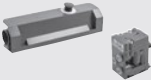


● VALVES	B1
● VALVES ISLANDS AND FIELDBUS	B2
● PROCESS VALVES MULTIPLE FLUIDS	B3

VALVES SUMMARY

	● MINIVALVES SERIES VME-1 MECHANICALLY/HAND OPERATED				 B1.4
	● VALVES SERIES PEV PEDAL OPERATED				 B1.8
	● TWO HAND SAFETY VALVE SERIE SAFE AIR®				 B1.10
	● VALVES SERIES 70				 B1.12
	● VALVES SERIES 70, HAND OPERATED				 B1.14
	● VALVES SERIES 70, MECHANICALLY OPERATED				 B1.20
	● VALVES SERIES 70, PNEUMATIC				 B1.23
	● VALVES SERIES 70, SOLENOID/PNEUMATIC				 B1.29
	● VALVES SERIES 70 LT (LOW TEMPERATURE)	MAN 	PN 	ELPN 	B1.37
	● ACCESSORIES VALVES SERIES 70				 B1.43
	● VALVES SERIES 70 ON BASE				 B1.48
	● VALVES NAMUR				 B1.53
	● VALVES SERIES BASIC				 B1.56
	● COILS AND CONNECTORS FOR SERIES 70, NAMUR AND SERIES BASIC VALVES				B1.60
	● 10-mm SOLENOID VALVES SERIES PLT-10				 B1.63
	● BASES FOR PLT-10 MULTIPLE CONNECTION				 B1.68
	● SOLENOID VALVES PIV.M 15-mm				 B1.74
	● SOLENOID VALVES PIV ON BASE				 B1.76
	● SOLENOID VALVES PIV IN LINE				 B1.81

VALVES

MINIVALVES, MECHANICALLY AND HAND OPERATED SERIES VME

- Minivalves with 3/2 NO NC poppet,
- Installation in any position
- Push-in fittings for pipe Ø 4 mm and M5
- Low actuation force
- Rapid, accurate signal
- Mechanical actuation
- The 2 places adapter allows manual actuation of 1 or 2 VME valves with manual Ø 22 panel actuators. Thus it is possible to obtain 3/2, 5/2, 5/3 open centre and 5/3 pressure centre pneumatic functions.
- On request, it is possible to place a NC-NO electric switch next to VME valve for mixed solenoid/pneumatic signals.

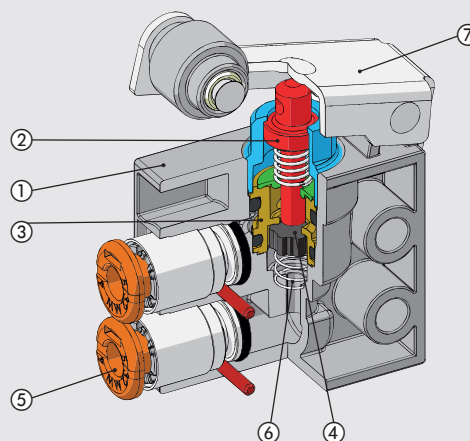


TECHNICAL DATA

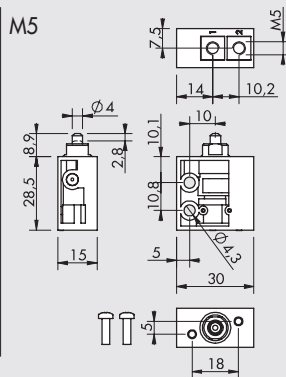
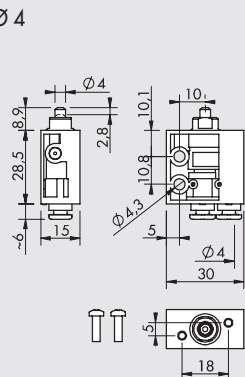
Valve fitting port		Push-in fitting for pipe diam. 4 and M5 (axial or side)
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Type		With poppet
Versions		Mechanical and manual
Operators:		With Plunger – Plunger for wall-mounting – Roller lever – Unidirectional roller lever
mechanical		Depending on the type of actuation panel selected
manual		0.6
Thread forming torque of the self-tapping screws for the plunger version	Nm	0.5 to 10
Operating pressure	bar	-10° to +60
Operating temperature range	°C	2.5
Nominal diameter	mm	16.5
Conductance C	Nl/min · bar	0.03
Critical ratio b	bar/bar	35
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	60
Flow rate at 6 bar ΔP 1 bar	Nl/min	8
Actuation force – Plunger at 6 Bar	N	In any position
Installation		See chapter Z1
Compatibility with oils		

COMPONENTS

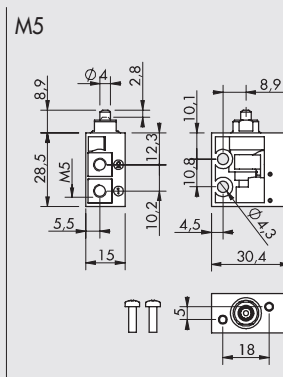
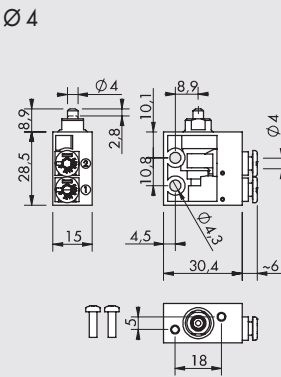
- ① VALVE BODY: technopolymer
- ② BUTTON: chemically nickel-plated brass
- ③ DISTANCE PLATES: brass
- ④ GASKETS: NBR
- ⑤ PUSH-IN FITTING CARTRIDGES: stainless steel, brass and plastic
- ⑥ SPRINGS: stainless steel
- ⑦ LEVER: nickel-plated steel



PLUNGER 3/2 NO - SIDE FITTINGS

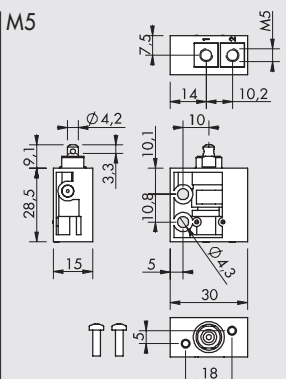
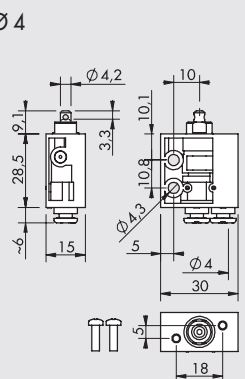


Symbol	Code	Description	Weight [g]
	W3501000101	VME1-10 NO Ø 4	22
	W3501000110	VME1-16 NO M5	24

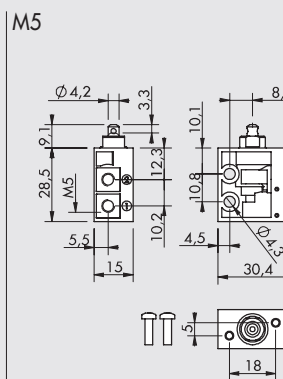
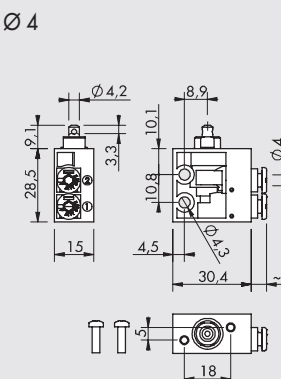


Symbol	Code	Description	Weight [g]
	W3501001100	VME2-00 NO Ø 4	22
	W3501001110	VME2-10 NO M5	24

PLUNGER 3/2 NC - SIDE FITTINGS

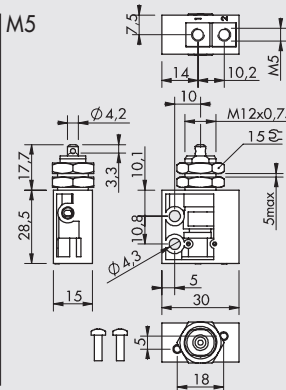
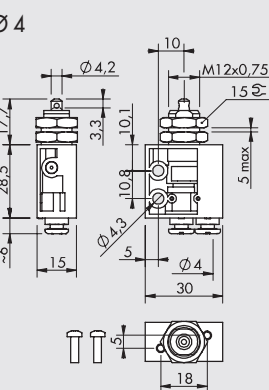


Symbol	Code	Description	Weight [g]
	W3501000100	VME1-01 NC Ø 4	22
	W3501000111	VME1-11 NC M5	24

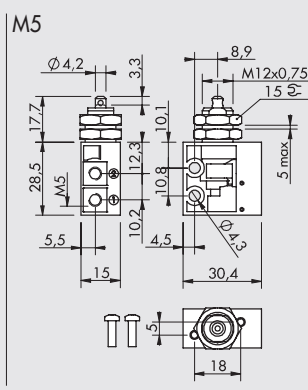
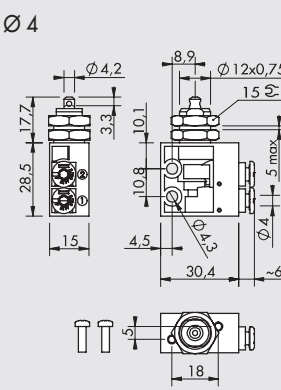


Symbol	Code	Description	Weight [g]
	W3501001101	VME2-01 NC Ø 4	22
	W3501001111	VME2-11 NC M5	24

PLUNGER FOR WALL MOUNTING, 3/2 NC - SIDE FITTINGS



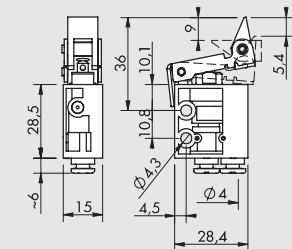
Symbol	Code	Description	Weight [g]
	W3501000400	VME1-04 NC Ø 4	36
	W3501000411	VME1-14 NC M5	38



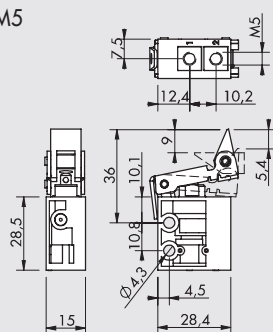
Symbol	Code	Description	Weight [g]
	W3501001401	VME2-04 NC Ø 4	36
	W3501001411	VME2-14 NC M5	38

UNIDIRECTIONAL ROLLER LEVER, 3/2 NC - AXIAL FITTINGS

Ø 4



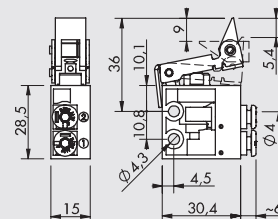
M5



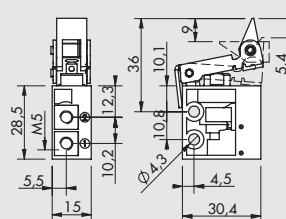
Symbol	Code	Description	Weight [g]
	W3501000300	VME1-03 NC Ø 4	38
	W3501000311	VME1-13 NC M5	40

UNIDIRECTIONAL ROLLER LEVER, 3/2 NC - SIDE FITTINGS

Ø 4



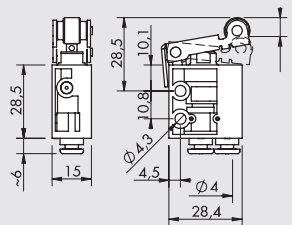
M5



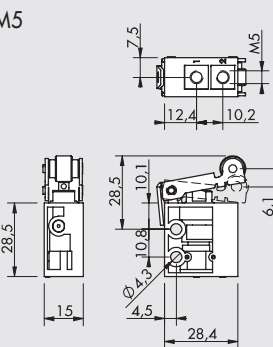
Symbol	Code	Description	Weight [g]
	W3501001301	VME2-03 NC Ø 4	38
	W3501001311	VME2-13 NC M5	40

ROLLER LEVER, 3/2 NO - AXIAL FITTINGS

Ø 4

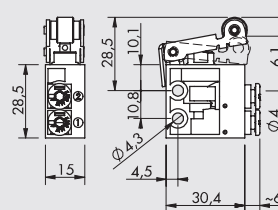


M5

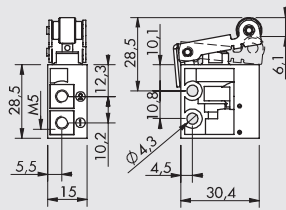


Symbol	Code	Description	Weight [g]
	W3501000201	VME1-05 NO Ø 4	36
	W3501000210	VME1-15 NO M5	38

Ø 4



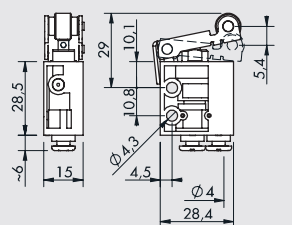
M5



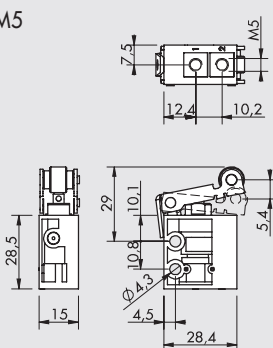
Symbol	Code	Description	Weight [g]
	W3501001200	VME2-05 NO Ø 4	36
	W3501001210	VME2-15 NO M5	38

ROLLER LEVER, 3/2 NC - AXIAL FITTINGS

Ø 4

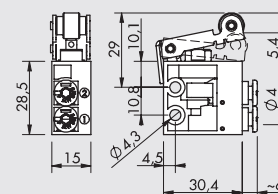


M5

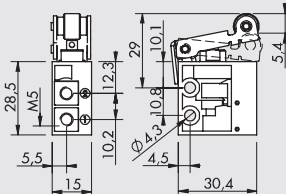


Symbol	Code	Description	Weight [g]
	W3501000200	VME1-02 NC Ø 4	36
	W3501000211	VME1-12 NC M5	38

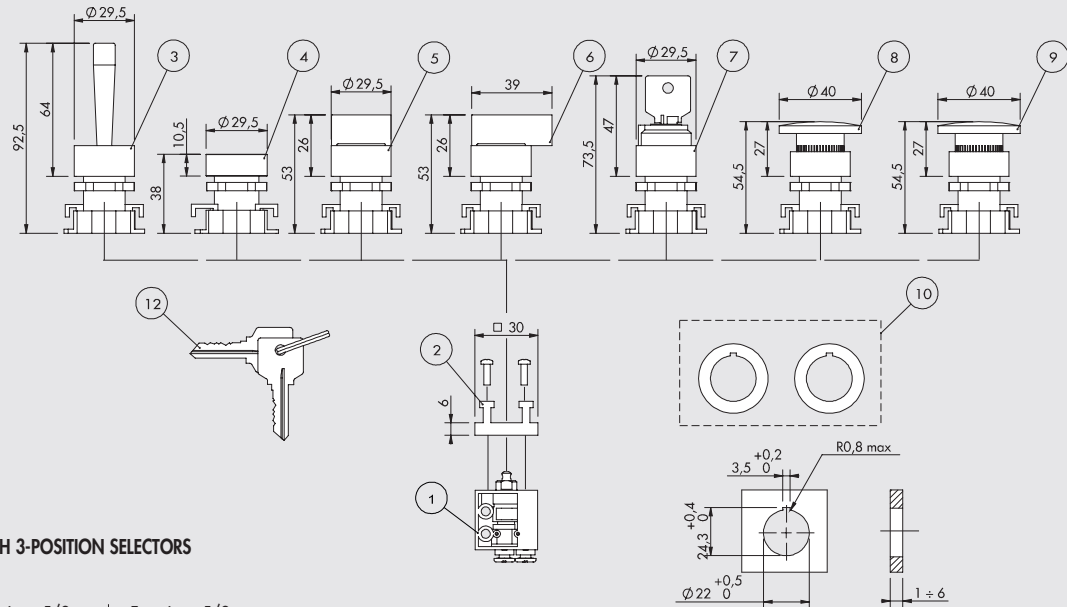
Ø 4



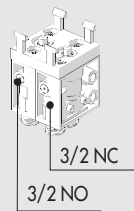
M5

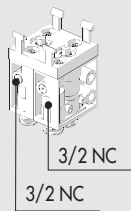
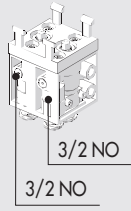


Symbol	Code	Description	Weight [g]
	W3501001201	VME2-02 NC Ø 4	36
	W3501001211	VME2-12 NC M5	38

MANUAL VME VALVES – ASSEMBLY DIAGRAM

WITH 2-POSITION SELECTORS

Functions 5/2


WITH 3-POSITION SELECTORS

 Functions 5/3
open centers

 Functions 5/3
pressure centers

NOTES:

- For VME valve bodies in technopolymer, use the self-tapping screws supplied with the valve.
- For before modification VME valve bodies (aluminum version), use the M3 screws supplied with the selector or button kit.

ORDERING CODES

Rif.	Symbol	Code	Description	Weight [g]
①		W3501000100	3/2 NC Axial fittings Ø 4	22
		W3501000111	3/2 NC Axial fittings M5	24
		W3501001101	3/2 NC Side fittings Ø 4	22
		W3501001111	3/2 NC Side fittings M5	24
		W3501000101	3/2 NO Axial fittings Ø 4	22
		W3501000110	3/2 NO Axial fittings M5	24
①		W3501001100	3/2 NO Side fittings Ø 4	22
		W3501001110	3/2 NO Side fittings M5	24
②		0351000050	2 places adaptor thickness 6.8 mm	5
③		W0351000015	Red handler with horizontally pivoted leve	25
④		W0351000011	Fat push button + 2 red/black coloured disks	15
		W0351000056	Green disk for push button ④	
⑤		W0351000030	Black selector short lever at 2 positions with return	20
		W0351000031	Black selector short lever at 2 positions	20

Rif.	Symbol	Code	Description	Weight [g]
⑤		W0351000032	Black selector short lever at 3 positions with return	20
		W0351000033	Black selector short lever at 3 positions	20
⑥		W0351000034	Black selector long lever at 2 positions with return	26
		W0351000035	Black selector long lever at 2 positions	26
⑥		W0351000036	Black selector long lever at 3 positions with return	26
		W0351000037	Black selector long lever at 3 positions	26
⑦		W0351000016	2 positions key selector with extractable key in 2 positions	50
		W0351000018	2 positions key selector with extractable key in 0	50
⑧		W0351000013	Red mushroom-head push button Ø 40	27
		W0351000017	Black mushroom-head push button Ø 40	27
⑨		W0351000014	Red mushroom-head push button with lock Ø 40	29
⑩		W0351000049	Reducer from 30 to 22.5 mm	
⑫		W0351000021	Key for ESC selectors	

The valves series PEV with pedal are available in a wide range:

- 5/2 1/4" monostable and bistable with guarded pedal
- 3/2 M5 monostable, pedal not guarded
- 3/2 Ø 4 monostable, pedal not guarded
- 3/2 M5 in monostable and bistable configuration with guarded pedal
- 3/2 Ø 4 in monostable and bistable configuration with guarded pedal

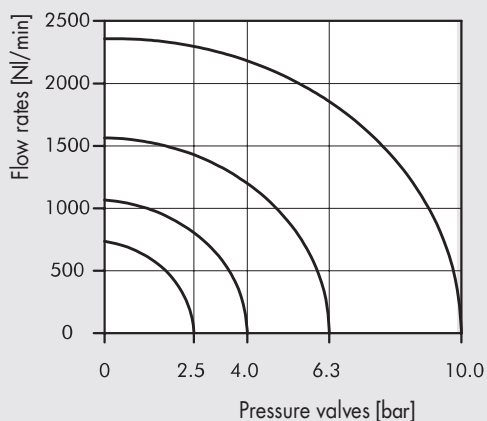


TECHNICAL DATA

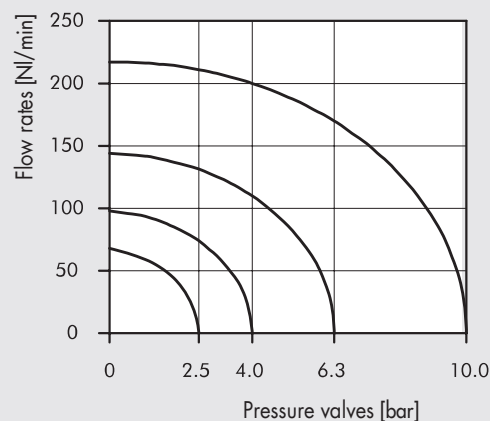
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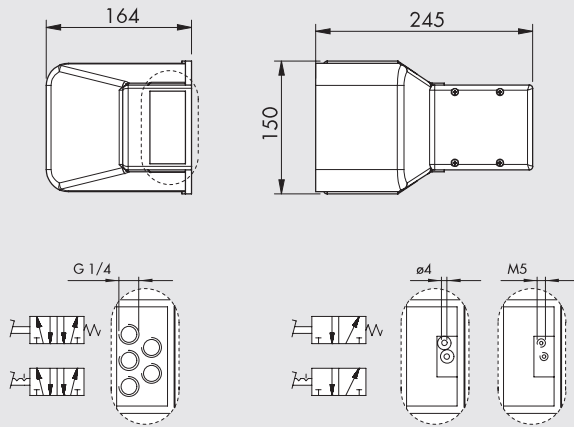
FLOW CHARTS

1/4"



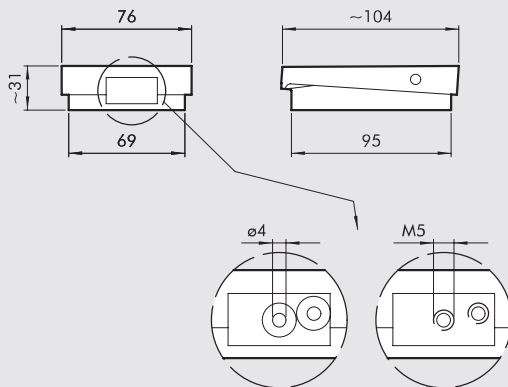
M5/Ø 4 mm



GUARDED PEDAL WITH VALVES 5/2 1/4" - 3/2 M5 - 3/2 Ø 4


Symbol	Code	Description	Abbrev.	Weight [g]
	W312000001	5/2 - 1/4" monostable, guarded	PEV 35 PES PR	1027
	W312000011	5/2 - 1/4" bistable, guarded ●	PEV 35 PEB PR	1035
	W312000031	3/2 M5 monostable, guarded	PEV 03 PES PR	883
	W312000032	3/2 Ø 4 monostable, guarded	PEV F3 PES PR	887
	W312000033	3/2 M5 bistable, guarded ●	PEV 03 PEB PR	890
	W312000031	3/2 Ø 4 bistable, guarded ●	PEV F3 PEB PR	914
	W312000021	5/2 - 1/4" monostable, with mechanical block and guard ■	PEV 35 PEC PR	1014

- The pedal-down position is maintained by a lever. When the foot presses on the lever, the pedal releases and can rise.
- When the foot presses on a locking lever, the pedal can be lowered.

NOT-GUARDED PEDAL WITH VALVES 3/2 M5 - 3/2 Ø 4


Symbol	Code	Description	Abbrev.	Weight [g]
	W312000041	3/2 - M5 monostable, not guarded	PEV 03 PES WP	188
	W312000040	3/2 Ø 4 monostable, not guarded	PEV F3 PES WP	192

SYNOPTIC, SIZES AND VERSIONS

PEV FAMILY	F DIMENSIONS	3 FUNCTION	PE OPERATORS 14	C RESETTING (12)	WP FURTHER DETAILS
PEV valve with pedal	3 1/4 0 M5 F Ø 4	3 3/2 5 5/2	PE pedal operated	S mechanical springs C mechanical block B bistable	WP not guarded PR guarded



TWO HAND SAFETY VALVE SERIES SAFE AIR®

VALVES

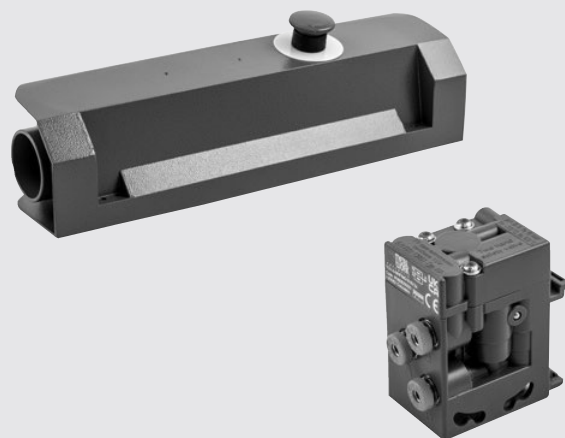
TWO HAND SAFETY VALVE SERIES SAFE AIR®

The two hand safety valve generates an output signal only if two synchronised pneumatic input signals are received.

If one input signal is interrupted, the output signal is interrupted as well.

The most common application involves connecting a manual button-controlled valve to each of the inputs and using the output signal as a start-of-cycle control for a pneumatically-operated machine.

- The two hand safety valve can be secured with through screws or a DIN bar adaptor.
- The complete pushbutton panel includes the dual manual control valve, two manual pushbuttons, and an emergency stop valve, all housed in a metal box to be mounted on a wall or stand.
- The pushbutton housing is supplied on request for anyone wishing to get a personalised pneumatic connection or drill holes to secure the unit.



TECHNICAL DATA

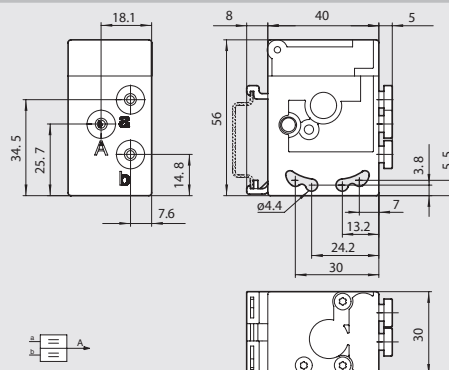
Compressed air couplings	mm	Push-in fitting for Ø 4 pipe
Fluid		Filtered, unlubricated compressed air, max 50 µm
Version		Single-control – Complete pushbutton panel
Standard		• EN ISO 13851 type IIIA, TÜV approved according to 2006/42/EC • Certified TÜV-A-MHF/MG18-00134V (code W3605000001) • Certified Bureau Veritas BV-23-MAC-CV-0001 (code 0227700000)
Synchronisation, max. time between two signals	s	0.4
De-activation time, with pipe L = max 1000 mm	s	< 0.05
Actuation		pneumatic
Reset		spring operated
Operating pressure	bar	2.5 to 8
Temperature range	°C	- 10 to +60
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 Mpa - 87 psi) ΔP 1 bar (0.1MPa - 1.45 psi)	Nl/min	85
Mounting position		In any direction
Compatibility with oils		See chapter Z1

TWO HAND SAFETY VALVE

Code	Description
W3605000001	Two hand safety valve

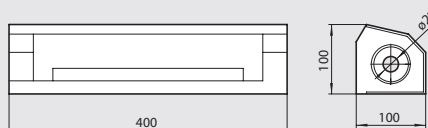
Materials

Body: technopolymer
Internal parts: brass and technopolymer
Gaskets: NBR
Spring: alloy steel

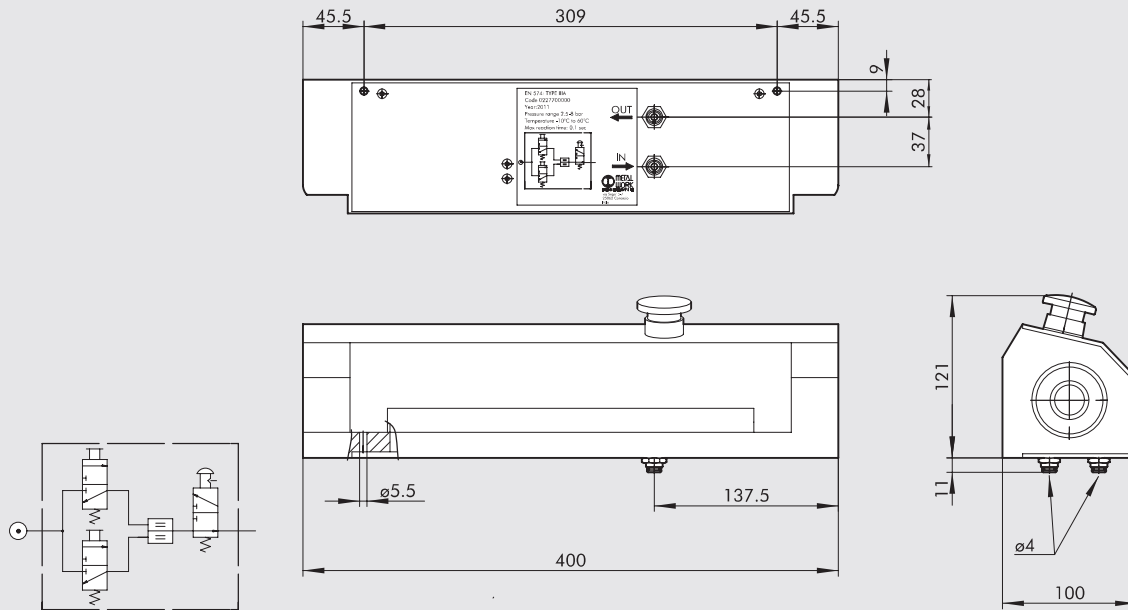


PUSHBUTTON HOUSING

Code	Description
W3120000212	Pushbutton housing



COMPLETE PUSHBUTTON PANEL



Code	Description
0227700000	Complete pushbutton panel

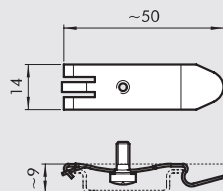
Materials
Pressure die-cast and painted aluminium alloy

MAIN COMPONENTS

Code	Description	Quantity
W3605000001	Dual manual safety valve	1
W0351000011	Monostable protected button - black disk	2
W0351000014	Emergency stop button	1
W3501000100	VME1-01 NC Ø 4	2
W3501001100	VME2-01 NO Ø 4	1
0351000050	Valve-button connecting base	3
2L11001	RL10 Ø 4	2

ACCESSORIES

CONNECTION BRACKETS ON THE BAR (DIN EN50022)



Code	Description
0227300600	Connection brackets on DIN bar

Individually packed

VALVES SERIES 70

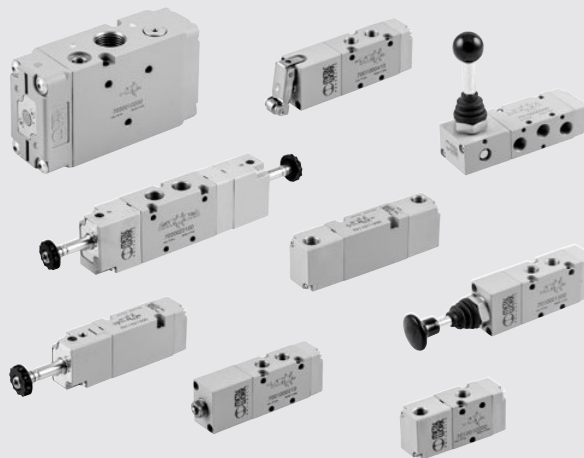
The Series 70 forms part of Metal Work's full range of traditional valves.

They are available in sizes 1/8", 1/4", 3/8" and 1/2", versions 3/2, 5/2, 5/3 and double 3/2, with mechanical, manual, pneumatic and electric drives.

They can be installed in line, onto a wall, on the cylinder (using a special bracket) or in series (on a multiple or modular base) to suit all possible applications.

A range of valves (Series 70 LT) designed using components for specific low-temperature applications is now available for the most commonly used types and sizes.

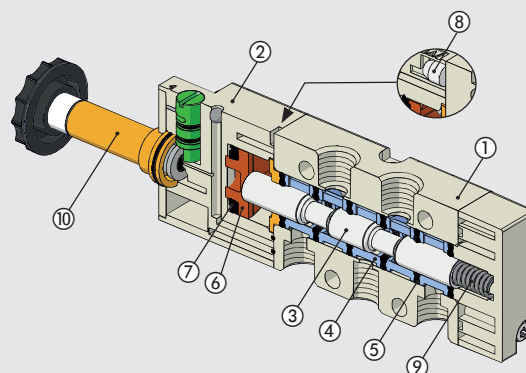
These highly reliable valves comply with the main applicable standards, including ATEX, ISO 13849 and SIL, as stated in the documents and certificates available online.



TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Thread on the valve ports		1/8"	1/4"	3/8"	1/2"
Operating pressure series 70 versions	bar	2.5 to 10			
monostable and bistable differential		1 to 10			
bistable		vacuum to 10			
assured					
Operating pressure series 70 LT (low temperature) versions	bar				
hand operated		vacuum to 10		-	
pneumatic and solenoid/pneumatic	t = -40°C to -10°C	5 to 10		-	
	t = -10°C to +60°C	3 to 10		-	
Minimum pilot pressure	bar	2.5			
Operating temperature range	°C				
series 70 versions		-10 to +60			
series 70 LT (low temperature) versions		-40 to +60			
Nominal diameter	mm	5	7.5	13.3	15
Conductance C	Nl/min · bar	121.43	264.26	505.52	971.43
Critical ratio b	bar/bar	0.32	0.27	0.32	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	1560	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	2150	4600
Installation		In any position (vertical assembly is not recommended for bistable valves subjected to vibration)			
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous.			
Recommended lubricant		For series 70 LT (low-temperature) versions, it is recommended to use of perfectly dried air. ISO and UNI FD 22			
Maximum coil nut torque	Nm	For series 70 LT (low-temperature) it is not expected to be used with lubricated air. 1			
Compatibility with oils		See chapter Z1			

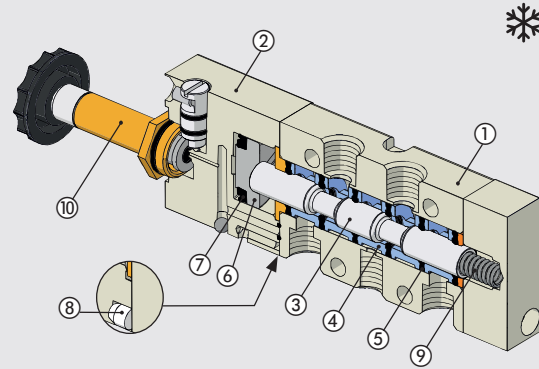
COMPONENTS SERIES 70

- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: plastic
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: plastic
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe - Stainless steel core



COMPONENTS SERIES 70 LT (LOW TEMPERATURE)

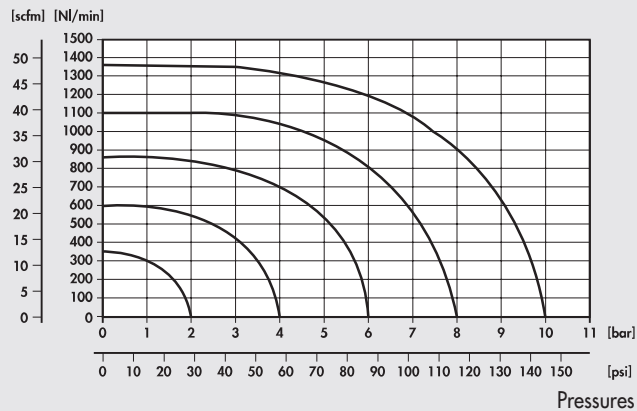
- ① VALVE BODY: aluminium
- ② CONTROL/END CAP: aluminium
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: HNBR
- ⑥ PISTONS: aluminium
- ⑦ PISTON GASKET: HNBR
- ⑧ FILTER: plastic
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: brass pipe - Stainless steel core
(version specific for low-temperature applications)



FLOW CHARTS

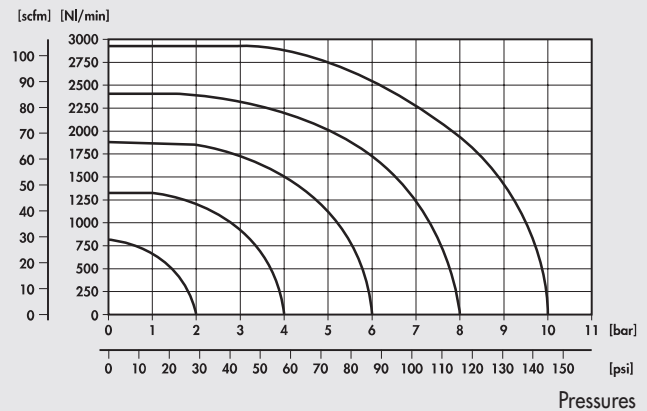
VALVES SERIES 70 1/8"

Flow rates



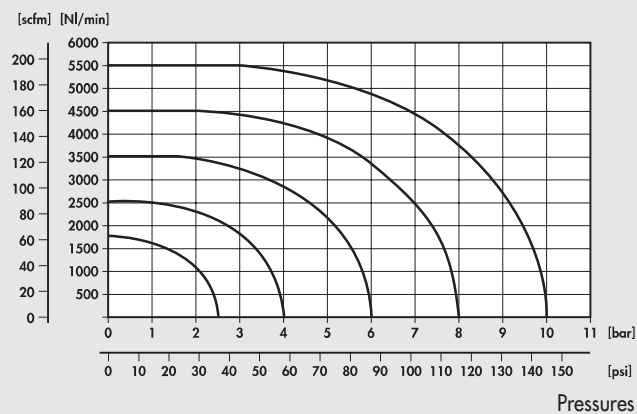
VALVES SERIES 70 1/4"

Flow rates



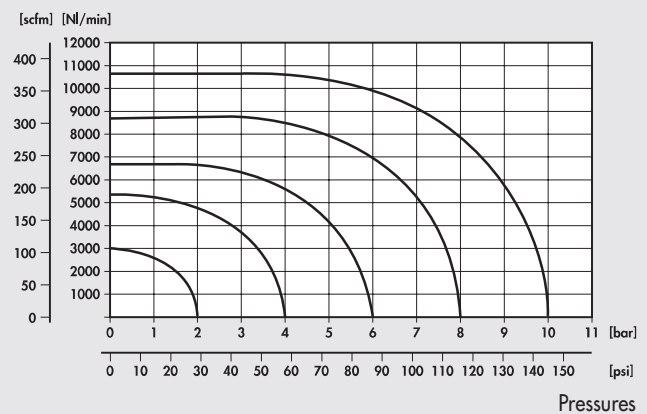
VALVES SERIES 70 3/8"

Flow rates



VALVES SERIES 70 1/2"

Flow rates

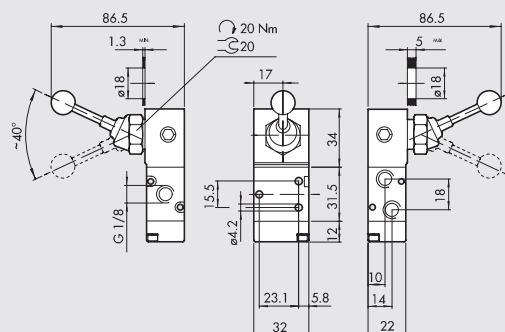


TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure range:				
• version with direct control	bar		Vacuum to 10	
• pilot-assisted version	bar		2.5 to 10	
Operating temperature range			-10 to +60	
Nominal diameter	mm	5	7.5	15
Conductance C	Nl/min · bar	121.43	264.26	971.43
Critical ratio b	bar/bar	0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	4600



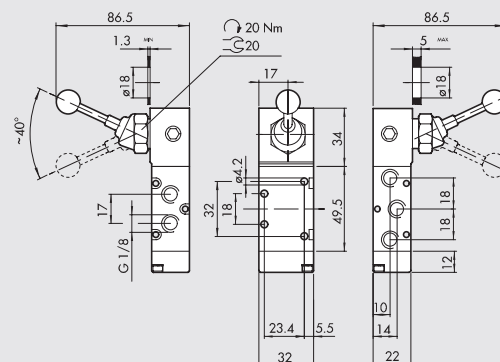
M A V FAMILY		2 DIMENSIONS		3 FUNCTION		P P OPERATORS 14		S RESETTING (12)		N C FURTHER DETAILS	
MAV	manual valves	2	1/8"	3	3/2	PP	drawer	A	pneumatic/ mechanical springs*	NC	normally closed
		3	1/4"	5	5/2	VL	axial lever	S	mechanical springs	NO	normally open
		4	1/2"	6	5/3	LE	90° lever	B	bistable	CC	closed centres
				8	2 x 3/2	BRE	arranged for manual panel actuators	D	differential	OC	open centres
								O	stable for 5/3	PC	pressure centres
									*on demand		

90° LEVER 3/2 1/8"



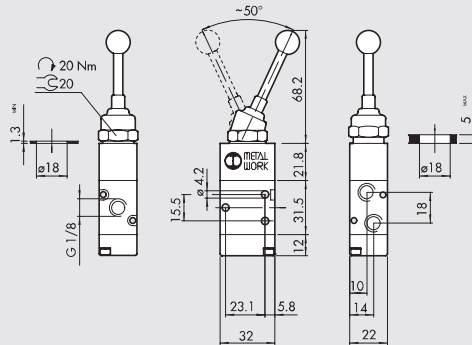
Symbol	Code	Abbrev.	Weight [g]
	7010000100	MAV 23 LES NC	168
	7010000200	MAV 23 LEB OO	171

90° LEVER 5/2 1/8"



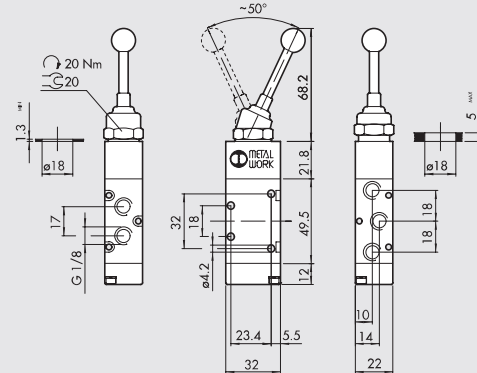
Symbol	Code	Abbrev.	Weight [g]
	7010000300	MAY 25 LES OO	194
	7010000400	MAY 25 LEB OO	197

FRONT LEVER 3/2, 1/8"



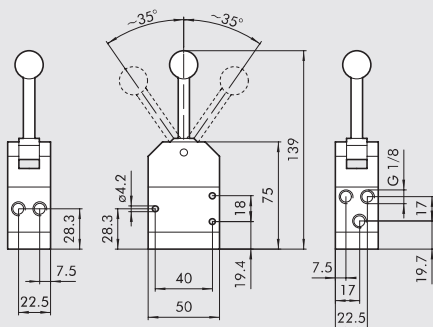
Symbol	Code	Abbrev.	Weight [g]
	7010001400	MAV 23 VLB OO	130

FRONT LEVER 5/2, 1/8"



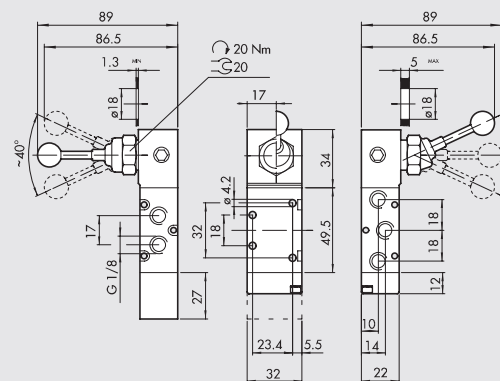
Symbol	Code	Abbrev.	Weight [g]
	7010001700	MAV 25 VLB OO	156

FRONT LEVER 5/3, 1/8"



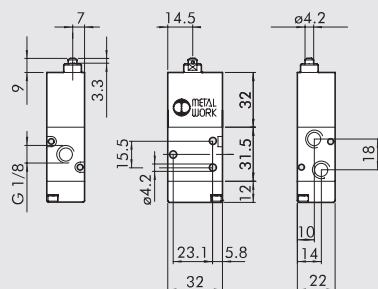
Symbol	Code	Abbrev.	Weight [g]
	7010001150	MAV 28 VLO OC	316
	7010001160	MAV 28 VLS OC	325

90° LEVER 5/3, 1/8"

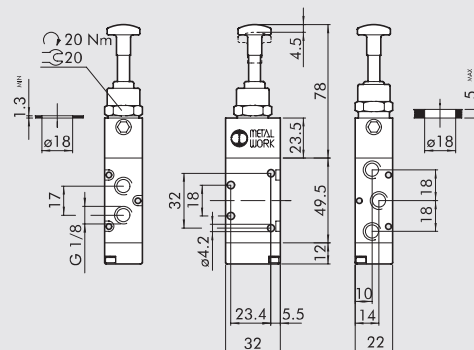


Symbol	Code	Abbrev.	Weight [g]
	7010001000	MAV 26 LES CC	242
	7010000900	MAV 26 LES OC	242
	7010001100	MAV 26 LES PC	242
	7010000500	MAV 26 LEO CC	194
	7010000600	MAV 26 LEO OC	194
	7010000700	MAV 26 LEO PC	194

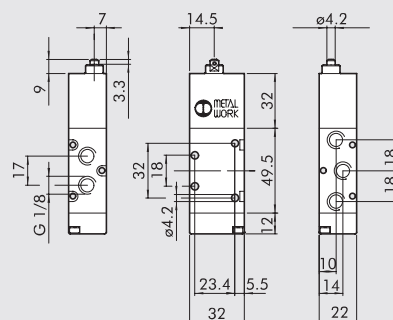
PILOT-ASSISTED PLUNGER 3/2 1/8"



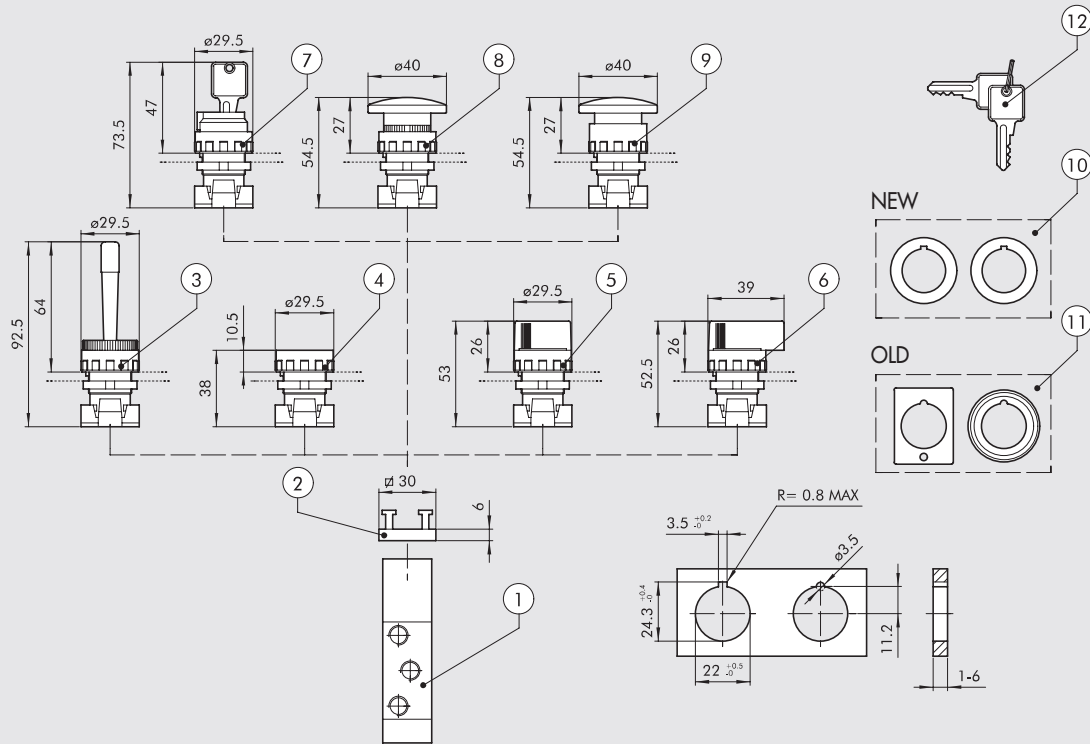
DRAWER 5/2, 1/8"

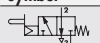
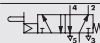
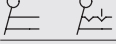
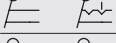


PILOT-ASSISTED PLUNGER 5/2 1/8"

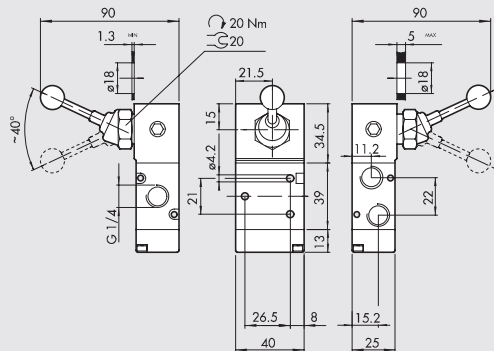


Symbol	Code	Abbrev.	Weight [g]
	7010001900	MAV 25 BRE OO	150

ASSEMBLY DIAGRAM FOR PILOT-ASSISTED HAND-OPERATED VALVES SERIES 70 WITH PANEL ACTUATORS

ORDERING CODES

Symbol	Reference	Code	Description	Weight [g]
	①	7010001800	Pilot-assisted plunger 3/2, 1/8"	124
	①	7010001900	Pilot-assisted plunger 5/2, 1/8"	150
	②	0351000050	2 places adaptor thickness 6.8 mm	5
	③	W0351000015	Red handler with horizontally pivoted lever	25
	④	W0351000011	Fat push button + 2 red/black coloured disks ◆ Bistable fat push button without disk	15
	⑤	W0351000030	Black selector short lever at 2 positions with return	20
		W0351000031	Black selector short lever at 2 positions	20
	⑤	W0351000032	Black selector short lever at 3 positions with return	20
		W0351000033	Black selector short lever at 3 positions	20
	⑥	W0351000034	Black selector long lever at 2 positions with return	26
		W0351000035	Black selector long lever at 2 positions	26
	⑥	W0351000036	Black selector long lever at 3 positions with return	26
		W0351000037	Black selector long lever at 3 positions	26
	⑦	W0351000016	2 positions key selector with extractable key in 2 positions	50
		W0351000018	2 positions key selector with extractable key in 0	50
	⑧	W0351000013	Red mushroom-head push button Ø 40	27
		W0351000017	Black mushroom-head push button Ø 40	27
	⑨	W0351000014	Red mushroom-head push button with lock Ø 40	29
◆ It can't be supplied. As working replaced by selector with bistable short lever at 2 positions ⑤.	⑩	W0351000049	◆ Reducer from 30 to 22.5 mm	
◆ Usable only with technopolymer body selectors.	⑪	W0351000050	▲ Adapter for bore Ø 30 G2326	
▲ Usable only with metal body selectors.	⑫	W0351000021	◆ Key for ESC selectors	
		W0351000056	Green disk for push button ④	

90° LEVER 3/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020000100	MAV 33 LES NC	244
	7020000200	MAV 33 LEB OO	244

Symbol	Code	Abbrev.	Weight [g]
	7020001400	MAV 33 VLB OO	194

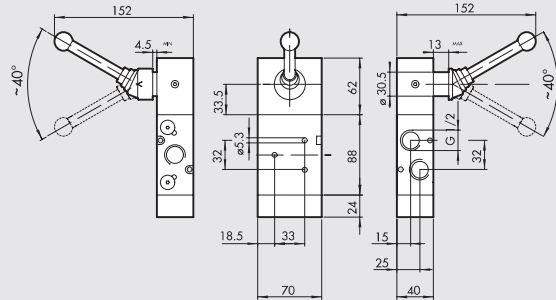
Symbol	Code	Abbrev.	Weight [g]
	7020000300	MAV 35 LES OO	290
	7020000400	MAV 35 LEB OO	290

Symbol	Code	Abbrev.	Weight [g]
	7020001700	MAV 35 VLB OO	244

Symbol	Code	Abbrev.	Weight [g]
	7020001000	MAV 36 LES CC	354
	7020000900	MAV 36 LES OC	354
	7020001100	MAV 36 LES PC	354
	7020000500	MAV 36 LEO CC	288
	7020000600	MAV 36 LEO OC	288
	7020000700	MAV 36 LEO PC	288

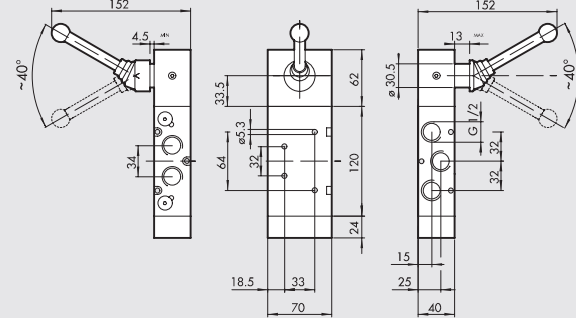
VALVES SERIES 70, HAND OPERATED, 1/2"

90° LEVER 3/2, 1/2"



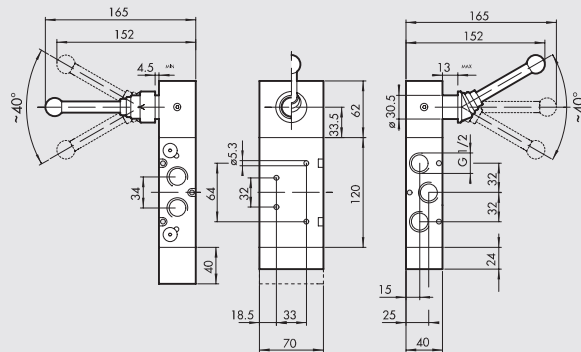
Symbol	Code	Abbrev.	Weight [g]
	7030000100	MAV 43 LES NC	1443
	7030000200	MAV 43 LEB OO	1435

90° LEVER 5/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030000300	MAV 45 LES OO	1588
	7030000400	MAV 45 LEB OO	1630

90° LEVER 5/3, 1/2"

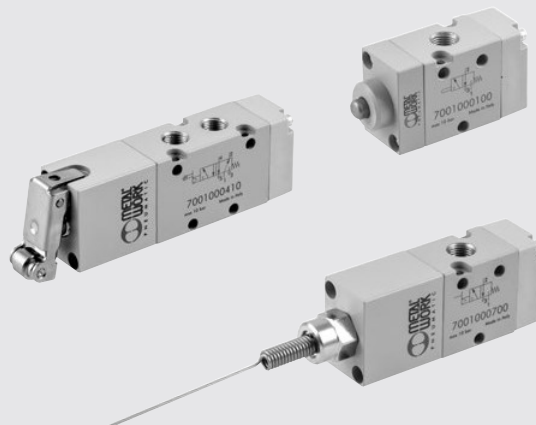


Symbol	Code	Abbrev.	Weight [g]
	7030001000	MAV 46 LES CC	1810
	7030000900	MAV 46 LES OC	1800
	7030001100	MAV 46 LES PC	1800
	7030000500	MAV 46 LEO CC	1615
	7030000600	MAV 46 LEO OC	1605
	7030000700	MAV 46 LEO PC	1605

NOTES

TECHNICAL DATA

Thread at valve ports		1/8"
Operation force at 6 bar:		
• version with direct control	N	50
• pilot-assisted version	N	6
Operating pressure:		
• version with direct control	bar	Vacuum to 10
• pilot-assisted version	bar	2.5 to 10
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	121.43
Critical ratio b	bar/bar	0.32
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400
Flow rate at 6 bar ΔP 1 bar	Nl/min	550



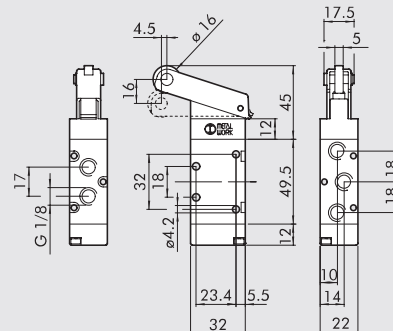
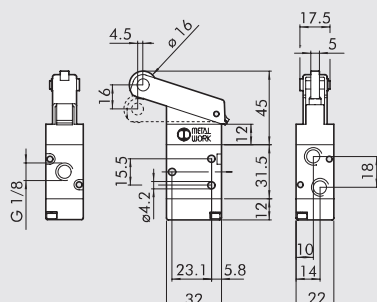
SYNOPTIC, SIZES AND VERSIONS

M E V		2		3		T A		S		N C	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
MEV	mechanically-operated valves	2	1/8"	3	3/2	TA	plunger	S	mechanical springs	NC	normally closed
						BR	bidirectional roller	A	pneumatic/mechanical spring*	OO	no indication
						UR	unidirectional roller				
						TS	sensitive plunger				
						RS	sensitive roller				
						AS	sensitive aerial				
						LL	frontal roller lever				

Symbol	Code	Abbrev.	Weight [g]
	7001000100	MEV 23 TAS NC	88

Symbol	Code	Abbrev.	Weight [g]
	7001000110	MEV 25 TAS OO	114

ROLLER LEVER 5/2, 1/8"

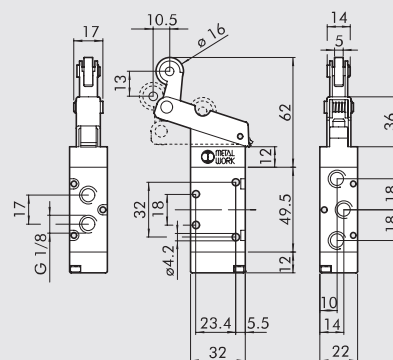
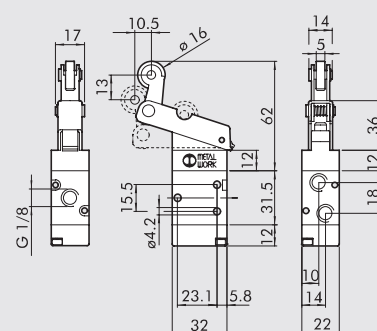


Symbol	Code	Abbrev.	Weight [g]
	7001000500	MEV 23 BRS NC	130

Symbol	Code	Abbrev.	Weight [g]
	7001000510	MEV 25 BRS OO	156

UNIDIRECTIONAL ROLLER 3/2, 1/8" LEVERS

UNIDIRECTIONAL ROLLER 5/2, 1/8" LEVERS

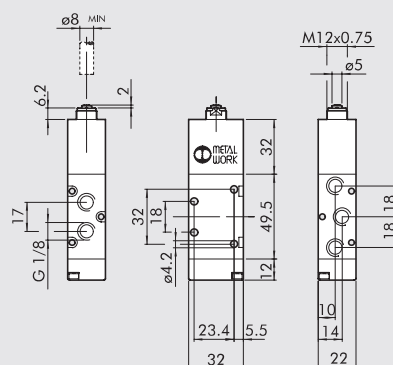
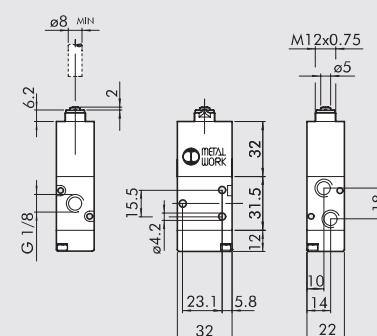


Symbol	Code	Abbrev.	Weight [g]
	7001000600	MEV 23 URS NC	136

Symbol	Code	Abbrev.	Weight [g]
	7001000610	MEV 25 URS OO	162

PILOT-ASSISTED PLUNGER 3/2 NC, 1/8"

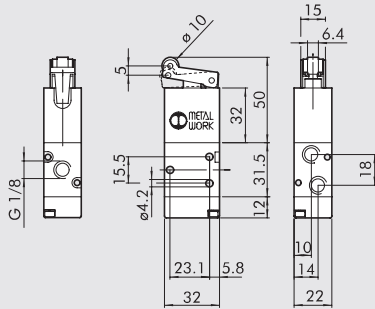
PILOT-ASSISTED PLUNGER 5/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000200	MEV 23 TSS NC	126

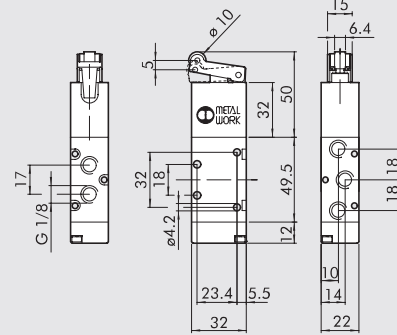
Symbol	Code	Abbrev.	Weight [g]
	7001000210	MEV 25 TSS OO	152

PILOT-ASSISTED ROLLER LEVER 3/2 NC, 1/8"



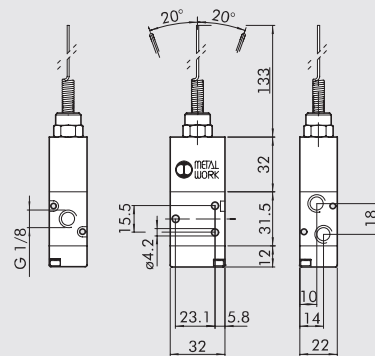
Symbol	Code	Abbrev.	Weight [g]
	7001000400	MEV 23 RSS NC	138

PILOT-ASSISTED ROLLER LEVER 5/2, 1/8"



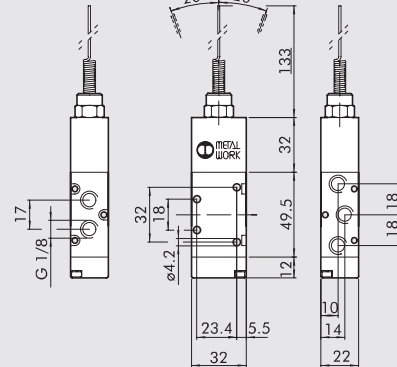
Symbol	Code	Abbrev.	Weight [g]
	7001000410	MEV 25 RSS OO	164

PILOT-ASSISTED AERIAL 3/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000700	MEV 23 ASS NC	142

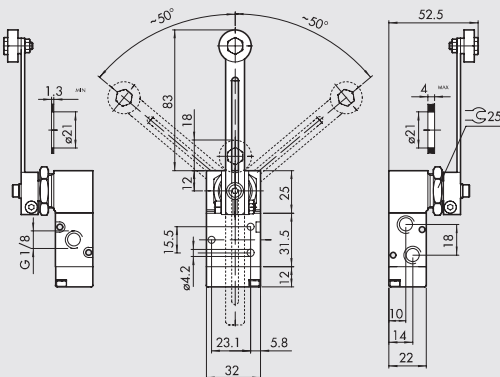
PILOT-ASSISTED AERIAL 5/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000710	MEV 25 ASS OO	168

ROLLER-LEVER 3/2 1/8"

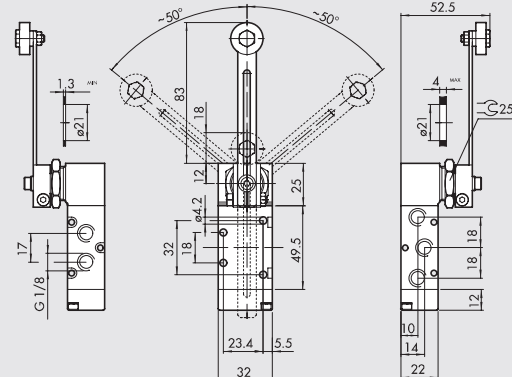
Operating torque: 0.5 Nm



Symbol	Code	Abbrev.	Weight [g]
	7001000900	MEV 23 LLS NC	189

ROLLER-LEVER 5/2 1/8"

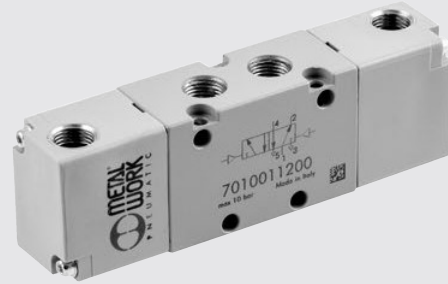
Operating torque: 0.5 Nm



Symbol	Code	Abbrev.	Weight [g]
	7001000910	MEV 25 LLS OO	216

VALVES SERIES 70, PNEUMATIC

TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Operating pressure	bar	Vacuum to 10			
Minimum pilot pressure					
• monostable and bistable differential	bar	2.5			
• bistable	bar	1			
Operating temperature range	°C	-10 to +60			
Nominal diameter	mm	5	7.5	13.3	15
Conductance C	NI/min · bar	121.43	264.26	505.52	971.43
Critical ratio b	bar/bar	0.32	0.27	0.32	0.43
Flow rate at 6 bar ΔP 0.5 bar	NI/min	400	750	1560	3200
Flow rate at 6 bar ΔP 1 bar	NI/min	550	1100	2150	4600
TRA / TRR monostable at 6 bar	ms	6/15	7/15	5/28	16/80
TRA / TRR bistable at 6 bar	ms	7/7	7/7	13/13	25/25



VALVES

VALVES SERIES 70, PNEUMATIC

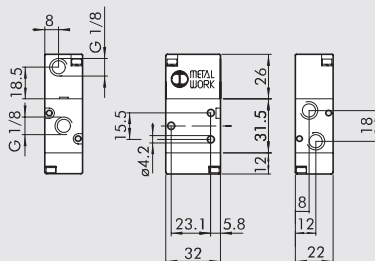
SYNOPTIC, SIZES AND VERSIONS

P N V FAMILY	2 DIMENSIONS	3 FUNCTION	P N OPERATORS 14	S RESETTING (12)	N C FURTHER DETAILS
PNV pneumatic valves	2 1/8"	3 3/2	PN pneumatic	S mechanical springs	OO no indication
	3 1/4"	5 5/2		B bistable	NC normally closed
	3 3/8"	6 5/3		D differential	NO normally open
	4 1/2"	■ 8 2-3/2		O stable for 5/3	CC closed centres
				◆ A pneumatic/mechanical spring	OC open centres
					PC pressure centres
					▲ NC-NO normally closed - normally open

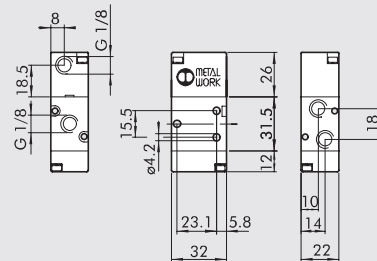
- Only available for size 1/8" and 1/4"
- ◆ On demand
- ▲ Only available for function 2-3/2

VALVES SERIES 70, PNEUMATIC, 1/8"

MONOSTABLE 3/2 NO, 1/8"



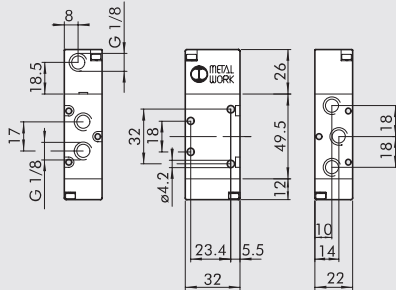
MONOSTABLE 3/2 NC, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010010400	PNV 23 PNS NO	82

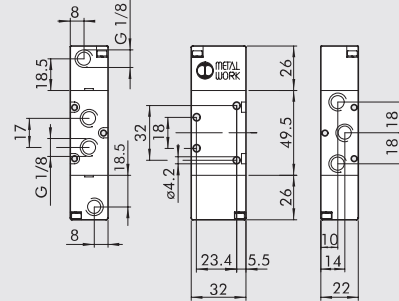
Symbol	Code	Abbrev.	Weight [g]
	7010010200	PNV 23 PNS NC	82

MONOSTABLE 5/2, 1/8"



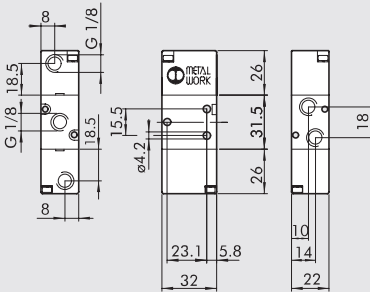
Symbol	Code	Abbrev.	Weight [g]
	7010011100	PNV 25 PNS OO	108

BISTABLE 5/2, 1/8"



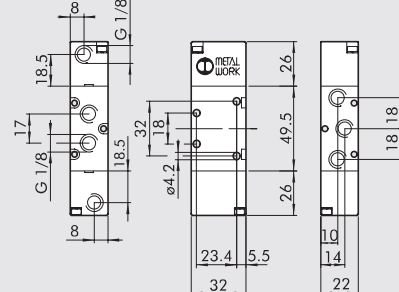
Symbol	Code	Abbrev.	Weight [g]
	7010011200	PNV 25 PNB OO	122
	7010011300	PNV 25 PND OO	128

BISTABLE 3/2, 1/8"



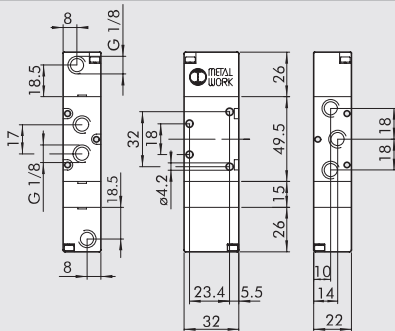
Symbol	Code	Abbrev.	Weight [g]
	7010010100	PNV 23 PNB OO	96

DOUBLE 3/2 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010013100	PNV 28 PNS NC	136
	7010013200	PNV 28 PNS NO	136
	7010013300	PNV 28 PNS NC-NO	136

MONOSTABLE 5/3, 1/8"

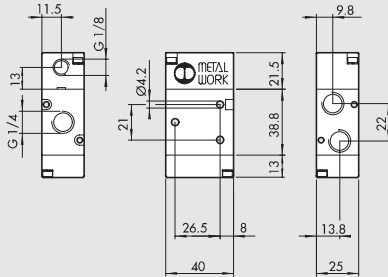


Symbol	Code	Abbrev.	Weight [g]
	7010012100	PNV 26 PNS CC	150
	7010012200	PNV 26 PNS OC	150
	7010012300	PNV 26 PNS PC	150

NOTES

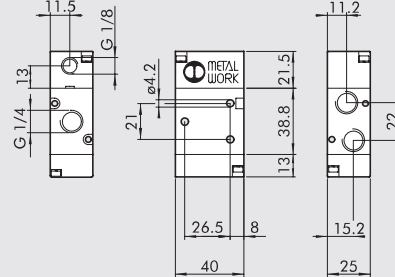
VALVES SERIES 70, PNEUMATIC, 1/4"

MONOSTABLE 3/2 NO, 1/4"



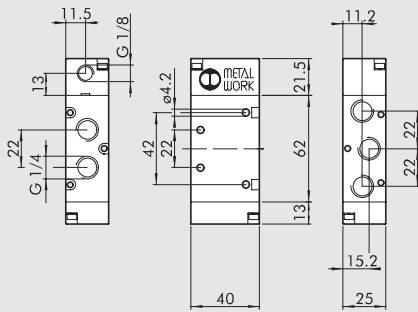
Symbol	Code	Abbrev.	Weight [g]
	7020010400	PNV 33 PNS NO	124

MONOSTABLE 3/2 NC, 1/4"



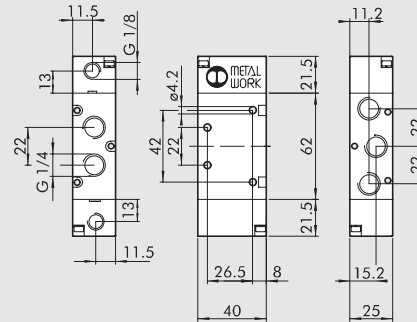
Symbol	Code	Abbrev.	Weight [g]
	7020010200	PNV 33 PNS NC	122

MONOSTABLE 5/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020011100	PNV 35 PNS OO	174

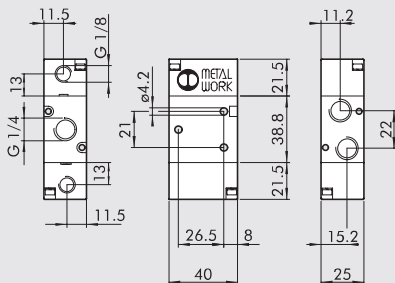
BISTABLE 5/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020011200	PNV 35 PNB OO	174

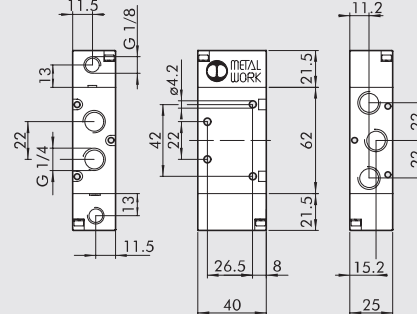
Symbol	Code	Abbrev.	Weight [g]
	7020011300	PNV 35 PND OO	198

BISTABLE 3/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020010100	PNV 33 PNB OO	134

DOUBLE 3/2, 1/4"

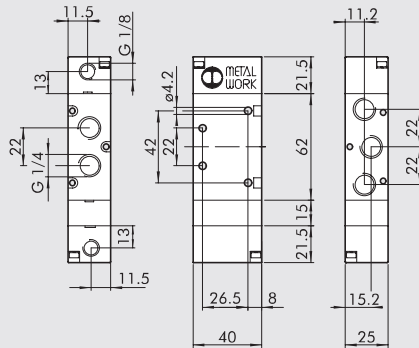


Symbol	Code	Abbrev.	Weight [g]
	7020013100	PNV 38 PNS NC	223

Symbol	Code	Abbrev.	Weight [g]
	7020013200	PNV 38 PNS NO	223

Symbol	Code	Abbrev.	Weight [g]
	7020013300	PNV 38 PNS NC-NO	223

MONOSTABLE 5/3, 1/4"

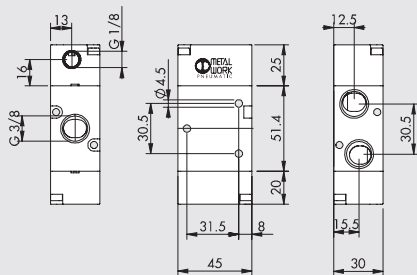


Symbol	Code	Abbrev.	Weight [g]
	7020012100	PNV 36 PNS CC	124
	7020012200	PNV 36 PNS OC	124
	7020012300	PNV 36 PNS PC	124

NOTES

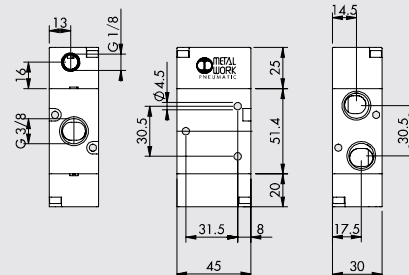
VALVES SERIES 70, PNEUMATIC, 3/8"

MONOSTABLE 3/2 NO, 3/8"



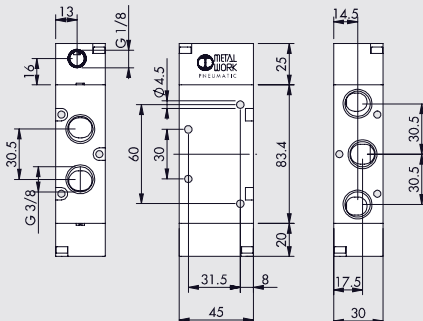
Symbol	Code	Abbrev.	Weight [g]
	7040010400	PNV C3 PNS NO	223

MONOSTABLE 3/2 NC, 3/8"



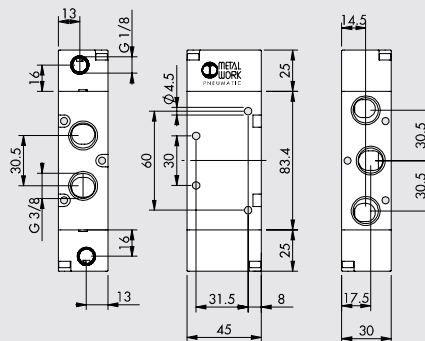
Symbol	Code	Abbrev.	Weight [g]
	7040010200	PNV C3 PNS NC	223

MONOSTABLE 5/2, 3/8"



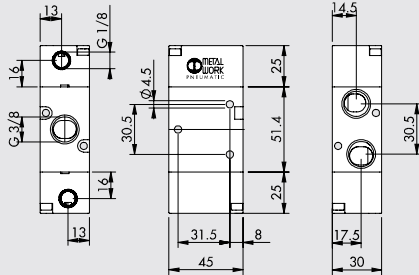
Symbol	Code	Abbrev.	Weight [g]
	7040011100	PNV C5 PNS OO	329

BISTABLE 5/2, 3/8"



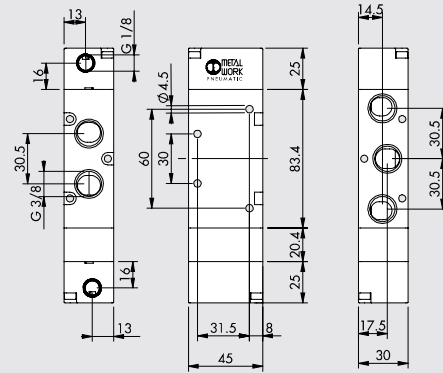
Symbol	Code	Abbrev.	Weight [g]
	7040011200	PNV C5 PNB OO	324
	7040011300	PNV C5 PND OO	360

BISTABLE 3/2, 3/8"

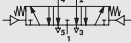


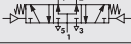
Symbol	Code	Abbrev.	Weight [g]
	7040010100	PNV C3 PNB OO	230

MONOSTABLE 5/3, 3/8"



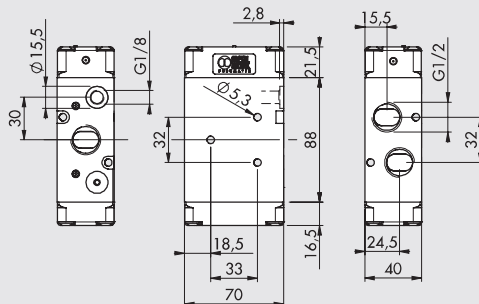
Symbol	Code	Abbrev.	Weight [g]
	7040012100	PNV C6 PNS CC	411

	7040012200	PNV C6 PNS OC	409
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	7040012300	PNV C6 PNS PC	409
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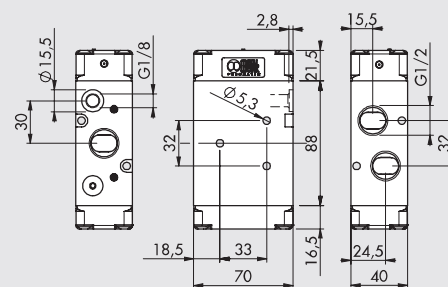
VALVES SERIES 70, PNEUMATIC, 1/2"

MONOSTABLE 3/2 NO, 1/2"



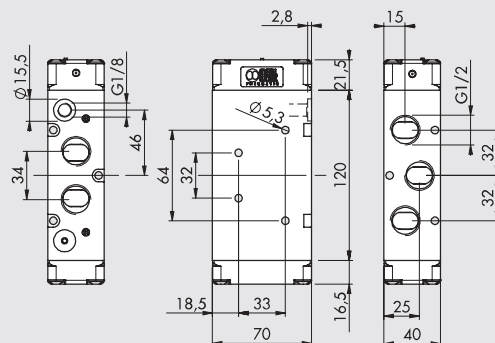
Symbol	Code	Abbrev.	Weight [g]
	7030010400	PNV 43 PNS NO	640

MONOSTABLE 3/2 NC, 1/2"



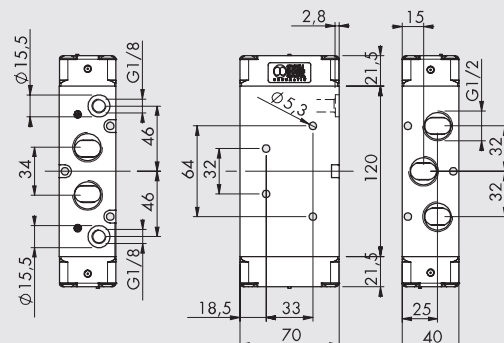
Symbol	Code	Abbrev.	Weight [g]
	7030010200	PNV 43 PNS NC	640

MONOSTABLE 5/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030011100	PNV 45 PNS OO	812

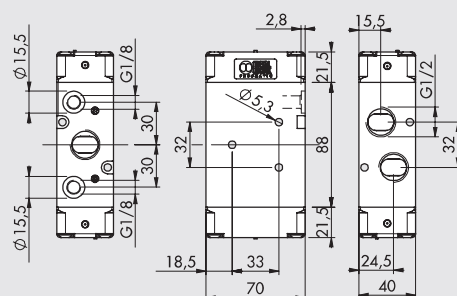
BISTABLE 5/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030011200	PNV 45 PNB OO	816

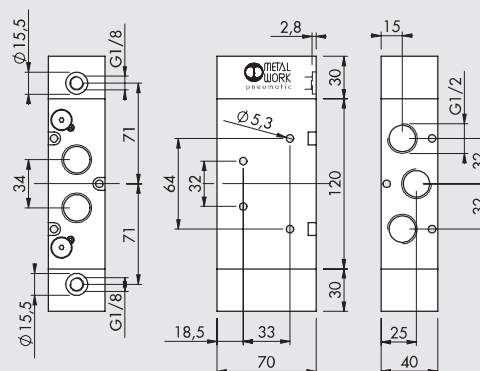
	7030011300	PNV 45 PND OO	828
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BISTABLE 3/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030010100	PNV 43 PNB OO	650

MONOSTABLE 5/3, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030012100	PNV 46 PNS CC	1200
	7030012200	PNV 46 PNS OC	1194
	7030012300	PNV 46 PNS PC	1196

NOTES

VALVES SERIES 70, SOLENOID/PNEUMATIC

TECHNICAL DATA	1/8"	1/4"	3/8"	1/2"
Operating pressure:				
• monostable and bistable differential	bar	2.5 to 10		
• bistable	bar	1 to 10		
• asserved	bar	Vacuum to 10		
Minimum pilot pressure	bar	2.5		
Operating temperature range	°C	-10 to +60		
Nominal diameter	mm	5	7.5	13.3
Conductance C	Nl/min · bar	121.43	264.26	505.52
Critical ratio b	bar/bar	0.32	0.27	0.32
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	1560
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	2150
TRA / TRR monostable at 6 bar	ms	15/35	19/45	21/72
TRA / TRR bistable at 6 bar	ms	20/20	21/21	18/18
Coil voltage values		12; 24 VDC - 24; 110; 220V AC 50/60Hz		
Power		2 W (DC) 3.5VA (AC)		
Voltage tolerance	%	-10 to +15		
Insulation class		F 155		
Maximum coil nut torque	Nm	1		
Hand operator		Bistable		



VALVES

SYNOPTIC, SIZES AND VERSIONS

SO V FAMILY	2 DIMENSIONS	3 FUNCTION	SO OPERATORS 14	S RESETTING (12)	NC FURTHER DETAILS
SOV solenoid/ pneumatic	2 1/8"	3 3/2	SO solenoid	S mechanical springs	OO no indication
	3 1/4"	5 5/2	SE solenoid assisted	B bistable	NC normally closed
	C 3/8"	6 5/3		D differential	NO normally open
	4 1/2"	■ 8 2-3/2		P pneumatic	CC closed centres
				◆ A pneumatic/mechanical spring	OC open centres
					PC pressure centres
					▲ NC-NO normally closed - normally open

■ Only available for size 1/8" and 1/4"

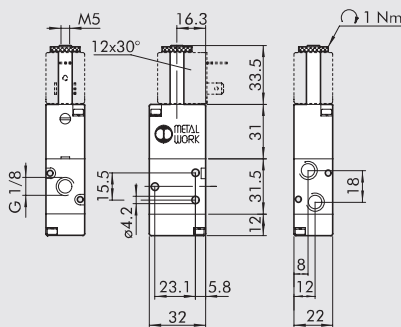
◆ On demand

▲ Only available for function 2-3/2

VALVES SERIES 70, PNEUMATIC

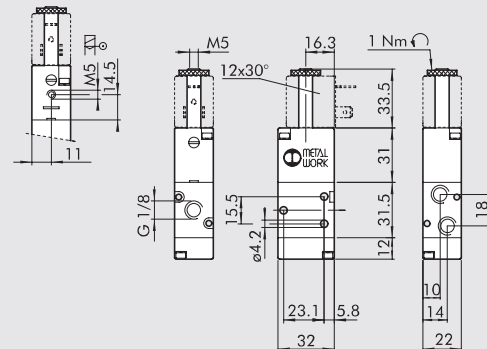
VALVES SERIES 70, SOLENOID/PNEUMATIC, PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/8"

MONOSTABLE 3/2 NO, 1/8"



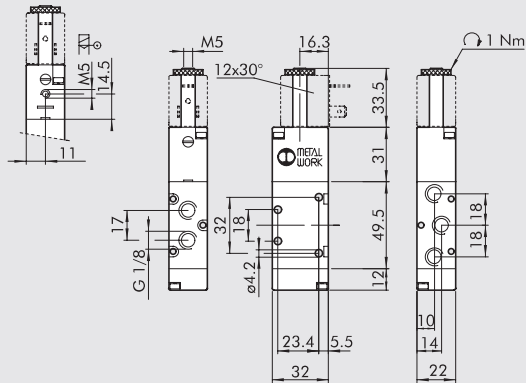
Symbol	Code	Abbrev.	Weight [g]
	7010020400	SOV 23 SOS NO	100

MONOSTABLE 3/2 NC, 1/8"



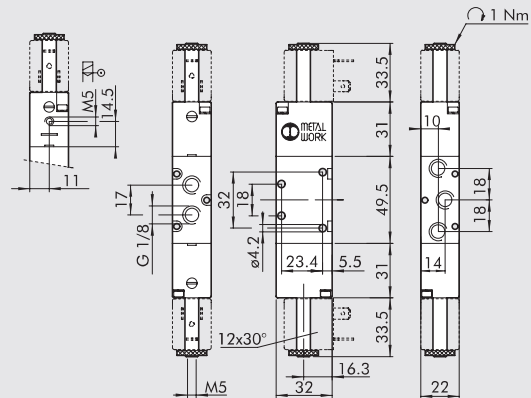
Symbol	Code	Abbrev.	Weight [g]
	7010020200	SOV 23 SOS NC	100
	7010020500	SOV 23 SES NC	100

MONOSTABLE 5/2, 1/8"



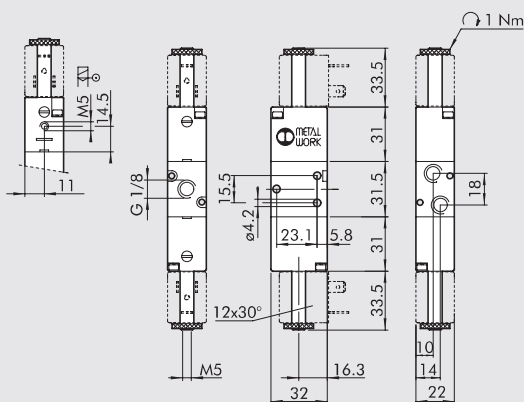
Symbol	Code	Abbrev.	Weight [g]
	7010021100	SOV 25 SOS OO	128
	7010021500	SOV 25 SES OO	129

BISTABLE 5/2, 1/8"



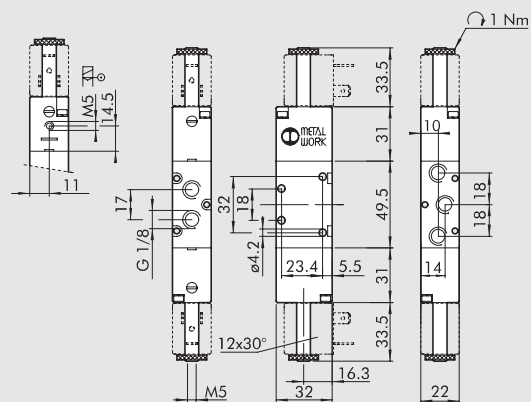
Symbol	Code	Abbrev.	Weight [g]
	7010021200	SOV 25 SOB OO	160
	7010021300	SOV 25 SOD OO	166
	7010021600	SOV 25 SEB OO	160

BISTABLE 3/2, 1/8"



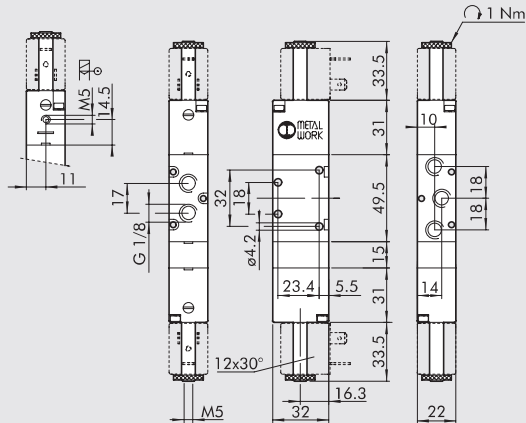
Symbol	Code	Abbrev.	Weight [g]
	7010020100	SOV 23 SOB OO	135
	7010020300	SOV 23 SEB OO	136

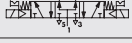
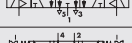
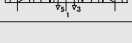
DOUBLE 3/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010023100	SOV 28 SOS NC	186
	7010023200	SOV 28 SOS NO	186
	7010023300	SOV 28 SOS NC-NO	186
	7010023400	SOV 28 SES NC	186
	7010023500	SOV 28 SES NO	186
	7010023600	SOV 28 SES NC-NO	186

MONOSTABLE 5/3, 1/8"

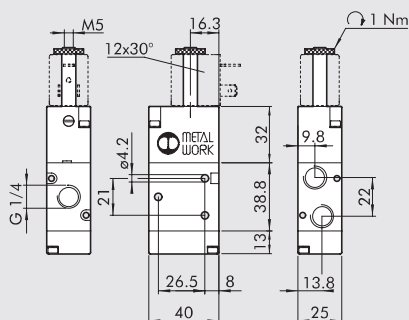


Symbol	Code	Abbrev.	Weight [g]
	7010022100	SOV 26 SOS CC	190
	7010022200	SOV 26 SOS OC	190
	7010022300	SOV 26 SOS PC	190
	7010022400	SOV 26 SES CC	188
	7010022500	SOV 26 SES OC	188
	7010022600	SOV 26 SES PC	188

NOTES

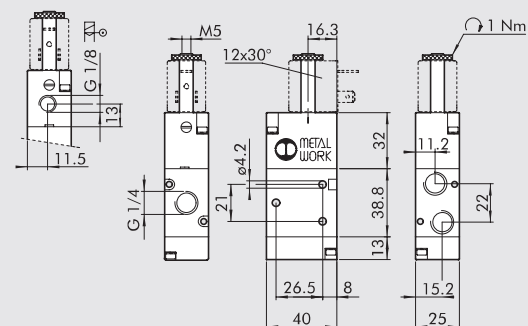
VALVES SERIES 70, SOLENOID/PNEUMATIC,
PILOT-ASSISTED SOLENOID/ PNEUMATIC, 1/4"

MONOSTABLE 3/2 NO, 1/4"



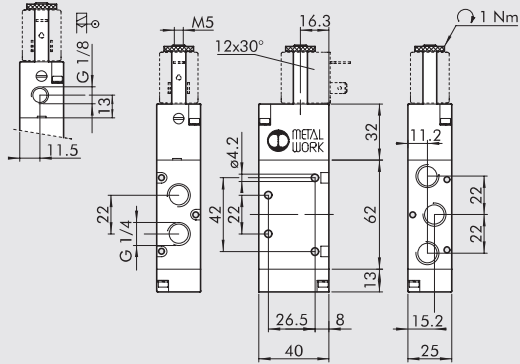
Symbol	Code	Abbrev.	Weight [g]
	7020020400	SOV 33 SOS NO	152

MONOSTABLE 3/2 NC, 1/4"



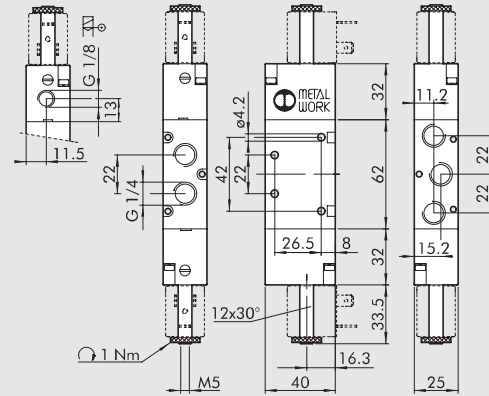
Symbol	Code	Abbrev.	Weight [g]
	7020020200	SOV 33 SOS NC	152
	7020020500	SOV 33 SES NC	152

MONOSTABLE 5/2, 1/4"



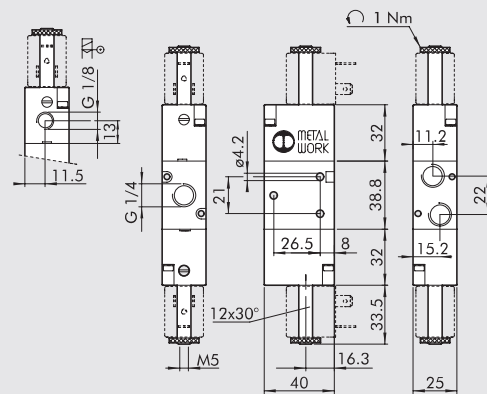
Symbol	Code	Abbrev.	Weight [g]
	7020021100	SOV 35 SOS OO	200
	7020021500	SOV 35 SES OO	200

BISTABLE 5/2, 1/4"



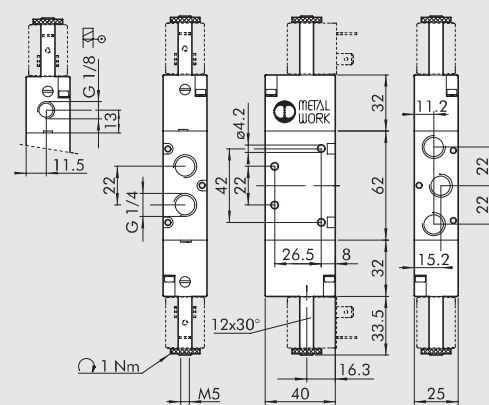
Symbol	Code	Abbrev.	Weight [g]
	7020021200	SOV 35 SOB OO	236
	7020021300	SOV 35 SOD OO	252
	7020021600	SOV 35 SEB OO	242

BISTABLE 3/2, 1/4"



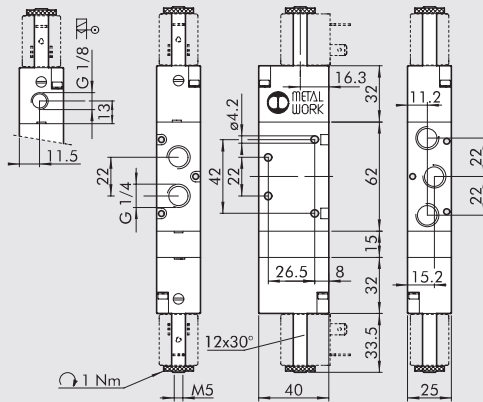
Symbol	Code	Abbrev.	Weight [g]
	7020020100	SOV 33 SOB OO	190
	7020020300	SOV 33 SEB OO	190

DOUBLE 3/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	7020023100	SOV 38 SOS NC	286
	7020023200	SOV 38 SOS NO	286
	7020023300	SOV 38 SOS NC-NO	286
	7020023400	SOV 38 SES NC	286
	7020023500	SOV 38 SES NO	286
	7020023600	SOV 38 SES NC-NO	286

MONOSTABLE 5/3, 1/4"

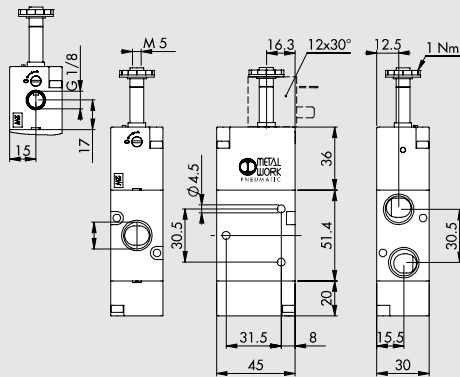


Symbol	Code	Abbrev.	Weight [g]
	7020022100	SOV 36 SOS CC	274
	7020022200	SOV 36 SOS OC	274
	7020022300	SOV 36 SOS PC	274
	7020022400	SOV 36 SES CC	277
	7020022500	SOV 36 SES OC	277
	7020022600	SOV 36 SES PC	277

NOTES

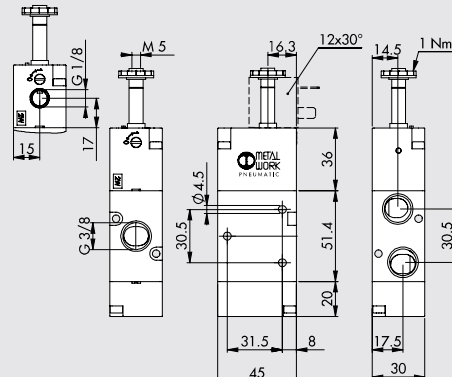
VALVES SERIES 70, SOLENOID/PNEUMATIC,
PILOT-ASSISTED SOLENOID/ PNEUMATIC, 3/8"

MONOSTABLE 3/2 NO, 3/8"



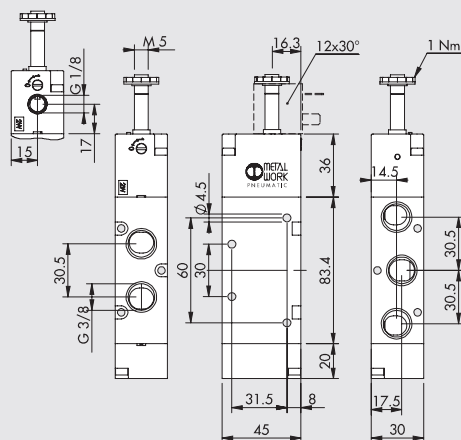
Symbol	Code	Abbrev.	Weight [g]
	7040020400	SOV C3 SOS NO	256
	7040020600	SOV C3 SES NO	255

MONOSTABLE 3/2 NC, 3/8"



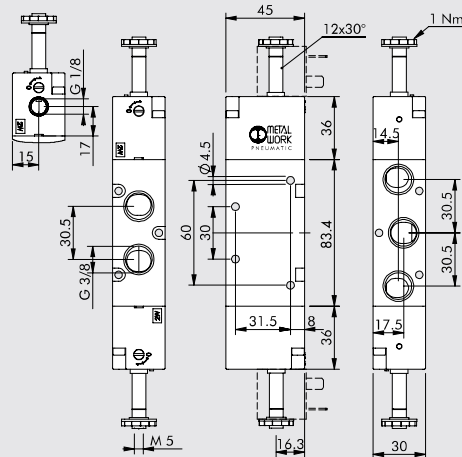
Symbol	Code	Abbrev.	Weight [g]
	7040020200	SOV C3 SOS NC	256
	7040020500	SOV C3 SES NC	255

MONOSTABLE 5/2, 3/8"



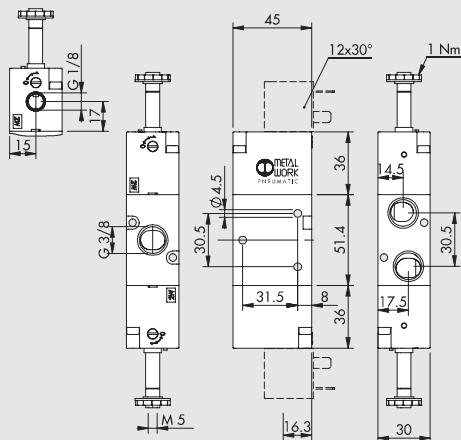
Symbol	Code	Abbrev.	Weight [g]
	7040021100	SOV C5 SOS OO	361
	7040021500	SOV C5 SES OO	361

BISTABLE 5/2, 3/8"



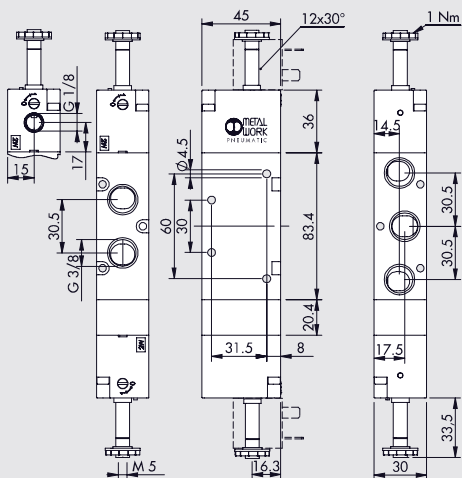
Symbol	Code	Abbrev.	Weight [g]
	7040021200	SOV C5 SOB OO	400
	7040021300	SOV C5 SOD OO	425
	7040021600	SOV C5 SEB OO	400

BISTABLE 3/2, 3/8"



Symbol	Code	Abbrev.	Weight [g]
	7040020100	SOV C3 SOB OO	307
	7040020300	SOV C3 SEB OO	307

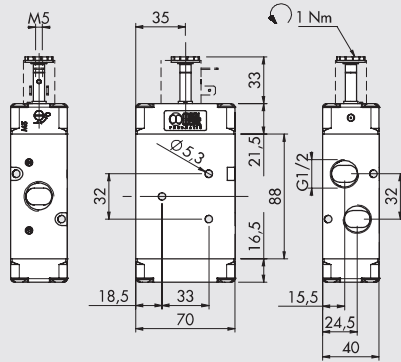
MONOSTABLE 5/3, 3/8"



Symbol	Code	Abbrev.	Weight [g]
	7040022100	SOV C6 SOS CC	476
	7040022200	SOV C6 SOS OC	474
	7040022300	SOV C6 SOS PC	474
	7040022400	SOV C6 SES CC	476
	7040022500	SOV C6 SES OC	474
	7040022600	SOV C6 SES PC	474

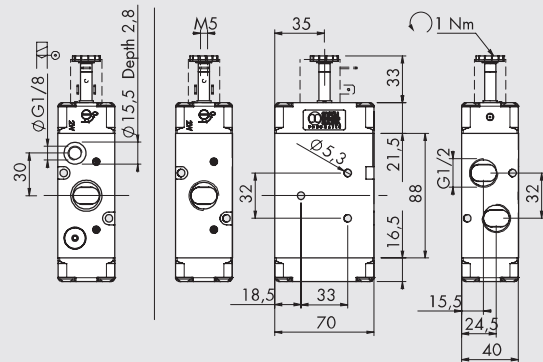
VALVES SERIES 70, SOLENOID/PNEUMATIC, PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/2"

MONOSTABLE 3/2 NO, 1/2"



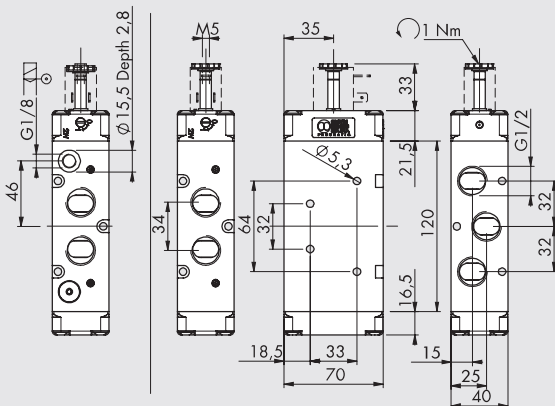
Symbol	Code	Abbrev.	Weight [g]
	7030020400	SOV 43 SOS NO	660

MONOSTABLE 3/2 NC, 1/2"



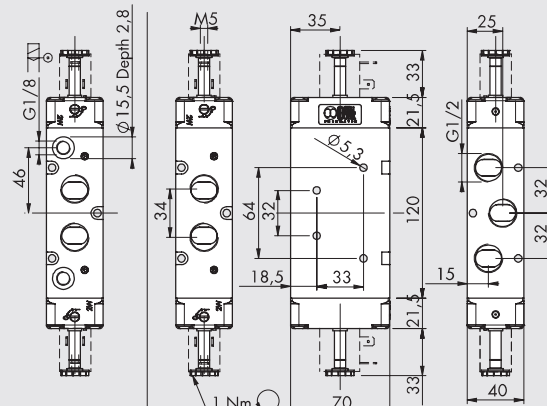
Symbol	Code	Abbrev.	Weight [g]
	7030020200	SOV 43 SOS NC	660
	7030020500	SOV 43 SES NC	654

MONOSTABLE 5/2, 1/2"



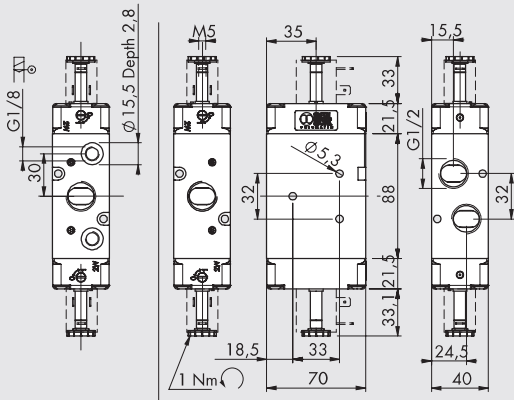
Symbol	Code	Abbrev.	Weight [g]
	7030021100	SOV 45 SOS OO	828
	7030021500	SOV 45 SES OO	830

BISTABLE 5/2, 1/2"



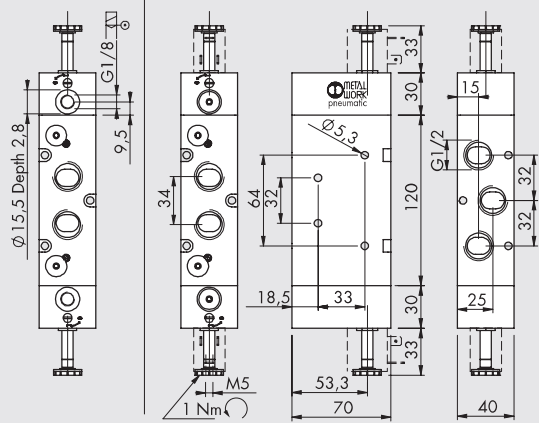
Symbol	Code	Abbrev.	Weight [g]
	7030021200	SOV 45 SOB OO	860
	7030021300	SOV 45 SOD OO	868
	7030021600	SOV 45 SEB OO	854

BISTABLE 3/2, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030020100	SOV 43 SOB OO	686
	7030020300	SOV 43 SEB OO	678

MONOSTABLE 5/3, 1/2"



Symbol	Code	Abbrev.	Weight [g]
	7030022100	SOV 46 SOS CC	1265
	7030022200	SOV 46 SOS OC	1265
	7030022300	SOV 46 SOS PC	1265
	7030022400	SOV 46 SES CC	1252
	7030022500	SOV 46 SES OC	1252
	7030022600	SOV 46 SES PC	1252

ACCESSORIES FOR SERIES 70 SOLENOID/PNEUMATIC VALVES

Refer to page B1.60 for coils and connectors



NOTES

VALVES SERIES 70 LT (LOW TEMPERATURE)

TECHNICAL DATA		1/8"	1/4"	3/8"
Operating pressure standard	bar	Vacuum to 10		
hand operated		5 to 10		
pneumatic and solenoid/pneumatic	t = -40°C to -10°C	3 to 10		
	t = -10°C to +60°C			
Operating temperature range	°C	-40 to +60		
Nominal diameter	mm	5	7.5	13.3
Conductance C	Nl/min · bar	121.43	264.26	505.52
Critical ratio b	bar/bar	0.32	0.27	0.32
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	1560
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	2150
PNEUMATIC				
Minimum pilot pressure	bar	5		
t = -40°C to -10°C		3		
t = -10°C to +60°C				
TRA / TRR monostable at 6 bar (at 20°C)	ms	6/15	7/15	5/28
TRA / TRR bistable at 6 bar (at 20°C)	ms	7/7	7/7	13/13
SOLENOID/PNEUMATIC				
TRA / TRR monostable at 6 bar (at 20°C)	ms	15/35	19/45	21/72
TRA / TRR bistable at 6 bar (at 20°C)	ms	20/20	21/21	18/18
Coil voltage values		12; 24 VDC		
		24; 110; 220V AC 50/60Hz		
Power	t = -40°C to -10°C	5 W (DC) - 5 VA (AC)		
	t = -10°C to +60°C	2 W (DC) - 3.5 VA (AC)		
Voltage tolerance	%	-10 to +15		
Insulation class		F 155		
Maximum coil nut torque	Nm	1		
Hand operator		Bistable		
Notes: after a long stop and with very low temperatures the movement of the first drives may be slower. It recommends the use of perfectly dry air.				



VALVES

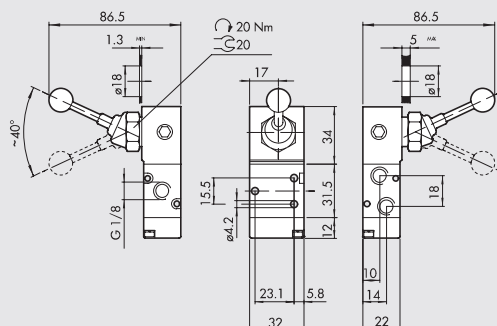
VALVES SERIES 70 LT (LOW TEMPERATURE)

SYNOPTIC, SIZES AND VERSIONS

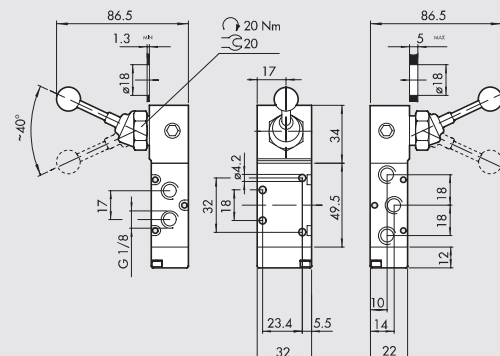
P N V FAMILY	2 DIMENSIONS	3 FUNCTION	P N OPERATORS 14	S RESETTING (12)	OO FURTHER DETAILS	LT
MAV manual valves	2 1/8"	3 3/2	LE leva 90°	S mechanical springs	OO no indication	LT low temperature
PNV pneumatic valves	3 1/4"	5 5/2	PN pneumatic	B bistable	NC normally closed	
SOV solenoid/ pneumatic	C 3/8"	6 5/3	SO solenoid	O stable for 5/3	NO normally open	
					CC closed centres	
					OC open centres	
					PC pressure centres	

VALVES SERIES 70 LT, HAND OPERATED (LOW TEMPERATURE)

90° LEVER 3/2 1/8"



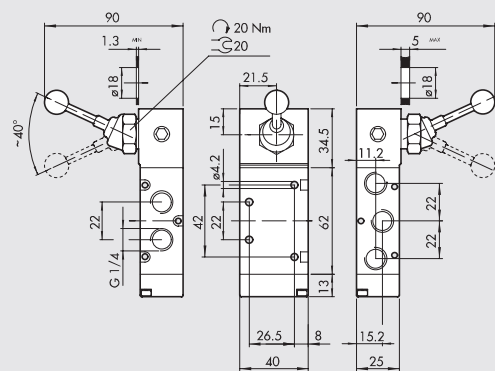
90° LEVER 5/2 1/8"



Symbol	Code	Abbrev.	Weight [g]
	* 70L1000100	MAV 23 LES NC LT	184
	* 70L1000200	MAV 23 LEB OO LT	187

Symbol	Code	Abbrev.	Weight [g]
	* 70L1000300	MAV 25 LES OO LT	210
	* 70L1000400	MAV 25 LEB OO LT	213

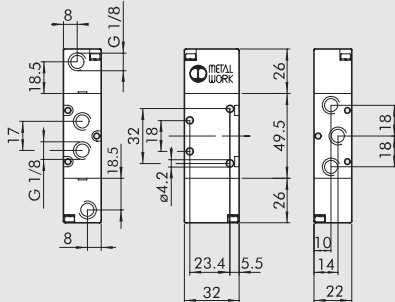
90° LEVER 5/2, 1/4"



		70L2000700	MAV 36 LEO PC LT	288
---	---	-------------------	------------------	-----

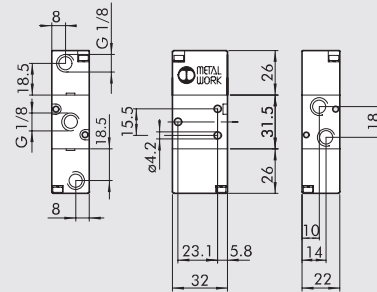
VALVES SERIES 70 LT, PNEUMATIC (LOW TEMPERATURE)

BISTABLE 5/2 1/8"



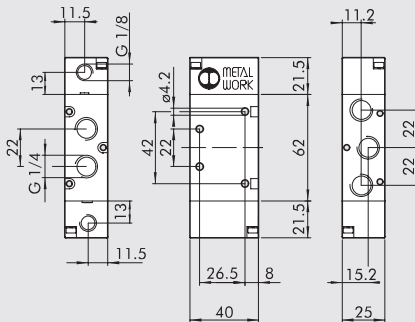
Symbol	Code	Abbrev.	Weight [g]
	* 70L1011200	PNV 25 PNB OO LT	176

BISTABLE 3/2 1/8"



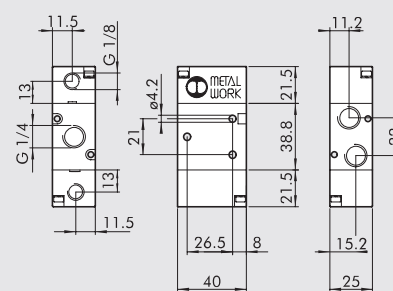
Symbol	Code	Abbrev.	Weight [g]
	* 70L1010100	PNV 23 PNB OO LT	150

BISTABLE 5/2 1/4"



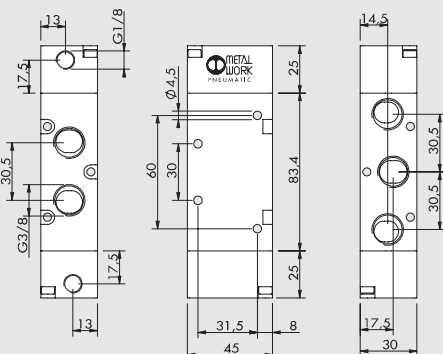
Symbol	Code	Abbrev.	Weight [g]
	* 70L2011200	PNV 35 PNB OO LT	233

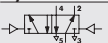
BISTABLE 3/2 1/4"



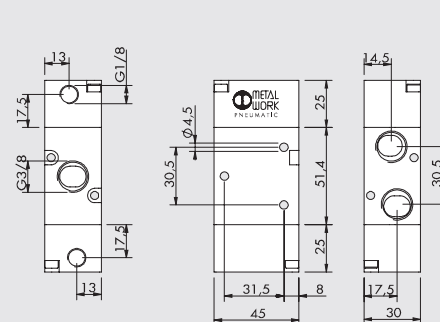
Symbol	Code	Abbrev.	Weight [g]
	* 70L2010100	PNV 33 PNB OO LT	194

BISTABLE 5/2 3/8"



Symbol	Code	Abbrev.	Weight [g]
	* 70L4011200	PNV C5 PNB OO LT	405

BISTABLE 3/2 3/8"



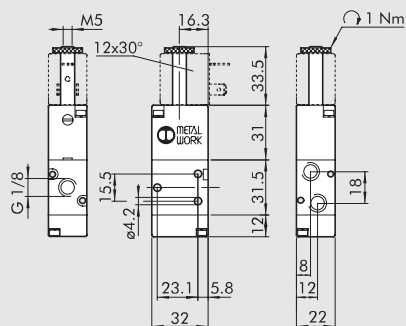
Symbol	Code	Abbrev.	Weight [g]
	* 70L4010100	PNV C3 PNB OO LT	305

VALVES SERIES 70 LT, SOLENOID/PNEUMATIC (LOW TEMPERATURE)

VALVES

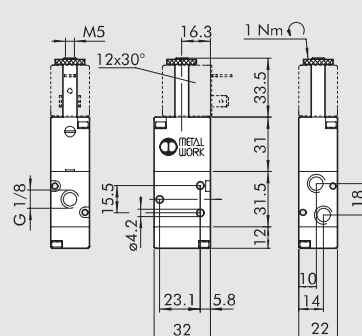
VALVES SERIES 70 LT (LOW TEMPERATURE)

MONOSTABLE 3/2 NO 1/8"



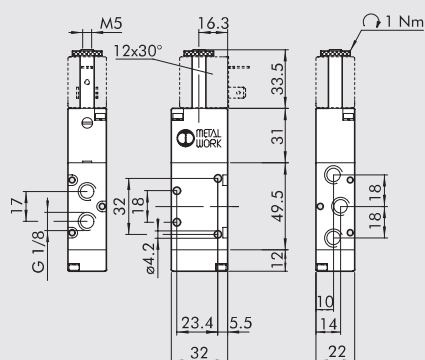
Symbol	Code	Abbrev.	Weight [g]
	* 70L1020400	SOV 23 SOS NO LT	147

MONOSTABLE 3/2 NC 1/8"



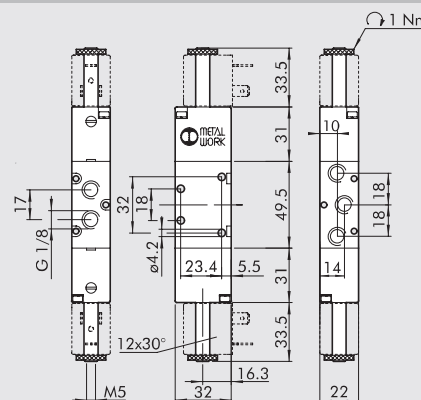
Symbol	Code	Abbrev.	Weight [g]
	* 70L1020200	SOV 23 SOS NC LT	147

MONOSTABLE 5/2 1/8"



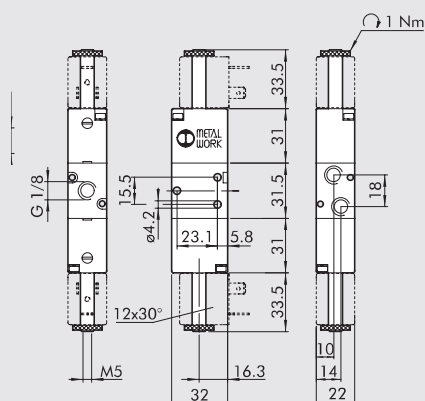
Symbol	Code	Abbrev.	Weight [g]
	* 70L1021100	SOV 25 SOS OO LT	175

BISTABLE 5/2 1/8"



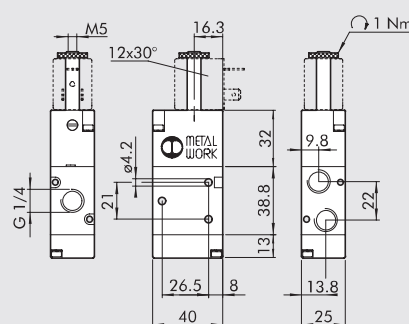
Symbol	Code	Abbrev.	Weight [g]
	* 70L1021200	SOV 25 SOB OO LT	228

BISTABLE 3/2 1/8"



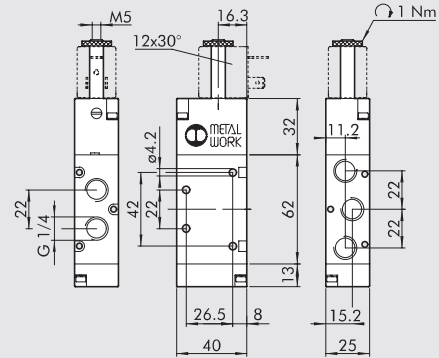
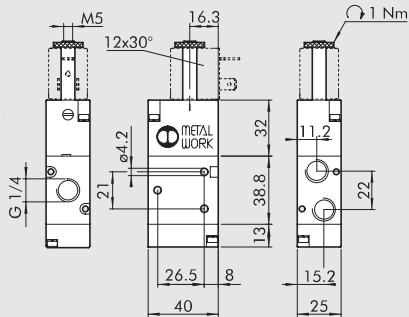
Symbol	Code	Abbrev.	Weight [g]
	* 70L1020100	SOV 23 SOB OO LT	203

MONOSTABLE 3/2 NO 1/4"



Symbol	Code	Abbrev.	Weight [g]
	* 70L2020400	SOV 33 SOS NO LT	230

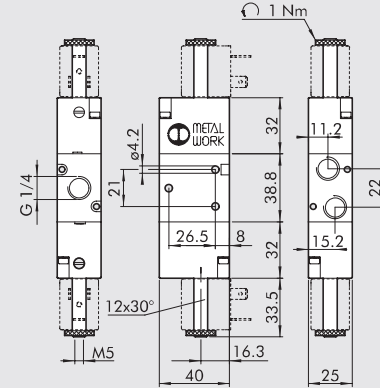
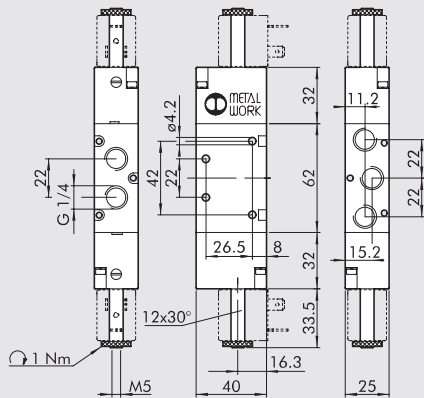
MONOSTABLE 5/2 1/4"



Symbol	Code	Abbrev.	Weight [g]
	❄️ 70L2020200	SOV 33 SOS NC LT	230

Symbol	Code	Abbrev.	Weight [g]
	 70L2021 100	SOV 35 SOS OO LT	278

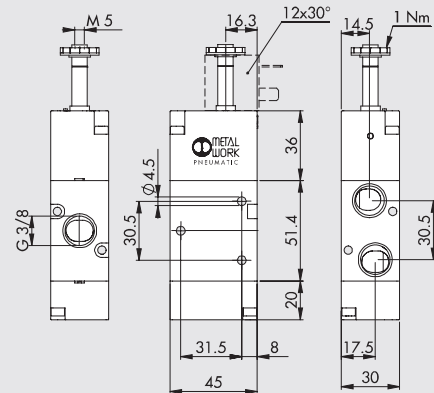
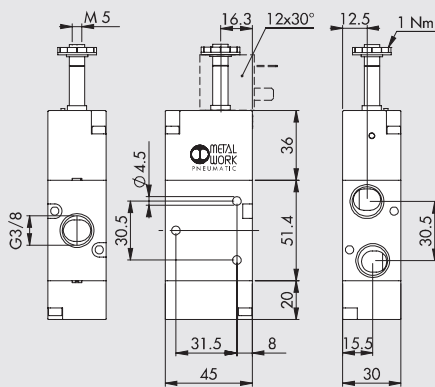
BISTABLE 5/2 1/4"



Symbol	Code	Abbrev.	Weight [g]
	70L2021200	SOV 35 SOB OO LT	332

Symbol	Code	Abbrev.	Weight [g]
	* 70L2020100	SOV 33 SOB OO LT	286

MONOSTABLE 3/2 NO 3/8"



Symbol	Code	Abbrev.	Weight [g]
	70L4020400	SOV C3 SOS NO LT	358

Symbol	Code	Abbrev.	Weight [g]
	70L4020200	SOV C3 SOS NC LT	358

[illegible]

The technical drawing illustrates the dimensions of the METAL WORK PNEUMATIC cylinder across three views:

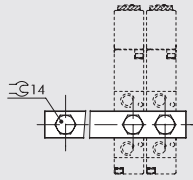
- Front View (Left):** Shows the main body with two ports. Key dimensions include a total height of 83.4 mm, a port diameter of $\varnothing 4.5$ mm, and a mounting bracket width of 30.5 mm.
- Side View (Middle):** Shows the cylinder's profile. Key dimensions include a total length of 45 mm, a mounting bracket width of 36 mm, and a central section width of 31.5 mm.
- End View (Right):** Shows the circular face of the cylinder. Key dimensions include a total diameter of 30 mm, a mounting bracket width of 30.5 mm, and a central section width of 17.5 mm.

Additional details include a 12x30° thread specification for the top port, a G 3/8 connection for the bottom port, and a 1 Nm torque requirement for the top cap screw.

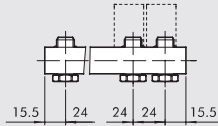
For temperatures $T < -10^{\circ}\text{C}$ it is necessary to use coils side 22 mm from 5 W or 5 VA .
(see page B1.79)

ACCESSORIES: 1/8 MANIFOLDS FOR SERIES 70 PNV-SOV AND SERIES BASIC VALVES

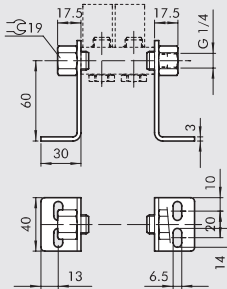
MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



Code	Description	Weight [g]
0221000200	CSA-18-02	70
0221000300	CSA-18-03	99
0221000400	CSA-18-04	131
0221000500	CSA-18-05	162
0221000600	CSA-18-06	192
0221000700	CSA-18-07	229

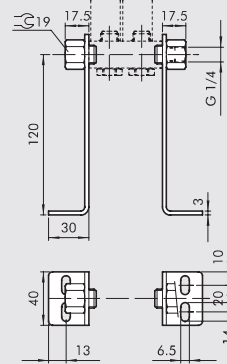


BRACKET SET H60



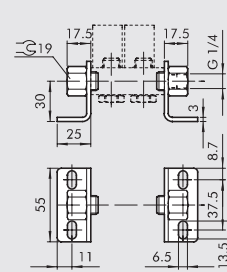
Code	Description	Weight [g]
0221000191	CSA-18-OC	213

BRACKET SET H120



Code	Description	Weight [g]
0221000190	CSA-18-OO	309

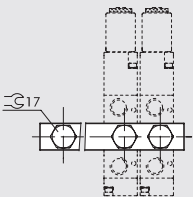
BRACKET SET H30



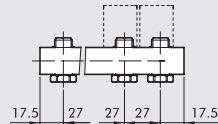
Code	Description	Weight [g]
0221000192	CSA-18-OE	181

ACCESSORIES: 1/4 MANIFOLDS FOR SERIES 70 PNV-SOV AND SERIES BASIC VALVES

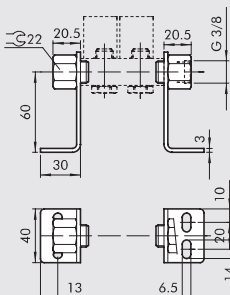
MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



Code	Description	Weight [g]
0222000200	CSA-14-02	89
0222000300	CSA-14-03	131
0222000400	CSA-14-04	174
0222000500	CSA-14-05	213
0222000600	CSA-14-06	252
0222000700	CSA-14-07	328

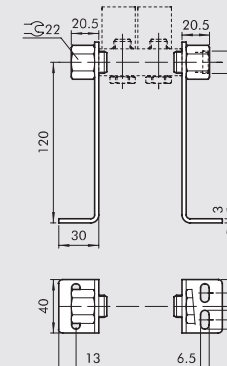


BRACKET SET H60



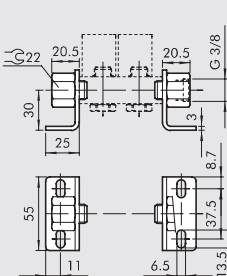
Code	Description	Weight [g]
0222000191	CSA-14-OC	242

BRACKET SET H120



Code	Description	Weight [g]
0222000190	CSA-14-OO	338

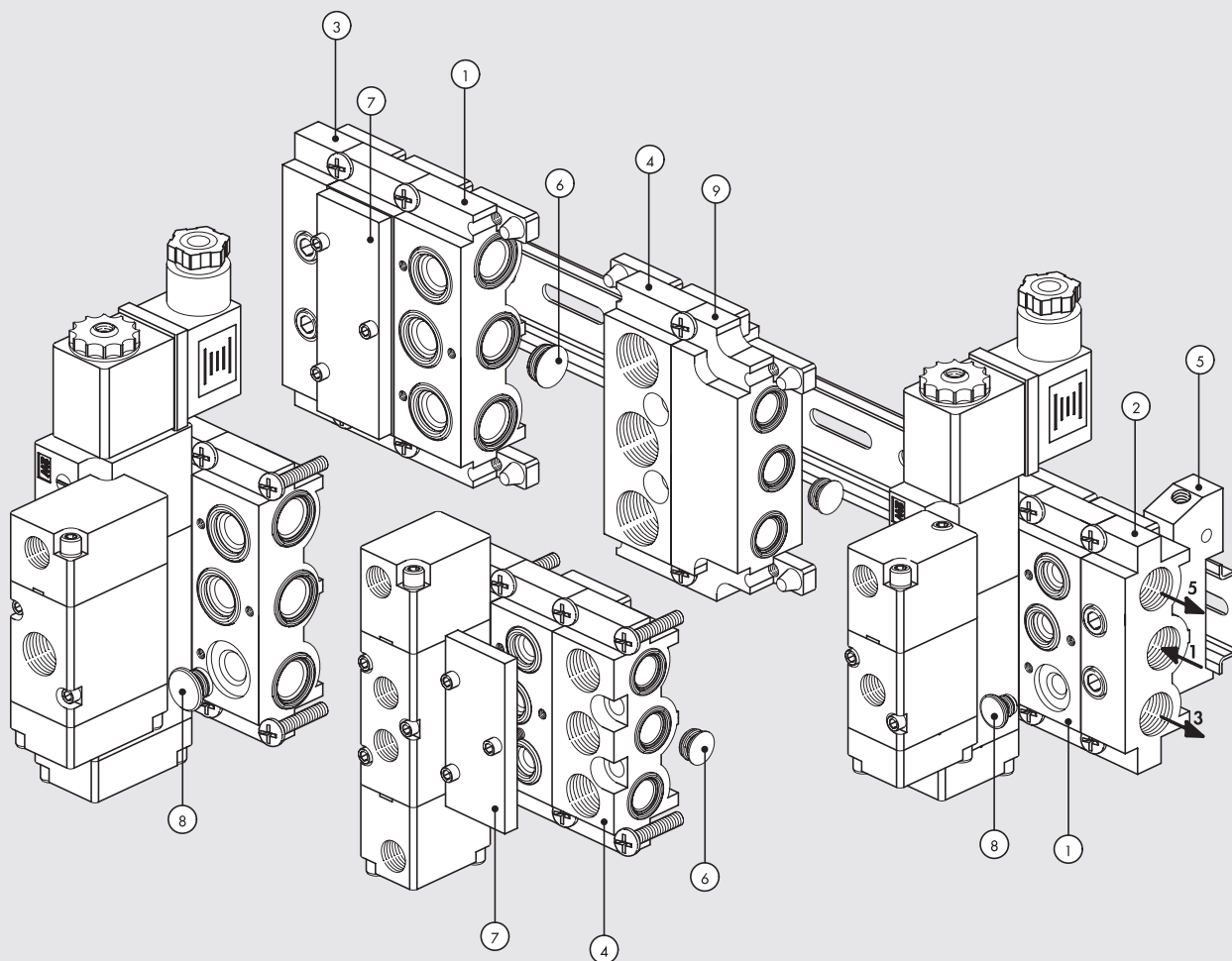
BRACKET SET H30



Code	Description	Weight [g]
0222000192	CSA-14-OE	209

ACCESSORIES FOR VALVES SERIES 70

MODULAR BASES FOR SERIES 70 SOV-PNV VALVES

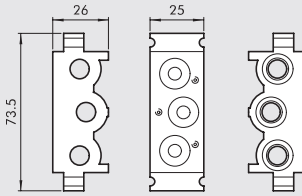


Note: Tightening torque for M4 base screws: 1.5 Nm
Tightening torque for M3 valve screws: 0.8 Nm

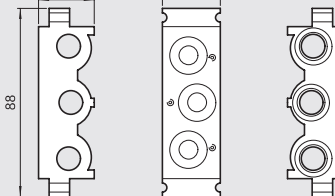
[illegible]

① MODULAR BASE MANIFOLD

1/8"



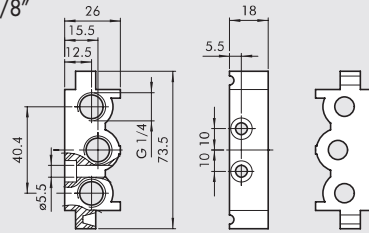
1/4"



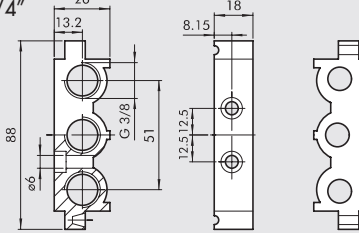
Code	Description	Weight [g]
0226004150	Modular base MANIFOLD 1/8"	110
0226005150	Modular base MANIFOLD 1/4"	131

② END PLATE WITHOUT OR

1/8"



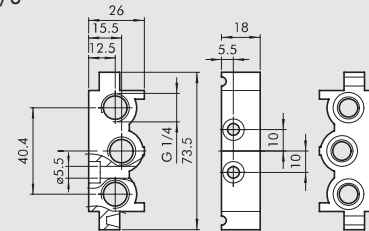
1/4"



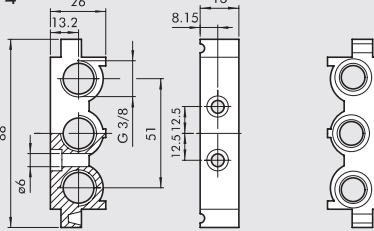
Code	Description	Weight [g]
0226004201	End plate without OR 1/8"	52
0226005201	End plate without OR 1/4"	57

③ END PLATE WITH OR

1/8"



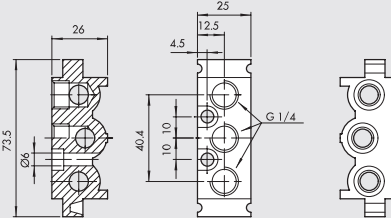
1/4"



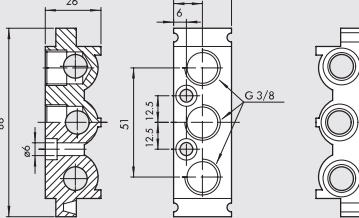
Code	Description	Weight [g]
0226004200	End plate with OR 1/8"	74
0226005200	End plate with OR 1/4"	80

④ INTERMEDIATE PART FOR UPPER FEED

1/8"



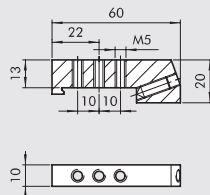
1/4"



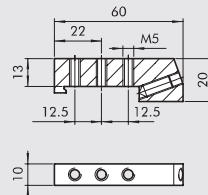
Code	Description	Weight [g]
0226004300	Intermediate part for upper feed 1/8"	93
0226005300	Intermediate part for upper feed 1/4"	109

⑤ ADAPTER FOR OMEGA BAR BASES (DIN EN 50022)

1/8"



1/4"

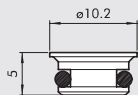


Code	Description	Weight [g]
0226004600	Adapter 1/8"	46
0226005600	Adapter 1/4"	46

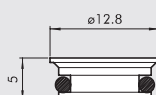
N.B.: Also for multiple bases

⑥ INTERMEDIATE DIAPHRAGM

1/8"



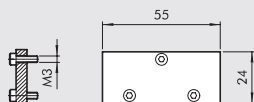
1/4"



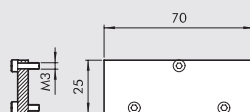
Code	Description	Weight [g]
0226004000	Intermediate diaphragm 1/8"	2
0226005000	Intermediate diaphragm 1/4"	3

⑦ BLANKING PLATE FOR UNUSED POSITIONS

1/8"



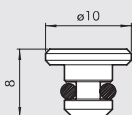
1/4"



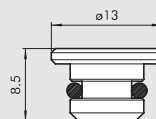
Code	Description	Weight [g]
0226004500	Blanking plate 1/8"	23
0226005500	Blanking plate 1/4"	29

⑧ PLUG FOR 3/2

1/8"

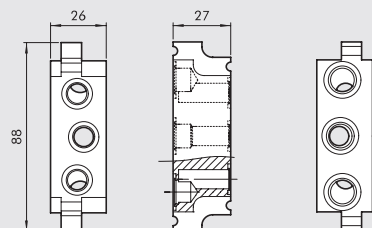


1/4"



Code	Description	Weight [g]
0226004001	Blanking plate 3/2 1/8"	2
0226005001	Blanking plate 3/2 1/4"	4

⑨ DIMENSIONAL ADAPTER 1/8" - 1/4"

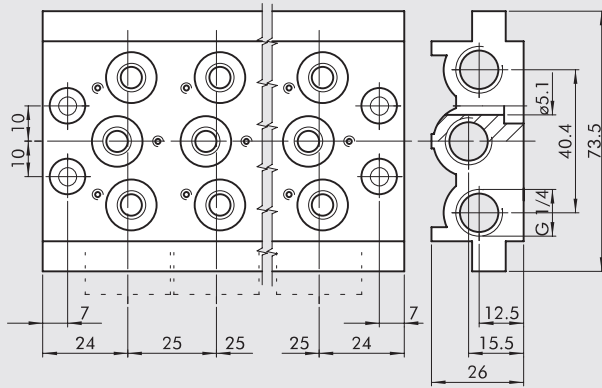


Code	Description	Weight [g]
0226006600	Adapter 1/8", 1/4"	177

NOTES

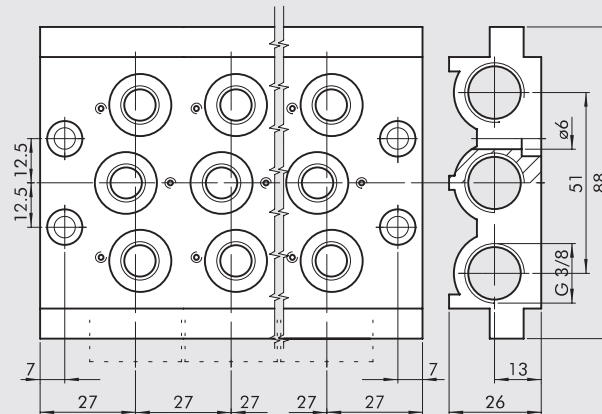
ACCESSORIES: MULTIPLE BASES FOR SERIES 70 PNV-SOV VALVES

MULTIPLE BASE 1/8"



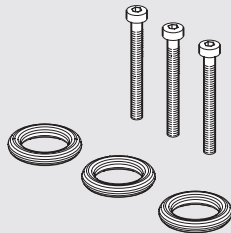
Code	Description	Abbrev.	Weight [g]
0223000201	2-position base	CVM-18-02	236
0223000301	3-position base	CVM-18-03	321
0223000401	4-position base	CVM-18-04	407
0223000501	5-position base	CVM-18-05	494
0223000601	6-position base	CVM-18-06	587
0223000701	7-position base	CVM-18-07	711
0223000801	8-position base	CVM-18-08	760
0223000901	9-position base	CVM-18-09	842
0223001001	10-position base	CVM-18-10	923

MULTIPLE BASE 1/4"



Code	Description	Abbrev.	Weight [g]
0224000201	2-position base	CVM-14-02	296
0224000301	3-position base	CVM-14-03	406
0224000401	4-position base	CVM-14-04	515
0224000501	5-position base	CVM-14-05	624
0224000601	6-position base	CVM-14-06	733
0224000701	7-position base	CVM-14-07	845
0224000801	8-position base	CVM-14-08	956
0224000901	9-position base	CVM-14-09	1055
0224001001	10-position base	CVM-14-10	1086

GASKET KIT



Code	Description	Weight [g]
0226004701	Gasket kit for 1/8" base	5
0226005701	Gasket kit for 1/4" base	5

VALVES SERIES 70 ON BASE

The series 70 valves on base, available in the air- and solenoid-actuated versions, is an excellent clean solution for use when it is necessary to intervene on the valves without disconnecting the pipes.

Here, the inlet, output and utility ports are in the base.



VALVES

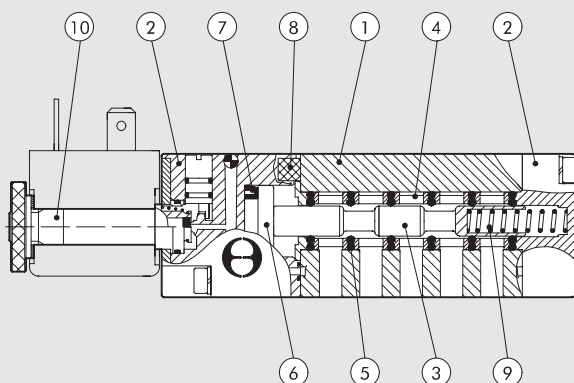
VALVES SERIES 70 ON BASE

TECHNICAL DATA

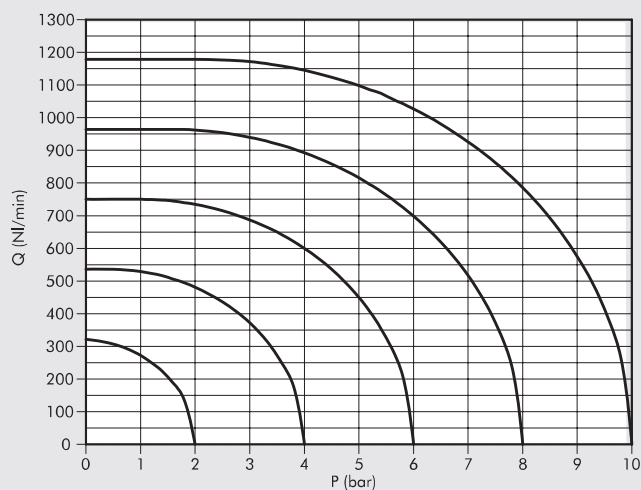
Operating pressure:		
• monostable and bistable differential	bar	2.5 to 10
• bistable	bar	1 to 10
• pilot-assisted	bar	Vacuum to 10
Minimum pilot pressure	bar	2.5
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	107.69
Critical ratio b	bar/bar	0.29
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	320
Flow rate at 6 bar ΔP 1 bar	Nl/min	450
Maximum torque coil nut	Nm	1
Tightening torque M3 valve / base screws	Nm	0.8

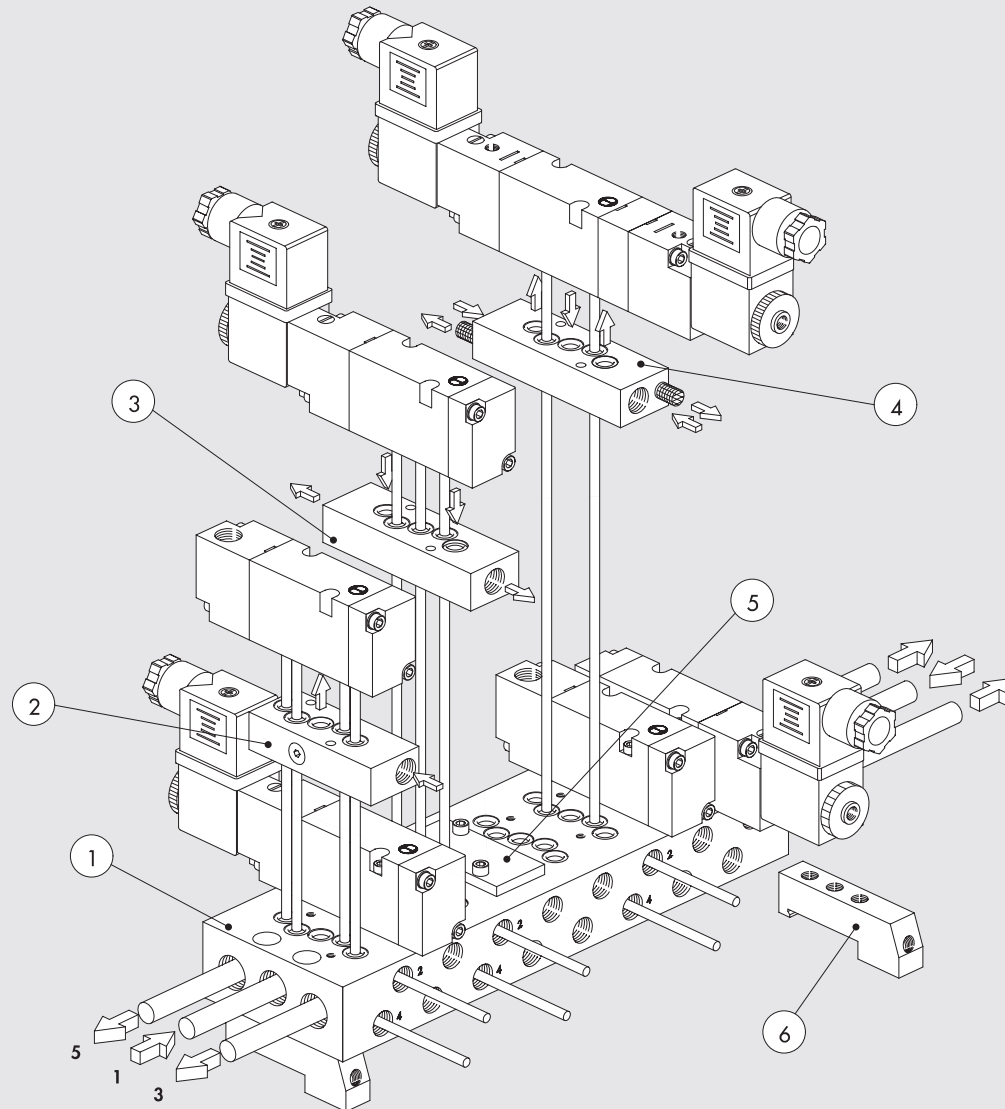
COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: Hostaform®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered Bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHART



MULTI-PURPOSE BASE FOR VALVES SERIES 70 ON BASE

VALVES

VALVES SERIES 70 ON BASE

Reference	Code	Description
①	0223100201	2-position base 1/8 on base
	0223100401	4-position base 1/8 on base
	0223100601	6-position base 1/8 on base
	0223100801	8-position base 1/8 on base
	0223101001	10-position base 1/8 on base
②	0223106301	Separate feed kit
③	0223106303	Exhaust regulation kit
④	0223106302	Exhaust feed kit
⑤	0223106500	Blanking plate
⑥	0226004600	Adapter for omega bar

SYNOPTIC, SIZES AND VERSIONS

P N V FAMILY	B DIMENSIONS	5 FUNCTION	P N OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS
PNV pneumatic SOV elettro-pneumatic	B 1/8" on base	5 5/2 6 5/3	PN pneumatic SO solenoid SE solenoid assisted	S mechanical springs B bistable D differential	OO no indication CC closed centres OC open centres PC pressure centres

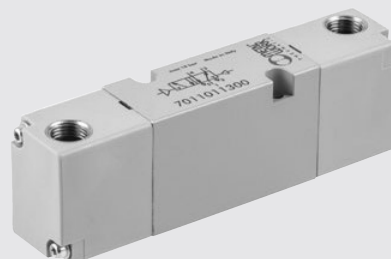
VALVES, SERIES 70, PNEUMATIC, ON BASE

VALVES

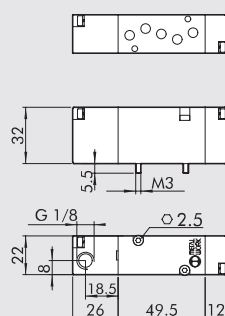
VALVES SERIES 70 ON BASE

TECHNICAL DATA

Operating pressure	bar	Vacuum to 10
Minimum actuation pressure:		
• monostable and bistable differential	bar	2.5
• bistable	bar	1
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	107.69
Critical ratio b	bar/bar	0.29
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	320
Flow rate at 6 bar ΔP 1 bar	Nl/min	450
TRA / TRR monostable at 6 bar	ms	6/15
TRA / TRR bistable at 6 bar	ms	7/7
Tightening torque M3 valve / base screws	Nm	0.8

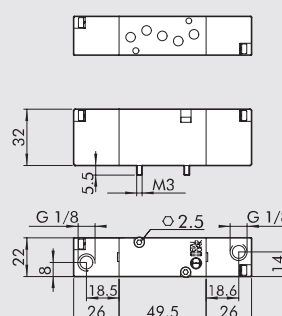


MONOSTABLE 5/2



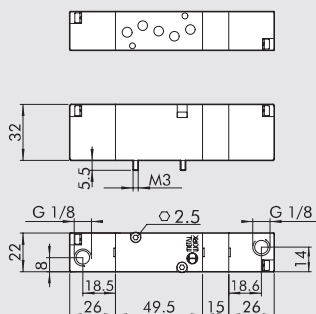
Symbol	Code	Abbrev.	Weight [g]
	7011011100	PNV B5 PNS OO	125

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7011011200	PNV B5 PNB OO	136
	7011011300	PNV B5 PND OO	142

MONOSTABLE 5/3



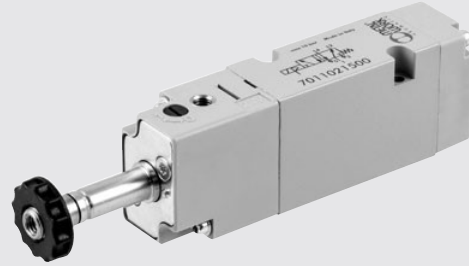
Symbol	Code	Abbrev.	Weight [g]
	7011012100	PNV B6 PNS CC	164
	7011012200	PNV B6 PNS OC	164
	7011012300	PNV B6 PNS PC	164

NOTES

VALVES SERIES 70, SOLENOID/PNEUMATIC ON BASE

TECHNICAL DATA

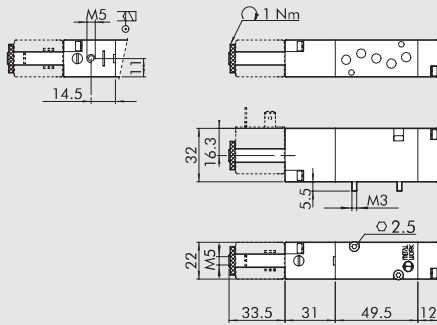
Operating pressure:		
• monostable and bistable differential	bar	2.5 to 10
• bistable	bar	1 to 10
• pilot-assisted	bar	Vacuum to 10
Minimum pilot pressure	bar	2.5
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	5
Conductance C	Nl/min · bar	107.69
Critical ratio b	bar/bar	0.29
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	320
Flow rate at 6 bar ΔP 1 bar	Nl/min	450
TRA / TRR monostable at 6 bar	ms	15 / 35
TRA / TRR bistable at 6 bar	ms	20 / 20
Electrical technical data		
Coil voltage values	12; 24VDC - 24; 110; 220VAC 50/60Hz	
Power	2 W (DC) 3.5VA (AC)	
Voltage tolerance	%	-10 to +15
Insulation class	F 155	
Maximum coil nut torque	Nm	1
Tightening torque M3 valve / base screws	Nm	0.8



VALVES

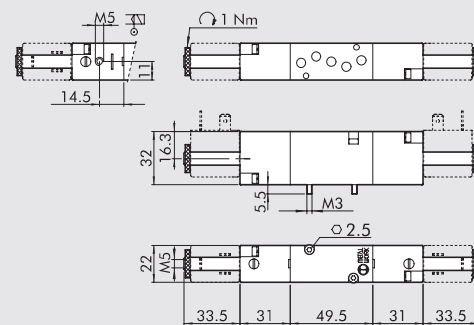
VALVES SERIES 70 ON BASE

MONOSTABLE 5/2



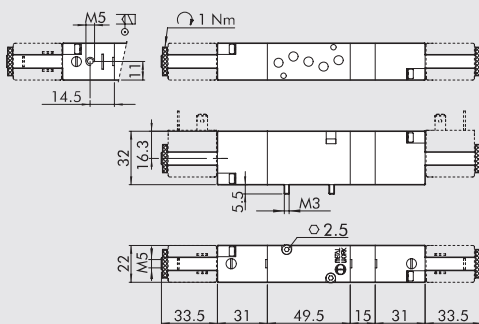
Symbol	Code	Abbrev.	Weight [g]
	7011021100	SOV B5 SOS OO	142
	7011021500	SOV B5 SES OO	143

BISTABLE 5/2



Symbol	Code	Abbrev.	Weight [g]
	7011021200	SOV B5 SOB OO	174
	7011021300	SOV B5 SOD OO	180
	7011021600	SOV B5 SEB OO	174

MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7011022100	SOV B6 SOS CC	204
	7011022200	SOV B6 SOS OC	204
	7011022300	SOV B6 SOS PC	204
	7011022400	SOV B6 SES CC	202
	7011022500	SOV B6 SES OC	202
	7011022600	SOV B6 SES PC	202

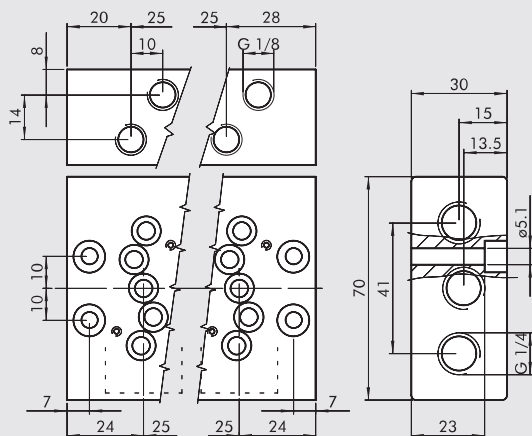
ACCESSORIES



Refer to page B1.60 for coils and connectors

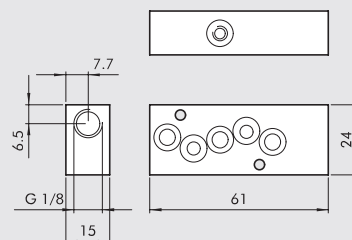
ACCESSORIES: MULTIPLE BASES

① MULTIPLE BASE



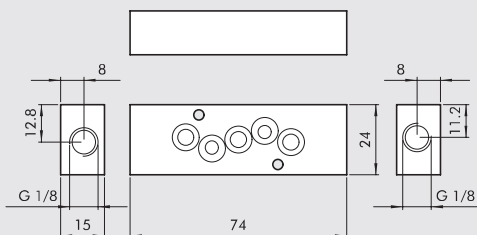
Code	Description	Weight [g]
0223100201	2-position base 1/8 on base	341
0223100401	4-position base 1/8 on base	591
0223100601	6-position base 1/8 on base	855
0223100801	8-position base 1/8 on base	1093
0223101001	10-position base 1/8 on base	1352

② SEPARATE FEED KIT



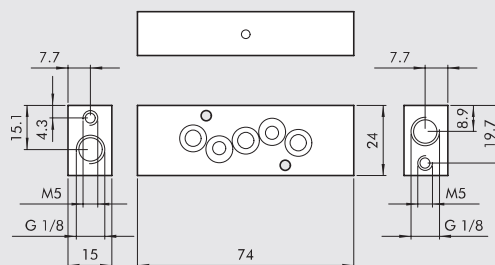
Code	Description	Weight [g]
0223106301	Separate feed kit 1/8	65

③ EXHAUST REGULATION KIT



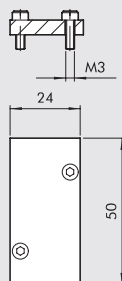
Code	Description	Weight [g]
0223106303	Exhaust regulation kit 1/8	75

④ EXHAUST FEED KIT



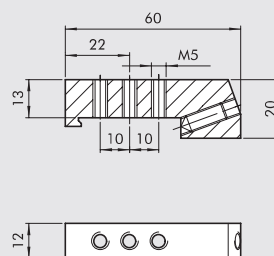
Code	Description	Weight [g]
0223106302	Exhaust feed kit 1/8	75

⑤ BLANKING PLATE



Code	Description	Weight [g]
0223106500	Blanking plate 1/8	15

⑥ ADAPTER FOR BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0226004600	Adapter for bar omega 1/8"	46

VALVES NAMUR



TECHNICAL DATA

Operating pressure:		
• monostable, electric	bar	2.5 to 10
• bistable, electric	bar	1 to 10
• pilot-assisted, electric	bar	Vacuum to 10
Minimum actuation pressure:		
• monostable, pneumatic	bar	2.5
• bistable, pneumatic	bar	1
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	7.5
Conductance C	Nl/min · bar	264.26
Critical ratio b	bar/bar	0.27
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	750
Flow rate at 6 bar ΔP 1 bar (0.1 Mpa - 14.5 psi)	Nl/min	1100
Response time at 6 bar:		
• TRA/TRR monostable, pneumatic at 6 bar	ms	7 / 15
• TRA/TRR bistable, pneumatic at 6 bar	ms	7 / 7
• TRA/TRR monostable electric at 6 bar	ms	19 / 45
• TRA/TRR bistable electric at 6 bar	ms	21 / 21
Tightening torque for M5 valve / base screws	Nm	3 - 4
Compatibility with oils		See chapter Z1

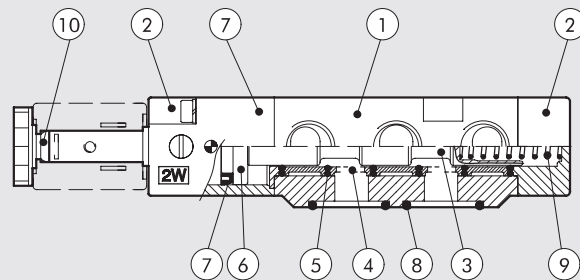


SYNOPTIC, SIZES AND VERSIONS

P N V FAMILY	A DIMENSIONS	5 FUNCTION	P N OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS
PNV pneumatic	A NAMUR	5 5/2	PN pneumatic	S mechanical springs	OO no indication
SOV electro-pneumatic		4 4/2	SO solenoid	B bistable	NC normally closed

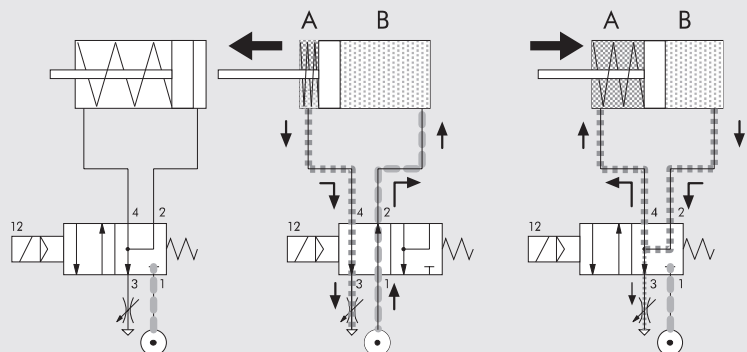
COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: Hostaform®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR nitrile rubber
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR nitrile rubber
- ⑧ INTERFACE GASKETS: NBR nitrile rubber
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core

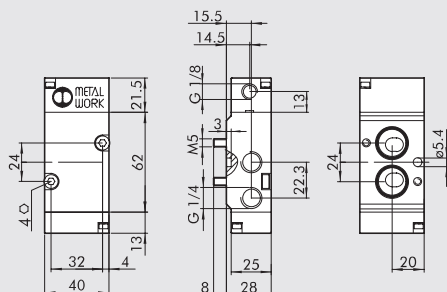


FUNCTIONING DIAGRAM 4/2 NAMUR VALVE

During the piston retraction stage, the air for chamber A is taken from the air leaving chamber B. This prevents the dirty air from getting in from the outside environment.

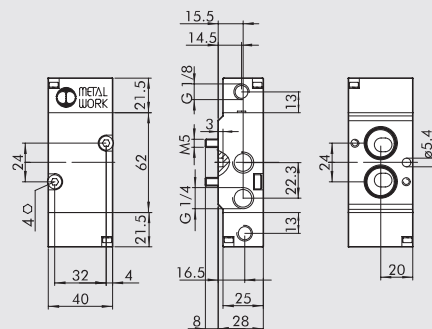


MONOSTABLE, PNEUMATIC 4/2



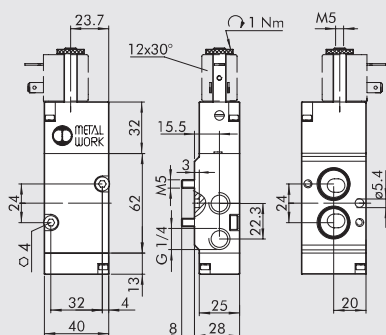
Symbol	Code	Abbrev.	Weight [g]
	7021010110	PNV A4 PNS NC	208

BISTABLE, PNEUMATIC 4/2



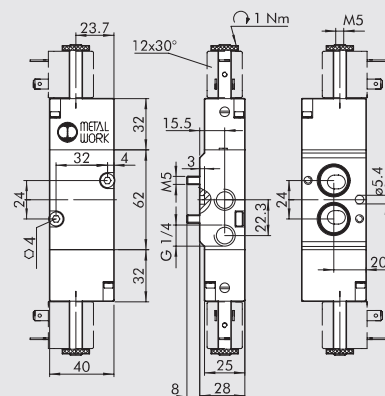
Symbol	Code	Abbrev.	Weight [g]
	7021010210	PNV A4 PNB OO	216

MONOSTABLE, SOLENOID/PNEUMATIC 4/2



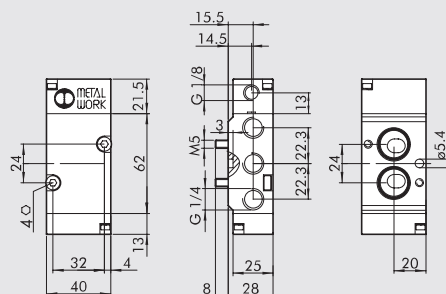
Symbol	Code	Abbrev.	Weight [g]
	7021020110	SOV A4 SOS NC	234

BISTABLE, SOLENOID/PNEUMATIC 4/2



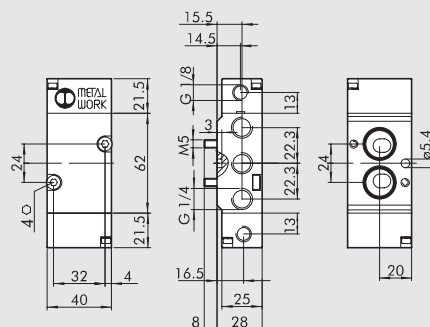
Symbol	Code	Abbrev.	Weight [g]
	7021020210	SOV A4 SOB OO	270

MONOSTABLE, PNEUMATIC 5/2



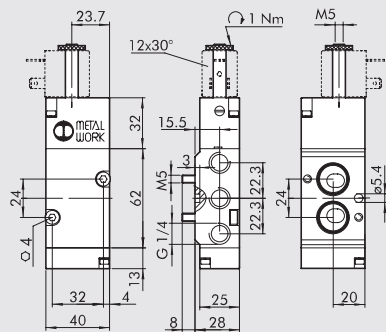
Symbol	Code	Abbrev.	Weight [g]
	7021010100	PNV A5 PNS OO	208

BISTABLE, PNEUMATIC 5/2



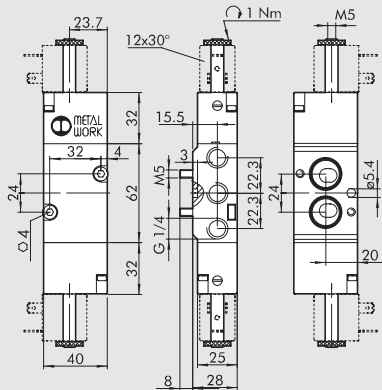
Symbol	Code	Abbrev.	Weight [g]
	7021010200	PNV A5 PNB OO	216

MONOSTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Code	Abbrev.	Weight [g]
	7021020100	SOV A5 SOS OO	234

BISTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Code	Abbrev.	Weight [g]
	7021020200	SOV A5 SOB OO	270

ACCESSORIES FOR NAMUR VALVES SOV, SOLENOID/PNEUMATIC

Refer to page B1.60 for coils and connectors



NOTES

VALVES SERIES BASIC

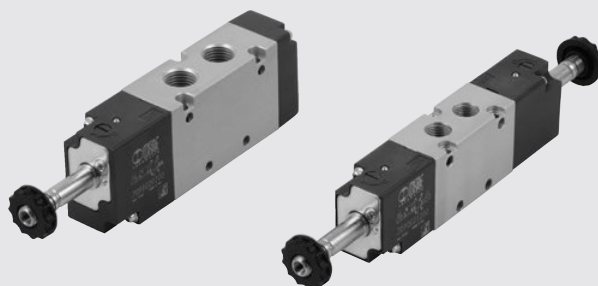
The valves in the BASIC series are a numerically-reduced selection of some types of the most commonly used solenoid valves.

They come in sizes 1/8" and 1/4" and in the 3/2 monostable, 5/2 monostable and 5/2 bistable versions.

Some production processes have been simplified, without affecting product quality and performance.

The body is made of anodized aluminium (without painting) and controls are in dark grey technopolymer.

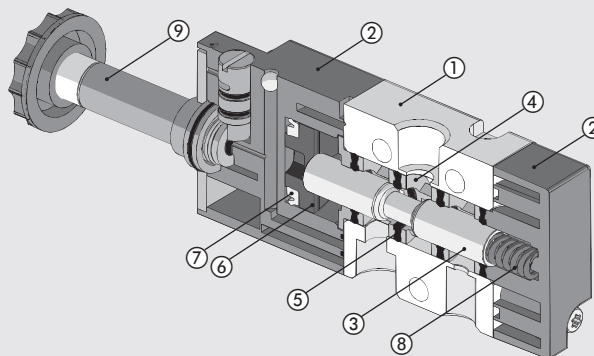
BASIC valves can be assembled with accessories of other families of valves, in particular with 22 mm coils, a 8 mm hole and related connectors, modular bases and the multi-position connectors of the series 70 valves.



TECHNICAL DATA		1/8"	1/4"
Operating pressure:			
• monostable	bar	2.5 to 10	
• bistable	bar	1 to 10	
Operating temperature range	°C	-10 to +60	
Nominal diameter	mm	5	7.5
Conductance C	Nl/min · bar	121.43	264.26
Critical ratio b	bar/bar	0.32	0.27
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100
TRA / TRR monostable at 6 bar	ms	15/35	19/45
TRA / TRR bistable at 6 bar	ms	20/20	21/21
Coil voltage values		12; 24 VDC - 24; 110; 220V AC 50/60Hz	
Power		2 W (DC) 3.5VA (AC)	
Voltage tolerance	%	-10 to +15	
Insulation class		F 155	
Maximum coil nut torque	Nm	1	
Hand operator		Bistable	
Installation		In any position (vertical assembly is not recommended for bistable valves subjected to vibration)	
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous	
Recommended lubricant		ISO and UNI FD 22	
Maximum coil nut torque	Nm	1	
Compatibility with oils		See chapter Z1	

COMPONENTS

- ① VALVE BODY: anodized aluminium
- ② CONTROL/END CAP: plastic
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ SPRINGS: special steel
- ⑨ OPERATOR: Brass pipe - Stainless steel core

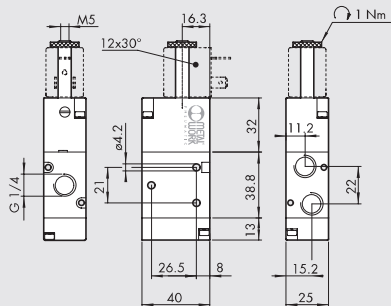


Flow rates



B1.57

MONOSTABLE 3/2 NC 1/4"

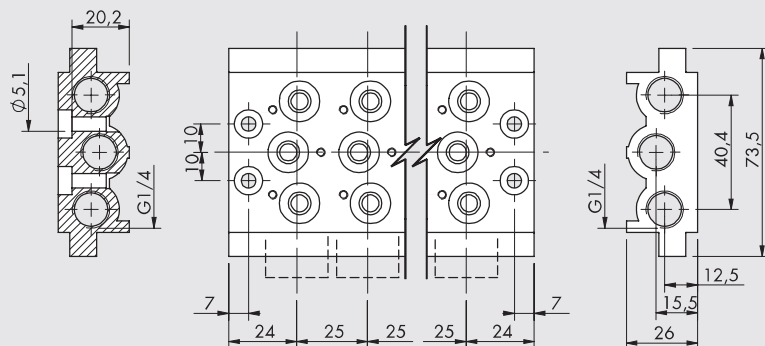


Symbol	Code	Abbrev.	Weight [g]
	7091020200	ELPN 1/4 3/2 MON NC	152

Symbol	Code	Abbrev.	Weight [g]
	7091021100	ELPN 1/4 5/2 MON	200

Symbol	Code	Abbrev.	Weight [g]
	7091021200	ELPN 1/4 5/2 BIS	236

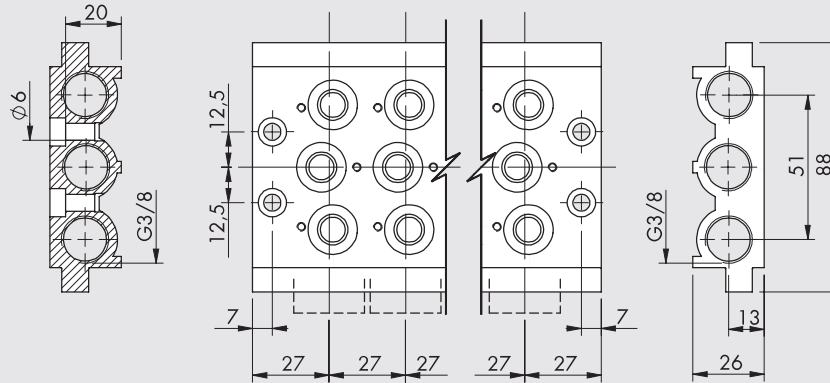
MULTIPLE BASE 1/8"



Code	Description	Weight [g]
0223200201	2 positions multiple base BASIC 1/8	236
0223200301	3 positions multiple base BASIC 1/8	321
0223200401	4 positions multiple base BASIC 1/8	407
0223200501	5 positions multiple base BASIC 1/8	494
0223200601	6 positions multiple base BASIC 1/8	587
0223200701	7 positions multiple base BASIC 1/8	711
0223200801	8 positions multiple base BASIC 1/8	760
0223200901	9 positions multiple base BASIC 1/8	842
0223201001	10 positions multiple base BASIC 1/8	923

Note: Supplied complete with screws and gaskets
Tightening torque for M5 valve / base screws: 3-4 Nm

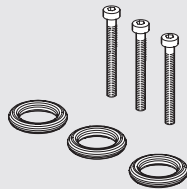
MULTIPLE BASE 1/4"



Code	Description	Weight [g]
0224200201	2 positions multiple base BASIC 1/4	296
0224200301	3 positions multiple base BASIC 1/4	406
0224200401	4 positions multiple base BASIC 1/4	515
0224200501	5 positions multiple base BASIC 1/4	624
0224200601	6 positions multiple base BASIC 1/4	733
0224200701	7 positions multiple base BASIC 1/4	845
0224200801	8 positions multiple base BASIC 1/4	956
0224200901	9 positions multiple base BASIC 1/4	1055
0224201001	10 positions multiple base BASIC 1/4	1086

Note: Supplied complete with screws and gaskets
Tightening torque for M5 valve / base screws: 3-4 Nm

GASKET KIT



Code	Description	Weight [g]
0226004701	Gasket kit for 1/8 base	5
0226005701	Gasket kit for 1/4 base	5

MANIFOLD BASES



Refer to page B1.44 for manifold bases

MANIFOLDS



Refer to page B1.43 for manifolds

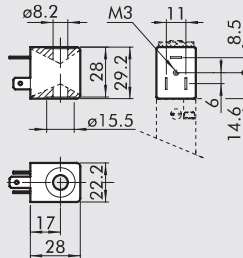
COILS AND CONNECTORS



Refer to page B1.60 for coils and connectors

COILS AND CONNECTORS FOR SERIES 70, NAMUR AND SERIES BASIC VALVES

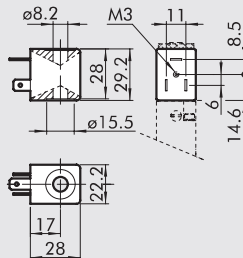
COILS SIDE 22 mm



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 DIN 40050 with connector
- Avoid prolonged exposure to atmospheric agents
- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

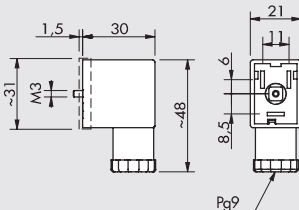
"UL" AND "CSA" COILS 22 mm



- Voltage tolerance: -10% to + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- Electrical connection DIN 43650 B-IND

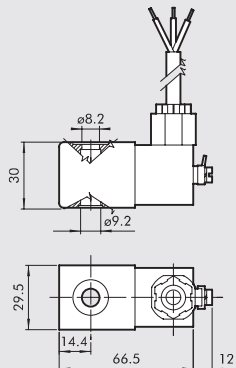
Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR	12Vcc	2W	2W
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR	24Vcc	2W	2W
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR	24V 50/60Hz	5.3VA	3.5VA
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR	110V 50/60Hz	5.3VA	3.5VA
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR	220V 50/60Hz	5.3VA	3.5VA

CONNECTOR FOR COILS SIDE 22 mm DIN 43650 B-IND



Code	Tipo	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230VAC EEXMT5 cable 5 m

According to Atex 2014/34/EU rule: II 2G Ex mb IIC T4/T5 Gb

II 2D Ex tb IIIC T130/T95 °C IP66 Db

N.B.: Supplied complete with adapter for Ø8 mm sleeve.

N.B.: It's not possible to mount valves having these coils on bases or on manifolds, because the width of 29.5 mm is higher than the distance between the valves. Special bases can be manufactured on request.

KIT COILS SIDE 22 IP65



Code	Description
0222100100	Kit for coils 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents.
Applicable to valves with a technopolymer control.

24VDC ENERGY SAVING CONNECTOR

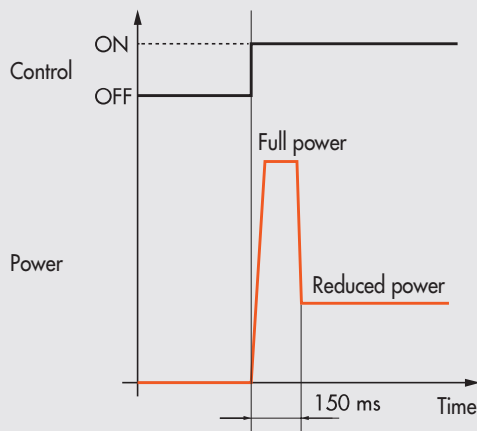
The 24VDC energy-saving connector type DIN 43650 B-IND for coils, side 22 mm, thanks to an internal electronic board, reduces by 65% the power consumed by the solenoid valve during the supply phase. Energy consumption is reduced by a 'speed-up & holding' control. This technology consists of supplying the electro-pilot with full power for 150 ms and subsequently reducing it via a PWM control that regulates the current circulating in the coil. The full power supplied for a few milliseconds guarantees high performance and a quick and safe valve switching; energy saving is hence guaranteed during the holding phase by a reduction in power, thereby allowing a reduction in temperature as well.



VALVES

24VDC ENERGY SAVING CONNECTOR

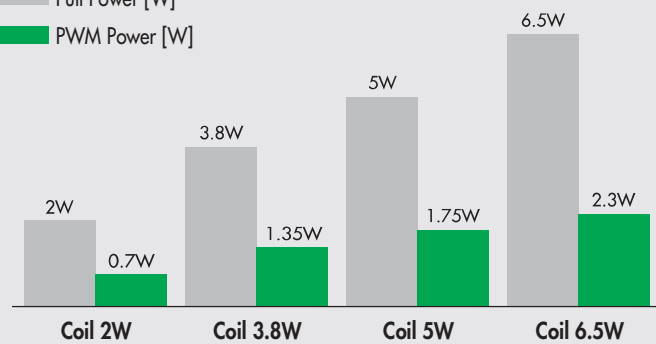
TECHNICAL DATA



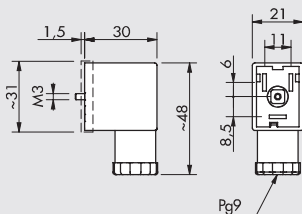
Below is a comparison of the reduction values between input power during the full power phase and the reduced power holding phase (PWM Power).

65% power reduction

■ Full Power [W]
■ PWM Power [W]



DIMENSIONS AND ORDERING CODES

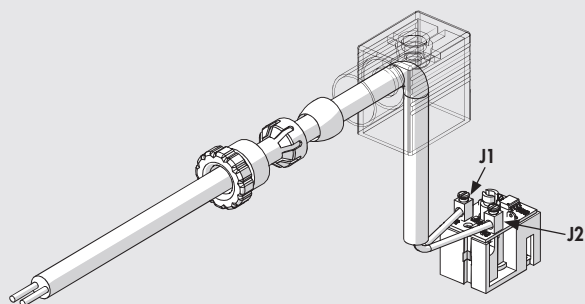


Code	Description	Ø Cable	Voltage
W0970510051	24VDC energy saving connector	PG9	24VDC ±10%

N.B.: The Energy Saving Connector can be used with coils up to 6.5W

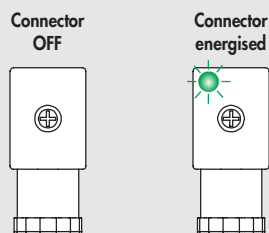
ASSEMBLY INSTRUCTIONS

The two cables (24VDC and GND) are connected to the connector via the two screw terminals (J1 and J2) on the circuit board. The two terminals have no polarity (thanks to a diode bridge on the circuit board), making it possible to connect either positive or negative wiring of the controller without the risk of damaging the internal board.



Screw terminal	Function
J1	24V or GND
J2	GND or 24V

The connector circuit board has a green LED that comes on when the coil is energised.



N.B.: For correct operation, both connector and coil need to be connected for the entire duty cycle (full power and reduced power); any electrical connection of the Energy-Saving connector to the coil during the reduced power phase **may cause the solenoid valve to be uncorrected switch**.

NOTES

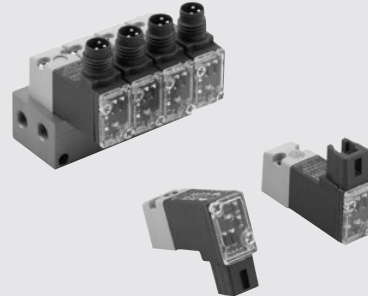
10-mm SOLENOID VALVES SERIES PLT-10



PLT-10 solenoid valves are the latest development in modern pneumatic design, where the main trends focus on miniaturisation, enhanced performance, reduced power and reliability.

Numerous versions are available, all with an ISO 15218 pneumatic interface. The power required to operate the PLT-10 has been greatly reduced, ranging from 0.3 to 0.8 Watts.

It is available with a LED indicating when it is active. Monostable manual control is also possible. None of the versions will get damaged if the polarity is accidentally inverted.

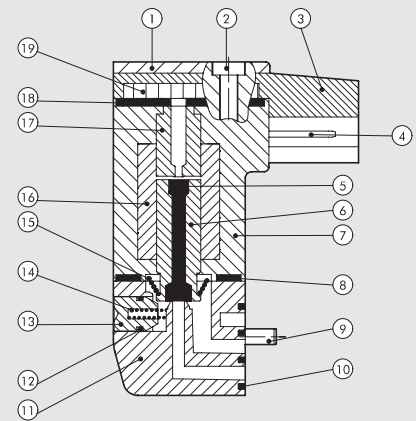


TECHNICAL DATA

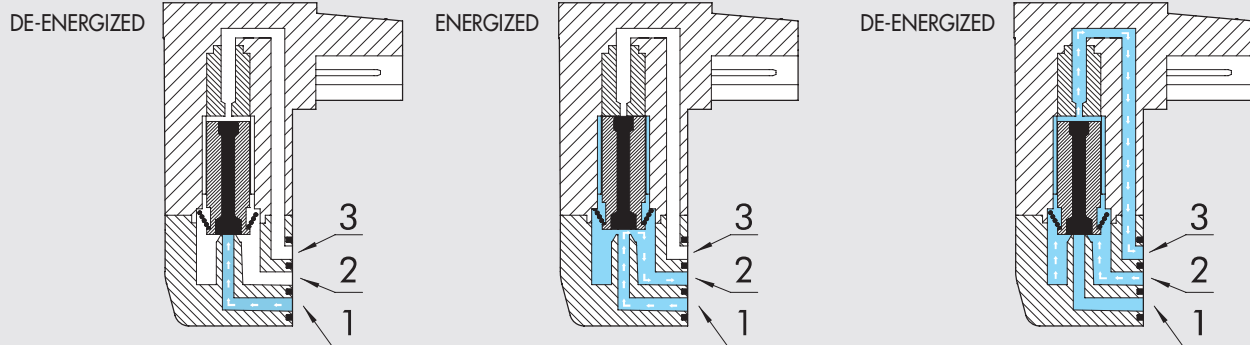
Type		3/2 NC
Operating temperature range (Te)	°C	5 to 50
Fluid temperature (Tg)	°C	5 to 50
Fluid		Filtered, lubricated or unlubricated air
Operating life		Over 50 million cycles
Actuation response time	ms	~ 4
Weight	g	12
Voltage tolerance	ΔV	± 10 %
Max operating frequency	f	30 Hz
Switching factor	ED	100 %
Insulation class		F155
Index of protection		IP51 for PLUG-IN version IP65 for M8 version
Valve / base screw tightening torque	Nm	0.1 - 0.15

COMPONENTS

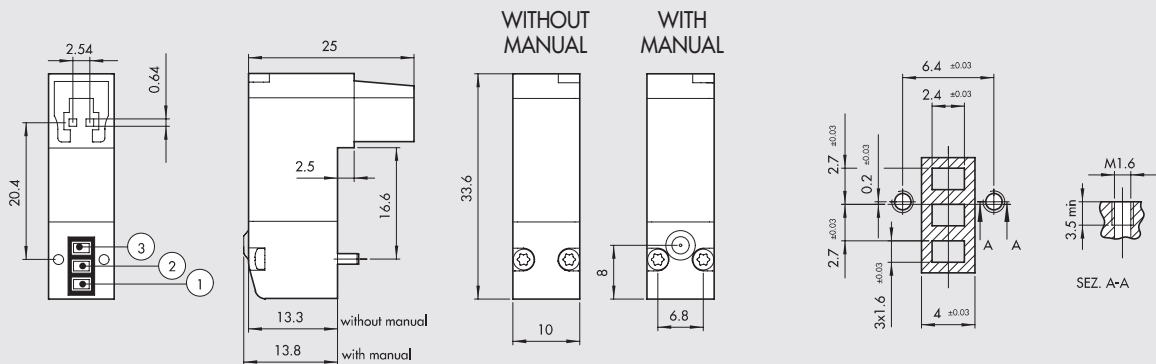
- | | |
|--|--|
| ① TRANSPARENT COVER: PA612-transparent | ⑭ MANUAL SPRING: AISI 302 |
| ② ASSEMBLY SCREWS: zinc-plated steel | (only for version with manual operated) |
| ③ COVER: PA66 | ⑮ SPRING: AISI 302 |
| ④ PIN | ⑯ WINDING: PPS - Copper wire |
| ⑤ MOBILE CORE OVER-STAMPING: FKM/FPM | ⑰ FIXED CORE: AISI 430F |
| ⑥ MOBILE CORE: AISI 403F | ⑱ COIL-COVER GASKET: NBR |
| ⑦ COIL OVER-STAMPING: PA66 | ⑲ ELECTRONIC BOARD |
| ⑧ BODY-COIL GASKET: NBR70 | (only for version with electronic board) |
| ⑨ ASSEMBLY SCREWS: zinc-plated steel | |
| ⑩ BODY GASKET: NBR | |
| ⑪ BODY: PA66 | |
| ⑫ MANUAL GASKET: NBR (only for version with manual operated) | |
| ⑬ MANUAL CONTROL: AISI 303 (only for version with manual operated) | |



OPERATING CHART

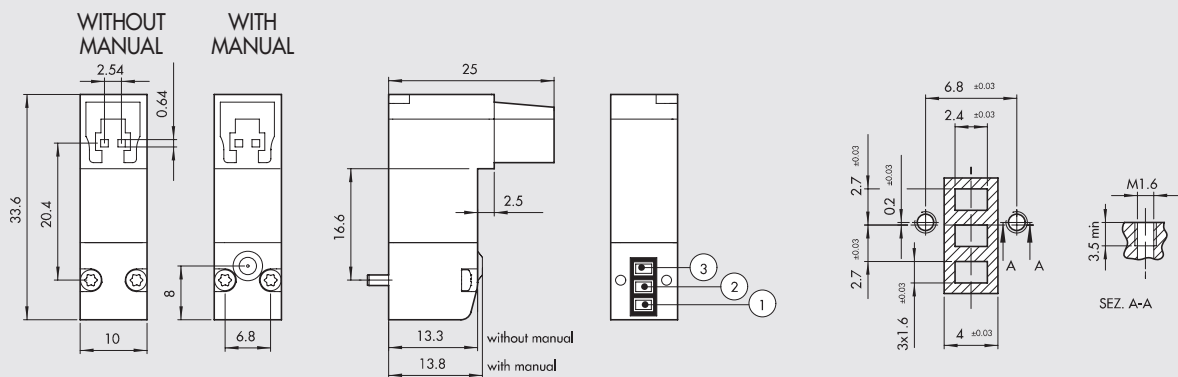


PLT-10 WITH BASE AND PLUG-IN CONNECTION ON THE SAME SIDE

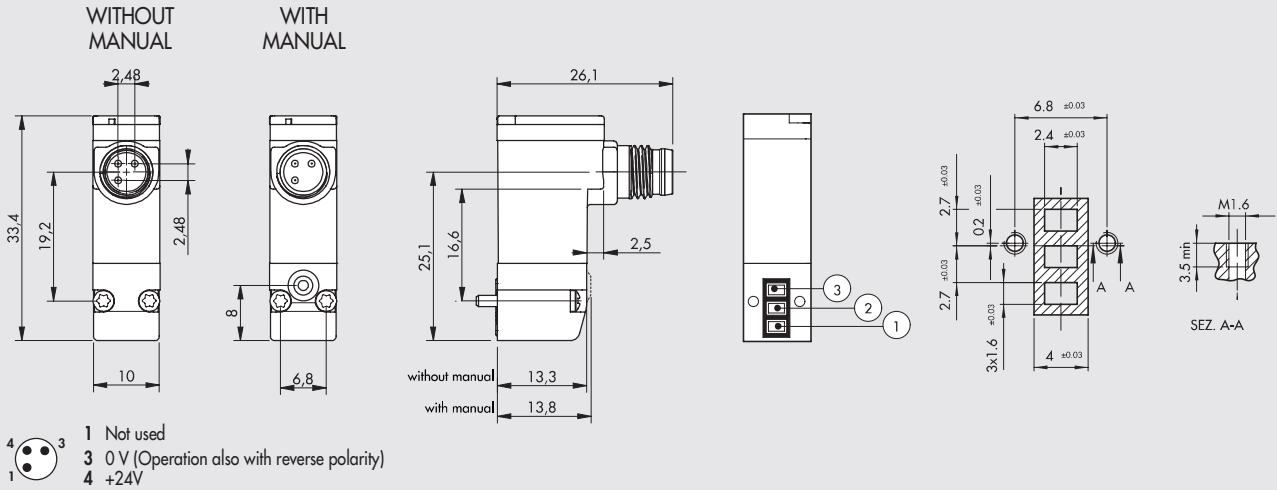


Version 3/2 NC	Code	Manual	Voltage [Volt]	Power [Watt]	Through Ø [mm]	Operating press. [bar]	Flow rate at 6 bar ΔP=1 bar [Nl/min]	Tmax coil Te 20°C α ED100% [°C]	Weight [g]
Without LED	722113330000	without	12 VDC	0.7	0.6	3 to 7	9	93	12
	722113330100	with	12 VDC	0.7	0.6	3 to 7	9	93	12
	722113340000	without	24 VDC	0.7	0.6	3 to 7	9	93	12
	722113340100	with	24 VDC	0.7	0.6	3 to 7	9	93	12
With LED	722113531000	without	12 VDC	0.8	0.6	3 to 7	9	93	12
	722113531100	with	12 VDC	0.8	0.6	3 to 7	9	93	12
	722113541000	without	24 VDC	0.8	0.6	3 to 7	9	93	12
	722113541100	with	24 VDC	0.8	0.6	3 to 7	9	93	12
SPEED-UP and LED	722116841000	without	24 VDC	3/0.3	1.2	2 to 7	16	51	12
	722116841100	with	24 VDC	3/0.3	1.2	2 to 7	16	51	12
	722116941000	without	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12
	722116941100	with	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12

PLT-10 WITH BASE AND PLUG-IN CONNECTION ON OPPOSITE SIDES



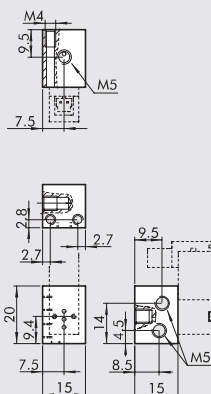
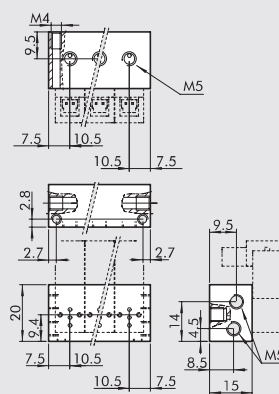
Version 3/2 NC	Code	Manuale	Voltage [Volt]	Power [Watt]	Through Ø [mm]	Operating press. [bar]	Flow rate at 6 bar ΔP=1 bar [Nl/min]	Tmax coil Te 20°C α ED100% [°C]	Weight [g]
Without LED	722213330000	without	12 VDC	0.7	0.6	3 to 7	9	93	12
	722213330100	with	12 VDC	0.7	0.6	3 to 7	9	93	12
	722213340000	without	24 VDC	0.7	0.6	3 to 7	9	93	12
	722213340100	with	24 VDC	0.7	0.6	3 to 7	9	93	12
With LED	722213531000	without	12 VDC	0.8	0.6	3 to 7	9	93	12
	722213531100	with	12 VDC	0.8	0.6	3 to 7	9	93	12
	722213541000	without	24 VDC	0.8	0.6	3 to 7	9	93	12
	722213541100	with	24 VDC	0.8	0.6	3 to 7	9	93	12
SPEED-UP e LED	722216841000	without	24 VDC	3/0.3	1.2	2 to 7	16	51	12
	722216841100	with	24 VDC	3/0.3	1.2	2 to 7	16	51	12
	722216941000	without	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12
	722216941100	with	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12

PLT-10 WITH BASE AND M8 CONNECTION ON OPPOSITE SIDES


Version 3/2 NC	Code	Manual	Voltage [Volt]	Power [Watt]	Through Ø [mm]	Operating press. [bar]	Flow rate at 6 bar ΔP=1 bar [Nl/min]	Tmax coil Te 20°C α ED100% [°C]	Weight [g]
With LED	7222M3541000	without	24 VDC	0.8	0.6	3 to 7	9	93	12
	7222M3541100	with	24 VDC	0.8	0.6	3 to 7	9	93	12
SPEED-UP and LED	7222M6941000	without	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12
	7222M6941100	with	24 VDC	4.2/0.7	1.2	2 to 7	30	51	12

KEY TO CODES

7 2 2 FAMILY	1 POSITIONING	1 POWER CONNECTION	3 Ø THROUGH	3 POWER	4 VOLTAGE	0 LED	1 MANUAL CONTROL	00 VERSION
Solenoid valves series "PLT-10"	1 Base and connection on same side 2 Base and connection opposite sides 2 Base and connection opposite sides	1 Plug-in M M8x1	3 0.6 mm 6 1.2 mm	3 0.7 W 5 0.8 W 8 3/0.3 W 9 4.2/0.7 W 5 0.8 W 9 4.2/0.7 W	3 12 VDC 4 24 VDC 4 24 VDC	0 - 1 LED 1 LED	0 - 1 Manual monostable	00 Standard

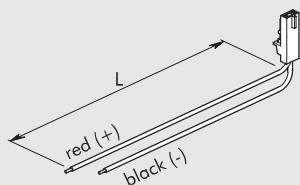
MULTIPLE BASES FOR PLT-10
1 POSITION

+ POSITIONS


Code	Description
W0400100101	Base 1 position for PLT-10
W0400100102	Base 2 positions for PLT-10
W0400100103	Base 3 positions for PLT-10
W0400100104	Base 4 positions for PLT-10
W0400100105	Base 5 positions for PLT-10
W0400100106	Base 6 positions for PLT-10
W0400100107	Base 7 positions for PLT-10
W0400100108	Base 8 positions for PLT-10
W0400100109	Base 9 positions for PLT-10
W0400100110	Base 10 positions for PLT-10

N.B.: For multiple manifold bases with PLT-10 M8 connection, only use straight connectors code 02400A

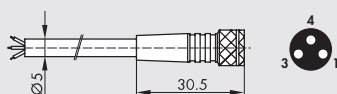
ACCESSORIES

PLUG-IN CONNECTOR



Code	Description
W0970512000	Mach 11 plug-in connector L = 300 mm
W0970512007	Mach 11 plug-in connector L = 1 m
W0970512002	Mach 11 plug-in connector L = 2 m

M8 STRAIGHT CONNECTOR WITH CABLE

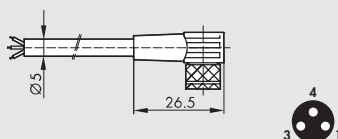


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

90° M8 CONNECTOR WITH CABLE



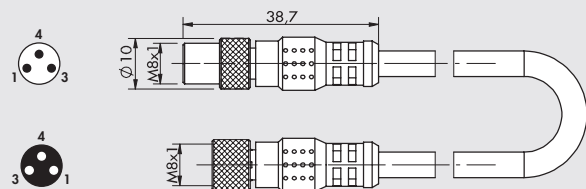
Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

N.B.: cannot be used on multiple manifold bases W0400100__

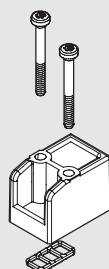
M8 M - M8 F CONNECTOR



Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

CAP FOR UNUSED POSITION

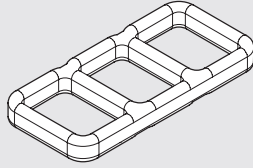


Code	Description	Weight [g]
W0400100200	Cap 10 mm	6

NOTES

SPARE PARTS

INTERFACE GASKET



Code	Description
0226009701	PLT-10 gasket

N.B.: 50 for pack

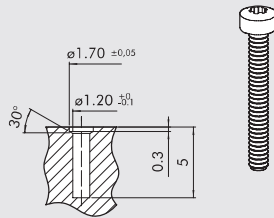
STANDARD SECURING SCREW (FOR ALUMINIUM)



Code	Description
0226009702	PLT-10 screw for aluminium

N.B.: 100 for pack

SECURING SCREWS FOR TECHNOPOLYMER



Code	Description
0226009703	Screw PLT-10 for technopolymer

N.B.: 100 for pack

When mounting on technopolymer bodies, use these screws instead of the ones supplied with the PLT-10.

ATTENTION: approximative dimensions for not added glass plastic materials It's always advisable to effect assembling tests.

NOTES

BASES FOR PLT-10 MULTIPLE CONNECTION

Series PLT-10 solenoid valves can be mounted on bases complete with electrical and pneumatic connections, from 4 to 24 positions. The electric contacts of each valve are linked to a single multiple connector via a printed circuit board.

The connector has 9 pins or 25 pins, depending on the model and the number of valves that can be mounted. **Versions with 25-pin connectors can interface with standard field buses by means of Profibus-DP modules for Multimach (see page B2.183).**

The compressed-air supply is common to all the valves and can be provided on either side of the base by means of a 1/8" fitting.

Connection to the utilities is via automatic integrated cartridges for Ø 4 pipe. The solenoid valve outlet is free, in a slot in the base.

The bases can be secured from above using M3 screws, or on a DIN bar using a bracket (see accessories).

The bases can mount various types of PLT-10 solenoid valves: 3/2 NC, 3/2 NO, with or without a manual actuator.

With this modular system, you can select the desired sequence of valves (NC, NO, blind) and change it at any time.

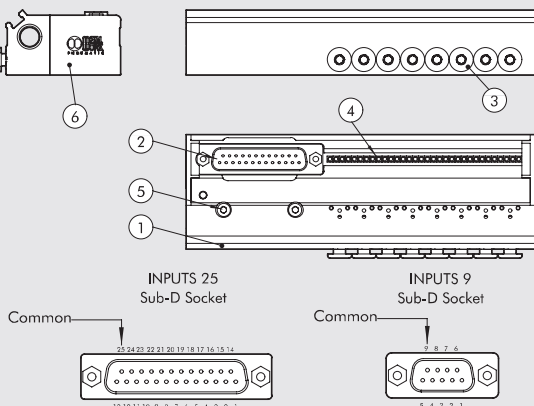


TECHNICAL DATA

Supply voltage		12 VDC or 24 VDC
Max input	W	0.7 per position for PLT-10 STD without LED 0.9 per position for PLT-10 STD with LED 3/0.3 per position for PLT-10 NC with Speed-up 3/0.7 per position for PLT-10 NO with Speed-up 4.2/0.7 per position for PLT-10 NC with Speed-up high flow
Valve actuation indicator		Led mounted on the PLT-10 (on versions of solenoid valve where envisaged)
Operating temperature range	°C	5 to 50
Actuation response time	ms	~ 4
Protection degree (with valves and connectors mounted)		IP 40
Maximum number of mountable PLT-10s		24
Number of contacts		9, of which 1 common, for versions with 4 and 8 positions 25, of which 1 common, for versions with 4, 8, 12, 16, 20, 24 positions
Valve / base screw tightening torque	Nm	0.1 - 0.15

COMPONENTS

- ① Anodized aluminium base
- ② Multi-pin electrical connector
- ③ Automatic integrated cartridges for Ø 4 pipe
- ④ Electrical connectors for PLT-10 solenoid valves mounted on printed circuit board
- ⑤ Securing screw
- ⑥ Technopolymer cover



CONNECTION DIAGRAM

9 PIN

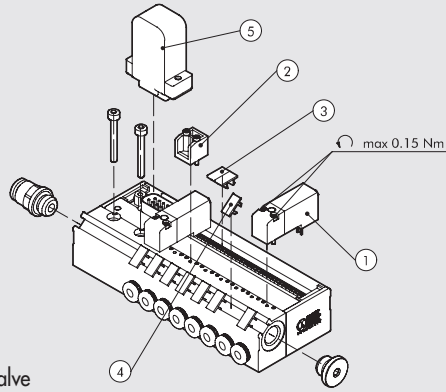
Position of electrical contact	N° PLT	Position of electrical contact	N° PLT
1	PLT1	6	PLT6
2	PLT2	7	PLT7
3	PLT3	8	PLT8
4	PLT4	9	COMMON (-)
5	PLT5		

25 PIN

Position of electrical contact	N° PLT	Position of electrical contact	N° PLT
1	PLT1	14	PLT14
2	PLT2	15	PLT15
3	PLT3	16	PLT16
4	PLT4	17	PLT17
5	PLT5	18	PLT18
6	PLT6	19	PLT19
7	PLT7	20	PLT20
8	PLT8	21	PLT21
9	PLT9	22	PLT22
10	PLT10	23	PLT23
11	PLT11	24	PLT24
12	PLT12	25	COMMON (-)
13	PLT13		

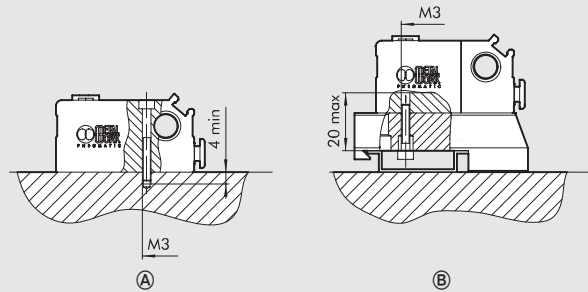
Pilot numbering from left to right, starting from the position closest to the connection.

ASSEMBLY OF SOLENOID VALVES AND ACCESSORIES



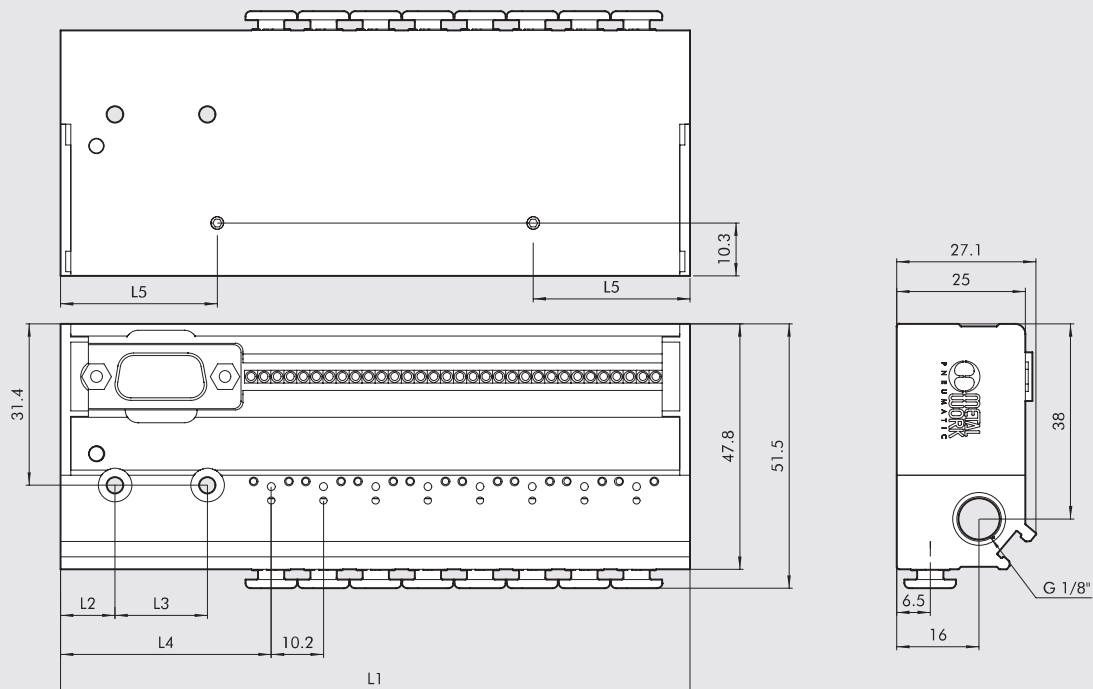
- ① Solenoid valve
- ② Pneumatic circuit cap for blind position
- ③ Electric circuit cap for blind position
(use two identification labels)
- ④ Identification label
- ⑤ Electrical connector

HOW TO SECURE THE BASE



- A From above using M3 screws
- B On a DIN bar, using the bracket and screws provided
The bases come with the rear holes plugged by provided dowels.

CODES AND DIMENSIONS FOR BASES 9 AND 25 PINS



Code	Description	N° of PINS	N° of positions	L1	L2	L3	L4	L5	Weight [g]
0210040004	4-posn. base PLT 10 9-PIN mult conn.	9	4	81.9	10.6	18	41	19.6	160
0210040008	8-posn. base PLT 10 9-PIN mult conn.	9	8	122.5	10.6	18	41	19.6	235
0210240004	4-posn. base PLT 10 25-PIN mult conn.	25	4	104.8	15.5	30	63.9	30.5	210
0210240008	8-posn. base PLT 10 25-PIN mult conn.	25	8	145.4	15.5	30	63.9	30.5	280
0210240012	12-posn. base PLT 10 25-PIN mult conn.	25	12	186	15.5	30	63.9	30.5	355
0210240016	16-posn. base PLT 10 25-PIN mult conn.	25	16	226.6	15.5	30	63.9	30.5	430
0210240020	20-posn. base PLT 10 25-PIN mult conn.	25	20	267.2	15.5	30	63.9	30.5	500
0210240024	24-posn. base PLT 10 25-PIN mult conn.	25	24	307.8	15.5	30	63.9	30.5	575

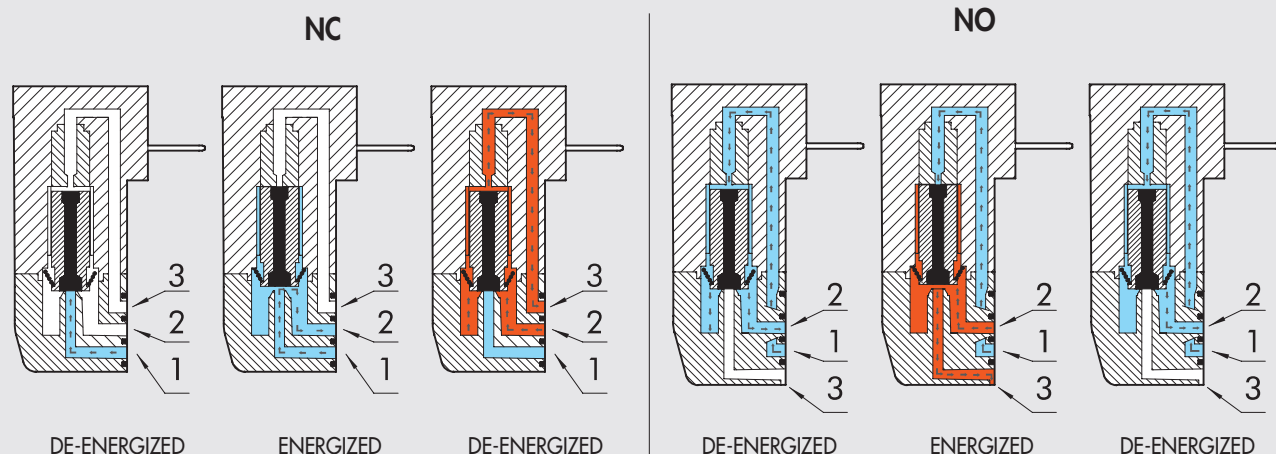
PLT-10 FOR MULTIPLE ELECTRIC CONNECTION

VALVES

BASES FOR PLT-10 MULTIPLE CONNECTION

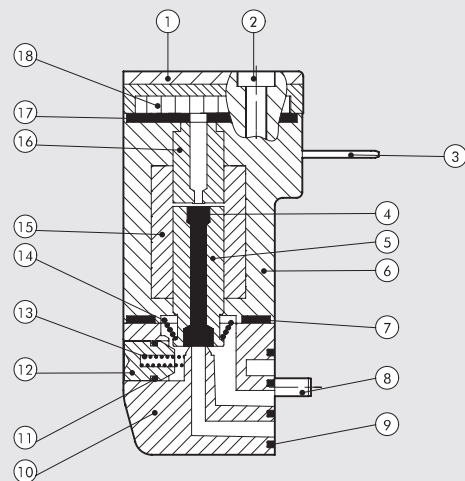
TECHNICAL DATA		NC	NO
Type		3/2 NC ed NO	
Operating temperature range (Te)	°C	5 to 50	
Fluid temperature (Tg)	°C	5 to 50	
Fluid		Filtered, lubricated or unlubricated air	
Operating life		Over 50 million cycles	
Weight	g	12	
Voltage tolerance	ΔV	± 10 %	
Max operating frequency	f	30 Hz	
Switching factor	ED	100 %	
Insulation class		F155	
Degree of protection		IP 51	IP 50

OPERATING CHART

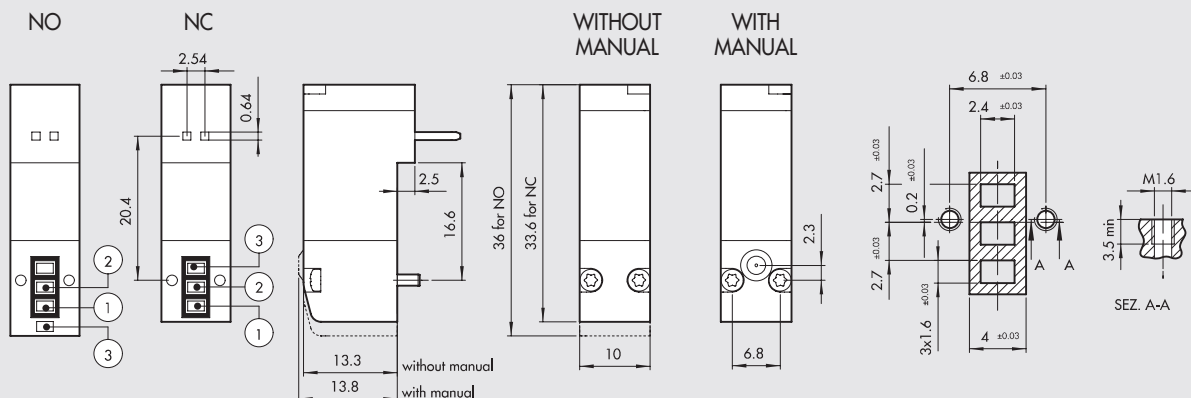


COMPONENTS

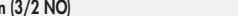
- ① TRANSPARENT COVER: PA612-transparent
- ② ASSEMBLY SCREWS: zinc-plated steel
- ③ PIN
- ④ MOBILE CORE OVER-STAMPING: FKM/FPM
- ⑤ MOBILE CORE: AISI 403F
- ⑥ COIL OVER-STAMPING: PA66
- ⑦ BODY-COIL GASKET: NBR70
- ⑧ ASSEMBLY SCREWS: zinc-plated steel
- ⑨ BODY GASKET: NBR
- ⑩ BODY: PA66
- ⑪ MANUAL GASKET: NBR (only for version with manual operated)
- ⑫ MANUAL CONTROL: AISI 303 (only for version with manual operated)
- ⑬ MANUAL SPRING: AISI 302 (only for version with manual operated)
- ⑭ SPRING: AISI 302
- ⑮ WINDING: PPS - Copper wire
- ⑯ FIXED CORE: AISI 430F
- ⑰ COIL-COVER GASKET: NBR
- ⑱ ELECTRONIC BOARD (only for version with electronic board)



VALVES



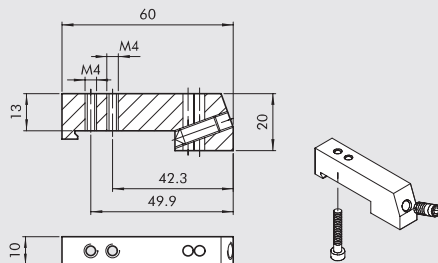
BASES FOR PLT-10 MULTIPLE CONNECTION

Version (3/2 NO)	Code	Manual	Voltage [Volt]	Power [Watt]	Ø Through [mm]	Operating pressure [bar]	Flow rate at 6 ΔP=1 bar [l/min]	TMax coil Te 20°C α ED100% [°C]	Weight [g]
SPEED-UP and LED 	722126841010	without	24 VDC	3/0.7	1.0	2 to 7	14	51	12
	722126841110	with	24 VDC	3/0.7	1.0	2 to 7	14	51	12

2	2	1	2	3	3	4	0	1	0	0
FAMILY	POSITIONING	POWER CONNECTION	Ø THROUGH	POWER	VOLTAGE	LED	MANUAL CONTROL	VERSION		
Solenoid valves series "PLT-10"	1 Base and connection on same side	2 for multiple base	3 0.6 mm 6 1.2 mm	3 0.7 W 5 0.8 W 8 3/0.3 W for NC 3/0.7 W for NO 9 4.2/0.7 W	3 12 VDC 4 24 VDC	0 - 1 LED	0 - 1 manual monostable	0 NC 1 NO	0	Standard

ACCESSORIES

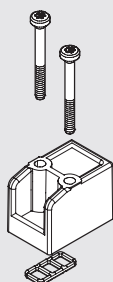
CONNECTION BRACKETS ON BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227301610	Connection brackets on din BAR for bases PLT-10	30

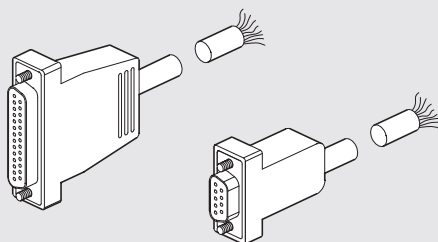
Supplied complete with one M3x20 screws and one M6 grub screw
Individually packed

CAP FOR UNUSED POSITION



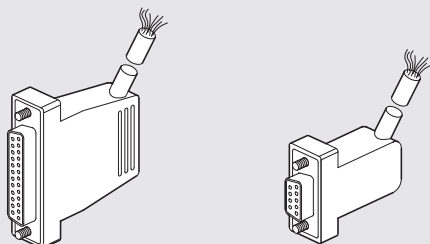
Code	Description	Weight [g]
W0400100200	Cap 10 mm	6

STRAIGHT PRE-WIRED CONNECTOR KIT



Code	Description	Weight [g]
0226900100	Straight D-Sub 9-PIN connector + cable L = 1 m	80
0226900250	Straight D-Sub 9-PIN connector + cable L = 2.5 m	170
0226900500	Straight D-Sub 9-PIN connector + cable L = 5 m	320
0226900750	Straight D-Sub 9-PIN connector + cable L = 7.5 m	470
0226901000	Straight D-Sub 9-PIN connector + cable L = 10 m	620
0226901500	Straight D-Sub 9-PIN connector + cable L = 15 m	920
0226902000	Straight D-Sub 9-PIN connector + cable L = 20 m	1220
0226905000	Straight D-Sub 9-PIN connector + cable L = 50 m	3020
0226920100	Straight D-Sub 25-PIN connector + cable L = 1 m	132
0226920250	Straight D-Sub 25-PIN connector + cable L = 2.5 m	320
0226920500	Straight D-Sub 25-PIN connector + cable L = 5 m	636

PRE-WIRED 90° CONNECTOR

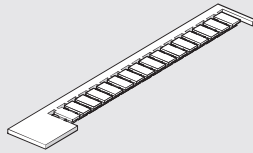


Code	Description	Weight [g]
0226910100	90° D-Sub 9-PIN connector + cable L = 1 m	80
0226910250	90° D-Sub 9-PIN connector + cable L = 2.5 m	170
0226910500	90° D-Sub 9-PIN connector + cable L = 5 m	320
0226910750	90° D-Sub 9-PIN connector + cable L = 7.5 m	470
0226911000	90° D-Sub 9-PIN connector + cable L = 10 m	620
0226911500	90° D-Sub 9-PIN connector + cable L = 15 m	920
0226930100	90° D-Sub 25-PIN connector + cable L = 1 m	132
0226930250	90° D-Sub 25-PIN connector + cable L = 2.5 m	320
0226930500	90° D-Sub 25-PIN connector + cable L = 5 m	636

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTORS

25 PIN				9 PIN			
Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black	1	green/black
2	red/brown	11	red/orange	20	white	2	white
3	white/black	12	light blue	21	blue/white	3	blue/black
4	red/blue	13	yellow/white	22	brown	4	blue
5	black/orange	14	yellow	23	green/white	5	yellow/black
6	yellow/red	15	red/green	24	red	6	yellow
7	black/brown	16	orange	25	green/black	7	red/black
8	white/red	17	orange/white			8	green
9	red/black	18	green			9	white/black

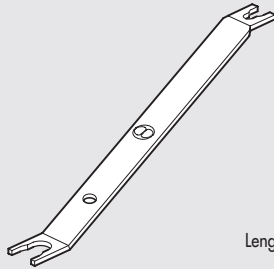
IDENTIFICATION PLATE KIT



Code	Description	Weight [g]
0226107000	Identification plate kit	30

Comes in 16-pc. packs

R17 - PIPE RELEASE SPANNER



Lenght = 140 mm

Code	Description	Ø Pipe
2L17001	RL17	from Ø 3 to Ø 10

NOTES

SOLENOID VALVES PIV.M 15-mm

VALVES

SOLENOID VALVES PIV.M 15-mm

- 3/2 NC/NO direct control microvalves
- Possible assembly on single and multiple bases
- Monostable manual actuation as standard
- Assembly in any position
- Operation with filtered lubricated or unlubricated air
- Maximum ambient temperature: 50°C
- Low power absorption



TECHNICAL DATA

Voltage tolerance	%	-10 to +15
Alternating current frequency (AC)	Hz	50/60
Max operating frequency	Hz	30
Solenoid rating		100% ED
Response time	ms	~ 10
Type of protection		IP 65 EN 60529
Power connection		Type C industrial, 9.4 mm centre distance
Insulation class		155
Ambient temperature	°C	-10 to + 50
Fluid temperature	°C	-10 to + 50
Fluid		Filtered lubricated or unlubricated air
Operating life		100 million cycles
Materials		Body: PPS Spring: 302 stainless steel FKM/FPM gaskets
Weight	g	30
Hand operator		Monostable
Assembly position		In any position
Tightening torque M3 valve / base screws	Nm	0.8

SYNOPTIC, SIZES AND VERSIONS

P I V FAMILY	1 AIR HOLE	3 NUMBER OF WAYS	M DIMENSIONS	0 THREAD	1 VERSION	N C FURTHER DETAILS
	1 1 mm	3 3 ways	M 15 x 15	0 on base	1 24 VDC	NC normally closed
	3 1.1 mm				3 24 VAC	NO normally open
	6 1.5 mm				5 110 VAC	
					7 220 VAC	

Symbol	Code	Abbrev.	Voltage [Volt]	Flow rate [l/min]	Air Ø [mm]	kV Factor	Operating press. [bar]
	W4015001000	PIV33M01 NC	24VDC	2.5W	1.1	0.42	-0.99 to 10
	W4015001010	PIV33M03 NC	24VAC	2W - 3VA	1.1	0.42	-0.99 to 10
	W4015001020	PIV33M05 NC	110VAC	2W - 3VA	1.1	0.42	-0.99 to 10
	W4015001030	PIV33M07 NC	220VAC	2W - 3VA	1.1	0.42	-0.99 to 10
	W4015001100	PIV63M01 NC	24VDC	2.5W	1.5	0.55	0 to 6
	W4015001110	PIV63M03 NC	24VAC	2W - 3VA	1.5	0.55	0 to 6
	W4015001120	PIV63M05 NC	110VAC	2W - 3VA	1.5	0.55	0 to 6
	W4015001130	PIV63M07 NC	220VAC	2W - 3VA	1.5	0.55	0 to 6
	W4015002000	PIV13M01 NO	24VDC	2.5W	1	0.33	-0.99 to 6
	W4015002010	PIV13M03 NO	24VAC	2W - 3VA	1	0.33	-0.99 to 6
	W4015002020	PIV13M05 NO	110VAC	2W - 3VA	1	0.33	-0.99 to 6
	W4015002030	PIV13M07 NO	220VAC	2W - 3VA	1	0.33	-0.99 to 6

The technical drawings show two types of electrical components:

- 1 POSN.**: This component has three terminals labeled NO, NC, and NC. The dimensions are specified as follows:
 - Terminal NO: 2mm wide, 1.3mm high.
 - Terminal NC: 2mm wide, 3.1mm high.
 - Mounting holes: M3, spaced 3.2mm apart.
 - Overall width: 9.7mm.
 - Terminal pitch: 8.5mm.
 - Terminal width: 4.5mm.
 - Terminal height: 7mm.
 - Base width: 15mm.
- + POSN.**: This component has three terminals labeled NC, NO, and NC. The dimensions are specified as follows:
 - Terminal NC: 2mm wide, 1.3mm high.
 - Terminal NO: 2mm wide, 3.1mm high.
 - Mounting holes: M5, spaced 3.2mm apart.
 - Overall width: 9.7mm.
 - Terminal pitch: 8.5mm.
 - Terminal width: 4.5mm.
 - Terminal height: 7mm.
 - Base width: 15mm.

Code	Description	Abbrev.	Weight [g]
W0400101001	Single base 1 position	B5001	6
W0400101002	Multiple base 2 positions	B5002	24
W0400101003	Multiple base 3 positions	B5003	34
W0400101004	Multiple base 4 positions	B5004	46
W0400101005	Multiple base 5 positions	B5005	58
W0400101006	Multiple base 6 positions	B5006	70
W0400101007	Multiple base 7 positions	B5007	82
W0400101008	Multiple base 8 positions	B5008	98
W0400101009	Multiple base 9 positions	B5009	106
W0400101010	Multiple base 10 positions	B5010	114

Code	Description	Weight [g]
W0400102000	End plug	6

Code	Description	Weight [g]
W0400102002	End plug – port 1	4

Code	Colour	Type
W0970500011	Black	Standard
W0970500012	Transparent	LED 24V
W0970500013	Transparent	LED 110V
W0970500015	Transparent	LED + VDR 24V
W0970500016	Transparent	LED + VDR 110V

SOLENOID VALVES PIV ON BASE

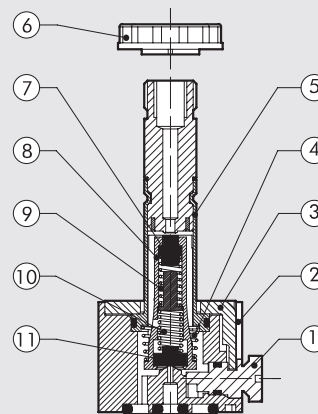
- PIV.I - PIV.T and PIV.B solenoid valves
- Assembly on base
- Bistable manual actuation
- Normally closed/normally open solenoid valves 2/2 – 3/2
- Installation in any position
- Particularly suitable for high operating frequencies and low response times

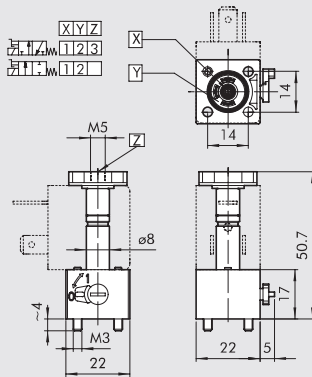


TECHNICAL DATA		PIV.I ON BASE	PIV.T ON BASE	PIV.B ON BASE
Absorption		5W - 5VA	3.8W - 6.5VA	10W - 13VA
Voltage available		12-24 VDC / 24-110-220 VAC	24VDC / 24-110-220 VAC	24VDC / 24-110-220 VAC
		50/60 Hz	50/60 Hz	50/60 Hz
Voltage tolerance	%	-10 to +15	-10 to +15	-10 to +15
Max operating frequency	Hz	30	30	15
Solenoid rating	%	100	100	100
Response time	ms	8 to 15	8 to 15	10 to 15
Type of protection		IP 65	IP 65	IP 65
Type of coil		Coil side 22 Ø 8	Coil side 22 Ø 9	Coil side 30
		DIN 43650	DIN 43650	DIN 43650
Insulation class		155	155	155
Ambient temperature	°C	-15 to 50	-15 to 50	-15 to 50
Fluid temperature	°C	-15 to 50	-15 to 50	-15 to 50
Fluid		Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air
Working life		25 million cycles	25 million cycles	-
Weight	g	80 to 120 (according to the version)	85	250
Maximum coil nut torque	Nm	1	1	1
Tightening torque M3 valve / base screws	Nm	0.8	0.8	0.8

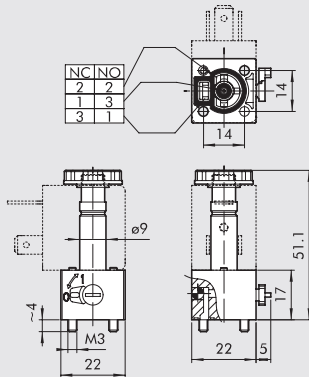
COMPONENTS

- ① Manual control: technopolymer
- ② Body: technopolymer
- ③ Sleeve locking plate
- ④ Spring: stainless steel
- ⑤ Sleeve: brass OT 58
- ⑥ Ring nut for coil fixing
- ⑦ Gasket: NBR
- ⑧ Mobile core
- ⑨ Spring: stainless steel
- ⑩ Spring: stainless steel
- ⑪ Gasket: NBR

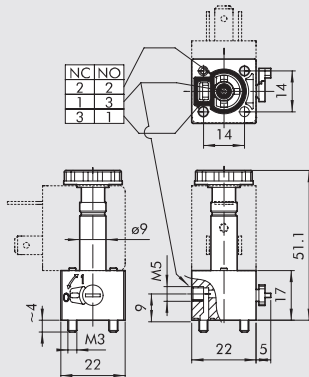


PIV.I VALVES, OPERATOR Ø 8, ON BASE


Symbol	Code	Abbrev.	Air hole Ø [mm]	kv Factor	Pressure range [bar]	
					DC	AC
	W4018000200	PIV42IOS NC	1.2	0.65	-0.99 to 10	-0.99 to 10
	W4018000300	PIV72IOS NC	1.5	1	-0.99 to 8	-0.99 to 8
	W4018001200	PIV43IOS NC	1.2	0.65	-0.99 to 10	-0.99 to 10
	W4018001300	PIV73IOS NC	1.5	1	-0.99 to 8	-0.99 to 8

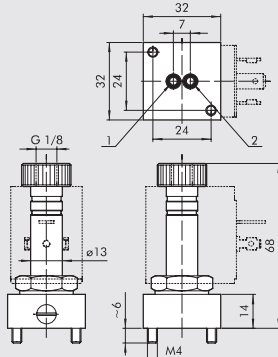
PIV.T VALVES, OPERATOR Ø 9, ON BASE


Symbol	Code	Abbrev.	Air hole Ø [mm]	kv Factor	Pressure range [bar]	
					DC	AC
	W4025002101	PIV73TOB NO	1.6	0.75	0.5 to 7	0.5 to 7
	W4025002301	PIV83TOB NO	1.8	0.85	0.5 to 6.5	0.5 to 6.5
	W4025002100	PIV73TOB NC	1.6	0.8	0.5 to 10	0.5 to 10
	W4025002300	PIV83TOB NC	1.8	1	0.5 to 8	0.5 to 8

PIV.T VALVES, OPERATOR Ø 9, ON BASE WITH CONVEYED EXHAUST


Symbol	Code	Abbrev.	Air hole Ø [mm]	kv Factor	Pressure range [bar]	
					DC	AC
	W4025002001	PIV73TOO NO	1.6	0.75	0.5 to 7	0.5 to 7
	W4025002501	PIV83TOO NO	1.8	0.85	0 to 6	0.5 to 6.5
	W4025002000	PIV73TOO NC	1.6	0.8	0.5 to 10	0.5 to 10
	W4025002500	PIV83TOO NC	1.8	1	0.5 to 8	0.5 to 8

PIV.B VALVES, OPERATOR Ø 13, ON BASE

 NORMALLY
CLOSED


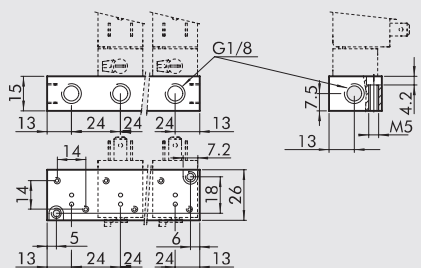
Symbol	Code	Abbrev.	Air hole Ø [mm]	kv Factor	Pressure range [bar]	
					DC	AC
	W4026003000	PIVY3BOS NC	2.4	2.2	0 to 8	0 to 10

SYNOPTIC, SIZES AND VERSIONS

P I V	7	3	T	0	0	N C
FAMILY	AIR HOLE	NUMBER OF WAYS	CONNECTION	THREAD	VERSION	FURTHER DETAILS
	4 1.2 mm 7 1.5 / 1.6 mm 8 1.8 mm Y 2.4 mm	2 2 ways 3 3 ways	I 22x22 operator Ø 8 T 22x22 operator Ø 9 B 30x30 operator Ø 13	0 on base	0 on base with conveyed exhaust B on base S standard	NC normally closed NO normally open

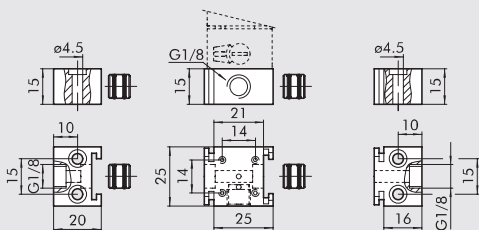
ACCESSORIES

MULTIPLE BASES FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



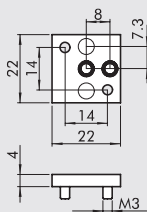
Code	Description	Abbrev.	Weight [g]
W0400111101	Base 1 position	EB 6001	22
W0400111102	Base 2 positions	EB 6002	50
W0400111103	Base 3 positions	EB 6003	76
W0400111104	Base 4 positions	EB 6004	102
W0400111105	Base 5 positions	EB 6005	128
W0400111106	Base 6 positions	EB 6006	154
W0400111107	Base 7 positions	EB 6007	180
W0400111108	Base 8 positions	EB 6008	206
W0400111109	Base 9 positions	EB 6009	232
W0400111110	Base 10 positions	EB 6010	258

MANIFOLD BASES FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



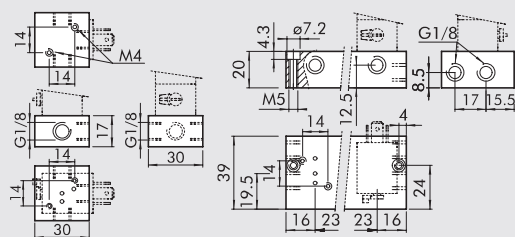
Code	Description	Abbrev.	Weight [g]
W0400111200	Manifold base	EB 8000 I	24
W0400111201	LH end plate	EB 8000 T1	17
W0400111202	RH end plate	EB 8000 T2	15

BLANKING PLATE FOR PIV.I PIV.T VALVES, UNUSED POSITION



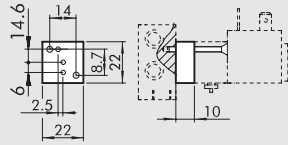
Code	Description	Abbrev.	Weight [g]
W0400112000	Unused position	B 6000	5

MULTIPLE BASES FOR PIV.T SOLENOID VALVES, OPERATOR Ø 9



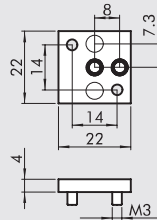
Code	Description	Abbrev.	Weight [g]
W0400101101	Base 1 position	19001	36
W0400101102	Base 2 positions	19002	104
W0400101103	Base 3 positions	19003	148
W0400101104	Base 4 positions	19004	192
W0400101105	Base 5 positions	19005	236
W0400101106	Base 6 positions	19006	280
W0400101107	Base 7 positions	19007	324
W0400101108	Base 8 positions	19008	368
W0400101109	Base 9 positions	19009	452
W0400101110	Base 10 positions	19010	456

NC/NO ADAPTER FOR PIV.T VALVES



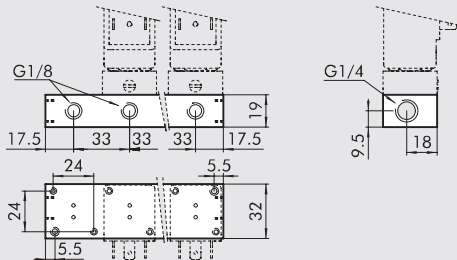
Code	Description	Abbrev.	Weight [g]
W0400101190	NC/NO adapter	I-9000	15

BASE BLANKING PLATE FOR PIV.T VALVES, UNUSED POSITIONS



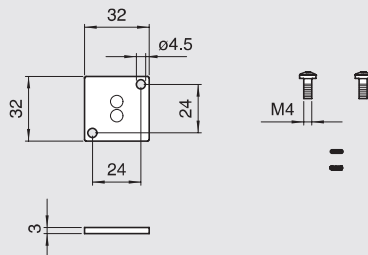
Code	Description	Abbrev.	Weight [g]
W0400112000	Blanking plate	B6000	5

MULTIPLE BASES FOR PIV.B VALVES



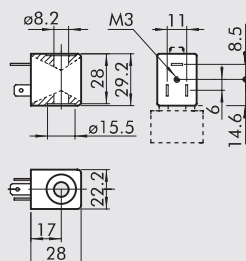
Code	Description	Abbrev.	Weight [g]
W0400101201	Base 1 position	B4001	42
W0400101202	Base 2 positions	B4002	94
W0400101203	Base 3 positions	B4003	142
W0400101204	Base 4 positions	B4004	188
W0400101205	Base 5 positions	B4005	234
W0400101206	Base 6 positions	B4006	280
W0400101207	Base 7 positions	B4007	326
W0400101208	Base 8 positions	B4008	372
W0400101209	Base 9 positions	B4009	418

BASE BLANKING PLATE FOR PIV.B VALVES, UNUSED POSITIONS



Code	Description	Weight [g]
W0400112001	Blanking plate	14

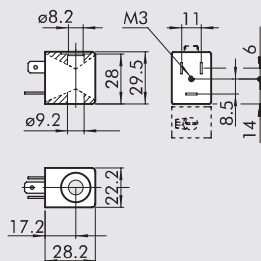
COILS, SIDE 22 mm FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents.
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption Inrush	Absorption Holding
W0215000051	Coil 22 Ø 8 5W-12VDC	12Vcc	5W	5W
W0215000001	Coil 22 Ø 8 5W-24VDC	24Vcc	5W	5W
W0215000011	Coil 22 Ø 8 5VA-24VAC	24V 50/60Hz	8VA	5VA
W0215000021	Coil 22 Ø 8 5VA-110VAC	110V 50/60Hz	8VA	5VA
W0215000031	Coil 22 Ø 8 5VA-220VAC	220V 50/60Hz	8VA	5VA

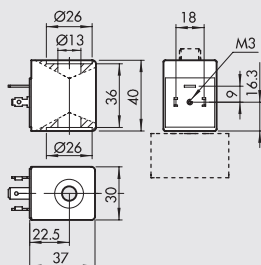
COILS, SIDE 22 mm FOR PIV.T SOLENOID VALVES, OPERATOR Ø 9



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0216000001	Coil 22 Ø9 3.8W-24VDC	24Vcc	3.8W	3.8W
W0216000011	Coil 22 Ø9 6.5VA-24VAC	24V 50/60Hz	9VA	6.5VA
W0216000021	Coil 22 Ø9 6.5VA-110VAC	110V 50/60Hz	9VA	6.5VA
W0216000031	Coil 22 Ø9 6.5VA-220VAC	220V 50/60Hz	9VA	6.5VA

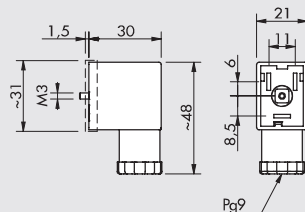
COILS, SIDE 30 mm FOR PIV.B SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 - A

Code	Abbrev.	Nominal voltage	Power absorption (average power input)	
W0216001001	Coil 30 Ø13 10W-24VDC	24Vcc	10W	
W0216001011	Coil 30 Ø13 13VA-24VAC	24V 50/60Hz	13VA	
W0216001021	Coil 30 Ø13 13VA-110VAC	110V 50/60Hz	13VA	
W0216001031	Coil 30 Ø13 13VA-220VAC	220V 50/60Hz	13VA	

CONNECTORS, SIDE 22 mm DIN 43650 B-IND FOR PIV.I-PIV.T

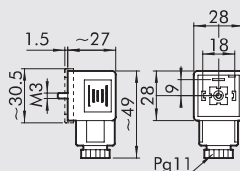


Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

Code	Type	Colour	Ø Cable
W0970510051	LED 24VDC Energy Saving	Transparent	PG9

For technical data see page B1.61

CONNECTORS, SIDE 30 mm DIN 43650-A FOR PIV.B



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG11
W0970520034	LED 24V	Transparent	PG11
W0970520035	LED 110V	Transparent	PG11
W0970520036	LED 220V	Transparent	PG11
W0970520037	LED + VDR 24V	Transparent	PG11
W0970520038	LED + VDR 110V	Transparent	PG11
W0970520039	LED + VDR 220V	Transparent	PG11
W0970520070	Atex II 2 GD	Black	PG11

SOLENOID VALVES PIV IN LINE



- PIV.I – PIV.B in-line solenoid valves
- Threaded ports: M5, G1/8", G1/4"
- 2/2 – 3/2 solenoid valves - normally closed/normally open
- Installation in any position
- Particularly suitable for high operating frequencies and low response times.



VALVES

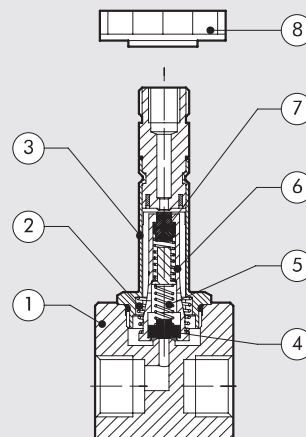
SOLENOID VALVES PIV IN LINE

TECHNICAL DATA		PIV.I IN LINE	PIV.B IN LINE
Absorption		5W to 5VA	10W - 13VA
Voltage available		12; 24VDC - 24; 110; 220VAC 50/60Hz	24VDC - 24; 110; 220VAC 50/60 Hz
Voltage tolerance	%	-10 to 15	-10 to 15
Max operating frequency	Hz	30	15
Solenoid rating	%	100	100
Response time	ms	8 to 15	10 to 15
Type of protection		IP 65	IP 65
Type of coil		Coil side 22 Ø 8 DIN 43650	Coil side 30 DIN 43650
Insulation class		155	155
Ambient temperature	°C	-15 to 50	-15 to 50
Fluid temperature	°C	-15 to 50	-15 to 50
Fluid		Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air
Working life		25 million cycles	-
Weight		35 to 40 (depending on version)	130
Maximum coil/nut torque	Nm	1	1

Note on use:
The 2/2 NC and 2/2 NO valves work only with inlet pressure $\geq$ outlet pressure.

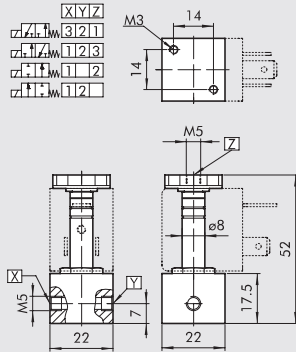
COMPONENTS

- ① Body: aluminium
- ② Springs: steel
- ③ Sleeve
- ④ Gasket: NBR
- ⑤ Springs: steel
- ⑥ Mobile core
- ⑦ Gasket: FKM/FPM
- ⑧ Coil locking ring

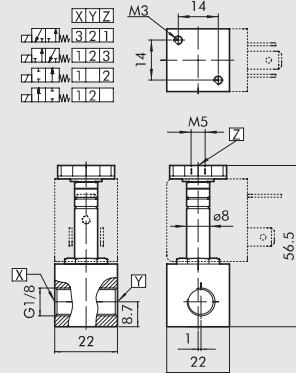


PIV.I VALVES, OPERATOR Ø 8 mm, IN LINE – M5 – 1/8"

M5

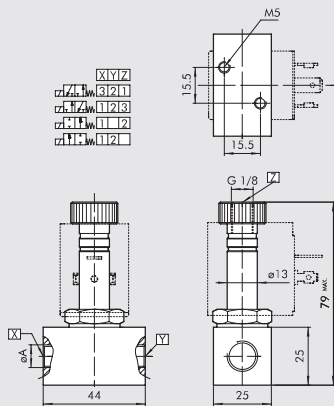


1/8"



Symbol	Code	Abbrev.	Input thread	Air hole Ø [mm]	kv Factor	Pressure range [bar]	
						DC 5W	AC 5VA
	W4017000100	PIV42I5S NC	M5	1.2	0.65	-0.99 to 30	-0.99 to 30
	W4017001300	PIV92I8S NC	G1/8"	2.4	2	-0.99 to 6	-0.99 to 7
	W4017001100	PIV42I8S NC	G1/8"	1.2	0.65	-0.99 to 30	-0.99 to 30
	W4017001200	PIV72I8S NC	G1/8"	1.6	1.2	-0.99 to 15	-0.99 to 14
	W4017000101	PIV72I5S NO	M5	1.4	0.8	-0.99 to 10	-0.99 to 10
	W4017001201	PIV72I8S NO	G1/8"	1.4	0.8	-0.99 to 10	-0.99 to 10
	W4017003100	PIV43I5S NC	M5	1.2	0.65	-0.99 to 10	-0.99 to 10
	W4017004100	PIV43I8S NC	G1/8"	1.2	0.65	-0.99 to 10	-0.99 to 10
	W4017004200	PIV73I8S NC	G1/8"	1.6	1	-0.99 to 6.5	-0.99 to 6.5
	W4017004201	PIV73I8S NO	G1/8"	1.4	0.7	0 to 6	0 to 7

PIV.B VALVES, OPERATOR Ø 13, IN LINE



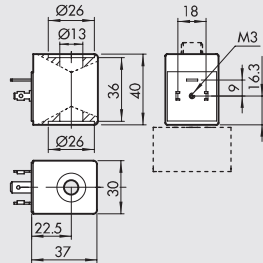
Symbol	Code	Abbrev.	Input thread	Ø Air hole [mm]	kv Factor	Pressure range [bar]	
						DC 10W	AC 13VA
	W4026005001	PIV73B8S NO	G1/8"	1.6	1.2	-0.99 to 6	-0.99 to 12
	W4026005101	PIV73B4S NO	G1/4"	1.6	1.2	-0.99 to 6	-0.99 to 12
	W4026005111	PIV93B4S NO	G1/4"	2.4	2	-0.99 to 3	-0.99 to 4
	W4026005010	PIV93B8S NC	G1/8"	2.4	2.8	0 to 8	0 to 10
	W4026005020	PIVW3B8S NC	G1/8"	3	4	0 to 5.5	0 to 6
	W4026005000	PIV73B8S NC	G1/8"	1.6	1.4	0 to 14	0 to 17
	W4026005100	PIV73B4S NC	G1/4"	1.6	1.4	0 to 14	0 to 17
	W4026005110	PIV93B4S NC	G1/4"	2.4	2.8	0 to 8	0 to 8
	W4026005120	PIVW3B4S NC	G1/4"	3	4	0 to 5.5	0 to 6
	W4026004000	PIV92B4S NC	G1/4"	2.4	3	0 to 15	0 to 30
	W4026004010	PIVX2B4S NC	G1/4"	4	7	0 to 6	0 to 12
	W4026004020	PIVZ2B4S NC	G1/4"	6	9	0 to 1.5	0 to 5
	W4026004001	PIV92B4S NO	G1/4"	2.4	2.6	0 to 13	0 to 15

SYNOPTIC, SIZES AND VERSIONS

PIV FAMILY	7 AIR HOLE	2 NUMBER OF WAYS	B CONNECTION	4 THREAD	S VERSION	N C FURTHER DETAILS
	4 1.2 mm	2 2 ways	I 22 x 22 operator Ø 8	5 M5	S standard	NC normally closed
	7 1.6 mm	3 3 ways	B 30 x 30 operator Ø 13	4 G1/4"		NO normally open
	9 2.4 mm			8 G1/8"		
	W 3 mm					
	X 4 mm					
	Z 6 mm					

ACCESSORIES

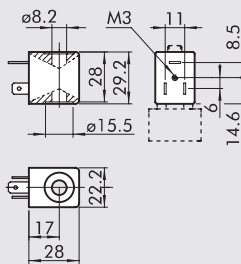
COIL, SIDE 30 mm - FOR PIV.B SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 - A

Code	Abbrev.	Nominal voltage	Absorption (average)
W0216001001	Coil 30 Ø13 10W-24VDC	24Vcc	10W
W0216001011	Coil 30 Ø13 13VA-24VAC	24V 50/60Hz	13VA
W0216001021	Coil 30 Ø13 13VA-110VAC	110V 50/60Hz	13VA
W0216001031	Coil 30 Ø13 13VA-220VAC	220V 50/60Hz	13VA

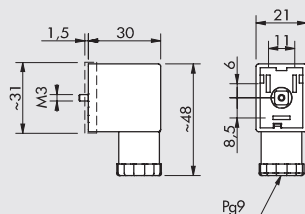
COIL, SIDE 22 mm - FOR PIV.I SOLENOID VALVES



- Voltage tolerance: -10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum temperature of coil at 100% use: 70°C at 20° ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000051	Coil 22 Ø8 5W-12VDC	12Vcc	5W	5W
W0215000001	Coil 22 Ø8 5W-24VDC	24Vcc	5W	5W
W0215000011	Coil 22 Ø8 5VA-24VAC	24V 50/60Hz	8VA	5VA
W0215000021	Coil 22 Ø8 5VA-110VAC	110V 50/60Hz	8VA	5VA
W0215000031	Coil 22 Ø8 5VA-220VAC	220V 50/60Hz	8VA	5VA

CONNECTOR, SIDE 22 mm DIN 43650 B-IND

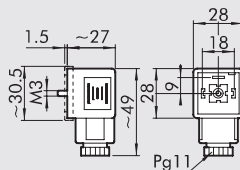


Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

Code	Type	Colour	Ø Cable
W0970510051	LED 24VDC Energy Saving	Transparent	PG9

For technical data see page B1.61

CONNECTOR, SIDE 30 mm DIN 43650-A



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG11
W0970520034	LED 24V	Transparent	PG11
W0970520035	LED 110V	Transparent	PG11
W0970520036	LED 220V	Transparent	PG11
W0970520037	LED + VDR 24V	Transparent	PG11
W0970520038	LED + VDR 110V	Transparent	PG11
W0970520039	LED + VDR 220V	Transparent	PG11
W0970520070	Atex II 2 GD	Black	PG11

- 3/2 version normally closed
- Bistable and monostable manual actuation
- Assembly on manifold base



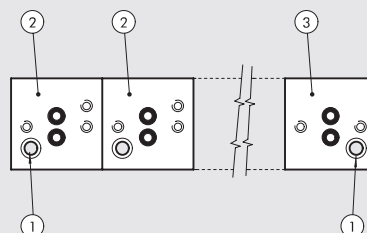
Operating pressure	bar	Max 10
Operating temperature range	°C	-10 to 60
Solenoid rating		100% ED
Fluid		Filtered lubricated or unlubricated air
System		With poppet
Nominal flow rate	l/min	40
TRA/TRR at 6 bar	ms	22/32
Maximum coil nut torque	Nm	1
Tightening torque for M4 fixing screws	Nm	1

A technical cross-section drawing of a mechanical assembly. The drawing shows a complex housing on the left with internal features. A long, cylindrical shaft (3) extends from the housing to the right, where it is secured by a nut and a cross-hatched end plate. Three numbered callouts are present: (1) points to a small circular feature on the top surface of the housing; (2) points to a vertical slot or channel on the side of the housing; (3) points to the central shaft.

- ① VALVE BODY: HOSTAFORM®
② GASKETS: NBR
③ OPERATOR: Brass pipe – Stainless steel core

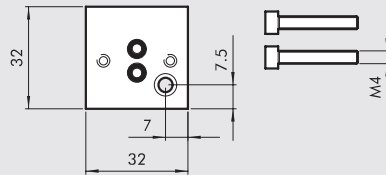
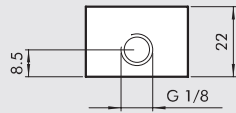
Code	Description
9453920	Cnomo 3/2 with monostable manual actuation
9453922	Cnomo 3/2 with bistable manual actuation

- ① Two fixing screws (included in input kit)
- ② CNOMO manifold base kit
- ③ CNOMO manifold base input kit



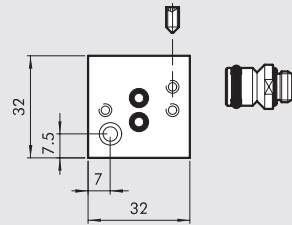
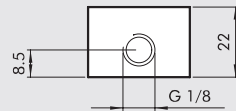
ACCESSORIES

CNOMO MANIFOLD BASE INPUT KIT



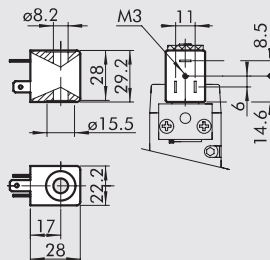
Code	Description
0227000200	Cnomo manifold base input kit

CNOMO MANIFOLD BASE KIT



Code	Description
0227000150	Cnomo manifold base kit

COILS SIDE 22 mm

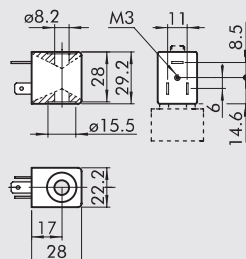


- Voltage tolerance: -10% to + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

"UL" AND "CSA" COILS 22 mm

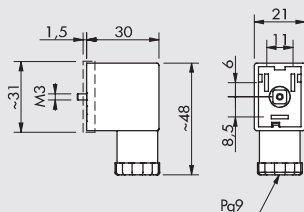


- Voltage tolerance: -10% to + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR	12Vcc	2W	2W
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR	24Vcc	2W	2W
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR	24V 50/60Hz	5.3VA	3.5VA
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR	110V 50/60Hz	5.3VA	3.5VA
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR	220V 50/60Hz	5.3VA	3.5VA

CONNECTOR FOR COILS SIDE 22 mm DIN 43650 B-IND

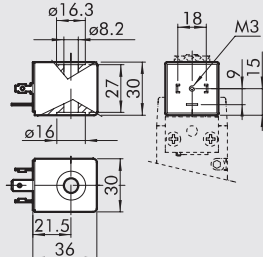


Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

Code	Type	Colour	Ø Cable
W0970510051	LED 24VDC Energy Saving	Transparent	PG9

For technical data see page B1.61

COILS, SIDE 30 mm

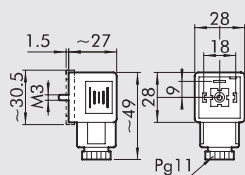


- Electric contact DIN 43650 Shape A - ISO 4400
- Voltage tolerance: -10% to +10%
- Insulation class: F155
- Degree of protection: IP65 EN 60529 with connector
- Solenoid rating: 100% ED

- Maximum coil temperature at 100% ED use 70°C at 20° ambient temperature
- Electrical connection DIN 43650 - A

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0210010100	Coil 30 Ø8 2W-24VDC	24Vcc	5W	2W
W0210011100	Coil 30 Ø8 3.5VA-24VAC	24V 50/60Hz	10VA	3.5VA
W0210012100	Coil 30 Ø8 3.5VA-110VAC	110V 50/60Hz	10VA	3.5VA
W0210013100	Coil 30 Ø8 3.5VA-220VAC	220V 50/60Hz	10VA	3.5VA

CONNECTOR ON SIDE 30 mm DIN 43650-A



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG11
W0970520034	LED 24V	Transparent	PG11
W0970520035	LED 110V	Transparent	PG11
W0970520036	LED 220V	Transparent	PG11
W0970520037	LED + VDR 24V	Transparent	PG11
W0970520038	LED + VDR 110V	Transparent	PG11
W0970520039	LED + VDR 220V	Transparent	PG11
W0970520070	Atex II 2 GD	Black	PG11

NOTES

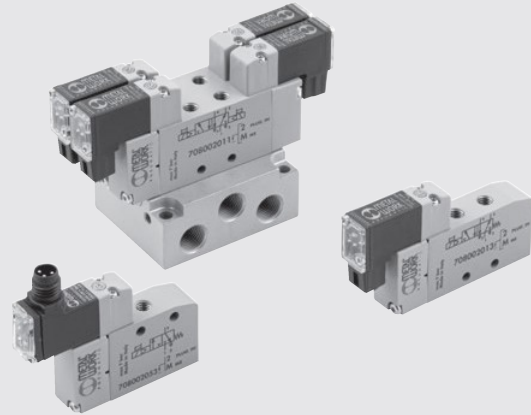
VALVES MINIMACH



Space-saving valve, ideal for in industrial automation applications. Made according to the well-proven design of the Mach series, the MINIMACH has a painted aluminium body to ensure extra sturdiness and reliable operation in even the harshest of environments. The internal seals are made of FKM/FPM and are compatible with all oils used in compressors. The pneumatic couplings are M5 threaded, allowing the user to choose the diameter, type and angle of the fitting. The valve can be mounted in line or on a panel or multiple-port base. The following versions are available:

- 3/2 normally open or normally closed
- 5/2 monostable or bistable
- 5/3 closed centres, open centres, pressure centres.

Electropneumatic actuation with a 24V DC pilot.



VALVES

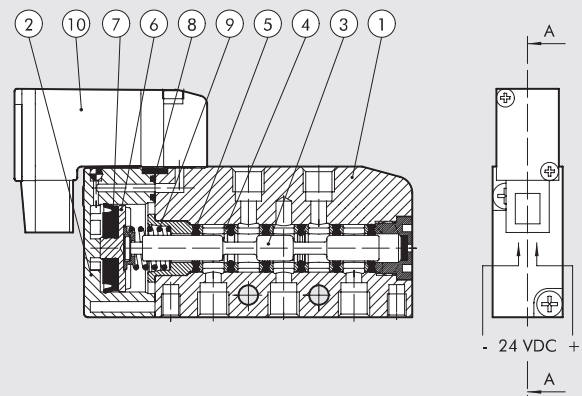
VALVES MINIMACH

TECHNICAL DATA

Valve port thread		M5
Type of actuation		electric-pneumatic
Maximum external diameter of fittings	mm	Ø 11
Operating temperature range	°C	-10 to +60
	°F	14 to +140
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Pressure range	MPa	0.3 to 0.7
	bar	3 to 7
	psi	44 to 102
Flow rate at 6 bar ΔP 1 3/2	Nl/min	140
Flow rate at 6 bar ΔP 1 5/2	Nl/min	170
Flow rate at 6 bar ΔP 1 5/3	Nl/min	80
Voltage range		24 VDC ± 10%
Power	W	0.9
Solenoid rating		100% ED
Manual operator		Monostable
TRA/TRR 3/2 at 6 bar	ms	8/23
TRA/TRR 5/2 monostable at 6 bar	ms	8/30
TRA/TRR 5/2 bistable at 6 bar	ms	15/15
TRA/TRR 5/3 at 6 bar	ms	9/30
Insulation class		F155
Degree of protection		IP51 for PLUG-IN version IP65 for M8 version
Tightening torque M4 valve / base screws	Nm	0.8
Installation		In any position. As for the bistable ones, if subject to vibration, the vertical assembly is not advisable
Compatibility with oils		See chapter Z1

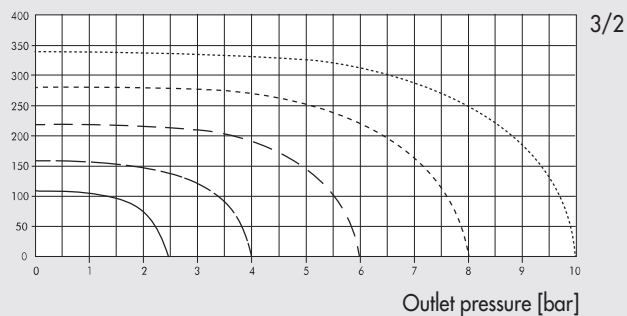
COMPONENTS

- 1 VALVE BODY: chemically nickel-plated aluminium
- 2 CONTROL/END CAP: Hostaform®
- 3 SPOOL: chemically nickel-plated aluminium
- 4 DISTANCE PLATES: tecnopolymer
- 5 GASKETS: FKM-FPM
- 6 PISTONS: Hostaform®
- 7 PISTON GASKET: Polyurethane
- 8 FILTER: sintered bronze
- 9 SPRINGS: special steel
- 10 PILOT: with integrated coil

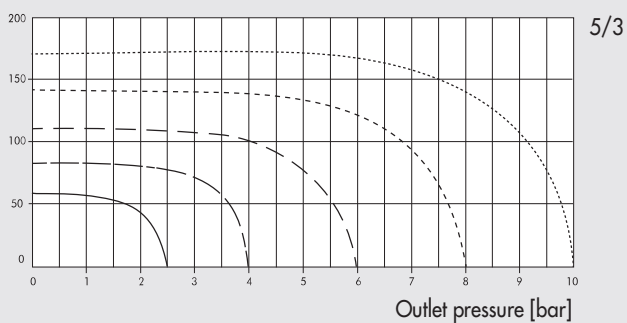


FLOW CHART

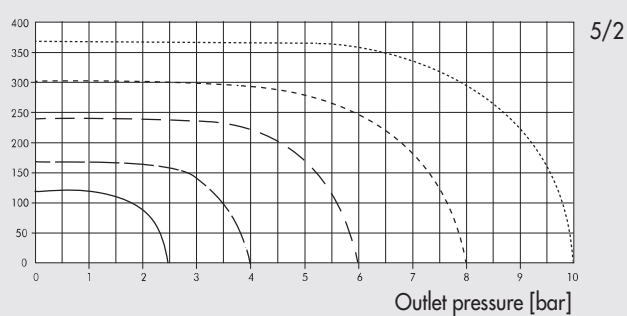
Flow rates [Nl/min]



Flow rates [Nl/min]



Flow rates [Nl/min]



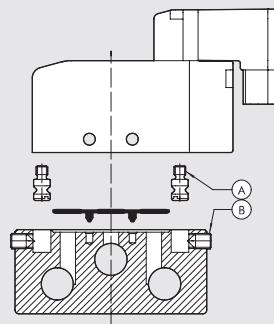
HOW TO FIX THE VALVE TO THE BASE

Proceed as follows:

1. screw the pins **A** onto the valve
2. secure them with the ready-mounted grub screws **B** on the base (0.5 Nm max)

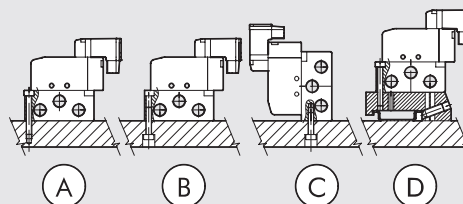
IMPORTANT

To secure properly, press the valve down onto the base while tightening the two grub screws. Do not tighten one grub screw completely before starting to tighten the other.



HOW TO FIX THE BASE

- A** From the top using M4 screws
- B** From below using M5 screws
- C** From the side using M4 screws
- D** From the top on the DIN bar via the M4 screws and bracket code 0225004600 (using 1 screw per bracket)



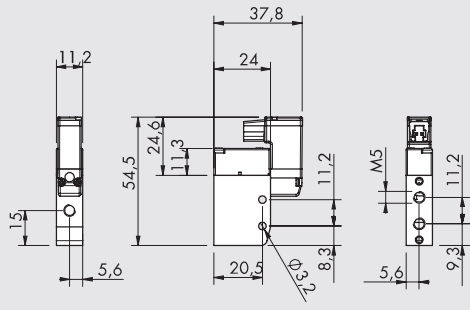
SYNOPTIC, SIZES AND VERSIONS

M S V	0	5	S O	B	O O	2 4 V D C
FAMILY	DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING (12)	FURTHER DETAILS	
MSV minivalves solenoid	0 M5	3 3/2 5 5/2 6 5/3	SO solenoid	B bistable S mechanical springs	OO no indication NC normally closed NO normally open CC closed centres OC open centres PC pressure centres	24VDC PLUG-IN 24VDC connector M8 M8 24VDC connector

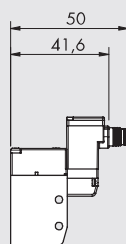
MINIMACH VALVES SOLENOID-PNEUMATIC

MONOSTABLE 3/2

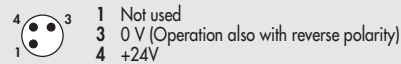
PLUG-IN VERSION



M8 VERSION



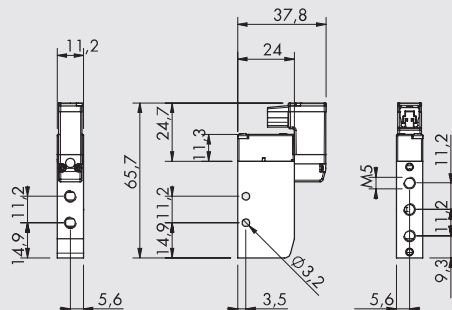
M8 CONNECTION



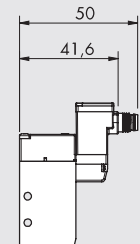
Symbol	Code	Abbrev.	Weight [g]
	7080020532	MSV 03 SOS NC 24VDC PLUG-IN	36.2
	708002053M	MSV 03 SOS NC 24VDC M8	36.2
	7080020632	MSV 03 SOS NO 24VDC PLUG-IN	36.2
	708002063M	MSV 03 SOS NO 24VDC M8	36.2

MONOSTABLE 5/2

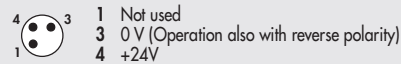
PLUG-IN VERSION



M8 VERSION



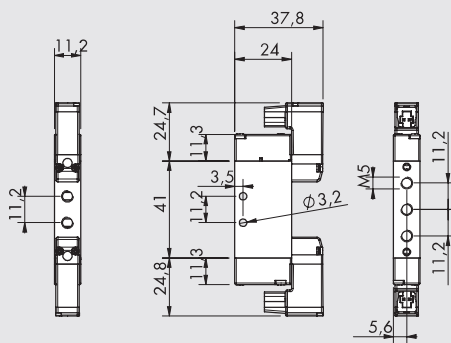
M8 CONNECTION



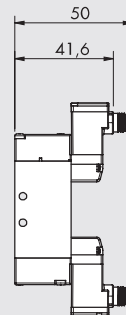
Symbol	Code	Abbrev.	Weight [g]
	7080020132	MSV 05 SOS OO 24VDC PLUG-IN	43.3
	708002013M	MSV 05 SOS OO 24VDC M8	43.3

BISTABLE 5/2

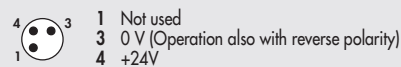
PLUG-IN VERSION



M8 VERSION



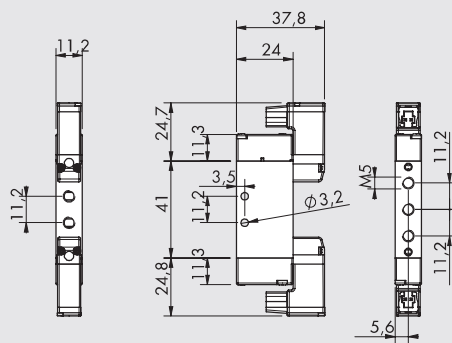
M8 CONNECTION



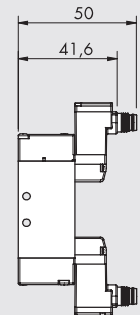
Symbol	Code	Abbrev.	Weight [g]
	7080020112	MSV 05 SOB OO 24VDC PLUG-IN	57
	708002011M	MSV 05 SOB OO 24VDC M8	57

MONOSTABLE 5/3

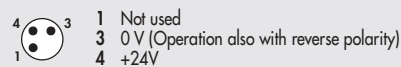
PLUG-IN VERSION



M8 VERSION



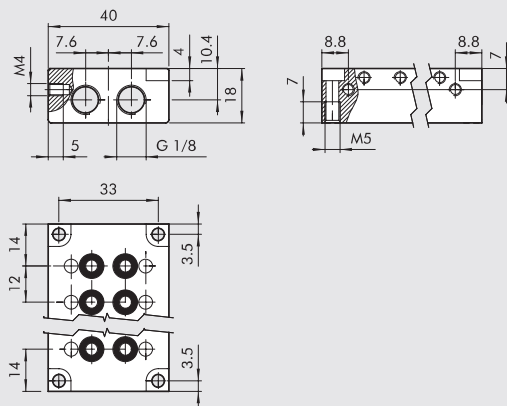
M8 CONNECTION



Symbol	Code	Abbrev.	Weight [g]
	7080020212	MSV 06 SOS CC 24VDC PLUG-IN	57
	708002021M	MSV 06 SOS CC 24VDC M8	57
	7080020312	MSV 06 SOS OC 24VDC PLUG-IN	57
	708002031M	MSV 06 SOS OC 24VDC M8	57
	7080020412	MSV 06 SOS PC 24VDC PLUG-IN	57
	708002041M	MSV 06 SOS PC 24VDC M8	57

ACCESSORIES: MULTIPLE BASE

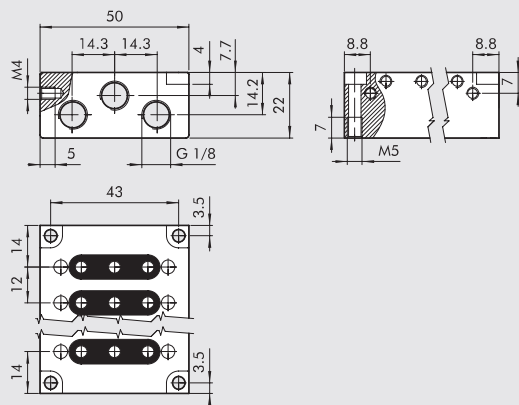
3/2 MULTIPLE BASE



Code	Description	Position	Weight [g]
0225010201	Base 2 position for 3/2 valves Minimach	2	60
0225010401	Base 4 position for 3/2 valves Minimach	4	99
0225010601	Base 6 position for 3/2 valves Minimach	6	135
0225010801	Base 8 position for 3/2 valves Minimach	8	178

N.B.: It is advisable to use straight connectors code 02400A____

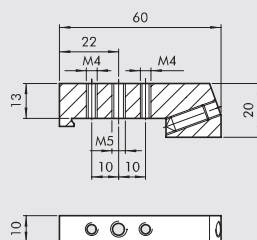
5/2 - 5/3 MULTIPLE BASE



Code	Description	Position	Weight [g]
0225020201	Base 2 position for 5/2-5/3 valves Minimach	2	95
0225020401	Base 4 position for 5/2-5/3 valves Minimach	4	154
0225020601	Base 6 position for 5/2-5/3 valves Minimach	6	211
0225020801	Base 8 position for 5/2-5/3 valves Minimach	8	270

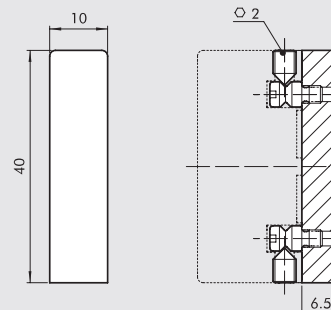
N.B.: It is advisable to use straight connectors code 02400A____

ADAPTER FOR BAR OMEGA (DIN EN 50022)



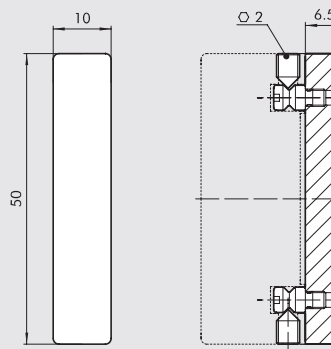
Code	Description	Weight [g]
0225004600	Omega-adapter Mach 16	46

BLANKING PLATE FOR 3/2 VALVES



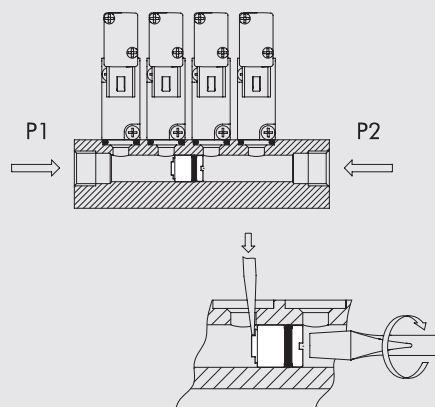
Code	Description	Weight [g]
0226009500	Blanking plate for 3/2 bases Minimach	9.5

BLANKING PLATE FOR 5/2 - 5/3 VALVES



Code	Description	Weight [g]
0226009501	Blanking plate for 5/2-5/3 bases Minimach	11

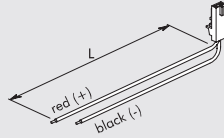
INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0226009010	Minimach base diaphragm	3.5

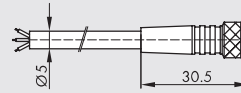
ACCESSORIES: CONNECTORS

PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector for Mach 11 L = 300 mm
W0970512007	Plug-in connector for Mach 11 L = 1 m
W0970512002	Plug-in connector for Mach 11 L = 2 m

M8 STRAIGHT CONNECTOR WITH CABLE

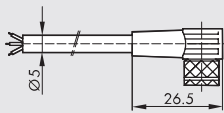


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

90° M8 CONNECTOR WITH CABLE



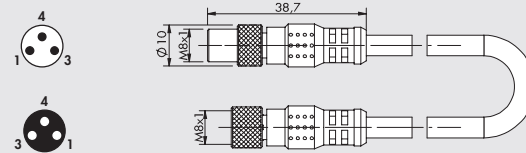
Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

N.B.: It is inadvisable for use on multi-position bases 0225010___ and 0225020___

M8 M - M8 F CONNECTOR

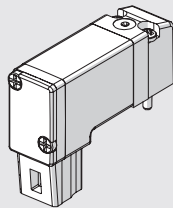


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

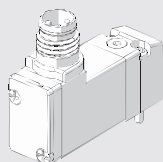
SPARE PARTS

PLUG-IN PILOT



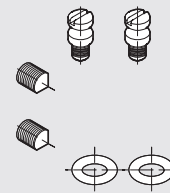
Code	Description
722113541100	PLT-10 722113541100

M8 PILOT



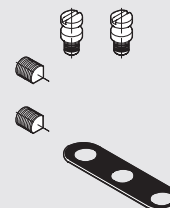
Code	Description
7222M3541100	PLT-10 3/2 NC 0.8W 24VDC LED M8 with manual

KIT OF SPARE GASKET BASES FOR 3/2 VALVES



Code	Description	Weight [g]
0226009000	Gasket kit 3/2 multiple bases Minimach	2.5

KIT OF SPARE GASKET BASES FOR 5/2 - 5/3 VALVES



Code	Description	Weight [g]
0226009001	Gasket kit 5/2-5/3 multiple bases Minimach	2.5

VALVES MACH 11

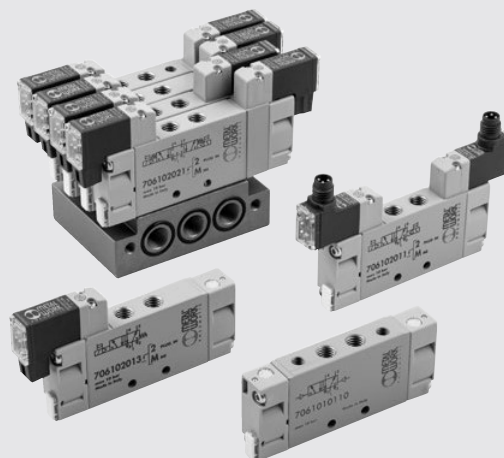
The Mach 11 in-line valves with M7 threaded connection come in the following versions:

- 5/2 monostable and bistable
- 5/3 with closed, open or pressure centres.

Control:

- pneumatic
- solenoid/pneumatic 24 V

With an exceptional compact design only 11 mm wide, and excellent high performance, these valves can be used in numerous applications in industrial automation.

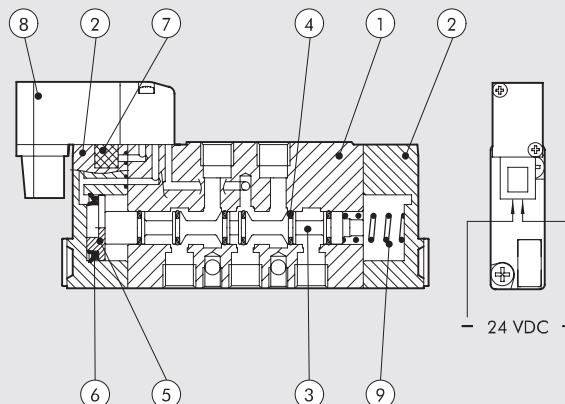


TECHNICAL DATA

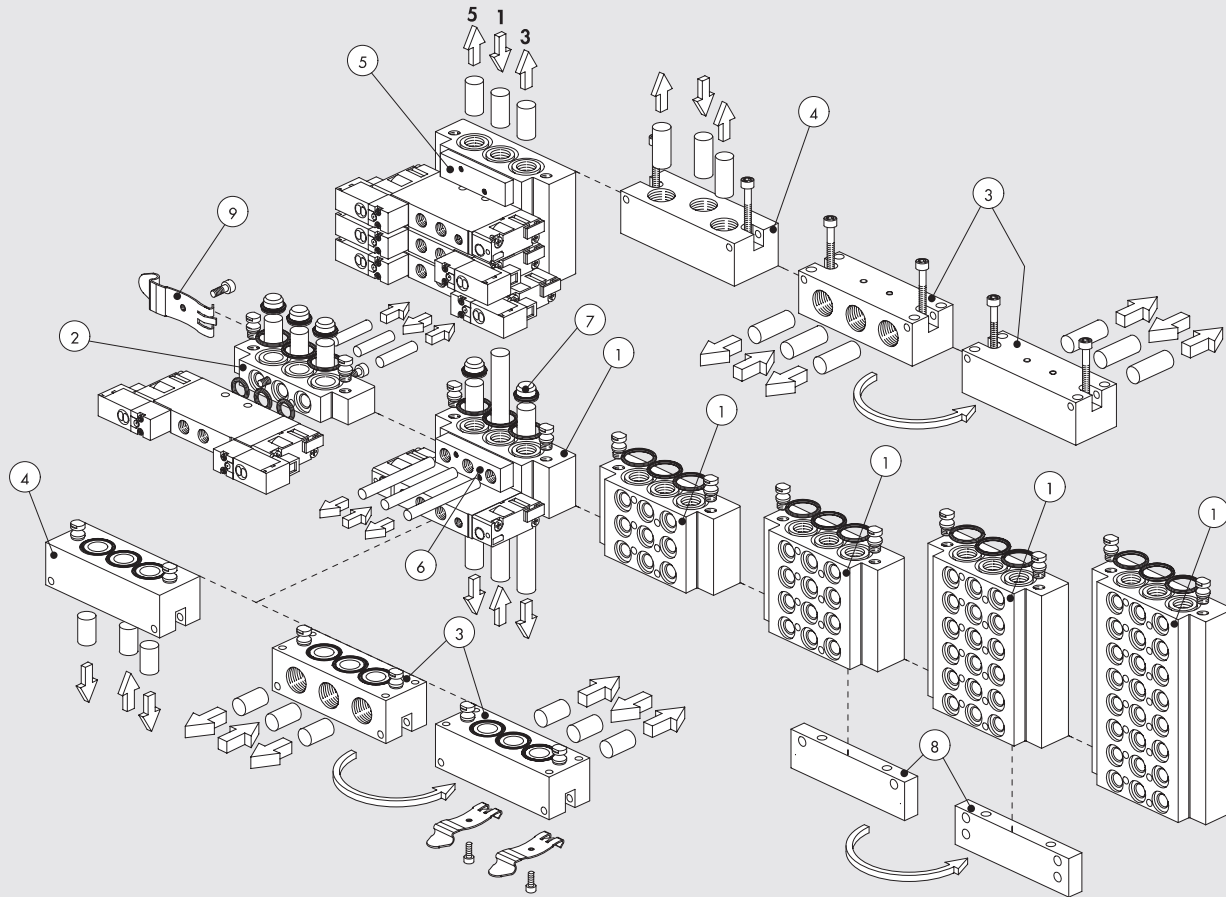
Valve port thread		M7		
Pilot thread		M5		
Maximum external diameter of fittings	mm	Pneumatic: M7 = Ø 11 - M5 = Ø 9 - Electric: M7 - M5 = Ø 11		
Operating temperature range	°C	-10 to +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve wall-mounting		M3		
Flow rate at 6 bar ΔP 1 bar	l/min	400		
Pressure range	bar			
		Electric monostable: 2 to 7 bistable: 2 to 7 5/3: 2 to 7	Electric pilot-assisted pilot pressure: 2 to 7 valve: vacuum to 10	Pneumatic monostable control pres. values: 2 to 10 bistable control pres. values: 1 to 10 control pressure 5/3: 2 to 10 valve: vacuum to 10
Voltage range		24 VDC ± 10%		
Power	W	0.9		
Insulation class		F155		
Degree of protection		IP51 for PLUG-IN version IP65 for M8 version		
Solenoid rating		100% ED		
TRA/TRR monostable at 6 bar	ms	10 / 45		
TRA/TRR bistable at 6 bar	ms	22 / 22		
TRA/TRR 5/3 monostable at 6 bar	ms	22 / 22		
Tightening torque M3 valve / base screws	Nm	0.8		
Compatibility with oils		See chapter Z1		

COMPONENTS

- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: Hostaform®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: Hostaform®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ FILTER: sintered bronze
- ⑧ PILOT: with integrated coil
- ⑨ SPRINGS: special steel
- ⑩ REMOVABLE IDENTIFICATION PLATE



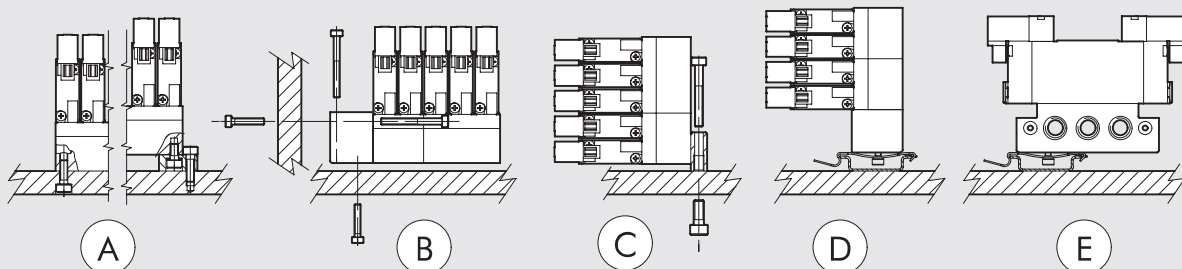
MODULARITY



VALVES

VALVES MACH 11

HOW TO FIX THE BASE

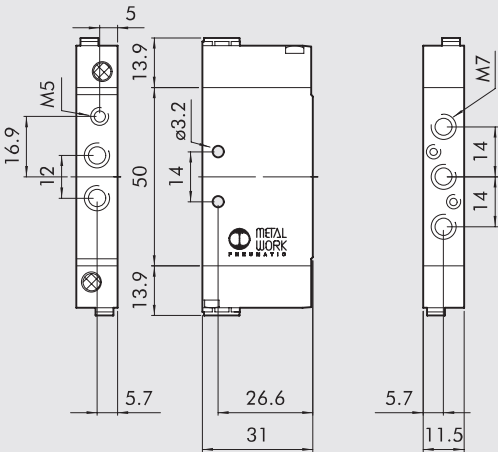


SYNOPTIC, SIZES AND VERSIONS

M S V FAMILY	1 DIMENSIONS	5 FUNCTION	S O OPERATORS 14	B RESETTING (12)	O O FURTHER DETAILS	2 4 V D C
MSV mini-solenoid valve	1 M7	5 5/2 6 5/3	SO solenoid SE solenoid assisted PN pneumatic	B bistable S mechanical springs	OO no indication CC closed centres OC open centres PC pressure centres	24VDC PLUG-IN 24VDC connector M8 M8 24VDC connector
MPV mini-pneumatic valve						

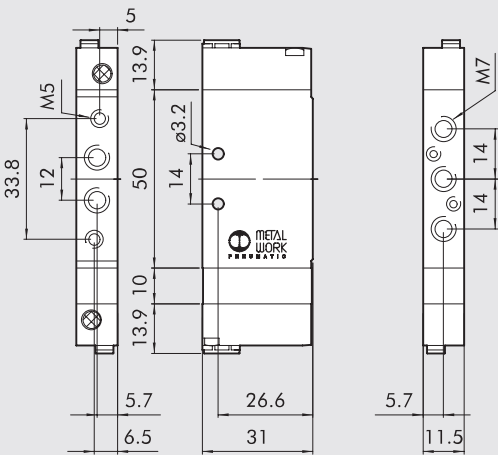
VALVES MACH 11, PNEUMATIC

MONOSTABLE 5/2



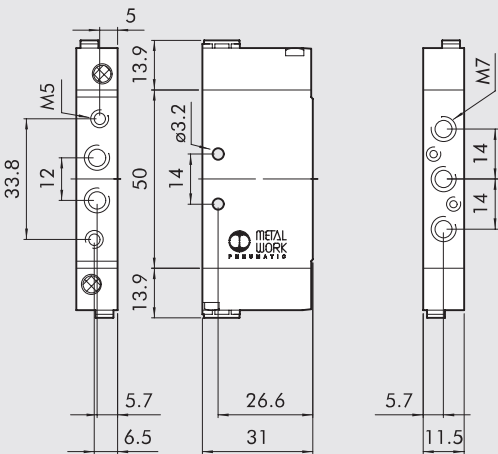
Symbol	Code	Abbrev.	Weight [g]
	7061010130	MPV 15 PNS OO	52

MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7061010210	MPV 16 PNS CC	62
	7061010310	MPV 16 PNS OC	62
	7061010410	MPV 16 PNS PC	62

BISTABLE 5/2

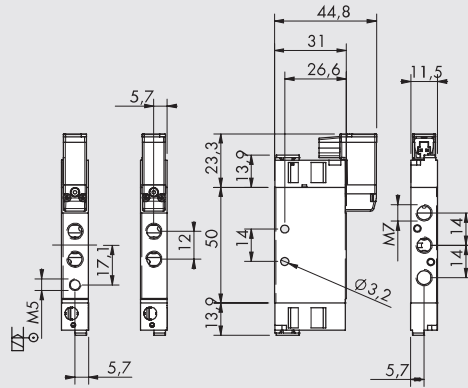


Symbol	Code	Abbrev.	Weight [g]
	7061010110	MPV 15 PNB OO	52

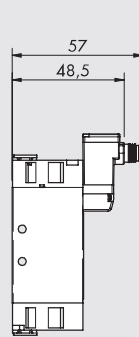
VALVES MACH 11, SOLENOID-PNEUMATIC

MONOSTABLE 5/2

PLUG-IN VERSION



M8 VERSION



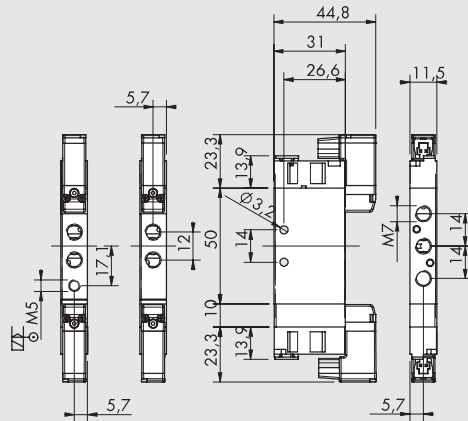
Symbol	Code	Abbrev.	Weight [g]
	7061020132	MSV 15 SOS OO 24VDC PLUG-IN	60
	706102013M	MSV 15 SOS OO 24VDC M8	60
	7061030132	MSV 15 SES OO 24VDC PLUG-IN	60
	706103013M	MSV 15 SES OO 24VDC M8	60

M8 CONNECTION

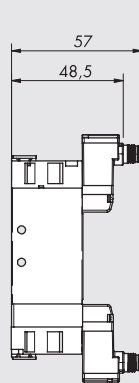
	1	Not used
	3	0 V (Operation also with reverse polarity)
	4	+24V

MONOSTABLE 5/3

PLUG-IN VERSION



M8 VERSION



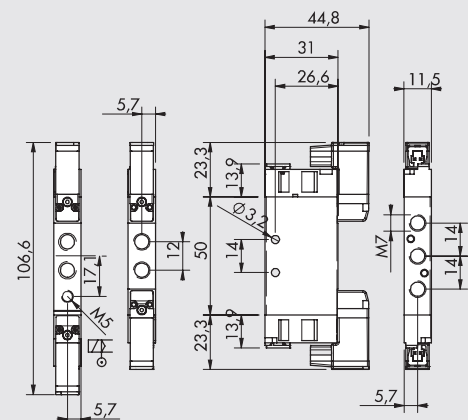
Symbol	Code	Abbrev.	Weight [g]
	7061020212	MSV 16 SOS CC 24VDC PLUG-IN	82
	706102021M	MSV 16 SOS CC 24VDC M8	82
	7061020312	MSV 16 SOS OC 24VDC PLUG-IN	82
	706102031M	MSV 16 SOS OC 24VDC M8	82
	7061020412	MSV 16 SOS PC 24VDC PLUG-IN	82
	706102041M	MSV 16 SOS PC 24VDC M8	82
	7061030212	MSV 16 SES CC 24VDC PLUG-IN	82
	706103021M	MSV 16 SES CC 24VDC M8	82
	7061030312	MSV 16 SES OC 24VDC PLUG-IN	82
	706103031M	MSV 16 SES OC 24VDC M8	82
	7061030412	MSV 16 SES PC 24VDC PLUG-IN	82
	706103041M	MSV 16 SES PC 24VDC M8	82

M8 CONNECTION

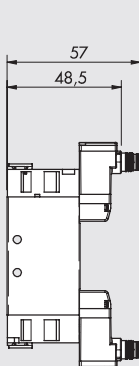
	1	Not used
	3	0 V (Operation also with reverse polarity)
	4	+24V

BISTABLE 5/2

PLUG-IN VERSION



M8 VERSION



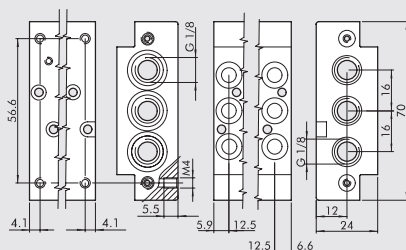
Symbol	Code	Abbrev.	Weight [g]
	7061020112	MSV 15 SOB OO 24VDC PLUG-IN	72
	706102011M	MSV 15 SOB OO 24VDC M8	72
	7061030112	MSV 15 SEB OO 24VDC PLUG-IN	88
	706103011M	MSV 15 SEB OO 24VDC M8	88

M8 CONNECTION

	1	Not used
	3	0 V (Operation also with reverse polarity)
	4	+24V

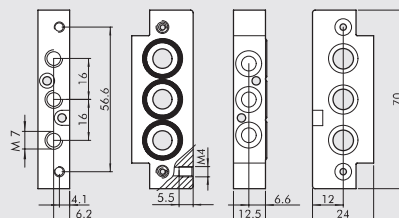
ACCESSORIES: MANIFOLD BASES

① MULTIPLE MANIFOLD BASE



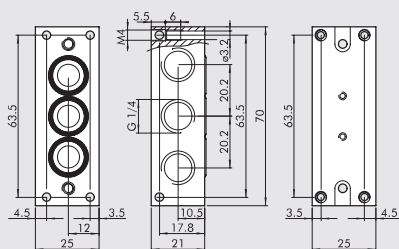
Code	Description	Weight [g]
0227400201	Base, 2 posn. for Mach 11	94
0227400301	Base, 3 posn. for Mach 11	140
0227400401	Base, 4 posn. for Mach 11	186
0227400601	Base, 6 posn. for Mach 11	282
0227400801	Base, 8 posn. for Mach 11	378

② SEPARATE FEED MANIFOLD BASE



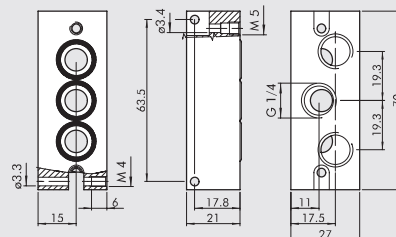
Code	Description	Weight [g]
0227400200	Separate feed manifold base for Mach 11	44

③ 90° END PLATE



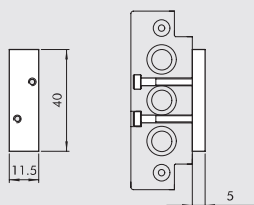
Code	Description	Weight [g]
0227400101	90° end plate 1/4 Mach 11	82

④ STRAIGHT END PLATE



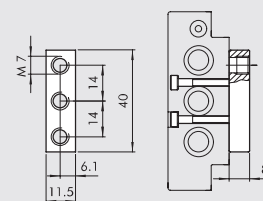
Code	Description	Weight [g]
0227400100	Straight end plate 1/4 for Mach 11	93

⑤ BLANKING PLATE



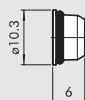
Code	Description	Weight [g]
0227400500	Blanking plate for Mach 11	13

⑥ FEED BLOCK



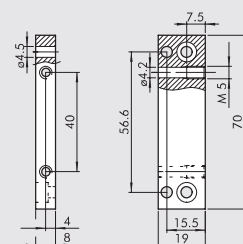
Code	Description	Weight [g]
0227400503	M7 feed block for Mach 11	11

⑦ DIAPHRAGM



Code	Description	Weight [g]
0227400000	Diaphragm for Mach 11 bases	3

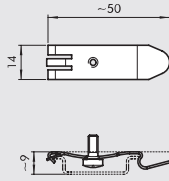
⑧ BASE FIXING PLATE



Code	Description	Weight [g]
0227400504	Fixing plate for Mach 11 bases	28

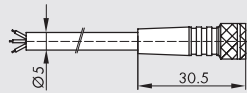
ACCESSORIES

⑨ CONNECTION BRACKET ON BAR OMEGA (DIN EN 50022)



Code	Description
0227300600	Connection bracket on DIN bar

M8 STRAIGHT CONNECTOR WITH CABLE

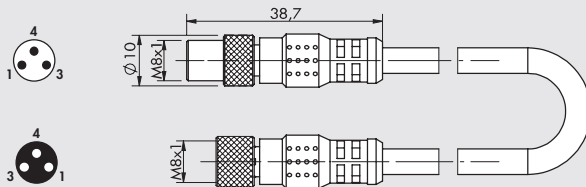


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 M - M8 F CONNECTOR

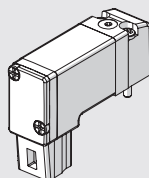


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

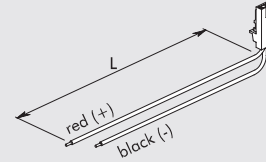
SPARE PARTS

PLUG-IN PILOT



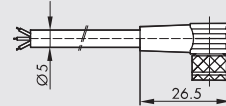
Code	Description
722113541100	PLT-10 722113541100

PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector for Mach 11 L = 300 mm
W0970512007	Plug-in connector for Mach 11 L = 1 m
W0970512002	Plug-in connector for Mach 11 L = 2 m

90° M8 CONNECTOR WITH CABLE



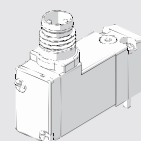
Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

NOTES

M8 PILOT

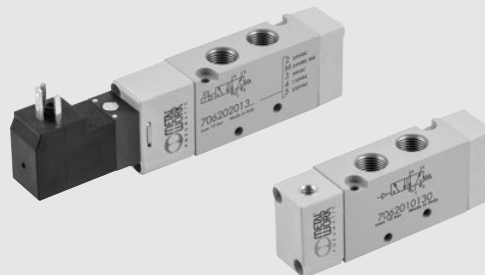


Code	Description
7222M3541100	PLT-10 3/2 NC 0.8W 24VDC LED M8 with manual

VALVES MACH 16

Available in size 1/8" only, versions 5/2 and 5/3 and with pneumatic and solenoid actuation. The Mach 16 valve is a typical small size valve, only 16 mm wide, with excellent performance 750 Nl/min flow rate at 6 bar ΔP 1 bar.

The valve can be used in line, on a panel or on a base (multiple or manifold). The Mach design is the result of the miniaturisation concept with the same durability, sturdiness and reliability.

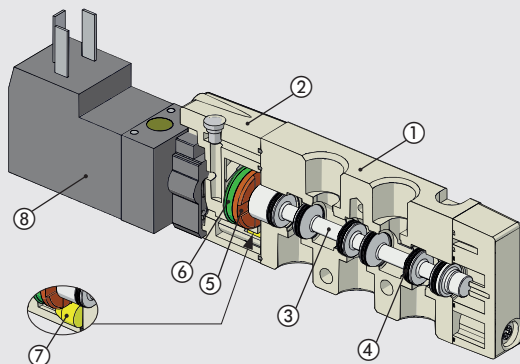


TECHNICAL DATA

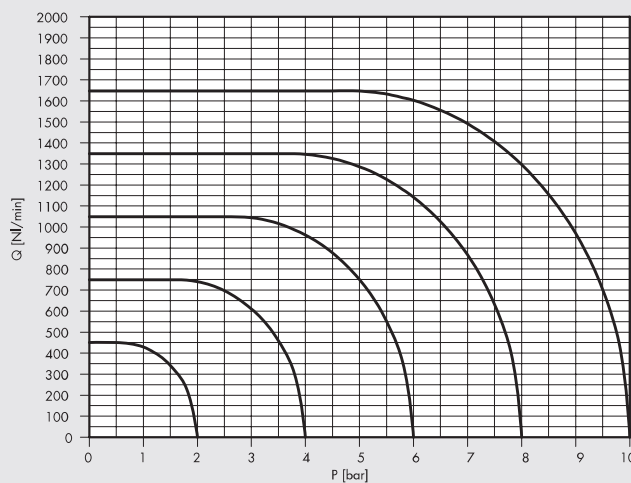
Valve port thread	1/8"
Type of control	M5 pneumatic actuation - Solenoid/pneumatic operation with integrated coil
Maximum outer diameter of gaskets for ports 1 - 3 - 5	mm 15
Maximum outer diameter for ports 2 - 4	mm 15
Operating temperature range	°C -10 to +60
Operating pressure	bar
• monostable - monostable 5/3	Vacuum to 10 pneumatic/1.9 to 10 solenoid/pneumatic
• bistable	Vacuum to 10 pneumatic/1 to 10 solenoid/pneumatic
• pilot-assisted	Vacuum to 10
Fluid	Filtered lubricated or unlubricated air lubrication, if used, must be continuous
Recommended lubricant	ISO e UNI FD22
Solenoid pilot with integrated coil	DIN 43650 C-shape / EN 175301-803-C; M8 connection (available for 24VDC voltage)
Hand operator	Monostable on solenoid pilot (with bistable manual valve on request)
Number of ways in base	1-3-5 and pilot exhaust
Screws for wall-mounting single valve	2 screws M3
Screws for base-mounting valve	2 screws M2.5x30
Installation	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)
Flow rate at 6 bar ΔP 0.5 bar	Nl/min 540
Flow rate at 6 bar ΔP 1 bar	Nl/min 750
Conductance C	Nl/min · bar 149.8
Critical ratio b	bar/bar 0.525
Tightening torque M2.5 valve / base screws	Nm 0.5
Compatibility with oils	See chapter Z1

COMPONENTS

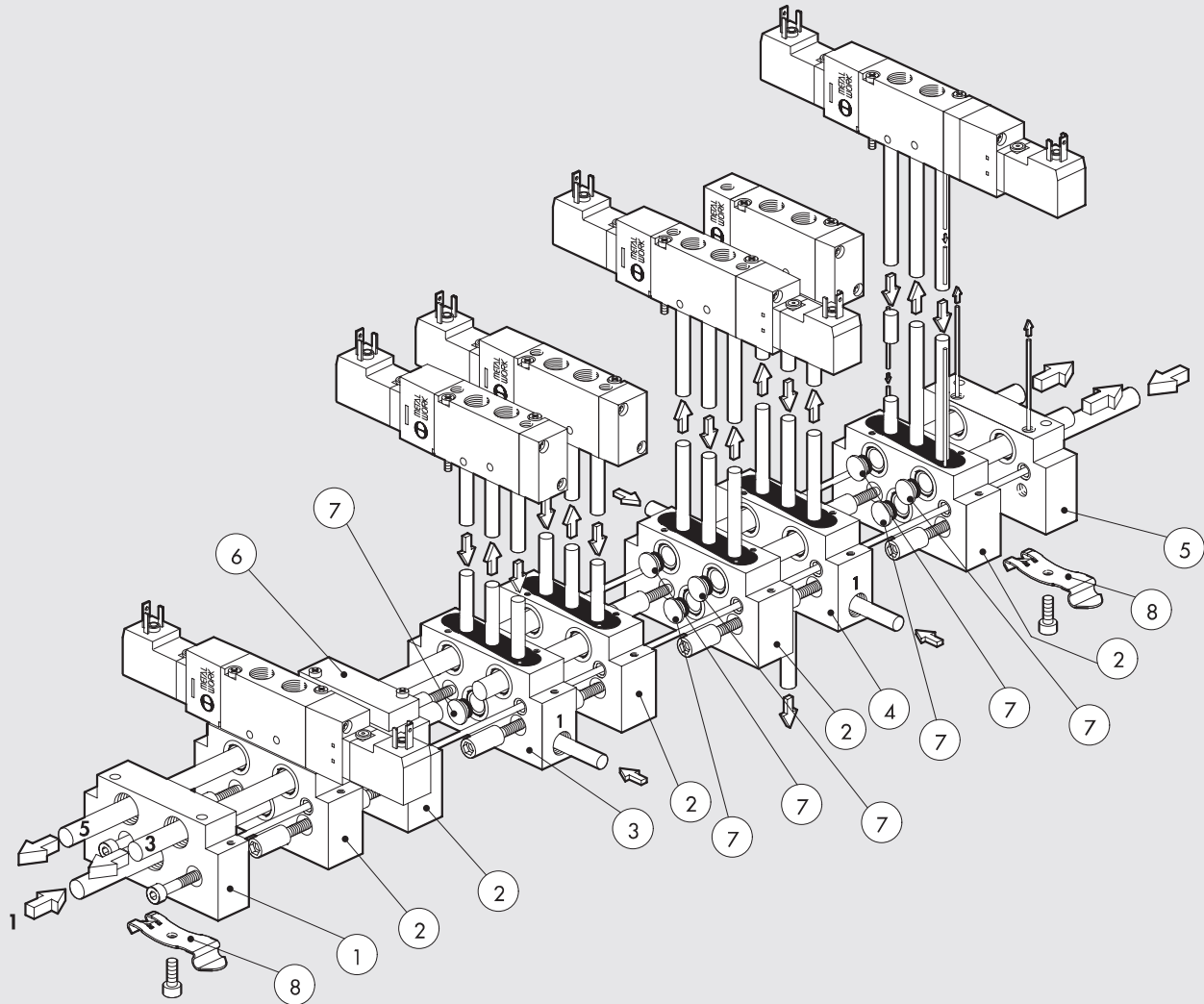
- ① VALVE BODY: Aluminium
- ② CONTROL/BASE: Hostaform®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: Hostaform®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ INTERFACE GASKETS: sintered HDPE
- ⑧ PILOT: with integrated coil



FLOW CHART



MANIFOLD BASES



VALVES

VALVES MACH 16

Reference	Code	Description
①	0227100201	M16/VDMA Input end-plate kit
②	0227100150	M16 manifold base kit
③	0227100301	M16 separate feed manifold base kit
④	0227100302	M16 exhaust feed manifold base kit
⑤	0227100200	M16/VDMA output end-plate kit
⑥	0225004500	M16 blanking plate
⑦	0227100000	Intermediate diaphragm
⑧	0227300600	Connection bracket on DIN-bar

SYNOPTIC, SIZES AND VERSIONS

M S V FAMILY	2 DIMENSIONS	5 FUNCTION	S O OPERATORS 14	B RESETTING 12	O O FURTHER DETAILS	2 4 V D C VOLTAGE
MSV solenoid/pneumatic MPV pneumatic	2 1/8"	5 5/2 6 5/3	SO solenoid SE solenoid assisted PN pneumatic	P pneumatic spring S mechanical springs B bistable	OO no indication CC closed centres OC open centres PC pressure centres	24VDC 24VDC M8 24VAC 110VAC 220VAC

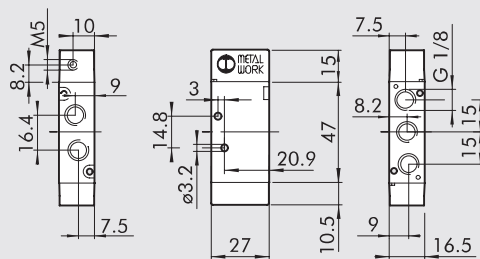
VALVES MACH 16 MPV, PNEUMATIC

TECHNICAL DATA

Operating pressure	bar	Vacuum to 10
Minimum operating pressure:	bar	
• monostable with pneumatic spring		see graph
• monostable with mechanical spring		1.6
• monostable 5/3		1.9
• bistable		1
Conductance C	Nl/min · bar	149.8
Critical ratio b	bar/bar	0.525
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	540
Flow rate at 6 bar ΔP 1 bar	Nl/min	750
Repositioning response times at 6 bar:		
• monostable	ms	4
• bistable	ms	4
Repositioning response times at 6 bar:		
• monostable	ms	8.4
• bistable	ms	4

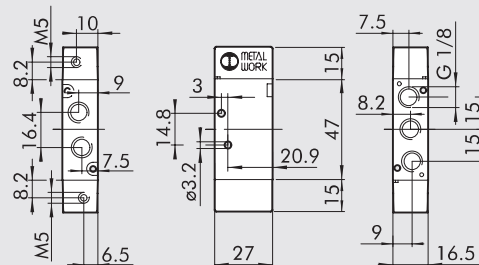


MONOSTABLE 5/2



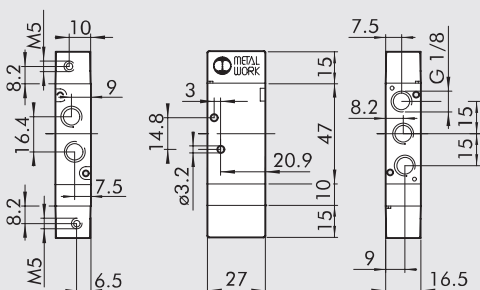
Symbol	Code	Abbrev.	Weight [g]
	7062010100	MPV 25 PNP OO	60
	7062010130	MPV 25 PNS OO	61

BISTABLE 5/2



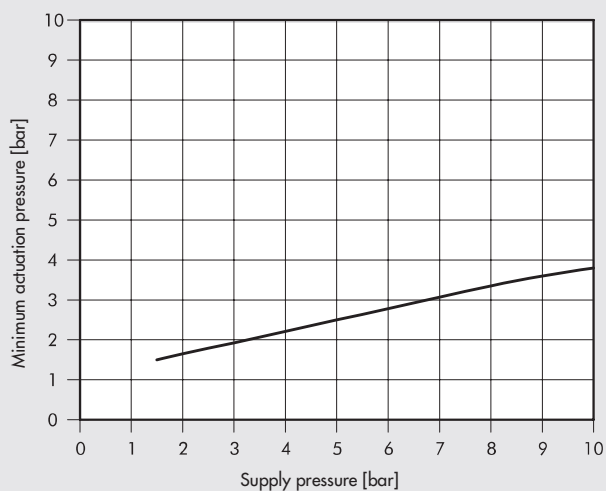
Symbol	Code	Abbrev.	Weight [g]
	7062010110	MPV 25 PNB OO	62

MONOSTABLE 5/3



Symbol	Code	Abbrev.	Weight [g]
	7062010210	MPV 26 PNS CC	73
	7062010310	MPV 26 PNS OC	73
	7062010410	MPV 26 PNS PC	73

OPERATING PRESSURE



VALVES

Operating pressure:	bar	
• monostable, monostable 5/3		1.9 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2
Operating temperature range	°C	-10 to +60
Conductance C	Nl/min · bar	149.8
Critical ratio b	bar/bar	0.525
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	540
Flow rate at 6 bar ΔP 1 bar	Nl/min	750
TRA / TRR monostable at 6 bar	ms	12 / 26
TRA / TRR bistable at 6 bar	ms	21 / 21
Hand operator		monostable on the solenoid pilot (also with bistable manual valve on request)
Pilot with integrated coil		24 VDC - 24 VAC - 110 VAC - 220 VAC
Power	W	1
Voltage tolerance		-10% to +15%
Insulation class		F 155
Degree of protection		IP 65 EN60529 with connector
Solenoid rating		100% ED
Electrical contacts		DIN 43650 C shape / EN 175301-803-C M8 connection*

705202013...
max 10 bar made in Italy

2 5VDC
M 5VDC MA
3 5VDC
4 10VDC
5 10VDC

VALVES MACH 16

Technical drawing of a mechanical assembly, showing four views: front, top, side, and end view. The drawing includes dimensions in millimeters and a scale of 1:1.

Front View Dimensions:

- Overall length: 39.6
- Distance from top to first hole center: 15
- Distance between first and second hole centers: 9
- Distance between second and third hole centers: 9
- Distance from third hole center to bottom: 8.9
- Hole diameters: $\varnothing 3.2$, $\varnothing 3.2$, $\varnothing 3.2$
- Threaded hole: M5
- Distance from bottom to threaded hole center: 16.4

Top View Dimensions:

- Overall width: 27
- Distance from left to first hole center: 10.5
- Distance from left to second hole center: 20.9
- Distance from left to third hole center: 14.8
- Distance from left to threaded hole center: 7.5

Side View Dimensions:

- Overall height: 35.6
- Distance from top to first hole center: 1.3
- Distance from top to second hole center: 25.6
- Distance from top to third hole center: 19.7
- Distance from top to threaded hole center: 7.5

End View Dimensions:

- Overall width: 16.5
- Distance from left to first hole center: 9
- Distance from left to second hole center: 8.2
- Distance from left to third hole center: 15
- Distance from left to threaded hole center: 15
- Note: G/18

Technical drawing of a 1/2" x 1/2" x 1/2" 303 stainless steel angle. The drawing shows the L-shaped profile with dimensions: 33 (total width), 24 (flange width), 35.6 (leg length), and 25.6 (flange thickness). The material is 303 stainless steel.

Symbol	Code	Abbrev.	Weight [g]
	7062020102	MSV 25 SOP OO 24VDC	92
	706202010M	MSV 25 SOP OO 24VDC M8	92
	7062020103	MSV 25 SOP OO 24VAC	92
	7062020104	MSV 25 SOP OO 110VAC	92
	7062020105	MSV 25 SOP OO 220VAC	92
	7062020132	MSV 25 SOS OO 24VDC	93
	706202013M	MSV 25 SOS OO 24VDC M8	93
	7062020133	MSV 25 SOS OO 24VAC	93
	7062020134	MSV 25 SOS OO 110VAC	93
	7062020135	MSV 25 SOS OO 220VAC	93
	7062030132	MSV 25 SES OO 24VDC	93
	706203013M	MSV 25 SES OO 24VDC M8	93
	7062030133	MSV 25 SES OO 24VAC	93
	7062030134	MSV 25 SES OO 110VAC	93
	7062030135	MSV 25 SES OO 220VAC	93


 1 Not used
 2 0 V (Operation also with reverse polarity)
 3 +24V
 4 Not used

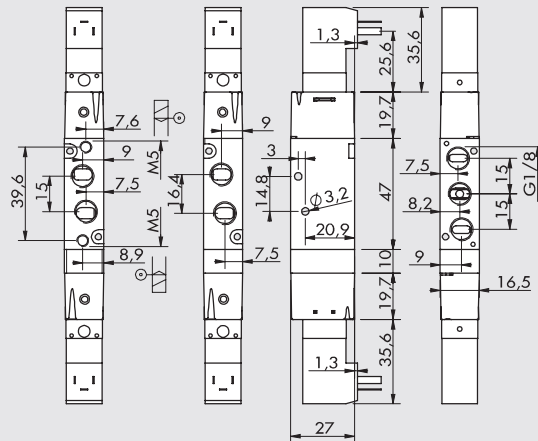


Technical drawing of the front view of the 1000 Series 1/2. The drawing shows a rectangular component with a total height of 35.7. The top section has a width of 33, with a central rectangular cutout of width 24. Below this cutout is a section with a height of 25.6, which contains a threaded hole labeled M8. The bottom section of the component has a height of 10.0. The drawing is labeled '1000 Series 1/2' and 'Front View'.

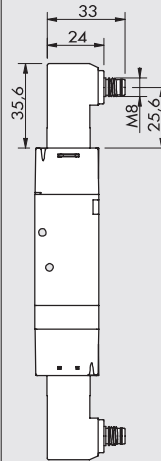
Symbol	Code	Abbrev.	Weight [g]
	7062020112	MSV 25 SOB OO 24VDC	124
	706202011M	MSV 25 SOB OO 24VDC M8	124
	7062020113	MSV 25 SOB OO 24VAC	124
	7062020114	MSV 25 SOB OO 110VAC	124
	7062020115	MSV 25 SOB OO 220VAC	124
	7062030112	MSV 25 SEB OO 24VDC	125
	706203011M	MSV 25 SEB OO 24VDC M8	125
	7062030113	MSV 25 SEB OO 24VAC	125
	7062030114	MSV 25 SEB OO 110VAC	125
	7062030115	MSV 25 SEB OO 220VAC	125

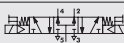
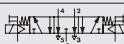
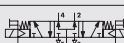

 1 Not used
 2 0 V (Operation also with reverse polarity)
 3 +24V

DIN 43650-C VERSION / EN 175301-803-C



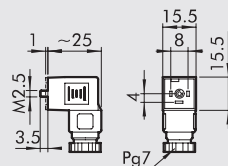
M8 VERSION



Symbol	Code	Abbrev.	Weight [g]
	7062020212	MSV 26 SOS CC 24VDC	142
	706202021M	MSV 26 SOS CC 24VDC M8	142
	7062020213	MSV 26 SOS CC 24VAC	142
	7062020214	MSV 26 SOS CC 110VAC	142
	7062020215	MSV 26 SOS CC 220VAC	142
	7062020312	MSV 26 SOS OC 24VDC	142
	706202031M	MSV 26 SOS OC 24VDC M8	142
	7062020313	MSV 26 SOS OC 24VAC	142
	7062020314	MSV 26 SOS OC 110VAC	142
	7062020315	MSV 26 SOS OC 220VAC	142
	7062020412	MSV 26 SOS PC 24VDC	142
	706202041M	MSV 26 SOS PC 24VDC M8	142
	7062020413	MSV 26 SOS PC 24VAC	142
	7062020414	MSV 26 SOS PC 110VAC	142
	7062020415	MSV 26 SOS PC 220VAC	142
	7062030212	MSV 26 SES CC 24VDC	143
	706203021M	MSV 26 SES CC 24VDC M8	143
	7062030213	MSV 26 SES CC 24VAC	143
	7062030214	MSV 26 SES CC 110VAC	143
	7062030215	MSV 26 SES CC 220VAC	143
	7062030312	MSV 26 SES OC 24VDC	143
	706203031M	MSV 26 SES OC 24VDC M8	143
	7062030313	MSV 26 SES OC 24VAC	143
	7062030314	MSV 26 SES OC 110VAC	143
	7062030315	MSV 26 SES OC 220VAC	143
	7062030412	MSV 26 SES PC 24VDC	143
	706203041M	MSV 26 SES PC 24VDC M8	143
	7062030413	MSV 26 SES PC 24VAC	143
	7062030414	MSV 26 SES PC 110VAC	143
	7062030415	MSV 26 SES PC 220VAC	143

 1 Not used
 3 0 V (Operation also with reverse polarity)
 4 +24V

CONNECTOR 15 mm DIN 43650 SHAPE C / EN 175301-803-C



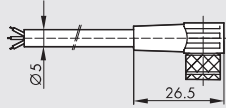
Code	Description
W0970501021	Connector 15 mm shape C
W0970501022	Connector 15 mm shape C LED 24V
W0970501025	Connector 15 mm shape C LED+VDR 24V

Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

B1.102

90° M8 CONNECTOR WITH CABLE

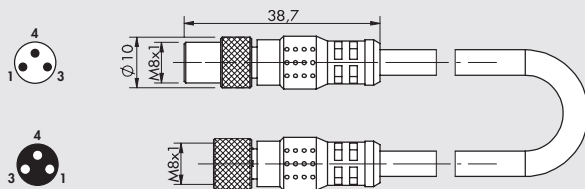


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 M - M8 F CONNECTOR

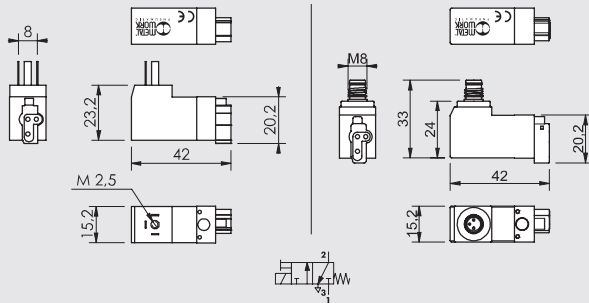


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

SPARE PARTS FOR VALVES MACH 16 MSV, SOLENOID/PNEUMATIC

COIL MACH 16

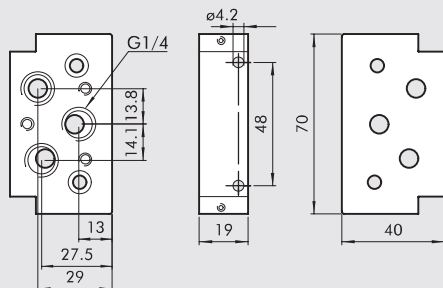


Code	Description
W4015301000	In-line pilot 24VDC
W4015301210	In-line pilot 24VDC M8
W4015301010	In-line pilot 24VAC 50/60 HZ
W4015301020	In-line pilot 110VAC 50/60 HZ
W4015301030	In-line pilot 220VAC 50/60 HZ

NOTES

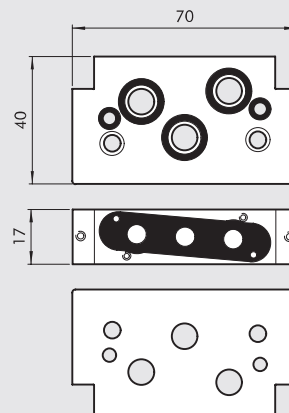
MANIFOLD BASES FOR VALVES MACH 16

① MACH 16 INPUT END-PLATE



Code	Description	Weight [g]
0227100201	Input end-plate kit M16/VDMA	125

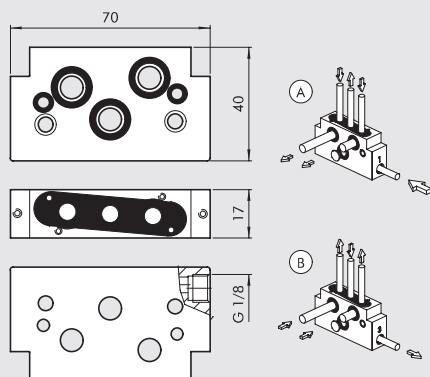
② MACH 16 MANIFOLD BASE



Code	Description	Weight [g]
0227100150	Manifold base kit M16	121

③ MACH 16 SEPARATE FEED MANIFOLD BASE

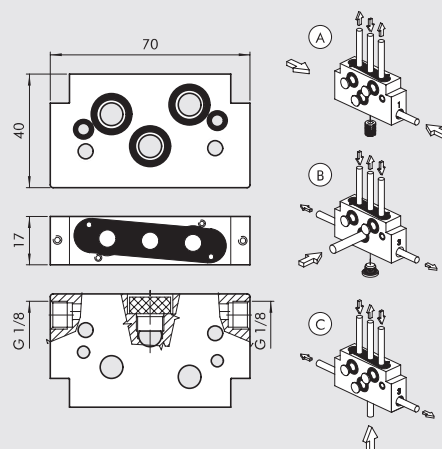
- Ⓐ Separate feed
- Ⓑ Separate exhaust



Code	Description	Weight [g]
0227100301	Manifold base kit-separate feed M16	119

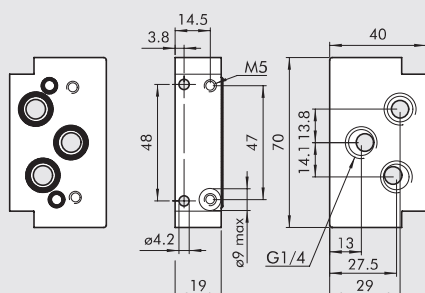
④ MACH 16 EXHAUST FEED MANIFOLD BASE

- Ⓐ Exhaust feed
- Ⓑ Separate exhausts
- Ⓒ Separate feed/exhausts



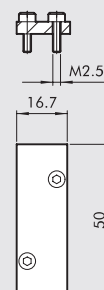
Code	Description	Weight [g]
0227100302	Manifold base kit-exhaust feed M16	113

⑤ MACH 16 OUTPUT END-PLATE



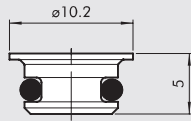
Code	Description	Weight [g]
0227100200	Output end-plate kit M16/VDMA	122

⑥ BLANKING PLATE – UNUSED POSITION



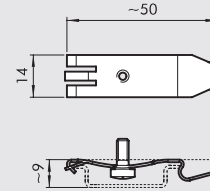
Code	Description	Weight [g]
0225004500	Accessories - blanking plate for Mach 16	18

⑦ INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0227100000	Intermediate diaphragm	1

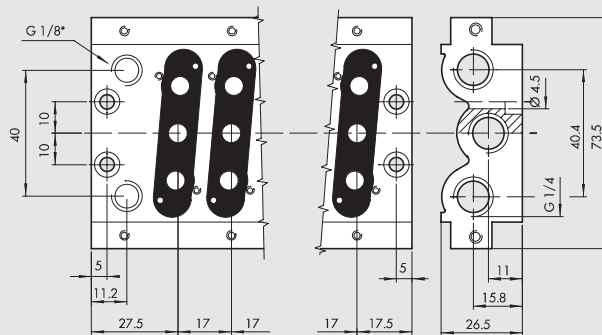
⑧ CONNECTION BRACKET ON BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227300600	Connection bracket on DIN bar	7

MULTIPLE BASES FOR VALVES MACH 16

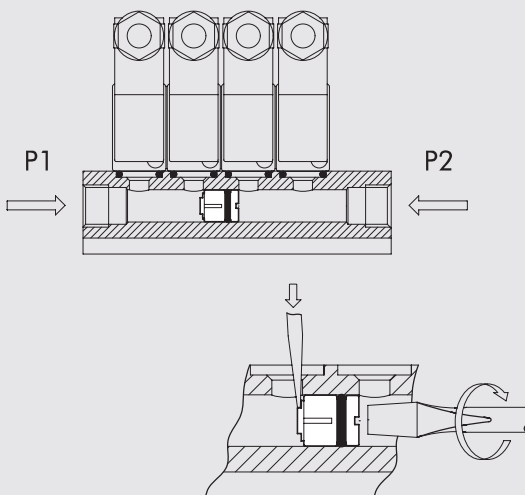
MULTIPLE BASE FOR MACH 16



* Exhaust solenoid pilots

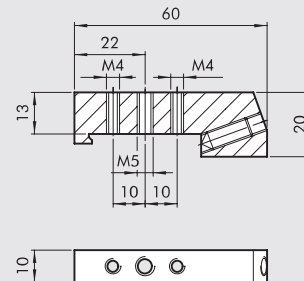
Code	Description	N° of positions	Weight [g]
0225000201	Base CVM.PN-08-02-0-000	2	180
0225000401	Base CVM.PN-08-04-0-000	4	286
0225000601	Base CVM.PN-08-06-0-000	6	390
0225000801	Base CVM.PN-08-08-0-000	8	500
0225001001	Base CVM.PN-08-10-0-000	10	613
0225001201	Base CVM.PN-08-12-0-000	12	706

INTERMEDIATE DIAPHRAGM



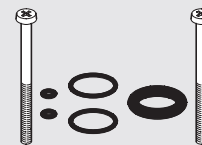
Code	Description	Weight [g]
0227100001	Acc. multiple base diaphragm	6

ADAPTER FOR BAR OMEGA (DIN EN 50022)



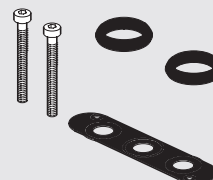
Code	Description	Weight [g]
0225004600	Omega-adapter Mach 16	46

GASKET KIT (FOR OLD BASES)



Code	Description	Weight [g]
0226007001	M16 multiple base gasket kit	5

KIT OF SPARE INTEGRATED GASKET



Code	Description	Weight [g]
0226007003	M16 multiple base gasket kit	5

MULTIPLE CONNECTORS MACH 16

Mach 16 valves can be mounted on bases with pneumatic or electrical connection. The electric contacts of the individual valves are connected by means of a printed circuit board in a sealed conduit to a single connection point suitable for up to 16 controls.

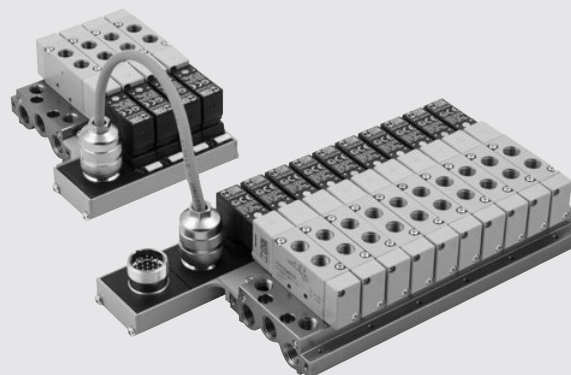
The number 16 was chosen because the number of outputs of most PLC output boards is 16 or a multiple of it.

The system has numerous alternatives and variants for a wide range of requirements:

- Base for monostable or bistable valves.
- Connection via a multiple connector or wired cable.
- Supply of individual parts or ready prepared bases or complete valve units
- The configuration can be modified at any time to convert bases for monostable valves into bases for bistable valves.
- The return cable can be used to connect two monostable valve units to a single multiple connector.

All versions are certified for electromagnetic compatibility and hence they bear the CE mark. The system is prearranged for mounting a slave for field buses, which can be added at any time. Valve units with multiple pneumatic/electrical connection are supplied complete with valves and are tested.

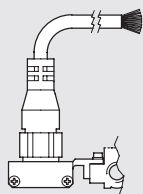
System modularity means that the valve sequence can be ordered to meet your own requirements (see key to codes).



TECHNICAL DATA

Supply voltage	24VDC - 24VAC
Maximum absorption	50 mA for each position
Valve actuation indicator	Yellow LED
Protection	Fuse
Operating temperature range	-10 to +60 °C
Degree of protection with valves mounted	IP65
Insulation class	In compliance with IEC 664-1 and VDE 0110 Group C
Electromagnetic compatibility	In compliance with EEC 366/89
Maximum number of solenoid valves which can be applied	16
n° of contacts	19, 16 of which for solenoid valves, 2 common and 1 earth
Pre-wired version	
Cable length	5 m
n° of wires	19, 16 of which for solenoid valves, 2 common and 1 earth
Wire section	0.22 mm ²
Shielding	Tin plated – covering 80 to 90%
Cable	Outer oil-proof and flame-proof PVC sheath
Cable outside diameter	8.5 mm

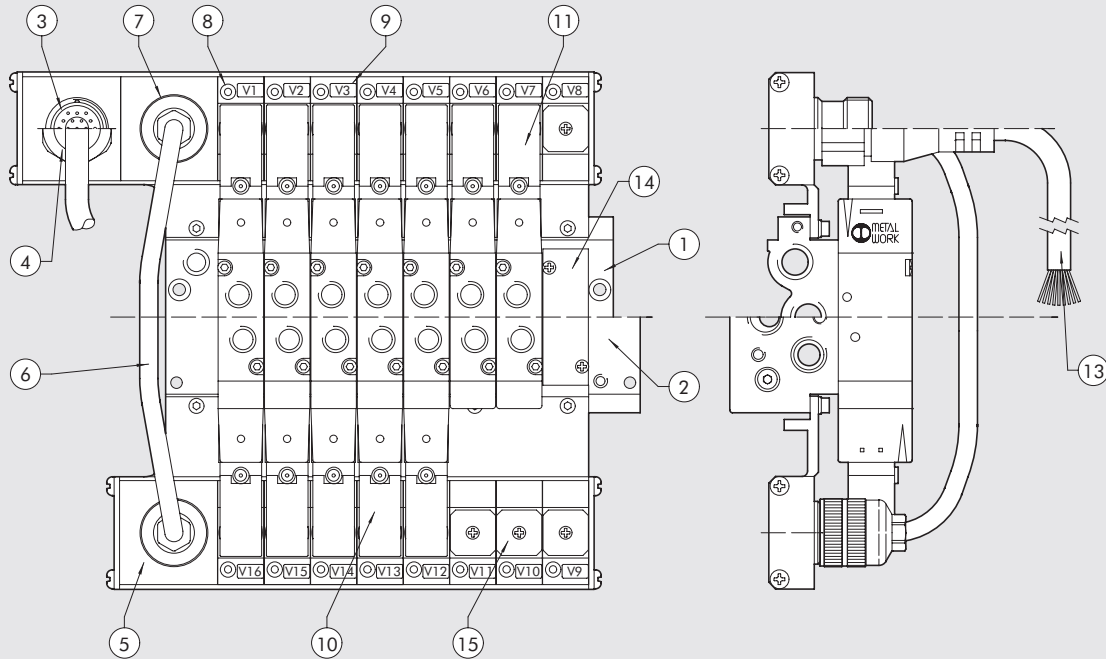
WIRING DIAGRAM FOR VERSION WITH CONNECTOR



Position of electrical contact	Colour of the corresponding wire
V1	Green /black
V2	Yellow
V3	White/black
V4	Blue
V5	Red
V6	Yellow/black
V7	White
V8	Brown/red
V9	Red/white
V10	Red/black
V11	Green/red
V12	Blue/red
V13	Brown
V14	Orange/black
V15	Orange
V16	Blue/black
GROUND	Yellow/red
- COM	Brown/black
- COM	Green

NOTES

COMPONENTS



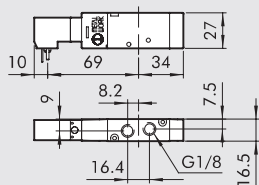
- ① Multiple base: extruded anodized aluminium
 ② Modular base: anodized aluminium
 ③ Main assembly, version with connector
 ④ Main assembly, pre-wired version
 ⑤ Secondary unit/additional secondary unit
 ⑥ 10-wire return cable
 ⑦ Socket for 10-wire return cable
 ⑧ LED (LED on = Solenoid valve energised)
 ⑨ Identification label (for writing on)
 ⑩ Bistable solenoid valve MACH 16
 ⑪ Monostable solenoid valve MACH 16
 ⑬ 19-wire cable for pre-wired version
 ⑭ Blanking plate - pneumatic position: anodized aluminium
 ⑮ Small blanking plate - electric connector: painted aluminium

SYNOPTIC, SIZES AND VERSIONS

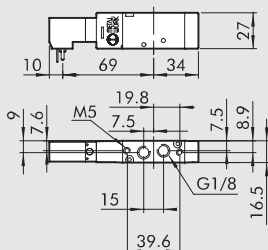
A FAMILY	O 8 NO. OF POSITIONS	B	W C 5	O 8 SIZE	M M V L	2 4 V D C VOLTAGE
A multiple base for solenoid/pneumatic connection Mach 16	04 4 posn. 06 6 posn. 08 8 posn.	M electrical connection only for monostable valves	MCN electrical connection pre-wired cable 5 m	08 G 1/8"	M MSV 25 SMS OO V MSV 25 SCS OO L MSV 25 SMP OO J MSV 25 SMB OO K MSV 25 SCB OO G MSV 26 SMS CC O MSV 26 SCS CC E MSV 26 SMS OC F MSV 26 SCS OC B MSV 26 SMS PC C MSV 26 SCS PC A blanking plate D intermediate diaphragm	24VDC 24VAC
B manifold base for Mach 16 solenoid/pneumatic connection	10 10 posn. 12 12 posn.	B electrical connection for bistable valves	ACM additional connection for monostable battery			

N.B.: The valve insertion order inside the descriptive key is the following, starting from the connector, from the left towards the right: the first left square corresponds to the first valve close to the connector on the base. There are 12 squares available for the description: if you order a base with less than 12 positions, complete by placing a 0 in the remaining boxes.

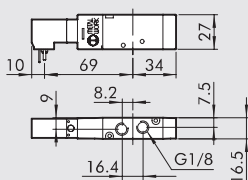
MACH 16 VALVES FOR MULTIPLE CONNECTOR

(M) MONOSTABLE 5/2, SOLENOID/PNEUMATIC - MECHANICAL SPRING

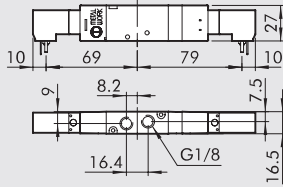
Symbol	Code	Description	Weight [g]
	7062040132	MSV 25 SMS OO 24VDC	92
	7062040133	MSV 25 SMS OO 24VAC	92

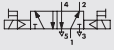
(V) MONOSTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED - MECHANICAL SPRING

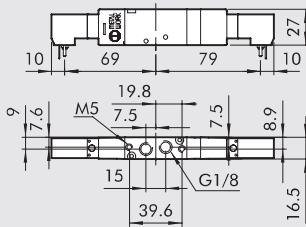
Symbol	Code	Description	Weight [g]
	7062060132	MSV 25 SCS OO 24VDC	93
	7062060133	MSV 25 SCS OO 24VAC	93

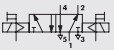
(L) MONOSTABLE 5/2, SOLENOID/PNEUMATIC - PNEUMATIC SPRING

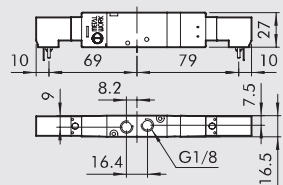
Symbol	Code	Description	Weight [g]
	7062040102	MSV 25 SMP OO 24VDC	93
	7062040103	MSV 25 SMP OO 24VAC	93

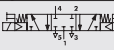
J BISTABLE 5/2, SOLENOID/PNEUMATIC


Symbol	Code	Description	Weight [g]
	7062040112	MSV 25 SMB OO 24VDC	139
	7062040113	MSV 25 SMB OO 24VAC	139

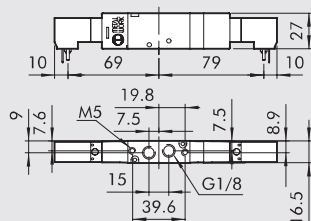
K BISTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED


Symbol	Code	Description	Weight [g]
	7062060112	MSV 25 SCB OO 24VDC	140
	7062060113	MSV 25 SCB OO 24VAC	140

G MONOSTABLE 5/3, SOLENOID/PNEUMATIC - CLOSED CENTRES


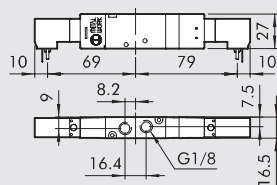
Symbol	Code	Description	Weight [g]
	7062040212	MSV 26 SMS CC 24VDC	142
	7062040213	MSV 26 SMS CC 24VAC	142

Ⓒ MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED - CLOSED CENTRES



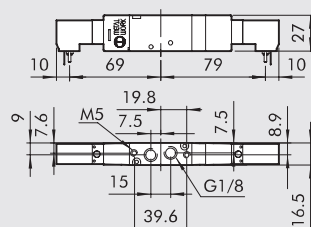
Symbol	Code	Description	Weight [g]
	7062060212	MSV 26 SCS CC 24VDC	143
	7062060213	MSV 26 SCS CC 24VAC	143

Ⓔ MONOSTABLE 5/3 SOLENOID/PNEUMATIC - OPEN CENTRES



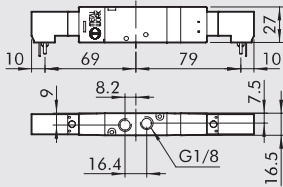
Symbol	Code	Description	Weight [g]
	7062040312	MSV 26 SMS OC 24VDC	142
	7062040313	MSV 26 SMS OC 24VAC	142

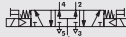
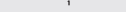
Ⓕ MONOSTABLE 5/3 SOLENOID/PNEUMATIC, PILOT-ASSISTED - OPEN CENTRES



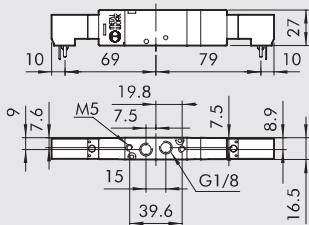
Symbol	Code	Description	Weight [g]
	7062060312	MSV 26 SCS OO 24VDC	143
	7062060313	MSV 26 SCS OO 24VAC	143

B) MONOSTABLE 5/3, SOLENOID/PNEUMATIC - PRESSURE CENTRES



Symbol	Code	Description	Weight [g]
	7062040412	MSV 26 SMS PC 24VDC	142
	7062040413	MSV 26 SMS PC 24VAC	142

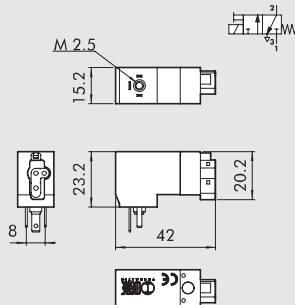
C) MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED - PRESSURE CENTRES



Symbol	Code	Description	Weight [g]
	7062060412	MSV 26 SCS PC 24VDC	143
	7062060413	MSV 26 SCS PC 24VAC	143

SPARE PARTS

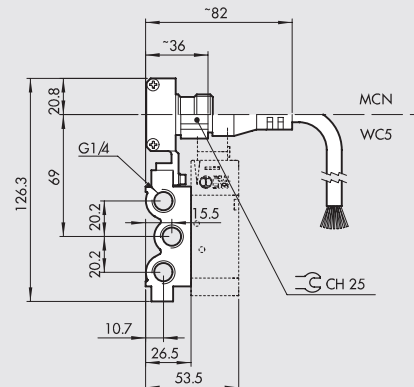
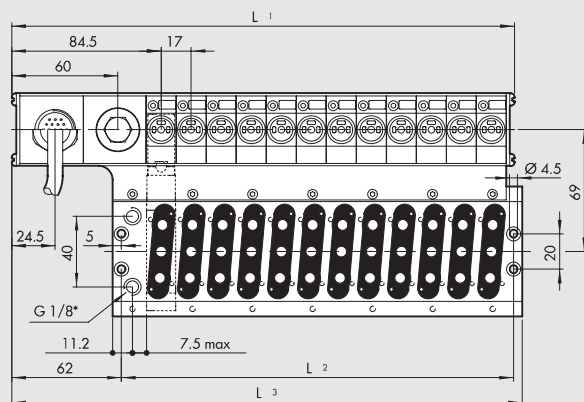
COIL MACH 16



Code	Description
W4015401000	In-line pilot 24VDC
W4015401010	In-line pilot 24VAC 50/60 Hz

BASES WITH MULTIPLE CONNECTION

MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8, 10, 12 POSITIONS

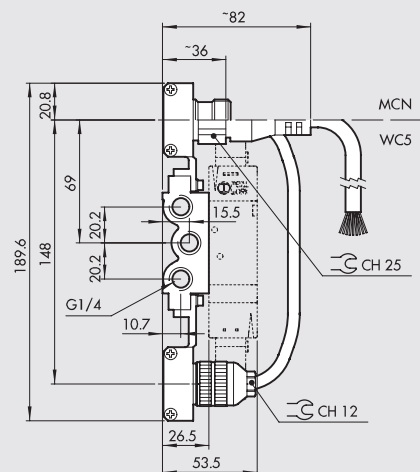
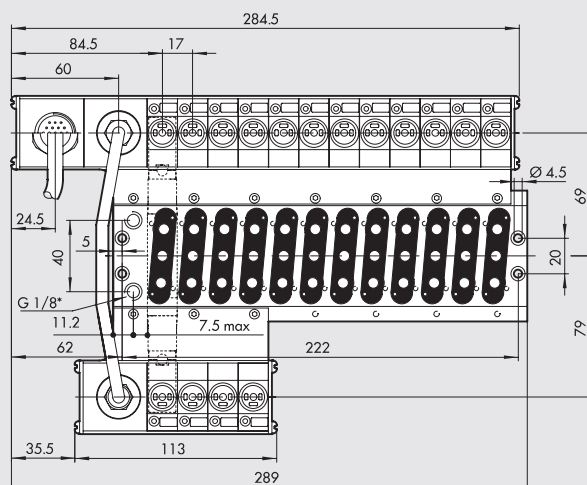


* Exhaust solenoid pilots

	Pos.-Nr.	L1	L2	L3	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	4	148.5	86	153	CVM EP 08 04 M MCN	0225100401	0225110401	504
	6	182.5	120	187	CVM EP 08 06 M MCN	0225100601	0225110601	644
	8	216.5	154	221	CVM EP 08 08 M MCN	0225100801	0225110801	784
	10	250.5	188	255	CVM EP 08 10 M MCN	0225101001	0225111001	924
	12	284.5	222	289	CVM EP 08 12 M MCN	0225101201	0225111201	1264
With pre-wired cable	4	148.5	86	153	CVM EP 08 04 M WC5	0225400401	0225410401	3642
	6	182.5	120	187	CVM EP 08 06 M WC5	0225400601	0225410601	3781
	8	216.5	154	221	CVM EP 08 08 M WC5	0225400801	0225410801	3923
	10	250.5	188	255	CVM EP 08 10 M WC5	0225401001	0225411001	4070
	12	284.5	222	289	CVM EP 08 12 M WC5	0225401201	0225411201	4195

. : • 24VDC = direct current
 • 24VAC = alternating current

BISTABLE SOLENOID/PNEUMATIC BASE WITH 12 POSITIONS

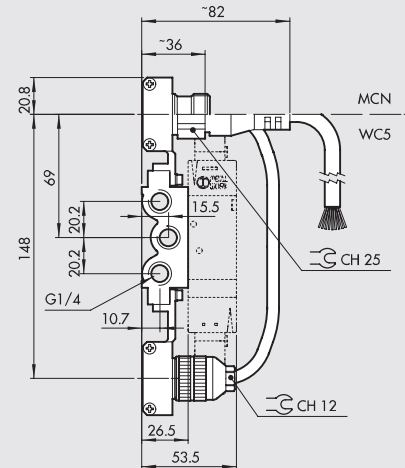
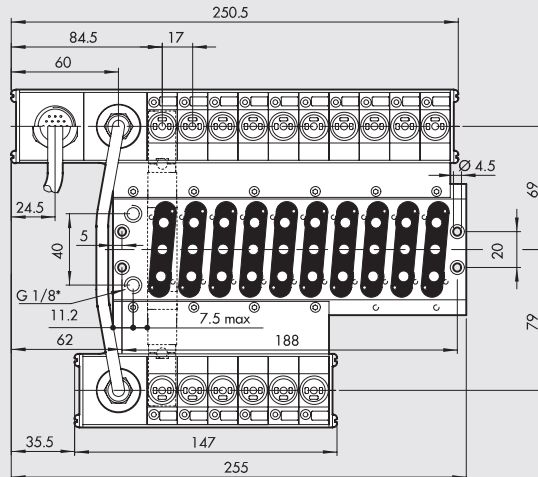


* Exhaust solenoid pilots

	Pos.-Nr.	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	12	CVM EP 08 12 B MCN	0225201201	0225211201	1315
With pre-wired cable	12	CVM EP 08 12 B WC5	0225501201	0225511201	4700

. : • 24VDC = direct current
 • 24VAC = alternating current

BISTABLE SOLENOID/PNEUMATIC BASE WITH 10 POSITIONS

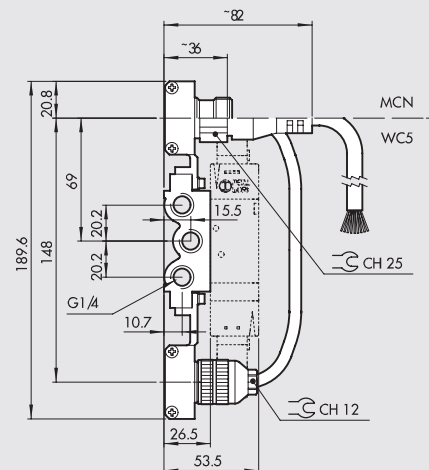
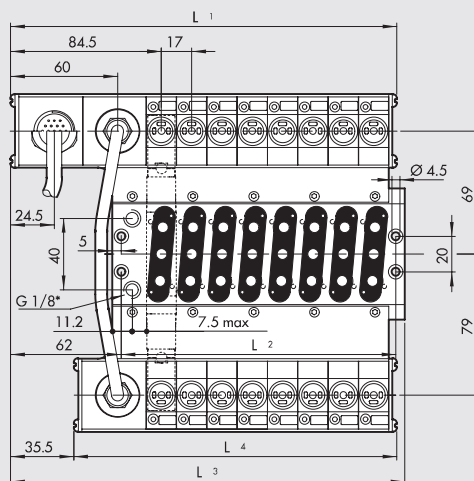


* Exhaust solenoid pilots

	Pos.-Nr.	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	10	CVM EP 08 10 B MCN	0225201001	0225211001	1245
With pre-wired cable	10	CVM EP 08 10 B WCS	0225501001	0225511001	4600

. : • 24VDC = direct current
• 24VAC = alternating current

BISTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS

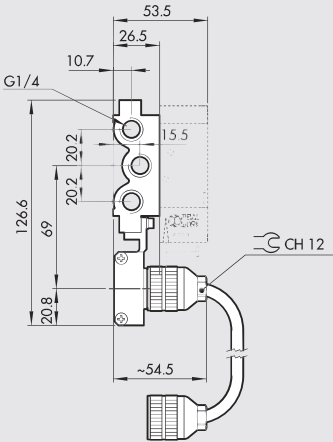
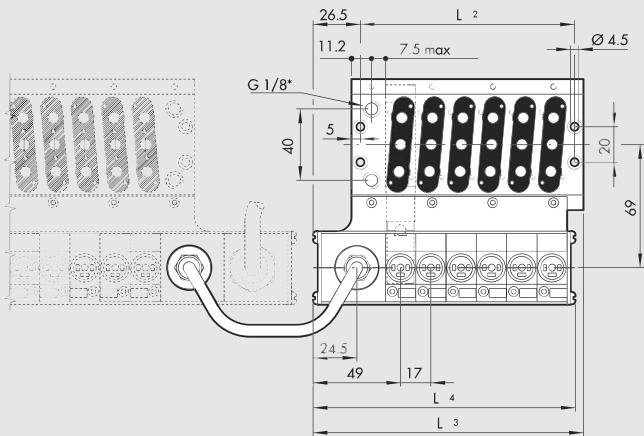


* Exhaust solenoid pilots

	Pos.-Nr.	L1	L2	L3	L4	Description	Code 24VDC	Code 24VAC	Weight [g]
With multiple connector	4	148.5	86	153	113	CVM EP 08 04 B MCN	0225200401	0225210401	770
	6	182.5	120	187	147	CVM EP 08 06 B MCN	0225200601	0225210601	965
	8	216.5	154	221	181	CVM EP 08 08 B MCN	0225200801	0225210801	1200
With pre-wired cable	4	148.5	86	153	113	CVM EP 08 04 B WCS	0225500401	0225510401	3910
	6	182.5	120	187	147	CVM EP 08 06 B WCS	0225500601	0225510601	4086
	8	216.5	154	221	181	CVM EP 08 08 B WCS	0225500801	0225510801	4264

. : • 24VDC = direct current
• 24VAC = alternating current

ADDITIONAL MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS



* Exhaust solenoid pilots

Pos.-Nr.	L2	L3	L4	Description	Code 24VDC	Code 24VAC	Weight [g]
4	86	117.5	113	CVM EP 08 04 M ACM	0225300401	0225310401	500
6	120	151.5	147	CVM EP 08 06 M ACM	0225300601	0225310601	640
8	154	185.5	181	CVM EP 08 08 M ACM	0225300801	0225310801	780

. : • 24VDC = direct current
• 24VAC = alternating current

NOTES

MODULAR MULTIPLE CONNECTOR KIT

It is possible to buy the various assembly kits separately, to obtain a wide range of customised applications.

The main units of the version with connector ① or the pre-wired version ② can easily be assembled with the multiple base ⑫ or the modular manifold base ⑬. The manifold base allows particular circuits on the individual valves (feed from exhaust outlets, pressure differentiation, etc.)

Likewise, on the other side it is also simple to mount the secondary unit ③. This possibility is very interesting because it allows you to convert a base for monostable valves into a base for bistable valves.

If you fit an additional secondary unit ④ on a base, you obtain an additional solenoid base that can be connected by means of return cables to a main base for monostable valves. The only thing to remember is that in all cases the total number of positions (connection to solenoid valve coil) must not exceed sixteen.

The 10 pin return cable ⑥ is used when a main unit and a secondary

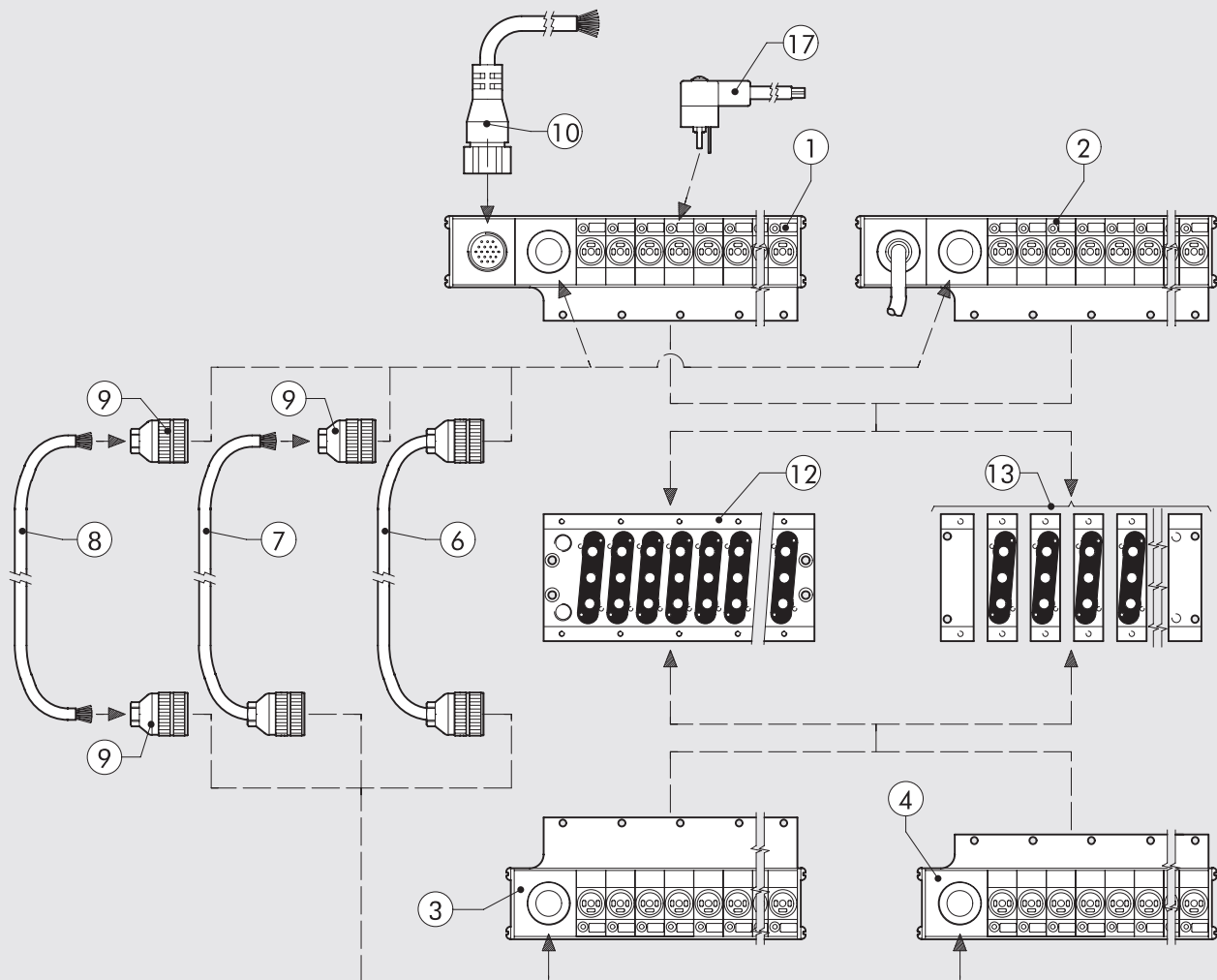
unit, or only one additional secondary unit, are mounted together on the multiple (or manifold) base. It has to be connected to the sockets shown in the diagram.

For different requirements, it is also possible to have return cables with a connector at one end only ⑦, or just the 10-wire cable ⑧.

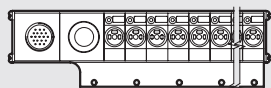
These types are available in different lengths. A 10-wire connector kit ⑨ is also available if you need to complete the wiring.

In the version with a connector, the piloting of the entire assembled base is assigned to the 19-wire connector complete with cable ⑩ which is available in various lengths.

The male connector ⑪ allows the free electrical connection of the multiple connector to be used, in order to control the valves placed in the system or to control the bistable valves by a monostable multiple electrical connection base.

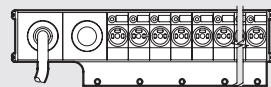


① MAIN KIT - VERSION WITH CONNECTOR



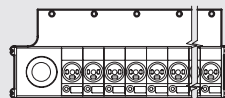
Code	Description	Weight [g]
0226500401	Main multiple connection kit, 4 positions 24VDC	245
0226510401	Main multiple connection kit, 4 positions 24VAC	245
0226500601	Main multiple connection kit, 6 positions 24VDC	280
0226510601	Main multiple connection kit, 6 positions 24VAC	280
0226500801	Main multiple connection kit, 8 positions 24VDC	308
0226510801	Main multiple connection kit, 8 positions 24VAC	308
0226501001	Main multiple connection kit, 10 positions 24VDC	344
0226511001	Main multiple connection kit, 10 positions 24VAC	344
0226501201	Main multiple connection kit, 12 positions 24VDC	396
0226511201	Main multiple connection kit, 12 positions 24VAC	396

② MAIN MULTIPLE PRE-WIRED CONNECTION KIT



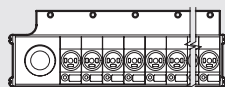
Code	Description	Weight [g]
0226400401	Pre-wired multiple main connector kit, 4 positions 24VDC	3350
0226410401	Pre-wired multiple main connector kit, 4 positions 24VAC	3350
0226400601	Pre-wired multiple main connector kit, 6 positions 24VDC	3400
0226410601	Pre-wired multiple main connector kit, 6 positions 24VAC	3400
0226400801	Pre-wired multiple main connector kit, 8 positions 24VDC	3423
0226410801	Pre-wired multiple main connector kit, 8 positions 24VAC	3423
0226401001	Pre-wired multiple main connector kit, 10 positions 24VDC	3460
0226411001	Pre-wired multiple main connector kit, 10 positions 24VAC	3460
0226401201	Pre-wired multiple main connector kit, 12 positions 24VDC	3490
0226411201	Pre-wired multiple main connector kit, 12 positions 24VAC	3490

③ SECONDARY KIT



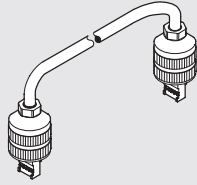
Code	Description	Weight [g]
0226200401	Multiple secondary connector kit, 4 positions 24VDC	166
0226210401	Multiple secondary connector kit, 4 positions 24VAC	166
0226200601	Multiple secondary connector kit, 6 positions 24VDC	210
0226210601	Multiple secondary connector kit, 6 positions 24VAC	210
0226200801	Multiple secondary connector kit, 8 positions 24VDC	257
0226210801	Multiple secondary connector kit, 8 positions 24VAC	257

④ ADDITIONAL SECONDARY KIT



Code	Description	Weight [g]
0226300401	Multiple secondary connector kit, 4 positions 24VDC	158
0226310401	Multiple secondary connector kit, 4 positions 24VAC	158
0226300601	Multiple secondary connector kit, 6 positions 24VDC	199
0226310601	Multiple secondary connector kit, 6 positions 24VAC	199
0226300801	Multiple secondary connector kit, 8 positions 24VDC	243
0226310801	Multiple secondary connector kit, 8 positions 24VAC	243

⑥ 10-WIRE RETURN CABLE

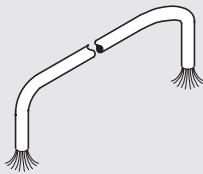


Code	Description
0226150022	10-wire return cable L = 22 cm
022615....	10-wire return cable

....Length in cm

Please contact our sales offices

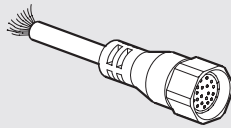
⑧ CABLE WITH 10 CONNECTORS



Code	Description
0226107201	10-wires cable

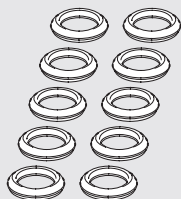
Please specify the desired length in metres

⑩ 19-WIRE CABLE, ONE END WITH CONNECTOR



Code	Description
0226140250	19-wire cable, one end with connector L = 2.5 m
0226140500	19-wire cable, one end with connector L = 5 m
0226141000	19-wire cable, one end with connector L = 10 m
0226141500	19-wire cable, one end with connector L = 15 m
0226142000	19-wire cable, one end with connector L = 20 m
0226143000	19-wire cable, one end with connector L = 30 m

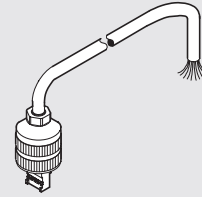
⑬ ELECTRIC CONTACT GASKETS



Code	Description
0226107001	Set of electric contact gaskets

Package: 10 pieces

⑦ 10-WIRE RETURN CABLE - ONE END WITH CONNECTOR



Code	Description
022613....	10-wire return cable - one end with connector

....Length in cm

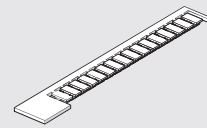
Please contact our sales offices

⑨ 10-WIRE CONNECTOR KIT



Code	Description
0226170002	10-wire connector kit

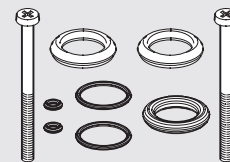
⑫ SET OF IDENTIFICATION PLATES



Code	Description
0226107000	Set of identification plates

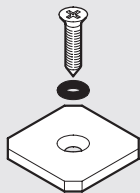
Package: 16 pieces

⑭ SET OF MULTIPLE BASE GASKETS



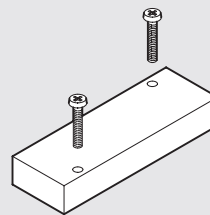
Code	Description
0226007001	Set of M16 multiple base gaskets

15 ELECTRIC CONNECTION BLANKING PLATE



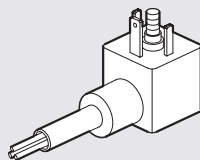
Code	Description
0225004502	Mach 16 electric connection blanking plate

16 BASE BLANKING PLATE



Code	Description
0225004500	Mach 16 base blanking plate

17 MALE CONNECTOR

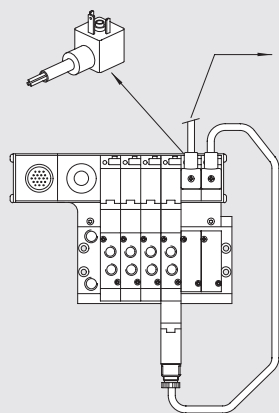


Code	Description
W0970504021	Male connector 2 mm

Max power for each position = 5W

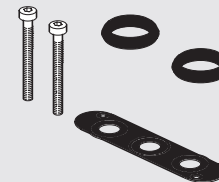
Max total power of multiple connector = 36W

Example of a male connector



SOV 1/8"
 SOV 1/4"
 SOV 1/2"
 SOV on base
 MACH 16
 MACH 18
 ISO 1 – ISO 2
 PIV valves
 APR: progressive starter
 V3V: circuit switching valve

18 KIT OF MULTIPLE BASE GASKETS



Code	Description
0226007003	Kit of M16 multiple base integrate gaskets

NOTES

REDUCER WITH GAUGE FOR VALVES, SERIES RMV



The RMV-series miniature pressure regulator with pressure gauge for valves is specifically conceived for mounting on the outlets of valves with a 1/8" port. With limited cross dimension, it can be fitted to a series of small valves. The body is 16.5 mm wide and fits exactly on the valves of the Mach 16 series for multiple electrical connection.

Using the RMV, it is possible to differentiate the pressure of each single output of the valves. For example, if you mount it on port 2 and not on port 4, the pressure can be reduced on port 2 only. If you mount one for each port, the pressure on port 2 will differ from that on port 4, which in turn is less than the feed pressure (outlet 1).

There are three 1/8" threaded RMV ports that are pneumatically connected in parallel. A small pressure gauge is mounted in one port; another port is plugged by an A7-type fitting and a third can take a fitting.

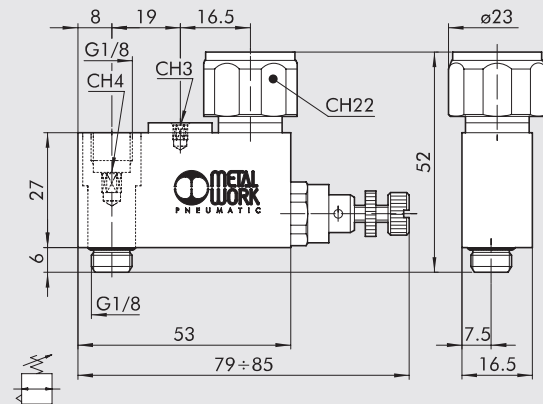
The user, however, can decide whether the layout of components is to be modified or not. He might, for example, decide to mount three fittings to create a three-port reduced-pressure distributor.



TECHNICAL DATA

Threaded input connection		1/8" male
Threaded output connection		1/8" female
Regulation range	bar	1 to 8
	MPa	0.1 to 0.8
	psi	14.5 to 116
Input pressure	bar	2 to 10
	MPa	0.2 to 1
	psi	29 to 145
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 1 bar	NI/min	140
Flow rate at free exhaust at 6.3 bar (0.63 MPa - 91 psi) NI/min		360
Fluid		Filtered lubricated or unlubricated air
Maximum temperature at 10 bar (1 MPa - 145 psi)	°C	-10 to +60
	°F	+14 to +140
Assembly position		On valves
Use instructions		The pressure must always be regulated in increasing values

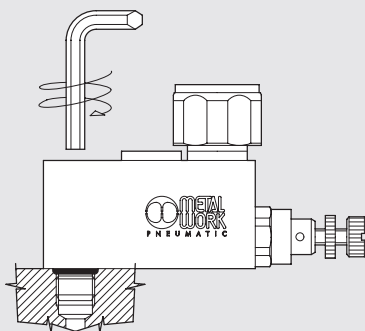
DIMENSIONES



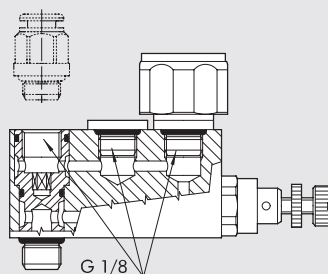
Code	Description
9061601	RMV 1/8"

APPLICATIONS - ASSEMBLY

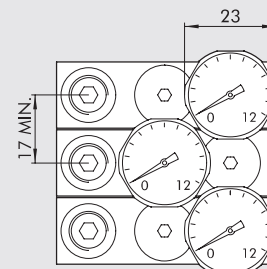
Fixing the reducer onto the valve



3 outputs with G1/8" thread

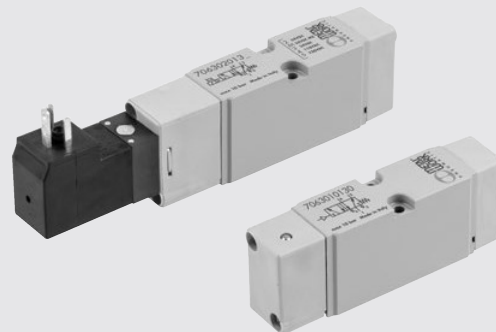


When mounting on valve units, with a pitch of less than 23 mm, alternate the gauge positions



VALVES MACH 18, ISO 15407-1/VDMA 24563-02

Mach 18 valve is manufactured according to the ISO 1507-1 standard, which in turn absorbs the VDMA 24563-02 rule. It comes in 5-way versions with 2 and 3 positions with solenoid or pneumatic actuation.

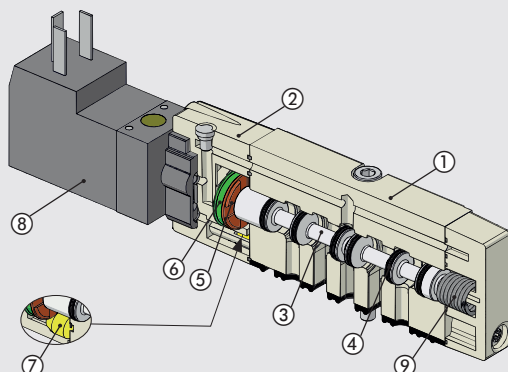


TECHNICAL DATA

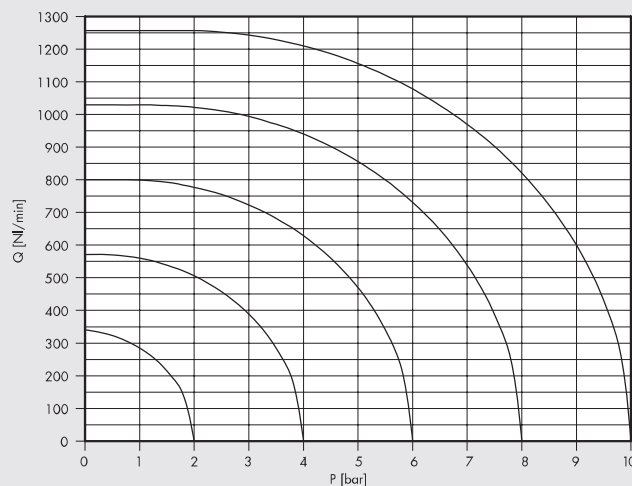
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Operating pressure:	bar	1.9 to 10
• monostable		Vacuum to 10 pneumatic/1.9 to 10 solenoid/pneumatic
• monostable 5/3		Vacuum to 10 pneumatic/1 to 10 solenoid/pneumatic
• bistable		Vacuum to 10
• pilot-assisted		2 to 10
Minimum pilot pressure	bar	-10 to +60
Operating temperature range	°C	114.86
Conductance C	Nl/min · bar	0.25
Critical ratio b	bar/bar	340
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	470
Flow rate at 6 bar ΔP 1 bar	Nl/min	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)
Installation		On manifold bases
Assembly		ISO and UNI FD 22
Recommended lubricant		DIN 43650 C-shape / EN 175301-803-C; M8 threaded connection (available for 24VDC voltage)
Solenoid pilot with integrated coil		Monostable on solenoid pilot (with manual monostable on request)
Hand operator		0.8
Valve / base screw tightening torque	Nm	See chapter Z1
Compatibility with oils		

COMPONENTS

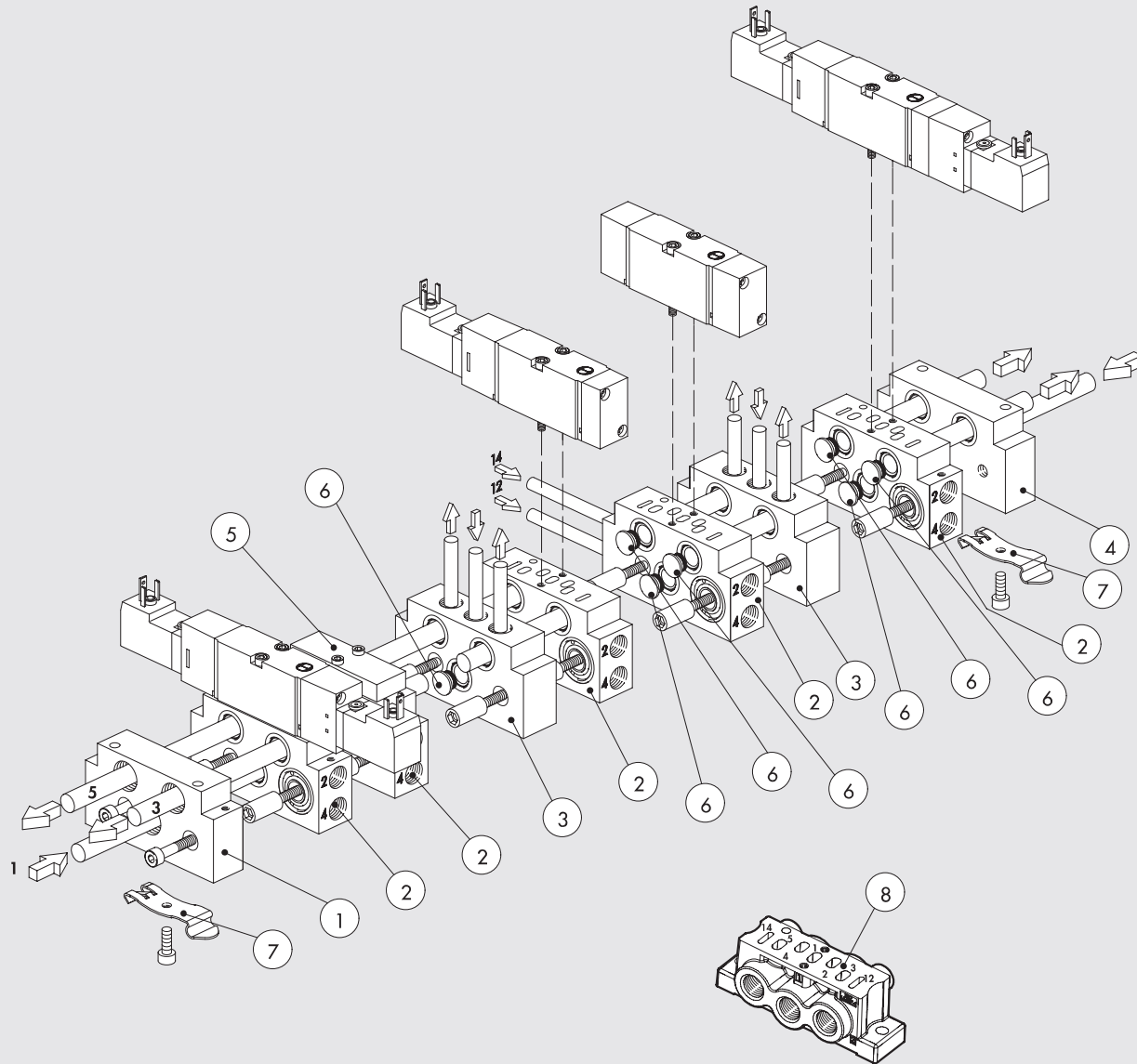
- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: Hostaform®
- ③ SPOOL: Aluminium
- ④ GASKETS: Polyurethane
- ⑤ PISTONS: Hostaform®
- ⑥ PISTON GASKET: Polyurethane
- ⑦ FILTER: sintered HDPE
- ⑧ PILOT: with integrated coil
- ⑨ SPRINGS: special steel



FLOW CHART



MODULARITY



VALVES

VALVES MACH 18, ISO 15407-1 / VDMA 24563-02

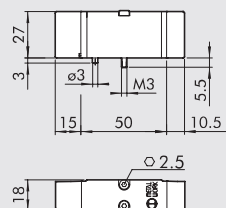
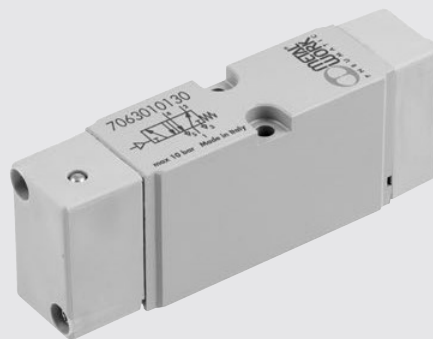
Reference	Code	Description
①	0227100201	ISO 15407-1 input end plate kit
②	0227200150	ISO 15407-1 manifold side base kit
③	0227200300	ISO 15407-1 intermediate bases
④	0227100200	ISO 15407-1 output end plate kit
⑤	0227200500	ISO 15407-1 blanking plate
⑥	0227100000	Intermediate diaphragm
⑦	0227300600	Connection bracket on DIN bar
⑧	0227200800	ISO 15407-1 individual base kit

SYNOPTIC, SIZES AND VERSIONS

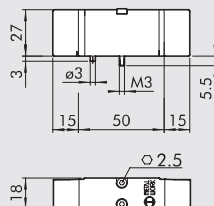
M S V FAMILY	D DIMENSIONS	5 FUNCTION	S O OPERATORS 14	S RESETTING (12)	O O FURTHER DETAILS	2 4 V D C VOLTAGE
MSV solenoid/pneumatic MPV pneumatic	D ISO 15407-1/ VDMA 24563-02	5 5/2 6 5/3	SO solenoid SE solenoid assisted PN pneumatic	S mechanical springs B bistable	OO no indication CC closed centres OC open centres PC pressure centres	24VDC 24VDC M8 24VAC 110VAC 220VAC

VALVES MACH 18, ISO 15407-1/VDMA 24563-02

Operating pressure:	bar	Vacuum to 10
Minimum operating pressure:	bar	
• monostable, monostable 5/3		1.9
• bistable		1
Conductance C	Nl/min · bar	114.86
Critical ratio b	bar/bar	0.25
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	340
Flow rate at 6 bar ΔP 1 bar	Nl/min	470
Actuation response times at 6 bar:	ms	
• monostable		4
• bistable		4
Repositioning response times at 6 bar	ms	
• monostable		8.4
• bistable		4
Operating temperature range	°C	-10 to + 60

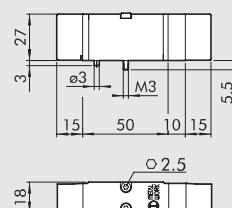


Symbol	Code	Abbrev.	Weight [g]
	7063010130	MPV D5 PINS OO	80



Symbol	Code	Abbrev.	Weight [g]
	7063010110	MPV D5 PNB OO	78

000000



Symbol	Code	Abbrev.	Weight [g]
	7063010210	MPV D6 PNS CC	93
	7063010310	MPV D6 PNS OC	93
	7063010410	MPV D6 PNS PC	93

NOTES

MACH 18 ISO 15407-1/VDMA 24563-02 SOLENOID/PNEUMATIC MSV

TECHNICAL DATA

Operating pressure:	bar	
• monostable, monostable 5/3		1.9 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2
Operating temperature range	°C	-10 to +60
Conductance C	Nl/min · bar	114.86
Critical ratio b	bar/bar	0.25
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	340
Flow rate at 6 bar ΔP 1 bar	Nl/min	470
TRA / TRR monostable at 6 bar	ms	12 / 26
TRA / TRR bistable at 6 bar	ms	21 / 21
Hand operator		Monostable on solenoid pilot (with bistable manual valve on request)
Pilot with integrated coil		24 VDC - 24 VAC - 110 VAC - 220 VAC
Power	W	1
Voltage tolerance		-10% to +15%
Insulation class		F 155
Degree of protection		IP 65 EN60529 with connector
Solenoid rating		100% ED
Electrical contacts		DIN 43650 C-shape / EN 175301-803-C M8 connection *

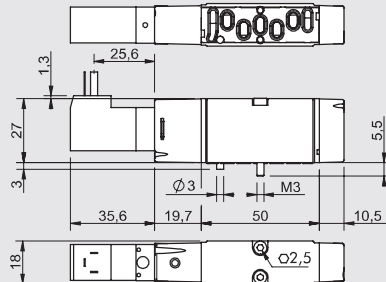
* Available for 24VDC voltage



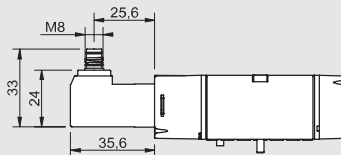
VALVES

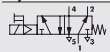
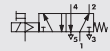
MONOSTABLE 5/2

DIN 43650-C VERSION
EN 175301-803-C

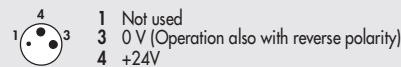


M8 VERSION



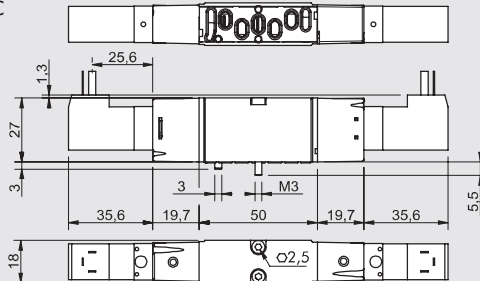
Symbol	Code	Abbrev.	Weight [g]
	7063020132	MSV D5 SOS OO 24VDC	110
	706302013M	MSV D5 SOS OO 24VDC M8	110
	7063020133	MSV D5 SOS OO 24VAC	110
	7063020134	MSV D5 SOS OO 110VAC	110
	7063020135	MSV D5 SOS OO 220VAC	110
	7063030132	MSV D5 SES OO 24VDC	110
	706303013M	MSV D5 SES OO 24VDC M8	110
	7063030133	MSV D5 SES OO 24VAC	110
	7063030134	MSV D5 SES OO 110VAC	110
	7063030135	MSV D5 SES OO 220VAC	110

M8 CONNECTION

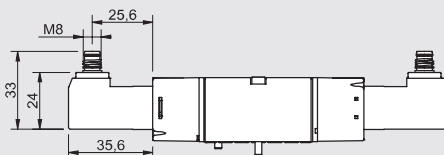


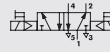
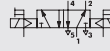
BISTABLE 5/2

DIN 43650-C VERSION
EN 175301-803-C

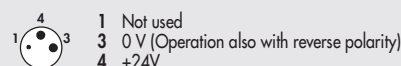


M8 VERSION



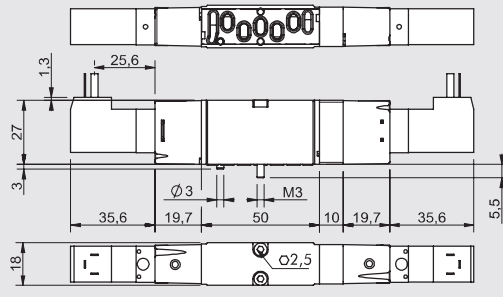
Symbol	Code	Abbrev.	Weight [g]
	7063020112	MSV D5 SOB OO 24VDC	143
	706302011M	MSV D5 SOB OO 24VDC M8	143
	7063020113	MSV D5 SOB OO 24VAC	143
	7063020114	MSV D5 SOB OO 110VAC	143
	7063020115	MSV D5 SOB OO 220VAC	143
	7063030112	MSV D5 SEB OO 24VDC	143
	706303011M	MSV D5 SEB OO 24VDC M8	143
	7063030113	MSV D5 SEB OO 24VAC	143
	7063030114	MSV D5 SEB OO 110VAC	143
	7063030115	MSV D5 SEB OO 220VAC	143

M8 CONNECTION

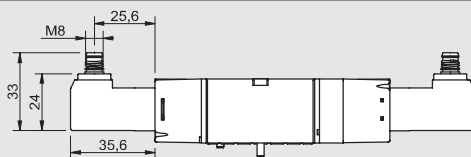


VALVES MACH 18, ISO 15407-1/VDMA 24563-02

MONOSTABLE 5/3

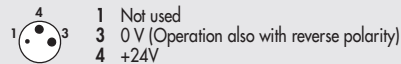
DIN 43650-C VERSION
EN 175301-803-C

M8 VERSION



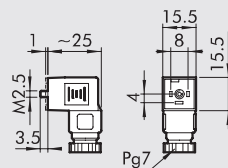
Symbol	Code	Abbrev.	Weight [g]
	7063020212	MSV D6 SOS CC 24VDC	156
	706302021M	MSV D6 SOS CC 24VDC M8	156
	7063020213	MSV D6 SOS CC 24VAC	156
	7063020214	MSV D6 SOS CC 110VAC	156
	7063020215	MSV D6 SOS CC 220VAC	156
	7063020312	MSV D6 SOS OC 24VDC	156
	706302031M	MSV D6 SOS OC 24VDC M8	156
	7063020313	MSV D6 SOS OC 24VAC	156
	7063020314	MSV D6 SOS OC 110VAC	156
	7063020315	MSV D6 SOS OC 220VAC	156
	7063020412	MSV D6 SOS PC 24VDC	156
	706302041M	MSV D6 SOS PC 24VDC M8	156
	7063020413	MSV D6 SOS PC 24VAC	156
	7063020414	MSV D6 SOS PC 110VAC	156
	7063020415	MSV D6 SOS PC 220VAC	156
	7063030212	MSV D6 SES CC 24VDC	156
	706303021M	MSVD6 SES CC 24VDC M8	156
	7063030213	MSV D6 SES CC 24VAC	156
	7063030214	MSV D6 SES CC 110VAC	156
	7063030215	MSV D6 SES CC 220VAC	156
	7063030312	MSV D6 SES OC 24VDC	156
	706303031M	MSV D6 SES OC 24VDC M8	156
	7063030313	MSV D6 SES OC 24VAC	156
	7063030314	MSV D6 SES OC 110VAC	156
	7063030315	MSV D6 SES OC 220VAC	156
	7063030412	MSV D6 SES PC 24VDC	156
	706303041M	MSV D6 SES PC 24VDC M8	156
	7063030413	MSV D6 SES PC 24VAC	156
	7063030414	MSV D6 SES PC 110VAC	156
	7063030415	MSV D6 SES PC 220VAC	156

M8 CONNECTION



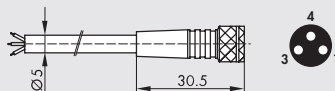
ACCESSORIES FOR VALVES MACH 18 MSV, SOLENOID/PNEUMATIC

CONNECTOR 15 mm DIN 43650 SHAPE C / EN 175301-803-C



Code	Description
W0970501021	Connector 15 mm C shape
W0970501022	Connector 15 mm C shape LED 24V
W0970501025	Connector 15 mm C shape LED+VDR 24V

M8 STRAIGHT CONNECTOR WITH CABLE

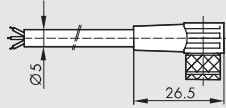


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

90° M8 CONNECTOR WITH CABLE

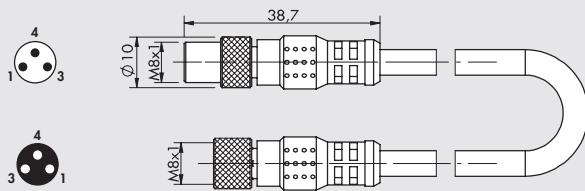


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 M - M8 F CONNECTOR

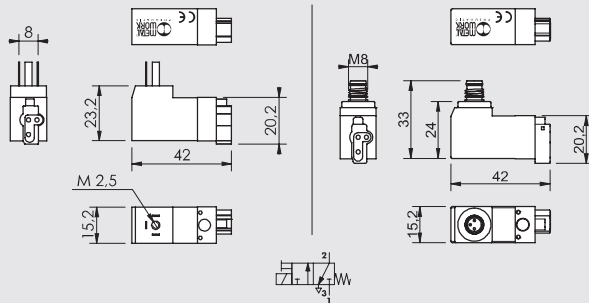


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

SPARE PARTS FOR VALVES MACH 18 MSV, SOLENOID/PNEUMATIC

PILOT MACH 18



Code	Description
W4015301000	In-line pilot 24VDC
W4015301210	In-line pilot 24VDC M8
W4015301010	In-line pilot 24VAC 50/60 Hz
W4015301020	In-line pilot 110VAC 50/60 Hz
W4015301030	In-line pilot 220VAC 50/60 Hz

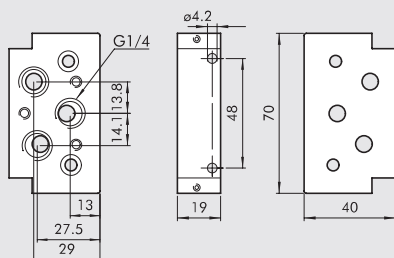
NOTES

BASES TO ISO 15407-1/VDMA 24563-02 FOR MACH 18 VALVES

VALVES

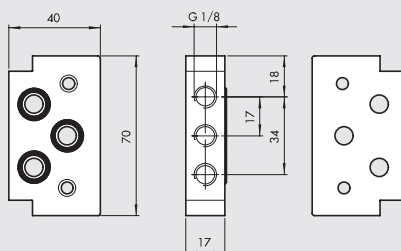
VALVES MACH 18, ISO 15407-1/VDMA 24563-02

① INPUT END PLATE



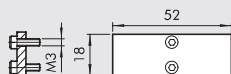
Code	Description	Weight [g]
0227100201	ISO 15407-1 input end plate kit	125

③ INTERMEDIATE UPPER PORTS



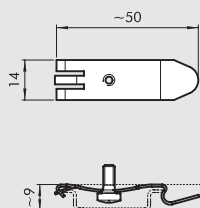
Code	Description	Weight [g]
0227200300	ISO 15407-1 intermediate upper ports kit	118

⑤ BLANKING PLATE - UNUSED POSITION



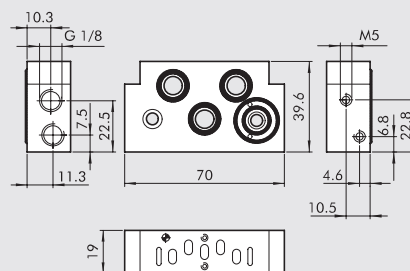
Code	Description	Weight [g]
0227200500	ISO 15407-1 blanking plate	24

⑦ CONNECTION BRACKETS ON THE BAR OMEGA (DIN EN 50022)



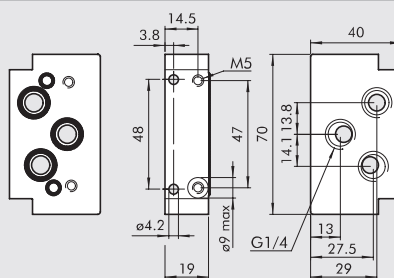
Code	Description	Weight [g]
0227300600	Connection brackets on DIN bar	7

② MANIFOLD BASE, SIDE PORTS



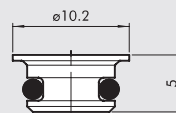
Code	Description	Weight [g]
0227200150	ISO 15407-1 manifold base, side ports kit	125

④ OUTPUT END PLATE



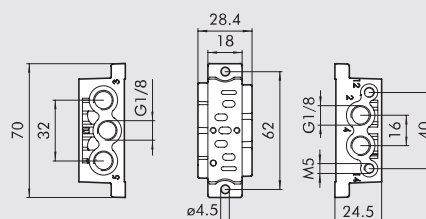
Code	Description	Weight [g]
0227100200	ISO 15407-1 output end-plate kit	122

⑥ INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0227100000	Intermediate diaphragm	2

⑧ INDIVIDUAL BASE

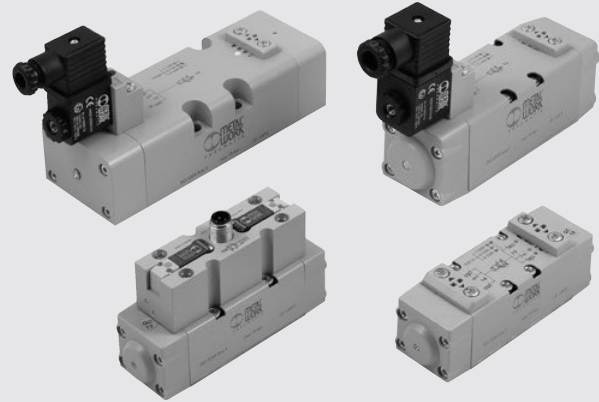


Code	Description	Weight [g]
0227200800	ISO 15407-1 individual base kit	51

VALVES ISO 5599/1, SERIES IPV-ISV



The assembly surface dimensions of ISO1, ISO2 and ISO 3 valves are to ISO5599-1. They are available in the 5-way versions with 2 and 3 positions and with pneumatic or solenoid actuation.



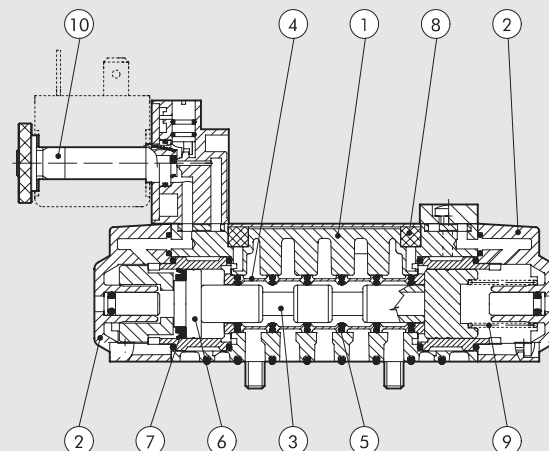
VALVES

VALVES ISO 5599/1, SERIES IPV-ISV

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Operating pressure:	bar			
• monostable and bistable differential		Vacuum to 10 pneumatic / 2.5 to 10 solenoid/pneumatic		
• bistable		Vacuum to 10 pneumatic / 1 to 10 solenoid/pneumatic		
• pilot-assisted		Vacuum to 10		
Minimum pilot pressure	bar	2.5		
Operating temperature range	°C	-10 to +60		
Nominal diameter	mm	7.5	12	15
Conductance C	Nl/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	1100	2700	4600
Valve / base screw tightening torque	Nm	3 - 4	6 - 7	10 - 12
Installation		In any position (vertical assembly is not recommended for bistable valves subjected to vibration)		
Assembly		On single and manifold bases according to ISO 5599/1		
Recommended lubricant		ISO and UNI FD 22		
Solenoid pilot		to CNOMO / in-line pilot / M12		to CNOMO
Hand operator		Bistable on solenoid pilot Monostable on valve body		
Maximum coil nut torque	Nm	1		
Compatibility with oils		See chapter Z1		

COMPONENTS

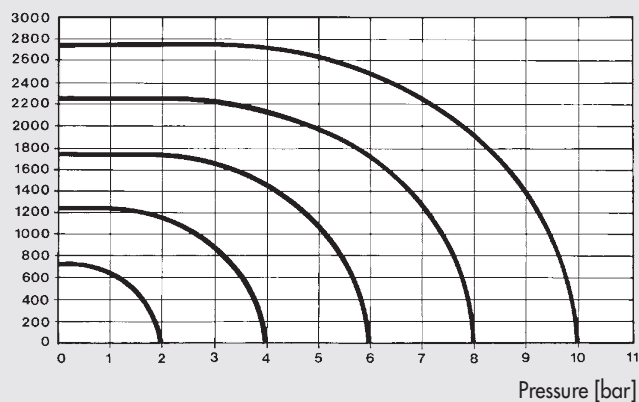
- ① VALVE BODY: Aluminium
- ② END CAP: Hostaform®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHART

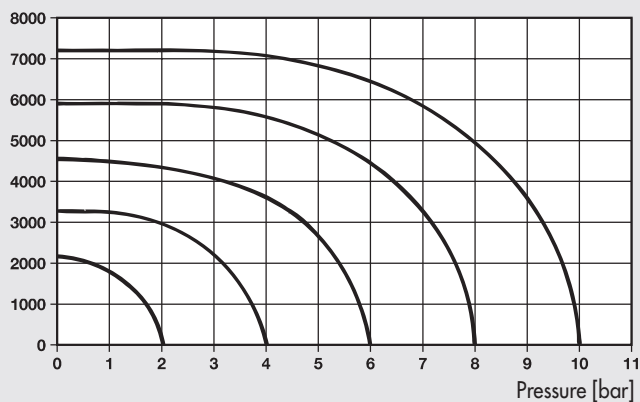
ISO 1

Flow rates [Nl/min]



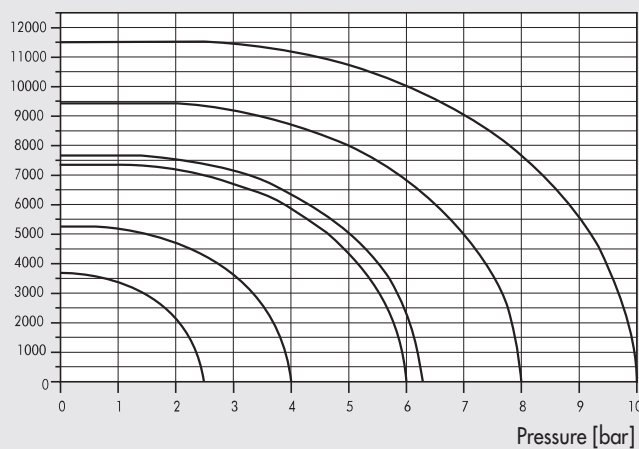
ISO 2

Flow rates [Nl/min]



ISO 3

Flow rates [Nl/min]



SYNOPTIC, SIZES AND VERSIONS

I P V		5		5		P N		S		O O	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
IPV	ISO pneumatic	5	ISO 1	5	5/2	PN	pneumatic	S	mechanical springs	OO	no indication
ISV	ISO solenoid/pneumatic	6	ISO 2	6	5/3	SO	solenoid	B	bistable	CC	closed centres
		7	ISO 3			SE	solenoid assisted	D	differential	OC	open centres
						* DO	solenoid in line			PC	pressure centres
						* DE	solenoid assisted in line				
						● CO	M12 solenoid				
						● CE	M12 solenoid assisted				

* Only for ISO 1

● Only for ISO 1 and ISO 2

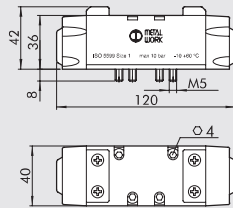
VALVES ISO 5599/1, PNEUMATIC SERIES IPV

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure	bar	Vacuum to 10		
Minimum operation pressure:				
• monostable and bistable differential	bar	2.5		
• bistable	bar	1		
Operating temperature range	°C	-10° to +60		
Nominal diameter	mm	7.5	12	15
Conductance C	NI/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	NI/min	1100	2700	4600
Response times at 6 Bar:				
• monostable	ms	12	24	35
• bistable	ms	20	30	45
Repositioning response times at 6 Bar:				
• monostable	ms	30	43	55
• bistable	ms	20	30	45
Hand operator		monostable on valve body		



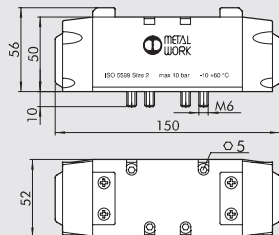
VALVES

PNEUMATIC ACTUATION ISO 1



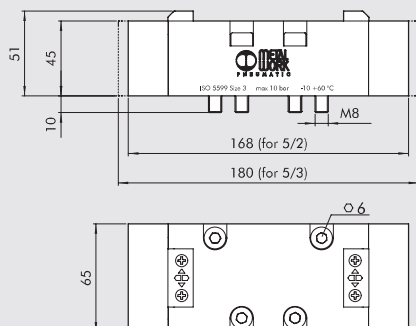
Symbol	Code	Abbrev.	Weight [g]
	7051011100	IPV 55 PNS OO	310
	7051011200	IPV 55 PNB OO	310
	7051011300	IPV 55 PND OO	310
	7051012100	IPV 56 PNS CC	310
	7051012200	IPV 56 PNS OC	310
	7051012300	IPV 56 PNS PC	310

PNEUMATIC ACTUATION ISO 2



Symbol	Code	Abbrev.	Weight [g]
	7052011100	IPV 65 PNS OO	705
	7052011200	IPV 65 PNB OO	705
	7052011300	IPV 65 PND OO	705
	7052012100	IPV 66 PNS CC	705
	7052012200	IPV 66 PNS OC	705
	7052012300	IPV 66 PNS PC	705

PNEUMATIC ACTUATION ISO 3



Symbol	Code	Abbrev.	Weight [g]
	7056011100	IPV 75 PNS OO	1175
	7056011200	IPV 75 PNB OO	1175
	7056011300	IPV 75 PND OO	1175
	7056012100	IPV 76 PNS CC	1290
	7056012200	IPV 76 PNS OC	1290
	7056012300	IPV 76 PNS PC	1290

VALVES ISO 5599/1, SERIES IPV-ISO

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV

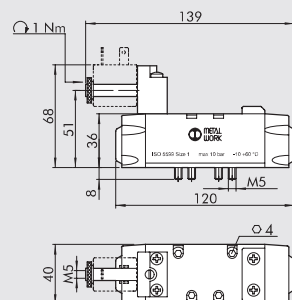
VALVES

VALVES ISO 5599/1, SERIES IPV-ISV

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure:	bar			
• monostable and bistable differential			2.5 to 10	
• bistable			1 to 10	
• pilot-assisted			Vacuum to 10	
Minimum pilot pressure	bar		2.5	
Operating temperature range	°C		-10 to +60	
Nominal diameter	mm	7.5	12	15
Conductance C	Nl/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	1100	2700	4600
TRA / TRR monostable at 6 bar	ms	24 / 50	39 / 60	50 / 120
TRA / TRR bistable at 6 bar	ms	20 / 20	25 / 25	35 / 35
Solenoid pilot		Standards CNOMO		
Hand operator		Bistable on solenoid pilot Monostable on valve body		
Coils		30 mm side DIN 43650 Form A - ISO 22 mm side		
Maximum coil nut torque	Nm	1		

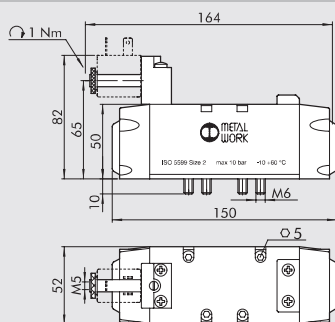


MONOSTABLE 5/2 ISO 1



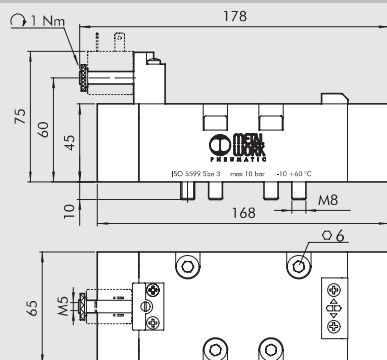
Symbol	Code	Abbrev.	Weight [g]
	7051021100	ISV 55 SOS OO	344
	7051021400	ISV 55 SES OO	344

MONOSTABLE 5/2 ISO 2



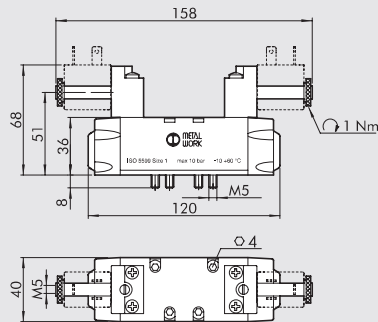
Symbol	Code	Abbrev.	Weight [g]
	7052021100	ISV 65 SOS OO	715
	7052021400	ISV 65 SES OO	715

MONOSTABLE 5/2 ISO 3



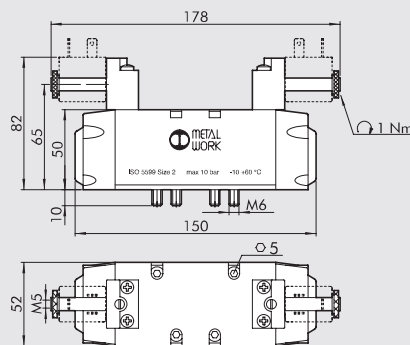
Symbol	Code	Abbrev.	Weight [g]
	7056021100	ISV 75 SOS OO	1207
	7056021400	ISV 75 SES OO	1207

BISTABLE 5/2 ISO 1 - MONOSTABLE 5/3 ISO 1



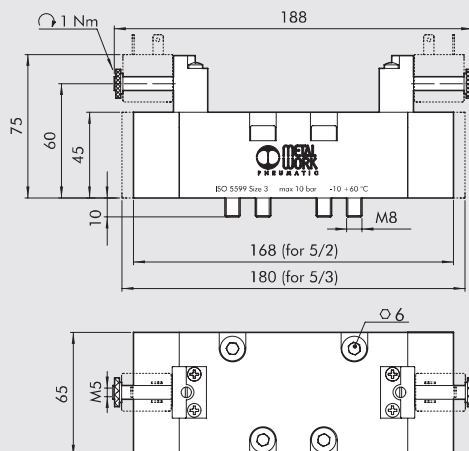
Symbol	Code	Abbrev.	Weight [g]
	7051021200	ISV 55 SOB OO	388
	7051021300	ISV 55 SOD OO	375
	7051022100	ISV 56 SOS CC	372
	7051022200	ISV 56 SOS OC	372
	7051022300	ISV 56 SOS PC	372
	7051021500	ISV 55 SEB OO	388
	7051021600	ISV 55 SED OO	375
	7051022400	ISV 56 SES CC	372
	7051022500	ISV 56 SES OC	372
	7051022600	ISV 56 SES PC	372

BISTABLE 5/2 ISO 2 - MONOSTABLE 5/3 ISO 2



Symbol	Code	Abbrev.	Weight [g]
	7052021200	ISV 65 SOB OO	740
	7052021300	ISV 65 SOD OO	710
	7052022100	ISV 66 SOS CC	720
	7052022200	ISV 66 SOS OC	720
	7052022300	ISV 66 SOS PC	720
	7052021500	ISV 65 SEB OO	740
	7052021600	ISV 65 SED OO	710
	7052022400	ISV 66 SES CC	720
	7052022500	ISV 66 SES OC	720
	7052022600	ISV 66 SES PC	720

BISTABLE 5/2 ISO 3 - MONOSTABLE 5/3 ISO 3



Symbol	Code	Abbrev.	Weight [g]
	7056021200	ISV 75 SOB OO	1230
	7056021300	ISV 75 SOD OO	1230
	7056022100	ISV 76 SOS CC	1355
	7056022200	ISV 76 SOS OC	1355
	7056022300	ISV 76 SOS PC	1355
	7056021500	ISV 75 SEB OO	1230
	7056021600	ISV 75 SED OO	1230
	7056022400	ISV 76 SES CC	1355
	7056022500	ISV 76 SES OC	1355
	7056022600	ISV 76 SES PC	1355

VALVES ISO 5599/1, PNEUMATIC, SERIES ISV WITH IN-LINE SOLENOID PILOT

VALVES

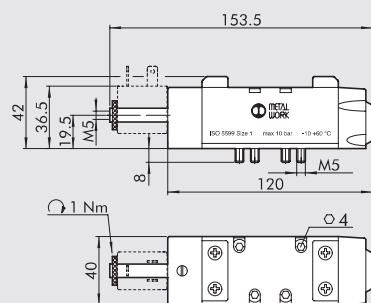
VALVES ISO 5599/1, SERIES IPV-ISV

TECHNICAL DATA

Operating pressure:	bar	ISO 1
• monostable		2.5 to 10
• bistable		1 to 10
• pilot-assisted		Vacuum to 10
Minimum pilot pressure	bar	2.5
Operating temperature range	°C	-10 to +60
Nominal diameter	mm	7.5
Conductance C	NI/min · bar	250
Critical ratio b	bar/bar	0.36
Flow rate at 6 bar ΔP 0.5 bar	NI/min	700
Flow rate at 6 bar ΔP 1 bar	NI/min	1100
TRA / TRR monostable at 6 bar	ms	24 / 50
TRA / TRR bistable at 6 bar	ms	20 / 20
Solenoid pilot		In line pilot
Hand operator		Bistable on solenoid pilot
Coils		30 mm side DIN 43650
		Form A - ISO
		22 mm side
Maximum coil nut torque	Nm	1

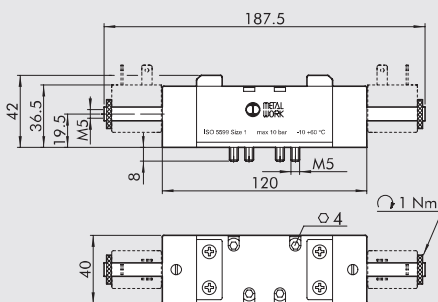


MONOSTABLE 5/2 ISO 1



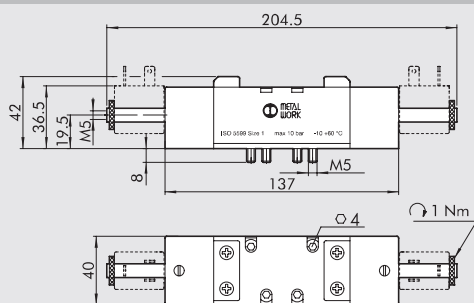
Symbol	Code	Abbrev.	Weight [g]
	7053021100	ISV 55 DOS OO	396
	7053021400	ISV 55 DES OO	396

BISTABLE 5/2 ISO 1



Symbol	Code	Abbrev.	Weight [g]
	7053021200	ISV 55 DOB OO	450
	7053021500	ISV 55 DEB OO	450

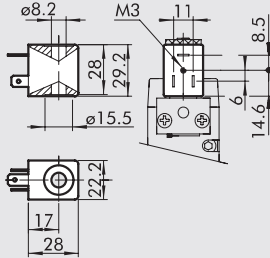
MONOSTABLE 5/3 ISO 1



Symbol	Code	Abbrev.	Weight [g]
	7053022100	ISV 56 DOS CC	517
	7053022200	ISV 56 DOS OC	516
	7053022300	ISV 56 DOS PC	516
	7053022400	ISV 56 DES CC	517
	7053022500	ISV 56 DES OC	516
	7053022600	ISV 56 DES PC	515

COILS AND CONNECTORS FOR ISO 5599/1 SOLENOID VALVES SERIES ISV

COILS SIDE 22 mm

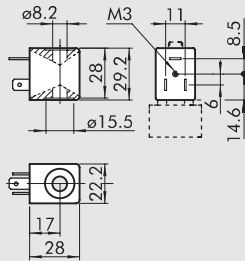


- Voltage tolerance: -10% to +15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

"UL" AND "CSA" COILS 22 mm



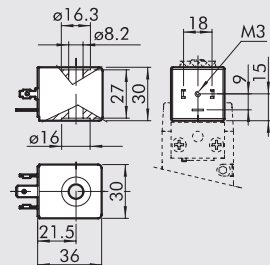
- Voltage tolerance: -10% to +15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR	12Vcc	2W	2W
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR	24Vcc	2W	2W
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR	24V 50/60Hz	5.3VA	3.5VA
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR	110V 50/60Hz	5.3VA	3.5VA
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR	220V 50/60Hz	5.3VA	3.5VA



COILS SIDE 30 mm

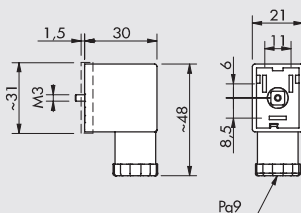


- Electric contact DIN43650 shape A - ISO 4400
- Voltage tolerance: -10% + 10%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector

- Avoid prolonged exposure to the atmospheric agents
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 - A

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0210010100	Coil 30 Ø 8 2W-24VDC	24Vcc	5W	2W
W0210011100	Coil 30 Ø 8 3.5VA-24VAC	24V 50/60Hz	10VA	3.5VA
W0210012100	Coil 30 Ø 8 3.5VA-110VAC	110V 50/60Hz	10VA	3.5VA
W0210013100	Coil 30 Ø 8 3.5VA-220VAC	220V 50/60Hz	10VA	3.5VA

CONNECTOR FOR COILS SIDE 22 mm DIN 43650 B-IND

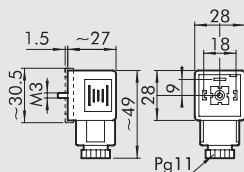


Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

Code	Type	Colour	Ø Cable
W0970510051	LED 24VDC Energy Saving	Transparent	PG9

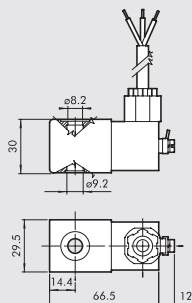
For technical data see page B1.61

CONNECTOR FOR COILS SIDE 30 mm DIN 43650-A



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG11
W0970520034	LED 24V	Transparent	PG11
W0970520035	LED 110V	Transparent	PG11
W0970520036	LED 220V	Transparent	PG11
W0970520037	LED + VDR 24V	Transparent	PG11
W0970520038	LED + VDR 110V	Transparent	PG11
W0970520039	LED + VDR 220V	Transparent	PG11
W0970520070	Atex II 2 GD	Black	PG11

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

According to Atex 2014/34/EU rule: II 2G Ex mb IIC T4/T5 Gb

II 2D Ex tb IIC T130/T95 °C IP66 Db

N.B.: Supplied complete with adapter for Ø8 mm sleeve.

KIT COILS SIDE 22 IP65



Code	Description
0222100100	Kit for coil 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents.
Applicable to valves with a technopolymer control.

NOTES

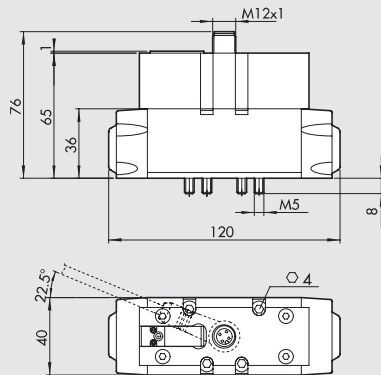
VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV WITH M12 CONNECTOR



TECHNICAL DATA	ISO 1	ISO 2
Operating pressure: bar		
• monostable and bistable differential	2.5 to 10	
• bistable	1 to 10	
• pilot-assisted	Vacuum to 10	
Minimum pilot pressure bar	2.5	
Operating temperature range °C	-10 to +60	
Nominal diameter mm	7.5	12
Conductance C NI/min · bar	250	657.14
Critical ratio b bar/bar	0.36	0.25
Flow rate at 6 bar ΔP 0.5 bar NI/min	700	1800
Flow rate at 6 bar ΔP 1 bar NI/min	1100	2700
TRA / TRR monostable at 6 bar ms	22 / 60	78 / 180
Solenoid pilot	With built-in coil	
Hand operator	Monostable on solenoid pilot Monostable on valve body	
Coil power W	1.2	
Voltage	24 VDC ±10%	
Electrical connection	M12	
Degree of protection	IP65 EN60529	
Electrical protection	Transil	

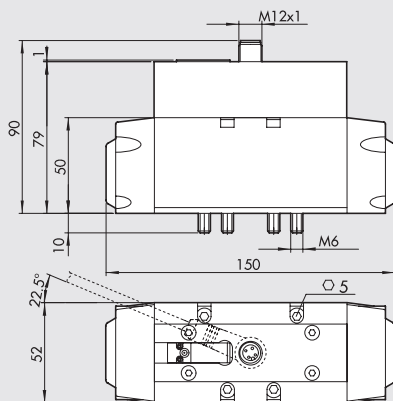


MONOSTABLE 5/2 ISO 1



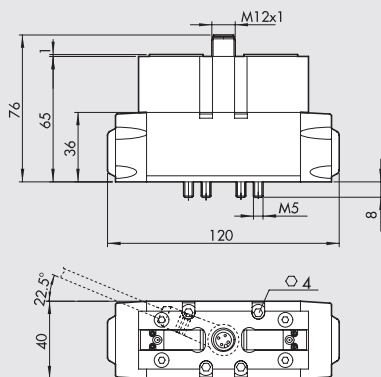
Symbol	Code	Abbrev.	Weight [g]
	7054021100	ISV 55 COS OO	508
	7054021400	ISV 55 CES OO	508

MONOSTABLE 5/2 ISO 2



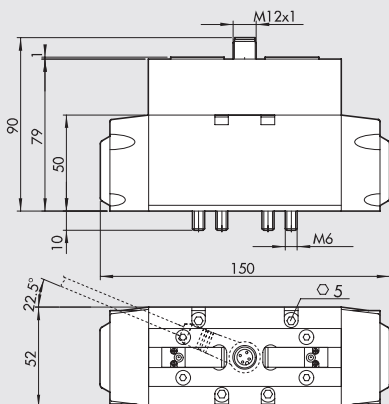
Symbol	Code	Abbrev.	Weight [g]
	7055021100	ISV 65 COS OO	901
	7055021400	ISV 65 CES OO	901

BISTABLE 5/2 ISO 1 - MONOSTABLE 5/3 ISO 1



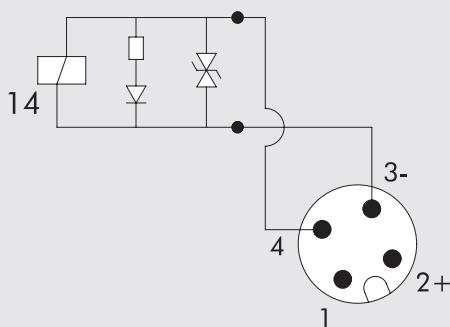
Symbol	Code	Abbrev.	Weight [g]
	7054021200	ISV 55 COB OO	512
	7054021300	ISV 55 COD OO	490
	7054022100	ISV 56 COS CC	496
	7054022200	ISV 56 COS OC	496
	7054022300	ISV 56 COS PC	496
	7054021500	ISV 55 CEB OO	512
	7054021600	ISV 55 CED OO	490
	7054022400	ISV 56 CES CC	496
	7054022500	ISV 56 CES OC	496
	7054022600	ISV 56 CES PC	496

BISTABLE 5/2 ISO 2 - MONOSTABLE 5/3 ISO 2

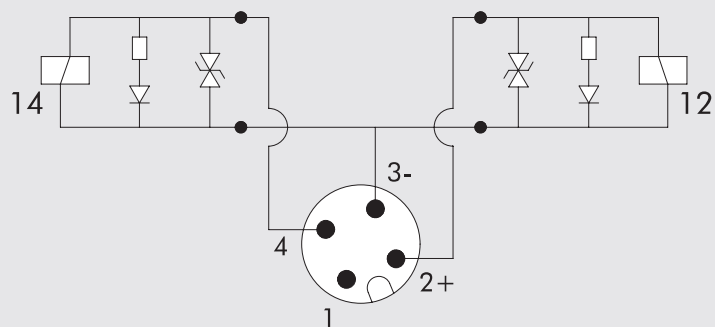


Symbol	Code	Abbrev.	Weight [g]
	7055021200	ISV 65 COB OO	860
	7055021300	ISV 65 COD OO	860
	7055022100	ISV 66 COS CC	868
	7055022200	ISV 66 COS OC	868
	7055022300	ISV 66 COS PC	868
	7055021500	ISV 65 CEB OO	860
	7055021600	ISV 65 CED OO	860
	7055022400	ISV 66 CES CC	868
	7055022500	ISV 66 CES OC	868
	7055022600	ISV 66 CES PC	868

WIRING DIAGRAM



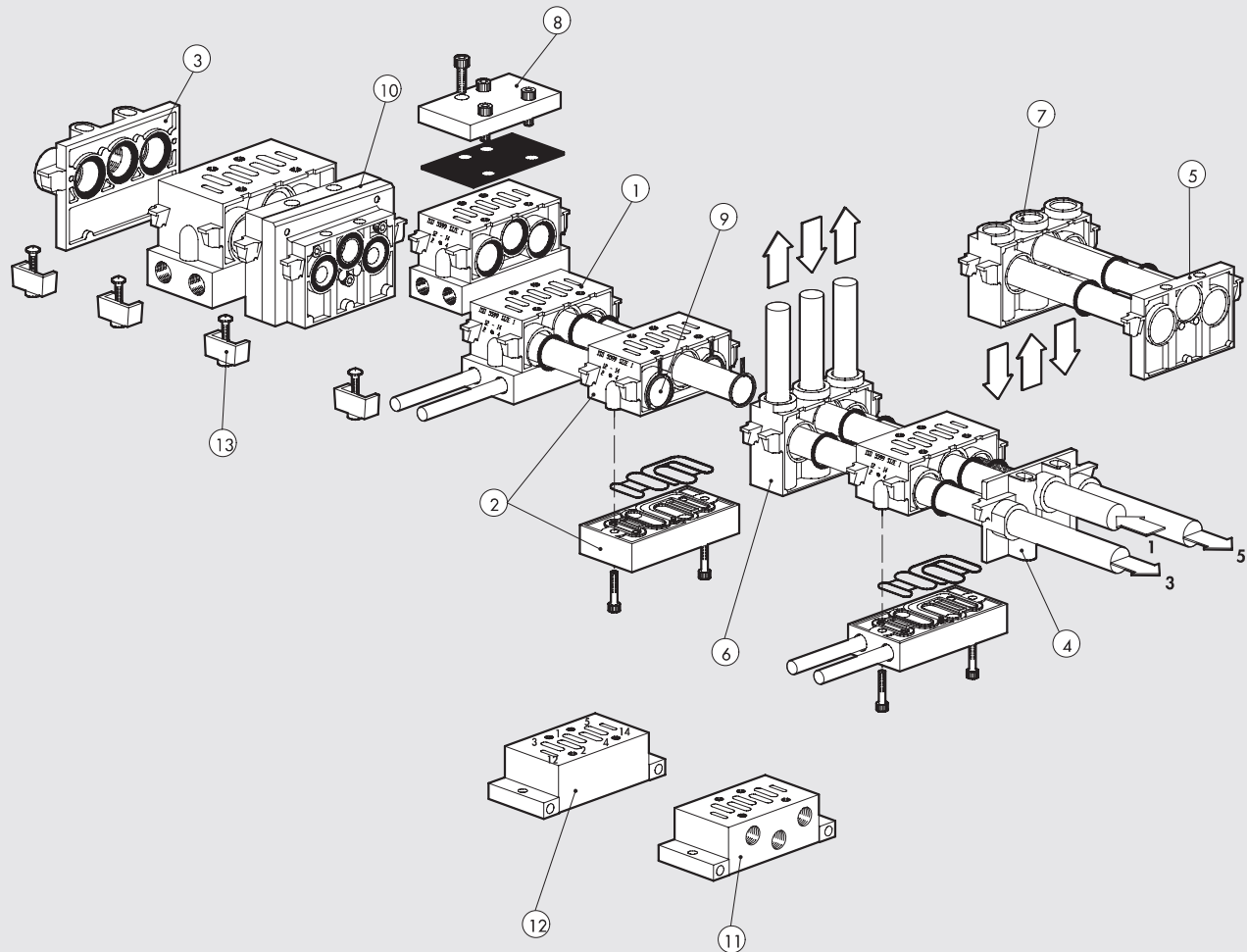
MONOSTABLE



BISTABLE

N.B.: Can be used the M12x1 connectors on page C5.12, without wiring the central PIN.

BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE 1 AND 2



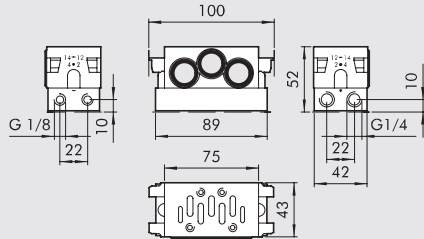
VALVES

BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE 1 AND 2

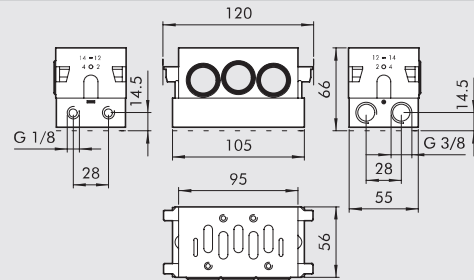
Reference	Code ISO 1	Code ISO 2	Description
①	0228000150	0228001150	Manifold base - side ports
②	0228000155	0228001155	Manifold base with bottom ports
③	0228000200	0228001200	Input end plate
④	0228000201	0228001201	Additional input end plate
⑤	0228000210	0228001210	Blind end plate
⑥	0228000300	0228001300	Intermediate - top ports
⑦	0228000301	0228001301	Intermediate - back ports
⑧	0228000500	0228001500	Blanking plate
⑨	0228000400	0228001400	Intermediate diaphragm
⑩	0228000600	-	ISO 1/ISO 2 port adapter
⑪	0228000100	0228001100	Individual base - side ports
⑫	0228000110	0228001110	Base - bottom ports
⑬	0228000700	0228001700	Assembly kit

① MANIFOLD BASE, SIDE PORTS

ISO 1



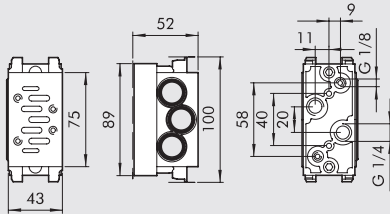
ISO 2



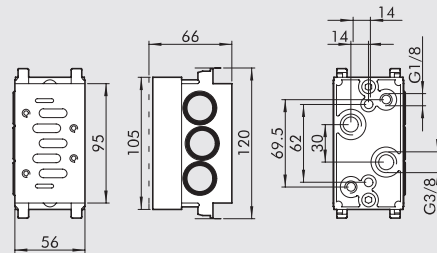
Code	Description	Weight [g]
0228000150	Manifold base, side ports, ISO 1	131
0228001150	Manifold base, side ports, ISO 2	314

② MANIFOLD BASE, BOTTOM PORTS

ISO 1



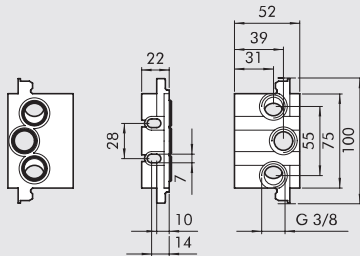
ISO 2



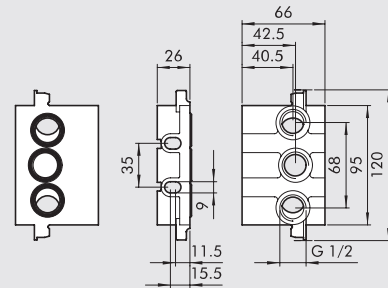
Code	Description	Weight [g]
0228000155	Manifold base, bottom ports, ISO 1	314
0228001155	Manifold base, bottom ports, ISO 2	505

③ INPUT END PLATE

ISO 1



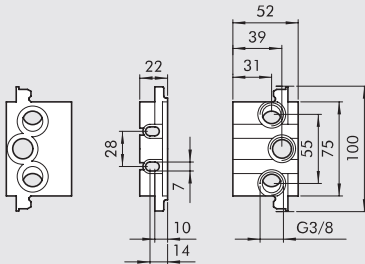
ISO 2



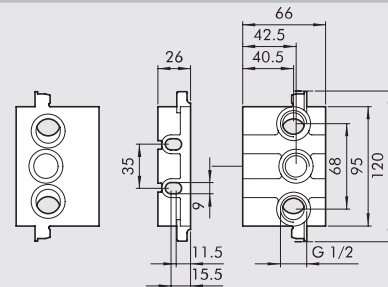
Code	Description	Weight [g]
0228000200	Input end plate ISO 1	129
0228001200	Input end plate ISO 2	206

④ ADDITIONAL INPUT END PLATE

ISO 1



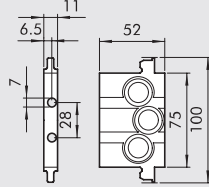
ISO 2



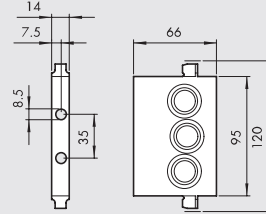
Code	Description	Weight [g]
0228000201	Additional input end plate, ISO 1	84
0228001201	Additional input end plate, ISO 2	162

5 BLIND END PLATE

ISO 1



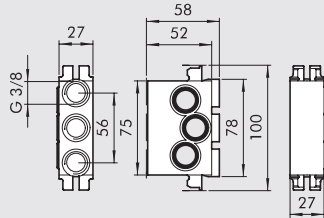
ISO 2



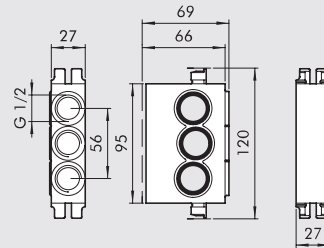
Code	Description	Weight [g]
0228000210	Blind end plate, ISO 1	79
0228001210	Blind end plate, ISO 2	130

6 INTERMEDIATE TOP PORTS

ISO 1



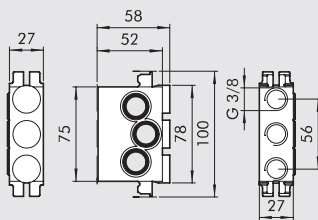
ISO 2



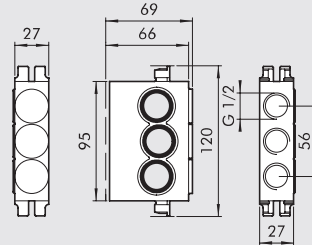
Code	Description	Weight [g]
0228000300	Intermediate top ports, ISO 1	235
0228001300	Intermediate top ports, ISO 2	299

7 INTERMEDIATE REAR PORTS

ISO 1



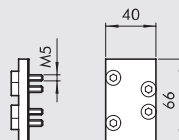
ISO 2



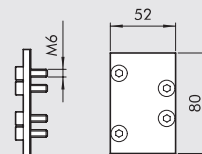
Code	Description	Weight [g]
0228000301	Intermediate rear ports, ISO 1	237
0228001301	Intermediate rear ports, ISO 2	299

8 BLANKING PLATE

ISO 1



ISO 2



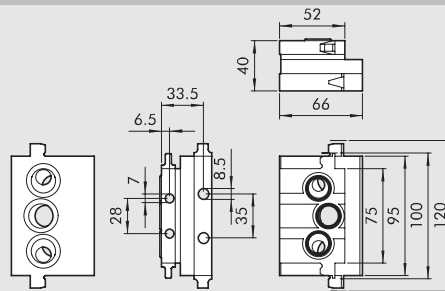
Code	Description	Weight [g]
0228000500	Blanking plate, ISO 1	47
0228001500	Blanking plate, ISO 2	96

9 INTERMEDIATE DIAPHRAGM



Code	Description	Weight [g]
0228000400	Intermediate diaphragm, ISO 1	4
0228001400	Intermediate diaphragm, ISO 2	7

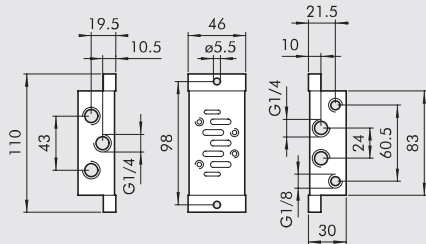
10 DIMENSION ADAPTER



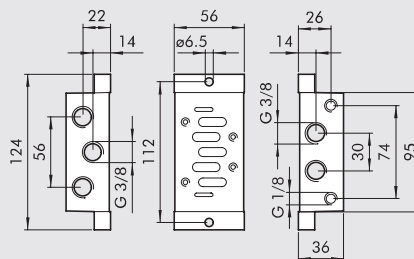
Code	Description	Weight [g]
0228000600	Dimension adapter ISO 1-2	454

11 INDIVIDUAL BASE SIDE PORTS

ISO 1



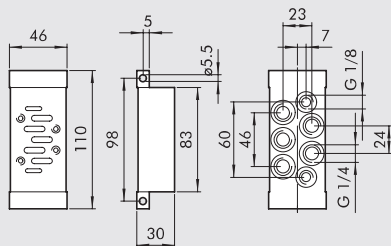
ISO 2



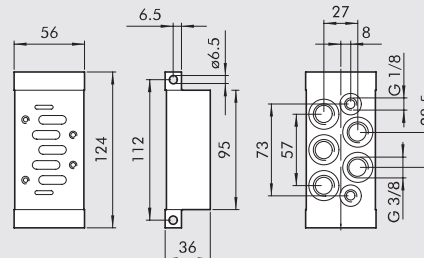
Code	Description	Weight [g]
0228000100	Individual base side ports, ISO 1	165
0228001100	Individual base side ports, ISO 2	257

12 INDIVIDUAL BASE BOTTOM PORTS

ISO 1



ISO 2



Code	Description	Weight [g]
0228000110	Individual base bottom ports, ISO 1	197
0228001110	Individual base bottom ports, ISO 2	304

13 ASSEMBLY KIT

ISO 1

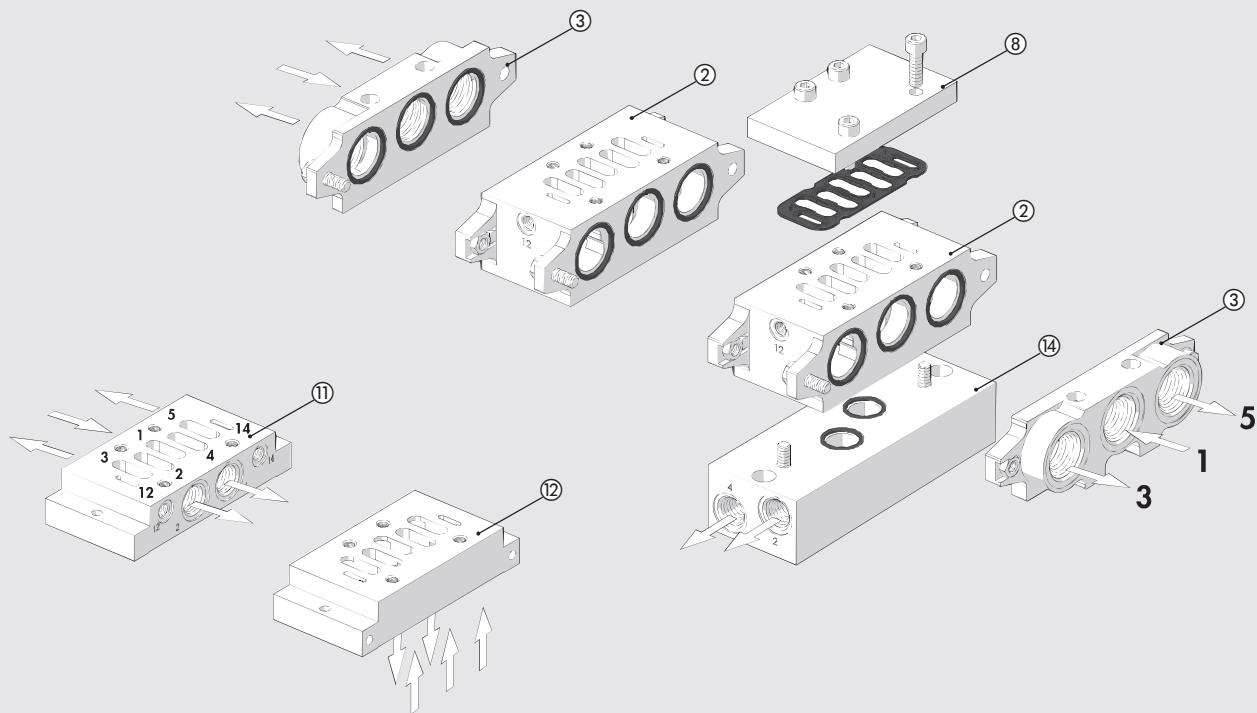


ISO 2



Code	Description	Weight [g]
0228000700	Assembly kit, ISO 1	47
0228001700	Assembly kit, ISO 2	47

BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE ISO 3

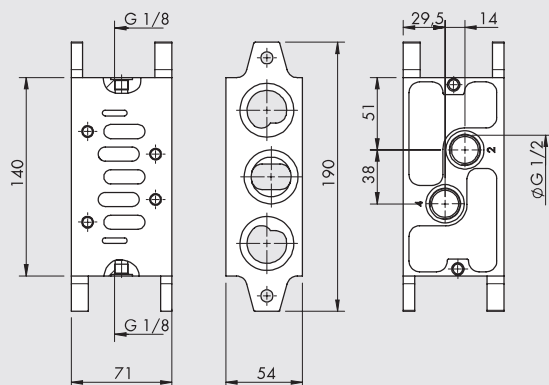


VALVES

BASES ISO 5599/1 FOR VALVES SERIES IPV-ISV SIZE ISO 3

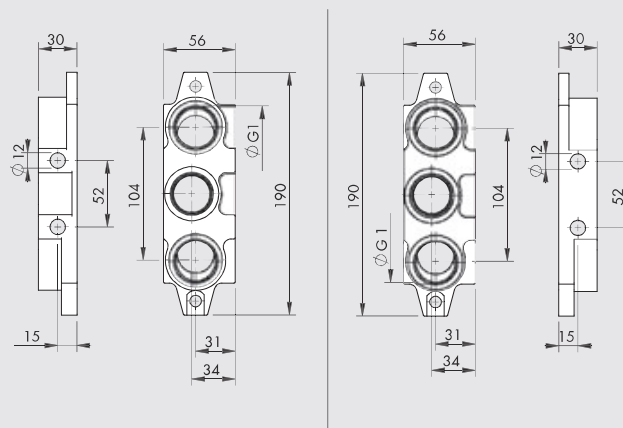
Reference	Code ISO 3	Description
②	0228002155	Manifold base with bottom ports
③	0228002200	Input end plate
⑧	0228002500	Blanking plate
⑪	0228002100	Individual base - side ports
⑫	0228002110	Base - bottom ports
⑭	0228002150	Side interface

② MANIFOLD BASE, BOTTOM PORTS



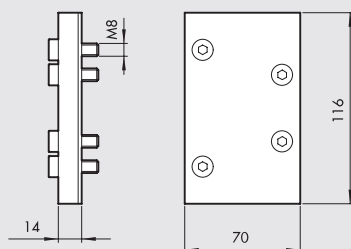
Code	Description	Weight [g]
0228002155	Manifold base, bottom ports, ISO 3	915

③ INPUT END PLATE



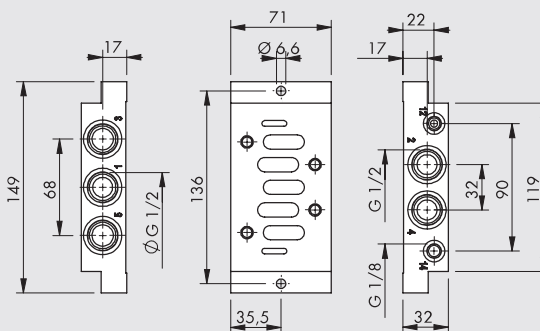
Code	Description	Weight [g]
0228002200	Input end plate, ISO 3	880

⑧ BLANKING PLATE



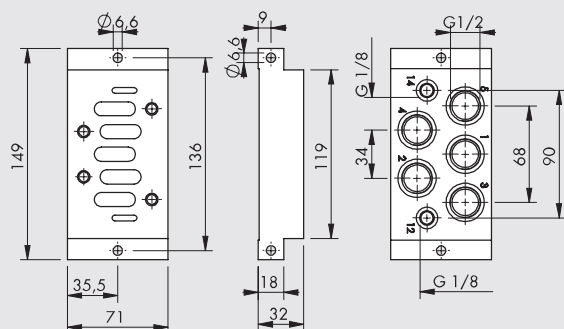
Code	Description	Weight [g]
0228002500	Blanking plate, ISO 3	350

⑪ INDIVIDUAL BASE SIDE PORTS



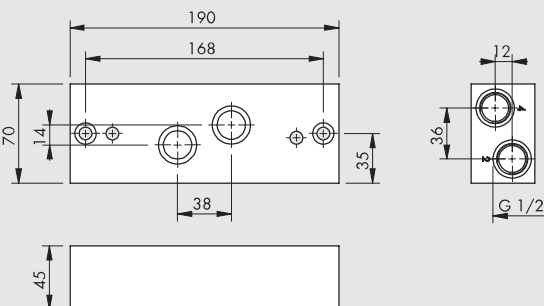
Code	Description	Weight [g]
0228002100	Individual base side ports, ISO 3	470

⑫ INDIVIDUAL BASE BOTTOM PORTS



Code	Description	Weight [g]
0228002110	Individual base bottom ports, ISO 3	655

⑭ SIDE INTERFACE

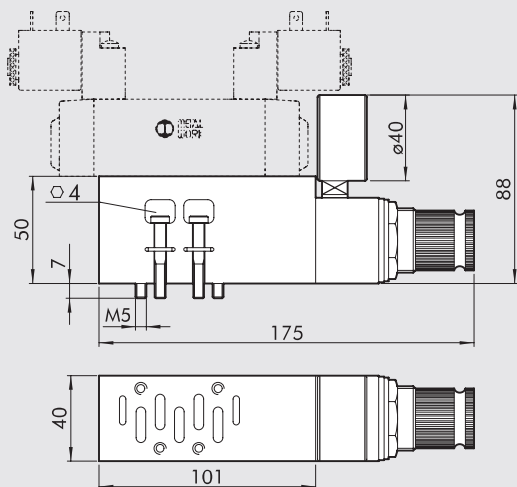


Code	Description	Weight [g]
0228002150	Side interface, ISO 3	1470

SANDWICH REGULATORS FOR ISO 5599/1 BASES ISO1-2

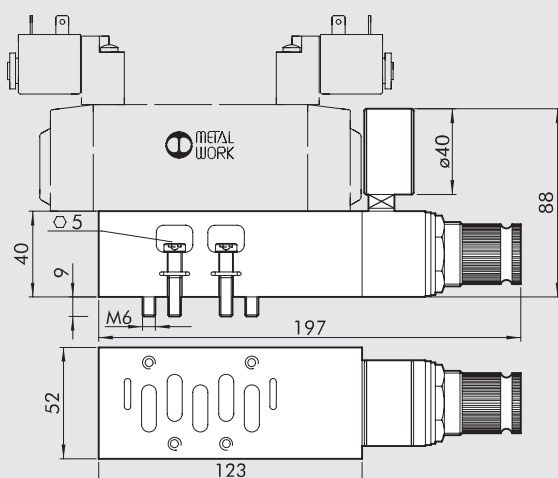
[illegible]

SANDWICH REGULATOR FOR ISO 1 VALVES



Symbol	Code	Description	Weight [g]
	0228000804	Sandwich regulator 1 0 to 12 bar ISO 1	760
	0228000814*	Sandwich regulator 3 0 to 12 bar ISO 1	760
* A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure			

SANDWICH REGULATOR FOR ISO 2 VALVES



Symbol	Code	Description	Weight [g]
	0228001804	Sandwich regulator 1 0 to 12 bar ISO 2	900
	0228001814*	Sandwich regulator 3 0 to 12 bar ISO 2	900
* A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure			



VALVES SERIES 70 SAFE AIR®

VALVES

VALVES SERIES 70 SAFE AIR®

Starting from the robust and reliable valves series 70, we have added a few distinctive features, such as the presence of a valve status diagnostic system and the creation of a double communication channel guaranteeing redundancy of the architecture.

The simplest version is obtained from a pneumatically-operated 3/2 monostable valve. It is well known that when this type of valve is in the idle state (coil de-energized), port 1 is not connected to the downstream pneumatic circuit and port 2 is on relief; when the valve is operated (coil energized), port 1 is connected to port 2. When the coil is de-energized again, the valve is returned to the idle state (and hence port 2 relieves) by means of a spring that returns the spool to the home position.

In the event of a failure, the spool may remain in the actuation position, even when the coil is de-energized, thus leaving port 2 pressurized. To offset this problem, we have added a Hall-effect sensor that reads the spool position. This means that when the valve is deactivated, the sensor is in the ON state, when the valve is activated, the sensor is in the OFF state.

A status in which the sensor is OFF state and the coil de-energized indicates that there is a problem.

To reduce the probability of risk during plant maintenance, the manual actuator mounted on the electric control is the monostable type.

The sensor inside the valve is available in the standard version with a 2.5m three-wire cable (standard or ATEX certified) or with an M8 connector and 300 mm cable.

This valve, which is available in sizes 1/8", 1/4", 3/8" and 1/2", is a category 2 component, according to ISO EN 13849, and is suitable for use in safety circuits up to PL = c.

For applications requiring higher performance levels, we have also developed a double-channel version (redundant) that requires the use of two valves series 70 with a monitored spool arranged so that port 2 of valve 1 is connected with port 1 of valve 2. If just one of the valves de-energizes, port 2 relieves, so, even if one of the two spools remains blocked, the other guarantees relief of the compressed-air circuit. In this case, too, the presence of spool position sensors can be used to monitor the status.

The double valve, which is available in the size 1/8", 1/4", 3/8" and 1/2" as well, is a category 4 component according to ISO EN 13849 and is suitable for use in safety circuits up to PL = e.

Both the single- and double-channel valves come with:

- a voluntary examination certificate no. BVI-24-MAC-CV-0007, issued by Bureau Veritas in accordance with EN ISO 13849.



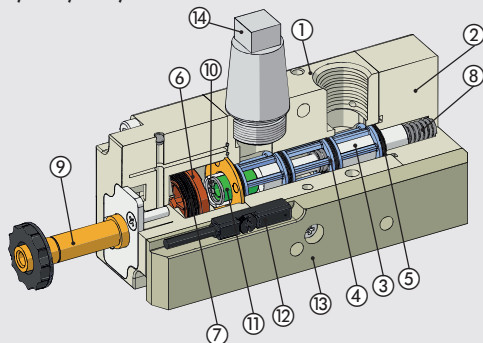
SINGLE VALVE SERIES 70 SAFE AIR®

TECHNICAL DATA	1/8"	1/4"	3/8"	1/2"
Fluid	Filtered unlubricated air (50µm); lubrication, if used, must be continuous			
Operation	3/2 monostable			
Operating pressure: non-assisted	from 2.5 to 10			
pilot-assisted	from vacuum to 10			
Minimum pilot pressure	2.5			
Operating temperature range	from -10 to +60 (from -10 to +45 for ATEX version)			
Nominal diameter	5	7.5	13.3	15
Conductance C	121	264	505	969.5
Critical ratio b	0.32	0.27	0.32	0.5
Flow rate at 6.3 bar Δp 0.5 bar	390	820	1600	3525
Flow rate at 6.3 bar Δp 1 bar	530	1130	2200	4800
Conductance C on relief	128	270	491	969.5
Critical ratio b on relief	0.23	0.29	0.40	0.62
Flow rate on free exhaust at 6.3 bar	900	2050	3550	7000
TRA/TRR at 6.3 bar	15 / 35	19 / 45	21 / 72	38 / 110
Installation	Any position			
Assembly	In-line			
Manual actuator	Monostable			
Recommended lubricant	ISO and UNI FD 22			
Compatibility with oils	See chapter Z1			
Coils	22 mm side, ø 8 hole – EN175301-803 connection, type B			
	Certified EN 60204.1 and VDE 0580			
	For the electrical features see page B1.60 *			
	IP65 with coil and connector mounted			
	Max. 78 dBA with silenced relief			
	1			
	In accordance with Machinery Directive, Annex V **			
	Ex II 3G Ex nA IIC T4 Gc X -10°C<Ta<45°C			
	Ex II 3G Ex h IIC T4 Gc X			
	Ex II 3D Ex tc IIIC T135°C Dc IP65			
	Cuts off the power supply and relieves the air circuit connected to port 2			
	Hall effect (refer to page B1.165 for sensor details)			
	50 x 10 ⁶ cycles			
	2			
	Low (80 %)			
	Suitable for use in safety circuits up to PL=c			

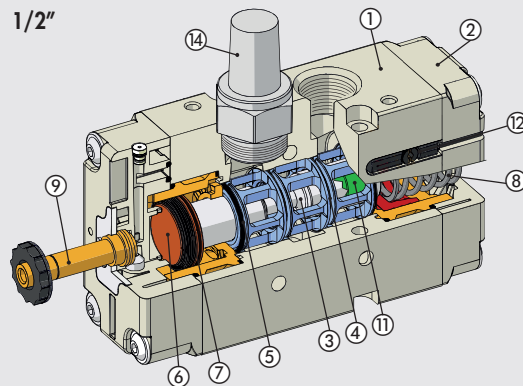
* To avoid malfunctions, we recommend using Metal Work accessories

** The declaration can be downloaded from www.metalwork.it

IMPORTANT: Do not mount 2 or more SAFE AIR® valves in adjacent positions. When mounting valves side by side, the minimum distance is specified in the user manual. Any ferromagnetic masses must be at least 40 mm from the sensor. Prevent magnetic fields from creating disturbance in the sensor area.

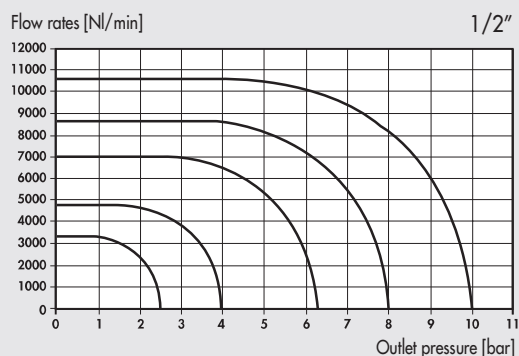
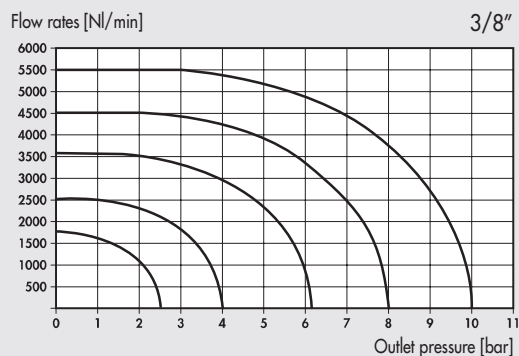
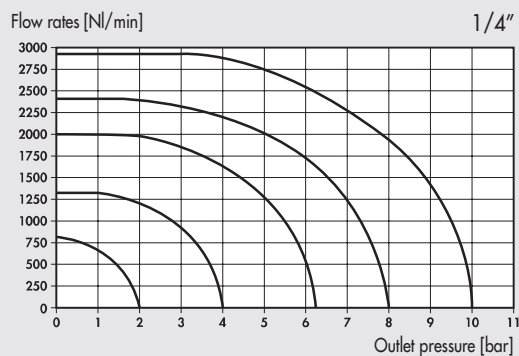
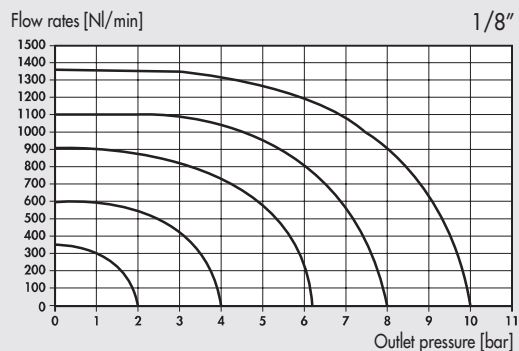
COMPONENTS
1/8"-1/4"-3/8"


- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: plastic
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: technopolymer
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR

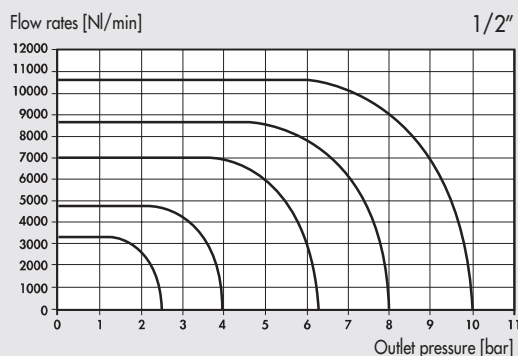
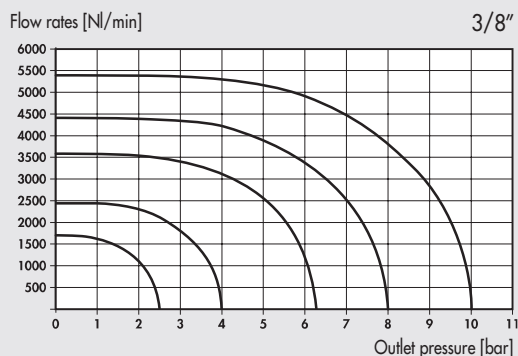
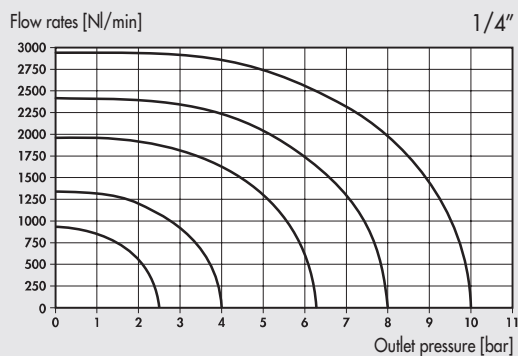
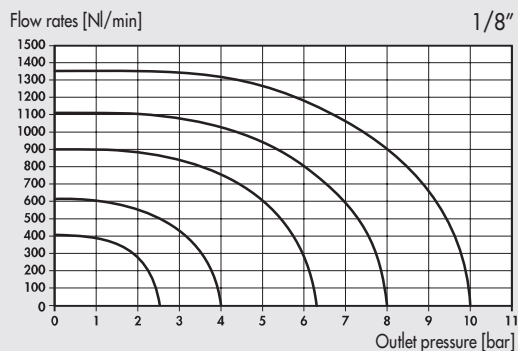
1/2"


- ⑧ SPRINGS: special steel
- ⑨ OPERATOR: Brass pipe – Stainless steel core
- ⑩ LOCKING RING: special steel
- ⑪ MAGNET: Neodymium
- ⑫ SENSOR: Hall effect
- ⑬ SENSOR SUPPORTING PLATE: Aluminium (for 1/8"-1/4"-3/8" only)
- ⑭ SILENCER

FLOW CHARTS ON DELIVERY - SINGLE VALVE



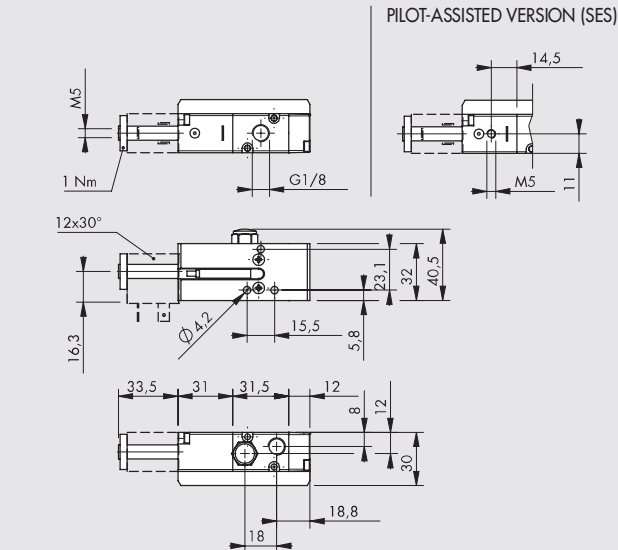
FLOW CHARTS ON RELIEF - SINGLE VALVE

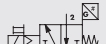
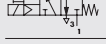
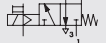
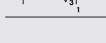
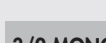


SYNOPTIC, SIZES AND VERSIONS

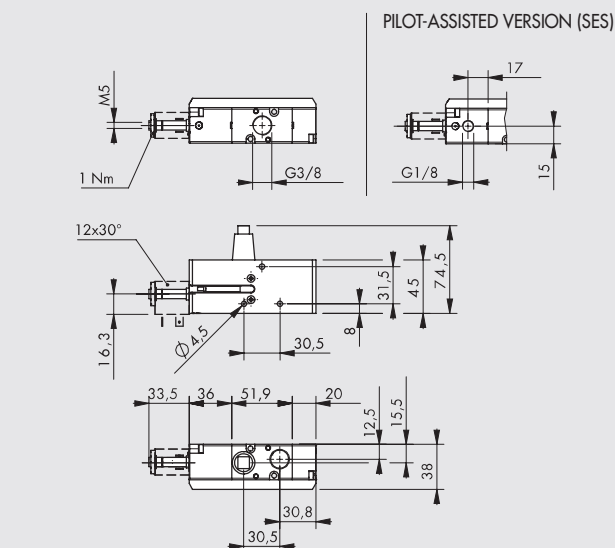
SO V FAMILY	2 DIMENSIONS	3 FUNCTION	SO OPERATORS 14	S RESETTING 12	NC FURTHER DETAILS	3 F SENSOR
SOV solenoid/ pneumatic	2 1/8" 3 1/4" C 3/8" 4 1/2"	3 3/2	SO solenoid SE solenoid assisted	S mechanical springs	NC Normally-Closed	3F 2.5 m 3 wires M8 0.3 m M8 AT 2 m ATEX

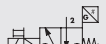
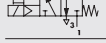
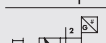
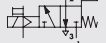
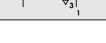
3/2 MONOSTABLE - 1/8"



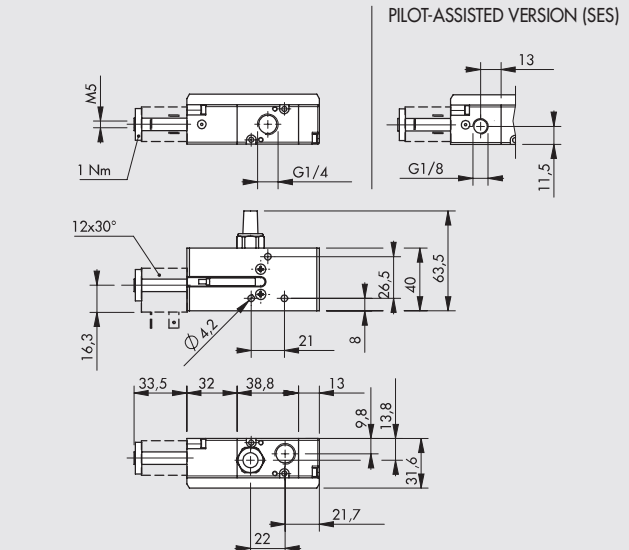
Symbol	Code	Abbrev.	Sensor	Weight [g]
	7015020200	SOV 23 SOS NC 3F	2.5 m 3 wires	182
	7015120200	SOV 23 SOS NC M8	0.3 m M8	178
	7015220200	SOV 23 SOS NC AT	2 m ATEX	174
	7015020500	SOV 23 SES NC 3F	2.5 m 3 wires	182
	7015120500	SOV 23 SES NC M8	0.3 m M8	178
	7015220500	SOV 23 SES NC AT	2 m ATEX	174

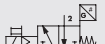
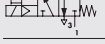
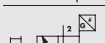
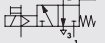
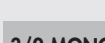
3/2 MONOSTABLE - 3/8"



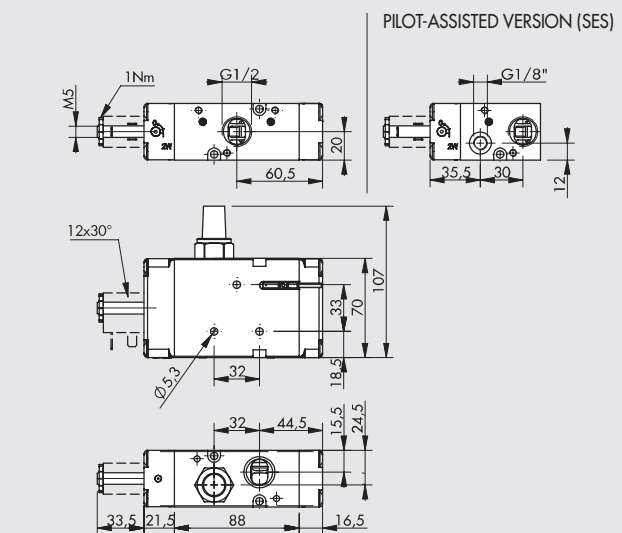
Symbol	Code	Abbrev.	Sensor	Weight [g]
	7045020200	SOV C3 SOS NC 3F	2.5 m 3 wires	402
	7045120200	SOV C3 SOS NC M8	0.3 m M8	398
	7045220200	SOV C3 SOS NC AT	2 m ATEX	394
	7045020500	SOV C3 SES NC 3F	2.5 m 3 wires	402
	7045120500	SOV C3 SES NC M8	0.3 m M8	398
	7045220500	SOV C3 SES NC AT	2 m ATEX	394

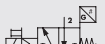
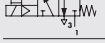
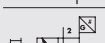
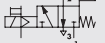
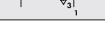
3/2 MONOSTABLE - 1/4"



Symbol	Code	Abbrev.	Sensor	Weight [g]
	7025020200	SOV 33 SOS NC 3F	2.5 m 3 wires	252
	7025120200	SOV 33 SOS NC M8	0.3 m M8	248
	7025220200	SOV 33 SOS NC AT	2 m ATEX	244
	7025020500	SOV 33 SES NC 3F	2.5 m 3 wires	252
	7025120500	SOV 33 SES NC M8	0.3 m M8	248
	7025220500	SOV 33 SES NC AT	2 m ATEX	244

3/2 MONOSTABLE - 1/2"



Symbol	Code	Abbrev.	Sensor	Weight [g]
	7035020200	SOV 43 SOS NC 3F	2.5 m 3 wires	705
	7035120200	SOV 43 SOS NC M8	0.3 m M8	705
	7035220200	SOV 43 SOS NC AT	2 m ATEX	705
	7035020500	SOV 43 SES NC 3F	2.5 m 3 wires	700
	7035120500	SOV 43 SES NC M8	0.3 m M8	700
	7035220500	SOV 43 SES NC AT	2 m ATEX	700

EXAMPLE OF A SAFETY CIRCUIT WITH A SINGLE VALVE

Below is an example of a wiring diagram for controlling Metal Work SAFE AIR® single valves using Pilz® components.

Circuit components:

- a Pilz® safety module PNOZ® s3 for controlling the emergency stop button; terminal Y32 indicates the status of the module, which can be relayed to the machine control logic
- an emergency stop button S1 (Pilz® - PIT® es Set) linked to terminals S11-S12-S22-S23 of the PNOZ® s3
- a Metal Work SAFE AIR® solenoid valve, the 24 VDC coil of which is fed by terminal 14 of the PNOZ® s3 (the other terminal of the coil is 0 V); the valve's Hall-effect sensor is 24 VDC
- a start/reset button S2
- a relay K1, controlled by the valve sensor; an NO contact of the relay is in series with button S2 of the PNOZ® s3.

Expected behaviour with the system operating correctly:

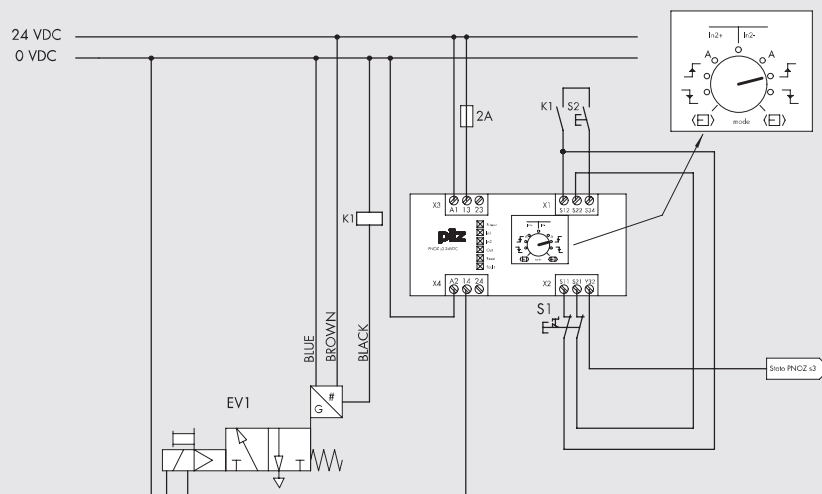
- system deactivated:
 - contact 14 is OFF
 - the coil is de-energized
 - the sensor is ON
 - relay K1 is energized
 - contact K1 is closed
 - contact Y32 is OFF
- with the system activated via the start/reset button S2:
 - contact 14 is ON
 - the coil is energized
 - the sensor is OFF
 - relay K1 is de-energized
 - contact K1 is open
 - contact Y32 is ON

In the event of a malfunction (e.g. spool jam), the coil is de-energized but the sensor remains OFF, relay K1 remains de-energized, contact K1 remains open (preventing subsequent restarts) and contact Y32 is OFF.

In the event of a valve fault, the circuit in the diagram below does not allow relief of the compressed air system. Sensor status must be monitored to assess valve operation. Contact Y32 indicates the status of the PNOZ® s3, not the status of the sensor.

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with $PL = c$ (calculations made with the PAScal programme by Pilz®). Responsibility for final checking that PL lies with the person assembling the circuit.



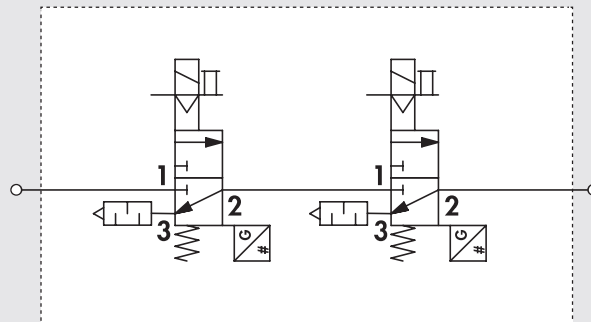
DOUBLE VALVE SERIES 70 SAFE AIR®

TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Fluid		Filtered unlubricated air (50µm); lubrication, if used, must be continuous			
Operation		double 3/2 monostable			
Operating pressure:	bar				
non-assisted		from 2.5 to 10			
pilot-assisted		from vacuum to 10			
Minimum pilot pressure	bar	2.5			
Operating temperature range	°C	from -10 to +60 (from -10 to +45 for ATEX version)			
Conductance C	Nl/min · bar	80	202	346	782.5
Critical ratio b	bar/bar	0.35	0.11	0.24	0.25
Flow rate at 6.3 bar Δp 0.5 bar	Nl/min	261	561	1038	2355
Flow rate at 6.3 bar Δp 1 bar	Nl/min	358	778	1433	3250
Conductance C on relief	Nl/min · bar	132	228	491	969.5
Critical ratio b on relief	bar/bar	0.27	0.21	0.21	0.54
Flow rate on free exhaust at 6.3 bar	Nl/min	930	1700	3550	7000
TRA/TRR α 6.3 bar	ms/ms	28 / 35	38 / 45	50 / 72	85/110
Installation		Any position			
Assembly		In-line			
Manual actuator		Monostable			
Recommended lubricant		ISO e UNI FD 22			
Compatibility with oils		See chapter Z1			
Coils		22 mm side, ø 8 hole – EN175301-803 connection, type B			
		Certified EN 60204.1 and VDE 0580			
		For the electrical features see page B1.60 *			
		IP65 with coil and connector mounted			
		Max. 78 dBA with silenced relief			
		1			
		In accordance with Machinery Directive, Annex V **			
		Ex II 3G Ex nA IIC T4 Gc X -10°C<Ta<45°C			
		Ex II 3G Ex h IIC T4 Gc X			
		Ex II 3D Ex tc IIIC T135°C Dc IP65			
Safety function		Cuts off the power supply and relieves the air circuit connected to port 2			
Type of sensor used		Hall effect (refer to page B1.165 for sensor details)			
B10d		50 x 10 ⁶ cycles			
Category - ISO EN 13849		4			
DC		High (≥ 99 %)			
CCF		80			
PL - ISO EN 13849		Suitable for use in safety circuits up to PL = e			

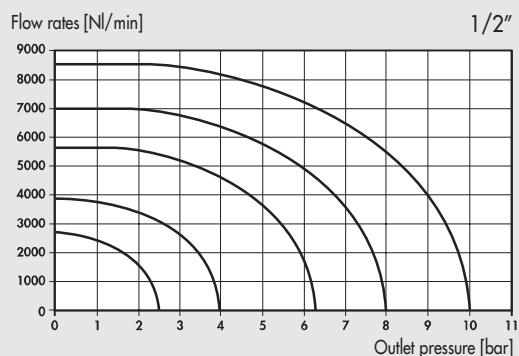
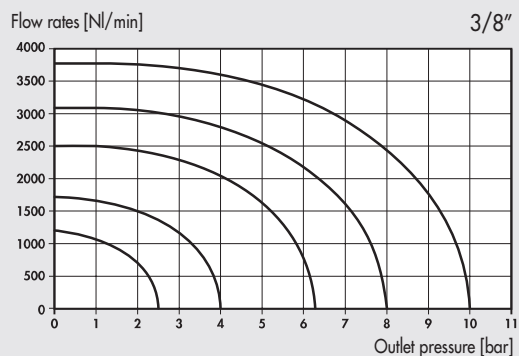
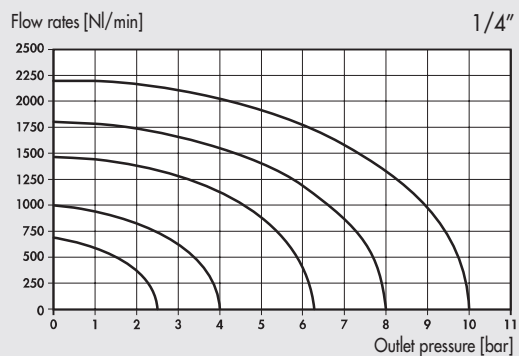
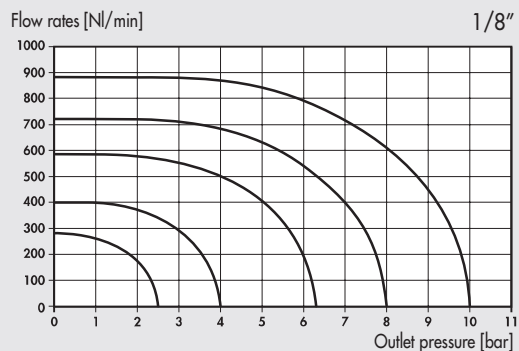
* To avoid malfunctions, we recommend using Metal Work accessories

** The declaration can be downloaded from www.metalwork.it

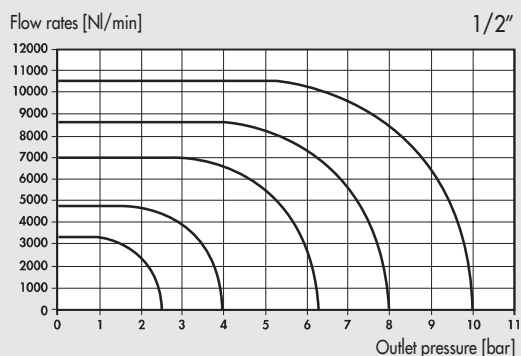
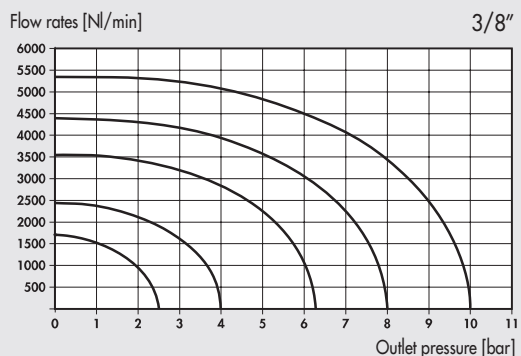
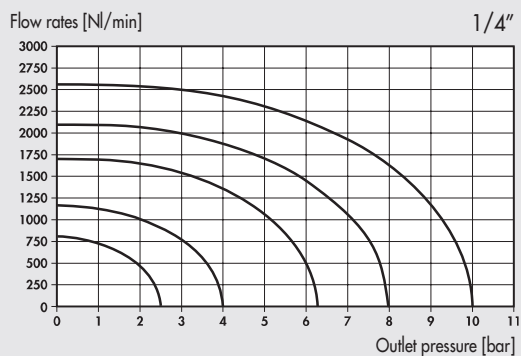
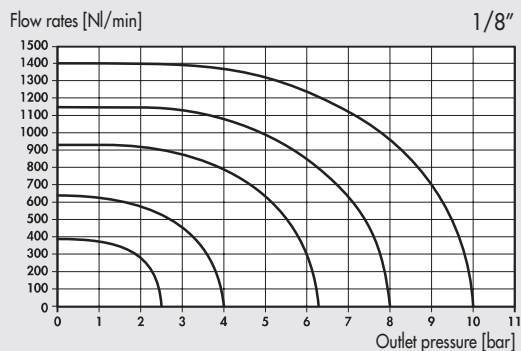
IMPORTANT: Any ferromagnetic masses must be at least 40 mm from the sensor.
Prevent magnetic fields from creating disturbance in the sensor area.

WIRING DIAGRAM


FLOW CHARTS ON DELIVERY - DOUBLE VALVE



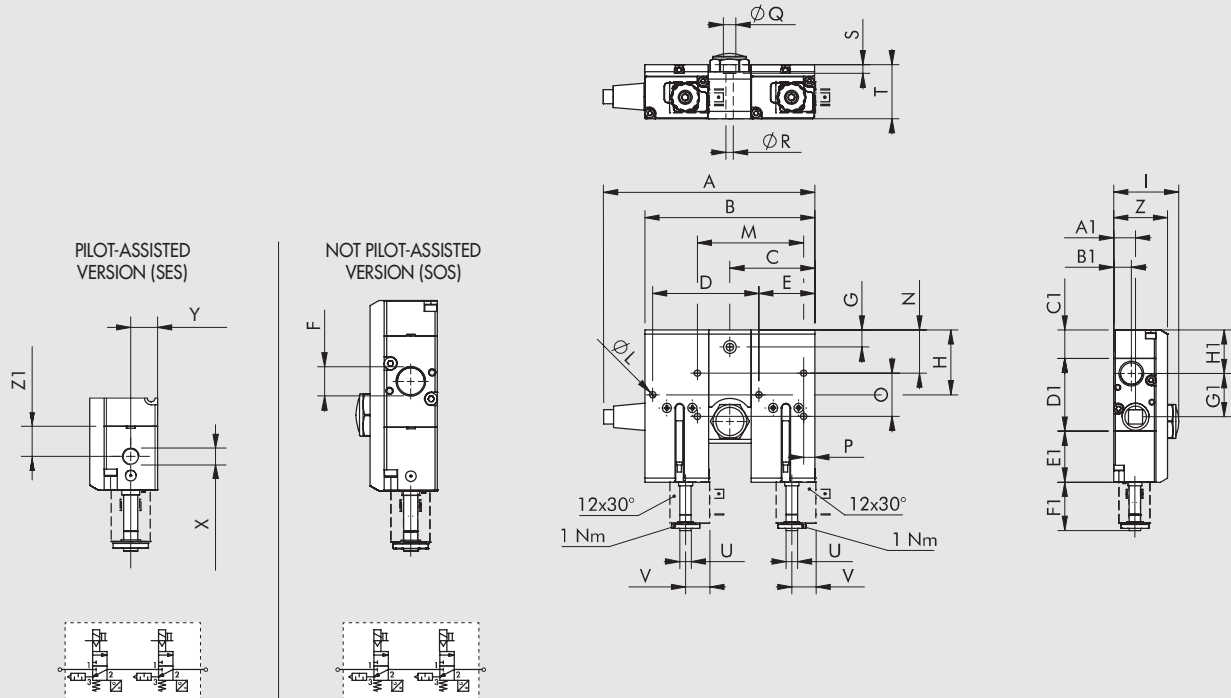
FLOW CHARTS ON RELIEF - DOUBLE VALVE



SYNOPTIC, SIZES AND VERSIONS

SO V FAMILY	2 DIMENSIONS	3 FUNCTION	SO OPERATORS 14	S RESETTING 12	DD FURTHER DETAILS	3 F SENSOR
SOV solenoid/ pneumatic	2 1/8" 3 1/4" C 3/8" 4 1/2"	3 3/2	SO solenoid SE solenoid assisted	S mechanical springs	DD double 3/2	3F 2.5 m 3 wires M8 0.3 m M8 AT 2 m ATEX

DOUBLE 3/2 MONOSTABLE 1/8"-1/4"-3/8"

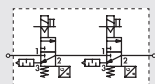
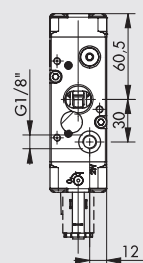
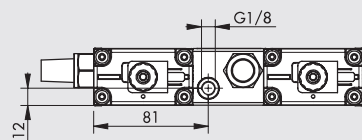


Code	Size	Abbrev.	A	B	C	D	E	F	G	H	I	ØL	M	N	O	P	ØQ	ØR	S	T
7015020210	1/8"	SOV 23 SOS DD 3F	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7015120210	1/8"	SOV 23 SOS DD M8	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7015220210	1/8"	SOV 23 SOS DD AT	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7015020510	1/8"	SOV 23 SES DD 3F	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7015120510	1/8"	SOV 23 SES DD M8	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7015220510	1/8"	SOV 23 SES DD AT	102.5	94	-	62	28.9	1/8"	-	27.8	35.5	4.2	-	-	-	-	-	-	-	-
7025020210	1/4"	SOV 33 SOS DD 3F	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7025120210	1/4"	SOV 33 SOS DD M8	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7025220210	1/4"	SOV 33 SOS DD AT	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7025020510	1/4"	SOV 33 SES DD 3F	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7025120510	1/4"	SOV 33 SES DD M8	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7025220510	1/4"	SOV 33 SES DD AT	133.5	110	55	70	34.5	1/4"	9	32.7	37.5	4.2	-	-	-	-	7.5	4.3	5	31.5
7045020210	3/8"	SOV C3 SOS DD 3F	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38
7045120210	3/8"	SOV C3 SOS DD M8	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38
7045220210	3/8"	SOV C3 SOS DD AT	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38
7045020510	3/8"	SOV C3 SES DD 3F	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38
7045120510	3/8"	SOV C3 SES DD M8	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38
7045220510	3/8"	SOV C3 SES DD AT	149.5	120	60	75	39.5	3/8"	12	45.7	46	4.5	75	30.45	30.5	8	9	5.3	6	38

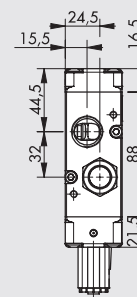
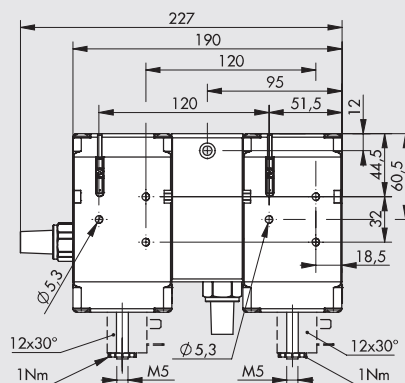
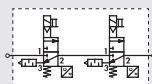
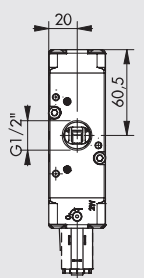
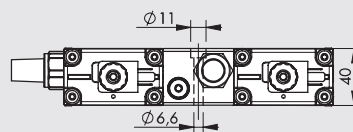
Code	Size	Abbrev.	U	V	Z	X	Y	Z1	A1	B1	C1	D1	E1	F1	G1	H1	Sensor	Weight [g]
7015020210	1/8"	SOV 23 SOS DD 3F	M5	16.3	-	-	-	14.5	12	8	12	31.6	31	33.5	18	18.8	2.5 m 3 wires	482
7015120210	1/8"	SOV 23 SOS DD M8	M5	16.3	-	-	-	14.5	12	8	12	31.6	31	33.5	18	18.8	0.3 m M8	479
7015220210	1/8"	SOV 23 SOS DD AT	M5	16.3	-	-	-	14.5	12	8	12	31.6	31	33.5	18	18.8	2 m ATEX	466
7015020510	1/8"	SOV 23 SES DD 3F	M5	16.3	30	M5	11	14.5	12	8	12	31.6	31	33.5	18	18.8	2.5 m 3 wires	482
7015120510	1/8"	SOV 23 SES DD M8	M5	16.3	30	M5	11	14.5	12	8	12	31.6	31	33.5	18	18.8	0.3 m M8	474
7015220510	1/8"	SOV 23 SES DD AT	M5	16.3	30	M5	11	14.5	12	8	12	31.6	31	33.5	18	18.8	2 m ATEX	466
7025020210	1/4"	SOV 33 SOS DD 3F	M5	16.3	-	-	-	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	2.5 m 3 wires	632
7025120210	1/4"	SOV 33 SOS DD M8	M5	16.3	-	-	-	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	0.3 m M8	624
7025220210	1/4"	SOV 33 SOS DD AT	M5	16.3	-	-	-	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	2 m ATEX	616
7025020510	1/4"	SOV 33 SES DD 3F	M5	16.3	31.6	1/8"	11.5	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	2.5 m 3 wires	632
7025120510	1/4"	SOV 33 SES DD M8	M5	16.3	31.6	1/8"	11.5	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	0.3 m M8	624
7025220510	1/4"	SOV 33 SES DD AT	M5	16.3	31.6	1/8"	11.5	13	13.8	9.8	13.25	38.9	32	33.5	22	21.7	2 m ATEX	616
7045020210	3/8"	SOV C3 SOS DD 3F	M5	16.3	-	-	-	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	2.5 m 3 wires	972
7045120210	3/8"	SOV C3 SOS DD M8	M5	16.3	-	-	-	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	0.3 m M8	964
7045220210	3/8"	SOV C3 SOS DD AT	M5	16.3	-	-	-	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	2 m ATEX	956
7045020510	3/8"	SOV C3 SES DD 3F	M5	16.3	38	1/8"	15	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	2.5 m 3 wires	972
7045120510	3/8"	SOV C3 SES DD M8	M5	16.3	38	1/8"	15	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	0.3 m M8	964
7045220510	3/8"	SOV C3 SES DD AT	M5	16.3	38	1/8"	15	17	15.5	12.5	20	51.9	36	33.5	30.5	30.8	2 m ATEX	956

DOUBLE 3/2 MONOSTABLE 1/2"

PILOT-ASSISTED VERSION (SES)



NOT PILOT-ASSISTED VERSION (SOS)



Code	Abbrev.	Sensor	Weight [g]
7035020210	SOV 43 SOS DD 3F	2.5 m 3 wires	1920
7035120210	SOV 43 SOS DD M8	0.3 m M8	1920
7035220210	SOV 43 SOS DD AT	2 m ATEX	1920
7035020510	SOV 43 SES DD 3F	2.5 m 3 wires	1915
7035120510	SOV 43 SES DD M8	0.3 m M8	1915
7035220510	SOV 43 SES DD AT	2 m ATEX	1915

NOTES

EXAMPLE OF A SAFETY CIRCUIT WITH A DOUBLE VALVE

Below is an example of a wiring diagram for controlling double valves SAFE AIR® a Metal Work using Pilz® components.

Circuit components:

- a Pilz® PNOZ® mm 0.1p modular safety system
- an emergency stop button S1 (Pilz® - PIT® es Set) linked to terminals T0-T1-I8-I9 of the PNOZ® mm 0.1p
- a Metal Work double solenoid valve SAFE AIR®, the 24 VDC coils of which are fed by terminals O0 (SV1) and O1 (SV2) of the PNOZ® mm 0.1p (the other terminals of the coils are OV); the valves' Hall-effect sensors are 24 VDC
- the sensor signals are relayed to terminals 16 (SV1) and 17 (SV2) of the PNOZ® mm 0.1p
- a start/reset button S2

Expected behaviour with the system operating correctly:

- system deactivated:
 - contacts O0 and O1 are OFF
 - the coils are de-energized
 - the sensors are ON (and hence signals to terminals 16 and 17)
 - if one of the sensors is OFF, the Pilz® module does not allow subsequent start/reset
- with the system activated via the start/reset button:
 - contacts O0 and O1 are ON
 - the coils are energized
 - the sensors are OFF (and hence signals to terminals 16 and 17)

The PNOZ® mm 0.1p module is programmed so that:

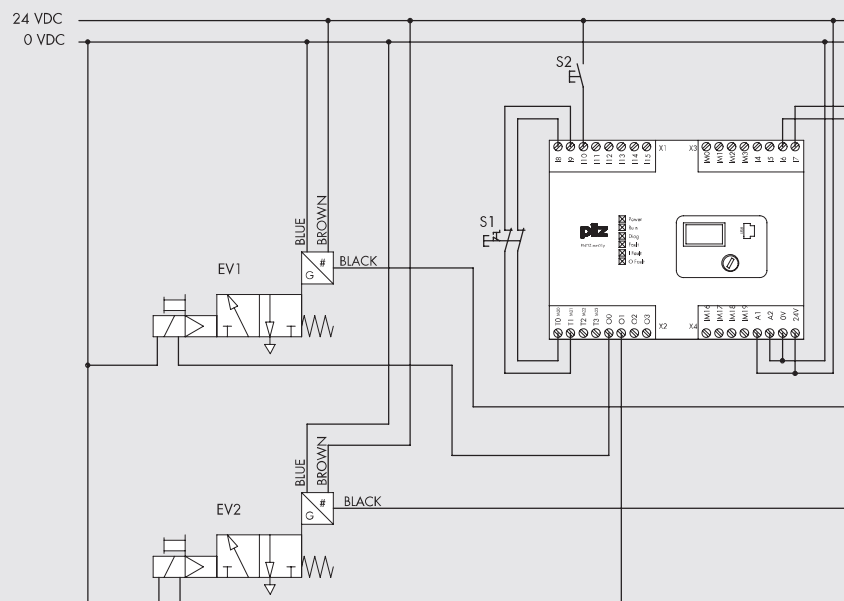
- when either sensor is OFF, and the coils are de-energized, the module does not allow subsequent restarts.
- when the valves are energized, the 2 sensors must go off within the valve actuation time (28 ms for Series 70 1/8", 38 ms for Series 70 1/4" and 50 ms for Series 70 3/8" and 85 ms Serie 70 1/2"), otherwise the 2 valves are switched off again.

The programme can be downloaded from www.metalwork.it (the licence for programming Pilz® modules is not included).

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with PL = e (calculations made with the PAScal programme by Pilz®).

Responsibility for final checking that PL lies with the person assembling the circuit.



ACCESSORIES

COILS AND CONNECTORS



Refer to page B1.60 for coils and connectors

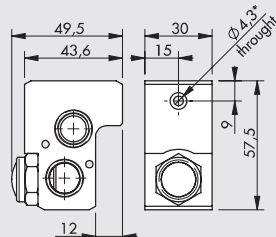
CONNECTORS FOR SENSORS M8



See page A6.9

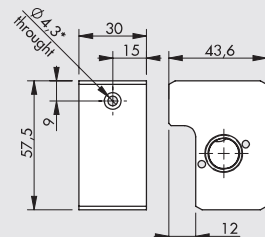
KIT FOR CONNECTION 1/4 VALVES TO SYNTES 1

IN



* Wall fixing

OUT

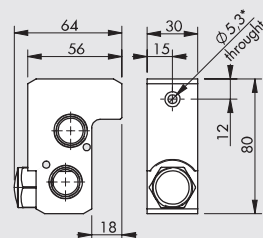


Code	Description	Weight [g]
9210015	IN 1/4 SY1 block accessory	175
9210016	OUT 1/4 SY1 block accessory	180

Note: Individually packed with bushing, screws and gaskets.

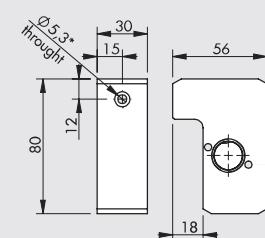
KIT FOR CONNECTION 3/8 VALVES TO SYNTES 1 - SYNTESI 2

IN



* Wall fixing

OUT

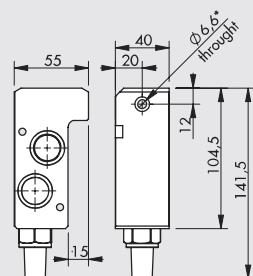


Code	Description	Weight [g]
9210022	IN 3/8 SY1 block accessory	297
9210023	OUT 3/8 SY1 block accessory	302
9210017	IN 3/8 SY2 block accessory	325
9210018	OUT 3/8 SY2 block accessory	330

Note: Individually packed with bushing, screws and gaskets.

KIT FOR CONNECTION 1/2 VALVES TO SYNTESI 2

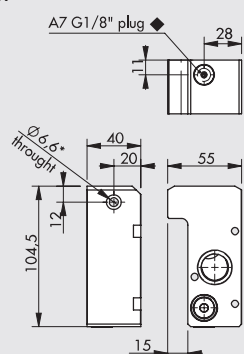
IN



* Wall fixing

◆ For pilot assisted version remove the G1/8 plug

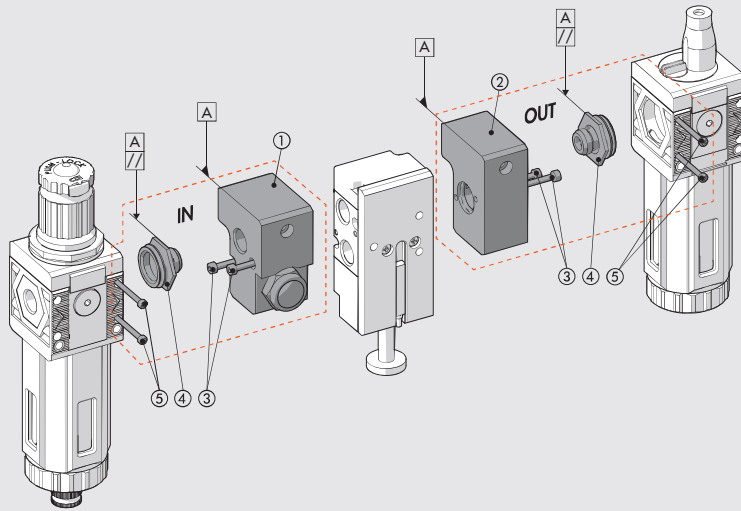
OUT



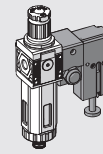
Code	Description	Weight [g]
9210020	IN 1/2 SY2 block accessory	515
9210021	OUT 1/2 SY2 block accessory	503

Note: Individually packed with bushing, screws and gaskets.

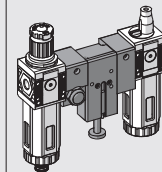
ASSEMBLY DIAGRAM WITH SYNTESI®



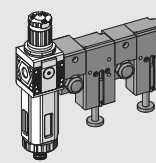
IN + SINGLE VALVE



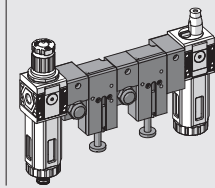
IN + SINGLE VALVE + OUT



IN + DOUBLE VALVE

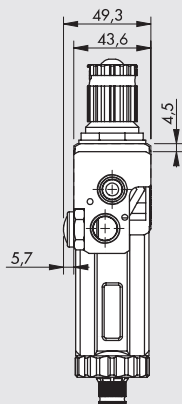


IN + DOUBLE VALVE + OUT

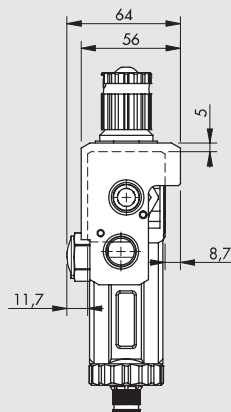


- 1) Connect the inlet ① or outlet ② plate to the safety component SAFE AIR® valve using the two TCE screws ③.
- 2) Screw the connecting bushing onto the input or output plate as far as it will go.
(Use sealant on the G1/4", G3/8" or G1/2" thread to provide a further seal).
- 3) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of plate ① or ② (see diagram).
- 4) Insert the bushing ④ into the Syntesi® unit.
- 5) Tighten the two self-tapping screws ⑤ in the Syntesi® unit to a torque of 0.4 Nm max (SY1) and 2.5 Nm max (SY2).

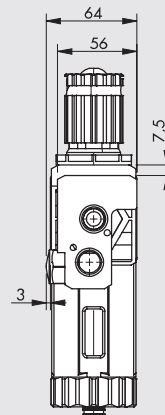
SYNTESI® 1
with valves of 1/4



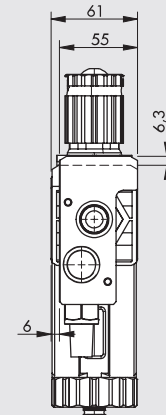
SYNTESI® 1
with valves of 3/8



SYNTESI® 2
with valves of 3/8



SYNTESI® 2
with valves of 1/2



N.B. The output accessory for Syntesi® is optional. It should be used when you intend to mount a Syntesi® component downstream the SAFE AIR® safety device. The **REG, FR, V3V, APR** elements **cannot be mounted** downstream the safety valves because if the elements are blocked, safety relief is not guaranteed.



VALVES ISO 5599/1 SERIES SAFE AIR®

VALVES

VALVES ISO 5599/1 SERIES SAFE AIR®

Starting from a series of sturdy, reliable valves, such as those to ISO 5599/1, some special features have been added, such as the presence of a valve status diagnostic system and the creation of a double channel guaranteeing architecture redundancy.

The simplest version features one electropneumatically-operated 5/2 monostable valve. It is common knowledge that when this type of valve is in the idle state (coil not energized), port 1 is connected to port 2, and port 4 relieves. When the valve is operated (coil energized), port 1 is connected to port 4, and port 2 relieves. When the coil is de-energized again, the valve is returned to the idle state (so port 4 relieves) by means of a spring that returns the spool to the home position. In the event of a failure, the spool may remain in the actuating position, even with coil de-energized, leaving port 4 pressurized.

To offset this problem, we have added a Hall-effect sensor that reads the spool position. This means that when the valve is deactivated, the sensor is on, and when the valve is activated, the sensor is off. A status in which the sensor is off and the coil de-energized indicates a problem.

To reduce the probability of risk during plant maintenance, the manual actuator mounted on the Cnomo electric control is the monostable type. The sensor inside the valve is available in the standard version with a 2.5m three-wire cable (standard or ATEX certified) or with an M8 connector and a 300 mm cable.

This valve, which is available in 3 sizes for the ISO 5599/1 series, is a category 2 component according to ISO EN 13849 and is suitable for use in safety circuits up to PL=c.

For those requiring higher PLs, we have also developed a double-channel version (redundant) that requires the use of ISO 5599/1 valves with a monitored coil arranged so that ports 2 are in parallel and ports 4 are in series. If just one of the valves de-energizes, port 4 relieves, so, even if one of the two coils remains blocked, the other guarantees relief of the compressed-air circuit. In this case, too, the presence of spool position sensors can be used to monitor the status.

The double valve is also available in 3 sizes for the ISO 5599/1 series. It is a category 4 component according to ISO EN 13849 and is suitable for use in safety circuits up to PL=e.

Both the single- and the double-channel valve come with:

- a voluntary examination certificate no. BVI-24-MAC-CV-0008 issued by Bureau Veritas in accordance with EN ISO 13849.



SINGLE VALVE ISO 5599/1 SERIES SAFE AIR®

TECHNICAL DATA	ISO 1	ISO 2	ISO 3
Fluid	Filtered unlubricated air (50µm); lubrication, if used, must be continuous		
Operation	5/2 monostable		
Operating pressure: bar			
non-assisted	from 2.5 to 10		
pilot-assisted	from vacuum to 10		
Minimum pilot pressure bar	2.5		
Operating temperature range °C	from -10 to +60 (from -10 to +45 for ATEX version)		
Nominal diameter mm	7.5	12	15
Conductance C NI/min · bar	250	657	971
Critical ratio b bar/bar	0.36	0.43	0.43
Flow rate at 6.3 bar Δp 0.5 bar NI/min	700	1800	3200
Flow rate at 6.3 bar Δp 1 bar NI/min	1100	2700	4600
Conductance C on relief NI/min · bar	267	817	1095
Critical ratio b on relief bar/bar	0.34	0.24	0.56
Flow rate on free exhaust at 6.3 bar NI/min	1850	4900	8000
TRA/TRR a 6.3 bar ms/ms	24 / 50	39 / 60	50 / 120
Valve / base screw tightening torque Nm	3 - 4	6 - 7	10 - 12
Installation	Any position		
Assembly	On single or manifold bases to ISO 5599/1 (*)		
Solenoid pilot	to CNOMO		
Manual actuator	Monostable on solenoid pilot and valve body		
Recommended lubricant	ISO e UNI FD 22		
Compatibility with oils	See chapter Z1		
Coils	30 mm side, Ø 8 hole – EN175301-803 connection, type A 22 mm side, Ø 8 hole – EN175301-803 connection, type B Certified EN 60204.1 and VDE 0580 Refer to the Accessories section for the electrical features page B1.133*		
Class of protection	IP65 with coil and connector mounted		
Noise level	Max. 78 dBA with silenced relief		
Max coil ring nut torque Nm	1		
CE marking	In accordance with Machinery Directive, Annexe V **		
ATEX category (only for versions with an ATEX sensor)	Ex II 3G Ex nA IIC T4 Gc X -10°C<Ta<45°C Ex II 3G Ex h IIC T4 Gc X Ex II 3D Ex tc IIIC T135°C Dc IP65		
Safety function	Cuts off the power supply and relieves the air circuit connected to port 4		
Type of sensor used	Hall effect (refer to page B1.165 for sensor details)		
B10d	50 x 10 ⁶ cycles		
Category - ISO EN 13849	2		
DC	Low (80 %)		
PL - ISO EN 13849	Suitable for use in safety circuits up to PL=c		

* To avoid malfunctions, we recommend using Metal Work accessories

** The declaration can be downloaded from www.metalwork.it

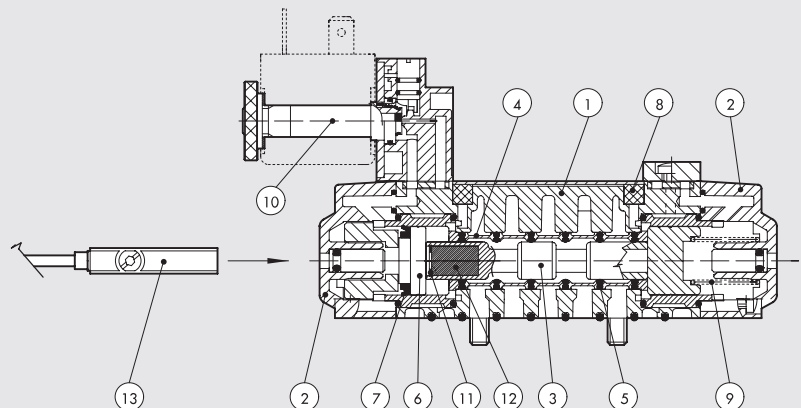
IMPORTANT: Do not mount 2 or more SAFE AIR® valves in adjacent positions.

Any ferromagnetic masses must be at least 30 mm from the sensor.

Prevent magnetic fields from creating disturbance in the sensor area.

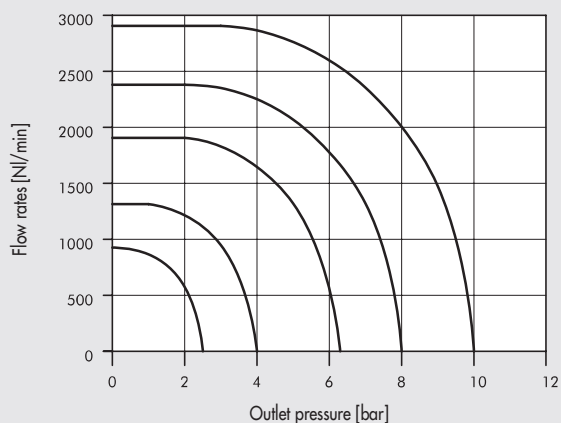
COMPONENTS

- ① VALVE BODY: Aluminium
- ② END CAP: Hostaform®
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: sintered bronze
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe – Stainless steel core
- ⑪ LOCKING RING: special steel
- ⑫ MAGNET: Neodymium
- ⑬ SENSOR: Hall effect

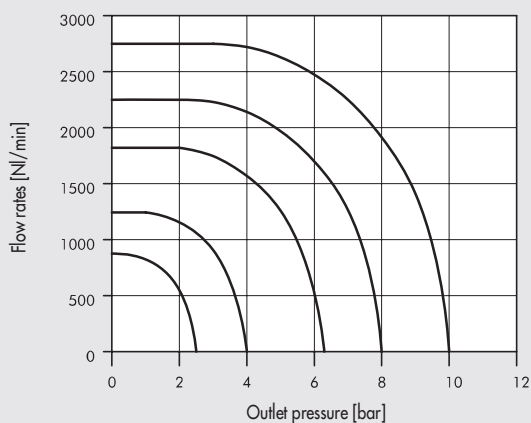


FLOW CHARTS - SINGLE VALVE

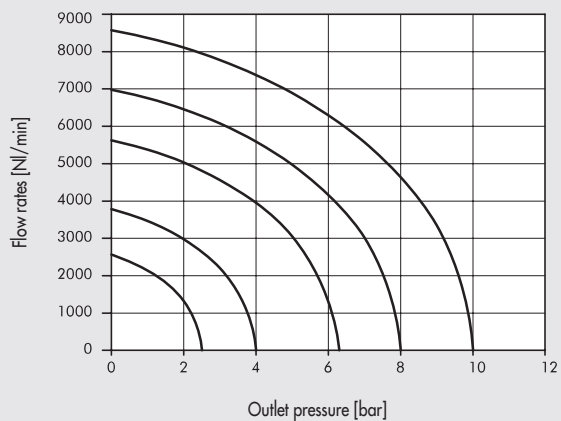
ISO 1 - ON DELIVERY



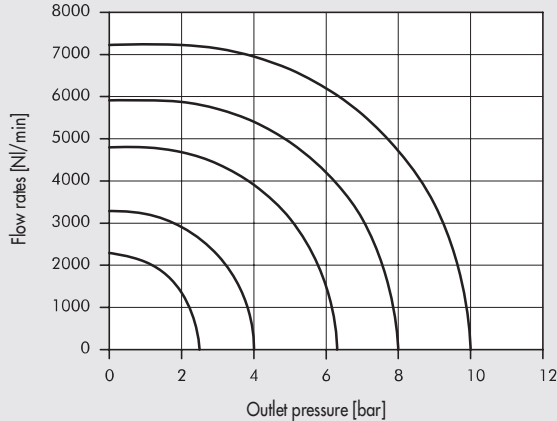
ISO 1 - ON RELIEF



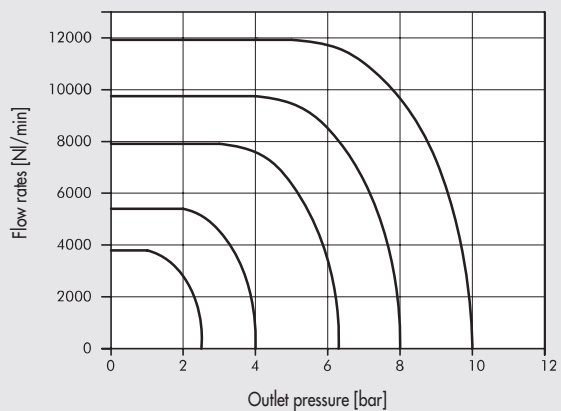
ISO 2 - ON DELIVERY



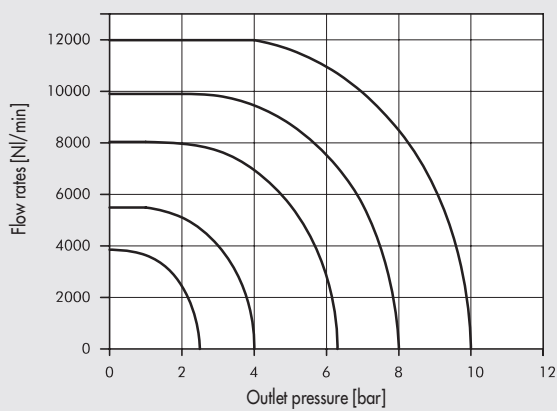
ISO 2 - ON RELIEF



ISO 3 - ON DELIVERY



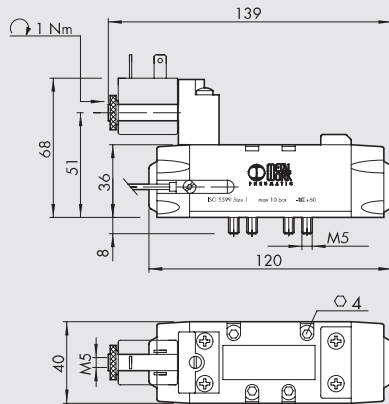
ISO 3 - ON RELIEF



SYNOPTIC, SIZES AND VERSIONS

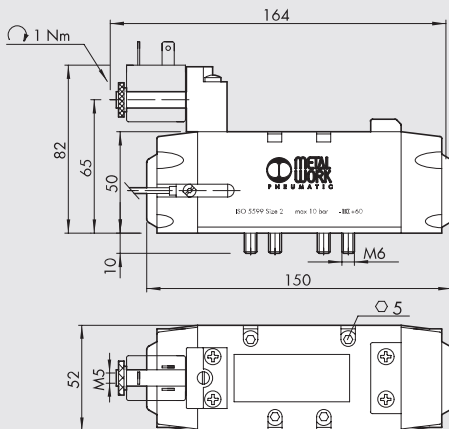
I S V		5	5	S O	S	O O	3 F
FAMILY		DIMENSIONS	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS	SENSOR
ISV	ISO solenoid/ pneumatic	5 ISO1 6 ISO2 7 ISO3	5 5/2	SO solenoid SE solenoid assisted	S mechanical springs	OO 5/2	3F 2.5 m 3 wires M8 0.3 m M8 AT 2 m ATEX

5/2 MONOSTABLE - ISO 1



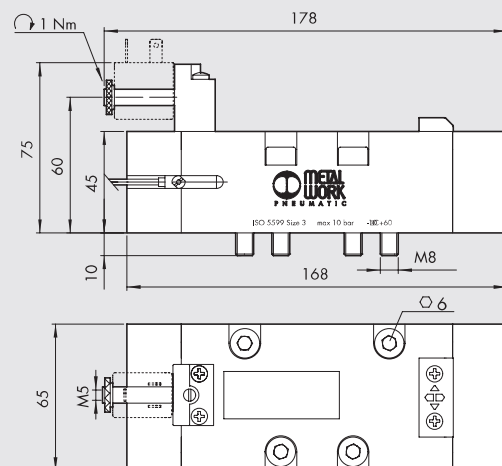
Symbol	Code	Abbrev.	Sensor	Weight [g]
	7057021100	ISV 55 SOS OO 3F	2.5 m 3 wires	380
	7057121100	ISV 55 SOS OO M8	0.3 m M8	350
	7057221100	ISV 55 SOS OO AT	2 m ATEX	370
	7057021400	ISV 55 SES OO 3F	2.5 m 3 wires	380
	7057121400	ISV 55 SES OO M8	0.3 m M8	350
	7057221400	ISV 55 SES OO AT	2 m ATEX	370

5/2 MONOSTABLE - ISO 2



Symbol	Code	Abbrev.	Sensor	Weight [g]
	7058021100	ISV 65 SOS OO 3F	2.5 m 3 wires	750
	7058121100	ISV 65 SOS OO M8	0.3 m M8	720
	7058221100	ISV 65 SOS OO AT	2 m ATEX	740
	7058021400	ISV 65 SES OO 3F	2.5 m 3 wires	750
	7058121400	ISV 65 SES OO M8	0.3 m M8	720
	7058221400	ISV 65 SES OO AT	2 m ATEX	740

5/2 MONOSTABLE - ISO 3



Symbol	Code	Abbrev.	Sensor	Weight [g]
	7059021100	ISV 75 SOS OO 3F	2.5 m 3 wires	1240
	7059121100	ISV 75 SOS OO M8	0.3 m M8	1210
	7059221100	ISV 75 SOS OO AT	2 m ATEX	1230
	7059021400	ISV 75 SES OO 3F	2.5 m 3 wires	1240
	7059121400	ISV 75 SES OO M8	0.3 m M8	1210
	7059221400	ISV 75 SES OO AT	2 m ATEX	1230

EXAMPLE OF A SAFETY CIRCUIT WITH A SINGLE VALVE

Below is an example of a wiring diagram for controlling Metal Work SAFE AIR® single valves using Pilz® components.

Circuit components:

- a Pilz® safety module PNOZ® s3 for controlling the emergency stop button; terminal Y32 indicates the status of the module, which can be relayed to the machine control logic
- an emergency stop button S1 (Pilz® - PIT® es Set) linked to terminals S11-S12-S22-S23 of the PNOZ® s3
- a Metal Work SAFE AIR® solenoid valve, the 24 VDC coil of which is fed by terminal 14 of the PNOZ® s3 (the other terminal of the coil is 0 V); the valve's Hall-effect sensor is 24 VDC
- a start/reset button S2
- a relay K1, controlled by the valve sensor; an NO contact of the relay is in series with button S2 of the PNOZ® s3.

Expected behaviour with the system operating correctly:

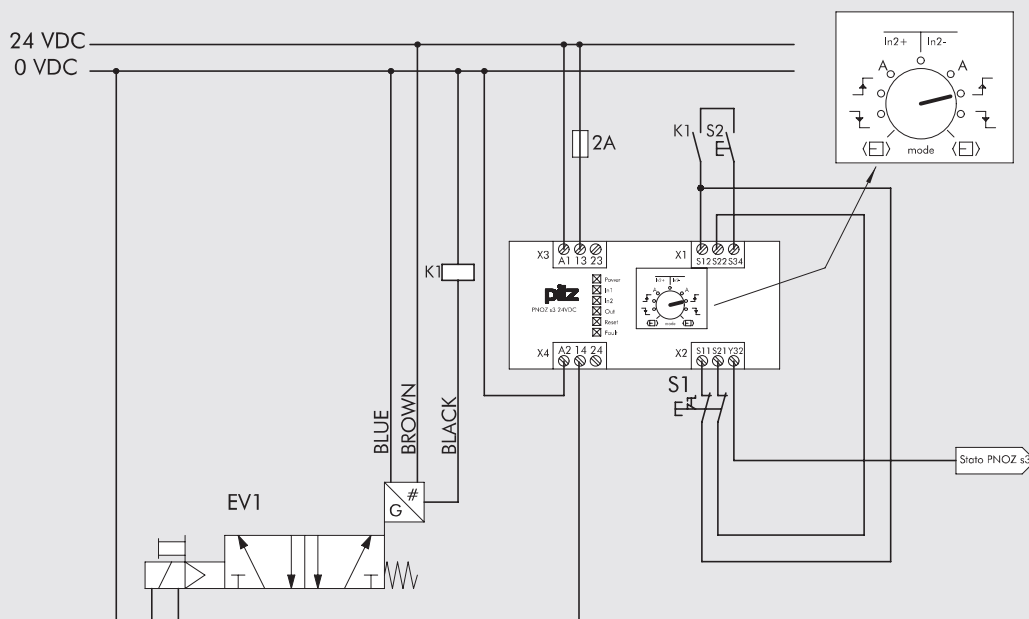
- system deactivated:
 - contact 14 is OFF
 - the coil is de-energized
 - the sensor is ON
 - relay K1 is energized
 - contact K1 is closed
 - contact Y32 is OFF
- with the system activated via the start/reset button:
 - contact 14 is ON
 - the coil is energized
 - the sensor is OFF
 - relay K1 is de-energized
 - contact K1 is open
 - contact Y32 is ON

In the event of a malfunction (e.g. spool jam), the coil is de-energized but the sensor remains OFF, relay K1 remains de-energized, contact K1 remains open (preventing subsequent restarts) and contact Y32 is OFF.

In the event of a valve fault, the circuit in the diagram below does not allow relief of the compressed air system. Sensor status must be monitored to assess valve operation. Contact Y32 indicates the status of the PNOZ® s3, not the status of the sensor.

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with $PL = c$ (calculations made with the PAScal programme by Pilz®). Responsibility for final checking that PL lies with the person assembling the circuit.



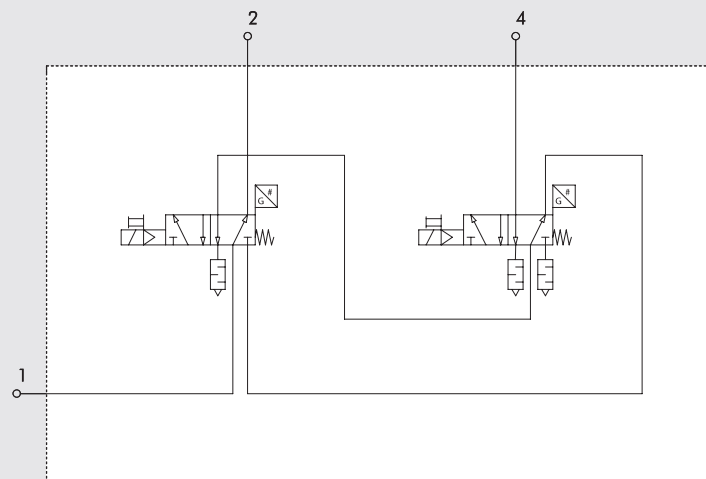
DOUBLE VALVE ISO 5599/1 SERIES SAFE AIR®

TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Fluid		Filtered unlubricated air (50µm); lubrication, if used, must be continuous		
Operation		double 5/2 monostable		
Operating pressure:	bar	from 2.5 to 10		
non-assisted		from vacuum to 10		
pilot-assisted		2.5		
Minimum pilot pressure	bar	from -10 to +60 (from -10 to +45 for Atex version)		
Operating temperature range	°C			
Conductance C	Nl/min · bar	228	498	720
Critical ratio b	bar/bar	0.40	0.24	0.44
Flow rate at 6.3 bar Δp 0.5 bar	Nl/min	770	1250	2500
Flow rate at 6.3 bar Δp 1 bar	Nl/min	1050	1750	3400
Conductance C on relief	Nl/min · bar	222	554	724
Critical ratio b on relief	bar/bar	0.30	0.20	0.41
Flow rate on free exhaust at 6.3 bar	Nl/min	1600	4000	5300
TRA/TRR α 6.3 bar	ms/ms	24 / 50	39 / 60	50 / 120
Installation		Any position		
Solenoid pilot		to CNOMO		
Manual actuator		Monostable on solenoid pilot and valve body		
Recommended lubricant		ISO e UNI FD 22		
Compatibility with oils		See chapter Z1		
Coils		30 mm side, Ø 8 hole – EN175301-803 connection, type A		
		22 mm side, Ø 8 hole – EN175301-803 connection, type B		
		Certified EN 60204.1 and VDE 0580		
		Refer to the Accessories section for electrical features page B1.133 (*)		
Class of protection		IP65 with coil and connector mounted		
Noise level		Max. 78 dBA with silenced relief		
Max coil ring nut torque	Nm	1		
CE marking		In accordance with Machinery Directive, Annexe V **		
ATEX category (only for versions with an ATEX sensor)		Ex II 3G Ex nA IIC T4 Gc X -10°C<Ta<45°C		
		Ex II 3G Ex h IIC T4 Gc X		
		Ex II 3D Ex tc IIIC T135°C Dc IP65		
Safety function		Cuts off the power supply and relieves the air circuit connected to port 4		
Type of sensor used		Hall effect (refer to page B1.165 for sensor details)		
B10d		50 x 10 ⁶ cycles		
Category - ISO EN 13849		4		
DC		High (≥ 99 %)		
CCF		80		
PL - ISO EN 13849		Suitable for use in safety circuits up to PL=e		

* To avoid malfunctions, we recommend using Metal Work accessories

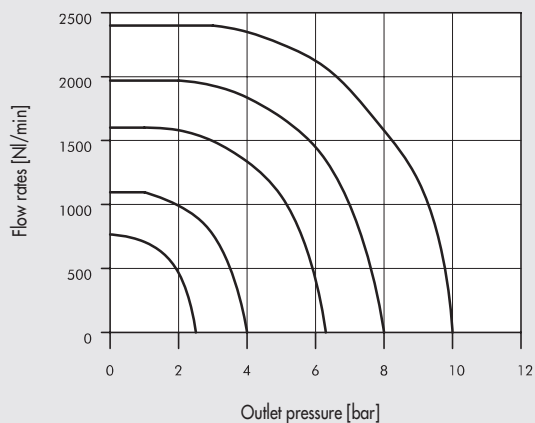
** The declaration can be downloaded from www.metalwork.it

IMPORTANT: Any ferromagnetic masses must be at least 30 mm from the sensor.
Prevent magnetic fields from creating disturbance in the sensor area.

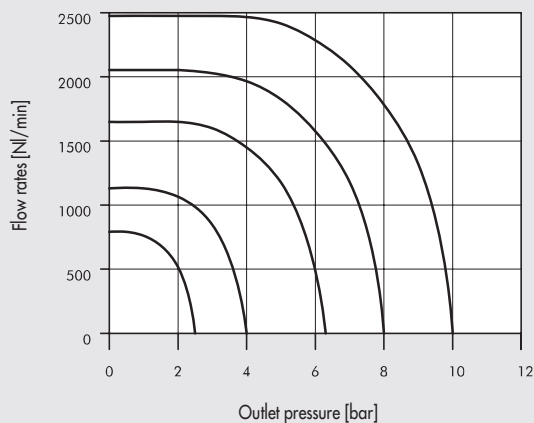
WIRING DIAGRAM


FLOW CHARTS - DOUBLE VALVE

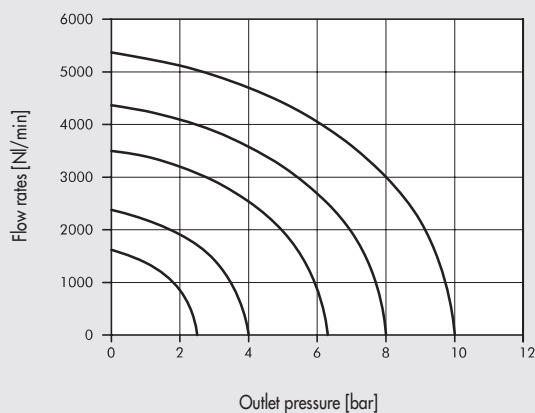
ISO 1 - ON DELIVERY



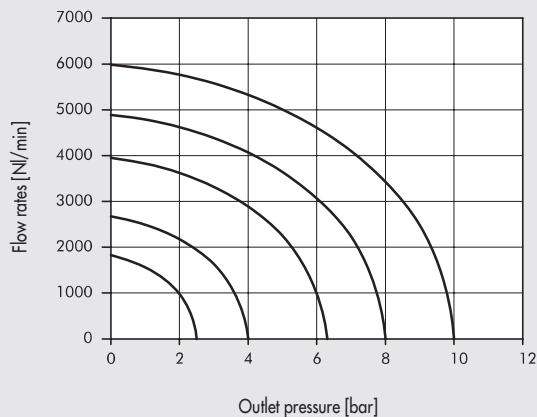
ISO 1 - ON RELIEF



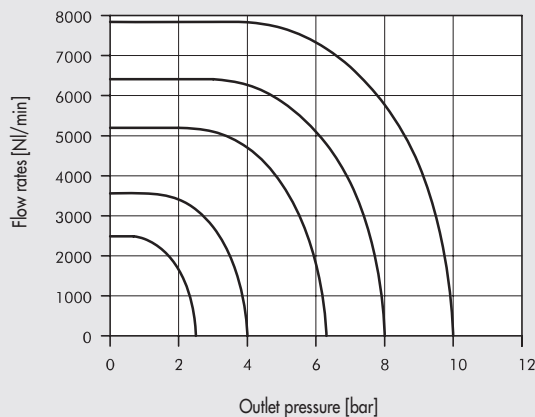
ISO 2 - ON DELIVERY



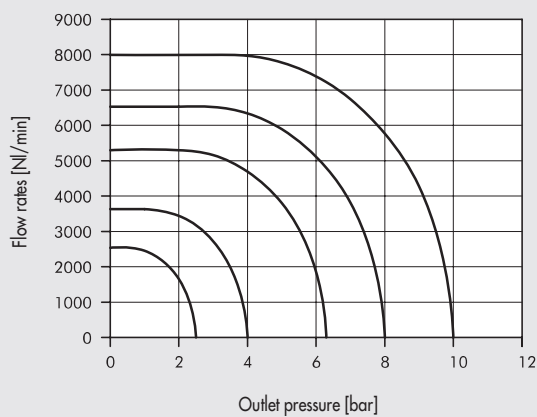
ISO 2 - ON RELIEF



ISO 3 - ON DELIVERY



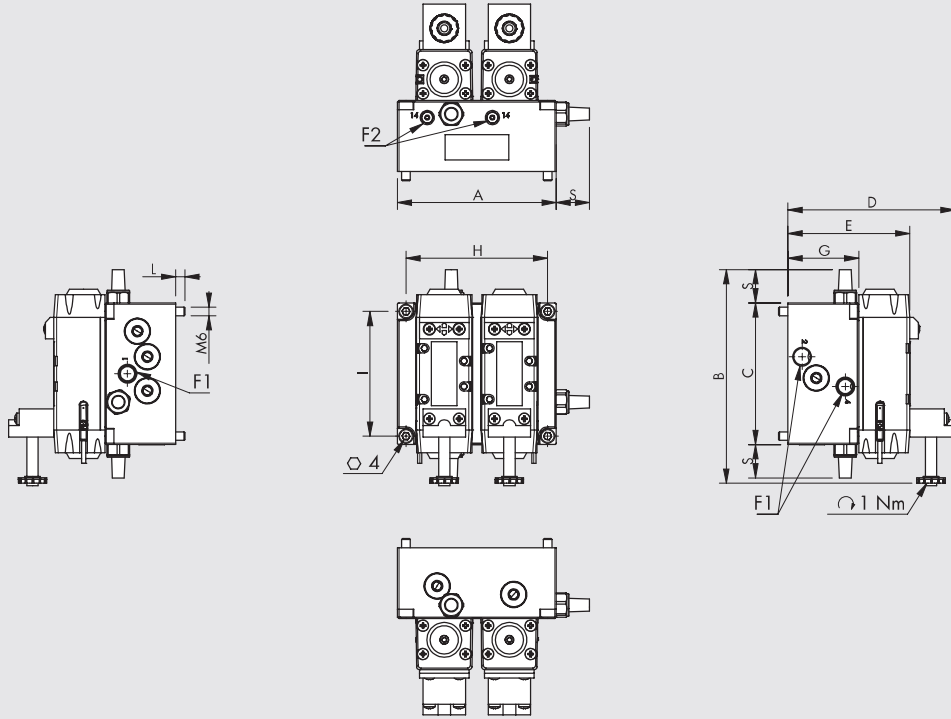
ISO 3 - ON RELIEF



SYNOPTIC, SIZES AND VERSIONS

I S V		5		5		S O		S		D D		3 F	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING 12		FURTHER DETAILS		SENSOR	
ISO	ISO solenoid/ pneumatic	5	ISO1	5	5/2	SO	solenoid	S	mechanical springs	DD	double 5/2	3F	2.5 m
		6	ISO2			SE	solenoid					M8	3 wires
		7	ISO3				assisted					AT	0.3 m M8
													2 m ATEX

DOUBLE 5/2 MONOSTABLE



Code	Size	Abbrev.	A	B	C	D	E	F1	F2	G	H	I	L	S	Sensor	Weight (g)
7057021110	ISO 1	ISV 55 SOS DD 3F	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	2.5 m 3 wires	2100
7057121110	ISO 1	ISV 55 SOS DD M8	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	0.3 m M8	2100
7057221110	ISO 1	ISV 55 SOS DD AT	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	2 m ATEX	2100
7057021410	ISO 1	ISV 55 SES DD 3F	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	2.5 m 3 wires	2100
7057121410	ISO 1	ISV 55 SES DD M8	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	0.3 m M8	2100
7057221410	ISO 1	ISV 55 SES DD AT	112	152.5	100	118	86	G 1/4"	M5	50	100	88	6	23.5	2 m ATEX	2100
7058021110	ISO 2	ISV 65 SOS DD 3F	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	2.5 m 3 wires	4000
7058121110	ISO 2	ISV 65 SOS DD M8	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	0.3 m M8	4000
7058221110	ISO 2	ISV 65 SOS DD AT	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	2 m ATEX	4000
7058021410	ISO 2	ISV 65 SES DD 3F	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	2.5 m 3 wires	4000
7058121410	ISO 2	ISV 65 SES DD M8	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	0.3 m M8	4000
7058221410	ISO 2	ISV 65 SES DD AT	146	176	116	145	113	G 3/8"	G 1/8"	63	134	104	13	29	2 m ATEX	4000
7059021110	ISO 3	ISV 75 SOS DD 3F	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	2.5 m 3 wires	5300
7059121110	ISO 3	ISV 75 SOS DD M8	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	0.3 m M8	5300
7059221110	ISO 3	ISV 75 SOS DD AT	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	2 m ATEX	5300
7059021410	ISO 3	ISV 75 SES DD 3F	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	2.5 m 3 wires	5300
7059121410	ISO 3	ISV 75 SES DD M8	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	0.3 m M8	5300
7059221410	ISO 3	ISV 75 SES DD AT	186	188	116	155	123	G 1/2"	G 1/8"	78	174	104	9	31.5	2 m ATEX	5300

NOTES

EXAMPLE OF A SAFETY CIRCUIT WITH A DOUBLE VALVE

Below is an example of a wiring diagram for controlling double valves SAFE AIR® a Metal Work using Pilz® components.

Circuit components:

- a Pilz® PNOZ® mm 0.1p modular safety system
- an emergency stop button S1 (Pilz® - PIT® es Set) linked to terminals T0-T1-I8-I9 of the PNOZ® mm 0.1p
- a Metal+ Work double solenoid valve SAFE AIR®, the 24 VDC coils of which are fed by terminals O0 (SV1) and O1 (SV2) of the PNOZ® mm 0.1p (the other terminals of the coils are OV); the valves' Hall-effect sensors are 24 VDC
- the sensor signals are relayed to terminals 16 (SV1) and 17 (SV2) of the PNOZ® mm 0.1p
- a start/reset button S2

Expected behaviour with the system operating correctly:

- system deactivated:
 - contacts O0 and O1 are OFF
 - the coils are de-energized
 - the sensors are ON (and hence signals to terminals 16 and 17)
 - if one of the sensors is OFF, the Pilz® module does not allow subsequent start/reset
- with the system activated via the start/reset button:
 - contacts O0 and O1 are ON
 - the coils are energized
 - the sensors are OFF (and hence signals to terminals 16 and 17)

The PNOZ® mm0.1p module is programmed so that:

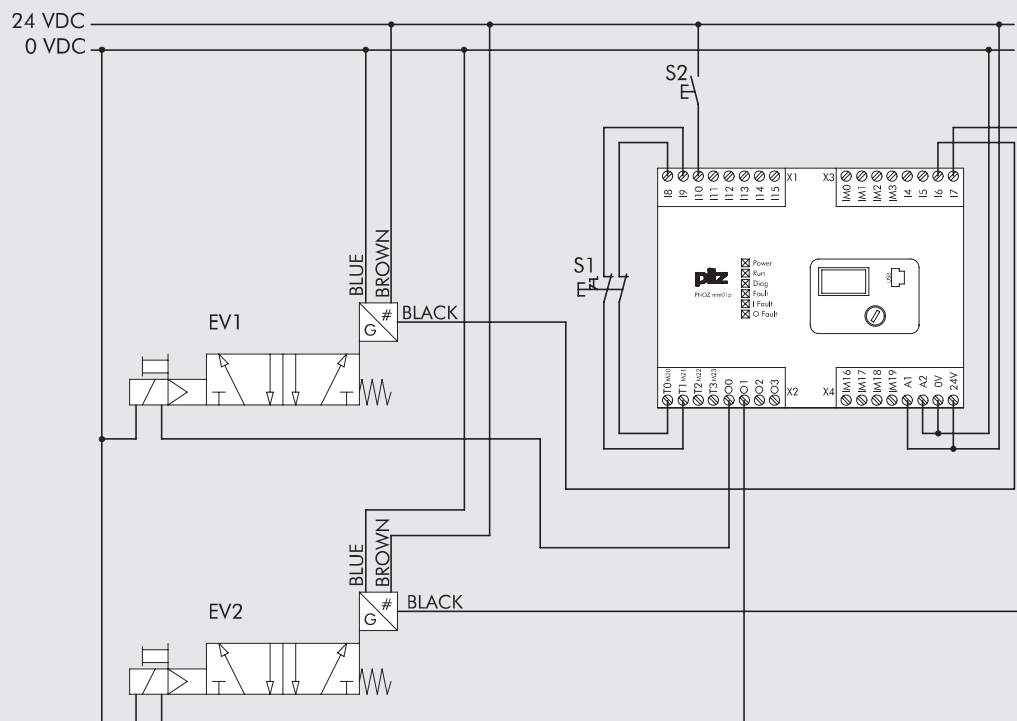
- when either sensor is OFF, and the coils are de-energized, the module does not allow subsequent restarts.
- when the valves are energized, the 2 sensors must go off within the valve actuation time (24 ms for ISO1s, 39 ms for ISO2s and 50 ms for ISO3s), otherwise the 2 valves are switched off again.

The programme can be downloaded from www.metalwork.it (the licence for programming Pilz® modules is not included).

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with PL = e (calculations made with the PAScal programme by Pilz®).

Responsibility for final checking that PL lies with the person assembling the circuit.

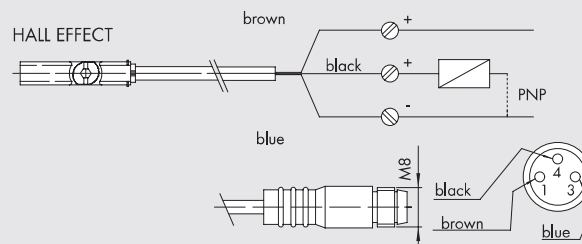


TECHNICAL DATA SENSOR		MZT8	ATEX MZT8
		EFFECT HALL	EFFECT HALL
Type of contact		N.O.	N.O.
Switch		PNP	PNP
Supply voltage (U _b)	VDC	10 to 30	10 to 26
Power	W	-	≤ 1.7
Voltage variation		-	≤ 10% of U _b
Voltage dro at I _{max}	V	≤ 2.2	≤ 2.2
Consumo	mA	≤ 10	≤ 10
Corrente di uscita	mA	≤ 200	≤ 50
Switching frequency	Hz	≤ 1000	≤ 1000
Short-circuit protection		Yes	Yes
Over-voltage suppression		Yes	Yes
Polarity inversion protection		Yes	Yes
EMC		EN 60947-5-2	EN 60947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity	mT	2.45 - 2.75	2.45 - 2.75
Repeatability	mT	≤ 0.1	≤ 0.1 mT (U _b and ta fixed)
Degree of protection (EN 60529)		IP67	IP67
Vibration and shock resistance		30 g, 11 ms, 10 to 55 Hz, 1 mm	30 g, 11 ms, 10 to 55 Hz, 1 mm
Temperature range	°C	-30 to +80	-20 to +50
Sensor capsule material		PA12	PA12
2.5 m/2 m connecting cable		PVC; 3 x 0.12 mm ²	PVC; 3 x 0.12 mm ²
Connecting cable with M8x1		Polyurethane; 3 x 0.14 mm ²	-
Wire NO.		3	3
Category ATEX		-	II 3G Ex nA IIC T4 Gc X II 3D Ex tc IIC T1 35°C Dc IP67 X
Certifications		CE	CE Ex

VALVES

VALVES ISO 5599 / 1 SERIES SAFE AIR®

WIRING DIAGRAM SENSOR



ACCESSORIES



Refer to page B1.133 for coils and connectors

CONNECTORS FOR SENSORS M8



See page A6.9

NOTES

VALVES



NOTES

VALVES

SUMMARY OF VALVE ISLANDS AND FIELDBUS

**EB 80****EB 80 ELECTRO-PNEUMATIC SYSTEM**

- EB 80 ELECTRO-PNEUMATIC SYSTEM B2.4

- EB 80 - ELECTRICAL MODULES - **S** B2.15



- EB 80 - WIRELESS MODULE - **S** B2.15



- EB 80 - SIGNAL MODULES - **S** B2.17

- EB 80 - ELECTRICAL CONNECTION - **E** B2.27



- EB 80 - MULTI-POLE ELECTRICAL CONNECTION - **E** B2.29



- EB 80 - ELECTRICAL CONNECTION WITH FIELDBUS - **E** B2.33



- EB 80 - ADDITIONAL ELECTRICAL CONNECTION - **E** B2.47



- EB 80 - COMPRESSED-AIR SUPPLY - **P** B2.50



- EB 80 - BASES FOR VALVES - **B** B2.53



- EB 80 - VALVES B2.56



- EB 80 - PROPORTIONAL PRESSURE REGULATOR - **A** B2.62



- EB 80 - INTERMEDIATE SUPPORT - **M** B2.68



- EB 80 - CLOSED END-PLATE - **C** B2.73

EB 80 BOXI

- EB 80 BOXI B2.76



- EB 80 BOXI - 4-POSITION VALVE ISLAND B2.80



- EB 80 BOXI - 6-8-12-POSITION VALVE ISLAND B2.87

EB 80 ACCESSORIES

- EB 80 - MULTI-FUNCTION MODULE B2.92



- EB 80 - SPLASH AREA B2.109



HDM

- HDM + MULTI-POLE CONNECTION  B2.112
- HDM + AS-Interface  B2.116
- HDM + PROFIBUS-DP  B2.121
- HDM + EtherNet/IP  B2.125
- HDM + CANopen  B2.131
- HDM + B&R  B2.137
- HDM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES  B2.140



CM

- CM CLEVER MULTIMACH  B2.145
- CM + MULTI-POLE CONNECTION  B2.150
- CM + Profinet IO  B2.155
- CM + EtherCAT  B2.159
- CM + EtherNet/IP  B2.163
- CM + CANopen  B2.167
- CM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES  B2.170



MULTIMACH

- MULTIMACH  B2.175
- MULTIMACH + PROFIBUS  B2.183
- MULTIMACH + B&R  B2.188

INPUT/OUTPUT PROFIBUS-DP



- INPUT/OUTPUT PROFIBUS-DP IP67 M12  B2.189



- INPUT PROFIBUS-DP IP67 M8  B2.193

EB 80 ELECTRO-PNEUMATIC SYSTEM

EB 80 is defined as an electro-pneumatic system as it would be simplistic to use the term "solenoid valve island". In effect, a single assembly can combine solenoid valves of all types, multi-position bases, pneumatic and electric supplies arranged as desired in a system, digital or analogue input or output signal control modules and much more besides.

The EB 80 system is protected by numerous patents and utility models, which enhance the most innovative design solutions.

The possible combinations are endless, but the most amazing thing is that they can be obtained using a small number of basic components.

In order to achieve this objective, a single size of small yet high-performance valves to cover the vast majority of applications was conceived.

A single electronic control unit is provided when supplying 12VDC or 24VDC valves with multi-pole cables or with a field bus for each protocol.

All EB 80 versions come with an efficient diagnostic system.

The EB 80 catalogue consists of a first overall introductory chapter followed by a chapter for each subsystem.

NSF H1-certified grease is used to lubricate the valve spool and seals.



TECHNICAL DATA

Supply voltage range	VDC	12 -10%	24 +30%				
Minimum operating voltage	VDC	10.8 *					
Maximum operating voltage	VDC	31.2					
Maximum admissible voltage	VDC	32 ***					
Power for each controlled pilot	W	3 for 15 ms, then holding 0.3					
Drive (for multi-pole)		PNP or NPN					
Solenoid rating		100% ED					
Solenoid valve supply power		See chapter "Electrical connection - E"					
Signal module supply power		See chapter "Signal module - S"					
Protection		Overload and short-circuit protected solenoid pilot Output					
Diagnostics		See chapter "Electrical connection - E"					
Maximum number of solenoid pilots		21 or 38 multi-pole connection; field bus 128					
Ambient temperature	°C	-10 to + 50 (at 8 bar)					
	°F	14 to 122 (at 8 bar)					
Operating pressure		5/2 and 5/3	2/2 and 3/2				
Non-assisted valves	bar	3 to 8	3.5 to 8				
	MPa	0.3 to 0.8	0.35 to 0.8				
	psi	43 to 116	51 to 116				
Assisted valves	bar	Vacuum to 10					
	MPa	Vacuum to 1					
	psi	Vacuum to 145					
Servo pressure	bar	3 to 8	min. (see graph on page B2.57) / max. 8				
	MPa	0.3 to 0.8	min. (see graph on page B2.57) / max. 0.8				
	psi	43 to 116	min. (see graph on page B2.57) / max. 116				
Valve flow rate, at 6.3 bar ΔP 1 bar		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"	Ø 10 **	Ø 3/8" **
	valve 2/2	Nl/min	350	430	500	430	-
	valve 3/2	Nl/min	350	600	700	600	1250
	valve 5/2	Nl/min	350	650	800	650	1250 - 1400
	valve 5/3	Nl/min	350	460	500	460	1000 - 1250
	valve V3V (R)	Nl/min	-	-	-	-	1000
Actuation response time (TRA) / reset response time (TRR) at 6 bar							
	TRA/TRR valve 2/2 and 3/2	ms				14 / 28	
	TRA/TRR valves 5/2 monostable and shut-off valve	ms				12 / 45	
	TRA/TRR valve 5/2 bistable	ms				12 / 14	
	TRA/TRR valve 5/3	ms				15 / 45	
	TRA/TRR valve 3/2 high flow	ms				13 / 36	
Fluid						Unlubricated air	
Air quality required						ISO 8573-1 class 4-7-3	
Degree of protection						IP65 (with connectors connected or plugged if not used)	
Category ATEX						Ex II 3G Ex ec IIC T5 Gc X -10°C<Ta<50°C	
						Ex II 3D Ex tc IIIC T1 00°C Dc X	
Certifications						CE - EAC - cULus - Ex	

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Using high-flow valves or connected valves - see pages B2.58

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

N.B.: Refer to the chapter of each EB 80 sub-assembly for specific technical data.

CERTIFICATIONS

The **CE** certification for the part concerning only CSA (Canadian market) is bound to the following conditions of use:

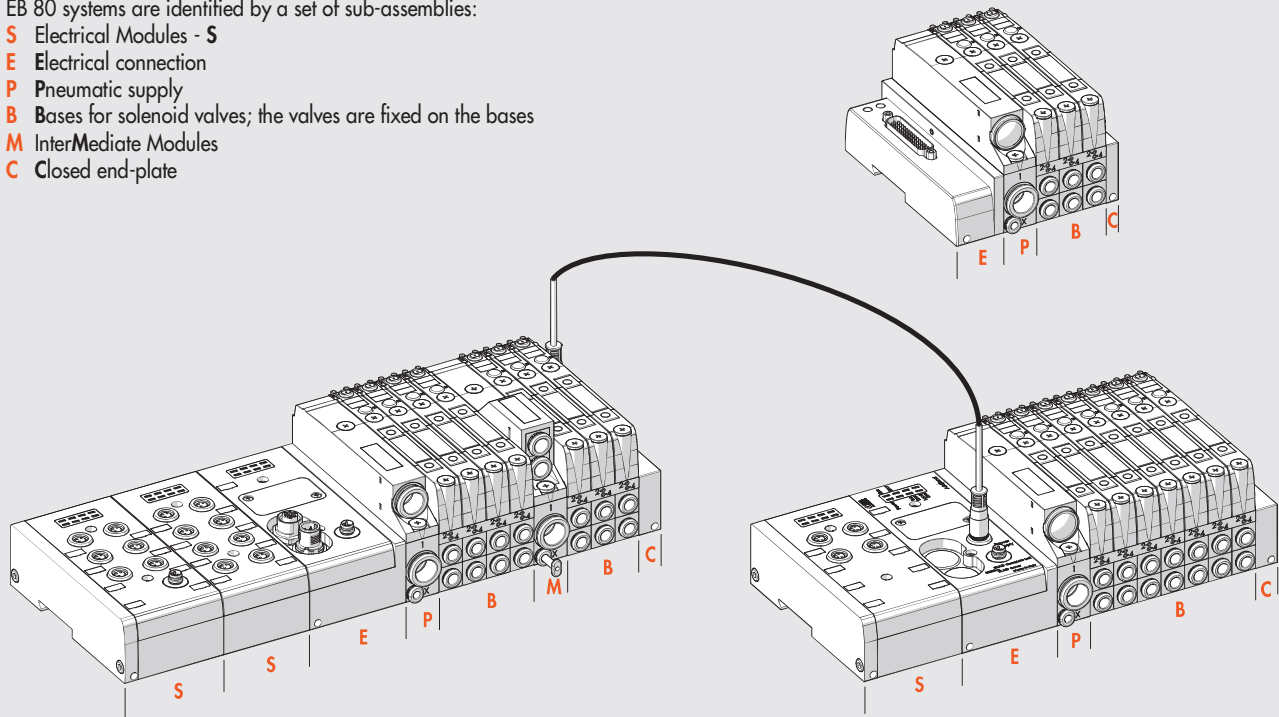
- environment temperature: max 45°C
- ED max 70%

If non-adjoint valves are used, ED max can reach 100% (environment temperature max 45°C)

COMPONENTS

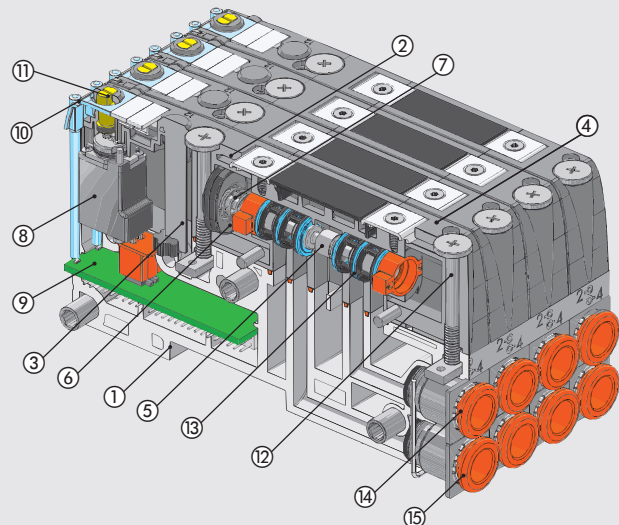
EB 80 systems are identified by a set of sub-assemblies:

- S** Electrical Modules - **S**
- E** Electrical connection
- P** Pneumatic supply
- B** Bases for solenoid valves; the valves are fixed on the bases
- M** InterMediate Modules
- C** Closed end-plate



COMPONENTS – SOLENOID VALVE AND BASE

- ① BASE: technopolymer
- ② VALVE BODY: technopolymer
- ③ CONTROL: technopolymer
- ④ BASE: technopolymer
- ⑤ SPOOL: chemically nickel-plated aluminium
- ⑥ CONTROL PISTON: Stainless steel and NBR
- ⑦ SPRING: Oteva® steel and Dacromet treatment
- ⑧ SOLENOID VALVE
- ⑨ ELECTRONIC BOARD
- ⑩ LED light display: technopolymer
- ⑪ MANUAL CONTROL: nickel-plated brass
- ⑫ SCREW SECURING VALVE TO THE BASE: zinc-plated steel
- ⑬ SPOOL GASKET: NBR
- ⑭ Push-in fitting CARTRIDGE for port 2
- ⑮ Push-in fitting CARTRIDGE for port 4



THE EB 80 WORLD

ELECTRICAL CONNECTION - E

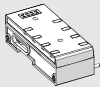
E025	E044	E0EN	E0EC	E0PN	E0CN	E0PB	E0PL	E0IO	E0LK	E0CC	E0AD
											
25 PIN	44 PIN	EtherNet/IP	EtherCAT	Profinet IO	CANopen	Profibus-DP	Ethernet POWERLINK	IO-Link 32 IN/32 OUT	IO-Link 64 OUT	CC-Link IE Field Basic	Additional
page B2.30	page B2.30	page B2.43	page B2.43	page B2.43	page B2.43	page B2.43	page B2.43	page B2.43	page B2.43	page B2.43	page B2.48

SIGNAL MODULE - S

S01	S02	S03	S04	S05	S06	S07	S08	S21	S22
									
8 M8 digital inputs	8 M8 digital outputs	6 M8 digital outputs + electrical supply	4 M8 analogue inputs	4 M8 analogue outputs	16 digital terminal block inputs	16 digital terminal block outputs	4 M8 analogue inputs for temperature measurement	16 M8 configurable digital inputs/outputs	16 M12 configurable digital inputs/outputs
page B2.18	page B2.18	page B2.19	page B2.19	page B2.20	page B2.20	page B2.21	page B2.21	page B2.22	page B2.22

WIRELESS MODULE - S

S20

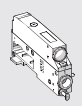
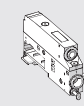
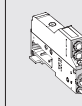
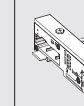


Wireless connection module

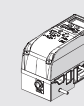
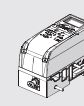
page B2.16

Part included in the
ELECTRICAL CONNECTION - E
with Fieldbus

COMPRESSED-AIR SUPPLY - P

P_Z00	P_Z_	P_Z_0	P91Z90
			
Silenced relief	Conveyed relief	Separate reliefs	Module for electric version only
page B2.51	page B2.51	page B2.51	page B2.52

PROPORTIONAL PRESSURE REGULATOR - A

A40_Z_0	A41_Z_0
	
Base port 1 pass-through local outlet	Base port 1 sectioned in-series regulation
page B2.65	page B2.65

VALVES											
Z_ ▲	I_ ▲	W_ ▲	L_ ▲	V_	K_ ▲	O_ ▲	G_	J_	R_ +	N0	Y8
											
2 valves 2/2 NC	2 valves 3/2 NC (valid as 5/3 OC)	2 valves 3/2 NO (valid as 5/3 PC)	3/2 NC + 3/2 NO	monostable 5/2	bistable 5/2	5/3 CC	3/2 NC high flow	3/2 NO high flow	Shut-off valve	Dummy valve	Bypass
page B2.57	page B2.57	page B2.57	page B2.57	page B2.57	page B2.57	page B2.57	page B2.58	page B2.58	page B2.59	page B2.60	page B2.60

▲ Can only be used with 6 or 8 control bases.
 + Requires inlet port X slave synchronisation.

CLOSED END-PLATE - C

C1	C2	C3
		
For islands with multi-pole connector	For islands with fieldbus	For electrical connection of islands with fieldbus to additional islands
page B2.74	page B2.74	page B2.74

BASES FOR VALVES - B

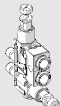
B3_0	B4_
	
3-position base for valves	4-position base for valves
page B2.54	page B2.54

Y-FITTING

R2

Y-fitting
page B2.61

MULTI-FUNCTION MODULE

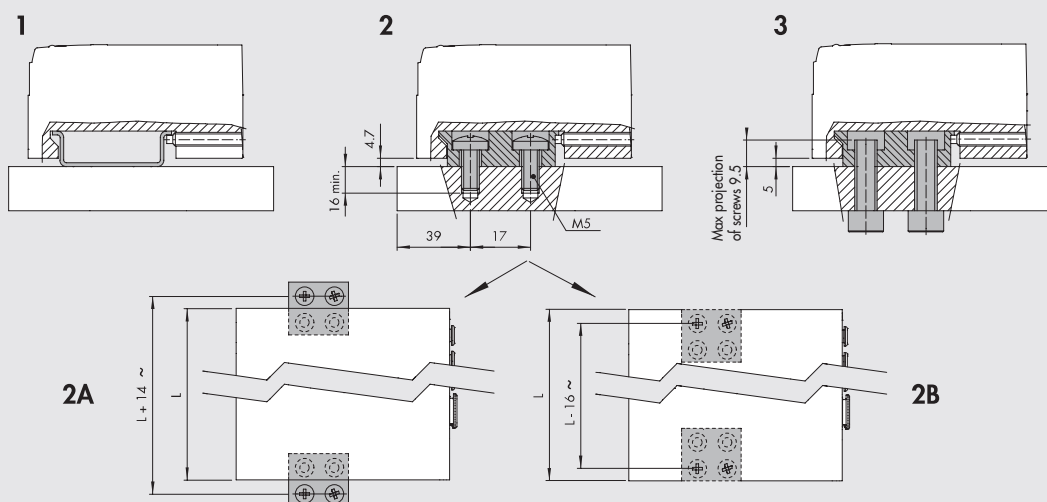

Fittings with pneumatic functions
page B2.92

INTERMEDIATE SUPPORT - M

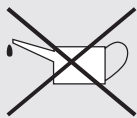
M_Z0	M_Z	M_Z
		
Silenced relief	Conveyed relief	Separate relief
page B2.69	page B2.70	page B2.71

FIXING OPTIONS

- 1 - **Fixing on a DIN bar:** tighten the grub screws into modules E (electrical connection) and C (closed end-plate).
For islands with more than 40 valves or 5 modules, also use the additional plate code 02282R4001.
 - 2 - **Fixing on a flat surface:** use the pair of brackets code 02282R4000 and the M5x20 screws supplied.
You can choose where to position the brackets in relation to the island:
 - 2A - **Protruding brackets:** can be used to install the island + brackets unit from above. First secure the brackets to the modules E and C using the grub screws, then secure everything with M5x20 screws.
 - 2B - **Concealed brackets:** the overall dimensions of the island are reduced. First secure the brackets to the flat top with M5x20 screws, then place the island onto the brackets and lock the two grub screws provided in the modules E and C.
 - 3 - **Fixing through a wall:** use the brackets code 02282R4000. The brackets come with M6 threaded holes and can be fixed with M6 screws (not included in the supply) passing through the wall. The brackets can fixed either protruded or concealed.
- N.B.:** Planar surfaces are required to ensure correct fixing. Avoid twisting or bending the valve units.



LUBRICATION



NO LUBE



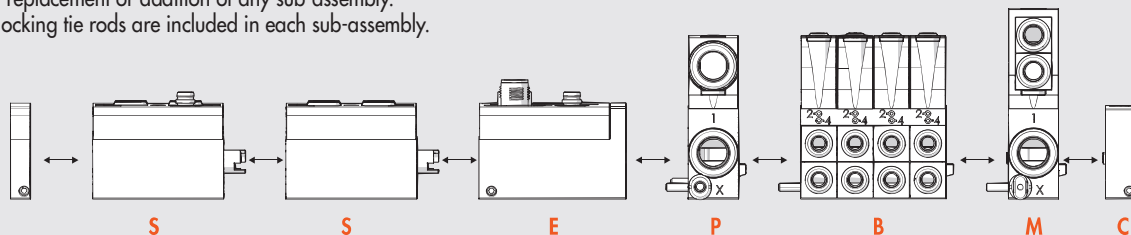
NO OIL

The EB 80 electro-pneumatic system is designed to run millions of cycles without the need for any lubrication. This is possible thanks to the optimisation of its components and the use of a special grease with excellent properties and NSF H1 certified. To avoid removing the grease, it is highly recommended not to lubricate the valve input and output ports and check the quality (to ISO 8573-1 class 4-7-3) of the compressed air used, which is often contaminated by particularly aggressive oils that are released by compressors and are not always compatible with the elastomers used in the valves.

SOME CHARACTERISTICS OF EB 80 SYSTEMS

HORIZONTAL MODULARITY

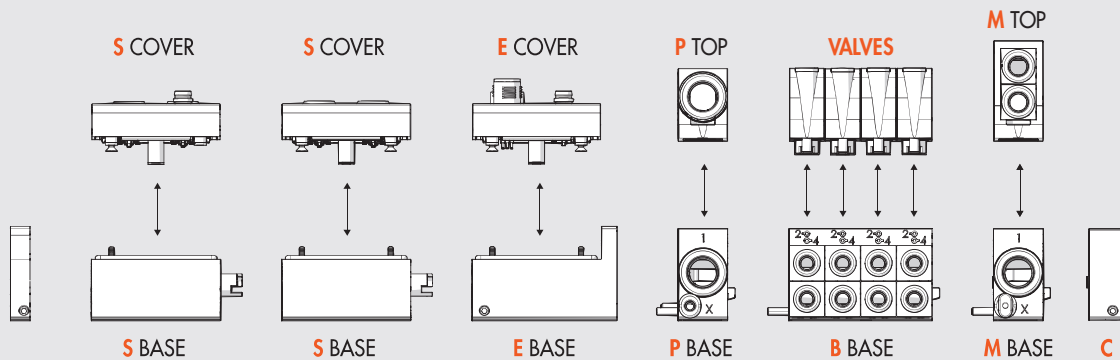
- Easy replacement or addition of any sub-assembly.
The locking tie rods are included in each sub-assembly.



VERTICAL MODULARITY

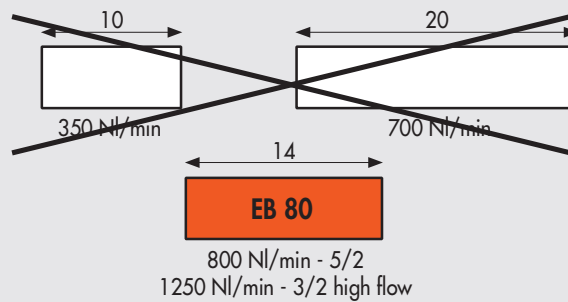
- Easy replacement – no need to disassemble the pack – of the valves on the Bases – B and also of the top part (cover) of subsystems S, E, P, M using a single Phillips-head screwdriver.

N.B.: All protocols can be mounted on the base for field buses and all input or output modules can be mounted on the same base for signals.



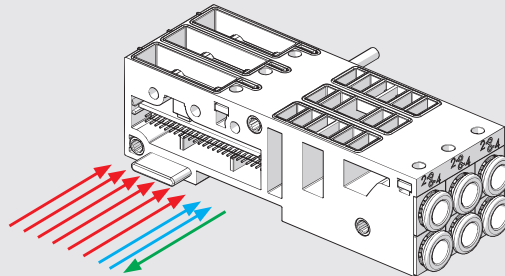
ONE SIZE FITS ALL

- Reduced dimensions
- High flow rate
- One warehouse and spares

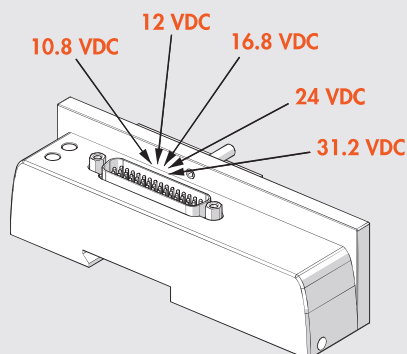


THE SAME BASE FITS BOTH MULTI-POLE CONNECTIONS AND FIELD BUSES

- Controls from multi-pole connection
- Controls from field buses
- Diagnostics

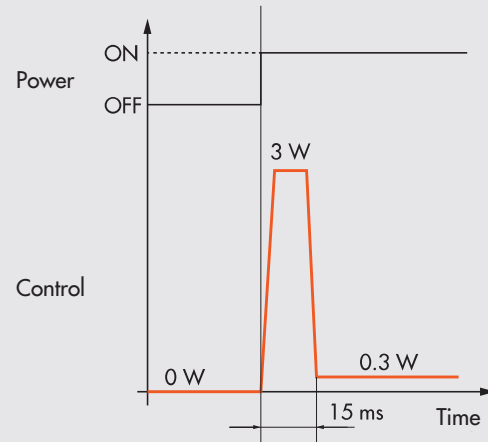


THE SAME ISLAND CAN BE SUPPLIED 10.8 - 31.2 VDC



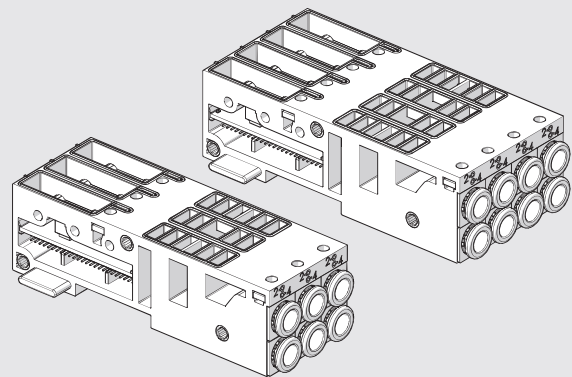
ONLY 0.3 W FOR EACH SOLENOID VALVE

- Speed-up solenoid valve control:
 - high power for a few milliseconds ensures high performance and rapid and safe switching;
 - reduced holding power resulting in reduced temperatures and energy saving.



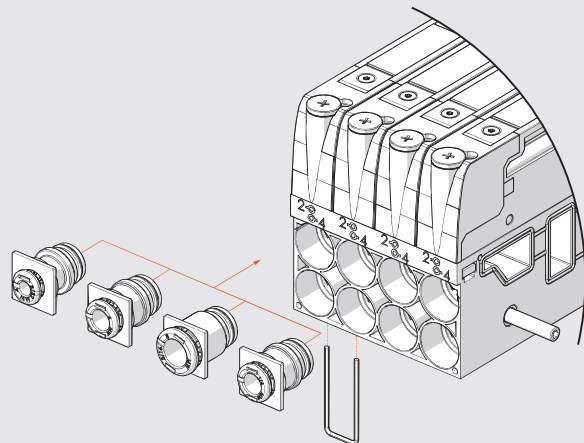
3- OR 4-POSITION BASES FOR VALVES

- Island layout options:
 - 3 1 base with 3 positions
 - 4 1 base with 4 positions
 - (5 2 bases with 3 positions and 1 dummy valve)
 - 6 2 bases with 3 positions
 - 7 1 base with 3 and 1 with 4 positions
 - 8 2 bases with 4 positions
 - ...
- Compared to single-base solutions, this configuration is advantageous because:
 - just a few bases are required for multiple positions;
 - the base is sturdy and rigid;
 - there is plenty of space to accommodate smart electronics



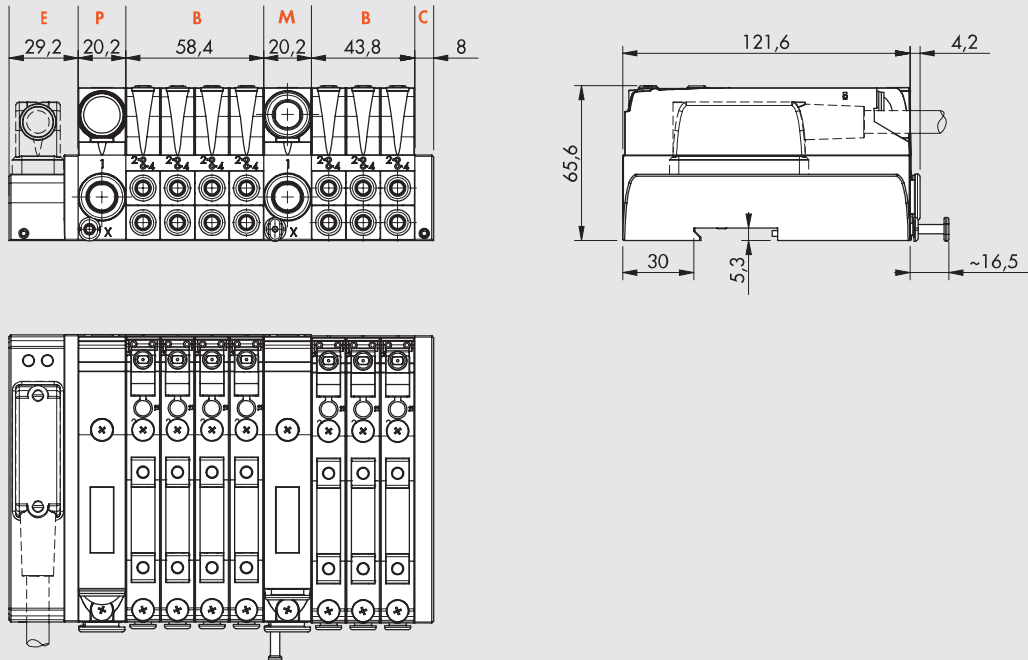
INTERCHANGEABLE CARTRIDGE FITTINGS

- For pipes $\varnothing$ 4 (5/32"), 6, 8 (5/16"), 1/4"

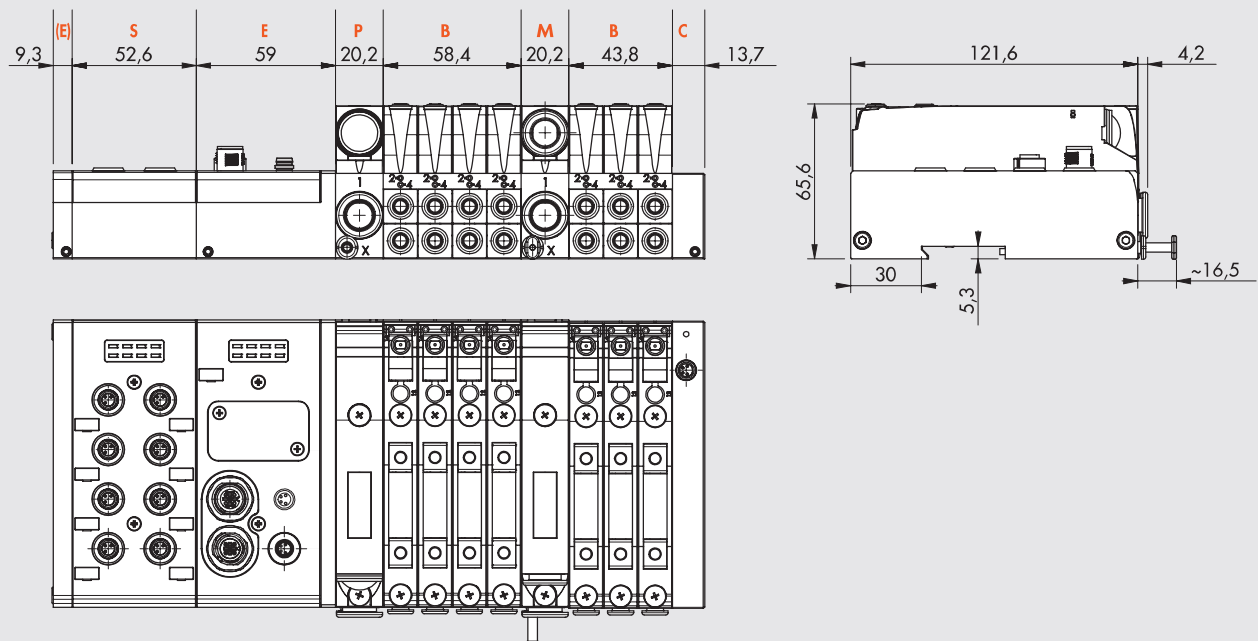


DIMENSIONS

DIMENSION OF VERSIONS WITH MULTI-POLE CONNECTION



DIMENSION OF VERSIONS WITH FIELD BUS OR ADDITIONAL CONNECTION



DESCRIPTION

A complete system has a compound **description** of all its subsystems listed in sequence from left to right, as shown below.
The abbreviation of each subsystem is obtained by taking the code and omitting the first digits 02282.
For example: the digital 8-input signal module is identified with code 02282S01; only write S01 in the description.

The abbreviation of each base for valves consists of:

Abbreviation of the Base	Manual valve control	Type of valves
Obtained from the code, after removing 02282	0 = monostable 1 = bistable	Valves Dummy valve Bypass
Example		
4-position base, 8 solenoid pilots, Ø 6 pipe; code 02282B4086666	Monostable	2 monostable 5/2 valves - V 1 double 3/2 NO - W 1 dummy valve - F
Abbreviation		
B4086666	0	VVWF

The description is therefore a sequence of this type:

EB 80	- S _ _	- E _ _	- P _ _ _	- B _ _ _ _ _	- M _ _ _ _	- C _
EB 80 system	Electrical Module (if present)	Electrical connection	Compressed air supply	Base for valves (as many as there are) with normal or dummy	Intermediate (if present)	Closed end-plate
For the codes:	see page B2.22	see page B2.28	see page B2.52	see page B2.55 and B2.60	see page B2.72	see page B2.75

Example:

EB 80-S01-E0EN-P3XZ00-B4086660VWKN-M300Z30-B30388800VVN-C2

EB 80	- S01	- E0EN	- P3XZ00	- B4086660VWKN	- M300Z30	- B30388800VVN	- C2
EB 80 system	Signal module complete 8 M8 digital inputs	Electrical connection EtherNet/IP	Compressed air supply - fitting Ø 12 - pilot servo Ø 4 - silenced relief	Base for valves - 4 positions - 8 controls - fittings for pipe Ø 6 - manual monostable control - 5/2 monostable valve - 2 3/2 NO valves - bistable 5/2 valve - dummy valve	Intermediate - fittings for pipe Ø 12 - through ports - without supplementary power supply	Base - 3 positions - 3 controls - fittings for pipe Ø 8 - manual monostable control - 5/2 monostable valve - 5/2 monostable valve - dummy valve	Closed end-plate for valve Island with field bus

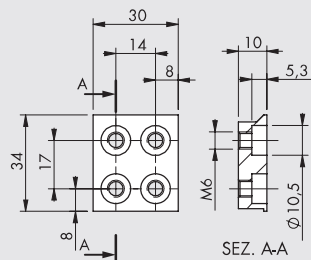
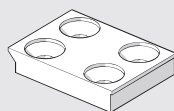
Endless number of EB 80 systems can be obtained and their description is variable in length, which can be very extended.

The actual ordering CODE of an EB 80 system is created by Metal Work S.p.a. with a limited number of characters.

The ordering code is not explicative. The description only is univocal, complete and explicative.

ACCESSORIES

FIXING BRACKET



Code	Description	Weight [g]
02282R4000	EB 80 base fixing bracket	47

Note: 2 pieces per pack complete with 4 M5x20 screws

NOTES

Please refer to the subsystem chapter for other accessories (e.g. connectors) and spare parts.

EB 80 INDUSTRY 4.0

The new advanced EB 80 diagnostic functions, known as EB 80 I4.0, provide a powerful analysis tool for traditional maintenance operations, ensuring the safe, reliable and lasting operation of production units.

They are available for all electrical connections with fieldbuses and bases marked I4.0, with advanced diagnostics integrated in accordance with Industry 4.0 philosophy.

These functions use the original EB 80 diagnostics, integrating them with the ability of the station itself to control IOs.

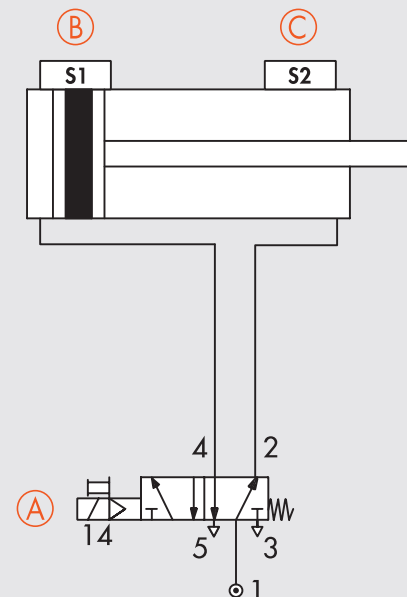
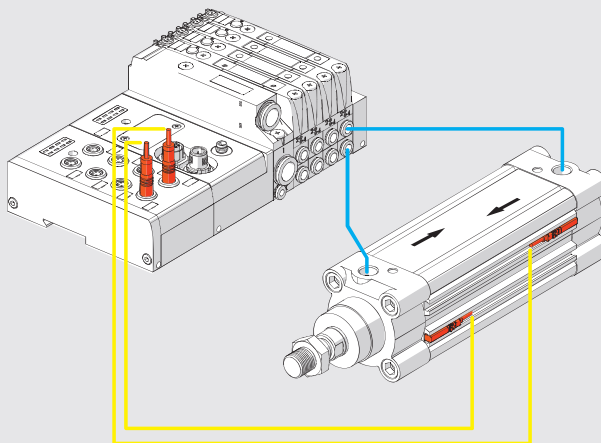
They re-organise and optimise maintenance management by developing predictive maintenance in order to:

- predict faults;
- intervene early to avoid system downtime;
- have all information on equipment operation available in real time;
- monitor component end-of-lifetime;
- optimise warehouse spare parts management.

This makes it possible to turn the data collected into concrete actions using standard EB 80 stations without needing additional modules.

Description of EB 80 I4.0 functions:

- System data:
 - EB 80 system startup counter;
 - supply alert counter.
- Valve data. Each valve base for each solenoid valve permanently stores the following information:
 - cycle counter;
 - counter for total solenoid valve excitation time;
 - activation of a flag to signal average lifetime exceeded;
 - short circuit alert counter;
 - open circuit alert counter.
- Electropneumatic system control functions (data updated with each cycle):
 - measurement of the delay between activating the solenoid valve "A" and actuator movement commencing via the signal of sensor "B", with delays that exceed the limit flagged;
 - measurement of actuator movement time using two linked sensors "B" and "C", with exceeded time limits flagged;
 - measurement of the delay between deactivating the solenoid valve "A" (or activating a second valve) and actuator return commencing via the signal of sensor "B", with exceeded time limits flagged;
 - measurement of actuator return time using two linked sensors "B" and "C", with exceeded time limits flagged;
 - counter for actuator range of motion.

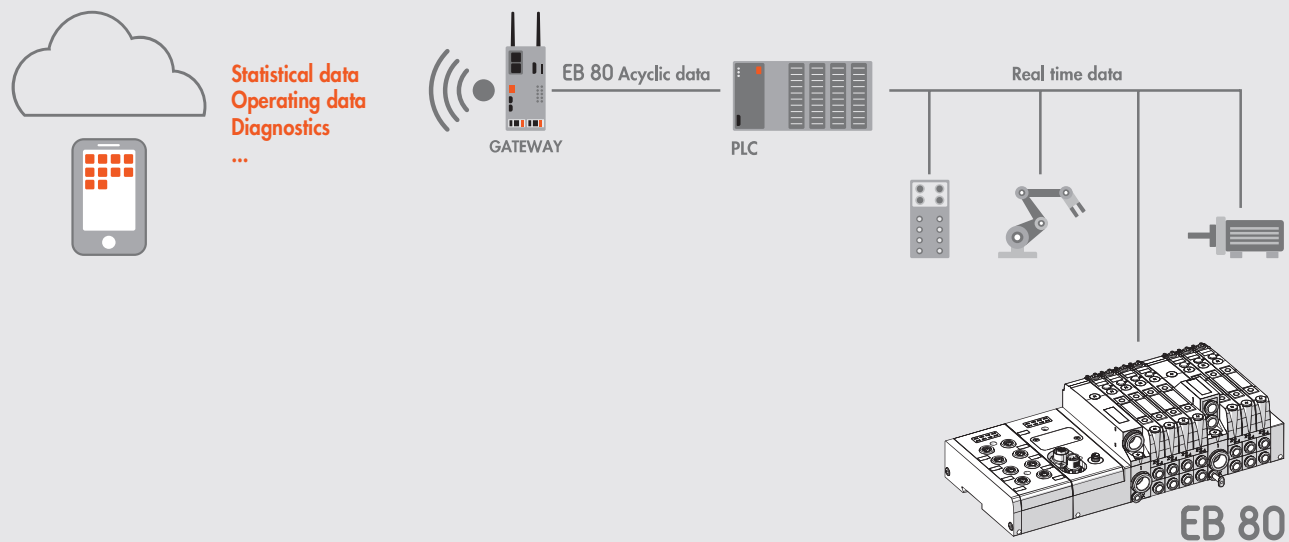


PLC-BASED DATA COLLECTION

Electrical connection modules can be used to complement the EB 80 with the main field buses available in the market. In this way, the control system (generally a PLC) can handle in real time the behaviour of the solenoid valve island, including signal modules.

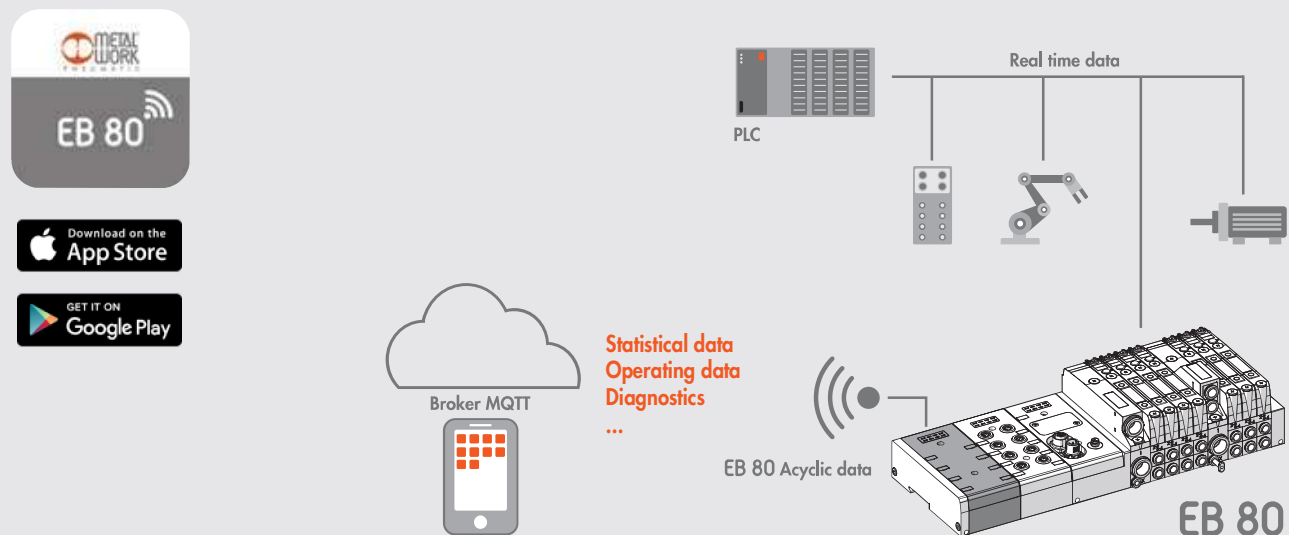
With the introduction of the I4.0 version, the field bus connection modules also send to the network the historical and diagnostic data relating to the behaviour of the island (such as the number of cycles for each solenoid pilot, total activation time and alarms) and the controlled pneumatic circuit (such as the delay times in sensor switching and actuator activation times).

This data is also sent to the control system and can be handled differently depending on the situation: in some cases, it can be used in real time, like in the case of fault alarms; in other cases, it can be sent to a storage local unit or one remotely controlled on a cloud server, and is analysed in a subsequent stage; in other cases, the alarms can be sent to a teleservice station that can monitor the state of the system remotely.



EB 80 WIRELESS DATA COLLECTION

Integrated into the EB 80, this module provides connection to Wi-Fi networks and Bluetooth® devices to display diagnostic and operating data. The APP specifically developed by Metal Work, called EB80Up, can connect Android and IOS devices for easy viewing of diagnostic and operating data plus the setting of network parameters.



EB 80 ELECTRICAL MODULES - S

EB 80 WIRELESS MODULE - S



The EB 80 Wireless module complements both Bluetooth® and Wi-Fi communication and displays data made available by the EB 80's advanced diagnostics functions, called EB 80 I4.0.

These functions provide traditional servicing with a powerful analysis tool to ensure reliable, safe and long-lasting operation.

This module can be added at any time: simply unscrew the metal plate on the left side of the 'Electrical connection E' module or the 'Signal module S' module, fit the 'Wireless module S' (ready fitted with tie rods for fixing) and screw the locking plate back on the left side.

Fully compatible with all electrical fieldbus connections, it offers advanced diagnostics in accordance with Industry 4.0 requirements.

Via the dedicated 'Metal Work EB80Up', this module communicates via Bluetooth with mobile devices (smartphones and tablets) to display diagnostic and operating data. On top of that, all network parameters can be set for communication with Ethernet networks via the MQTT protocol.

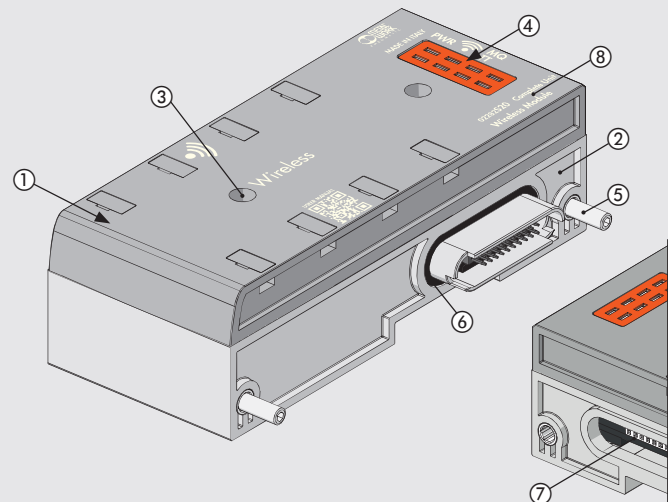


TECHNICAL DATA

Communication protocols		Wi-Fi MQTT Bluetooth® LE
Connection status reporting		3 LED, Power - Wi-Fi - MQTT
Degree of protection		IP 65
Ambient temperature	°C	-10 to +50
	°F	14 to 122

COMPONENTS

- ① UPPER PART BODY: technopolymer
- ② LOWER PART BODY: technopolymer
- ③ SCREW securing the upper part to the lower part
- ④ LED
- ⑤ TIE ROD to secure modules: nickel-plated brass + stainless steel grub screw
- ⑥ GASKET: NBR
- ⑦ FEMALE CONNECTOR for other modules - S or fieldbus connection - E
- ⑧ IDENTIFICATION of wording by laser

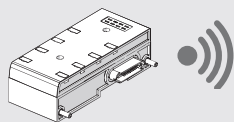


WIRELESS CONNECTION

Connecting to a Wi-Fi network via an Access point to display diagnostic data is also possible.

Layout of the connection via an Access point to an MQTT broker

MQTT



Broker MQTT



Collecting data from the field provides predictive diagnostics of the plant, i.e:

- managing preventive maintenance;
- keeping the operating parameters under control at all times and optimising the operation of the machines and the pneumatic system.

The 'Metal Work EB80Up' App provides a Bluetooth connection from Android smartphones and the iOS to the EB 80 wireless module installed on the island.

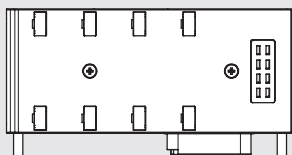
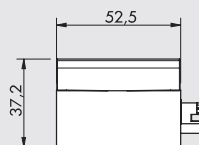
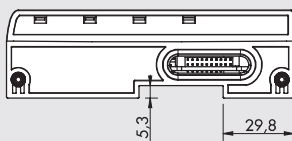
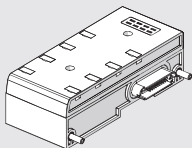
Via the 'Metal Work EB80Up' App, you can:

- scan nearby EB 80 devices;
- login and view device diagnostic data;
- reset the number of valve cycles;
- reset the number of cycles of virtual actuators;
- set wireless network parameters.



DIMENSIONS - ORDERING CODES

WIRELESS MODULE



Code	Description	Weight [g]
02282S20	EB 80 Wireless module	180

KEY TO CODES

02282	S	20
FAMILY	SUBSYSTEM	TYPE
02282 EB 80	S Modules	20 Wireless

EB 80 SIGNAL MODULES - S

The EB 80 systems come with numerous input or output signal modules, which can be mounted on systems with fieldbus electrical connection or additional systems.

The signal modules can be added at any time. You only need to unscrew the aluminium plate to the left side of the "Electrical connection - E" module and install the "Signal Modules - S" (ready fitted with fixing tie rods) and retighten the end plate to the left.

Each signal module consists of two parts: the lower part, which contains transmission electronics of the controls, is unique and valid for all modules; the upper part, which is specific for each type.

This design highlights the modular features of the EB 80 system: the upper part of the "Signal Module - S" can be replaced either with a similar one by simply unscrewing the screws in the event of failure or one of another type. All this without having to remove anything from the system.



TECHNICAL DATA		
Supply voltage range	VDC	12 -10% 24 +30%
Minimum operating voltage	VDC	10.8 *
Maximum operating voltage	VDC	31.2
Maximum admissible voltage	VDC	32 ***
Power and current		See individual "Signal Modules - S"
Protection		See individual "Signal Modules - S"
Diagnostics		Local via LED light and software message
Maximum number of signal modules		Undervoltage, overvoltage, short-circuit and overload of individual connector and the entire module, 128 digital inputs ** - 128 digital outputs ** 16 analogue inputs - 16 analogue outputs 16 inputs for temperature measurement
Ambient temperature	°C	-10 to + 50
	°F	14 to 122
Versions		digital input, digital output, analogue input, analogue output
Degree of protection		IP65 (with connectors connected or plugged if not used) IP40 for 16-position I/O modules

* Minimum voltage 10.8V required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

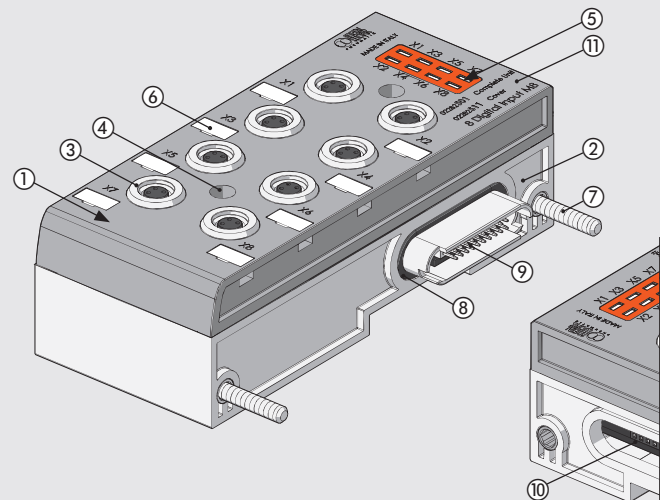
** Using S21-S22 modules only, the maximum number of signal is 64; reaching a quantity of 128 signals is possible by adding other modules, such as S01, S02, S06 and S07

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

N.B.: Refer to the following pages for specific technical data of each module.

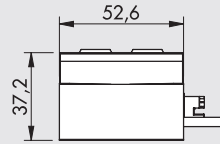
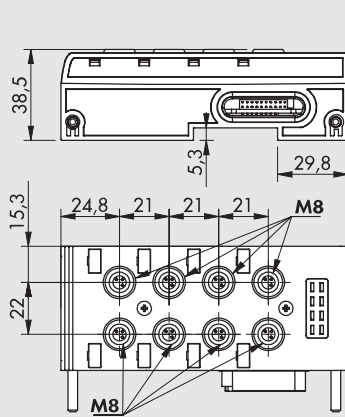
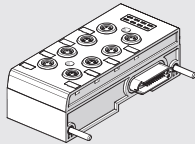
COMPONENTS

- ① UPPER PART BODY: technopolymer
- ② LOWER PART BODY: technopolymer
- ③ M8 CONNECTOR: signal connection
- ④ SCREW securing the upper part to the lower part
- ⑤ LED light
- ⑥ NAMEPLATE: removable
- ⑦ TIE ROD to secure modules: nickel-plated brass + stainless steel grub screw
- ⑧ GASKET: NBR
- ⑨ MALE CONNECTOR for other modules - S or fieldbus connection - E
- ⑩ FEMALE CONNECTOR for other modules - S or fieldbus connection - E
- ⑪ IDENTIFICATION of wording with laser



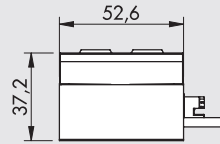
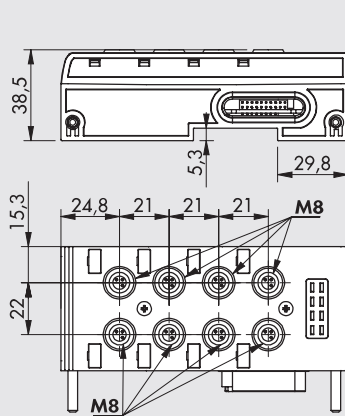
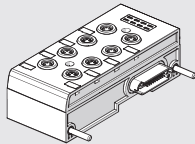
DIMENSIONS - ORDERING CODES

8 M8 DIGITAL INPUTS



Code	Description	Weight [g]	TECHNICAL DATA	
02282501	EB 80 module with 8 M8 digital inputs	250	Sensors supply voltage	Corresponding to the supply voltage
			Current for each connector	max 200 mA
			Current for each module	max 500 mA
			Input impedance	3.9 kΩ
			Type of input	Software-configurable PNP/NPN
			Protection	Overload and short-circuit protected inputs
			Connections	8 M8 3-pole female connectors
			Input active signals	One LED for each input

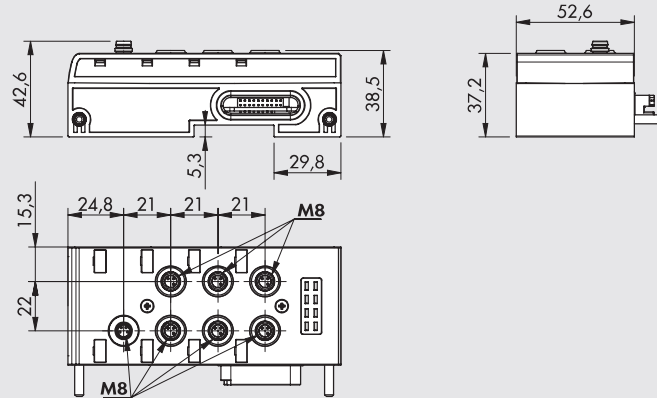
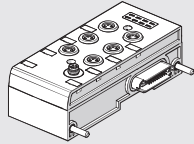
8 M8 DIGITAL OUTPUTS



Code	Description	Weight [g]	TECHNICAL DATA	
02282502	EB 80 module with 8 M8 digital outputs	250	Output voltage	Corresponding to the supply voltage
			Current for each connector	max 500 mA
			Current for each module	max 3000 *
			Type of output	Software-configurable PNP/NPN
			Protection	Overload and short-circuit protected outputs
			Connections	8 M8 3-pole female connectors
			Outputs active signals	One LED for each output

* IMPORTANT: the module is powered via the fieldbus. The total current of the connected outputs must not exceed 3.5 A.

6 M8 DIGITAL OUTPUTS + ELECTRICAL POWER SUPPLY



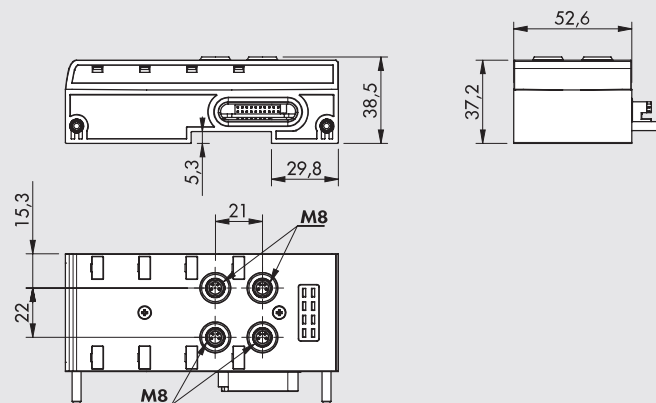
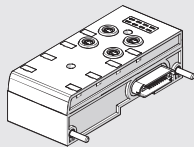
Code	Description	Weight [g]
02282503	EB 80 module with 6 M8 digital outputs + electrical supply	240

TECHNICAL DATA		
Bus supply voltage range	VDC	12 -10% 24 +30%
Digital out supply voltage range	VDC	12 -10% 24 +30%
Minimum operating voltage	VDC	10.8 *
Maximum operating voltage	VDC	31.2
Maximum admissible voltage	VDC	32 ***
Output voltage		Corresponding to the supply voltage
Current for each connector	mA	max 1000
Current for each module	mA	max 4000
Type of output		Software-configurable PNP/NPN
Protection		Overload, short-circuit and polarity inversion protected outputs
Connections		6 M8 3-pole female connectors for Signals 1 M8 4-pole male connector for Supply
Output active signals		One LED for each output

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

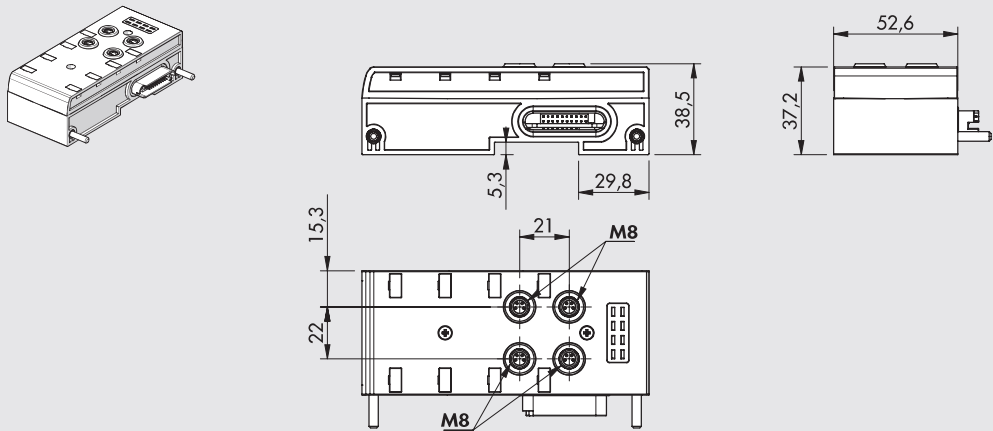
4 M8 ANALOGUE INPUTS



Code	Description	Weight [g]
02282504	EB 80 module with 4 M8 analogue inputs	220

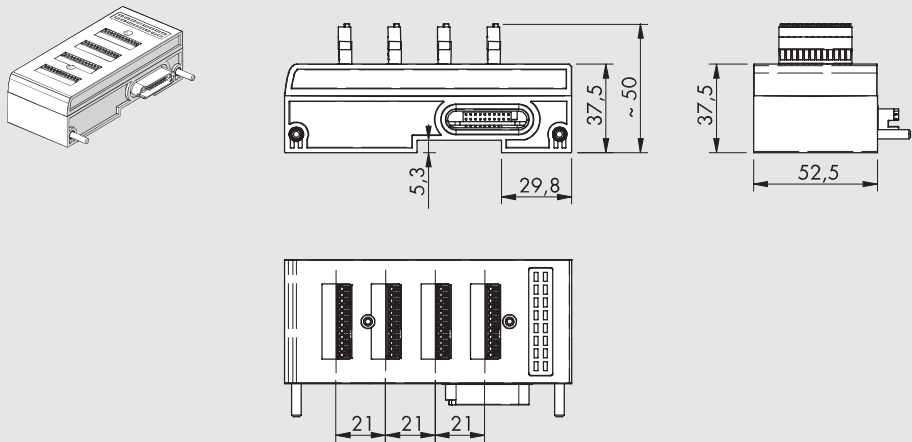
TECHNICAL DATA		
Sensors supply voltage		Corresponding to the supply voltage
Current for each connector	mA	max 200
Current for each module	mA	max 650
Type of input, software configurable		0/10VDC; 0/5VDC; +/-10VDC; +/-5VDC; 4/20 mA; 0/20 mA
Protection		Overload and short-circuit protected inputs
Connections		4 M8 4-pin female connectors
Local diagnostic signal via LED		Overload, short-circuit or type of input not complying with the configuration
Digital convert resolution		15 bit + prefix

4 M8 ANALOGUE OUTPUTS



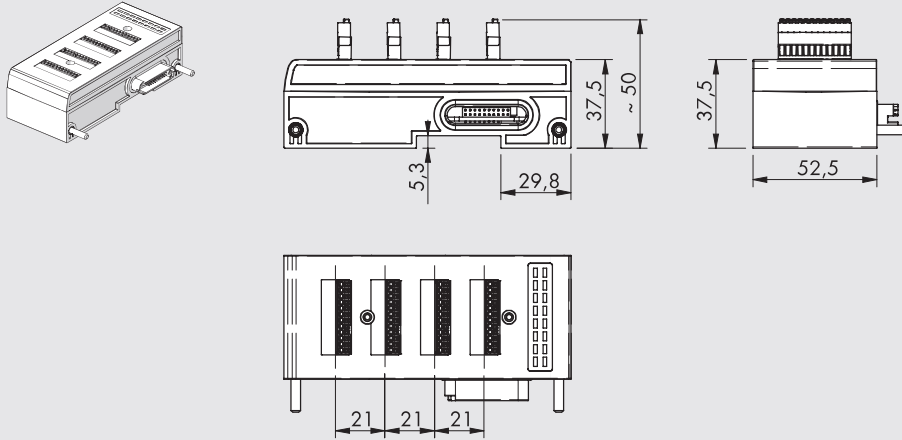
Code	Description	Weight [g]	TECHNICAL DATA	
02282505	EB 80 module with 4 M8 analogue outputs	220	Devices supply voltage	Corresponding to the supply voltage
			Current for each connector	max 200 mA
			Current for each module	max 650 mA
			Type of output	0/10VDC; 0/5VDC; +/-10VDC; +/-5VDC; 4/20 mA; 0/20 mA
			Protection	Overload and short-circuit protected outputs
			Connections	4 M8 4-pole female connectors
			Local diagnostic signal via LED	Overload, short-circuit or type of connection not complying with the configuration
			Digital convert resolution	15 bit + prefix

16 DIGITAL TERMINAL BLOCK INPUTS



Code	Description	Weight [g]	TECHNICAL DATA	
02282506	EB 80 module with 16 digital terminal block inputs	200	Sensors supply voltage	Corresponding to the supply voltage
			Current for each connector	max 200 mA
			Current for each module	max 500 mA
			Input impedance	3.9 kΩ
			Type of input	Software-configurable PNP/NPN
			Protection	Overload and short-circuit protected inputs
			Connections	4 12-pin connectors with spring clamping
			Input active signals	One LED for each input
			Degree of protection	IP40

16 DIGITAL TERMINAL BLOCK OUTPUTS

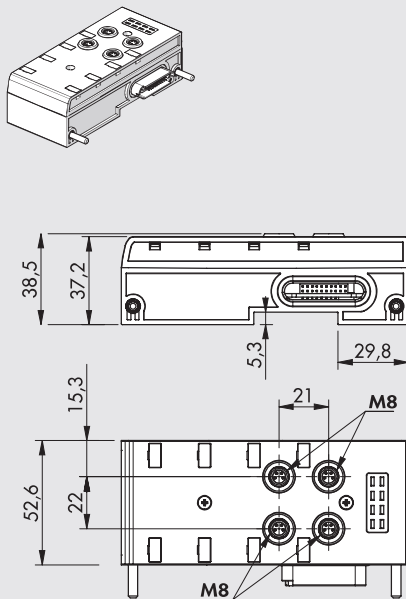


Code	Description	Weight [g]
02282507	EB 80 module with 16 digital terminal block outputs	200

TECHNICAL DATA	
Output voltage	Corresponding to the supply voltage
Current for each connector	mA max 500
Current for each module	mA max 3000 *
Type of output	Software-configurable PNP/NPN
Protection	Overload and short-circuit protected outputs
Connections	4 12-pin connectors with spring clamping
Outputs active signals	One LED for each Output
Degree of protection	IP40

*** IMPORTANT:** the module is powered via the fieldbus. The total current of the connected outputs must not exceed 3.5 A.

4 M8 ANALOGUE INPUTS FOR TEMPERATURE MEASUREMENT

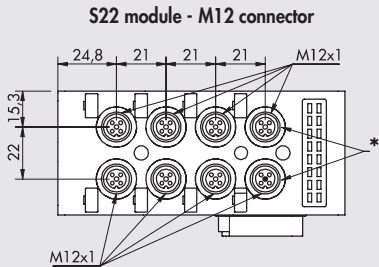
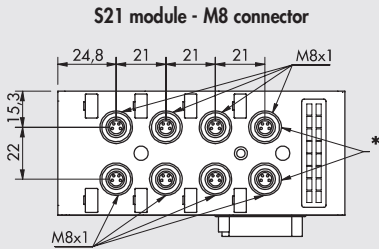
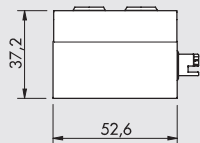
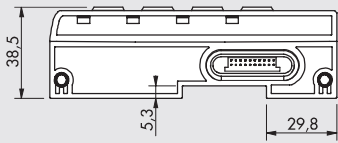
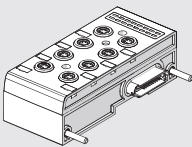


Code	Description	Weight [g]
02282508	EB 80 module with 4 M8 analogue inputs for temperature measurement	220

TECHNICAL DATA	
Sensors supply voltage	Corresponding to the supply voltage
Maximum input voltage	VDC 30
Sensor type (RTD)	
platinum (-200 to +850°C)	Pt100, Pt200, Pt500, Pt1000 (TK = 0.00385 and TK = 0.00391)
nickel (-60 to +180°C)	Ni100, Ni120, Ni500, Ni1000 (TK = 0.00618)
Connections type (RTD)	2, 3 or 4-wire
Type of thermocouple (TC)	J, E, T, K, N, S, B, R
Cold junction compensation for thermocouples	
internal	With internal electronic sensor included
external (recommended in case of sudden changes in the ambient temperature)	PT1000 sensor for connection with the M8 thermocouple connector
Temperature range	°C °F - 200 to + 800 - 328 to + 1472
Digital convert resolution	15 bit + prefix
Max error compared to ambient temperature	±0.5% (TC) ±0.06% (RTD)
Max. basic error (ambient T 25°C)	°C °F ±0.4% (TC) ±0.6 (with 4-wire RTD with 0.1 resolution) ±0.2 (with 4-wire RTD with 0.01 resolution)
Repeatability (ambient T 25°C)	°C °F ±0.03%
Address employment	2 bytes for each input - 8 bytes per module
Cycle time (module)	ms 240
Software linearization	
for RTD	Piecewise linear approximation
for TC	NIST (National Institute of Standards and Technology)
	Linearization based on ITS-90 scale (International Temperature Scale of 1990) for the thermocouple linearization
Maximum length of shielded cable for the connection	m < 30
Diagnostics	One LED for each input and reporting to the Master

16 CONFIGURABLE DIGITAL INPUTS/OUTPUTS M8 AND M12

These are innovative modules with 8 connectors and 16 digital signals, each configurable as a digital input or digital output. Modules can be configured via software by connecting the island's fieldbus module to a PLC. The signals of the first two connectors can also be used as inputs for reading direct current (VDC) motor encoders. Since each 4-pin connector allows the management of two signals (a pair of pins for each signal), dedicated connectors are also provided that allow the separation of the signals.



* Connectors usable also for reading direct current motor encoders

Code	Description	Weight [g]	TECHNICAL DATA	
02282521	EB 80 module with 16 M8 configurable digital inputs/outputs	230	Supply voltage	Corresponding to power voltage
			Current for each connector	max 1000 mA
02282522	EB 80 module with 16 M12 configurable digital inputs/outputs	230	Current for each module	max 3000 **
			Current for each output	max 500
			Type of output	PNP
			Input impedance	3.9 kΩ
			Type of input	PNP
			Protection	Overload and short-circuit protected inputs /outputs
			Connections	S21 module: 8 M8 4-pole female connectors S22 module: 8 M12 4-pole female connectors
			Input active signals	One LED for each input
			Output active signals	One LED for each output
			Default configuration	Port X1...X8 Digital inputs Port X9...X16 Digital outputs
			Encoder Configuration	
			Type of input	PNP
			Input active signals	>12 V
			Input not active signals	<12 V
			Maximum Frequency	300 Hz
			Value format	32 bit (DWORD)
			Maximum count	4.294.967.295
** IMPORTANT: the module is powered via the fieldbus. The total current of the connected outputs must not exceed 3.5 A.				

KEY TO CODES

02282	S	01
FAMILY	SUBSYSTEM	TYPE
02282 EB 80	S Modules	01 8 M8 digital inputs 02 8 M8 digital outputs 03 6 M8 digitaloutputs + electrical supply 04 4 M8 analogue inputs 05 4 M8 analogue outputs 06 16 digital terminal block inputs 07 16 digital terminal block outputs 08 4 M8 analogue inputs for temperature measurement 21 16 M8 configurable digital inputs/outputs 22 16 M12 configurable digital inputs/outputs

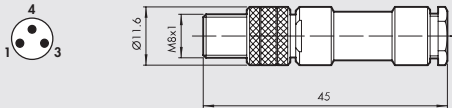
ACCESSORIES

M8 PLUG



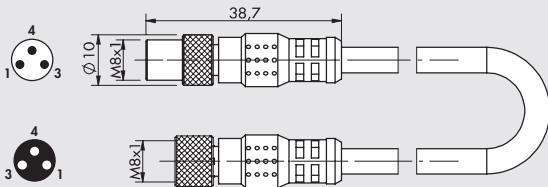
Code	Description
0240009039	Plug for M8 connector

M8 CONNECTOR FOR DIGITAL INPUTS / OUTPUTS



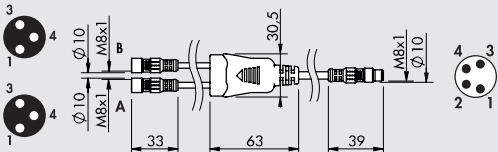
Code	Description
0240009010	M8 3-pin straight connector

M8 CONNECTOR WITH CABLE FOR DIGITAL INPUTS / OUTPUTS



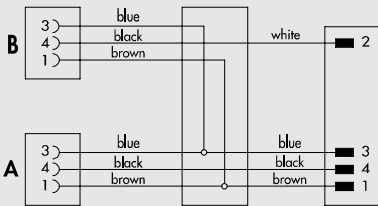
Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

M8 Y-CONNECTOR WITH CABLE FOR DIGITAL INPUT/OUTPUT

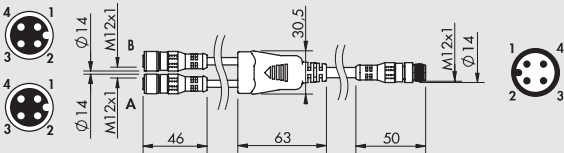


Code	Description
0240009048	Y-connector M8 4-pin M / double M8 3-pin F with cable L = 0.7 m

Note: Can only be used with S21 modules

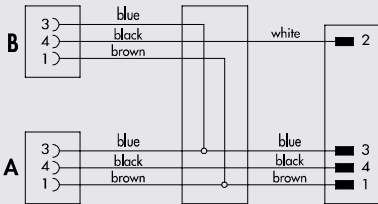


M12 Y-CONNECTOR WITH CABLE FOR DIGITAL INPUT/OUTPUT

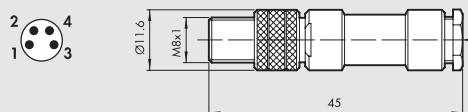


Code	Description
0240009049	Y-connector M12 4-pin M / double M12 4-pin F with cable L = 0.7 m

Note: Can only be used with S22 modules



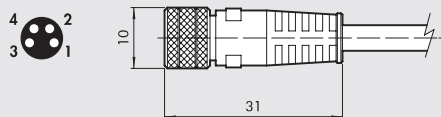
M8 MALE CONNECTOR FOR ANALOGUE INPUTS/OUTPUTS



Code	Description
0240010300	M8 4-pin male connector

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black

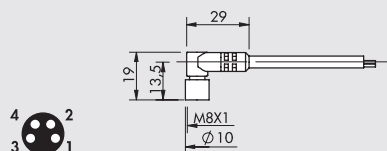


Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

* Very flexible cables, class 6 according to IEC 60228

90° M8 CONNECTORS WITH SHIELDED CABLE

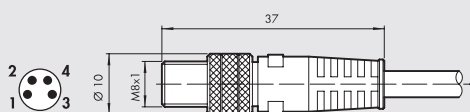
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009102	M8 4-pin female, 90° connector with shielded cable L = 2 m
0240009103	M8 4-pin female, 90° connector with shielded cable L = 5 m

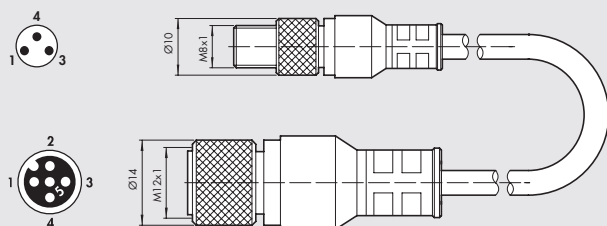
M8 4-POLE MALE CONNECTOR

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240010105	M8 4-pin connector shielded cable L = 5 m

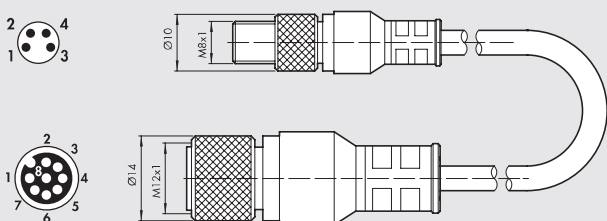
M8 3-POLE MALE – M12 5-POLE FEMALE CONNECTOR WITH CABLE FOR DIGITAL INPUTS/OUTPUTS



Code	Description
0240009045	M8 3-pole male straight - M12 5-pole female connector with cable L= 0.2 m

M8	M12
pin 1	pin 1
pin 4	pin 4
pin 3	pin 3

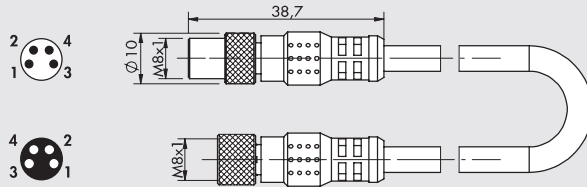
M8 4-POLE MALE – M12 8-POLE FEMALE CONNECTOR WITH CABLE FOR REGTRONIC CONNECTION



Code	Description
0240009046	M8 4-pole male straight - M12 8-pole female connector with cable L= 1 m

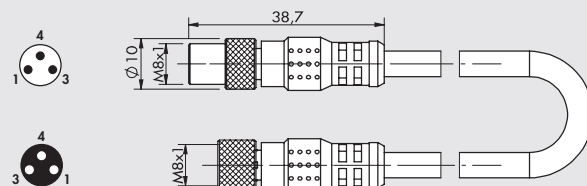
M8	M12
pin 1	pin 8
pin 2	pin 3
pin 3	pin 7
pin 4	disconnect

M8 CONNECTOR WITH SHIELDED CABLE FOR ANALOGUE INPUTS/OUTPUTS



Code	Description
0240005005	M8-M, M8-F 4-pole straight connector with shielded cable L = 1 m
0240005006	M8-M, M8-F 4-pole straight connector with shielded cable L = 3 m
0240005003	M8-M, M8-F 4-pole straight connector with shielded cable L = 5 m
0240005008	M8-M, M8-F 4-pole straight connector with shielded cable L = 10 m

M8 ADAPTER CABLE FOR CONNECTING THE PRESSURE SWITCH TO THE DIGITAL INPUTS MODULE

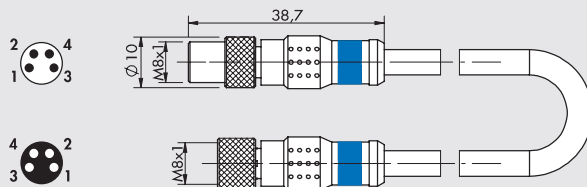


Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

Note: Can be used for connecting 1/8-1/4, Syntesi®, Skillair®, PRS L pressure switches to the module of digital INPUT S01 of the EB 80 valves. Contact type NO (Normally-Open)

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

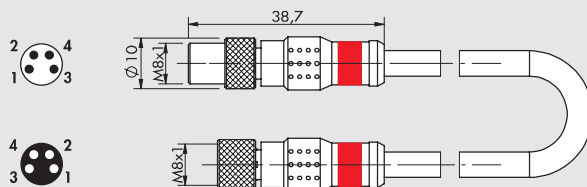
M8 SHIELDED ADAPTER CABLE FOR CONNECTING THE LTS-LTL POSITION TRANSDUCERS TO THE ANALOGUE INPUTS MODULE



Code	Description
0240010601	M8-M, M8-F 4-pole adapter with shielded cable L = 0.3 m (blue collar)

Note: Can be used for connecting the 4/20 mA analog output of the LTL-LTS position sensors to the module of analog INPUT S04 of the EB 80 valves.

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 2	pin 2	Signal 4/20 mA
pin 3	pin 3	Power supply -
pin 4	disconnect	

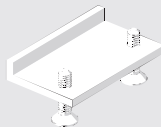


Code	Description
0240010701	M8-M, M8-F 4-pole adapter with shielded cable L = 0.3 m (red collar)

Note: Can be used for connecting the 0/10 VDC analog output of the LTL-LTS position sensors to the module of analog INPUT S04 of the EB 80 valves.

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 4	pin 2	Signal 0/10 V
pin 3	pin 3	Power supply -
pin 2	disconnect	

ADDITIONAL FIXING BRACKET TO OMEGA BAR



Code	Description	Weight [g]
02282R4001	Additional fixing bar accessory to EB 80 Omega bar	5

Individually packed

N.B.: to be used to improve the fixing to Omega bars of islands with more than 10 modules. The bracket must be positioned every 5-6 modules.

NOTES

SPARE PARTS

VALVES

EB 80 - SIGNAL MODULES - S

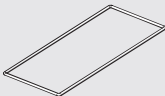
EB 80 BUS/SIGNAL INTERFACE OR SEAL



Code	Description
02282R1005	EB 80 BUS/Signal interface OR seal

Comes in 10-pc. packs

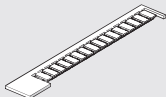
EB 80 GASKET BETWEEN BASE AND BUS/SIGNAL COVER



Code	Description
02282R1004	Kit of gaskets between base and BUS/Signal cover

Comes in 10-pc. packs

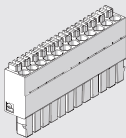
IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 16-pc. packs

CONNECTOR 12 POSITIONS



Code	Description
02282R5010	Connector 12 positions for modules S06 and S07

Comes in 4-pc. packs

NOTES

EB 80 ELECTRICAL CONNECTION - E



The job of the "Electrical Connection - E" subsystem is to power the EB 80 systems, transmit control signals for the solenoid valves, send and receive signals for the input/output management modules and control diagnostics. Versions with a multi-pole connector or fieldbus are also available. It is worth noting that the island of solenoid valves functions equally with both systems. This means that all the valves, bases and intermediate elements can work both with parallel and serial controls (patented). Smart electronics of all electrical connection modules, including multi-pole ones, can be used to control unexpected functions, including very interesting diagnostics. The system can be supplied with a very wide voltage range, so much so that the EB 80 island can be controlled either at 12VDC or 24VDC (patented). Overvoltages up to 30% of the rated value, i.e. up to 31.2VDC, are admitted. The minimum voltage for solenoid pilots can be 10.8VDC, i.e. 12VDC-10%. The body of the multi-pole version is made of metal in one piece (as the IO-Link 64 OUT version); simplified versions that can only manage solenoid valves, but that keeps the whole modularity and diagnostics of the EB 80 family.

Versions with a fieldbus instead consist of two parts: a lower part, with a single metal body separate from the bus protocol; an upper part with a technopolymer body dedicated to each specific bus protocol.



VALVES

EB 80 - ELECTRICAL CONNECTION - E

TECHNICAL DATA							
Supply voltage range	VDC	12 -10% 24 +30%					
Minimum operating voltage	VDC	10.8 *					
Maximum operating voltage	VDC	31.2					
Maximum admissible voltage	VDC	32 ***					
Drive (for multi-pole)		PNP or NPN					
Solenoid rating		100% ED					
Power supply without controlled valves:							
steady rate, with multi-pole connection	W	0.1 for "Electrical connection - E" + 0.25 for each "Base - B"					
steady rate, with fieldbus connection	W	4 for "Electrical connection - E" + 0.25 for each "Base - B"					
Signal module supply power		See chapter "Signal module - S"					
Maximum operating power supply (data useful for the sizing of the power supply unit)	W	3.15 for each solenoid pilot operated simultaneously + input and output					
Maximum current admissible							
with multi-pole connection	A	6 continuous, 9 instantaneous					
with fieldbus connection	A	4 continuous, 6 instantaneous for valve supply 4 continuous, 6 instantaneous for bus and signal supply					
Protection		Overload and short-circuit protected solenoid pilot Output					
Diagnostics		LED signal on valve, LED light on electrical connection. With multi-pole: fault signal OUT activation. With field bus: software message.					
Faults signalled		Short-circuited solenoid pilot; Solenoid pilot broken or missing Power supply out of range (under-voltage or over-voltage) With fieldbus only, different configuration, on switching on, compared to that stored; communication control between modules					
Ambient temperature	°C °F	-10 to + 50 14 to 122					
Versions		Plug connectors, fieldbus with various protocols, additional island					
		25-pin connector	44-pin connector	Fieldbus	IO-link 32 IN / 32 OUT	IO-link 64 OUT	additional island
Maximum number of controllable solenoid pilots		21	38	128	32	64	128
Maximum number of controllable solenoid valves		Ditto as above, depending on the number of solenoid pilots and type of base					
Degree of protection		IP65 (with connectors connected or plugged if not used)					
Weight	g	180	180	350	350	180	320

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

SYSTEM VOLTAGE DROP

Voltage drop depends on the input maximum current drawn by the system and the length of the cable for connection to the system.

In a 24VDC-powered system, with cable lengths up to 20 m, voltage drops do not need to be taken into account.

In a 12VDC-powered system, there must be enough voltage to ensure correct operation. It is necessary to take into account any voltage drops due to the number of active solenoid valves, the number of valves controlled simultaneously and the cable length.

The actual voltage supplied to the solenoid pilots must be at least 10.8VDC.

More details are given in the instruction manual (please refer to the Metal Work website).

A synthesis of the verification algorithm is shown here below.

Maximum current: $I_{\max} [A] = \frac{\text{no. of solenoid pilots controlled simultaneously} \times 4 + \text{no. of active solenoid valves} \times 0.5}{VDC}$

Voltage drop: with a 25-pole connector: $\Delta V = I_{\max} [A] \times R_s [0.067\Omega/m] \times 2L [m]$

Voltage drop: with a 44-pole connector: $\Delta V = I_{\max} [A] \times R_s [0.067\Omega/m] \times L [m]$

Where R_s is the cable resistance and L its length.

The voltage at the cable inlet, V_{in} must be at least $10.8VDC + \Delta V$

Example:

12VDC supply voltage, 5 m cable, 25-pin connector, 3 pilots activate while other 10 are already active:

$$I_{\max} = \frac{3 \times 4 + 10 \times 0.5}{12} = 1.41 \text{ A}$$

$$\Delta V = (1.41 \times 0.067 \times 2 \times 5) = 0.95VDC$$

This means that at the power supply voltage greater than or equal to $10.8 + 0.95 = 11.75VDC$ is required.

$V_{in} = 12VDC > 11.75 \rightarrow OK$

KEY TO CODES

02282	E	0	25
FAMILY	SUBSYSTEM	SUPPLY	TYPE
02282 EB 80	E Electrical connection	0 Complete	25 25-pin connector 44 44-pin connector EN EtherNet/IP EC EtherCAT PN Profinet IO CN CANopen PB Profibus-DP PL Ethernet POWERLINK IO IO-Link 32 IN / 32 OUT LK IO-Link 64 OUT CC CC-Link IE Field Basic AD Additional island

NOTE

EB 80 MULTI-POLE ELECTRICAL CONNECTION - E

The job of the multi-pole version of the electrical connection subsystem is to power the EB solenoid valve islands. The system accepts to be supplied with a very wide range of voltages, to such an extent that the EB 80 island alone can be controlled at either 12VDC or 24VDC (patented).
Overvoltages up to 30% of the rated value, i.e. up to 31.2VDC, are admitted.
The minimum voltage for the solenoid pilots can be 10.8VDC, i.e. 12VDC - 10%.
The body of the multi-pole version is made of metal in a single piece.



TECHNICAL DATA			
Supply voltage range	VDC	12 -10%	24 +30%
Minimum operating voltage	VDC	10.8 *	
Maximum operating voltage	VDC	31.2	
Maximum admissible voltage	VDC	32 ***	
Drive		Configurable PNP or NPN	
Power supply without controlled valves	W	0.1 for "Electrical connection - E" + 0.25 for each "Base - B"	
Solenoid pilot power on start-up (Speed Up)	W	3 for 15 msec	
Solenoid pilot power after start-up (holding)	W	0.3	
Maximum admissible current	A	6 continuous, 9 instantaneous	
Protection		System protected against overload short-circuit protected solenoid pilot Output	
Diagnostics		FAULT signal red light and Out signal on "Electrical connection - E" LED light signal on valve	
Faults signalled		Short-circuited solenoid pilot; Solenoid pilot broken or missing Power supply out of range (under-voltage or over-voltage)	
Ambient temperature	°C	-10 to + 50	
	°F	14 to 122	
Electrical connection		Plug connectors	
		25-pin connector	44-pin connector
Maximum number of controllable solenoid pilots **		21	38
Maximum number of controllable solenoid valves		Ditto as above, depending on the number of solenoid pilots and type of base	
Maximum number of simultaneously controllable solenoid pilots:			
at 24VDC		21	38
at 12VDC		Depending on the voltage drop – see page B2.28	
Maximum current at 24VDC	A	3	5
Maximum current at 12VDC	A	6	9
Degree of protection		IP65 (with connectors connected or plugged if not used)	
Weight	g	180	180

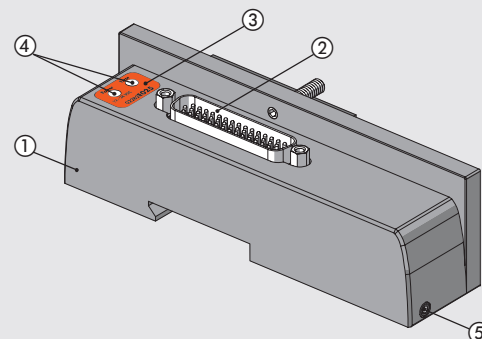
* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** If the units are made up of bases exceeding the maximum number of controllable solenoid pilots (by mounting a dummy valve N or a bypass Y in the excess positions), operation is only possible on the islands with a positive signal (PNP), conversely (with an NPN signal), an error message is generated by the diagnostic system.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

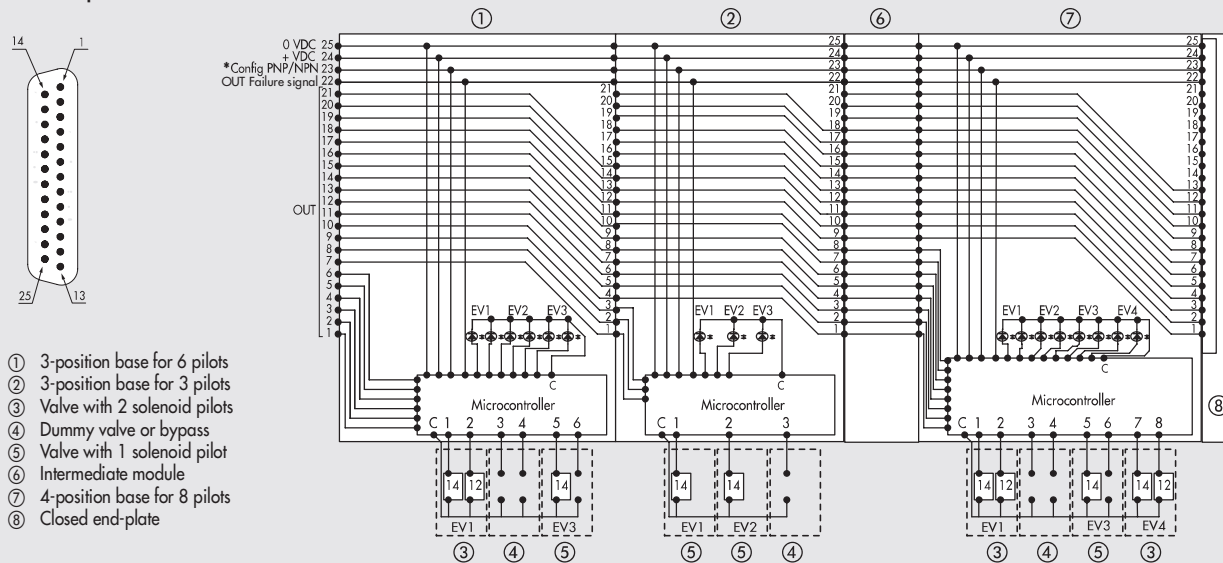
COMPONENTS

- ① BODY: painted metal
- ② CONNECTOR: plug type
- ③ NAMEPLATE: with product code
- ④ LED: signal on and alarm
- ⑤ GRUB SCREW securing the DIN bar or bracket: zinc-plated steel

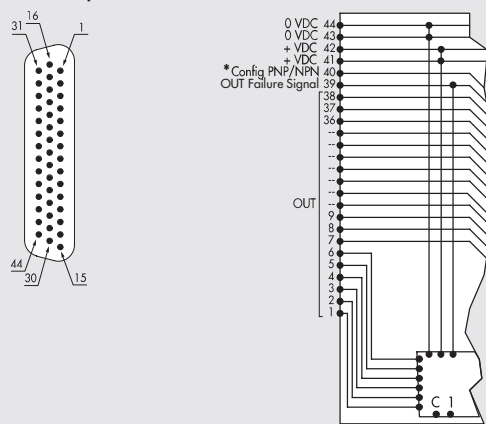


WIRING DIAGRAM

D-Sub 25-pin CONNECTOR



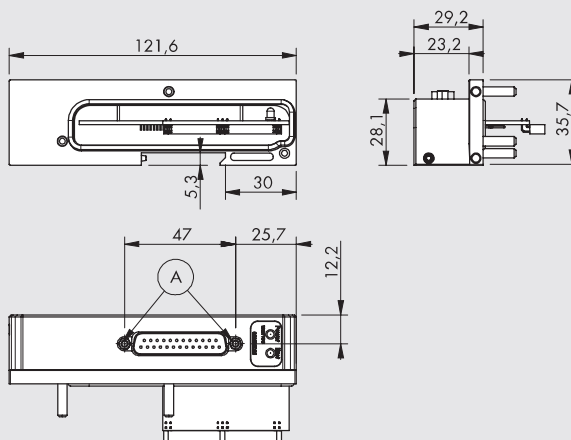
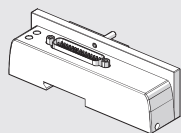
D-Sub 44-pin CONNECTOR



* Connect to +VDC if (Out) valves with a POSITIVE signal are to be controlled
 Connect to 0VDC if (Out) valves with a NEGATIVE signal are to be controlled

DIMENSIONS - ORDERING CODES

DIMENSION OF A MULTI-POLE ELECTRICAL CONNECTION

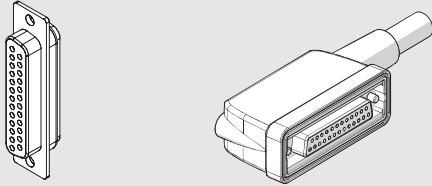


Ⓐ = Holes for D-Sub connector
 25-pin or 44-pin

Code	Description	Weight [g]
02282E025	EB 80 25-pin electrical connection	260
02282E044	EB 80 44-pin electrical connection	260

ACCESSORIES

IP65 25-PIN PRE-WIRED PLUG CONNECTOR



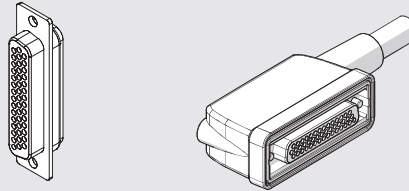
Code	Description	Weight [g]
02269A0100	IP65 25-pin 90° connector, UL cable L = 1 m	180
02269A0250	IP65 25-pin 90° connector, UL cable L = 2.5 m	365
02269A0500	IP65 25-pin 90° connector, UL cable L = 5 m	680
02269A1000	IP65 25-pin 90° connector, UL cable L = 10 m	1220
02269A2000	IP65 25-pin 90° connector, UL cable L = 20 m	2350
02269C0100 **	IP65 25-pin 90° connector, UL H-FLEX CL6, cable L = 1 m	180
02269C0250 **	IP65 25-pin 90° connector, UL H-FLEX CL6, cable L = 2.5 m	365
02269C0500 **	IP65 25-pin 90° connector, UL H-FLEX CL6, cable L = 5 m	680
02269C1000 **	IP65 25-pin 90° connector, UL H-FLEX CL6, cable L = 10 m	1220

** Very flexible cables, class 6 according to IEC 60228

Position of electrical contact	Colour of the corresponding wire	Function
1	White	Out 1
2	Brown	Out 2
3	Green	Out 3
4	Yellow	Out 4
5	Grey	Out 5
6	Pink	Out 6
7	Blue	Out 7
8	Red	Out 8
9	Black	Out 9
10	Violet	Out 10
11	Grey + Pink ring	Out 11
12	Red + Blue ring	Out 12
13	White + Green ring	Out 13
14	Brown + Green ring	Out 14
15	White + Yellow ring	Out 15
16	Yellow + Brown ring	Out 16
17	White + Grey ring	Out 17
18	Grey + Brown ring	Out 18
19	White + Pink ring	Out 19
20	Pink + Brown ring	Out 20
21	White + Blue ring	Out 21
22	Brown + Blue ring	Fault reporting
23	White + Red ring	Config. PNP/NPN *
24	Brown + Red ring	+VDC
25	White + Black ring	0VDC

* Connect to +VDC if (Out) valves with a POSITIVE signal are to be controlled
Connect to 0VDC if (Out) valves with a NEGATIVE signal are to be controlled

IP65 44-PIN PRE-WIRED PLUG CONNECTOR



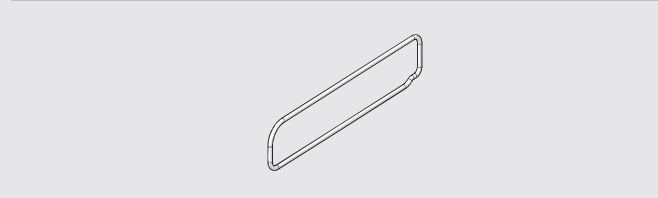
Code	Description	Weight [g]
02269B0100	IP65 44-pin 90° connector, UL cable L = 1 m	275
02269B0250	IP65 44-pin 90° connector, UL cable L = 2.5 m	630
02269B0500	IP65 44-pin 90° connector, UL cable L = 5 m	1180
02269B1000	IP65 44-pin 90° connector, UL cable L = 10 m	2210
02269B2000	IP65 44-pin 90° connector, UL cable L = 20 m	4340
02269D0100 **	IP65 44-pin 90° connector, UL H-FLEX CL6, cable L = 1 m	275
02269D0250 **	IP65 44-pin 90° connector, UL H-FLEX CL6, cable L = 2.5 m	630
02269D0500 **	IP65 44-pin 90° connector, UL H-FLEX CL6, cable L = 5 m	1180
02269D1000 **	IP65 44-pin 90° connector, UL H-FLEX CL6, cable L = 10 m	2210

** Very flexible cables, class 6 according to IEC 60228

Position of electrical contact	Colour of the corresponding wire	Function
1	White	Out 1
2	Brown	Out 2
3	Green	Out 3
4	Yellow	Out 4
5	Grey	Out 5
6	Pink	Out 6
7	Blue	Out 7
8	Red	Out 8
9	Black	Out 9
10	Violet	Out 10
11	Grey + Pink ring	Out 11
12	Red + Blue ring	Out 12
13	White + Green ring	Out 13
14	Brown + Green ring	Out 14
15	White + Yellow ring	Out 15
16	Yellow + Brown ring	Out 16
17	White + Grey ring	Out 17
18	Grey + Brown ring	Out 18
19	White + Pink ring	Out 19
20	Pink + Brown ring	Out 20
21	White + Blue ring	Out 21
22	Brown + Blue ring	Out 22
23	White + Red ring	Out 23
24	Brown + Red ring	Out 24
25	White + Black ring	Out 25
26	Brown + Black ring	Out 26
27	Grey + Green ring	Out 27
28	Yellow + Grey ring	Out 28
29	Pink + Green ring	Out 29
30	Yellow + Pink ring	Out 30
31	Green + Blue ring	Out 31
32	Yellow + Blue ring	Out 32
33	Green + Red ring	Out 33
34	Yellow + Red ring	Out 34
35	Green + Black ring	Out 35
36	Yellow + Black ring	Out 36
37	Grey + Blue ring	Out 37
38	Pink + Blue ring	Out 38
39	Grey + Red ring	Fault reporting
40	Pink + Red ring	Config. PNP/NPN *
41	Grey + Black ring	+VDC
42	Pink + Black ring	+VDC
43	Blue + Black ring	0VDC
44	Red + Black ring	0VDC

* Connect to +VDC if (Out) valves with a POSITIVE signal are to be controlled
Connect to 0VDC if (Out) valves with a NEGATIVE signal are to be controlled

EB 80 ELECTRICAL CONNECTION INTERFACE OR SEAL



Code	Description
02282R1003	EB 80 electrical connection interface OR seal
Comes in 10-pc. packs	

NOTES

VALVES

EB 80 - MULTI-POLE ELECTRICAL CONNECTION - E

EB 80 ELECTRICAL CONNECTION WITH FIELDBUS - E P N E U M A T I C

The job of the electrical connection with fieldbus is to power the EB 80 systems, transmit control signals for the solenoid valves, send or receive signals for input/output management modules and control diagnostics. The system can be supplied with a very wide voltage range, so much so that the EB 80 island can be controlled either at 12VDC or 24VDC (patented). Overvoltages up to 30% of the rated value, i.e. up to 31.2VDC, are admitted. The minimum voltage for solenoid pilots can be 10.8VDC, i.e. 12VDC - 10%. The modules come into parts: a lower part, with a single aluminium body separate from the bus protocol; an upper part with a technopolymer body dedicated to each specific bus protocol. The exception is the IO-Link 64 OUT version which is composed of a single aluminum element and can only manage solenoid valves (32 or 64) while maintaining all the modularity and diagnostic features of the EB 80 family.



TECHNICAL DATA		
Supply voltage range	VDC	12 -10% 24 +30%
Minimum operating voltage	VDC	10.8 *
Maximum operating voltage	VDC	31.2
Maximum admissible voltage	VDC	32 ***
Power supply without controlled valves	W	4 for "Electrical connection - E" + 0.25 for each "Base - B"
Solenoid pilot power on start-up (Speed Up)	W	3 for 15 msec
Solenoid pilot power after start-up (holding)	W	0.3
Maximum admissible current	A	4 continuous, 6 instantaneous for valve supply 4 continuous, 6 instantaneous for bus and signal supply
Protection		Overload and short-circuit protected solenoid pilot Output
Diagnostics		LED signal on valve, LED on electrical connection and software message regarding: short-circuited solenoid pilot; solenoid pilot with coil failure; voltage out of range (undervoltage and overvoltage); module communication control; on switching, configuration other than that stored
Maximum number of solenoid pilots		128 (32 for IO-Link 32 IN / 32 OUT; 64 for IO-Link 64 OUT)
Maximum number of simultaneously controllable solenoid pilots to actuate a greater number of solenoid pilots at the same time, add "Intermediate modules - M" with electrical connection		38
Maximum number of signals **		128 digital inputs, 128 digital outputs, 16 analogue inputs, 16 analogue outputs (32 for IO-Link 32 IN / 32 OUT)
Maximum number of nodes **		40 Bases for valves + 16 digital inputs + 16 digital outputs + 4 analogue inputs + 4 analogue outputs
Ambient temperature	°C	-10 to + 50
	°F	14 to 122
Versions		EtherNet/IP, EtherCAT, CANopen, Profinet IO, Profibus-DP, Ethernet POWERLINK, IO-Link, CC-Link IE Field Basic
Degree of protection		IP65 (with connectors connected or plugged if not used)
Weight	g	350 (180 for IO-Link 64 OUT)

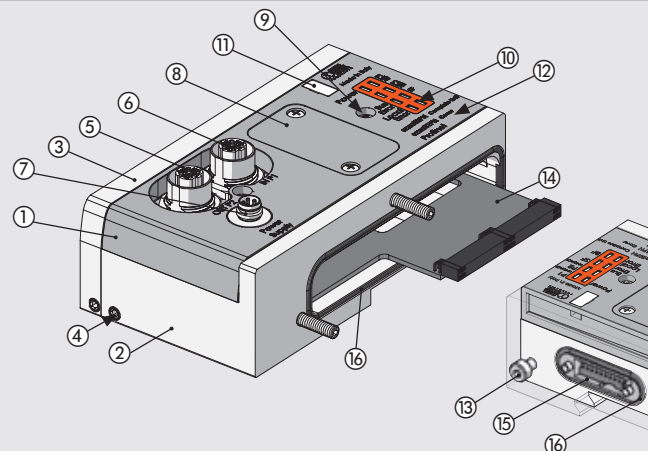
* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** For topological limits (maximum lengths, etc.) see the instructions.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

COMPONENTS

- ① UPPER PART BODY: technopolymer
- ② LOWER PART BODY: painted aluminium
- ③ CLOSING PLATE: painted aluminium
- ④ GRUB SCREW securing the DIN bar or bracket: zinc-plated steel
- ⑤ Fieldbus signal receive CONNECTOR
- ⑥ Fieldbus signal send CONNECTOR
- ⑦ M8 power supply CONNECTOR
- ⑧ COVER for access to bus address switches: technopolymer
- ⑨ SCREW securing the upper part to the lower part
- ⑩ LED light
- ⑪ NAMEPLATE: removable
- ⑫ IDENTIFICATION wording: laser etched
- ⑬ SCREW securing the end plate
- ⑭ CONNECTOR for solenoid valve base modules
- ⑮ CONNECTOR for input/output signal modules
- ⑯ GASKETS interfacing: NBR



EtherNet/IP WIRING DIAGRAM

Connection to the EtherNet/IP network

IN (M12 female connector, D encoding)

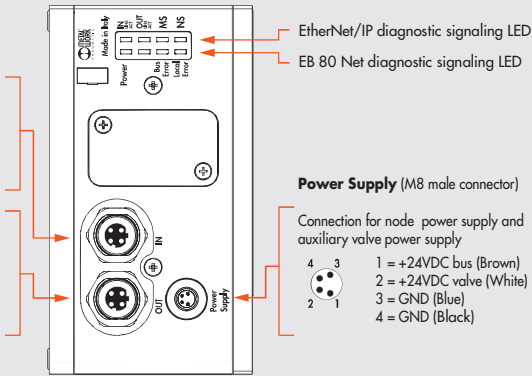


- 1 = TD+
- 2 = RD+
- 3 = TD-
- 4 = RD-
- Metal ring nut = Shield

OUT (M12 female connector, D encoding)



- 1 = TD+
- 2 = RD+
- 3 = TD-
- 4 = RD-
- Metal ring nut = Shield



End plate with intermediate control



EB 80 Net (M8 female connector)

- 1 = CAN H
- 2 = CAN L
- 3 = Token
- 4 = GND

Power Supply (M8 male connector)

Connection for node power supply and auxiliary valve power supply



- 1 = +24VDC bus (Brown)
- 2 = +24VDC valve (White)
- 3 = GND (Blue)
- 4 = GND (Black)

TECHNICAL DATA	
Fieldbus	10 - 100 Mbit/S - Full-duplex - Half-duplex - Supports auto-negotiation and Quick Connect
Factory settings	IP address: 192.168.192.32
Addressing	Software - DHCP hardware
Supply voltage range	VDC 12 -10% 24 +30%
Minimum operating voltage	VDC 10.8 *
Maximum operating voltage	VDC 31.2
Maximum admissible voltage	VDC 32 ***
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections	Fieldbus: 2 M12 F, D encoding, internal switch. Power supply: M8, 4-pin
Diagnostics **	EtherNet/IP: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Bus power supply current absorption	nominal Icc 180 mA at 24VDC
Maximum number of pilots	128
Maximum number of digital inputs	128
Maximum number of digital outputs	128
Maximum number of analogue inputs	16
Maximum number of analogue outputs	16
Maximum number of inputs for temperatures	16
Data bit value	0 = non-active; 1= active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

EtherCAT WIRING DIAGRAM

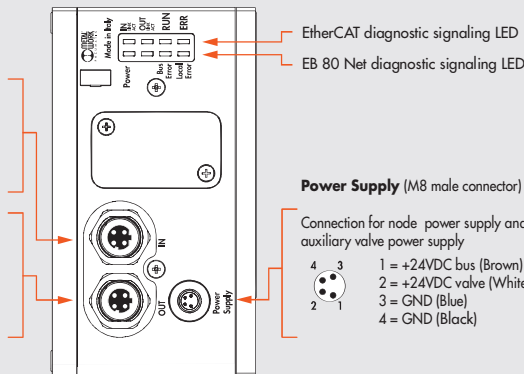
Connection to the EtherCAT network

IN (M12 female connector, D encoding)

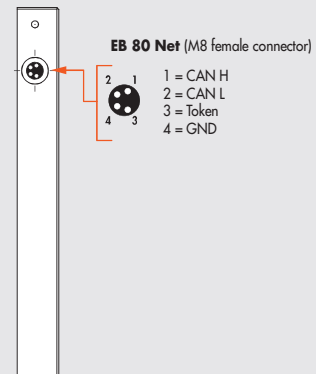
- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield

OUT (M12 female connector, D encoding)

- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield



End plate with intermediate control



TECHNICAL DATA	
Fieldbus	100 Mbit/S - Full-duplex - Supports auto-negotiation
Factory settings	module denomination: EB80series
Addressing	Automatic from the master depending on its topological position. Fixes with the second slave address function
Supply voltage range	VDC 12 -10% 24 +30%
Minimum operating voltage	VDC 10.8 *
Maximum operating voltage	VDC 31.2
Maximum admissible voltage	VDC 32 ***
Protection	Module protected from overload and polarity inversion. outputs protected from overloads and short-circuits.
Connections	Fieldbus: 2 M12 F D encoding, internal switch. Power supply: M8, 4-PIN
Diagnostics **	EtherCAT: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Bus power supply current absorption	nominal Icc 180 mA at 24VDC
Maximum number of pilots	128
Maximum number of digital inputs	128
Maximum number of digital outputs	128
Maximum number of analogue inputs	16
Maximum number of analogue outputs	16
Maximum number of inputs for temperatures	16
Data bit value	0 = non-active; 1= active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

CANopen WIRING DIAGRAM

Connection to the CANopen network

BUS IN (M12 male connector, A encoding)

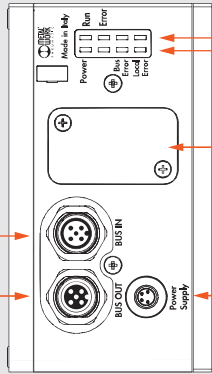


- 1 = CAN_SHLD
- 2 = - - -
- 3 = CAN_GND
- 4 = CAN_H
- 5 = CAN_L
- Metal ring nut = Shield

BUS OUT (M12 female connector, A encoding)



- 1 = CAN_SHLD
- 2 = - - -
- 3 = CAN_GND
- 4 = CAN_H
- 5 = CAN_L
- Metal ring nut = Shield



CANopen diagnostic signaling LED

EB 80 Net diagnostic signaling LED

The following is under the cover plate:
- address assignment switches
- transmission speed setting and the entry of the terminating resistors

Power Supply (M8 male connector)

Connection for node: power supply and auxiliary valve power supply



- 1 = +24VDC bus (Brown)
- 2 = +24VDC valve (White)
- 3 = GND (Blue)
- 4 = GND (Black)

End plate with intermediate control



EB 80 Net (M8 female connector)



- 1 = CAN H
- 2 = CAN L
- 3 = Token
- 4 = GND

TECHNICAL DATA	
Fieldbus	Complying with CiA DS401 specification
Factory settings	Module denomination: EB80series - Address 5
Addressing	Hardware via DIP SWITCH
Supply voltage range	VDC 12 -10% 24 +30%
Minimum operating voltage	VDC 10.8 *
Maximum operating voltage	VDC 31.2
Maximum admissible voltage	VDC 32 ***
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections	Fieldbus: BUS IN M12 Male, 5 poles, A encoding - BUS OUT M12 Female, 5 poles, encoding A - Power supply: M8, 4-PIN
Diagnostics**	CANopen: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Bus power supply current absorption	nominal Icc 180 mA at 24VDC
Maximum number of pilots	128
Maximum number of digital inputs	128
Maximum number of digital outputs	128
Maximum number of analogue inputs	16
Maximum number of analogue outputs	16
Maximum number of inputs for temperatures	16
Data bit value	0 = non-active; 1= active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

Profinet IO WIRING DIAGRAM

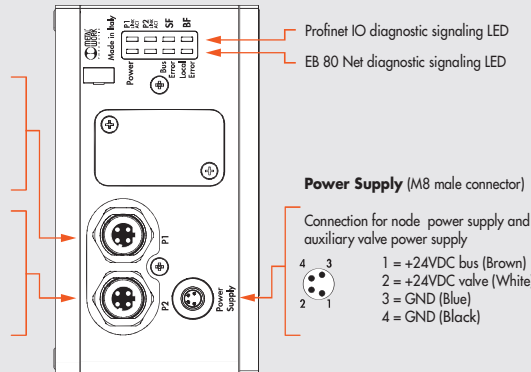
Connection to the Profinet IO network

P1 (M12 female connector, D encoding)

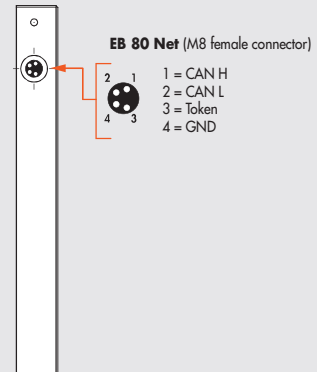
- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield

P2 (M12 female connector, D encoding)

- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield



End plate with intermediate control



TECHNICAL DATA

Fieldbus	100 Mbit/s - Full-duplex – Supports Fast Start Up, RT communication, Shared Device, Identification & Maintenance 1-4		
Factory settings	Module denomination: EB80series – IP address: 0.0.0.0		
Addressing	DCP Software		
Supply voltage range	VDC	12 -10%	24 +30%
Minimum operating voltage	VDC	10.8 *	
Maximum operating voltage	VDC	31.2	
Maximum admissible voltage	VDC	32 ***	
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.		
Connections	Fieldbus: 2 M12 Female, D encoding, internal switch. Power supply: M8, 4-PIN		
Diagnostics **	Profinet IO: via local LED lights and software messages. Outputs: via local LED lights and state bytes		
Bus power supply current absorption	nominal Icc 180 mA at 24VDC		
Maximum number of pilots	128		
Maximum number of digital inputs	128		
Maximum number of digital outputs	128		
Maximum number of analogue inputs	16		
Maximum number of analogue outputs	16		
Maximum number of inputs for temperatures	16		
Data bit value	0 = non-active; 1= active		
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state		

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

Profibus-DP WIRING DIAGRAM

Connection to the Profibus-DP network

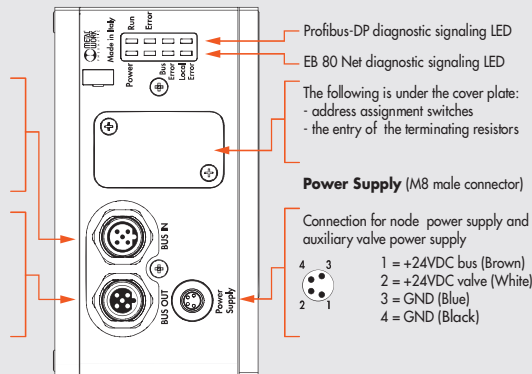
BUS IN (M12 Male Connector, B encoding)

- 1 = 5 VDC*
 2 = A
 3 = 0 VDC*
 4 = B
 5 = Shield

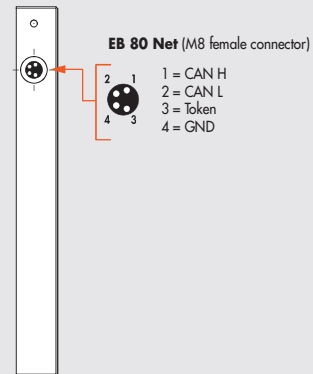
BUS OUT (M12 female connector, B encoding)

- 1 = 5 VDC*
 2 = A
 3 = 0 VDC*
 4 = B
 5 = Shield

* DO NOT CONNECT PIN 1 and PIN 3:
Only the power supply of external
terminating resistors must be used.



End plate with intermediate control



TECHNICAL DATA

Fieldbus	Complying with Profibus-DP DIN E 1924 specification	
Factory settings	Module denomination: EB80series - Address 5	
Addressing	Hardware via ROTARY SWITCH	
Supply voltage range	VDC	12 -10% 24 +30%
Minimum operating voltage	VDC	10.8 *
Maximum operating voltage	VDC	31.2
Maximum admissible voltage	VDC	32 ***
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.	
Connections	Fieldbus: BUS IN M12 Male, 5 poles, B encoding - BUS OUT M12 Female, 5 poles, B encoding - Power supply: M8, 4-PIN	
Diagnostics **	Profibus-DP: via local LED lights and software messages. Outputs: via local LED lights and state bytes	
Bus power supply current absorption	nominal Icc 180 mA at 24VDC	
Maximum number of pilots	128	
Maximum number of digital inputs	128	
Maximum number of digital outputs	128	
Maximum number of analogue inputs	16	
Maximum number of analogue outputs	16	
Maximum number of inputs for temperatures	16	
Data bit value	0 = non-active; 1= active	
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state	

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

Ethernet POWERLINK WIRING DIAGRAM

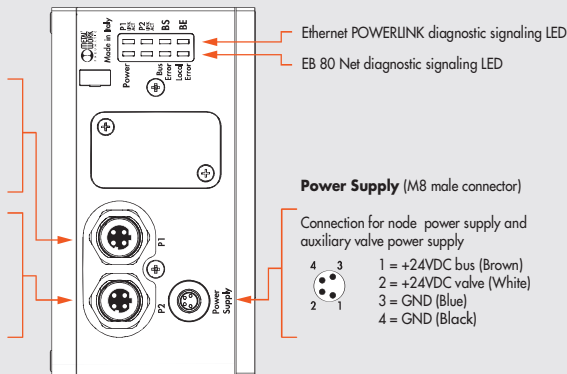
Connection to the Ethernet POWERLINK network

P1 (M12 female connector, D encoding)

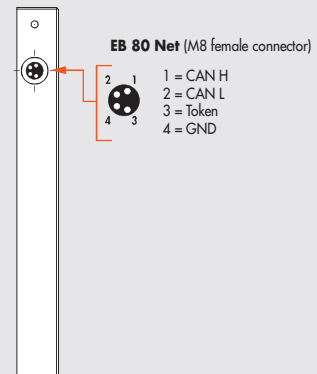
- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield

P2 (M12 female connector, D encoding)

- 1 = TD+
2 = RD+
3 = TD-
4 = RD-
Metal ring nut = Shield



End plate with intermediate control



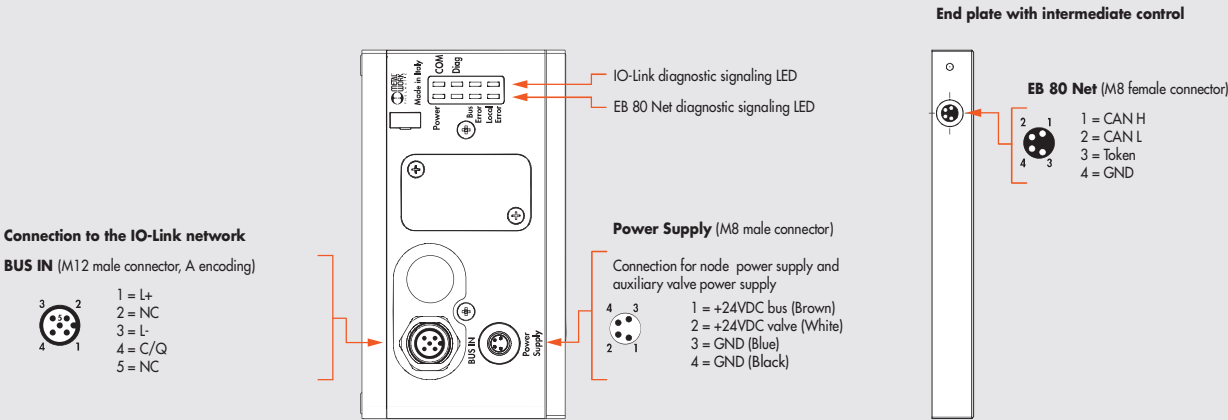
TECHNICAL DATA	
Fieldbus	100 Mbit/S - Half-duplex - Supports auto-negotiation
Factory settings	module denomination: EB80series address number 2
Addressing	Hardware by rotary switch
Supply voltage range	VDC 12 -10% 24 +30%
Minimum operating voltage	VDC 10.8 *
Maximum operating voltage	VDC 31.2
Maximum admissible voltage	VDC 32 ***
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections	Fieldbus: 2 M12 Female, D encoding, internal switch. Power supply: M8, 4-PIN
Diagnostics **	Ethernet POWERLINK: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Bus power supply current absorption	nominal Icc 180 mA at 24VDC
Maximum number of pilots	128
Maximum number of digital inputs	128
Maximum number of digital outputs	128
Maximum number of analogue inputs	16
Maximum number of analogue outputs	16
Maximum number of inputs for temperatures	16
Data bit value	0 = non-active; 1 = active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

IO-Link 32 IN / 32 OUT WIRING DIAGRAM



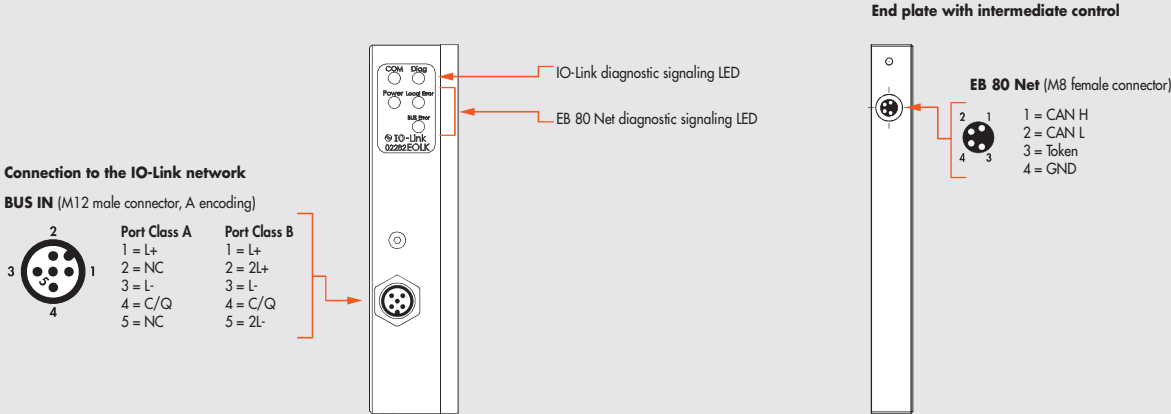
TECHNICAL DATA		
Fieldbus		IO-Link version 1.1
Communication speed	Kbps	230.4 (COM3)
Vendor ID / Device ID		1046 (hex 0x0416) / 32 (hex 0x000020)
Minimum cycle time	ms	2.8
Process data length		5 byte of Input / 4 byte of Output
Supply voltage range (M8 connector)	VDC	12 -10% 24 +30%
Minimum operating voltage	VDC	10.8 *
Maximum operating voltage	VDC	31.2
Maximum admissible voltage	VDC	32 ***
IO-Link power supply (L+L - Bus IN connector)	VDC	min 20, max 30
Protection		Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections		Fieldbus: M12 male, A-coded - port class A. Power supply: M8, 4-PIN
Diagnostics **		IO-Link: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Power supply current absorption		See IO-Link instruction manual
Maximum number of pilots		32
Maximum number of digital inputs		32
Data bit value		0 = non-active; 1 = active
State of outputs in the absence of communication		Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

IO-Link 64 OUT WIRING DIAGRAM



VALVES

TECHNICAL DATA	
Fieldbus	IO-Link version 1.1
Communication speed	230.4 (COM3)
Vendor ID / Device ID	1046 (hex 0x0416) / 64 (hex 0x000040)
Minimum cycle time	2.8
Process data length	1 byte of Input / 8 byte of Output
Valves supply voltage range	12 -10% 24 +30%
Minimum valves operating voltage	10.8 *
Maximum valves operating voltage	31.2
Maximum admissible voltage	32 ***
IO-Link power supply (L+L - Bus IN connector)	min 18, max 30
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections	Fieldbus: M12 male, A-coded - port class A - port class B
Diagnostics**	IO-Link: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Power supply current absorption	See IO-Link 64 OUT instruction manual
Maximum number of pilots	64
Data bit value	0 = non-active; 1 = active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

N.B.: The EB 80 island with IO-Link 64 OUT can be connected with an EB 80 island with Additional electrical control, but the latter cannot manage IN or OUT modules.

CC-Link IE Field Basic WIRING DIAGRAM

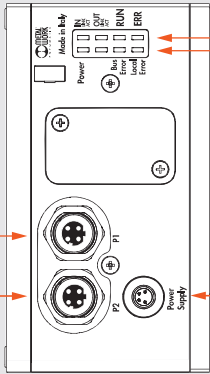
Connection to the CC-Link IE Field Basic network

P1 (M12 female connector, D encoding)

- 1 = TD+
- 2 = RD+
- 3 = TD-
- 4 = RD-
- Metal ring nut = Shield

P2 (M12 female connector, D encoding)

- 1 = TD+
- 2 = RD+
- 3 = TD-
- 4 = RD-
- Metal ring nut = Shield



- CC-Link IE Field Basic diagnostic signaling LED
- EB 80 Net diagnostic signaling LED

Power Supply (M8 male connector)

- Connection for node power supply and auxiliary valve power supply
- 1 = +24VDC bus (Brown)
- 2 = +24VDC valve (White)
- 3 = GND (Blue)
- 4 = GND (Black)

End plate with intermediate control



- EB 80 Net (M8 female connector)
- 1 = CAN H
- 2 = CAN L
- 3 = Token
- 4 = GND

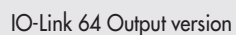
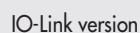
TECHNICAL DATA	
Fieldbus	100 Mbit/s Number of occupied stations: from 1 to 4
Factory settings	IP address: 192.168.3.32 Subnet Mask: 255.255.255.0
Addressing	Software
Supply voltage range	VDC 12 -10% 24 +30%
Minimum operating voltage	VDC 10.8 *
Maximum operating voltage	VDC 31.2
Maximum admissible voltage	VDC 32 ***
Protection	Module protected from overload and polarity inversion. Outputs protected from overloads and short-circuits.
Connections	Fieldbus: 2 M12 Female, D encoding, internal switch. Power supply: M8, 4-PIN
Diagnostics **	CC-Link IE Field Basic: via local LED lights and software messages. Outputs: via local LED lights and state bytes
Bus power supply current absorption	nominal Icc 180 mA at 24VDC
Maximum number of pilots	128
Maximum number of digital inputs	128
Maximum number of digital outputs	128
Maximum number of analogue inputs	16
Maximum number of analogue outputs	16
Maximum number of inputs for temperatures	16
Data bit value	0 = non-active; 1= active
State of outputs in the absence of communication	Configurable for each output: non-active, holding of the state, setting of a preset state

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

ELECTRICAL CONNECTION FIELD BUS DIMENSION



Code	Description	Weight [g]
02282E0EN	EB 80 Electrical connection EtherNet/IP	600
02282E0EC	EB 80 Electrical connection EtherCAT	600
02282E0PN	EB 80 Electrical connection Profinet IO	600
02282E0CN	EB 80 Electrical connection CANopen	600
02282E0PB	EB 80 Electrical connection Profibus-DP	600
02282E0PL	EB 80 Electrical connection Ethernet POWERLINK	600
02282E0IO	EB 80 Electrical connection IO-Link 32 IN / 32 OUT	580
02282E0LK	EB 80 Electrical connection IO-Link 64 OUT	190
02282E0CC	EB 80 Electrical connection CC-Link IE Field Basic	580

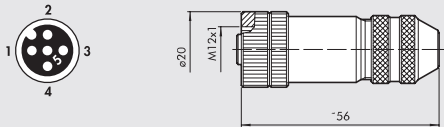
VALVES

IEB 80 - ELECTRICAL CONNECTION WITH FIELDBUS - E

NOTES

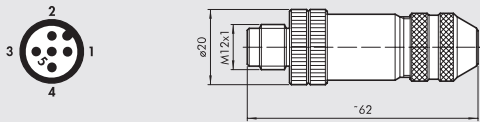
ACCESSORIES

M12 FEMALE CONNECTOR FOR BUS-IN, A ENCODING



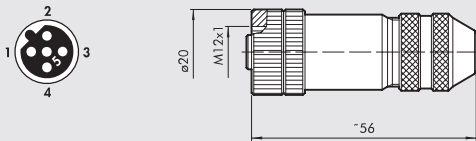
Code	Description
0240009055	M12 5-pin female connector, encoding A
Note: Can be used for Bus CANopen and IO-Link	

M12 MALE CONNECTOR FOR BUS-IN, A ENCODING



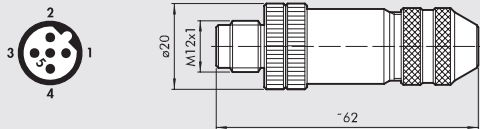
Code	Description
0240009038	M12 5-pin male connector, encoding A
Note: Can be used for Bus CANopen	

M12 FEMALE CONNECTOR FOR BUS-IN, B ENCODING



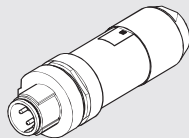
Code	Description
0240009036	M12 5-pin female connector, encoding B
Note: Can be used for Profibus-DP	

M12 MALE CONNECTOR FOR BUS-IN, B ENCODING



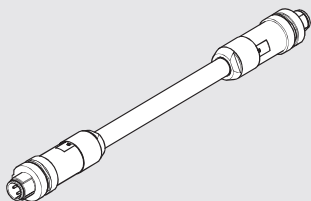
Code	Description
0240009035	M12 5-pin male connector, encoding B
Note: Can be used for Profibus-DP	

M12 BUS CONNECTOR, D ENCODING



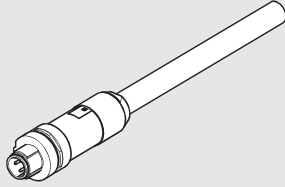
Code	Description
0240005051	M12 4-pin BUS connector, D-coded
Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP, Ethernet POWERLINK, CC-Link IE Field Basic)	

STRAIGHT CONNECTOR FOR M12-M12 BUS, D-CODED



Code	Description
0240005103	Straight connector for M12-M12 4-pin BUS, D-coded, with 3 m cable
0240005105	Straight connector for M12-M12 4-pin BUS, D-coded, with 5 m cable
0240005110	Straight connector for M12-M12 4-pin BUS, D-coded, with 10 m cable
Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP, Ethernet POWERLINK, CC-Link IE Field Basic)	

STRAIGHT CONNECTOR FOR M12 BUS, D-CODED

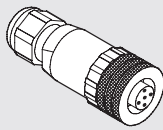


Pin	Cable color
1	Yellow
2	White
3	Red
4	Blue

Code	Description
0240005093	Straight connector for M12 4-pin BUS, D-coded, with 3 m cable
0240005095	Straight connector for M12 4-pin BUS, D-coded, with 5 m cable
0240005100	Straight connector for M12 4-pin BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP, Ethernet POWERLINK, CC-Link IE Field Basic)

STRAIGHT CONNECTOR FOR M12, A-CODED

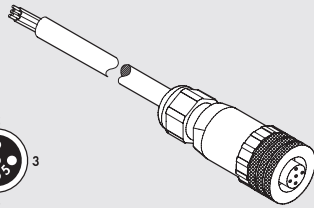


Code	Description
W0970513001	5-PIN M12x1 straight connector

Note: Can be used for IO-Link

STRAIGHT CONNECTOR WITH WIRE FOR M12, A-CODED

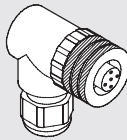
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray



Code	Description
W0970513002	5-PIN M12x1 straight connector with wire L = 5 m

Note: Can be used for IO-Link

90° CONNECTOR FOR M12, A-CODED

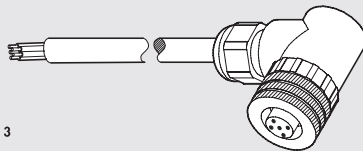


Code	Description
W0970513003	M12x1 5-PIN 90° connector

Note: Can be used for IO-Link

90° CONNECTOR WITH WIRE FOR M12, A-CODED

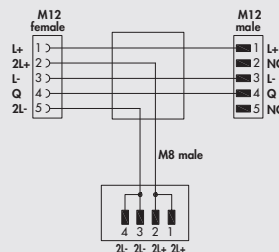
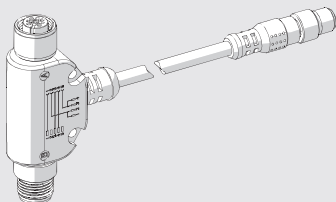
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray



Code	Description
W0970513004	M12x1 5-PIN 90° connector with wire L = 5 m

Note: Can be used for IO-Link

T-CONNECTOR M12 A-CODED / M8 MALE FOR AUXILIARY POWER



Code	Description
0240009070	T - connector for auxiliary power

Note: Can be used for IO-Link 64 OUT

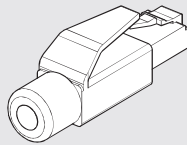
CABLE FOR BUS



Code	Description
0240005220*	Cable for BUS 20 m
0240005250	Cable for BUS CANopen BUS 20 m

* Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP, Ethernet POWERLINK, CC-Link IE Field Basic)

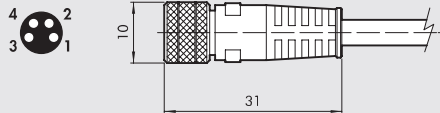
RJ45 CONNECTOR



Code	Description
0240005050	RJ45 connector with 4 contacts according to IEC 60603-7

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

* Very flexible cables, class 6 according to IEC 60228

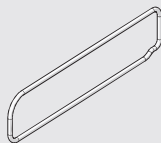
M8-M12 PLUG



Code	Description
0240009039	Plug for M8 connector
0240009040	Plug for M12 connector

SPARE PARTS

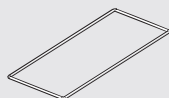
EB 80 ELECTRICAL CONNECTION INTERFACE OR-SEAL



Code	Description
02282R1003	EB 80 electrical connection interface or-seal

Comes in 10-pc. packs

GASKET BETWEEN EB 80 BASE AND COVER BUS/SIGNALS



Code	Description
02282R1004	Kit of gaskets between EB 80 base and cover bus/signals

Comes in 10-pc. packs

EB 80 BUS/SIGNAL INTERFACE OR-SEAL



Code	Description
02282R1005	EB 80 BUS/Signal interface OR-seal

Comes in 10-pc. packs

EB 80 ADDITIONAL ELECTRICAL CONNECTION - E

The additional electrical connection can be used to connect different EB 80 systems to a single bus node. To do this, the main island is equipped with a C3-type closed end-plate, equipped with an M8 connector. An M8-M8 connected cable relays the signal to the additional system. The system can be supplied with a very wide range of voltages, so much so that the EB 80 island can be controlled at either 12VDC or 24VDC (patented). Overvoltages up to 30% of the nominal value are admitted, i.e. up to 31.2VDC. The minimum voltage for the solenoid pilots can be 10.8VDC, i.e. 12VDC-10%. The modules consist of two parts: a lower part with a single aluminium body similar to that used for fieldbuses; an upper part with a technopolymer body specific for the additional model.



TECHNICAL DATA			
Supply voltage range	VDC	12 -10% 24 +30%	
Minimum operating voltage	VDC	10.8 *	
Maximum operating voltage	VDC	31.2	
Maximum admissible voltage	VDC	32 ***	
Power supply without controlled valves	W	4 for "Electrical connection - E" + 0.25 for each "Base - B"	
Solenoid pilot power on start-up (Speed Up)	W	3 for 15 msec	
Solenoid pilot power after start-up (holding)	W	0.3	
Maximum admissible current	A	4 continuous, 6 instantaneous for valve supply	
Protection		4 continuous, 6 instantaneous for bus and signal supply	
Diagnostics		Overload and short-circuit protected solenoid pilot Output	
		LED signal on valve, LED on electrical connection and software message regarding:	
		short-circuited solenoid pilot; solenoid pilot with coil failure;	
		voltage out of range (undervoltage and overvoltage);	
		module communication control; on switching, configuration other than that stored.	
Maximum number of solenoid pilots		128 **	
Maximum number of simultaneously controllable solenoid pilots		38	
(to actuate a greater number of pilots at the same time, add "Intermediate modules - M" with "Electrical connection - E")			
Maximum number of signals **		128 digital inputs, 128 digital outputs, 16 analogue inputs, 16 analogue outputs	
Maximum number of nodes **		40 Bases for valves + 16 Digital inputs + 16 Digital outputs + 4 Analogue inputs + 4 Analogue outputs	
Maximum length of the connection cables ****	m	40	
Ambient temperature	°C	-10 to + 50	
	°F	14 to 122	
Degree of protection		IP65 (with connectors connected or plugged if not used)	
Weight	g	320	

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

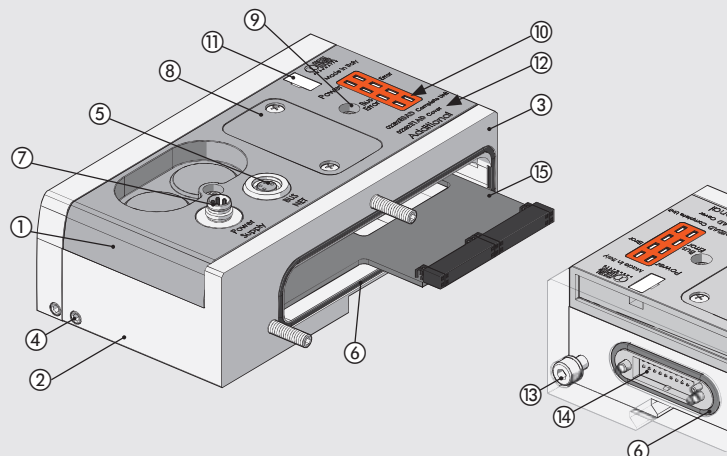
** Total numbers, by summing up those of the fieldbus connection and all additional connections.

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

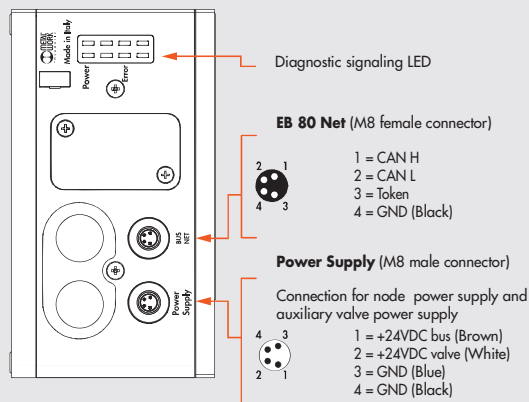
**** Sum of the lengths of the cables between the fieldbus electrical connection and any additional electrical connections.

COMPONENTS

- ① UPPER PART BODY: technopolymer
- ② LOWER PART BODY: painted aluminium
- ③ END PLATE: painted aluminium
- ④ GRUB SCREW securing the DIN bar or bracket: zinc-plated steel
- ⑤ CONNECTOR for connection to the valve island (main one)
- ⑥ GASKETS interfacing: NBR
- ⑦ M8 power supply CONNECTOR
- ⑧ COVER for access to bus address switches: technopolymer
- ⑨ SCREW securing the upper part to the lower part
- ⑩ LED light
- ⑪ NAMEPLATE: removable
- ⑫ IDENTIFICATION wording: laser etched
- ⑬ SCREW securing the end plate
- ⑭ CONNECTOR for solenoid valve base modules
- ⑮ CONNECTOR for Input/Output signal modules

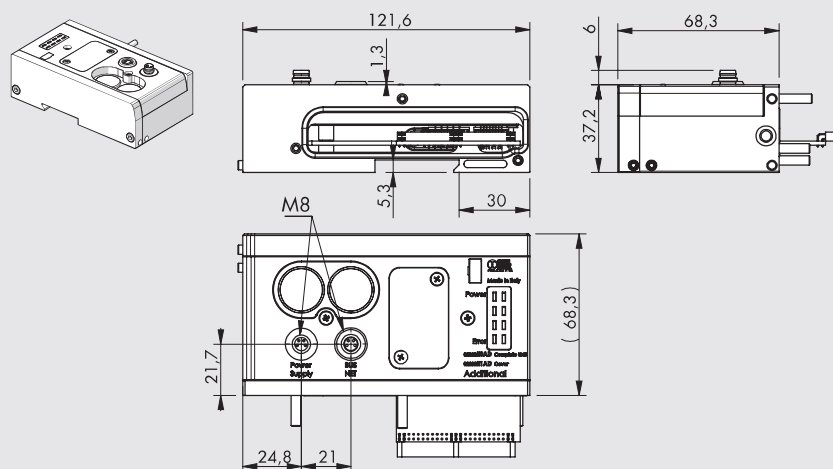


WIRING DIAGRAM



DIMENSIONS - ORDERING CODES

DIMENSION OF ADDITIONAL ELECTRICAL CONNECTION

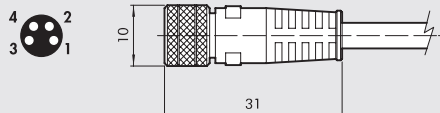


Code	Description	Weight [g]
02282E0AD	Additional electrical connection EB 80	570

ACCESSORIES

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

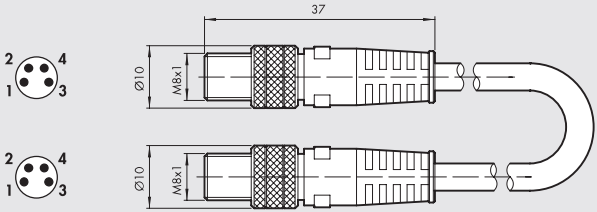
* Very flexible cables, class 6 according to IEC 60228

M8 PLUG



Code	Description
0240009039	Plug for M8 connector

M8 CONNECTOR WITH CABLE FOR CONNECTION BETWEEN EB 80 ISLANDS

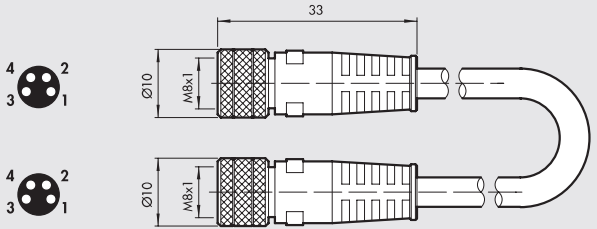


Code	Description	Weight [g]
0240010201	M8-M8 4-pin male straight connector with shielded cable L = 1 m	45
0240010205	M8-M8 4-pin male straight connector with shielded cable L = 5 m	185
0240010210	M8-M8 4-pin male straight connector with shielded cable L = 10 m	330
0240010215	M8-M8 4-pin male straight connector with shielded cable L = 15 m	475
0240010220	M8-M8 4-pin male straight connector with shielded cable L = 20 m	620
0240010405 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 5 m	185
0240010410 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 10 m	330
0240010415 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 15 m	475
0240010420 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 20 m	620

* Very flexible cables, class 6 according to IEC 60228

N.B.: For correct operation of the entire EB 80 system, use M8-M8 pre-wired, twisted and shielded cables only.

M8 ADAPTER CABLE

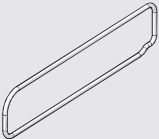


Code	Description	Weight [g]
0240010350	M8-M8 4-pin female adapter cable with shielded cable L = 200 mm	16

N.B.: Cannot be used with cables for mobile laying (H-FLEX CL6)

SPARE PARTS

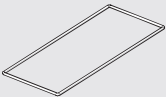
EB 80 ELECTRICAL CONNECTION INTERFACE OR-SEAL



Code	Description
02282R1003	EB 80 electrical connection interface OR-seal

Comes in 10-pc. packs

GASKET BETWEEN EB 80 BASE AND COVER BUS/SIGNALS



Code	Description
02282R1004	Kit of gaskets between EB 80 base and cover bus/signals

Comes in 10-pc. packs

EB 80 BUS/SIGNAL INTERFACE OR-SEAL



Code	Description
02282R1005	EB 80 BUS/Signal interface OR-seal

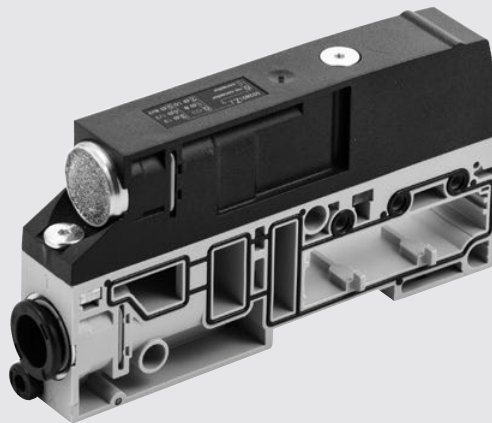
Comes in 10-pc. packs

EB 80 COMPRESSED-AIR SUPPLY - P

The Compressed air supply - P modules power the valve base and collect the air coming from the relief ports. Various versions are available, with pipe fittings of different diameter. The product code also identifies whether the module is set to supply the pilots without servo-assistance, in which case you only need to connect compressed air to the supply fitting; or with servo-assistance (recommended), in which case you only need to connect the compressed air to the Ø 4 pilot fitting. Switching from servo to non-servo operation or vice versa is possible, however, by changing the position of the orange gasket situated between the lower and the upper part of the module; the configuration is identified by a tab protruding at the back.

Relief ports 3 and 5 can be either connected using a silencer or conveyed via a fitting.

A version with separate ports 3 and 5 is also available. This feature is useful in versions with pilot servo-assistance to power the valves from ports 3 and 5, at different pressures from vacuum to 8 bar at different pressures from vacuum to 8 bar, including the version to configure a fieldbus island with signal modules only, without the pneumatic part.

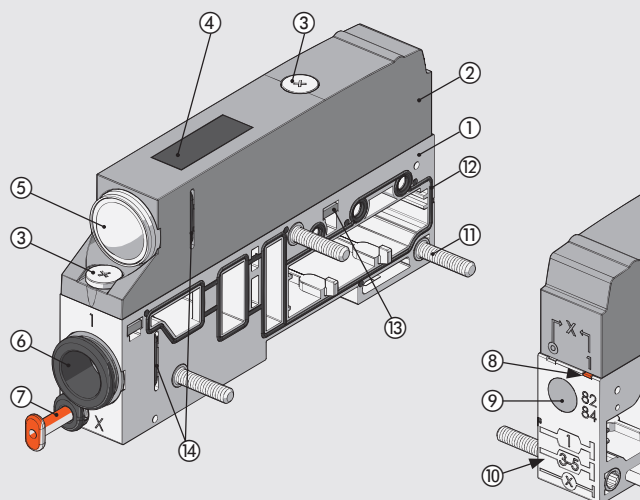


TECHNICAL DATA

Operating pressure		5/2 and 5/3		2/2 and 3/2		
Non-servo versions and solenoid pilot servo pressure						
bar	3 to 8					min. (see graph on page B2.57) / max. 8
MPa	0.3 to 0.8					min. (see graph on page B2.57) / max. 0.8
	psi	43 to 116	min. (see graph on page B2.57) / max. 116			
Assisted valves						
bar	Vacuum to 10					
MPa	Vacuum to 1					
	psi	Vacuum to 145				
Ambient temperature		°C		-10 to + 50		
	°F	14 to 122				
Flow rate at 6.3 bar ΔP 1 bar		Ø 8 (5/16")	Ø 10	Ø 12	Ø 1 1/2"	
Feeding (port 1)	Nl/min	1800	2800	3500	3500	
Exhaust with fitting (ports 3 and 5)	Nl/min	2000	3200	4400	4400	
Separate exhausts Ø 8 (N.B.: Pmax 8 bar)	Nl/min	1800 x 2	-	-	-	
Flow rate at 6.3 bar free exhaust						
Exhaust with fitting (ports 3 and 5)	Nl/min	2700	3900	6100	6100	
Silenced exhaust	Nl/min	3600				
Exhaust with fitting Ø12 and silencer W0970530086	Nl/min	6000				
Separate exhausts Ø 8 (N.B.: Pmax 8 bar)	Nl/min	2700 x 2	-	-	-	
Fluid		Unlubricated air				
Versions		Silenced relief or conveyed relief, fittings for pipes Ø 8, 10, 12, 1/2"				
Degree of protection		IP65				
Weight	g	140	130	125	125	

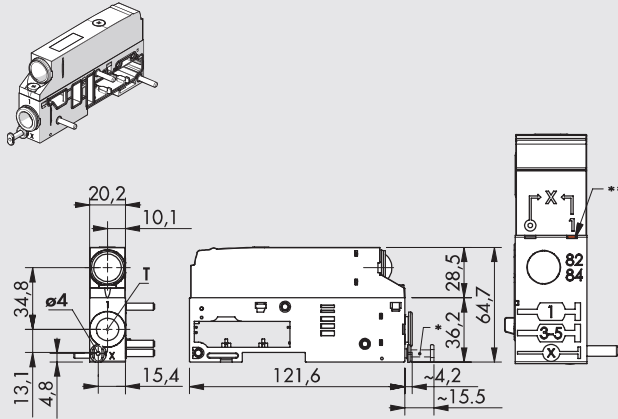
COMPONENTS

- ① LOWER PART BODY: technopolymer
- ② UPPER PART BODY: technopolymer
- ③ SCREWS securing the island bodies: zinc-plated steel
(Tightening torque: 1.2 Nm)
- ④ TAG: with laser etched wording - technopolymer
- ⑤ RELIEF: silencer or pipe fitting
- ⑥ POWER SUPPLY: pipe fitting
- ⑦ PILOTING (X): Ø 4 pipe fitting
- ⑧ INDICATOR: indicates whether pilot power supply is separate or not
- ⑨ PILOT RELIEF: HDPE silencer
- ⑩ PICTOGRAM: showing compressed air system layout
- ⑪ TIE ROD: zinc-plated steel
- ⑫ GASKET: NBR
- ⑬ THREADED PLATE: zinc-plated steel
- ⑭ CARTRIDGE FIXING CLIP: stainless steel



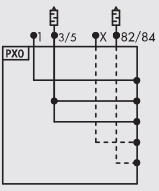
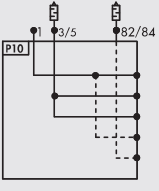
DIMENSIONS - ORDERING CODES

COMPRESSED AIR SUPPLY - SILENCED RELIEF

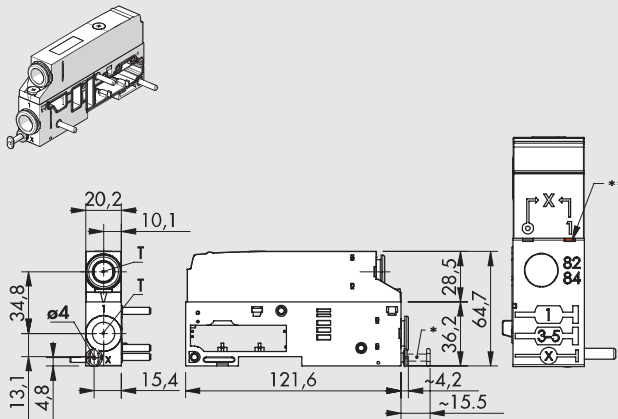


* R9 plug for NON-SERVO-ASSISTED versions

** Orange tab in SERVO-ASSISTED (⊙) or NON-SERVO-ASSISTED (1) position

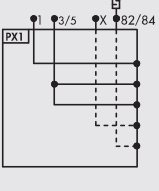
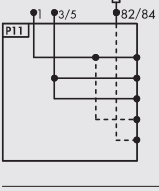
Symbol	T - Pipe fitting	Code	Weight [g]
	Ø 8 (5/16")	02282P1XZ00	140
	Ø 10	02282P2XZ00	140
	Ø 12	02282P3XZ00	130
	Ø 1/2"	02282P5XZ00	130
	Ø 8 (5/16")	02282P11Z00	140
	Ø 10	02282P21Z00	140
	Ø 12	02282P31Z00	130
	Ø 1/2"	02282P51Z00	130

COMPRESSED AIR SUPPLY - CONVEYED RELIEF

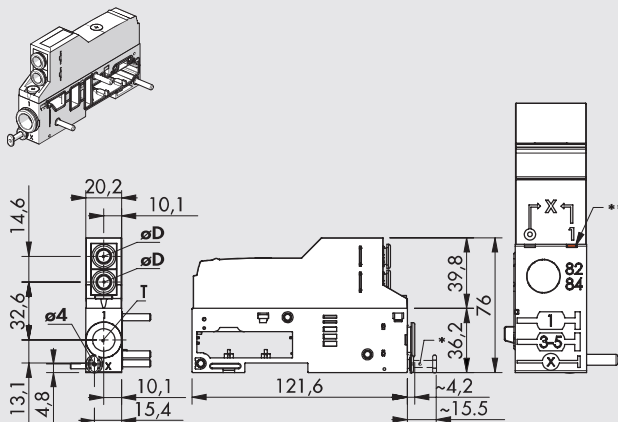


* R9 plug for NON-SERVO-ASSISTED versions

** Orange tab in SERVO-ASSISTED (⊙) or NON-SERVO-ASSISTED (1) position

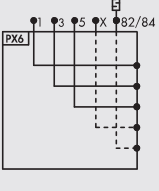
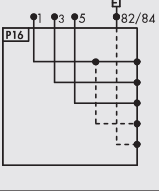
Symbol	T - Pipe fitting	Code	Weight [g]
	Ø 8 (5/16")	02282P1XZ10	140
	Ø 10	02282P2XZ20	140
	Ø 12	02282P3XZ30	130
	Ø 1/2"	02282P5XZ50	130
	Ø 8 (5/16")	02282P11Z10	140
	Ø 10	02282P21Z20	140
	Ø 12	02282P31Z30	130
	Ø 1/2"	02282P51Z50	130

COMPRESSED AIR SUPPLY - SEPARATE RELIEFS

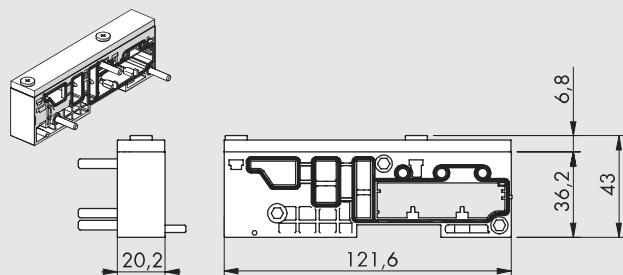


* R9 plug for NON-SERVO-ASSISTED versions

** Orange tab in SERVO-ASSISTED (⊙) or NON-SERVO-ASSISTED (1) position

Symbol	T - Pipe fitting	Code	Weight [g]
	Ø 8 (5/16")	02282P1XZ_0	150
	Ø 10	02282P2XZ_0	150
	Ø 12	02282P3XZ_0	140
	Ø 1/2"	02282P5XZ_0	140
_ = To complete the code enter: 6: øD = 8 mm; 7: øD = 6 mm; 8: øD = 4 mm N.B.: Maximum pressure in the ports 3 and 5: 8 bar			
	Ø 8 (5/16")	02282P11Z_0	150
	Ø 10	02282P21Z_0	150
	Ø 12	02282P31Z_0	140
	Ø 1/2"	02282P51Z_0	140
_ = To complete the code enter: 6: øD = 8 mm; 7: øD = 6 mm; 8: øD = 4 mm N.B.: Maximum pressure in the ports 3 and 5: 8 bar			

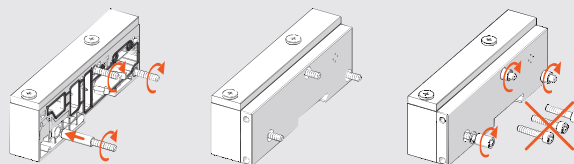
MODULE FOR ELECTRIC VERSION ONLY



Code	Description	Weight [g]
------	-------------	------------

02282P91Z90	Module for electric version only	120
-------------	----------------------------------	-----

N.B.: Version used to make up an EB 80 island without pneumatic part, but only with "S" signal modules and fieldbus or additional electrical connection "E". Bases and valves cannot be added.



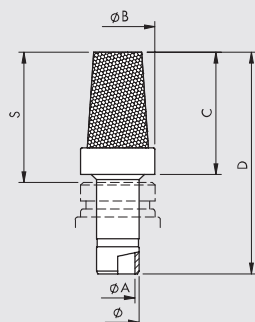
KEY TO CODES

02282 FAMILY	P SUBSYSTEM	3 PORT FITTING 1	1 PILOT SERVO-ASSISTED	Z UPPER PART	3 PORTS 3 AND 5 FITTING	0 SPECIALTY
02282 EB 80	P Compressed air supply	1 Pipe fitting Ø 8 (5/16") 2 Pipe fitting Ø 10 3 Pipe fitting Ø 12 5 Pipe fitting Ø 1/2"	1 Non-servo-assisted X Servo-assisted	Z The upper part is present	0 Silencer ▲ 1 Pipe fitting Ø 8 (5/16") ▲ 2 Pipe fitting Ø 10 ▲ 3 Pipe fitting Ø 12 ▲ 5 Pipe fitting Ø 1/2" 6 2 pipes fitting Ø 8 (5/16") (one for port 3, one for port 5) 7 2 pipes fitting Ø 6 (one for port 3, one for port 5) 8 2 pipes fitting Ø 4 (5/32") (one for port 3, one for port 5) 9 Without connection	0 Standard
		9 Module for electric version only	1 Non-servo-assisted			

▲ For ports 3 and 5 use the same pipe Ø of port 1.

ACCESSORIES

SILENCER FOR FITTING



Ø	Ø A	Ø B	C	D	S
8	6.5	14	23	42	24.5
12	10	18.8	29	51.5	31.5

Code	Description	Flow rate at 6.3 bar [Nl/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15
W0970530086	Silencer for fitting, Ø 12	6000	24

SPARE PARTS

CARTRIDGE



Code	Description	Ø
02282R2110	EB 80 silencer cartridge kit	silencer
02282R2113	EB 80 Ø 8 power supply round cartridge kit	8 (5/16")
02282R2114	EB 80 Ø 10 power supply round cartridge kit	10
02282R2115	EB 80 Ø 12 power supply round cartridge kit	12
02282R2118	EB 80 Ø 1/2 power supply round cartridge kit	1/2"

Comes in 10-pc. packs

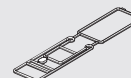
BASE INTERFACE GASKET



Code	Description
02282R1000	EB 80 base interface gasket kit

Comes in 10-pc. packs

LOWER /UPPER BODY GASKET



Code	Description
02282R1001	EB 80 lower/upper body gasket kit

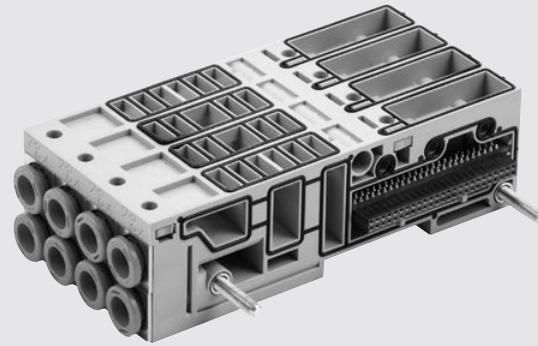
Comes in 10-pc. packs

EB 80 BASES FOR VALVES - B



The EB 80 "Bases for valves - B" can be provided with 3 or 4 positions. A version is available with an electrical connection for a single control of each position, suitable for 5/2 monostable solenoid valves (physically impossible to install other valves). Another version comes with two electrical connections for each position and is suitable for all types of valves. The electronics in the base controls the signal coming from both the multi-pole connector and the fieldbus, so the base is the same, regardless of the control system of the island.

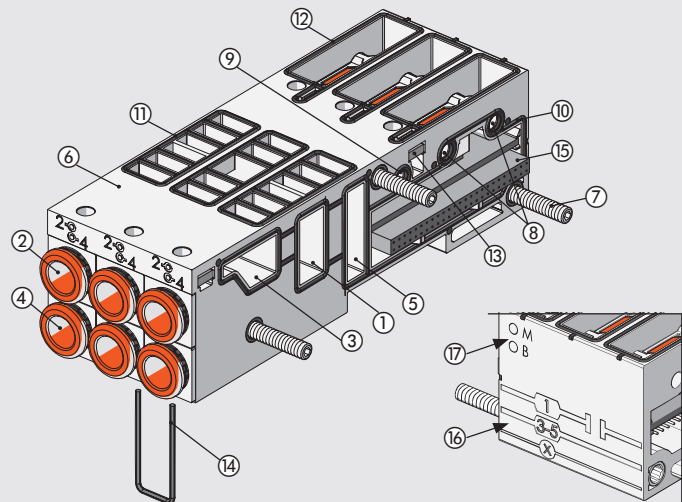
The air delivery ducts (ports 2 and 4) are made up of cartridge-type push-in fittings. The cartridge can be replaced, for example when the pipe diameter needs to be changed, by pulling out the clip placed under the base. The air flow ducts (ports 1, 3, 5, X) of the 4-position base are the full flow type. For the 3-position base, either full-flow or one or more sectioned ports can be mounted. With this solution, islands with zones with differentiated pressure can be created.



TECHNICAL DATA		
Ambient temperature	°C	-10 to + 50
	°F	14 to 122
Fluid		Unlubricated air
Versions		3-position base for controlling 3 solenoid pilots; 3 positions for 6 solenoid pilots; 4 positions for 4 solenoid pilots; 4 positions for 8 solenoid pilots.
		Pipe fittings Ø 4 (5/32"), 6, 8 (5/16"), 1/4" Ducts
		1, 3, 5 and X full flow
Degree of protection		3-position base with 1 sectioned duct; 1, 3 a 5 sectioned; 3 and 5 sectioned (after the first position)
		IP65

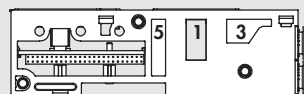
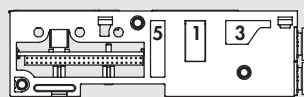
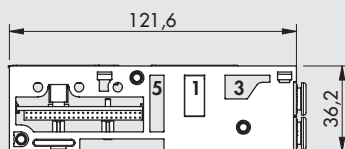
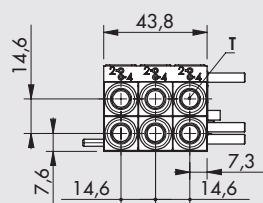
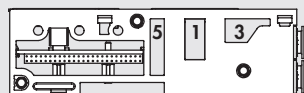
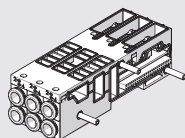
COMPONENTS

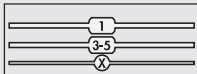
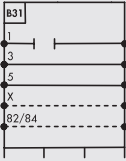
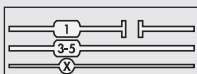
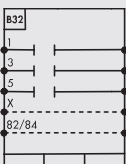
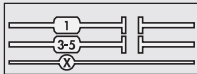
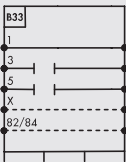
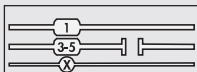
- ① PORT 1 DUCT
- ② PORT 2 CARTRIDGE: push-in fitting
- ③ PORT 3 DUCT
- ④ PORT 4 CARTRIDGE: push-in fitting
- ⑤ PORT 5 DUCT
- ⑥ BODY: technopolymer
- ⑦ TIE ROD: nickel-plated brass + stainless steel grub screw
- ⑧ 82/84 DUCT: pilot air relief
- ⑨ X DUCT: pilot control
- ⑩ GASKET BETWEEN BASES: NBR
- ⑪ GASKET FOR THE VALVE: NBR
- ⑫ GASKET FOR IP65: NBR
- ⑬ THREADED PLATE for securing the valves: zinc-plated steel
- ⑭ CLIP for securing the cartridge: stainless steel
- ⑮ ELECTRONICS
- ⑯ PICTOGRAM: indication of compressed air system layout
- ⑰ INDICATION of the type of electronic board:
M = to 3 or 4 controls - B = to 6 or 8 controls



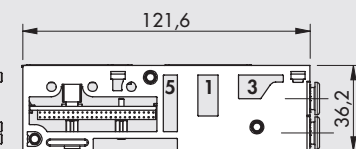
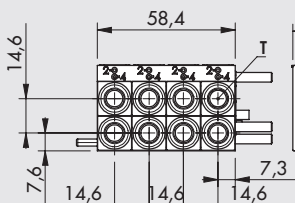
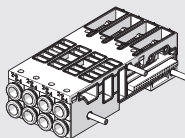
DIMENSIONS - ORDERING CODES

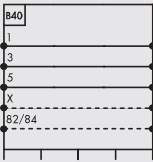
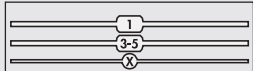
3-POSITION BASE FOR VALVES



Symbol	T - Pipe fitting	Code		Weight [g]
		3 CONTROLS	6 CONTROLS	
Full-flow ports				
	without cartridges	02282B3031110	02282B3061110	170
	Ø 4 (5/32")	02282B3034440	02282B3064440	230
	Ø 6	02282B3036660	02282B3066660	220
	Ø 8 (5/16")	02282B3038880	02282B3068880	210
	Ø 1/4"	02282B3032220	02282B3062220	220
				
Port 1 sectioned after the first position				
	without cartridges	02282B3131110	02282B3161110	170
	Ø 4 (5/32")	02282B3134440	02282B3164440	230
	Ø 6	02282B3136660	02282B3166660	220
	Ø 8 (5/16")	02282B3138880	02282B3168880	210
	Ø 1/4"	02282B3132220	02282B3162220	220
				
Ports 1, 3 and 5 sectioned after the first position				
	without cartridges	02282B3231110	02282B3261110	170
	Ø 4 (5/32")	02282B3234440	02282B3264440	230
	Ø 6	02282B3236660	02282B3266660	220
	Ø 8 (5/16")	02282B3238880	02282B3268880	210
	Ø 1/4"	02282B3232220	02282B3262220	220
				
Ports 3 and 5 sectioned after the first position				
	without cartridges	02282B3331110	02282B3361110	170
	Ø 4 (5/32")	02282B3334440	02282B3364440	230
	Ø 6	02282B3336660	02282B3366660	220
	Ø 8 (5/16")	02282B3338880	02282B3368880	210
	Ø 1/4"	02282B3332220	02282B3362220	220
				

4-POSITION BASE FOR VALVES



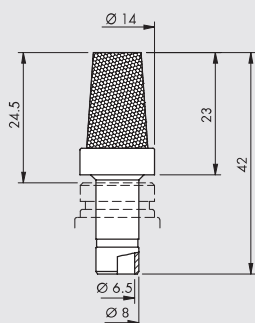
Symbol	T - Pipe fitting	Code		Weight [g]
		4 CONTROLS	8 CONTROLS	
Full-flow ports				
	without cartridges	02282B4041111	02282B4081111	230
	Ø 4 (5/32")	02282B4044444	02282B4084444	310
	Ø 6	02282B4046666	02282B4086666	300
	Ø 8 (5/16")	02282B4048888	02282B4088888	270
	Ø 1/4"	02282B4042222	02282B4082222	290
				

KEY TO CODES

02282	B	3	0	6	8	8	8	0
FAMILY	SUBSYSTEM	NUMBER OF POSITIONS	PORTS IN THE BASE	NUMBER OF SOLENOID PILOT CONTROLS	1 st position (from left)	2 nd position	3 rd position	FITTINGS 4 th position
02282 EB 80	B Base for valve	3 3 positions	0 Full-flow ports 1 Port 1 sectioned 2 Ports 1, 3 and 5 sectioned 3 Ports 3 and 5 sectioned	3 3 controls 6 6 controls	1 The whole base without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")			0 (for 3-position base)
		4 4 positions	0 Full-flow ports	4 4 controls 8 8 controls	1 The whole base without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")			1 The whole base without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")

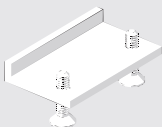
ACCESSORIES

SILENCER FOR FITTING, Ø 8



Code	Description	Flow rate at 6.3 bar [Nl/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15

ADDITIONAL FIXING BRACKET TO OMEGA BAR



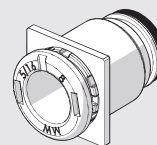
Code	Description	Weight [g]
02282R4001	Additional fixing bar accessory to EB 80 omega bar	5

Individually packed

N.B.: to be used to improve the fixing to Omega bars of islands with more than 40 valves. The bracket must be positioned every 20-25 valves.

SPARE PARTS

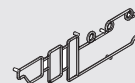
CARTRIDGE



Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

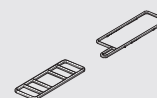
BASE INTERFACE GASKET



Code	Description
02282R1000	EB 80 base interface gasket kit

Comes in 10-pc. packs

BASE-VALVE GASKET



Code	Description
02282R1002	EB 80 base-valve gasket kit

Comes in 10-pc. packs

EB 80 VALVES

The valves in the EB 80 series are designed to ensure high flow using only one small size valve (14 mm wide), without the need of installing a larger size one, to the benefit of component standardisation.

Versions are available with all the main air supply diagrams - from 2/2 to 5/3. The valves are secured to the base with two sturdy M4 captive screws. They come with all the accessories that facilitate their use: manual control, monostable or bistable, LED light, plate with air supply diagram and technical data, white plates available to the customer.

The range also includes:

- High-flow valves which have an innovative system that reaches flow rates that are uncommon for this size of valve.
- Bypass element that makes it possible to boost supply and reliefs or create special pneumatic circuits.
- Circuit shut-off valve (V3V) to connect/disconnect all station valves.
- Dummy valve to plug blank base positions.



TECHNICAL DATA

Operating pressure			5/2 and 5/3				2/2 and 3/2		
Non-assisted valves			bar	3 to 8				3.5 to 8	
			MPa	0.3 to 0.8				0.35 to 0.8	
			psi	43 to 116				51 to 116	
Assisted valves			bar	Vacuum to 10					
			MPa	Vacuum to 1					
			psi	Vacuum to 145					
Servo pressure			bar	3 to 8				min. (see graph on page B2.57) / max. 8	
			MPa	0.3 to 0.8				min. (see graph on page B2.57) / max. 0.8	
			psi	43 to 116				min. (see graph on page B2.57) / max. 116	
Ambient temperature			°C	-10 to 50 (at 8 bar)					
			°F	14 to 122 (at 8 bar)					
Flow rate at 6.3 bar ΔP 1 bar				Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"	Ø 10 **	Ø 3/8" **
valve 2/2			Nl/min	350	430	500	430	-	-
valve 3/2			Nl/min	350	600	700	600	1250	1250
valve 5/2			Nl/min	350	650	800	650	1250 - 1400	1250 - 1400
valve 5/3			Nl/min	350	460	500	460	1000 - 1250	1000 - 1250
valve V3V (R)			Nl/min	-	-	-	-	1000	1000
Actuation response time (TRA) / reset response time (TRR) at 6 bar									
TRA/TRR valves 2/2 and 3/2			ms	14 / 28					
TRA/TRR valves 5/2 monostable and shut-off valve			ms	12 / 45					
TRA/TRR valve 5/2 bistable			ms	12 / 14					
TRA/TRR valve 5/3			ms	15 / 45					
TRA/TRR valve 3/2 high flow			ms	13 / 36					
Fluid				Unlubricated air					
Air quality required				ISO 8573-1 class 4-7-3					
Supply voltage range			VDC	12 -10% 24 +30%					
Minimum operating voltage			VDC	10.8 *					
Maximum operating voltage			VDC	31.2					
Maximum admissible voltage			VDC	32 ***					
Power for each valve			W	3 for a few milliseconds. Holding 0.3					
Drive				PNP or NPN					
Solenoid rating				100% ED					
Versions				Manual monostable or bistable control. Various compressed air diagrams					
Degree of protection				IP65					

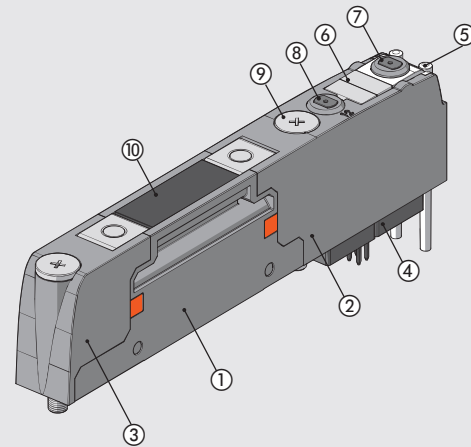
* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power pack output using the calculations shown on page B2.28

** Using high-flow valves or connected valves - see pages B2.58

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

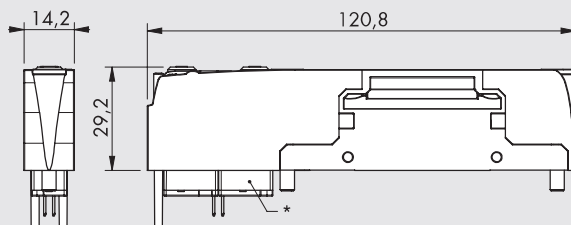
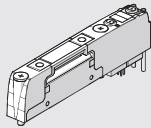
COMPONENTS

- ① BODY: technopolymer
- ② CONTROL: technopolymer
- ③ BASE: technopolymer
- ④ SOLENOID PILOT
- ⑤ DISPLAY: LED light and optical tester in technopolymer
- ⑥ TAG: removable
- ⑦ MANUAL CONTROL 14, for port 4: monostable or bistable, in brass
- ⑧ MANUAL CONTROL 12, for port 2: monostable or bistable, in brass
- ⑨ SCREW FOR FIXING TO THE BASE: M4 with PH 1 cross-head, zinc-plated steel. Tightening torque: 1.2 Nm
- ⑩ TAG: technopolymer with laser-etched wording



DIMENSIONS - ORDERING CODES

EB 80 VALVE

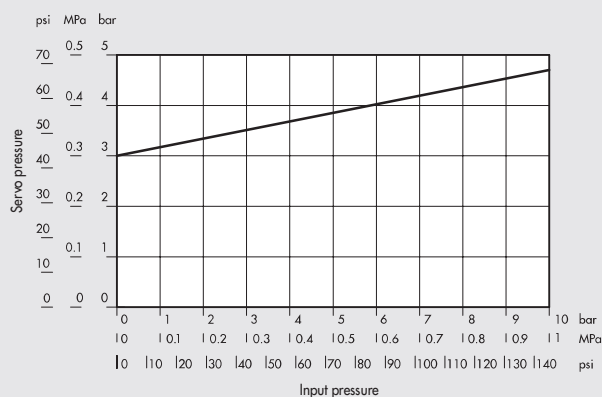


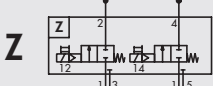
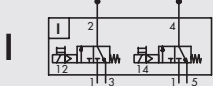
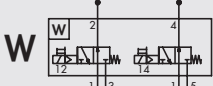
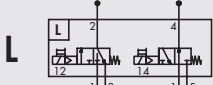
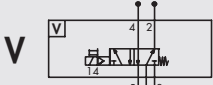
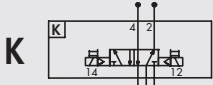
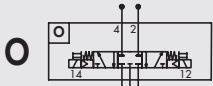
* The second solenoid pilot is not present in the valves V= 5/2 monostable.

N.B.: The valves Z, I, W, L, K, O can be mounted only on bases having 6 or 8 controls.

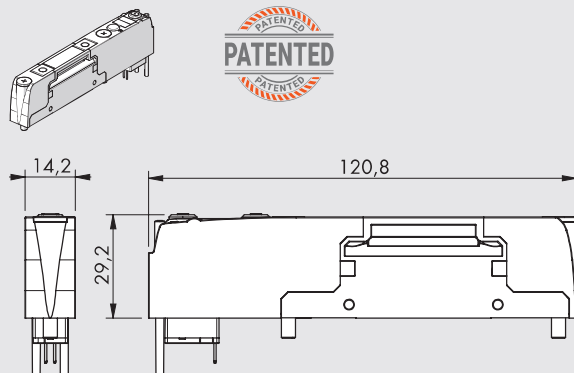
SERVO MINIMUM PRESSURE FOR VALVES 2/2 AND 3/2

If the island is configured without servo, minimum pressure 3.5 bar

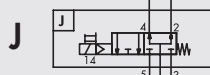
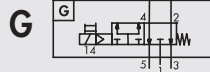


Symbol	Type	Code	Manual control	Weight [g]
	2 valves 2/2 NC	708203Z0	monostable	80
		708203Z1	bistable	80
	2 valves 3/2 NC	708203I0	monostable	80
		708203I1	bistable	80
valid as 5/3 OC				
	2 valves 3/2 NO	708203W0	monostable	80
		708203W1	bistable	80
valid as 5/3 PC				
	3/2 NC + 3/2 NO	708203L0	monostable	80
		708203L1	bistable	80
	monostable 5/2	708203V0	monostable	65
		708203V1	bistable	65
	bistable 5/2	708203K0	monostable	80
		708203K1	bistable	80
	5/3 CC	708203O0	monostable	80
		708203O1	bistable	80

EB 80 HIGH-FLOW VALVE



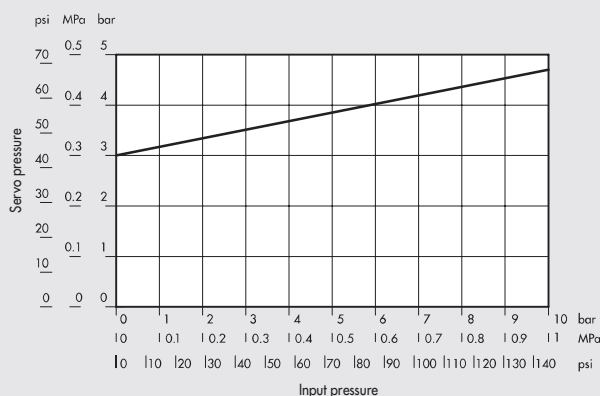
Symbol	Type	Code	Manual control	Weight [g]
G	3/2 NC high flow	708203G0	monostable	65
		708203G1	bistable	65



J	3/2 NO high flow	708203J0	monostable	65
		708203J1	bistable	65

SERVO MINIMUM PRESSURE

If the island is configured without servo, minimum pressure 3.5 bar

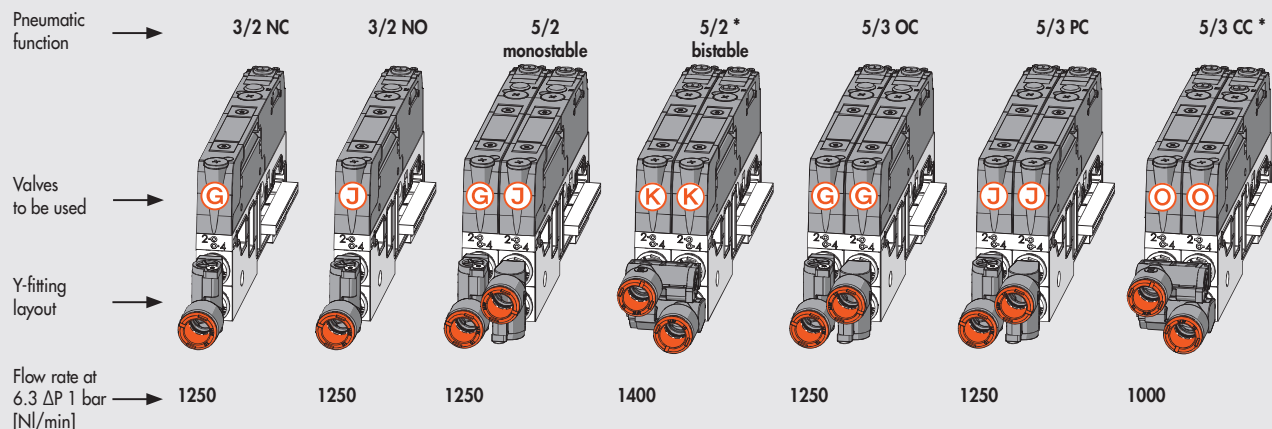


HOW TO GET HIGH-FLOW RATE FOR EACH PNEUMATIC FUNCTION

N.B. The two cartridges on the base (2 and 4) must fit the Ø 8 mm pipe.

Outputs 2 and 4 must be connected one to the other. To do this, you can use the special Y-fitting.

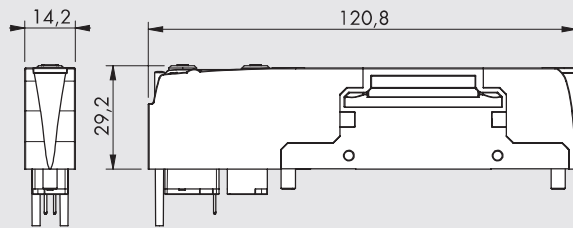
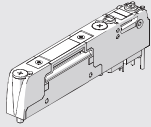
When connecting one or more valves using the Y-fitting, the pneumatic system functions must be configured according to the following diagram.



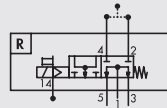
In order to get 5/2 monostable, 5/2 bistable and 5/3 DC high flow, use two parallel valves, by energizing the solenoids simultaneously.

* The Y-fittings of this valve must be installed longitudinally with one Y-fitting connecting the two outputs (2) and the other the two outputs (4). The solenoid pilots must be operated simultaneously.

EB 80 SHUT-OFF VALVE (V3V)

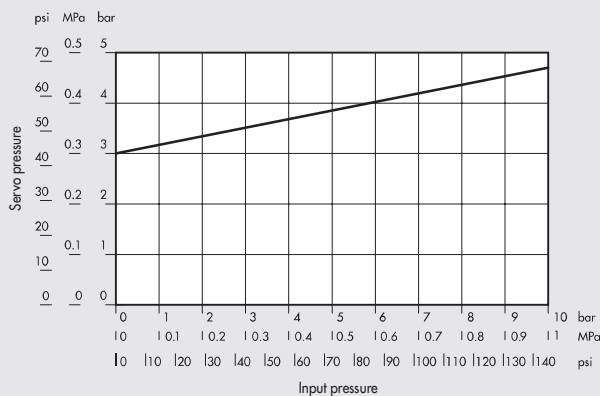


Symbol	Type	Code	Manual control	Weight [g]
R	Shut-off valve	708203R0	monostable	65
		708203R1	bistable	65



SERVO MINIMUM PRESSURE

If the island is configured without servo, minimum pressure 3.5 bar



This valve enables the supply/relief of all station valves. The pneumatic supply is delivered via ports 2 and 4 on the base underneath the valve. It is discharged via ports 3 and 5 with general station discharge. Port 1 on pneumatic supply module P must be plugged for the system to operate and slave the island by supplying continuous pressure to port X.

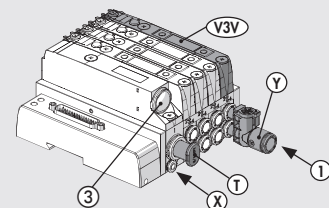
The shut-off valve is designed for the following uses and benefits:

- the valve can be fitted in any position and not necessarily to the left of the others;
- if the station is split into areas with separate channels (1) via intermediate modules M or bases with port 1 selected, the shut-off valve only operates in the area where it is fitted.
- if the capacity of a shut-off valve is not sufficient for its use, two or more can be fitted and operated simultaneously.

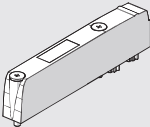
TECHNICAL DATA		
Flow rate at 6.3 bar ΔP 1 bar	NI/min	1000 (with 2 $\varnothing$ 8 fittings or a Y fitting, pipe $\varnothing$ 10 mm or 3/8")
Exhaust flow rate at 6.3 bar	NI/min	660
Actuation response time (TRA) / reset response time (TRR) at 6 bar	ms	12/45
Servo pressure		See technical data 3/2 valves (page B2.56)

SHUT-OFF VALVE DIAGRAM

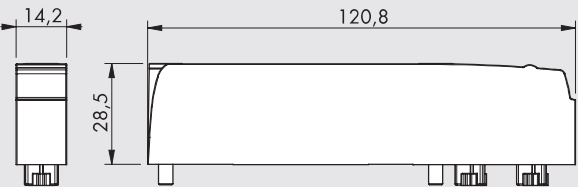
- V3V** Shut-off valve, can be fitted in any position
- 1** Pneumatic supply
 - 3** Relief
 - Y** Y-fitting with black bush (page B2.59)
 - T** Plug port 1 of pneumatic supply P module
 - X** Always use the pneumatic supply servo version



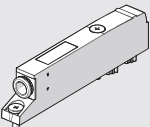
DUMMY VALVE (PLUG)



Symbol	Description	Code	Weight [g]
	Dummy valve	708203N0	45

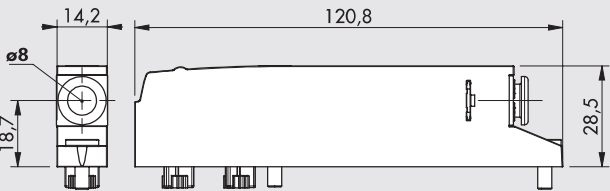


BYPASS



Symbol	Description	Code	Weight [g]
	Bypass Ø8	708203Y8	45

N.B.: Maximum pressure in the ports 2 and 4: 8 bar



Connects port 3 of the base to port 2 and port 5 to port 4.
The fitting present is connected to port 1.

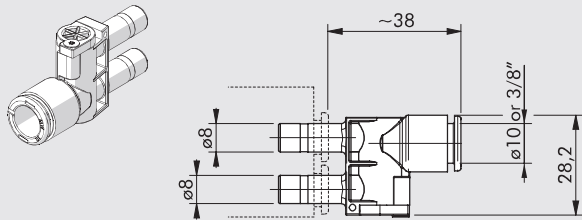
KEY TO CODES

7082	03	V	0
FAMILY	TYPE	SCHEMA	MANUAL CONTROL
7082 EB 80	03 Electric, servo-assisted	▲ Z 2 valves 2/2NC ▲ I 2 valves 3/2 NC ▲ W 2 valves 3/2 NO ▲ L 3/2 NC + 3/2 NO - V 5/2 monostable ▲ K 5/2 bistable ▲ O 5/3 CC - G 3/2 NC high flow - J 3/2 NO high flow + R Shut-off valve - Y Bypass - N Dummy valve (plug)	0 Monostable or for dummy valve 1 Bistable 8 For bypass only

▲ Can only be used with 6 or 8 control bases.
+ Requires inlet port X slave synchronisation.

ACCESSORIES

Y-FITTING



Code	Description	Release bushing color
02282R2Y04	Y-fitting for EB 80 Ø 8 (5/16") - Ø 10	Orange
02282R2Y14	Y-fitting for EB 80 Ø 8 (5/16") - Ø 10	Black
02282R2Y07	Y-fitting for EB 80 Ø 8 (5/16") - Ø 3/8"	Orange
02282R2Y17	Y-fitting for EB 80 Ø 8 (5/16") - Ø 3/8"	Black

SPARE PARTS

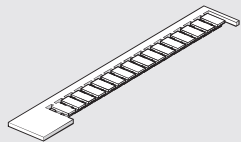
BASE FIXING SCREW



Code	Description
02282R3000	Kit of screws for fixing the EB 80 base

Comes in 10-pc. packs

IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 16-pc. packs

NOTES

EB 80 PROPORTIONAL PRESSURE REGULATOR - A

The EB 80 proportional pressure regulator is an extremely precise and reliable component part. It is designed to regulate the pressure of a system with varying values according to the electrical control setting.

It can be inserted in any position and on all EB 80 islands.

Highly flexible, it comes in various types: for the 25/44-pin multi-pole islands, it is possible to use the analogue regulator with external M12 electrical connection, it accepts commands in Volts, mA and via RS232 protocol; in all the versions with a fieldbus, the connections and electrical controls are directly incorporated in the internal hardware/software that can be easily managed by the user in a simple and intuitive way every island and can accommodate up to 16 pressure regulators that are connected to all the protocols available for the EB 80 (also in additional islands).

An island of electronic regulators arranged in a row can be created, without necessarily requiring solenoid valves.

The "closed loop" system has a precision sensor that detects the output pressure value; the control system compares the value read with the value set in real time and two mini-solenoid valves adjust the pressure until the target value is reached.

As for the Regtronic family, in this case too, you can opt for a regulator with a screen that displays the pressure and a whole series of information including diagnostics that facilitates the configuration or a version without display where the configuration is done remotely.

As to the pneumatic system, there are two possibilities: with Local Regulation or Series Regulation. In the former case, the air taken from port 1 of the island is regulated by a quick-fit coupling with the front side in the base; in this way, several regulators can be placed in succession. In the latter case, the pressure is regulated directly at port 1 of the island, so all the valves downstream are supplied with the pressure set by the regulator. The front outlet fitting, which has an RL9 cap in this version, is still present and operational.



TECHNICAL DATA		LOCAL OUTPUT VERSION		SERIES CONTROL VERSION	
Fluid		Filtered, unlubricated air. The air must be filtered at least 10 µm			
MIN inlet pressure	bar	Regulation pressure + 0.5 to 1			
MAX inlet pressure	bar	10.5			
Temperature range	°C	from -10 to 50			
Pressure regulation range	bar	from 0.05 to 10 (settable full scale and minimum pressure)			
Flow rate at 6.3 bar ΔP 0.5	NI/min	720		850	
Flow rate at 6.3 bar ΔP 1	NI/min	1000		1250	
Exhaust flow rate at 6.3 bar with 0.1 bar overpressure	NI/min	380		450	
Exhaust flow rate at 6.3 bar with 0.5 bar overpressure	NI/min	800		1100	
Response time	Volume [cc]	100	1000	100	1000
from 6 to 7 bar	s	0.1	0.15	0.1	0.15
from 7 to 6 bar	s	0.1	0.15	0.1	0.15
Weight	kg	0.6			
Class of protection		IP 65			
Hysteresis		≤ ± 0.2% (Full scale)			
Repeatability		≤ ± 0.2% (Full scale)			
Sensitivity/Dead-band		setting range 10 to 300 mbar			
Output pressure (display version)	Accuracy	≤ ± 0.3% (Full scale)			
	Unit of measurement	bar, MPa, psi			
	Minimum resolution	0.01 bar - 0.001 MPa - 0.01 psi			
Temperature characteristics		Max 2 mbar / °C			
Installation position		In any position			
Current input in the fieldbus version		Max 220 mA at 12VDC			
Supply voltage range analog version	VDC	12 -10% to 24 +30%			
Minimum operating voltage	VDC	10.8			
Maximum operating voltage	VDC	31.2			
Maximum admissible voltage	VDC	32 *			
Current absorption		Max 220 mA at 12VDC			
Input signal (input impedance)	Voltage	0 to 5 VDC, 0 to 10 VDC (approx. 6.3 KΩ)			
	Current	4 to 20 mA (approx. 100 Ω)			
	Serial ports	RS 232			
	Manual	Keypad			
Output signals in the analogue version					
	Analog in current	4 to 20 mA			
	Analog voltage	0 to 10 VDC (1 VDC = 1 bar) - 1 mA max			
	Digital	PNP open collector output: max 24VDC 60 mA			
		NPN open collector output: max 24VDC 60 mA			
	Analog output accuracy	≤ ± 0.4% (Full scale)			

Notes

The features shown refer to the static condition only. With air consumption the pressure may vary.

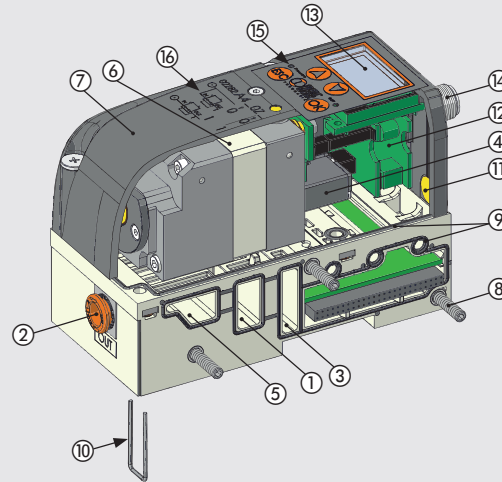
On all analog versions you can set the parameters using the software "MWRegtronic" downloadable from the website www.metalwork.eu; to connect the PC to Regtronic you can use the cable code W0970513019

For more details, please refer to the User Manual.

* IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

COMPONENTS

- ① PORT 1 DUCT
- ② CARTRIDGE Ø8: push-in fitting
- ③ PORT 3 DUCT
- ④ SOLENOID VALVE: 10 mm series PLT-10
- ⑤ PORT 5 DUCT
- ⑥ BODIES: aluminium
- ⑦ COVER: technopolymer
- ⑧ TIE ROD: nickel-plated brass with stainless steel grub screws
- ⑨ GASKETS: NBR
- ⑩ CLIP for securing the cartridge: stainless steel
- ⑪ Compensation DIAPHRAGM: PTFE
- ⑫ ELECTRONIC BOARDS
- ⑬ DISPLAY and keypad or cover
- ⑭ CONNECTOR M12 (for analog version)
- ⑮ INDICATOR LED
- ⑯ IDENTIFICATION of wording with laser

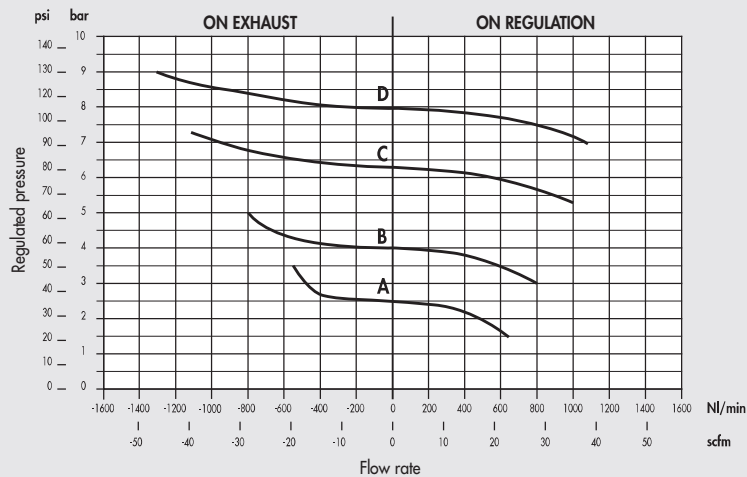


VALVES

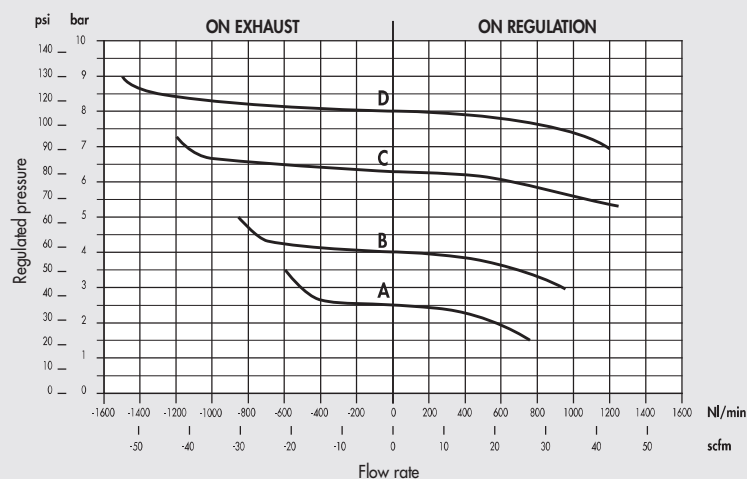
EB 80 - PROPORTIONAL PRESSURE REGULATOR - A

FLOW CHARTS

LOCAL OUTLET (Ø8)



REGULATION IN SERIES



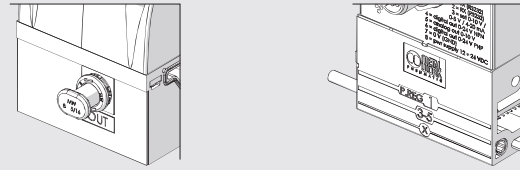
VERSIONS

PASS-THROUGH BASE – LOCAL OUTLET



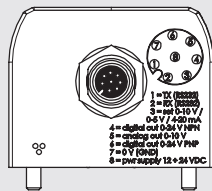
Air outlet regulated only by the front Ø8 fitting.

REGULATION IN SERIES



Air outlet adjusted to the next bases.
Front outlet closed, however usable by removing the cap from the fitting.

M12 EXTERNAL ANALOGUE CONTROL (MULTI-POLE ISLANDS)

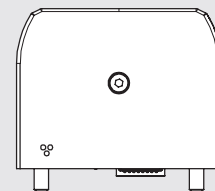


8 PIN M12x1



Pin	Signal	Description	Lead colour
1	TX	RS232	White
2	RX	RS232	Brown
3	Pressure set	0 to 10 VDC / 0 to 5 VDC 4 to 20 mA	Green
4	Digital out	NPN	Yellow
5	Analog out	Voltage version 0 to 10 VDC Current version 4 to 20 mA	Gray
6	Digital out	PNP	Pink
7	0 VDC	Power supply	Blue
8	+ VDC	Power supply	Red

FIELDBUS CONTROL



WITH REMOTE-CONTROL



The remote-control version of the Regtronic has two diagnostic LEDs.

WITH DISPLAY



The display version also has buttons for entering the various parameters.

PROGRAMMABLE AND FLEXIBLE

Setting options:

- LANGUAGE
- UNIT OF MEASUREMENT
- TYPE OF INPUT
- TYPE OF DIGITAL OUTPUT
- DEAD-BAND
- FULL SCALE
- MINIMUM PRESSURE

PRECISION

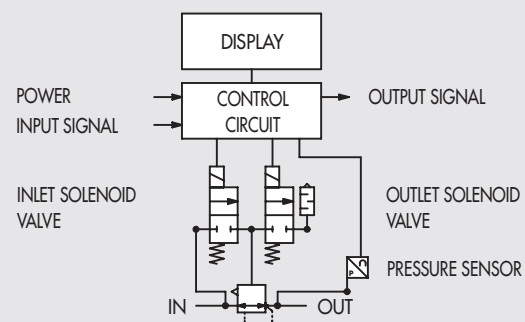
Linearity
 $\pm 0.5\%$ (full scale)

Hysteresis
 $\pm 0.2\%$ (full scale)

Repeatability
 $\pm 0.2\%$ (full scale)

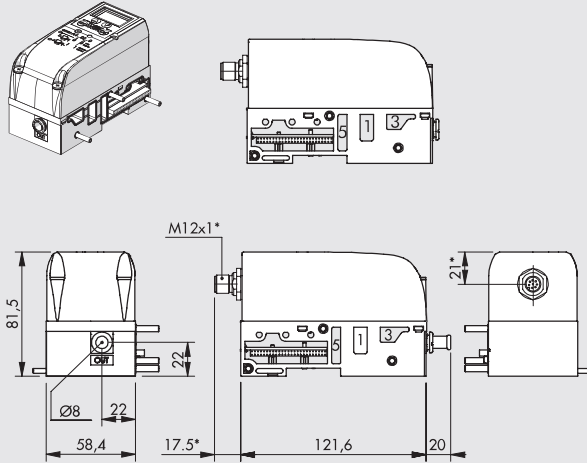
Sensitivity
range 10 to 300 mbar

FUNCTION DIAGRAM



DIMENSIONS - ORDERING CODES

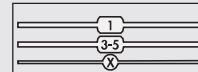
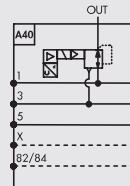
PROPORTIONAL PRESSURE REGULATOR



* For version with electrical analogue control only.

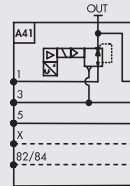
Electrical connection with M12 connector

Symbol	Display	Code		Weight [g]
		0-10V analogue OUT	4-20 mA analogue OUT	
Port 1 pass-through	WITH	02282A400Z00	02282A402Z00	640
	WITHOUT	02282A400Z10	02282A402Z10	640



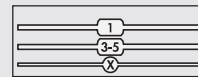
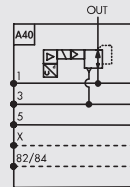
Port 1 sectioned

Port 1 sectioned	WITH	02282A410Z00	02282A412Z00	640
	WITHOUT	02282A410Z10	02282A412Z10	640



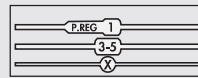
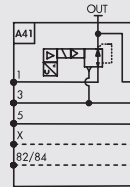
Electrical connection via fieldbus

Symbol	Display	Code		Weight [g]
		0-10V analogue OUT	4-20 mA analogue OUT	
Port 1 pass-through	WITH	02282A401Z00		630
	WITHOUT	02282A401Z10		630



Port 1 sectioned

Port 1 sectioned	WITH	02282A411Z00		630
	WITHOUT	02282A411Z10		630

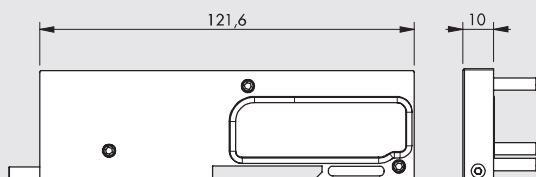
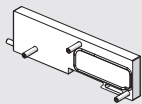


KEY TO CODES

02282	A4	0	1	Z	0	0
FAMILY	SUBSYSTEM	TYPE OF BASE	TYPE OF ELECTRICAL CONNECTION	SPECIALTY	DISPLAY	SPECIALTY
02282 EB 80	A4 Proportional pressure regulator	0 Base port 1 pass-through local outlet 1 Base port 1 sectioned in-series regulation	0 External electrical analogue control connector M12 0-10V analogue OUT 1 Electrical control via fieldbus 2 External electrical analogue control connector M12, 4-20 mA analogue OUT	Z Standard	0 With 1 Without	0 Standard

ACCESSORIES: ANALOG VERSION

CLOSING PLATE FOR EB 80 MANIFOLD PRESSURE REGULATOR

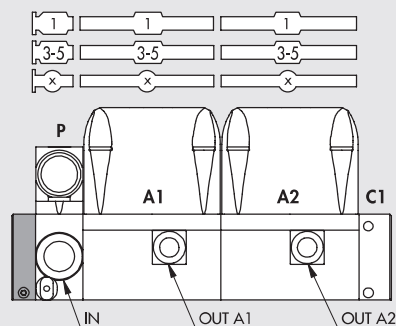


Code	Description	Weight [g]
02282R8000	Closing plate for EB 80 manifold proportional pressure regulator with M12 connector	120

N.B.: Can only be used with regulators code 02282A400Z00 - 02282A400Z10 - 02282A410Z00 - 02282A410Z10 - 02282A402Z00 - 02282A402Z10 - 02282A412Z00 - 02282A412Z10

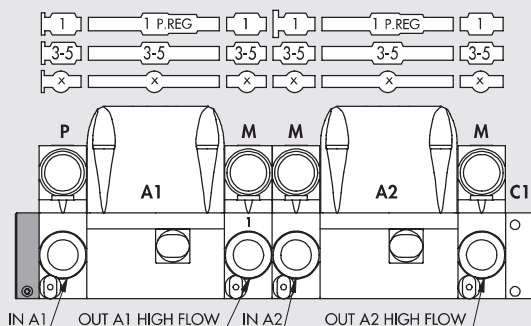
This terminal is used to fit multiple EB 80 pressure proportional regulators controlled by an M12 connector, without using EB 80 power supplies. Each regular can be controlled individually via its own M12 connector. Several configurable solutions can thus be obtained, as illustrated in examples below:

COMMON POWER SUPPLY



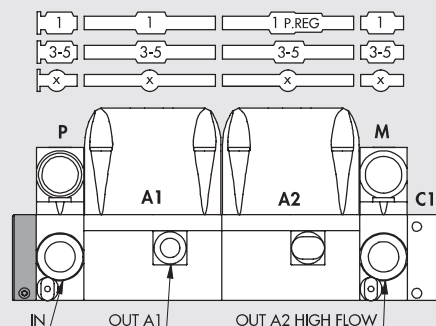
Island consisting of a single pneumatic supply (P) and front outlet from individual regulators.

INDEPENDENT POWER SUPPLY AND HIGH-FLOW RATE



Island consisting of independent regulator power supply, via P supplies and intermediate elements M (with port 1 closed) placed upstream of the regulator. High-flow outputs are obtained via intermediate elements M placed downstream of the individual regulators.

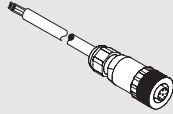
HYBRID



Hybrid island.
It consists of regulators with a local output (A1) and in-series high-flow rate regulators via intermediate element M downstream of regulator A2. Power supply P is in common.

P = compressed-air supply, page B2.50
M = intermediate support, page B2.68
C1 = closed end-plate for islands with multi-pole connector, page B2.74
A = proportional pressure regulator

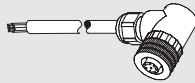
CONNECTOR M12x1, 8-PIN, A-CODED, FEMALE, STRAIGHT



Pin	Cable color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red

Code	Description
W0970513010	Connector M12x1, 8-pin, A-coded, female, straight, with cable L = 5 m

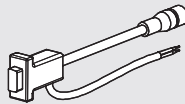
CONNECTOR M12x1, 8-PIN, A-CODED, FEMALE, 90°, WITH CABLE



Pin	Cable color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red

Code	Description
W0970513011	Connector M12x1, 8-pin, A-coded, female, 90°, with cable L = 5 m

CONFIGURATION CABLE



Code	Description
W0970513019	Configuration cable

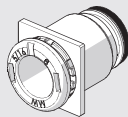
The cable consists of:

- M12 8-PIN female connector to be connected to regulator
- RS232 serial connector to be connected to PC
- 2 wires to supply 24VDC power

The package also includes a RS232-USB adapter

SPARE PARTS

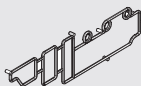
CARTRIDGE



Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

BASE INTERFACE GASKET



Code	Description
02282R1000	EB 80 base interface gasket kit

Comes in 10-pc. packs

EB 80 INTERMEDIATE SUPPORT - M

The "Intermediate modules - M" perform a series of functions.

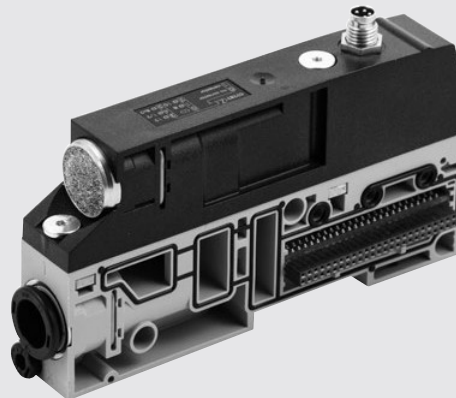
They can help increase the flow rate available in an EB 80 island, when various valves are used at the same time. They can be used to divide an island in areas of different pressures.

They can also be used as additional electrical power supply, when there is a high number of solenoid pilots actuated simultaneously; or to electrically separate and cut out a part of the island, in the event of an emergency, for example.

Intermediate modules can be placed in any position in the EB 80 island. Several versions are available, with fittings for pipes of different diameter. Relief ports 3 and 5 can be either connected using a silencer or conveyed via a fitting.

A version with separate ports 3 and 5 is also available. This feature is useful in versions with pilot servo-assistance to power the valves from ports 3 and 5, at different pressures, from vacuum to 8 bar.

The lower body of the intermediate plate comes with different air flow ducts: with full flow ports or one or more closed ports.



TECHNICAL DATA

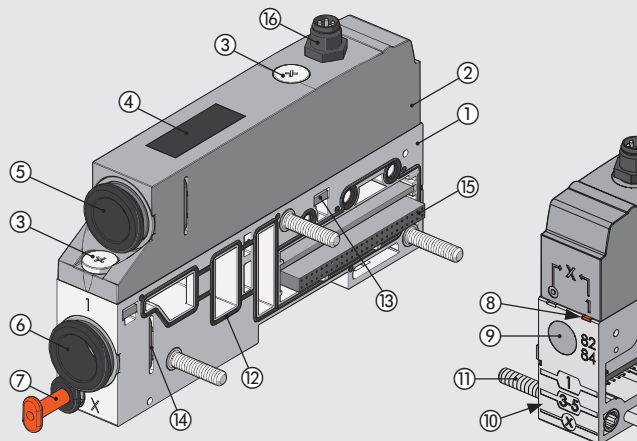
Operating pressure	Vacuum to 10 bar / Vacuum to 1 MPa / Vacuum to 145 psi			
Ambient temperature	-10 to + 50 °C / 14 to 122 °F			
Flow rate at 6.3 bar ΔP 1 bar	$\varnothing$ 8 (5/16")	$\varnothing$ 10	$\varnothing$ 12	$\varnothing$ 1 1/2"
Feeding (port 1)	Nl/min	1800	2800	3500
Exhaust with fitting (ports 3 and 5)	Nl/min	2000	3200	4400
Separate exhausts $\varnothing$ 8	Nl/min	1800 x 2	-	-
Flow rate at 6.3 bar free exhaust				
Exhaust with fitting (ports 3 and 5)	Nl/min	2700	3900	6100
Silenced exhaust	Nl/min		3600	6100
Exhaust with fitting $\varnothing$ 12 and silencer W0970530086	Nl/min		6000	
Separate exhausts $\varnothing$ 8 (N.B.: Pmax 8 bar)	Nl/min	2700 x 2	-	-
Fluid	Unlubricated air			
Additional electrical power supply	M8 4-pin connector *			
Voltage range	VDC	12 to 31.2		
Maximum number of solenoid pilots that can be actuated simultaneously from the additional electrical connection:		With 100% simultaneity: 48 / With 60% simultaneity: 80		
at 24VDC		With 100% simultaneity: 32 / With 60% simultaneity: 64		
at 12VDC		Pipe fittings $\varnothing$ 8, 10, 12, 1 1/2"; Silenced relief, conveyed relief, ports 3 and 5 separate		
Versions		Full-flow ports in the base, 1 closed, 1, 3 and 5 closed, 3 and 5 closed, 1, 3, 5 and X closed		
		With or without additional electrical power supply		
		IP65 (with connectors connected or plugged if not used)		
Degree of protection				

IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

* If electric power is not supplied: the red power LED light comes on and the LEDs at the base keep flashing (voltage out of range); in the version with multi-pin electrical connection, the "OUT" fault signal is triggered; in the version with fieldbus, a software message is sent.

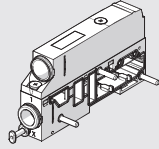
COMPONENTS

- ① LOWER PART BODY: technopolymer
- ② UPPER PART BODY: technopolymer
- ③ SCREWS for fixing between the bodies: zinc-plated steel (Tightening torque: 1.2 Nm)
- ④ TAG with laser-etched wording: technopolymer
- ⑤ AIR RELIEF: silencer or pipe fitting
- ⑥ POWER SUPPLY: pipe fitting
- ⑦ PILOTING (X): pipe fitting $\varnothing$ 4
- ⑧ INDICATOR: indicating whether power supply to pilots is separate or not
- ⑨ PILOT RELIEF: silencer in HDPE
- ⑩ PICTOGRAM: indication of compressed air system layout
- ⑪ TIE RODS: zinc-plated steel
- ⑫ GASKET: NBR
- ⑬ THREADED PLATE: zinc-plated steel
- ⑭ CARTRIDGE FIXING CLIP: stainless steel
- ⑮ ELECTRONIC BOARD
- ⑯ M8 CONNECTOR: only for version with additional electrical power supply

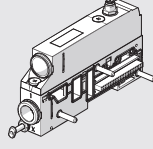


DIMENSIONS - ORDERING CODES

INTERMEDIATE MODULE - SILENCED RELIEF

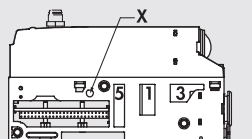
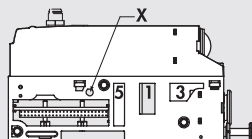
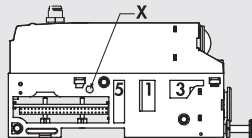
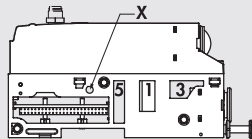
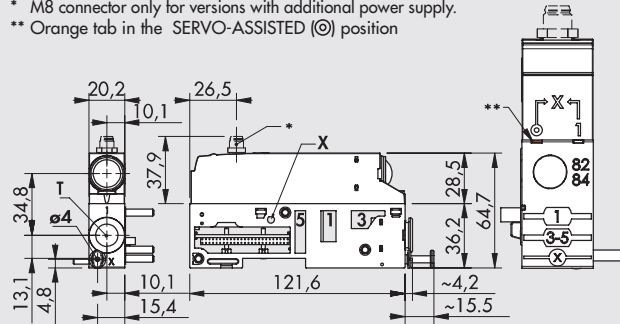


WITHOUT additional
electrical power supply



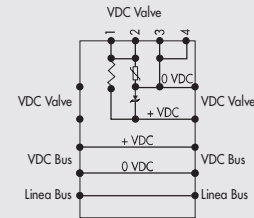
WITH additional
electric power supply

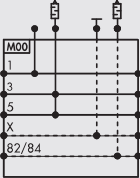
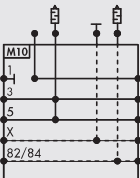
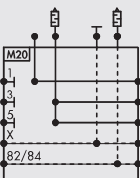
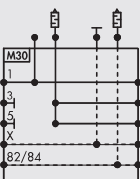
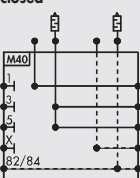
- * M8 connector only for versions with additional power supply.
 ** Orange tab in the SERVO-ASSISTED (©) position



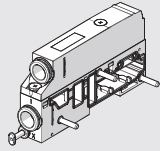
WIRING DIAGRAM INTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

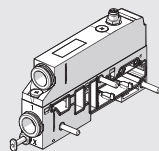


Symbol	T Pipe fitting	Code Additional electric power supply WITHOUT WITH		Weight [g]
Full-flow ports				
	Ø 8 (5/16")	02282M100Z00	02282M101Z01	160
	Ø 10	02282M200Z00	02282M201Z01	160
	Ø 12	02282M300Z00	02282M301Z01	150
	Ø 1/2"	02282M500Z00	02282M501Z01	150
				
Port 1 closed				
	Ø 8 (5/16")	02282M110Z00	02282M111Z01	160
	Ø 10	02282M210Z00	02282M211Z01	160
	Ø 12	02282M310Z00	02282M311Z01	150
	Ø 1/2"	02282M510Z00	02282M511Z01	150
				
Ports 1, 3 and 5 closed				
	Ø 8 (5/16")	02282M120Z00	02282M121Z01	160
	Ø 10	02282M220Z00	02282M221Z01	160
	Ø 12	02282M320Z00	02282M321Z01	150
	Ø 1/2"	02282M520Z00	02282M521Z01	150
				
Ports 3 and 5 closed				
	Ø 8 (5/16")	02282M130Z00	02282M131Z01	160
	Ø 10	02282M230Z00	02282M231Z01	160
	Ø 12	02282M330Z00	02282M331Z01	150
	Ø 1/2"	02282M530Z00	02282M531Z01	150
				
Ports 1, 3, 5 and X closed				
	Ø 8 (5/16")	02282M140Z00	02282M141Z01	160
	Ø 10	02282M240Z00	02282M241Z01	160
	Ø 12	02282M340Z00	02282M341Z01	150
	Ø 1/2"	02282M540Z00	02282M541Z01	150
				

INTERMEDIATE MODULE - CONVEYED RELIEF

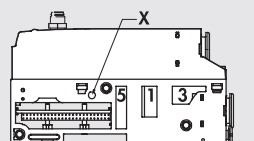
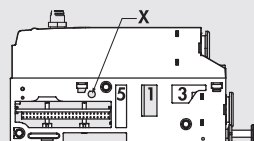
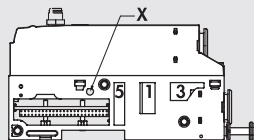
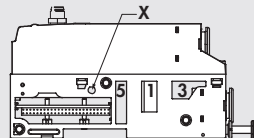
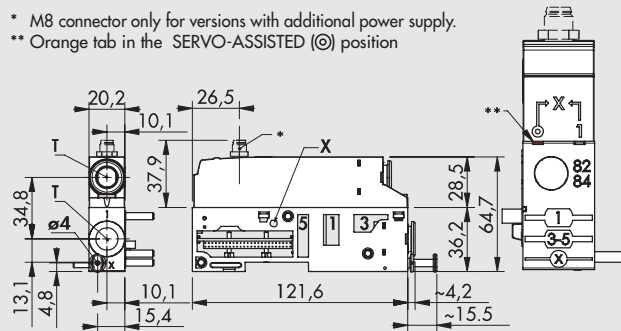


WITHOUT additional electrical power supply



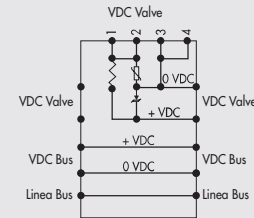
WITH additional electric power supply

- * M8 connector only for versions with additional power supply.
- ** Orange tab in the SERVO-ASSISTED (©) position



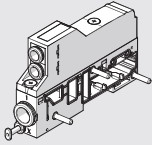
WIRING DIAGRAM INTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

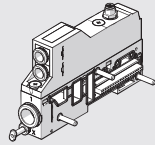


Symbol	T Pipe fitting	Code Additional electric power supply WITHOUT WITH		Weight [g]
Full-flow ports				
	Ø 8 [5/16"]	02282M100Z10	02282M101Z11	160
	Ø 10	02282M200Z20	02282M201Z21	160
	Ø 12	02282M300Z30	02282M301Z31	150
	Ø 1/2"	02282M500Z50	02282M501Z51	150
Port 1 closed				
	Ø 8 [5/16"]	02282M110Z10	02282M111Z11	160
	Ø 10	02282M210Z20	02282M211Z21	160
	Ø 12	02282M310Z30	02282M311Z31	150
	Ø 1/2"	02282M510Z50	02282M511Z51	150
Ports 1, 3 and 5 closed				
	Ø 8 [5/16"]	02282M120Z10	02282M121Z11	160
	Ø 10	02282M220Z20	02282M221Z21	160
	Ø 12	02282M320Z30	02282M321Z31	150
	Ø 1/2"	02282M520Z50	02282M521Z51	150
Ports 3 and 5 closed				
	Ø 8 [5/16"]	02282M130Z10	02282M131Z11	160
	Ø 10	02282M230Z20	02282M231Z21	160
	Ø 12	02282M330Z30	02282M331Z31	150
	Ø 1/2"	02282M530Z50	02282M531Z51	150
Ports 1, 3, 5 and X closed				
	Ø 8 [5/16"]	02282M140Z10	02282M141Z11	160
	Ø 10	02282M240Z20	02282M241Z21	160
	Ø 12	02282M340Z30	02282M341Z31	150
	Ø 1/2"	02282M540Z50	02282M541Z51	150

INTERMEDIATE MODULE - SEPARATE RELIEF

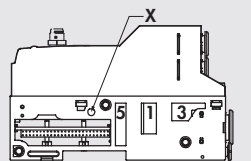
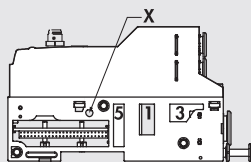
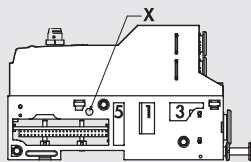
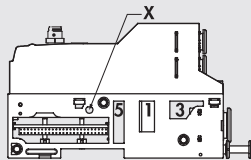
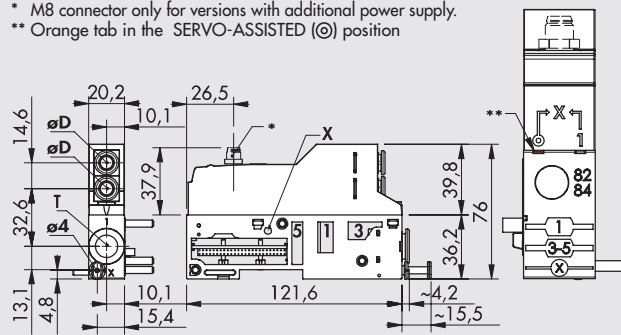


WITHOUT additional electrical power supply



WITH additional electrical power supply

- * M8 connector only for versions with additional power supply.
 ** Orange tab in the SERVO-ASSISTED (©) position

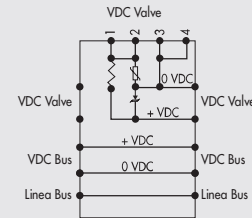


WIRING DIAGRAM INTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

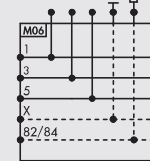


- 1 = + VDC
 2 = + VDC
 3 = GND
 4 = GND

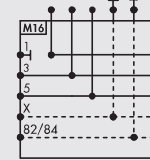


N.B.: Maximum pressure in the ports 3 and 5: 8 bar

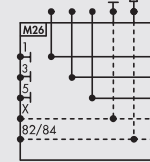
Symbol	T Pipe fitting	Code Additional electric power supply WITHOUT	Code WITH	Weight [g]
Full-flow ports	Ø 8 (5/16")	02282M100Z_0	02282M101Z_1	190
	Ø 10	02282M200Z_0	02282M201Z_1	190
	Ø 12	02282M300Z_0	02282M301Z_1	180
	Ø 1/2"	02282M500Z_0	02282M501Z_1	180



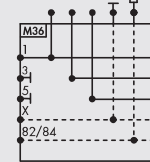
Port 1 closed	Ø 8 (5/16")	02282M110Z_0	02282M111Z_1	190
	Ø 10	02282M210Z_0	02282M211Z_1	190
	Ø 12	02282M310Z_0	02282M311Z_1	180
	Ø 1/2"	02282M510Z_0	02282M511Z_1	180



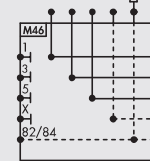
Ports 1, 3 and 5 closed	Ø 8 (5/16")	02282M120Z_0	02282M121Z_1	190
	Ø 10	02282M220Z_0	02282M221Z_1	190
	Ø 12	02282M320Z_0	02282M321Z_1	180
	Ø 1/2"	02282M520Z_0	02282M521Z_1	180



Ports 3 and 5 closed	Ø 8 (5/16")	02282M130Z_0	02282M131Z_1	190
	Ø 10	02282M230Z_0	02282M231Z_1	190
	Ø 12	02282M330Z_0	02282M331Z_1	180
	Ø 1/2"	02282M530Z_0	02282M531Z_1	180



Ports 1, 3, 5 and X closed	Ø 8 (5/16")	02282M140Z_0	02282M141Z_1	190
	Ø 10	02282M240Z_0	02282M241Z_1	190
	Ø 12	02282M340Z_0	02282M341Z_1	180
	Ø 1/2"	02282M540Z_0	02282M541Z_1	180



_ = To complete the code enter: 6: ØD = 8 mm; 7: ØD = 6 mm; 8: ØD = 4 mm

KEY TO CODES

02282 FAMILY	M SUBSYSTEM	3 PORT FITTING 1	0 PORTS IN THE BASE	0 ADDITIONAL ELECTRICAL POWER SUPPLY	Z UPPER PART	3 PORTS 3 AND 5 FITTING	0 ELECTRICAL CONNECTOR
02282 EB 80	M Intermediate	1 Pipe fitting Ø 8 (5/16") 2 Pipe fitting Ø 10 3 Pipe fitting Ø 12 5 Pipe fitting Ø 1/2"	0 Full-flow ports 1 Port 1 closed 2 Ports 1, 3 and 5 closed 3 Ports 3 and 5 closed 4 Ports 1, 3, 5 and X closed	■ 0 Without ● 1 With	Z The upper part is present	0 Silencer ▲ 1 Pipe fitting Ø 8 (5/16") ▲ 2 Pipe fitting Ø 10 ▲ 3 Pipe fitting Ø 12 ▲ 5 Pipe fitting Ø 1/2" 6 2 pipes fitting Ø 8 (5/16") (one for port 3, one for port 5) 7 2 pipes fitting Ø 6 (one for port 3, one for port 5) 8 2 pipes fitting Ø 4 (5/32") (one for port 3, one for port 5)	■ 0 Without ● 1 With

▲ For ports 3/5, use the same Ø pipe as port 1.

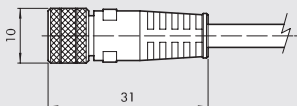
■ Same number for both positions.

● Same number for both positions.

ACCESSORIES

M8 CONNECTOR FOR POWER SUPPLY

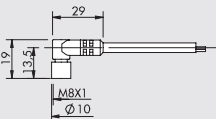
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m
* Very flexible cables, class 6 according to IEC 60228	

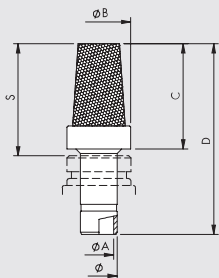
M8 90° CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009103	M8 4-pin connector - female, 90° angle L = 5 m

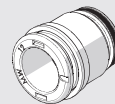
SILENCER FOR FITTING



Code	Description	Flow rate at 6.3 bar [Nl/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15
W0970530086	Silencer for fitting, Ø 12	6000	24

SPARE PARTS

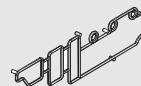
CARTRIDGE



Code	Description	Ø
02282R2110	EB 80 silencer cartridge kit	silencer
02282R2113	EB 80 Ø 8 power supply round cartridge kit	8 (5/16")
02282R2114	EB 80 Ø 10 power supply round cartridge kit	10
02282R2115	EB 80 Ø 12 power supply round cartridge kit	12
02282R2118	EB 80 Ø 1/2 power supply round cartridge kit	1/2"

Comes in 10-pc. packs

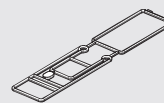
BASE INTERFACE GASKET



Code	Description
02282R1000	EB 80 base interface gasket kit

Comes in 10-pc. packs

LOWER /UPPER BODY GASKET



Code	Description
02282R1001	EB 80 lower/upper body gasket kit

Comes in 10-pc. packs

The "Closed end-plate - C" is the last element of each EB 80 system. A version for islands with multi-pole connector is available. One for islands with fieldbus, containing a small electronic board; one for connection to other additional EB 80 islands (only for systems with fieldbus). The end plate houses the system for mechanically fixing the island to external supports.

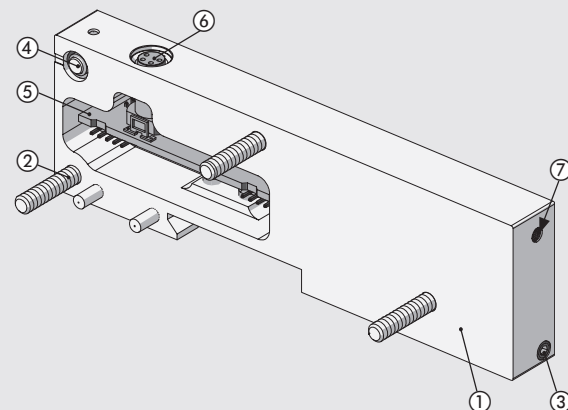


TECHNICAL DATA

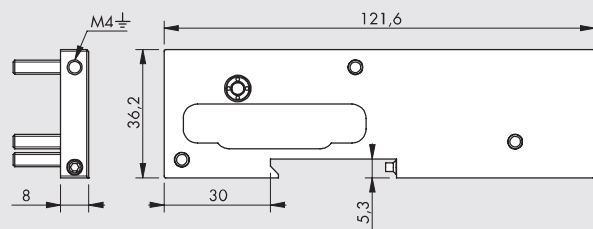
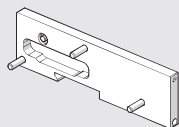
[illegible]

COMPONENTS

- ① BODY: painted metal
- ② FIXING SCREW: TCE M4x20 zinc-plated steel
- ③ GRUB SCREW securing the DIN bar or bracket: zinc-plated steel
- ④ RELIEF VALVE: safety in case of internal pressure increase due to temperature or losses
- ⑤ ELECTRONIC BOARD: none in the Closed end-plate for islands with multi-pole connector
- ⑥ M8 CONNECTOR: only in the Closed end-plate for connection with additional islands
- ⑦ GROUNDING $\perp$

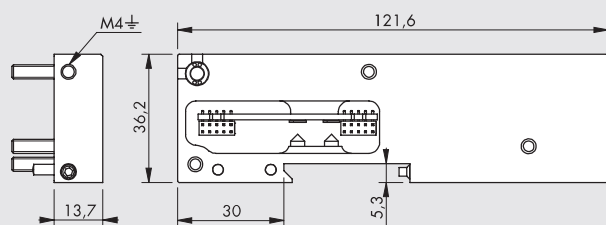
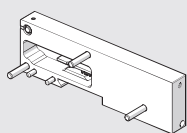


CLOSED END-PLATE FOR ISLANDS WITH MULTI-POLE CONNECTOR



Code	Description	Weight [g]
02282C1	Closed end-plate for islands with multi-pole connector	150

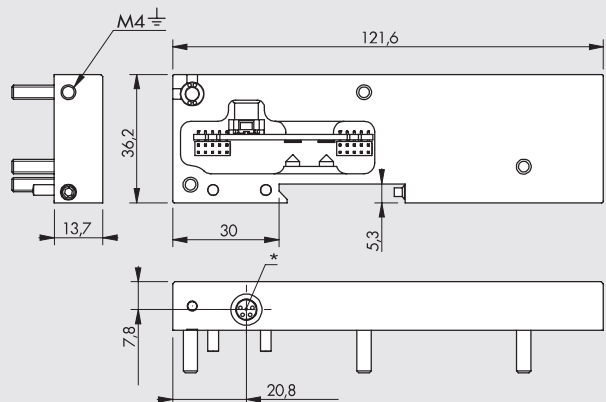
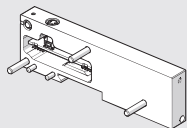
Symbol



Code	Description	Weight [g]
02282C2	Closed end-plate for islands with fieldbus	220

Note: also usable for islands with multi-pole connector

Symbol



Code	Description	Weight [g]
02282C3	Closed end-plate for electrical connection to additional islands	150

Note: if you do not connect additional island you must mount the M8 end connector

* M8 connector for connection to additional islands.

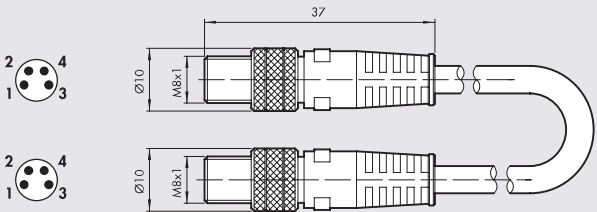
N.B.: The system does not work until the connector is connected to the "Additional electrical connection - E" module.

KEY TO CODES

02282	C	1
FAMILY	SUBSYSTEM	TYPE
02282 EB 80	C Closed end-plate	1 For islands with multi-pole connection 2 For islands with fieldbus 3 For connection to additional islands

ACCESSORIES

M8 CONNECTOR WITH CABLE FOR CONNECTION BETWEEN EB 80 ISLANDS

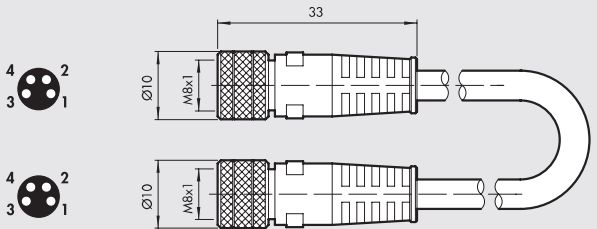


Code	Description	Weight [g]
0240010201	M8-M8 4-pin male straight connector with shielded cable L = 1 m	45
0240010205	M8-M8 4-pin male straight connector with shielded cable L = 5 m	185
0240010210	M8-M8 4-pin male straight connector with shielded cable L = 10 m	330
0240010215	M8-M8 4-pin male straight connector with shielded cable L = 15 m	475
0240010220	M8-M8 4-pin male straight connector with shielded cable L = 20 m	620
0240010405 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 5 m	185
0240010410 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 10 m	330
0240010415 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 15 m	475
0240010420 *	M8-M8 4-pin male straight connector with shielded cable H-FLEX CL6, L = 20 m	620

* Very flexible cables, class 6 according to IEC 60228

N.B.: For correct operation of the entire EB 80 system, use M8-M8 pre-wired, twisted and shielded cables only.

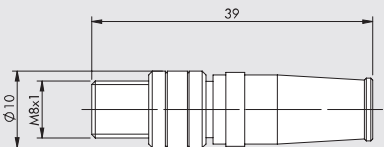
M8 ADAPTER CABLE



Code	Description	Weight [g]
0240010350	M8-M8 4-pin female adapter cable with shielded cable L = 200 mm	16

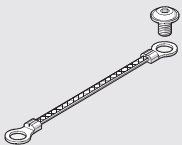
N.B.: Cannot be used with cables for mobile laying (H-FLEX CL6)

M8 END CONNECTOR FOR EB 80 VALVES



Code	Description
02282R5000	M8 end connector for EB 80 valves

BRAIDED GROUNDING CABLE



Code	Description
02282R6000	Braided grounding cable

EB 80 BOXI

Being extremely modular, the EB 80 electro-pneumatic system is ideal for the construction of all types of valve island and size. This great versatility is not always being utilized, especially in the case of applications where only a few valves are needed and where there is no need to handle input or output signals.

BOXI was designed to best meet this requirement for simplicity.

Each version includes pneumatic and electrical connections, control electronics and the possibility of installing 4, 6, 8 or 12 valves.

BOXI retains most of the features that have made the EB 80 so popular, namely:

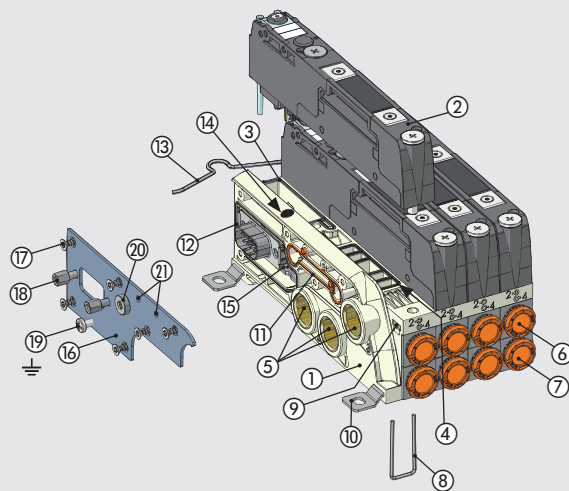
- All the EB 80 valves, from the twin 2/2 to the high-flow models, can be installed.
- Can be powered at 12VDC or 24VDC.
- Bases with single or double electric control, featuring interchangeable cartridge fittings.
- Only 0.3 W to keep each valve controlled.
- Diagnostics (open circuit, overload, voltage short-circuit) with LED signal lights.
- Possibility of connecting multifunction modules to the outputs.

In addition, an extra supply and drain module to be fitted onto the 6, 8 or 12-position islands downstream the solenoid valves can be requested when ordering.



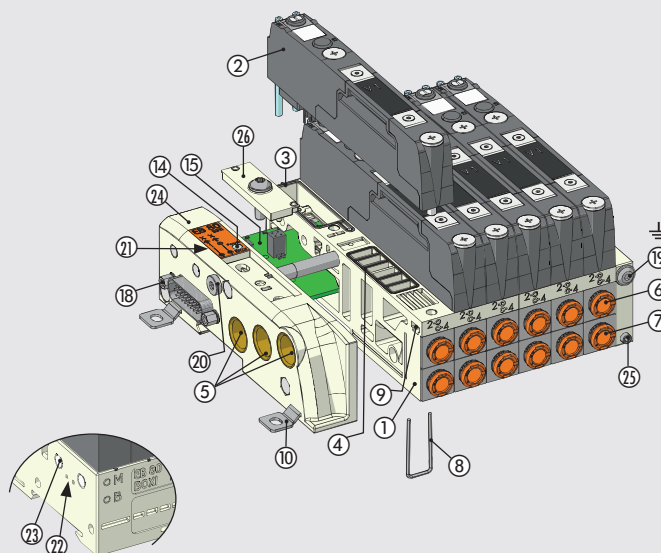
COMPONENTS

4-position valve island



- ① BASE: technopolymer
- ② EB 80 VALVE (see page B2.5 and page B2.56)
- ③ GASKET: NBR
- ④ VALVE GASKET: NBR
- ⑤ PORTS 1-3-5: brass threaded element
- ⑥ PORT 2 CARTRIDGE: push-in fitting
- ⑦ PORT 4 CARTRIDGE: push-in fitting
- ⑧ CLIP for securing the cartridge: stainless steel
- ⑨ THREADED PLATE for securing the valves: zinc-plated steel
- ⑩ FIXING FOOT: zinc-plated steel
- ⑪ GASKET FOR SERVO-ASSISTING: NBR
- ⑫ GASKET FOR IP65: NBR
- ⑬ SPRING CLIP for omega bar: stainless steel
- ⑭ Alarm LED light display: technopolymer
- ⑮ ELECTRONIC BOARD

6-8-12-position valve island



- ⑮ ELECTRONIC BOARD
- ⑯ END PLATE: stainless steel
- ⑰ SCREW FOR FIXING THE CLOSING PLATE TO THE BASE: zinc-plated steel
- ⑱ ELECTRIC CONNECTOR FIXING COLUMNS: nickel-plated brass
- ⑲ GROUNDING SCREW: zinc-plated steel
- ⑳ A7/M5 PLUG (in the non-servo-assisted version only): nickel-plated brass
- ㉑ INDICATOR: indicates whether pilot power supply is separate or not
- ㉒ RELIEF VALVE: safety in case of internal pressure increase due to temperature or losses
- ㉓ PILOT RELIEF: HDPE silencer
- ㉔ INPUT TERMINAL: technopolymer
- ㉕ GRUB SCREW securing the DIN bar or bracket: zinc-plated steel
- ㉖ INTERLOCKING SELECTOR SWITCH: zinc alloy

TECHNICAL DATA

Supply voltage range	VDC	12 -10%	24 +30%
Minimum operating voltage	VDC	10.8 *	
Maximum operating voltage	VDC	31.2	
Maximum admissible voltage	VDC	32 ***	
Power for each controlled pilot	W	3 for 15 ms, then holding 0.3	
Drive		PNP	
Solenoid rating		100% ED	
Protection		Overload protection	
Grounding		With screw on a metal closing plate	
Diagnostics		LED light signal on the base	
Faults signalled		Solenoid pilot broken or missing; solenoid pilot overload.	
Type of electric solenoid pilot control		power supply out of range	
Electrical connection		Version with one electric control at each valve position	
Ambient temperature	°C	Version with two electric controls at each valve position	
Operating pressure	°F	D-Sub 9-pin multipole (BOXI 4-position); D-Sub 26-pin multipole (BOXI 6, 8, 12-position)	
Non-assisted valves	bar	IO-Link with M12x1 connector (BOXI 4-position)	
Assisted valves	MPa	-10 to + 50 (at 8 bar)	
Servo pressure	psi	14 to 122 (at 8 bar)	
Pneumatic fittings	bar	5/2 and 5/3	2/2 and 3/2
Pneumatic outputs	MPa	3 to 8	3.5 to 8
Flow rate at 6.3 bar ΔP 1 bar Feeding (port 1)	Nl/min	0.3 to 0.8	0.35 to 0.8
6.3 bar flow rate with free exhaust from ports 3 and 5	Nl/min	43 to 116	51 to 116
Valve flow rate, at 6.3 bar ΔP 1 bar			
valve 2/2 Nl/min		Vacuum to 10	
valve 3/2 Nl/min		Vacuum to 1	
valve 5/2 Nl/min		Vacuum to 145	
valve 5/3 Nl/min		3 to 8	min (see graph on page B2.57) / max. 8
valve V3V (R) Nl/min		0.3 to 0.8	min (see graph on page B2.57) / max. 0.8
Actuation response time (TRA) / reset response time (TRR) at 6 bar		43 to 116	min (see graph on page B2.57) / max. 116
TRA/TRR valve 2/2 and 3/2	ms		Supply (port 1) and exhaust (ports 3 and 5): 1/4" G (BSP) or 1/4" NPT.
TRA/TRR valves 5/2 monostable and shut-off valve	ms		Piloting (X): M5 or 10/32" UNF (with adapter)
TRA/TRR valve 5/2 bistable	ms		Pipe fittings Ø 4 (5/32"), 6, 8 (5/16"), 1/4"
TRA/TRR valve 5/3	ms		4500
TRA/TRR valve 3/2 high flow	ms		5500 + 5500
Fluid			
Air quality required			
Degree of protection			
Category ATEX			
Certifications			
Weight (without valves)	g		

* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Using high-flow valves or connected valves - see pages B2.58

*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

CERTIFICATIONS

The **cRU** certification for the part concerning only CSA (Canada) is bound to the following conditions of use:

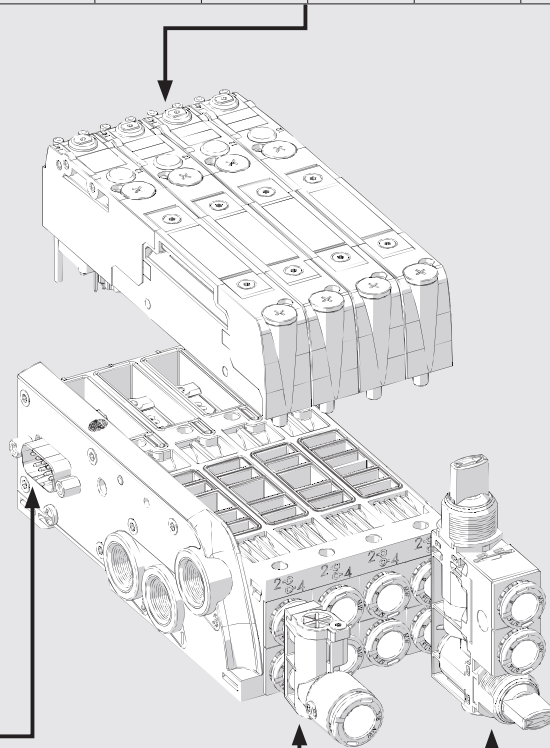
- environment temperature: max 45°C
- ED max 70%

If non-adjoint valves are used, ED max can reach 100% (environment temperature max 45°C)

THE EB 80 BOXI WORLD

VALVES

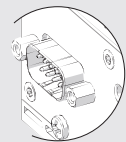
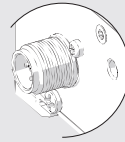
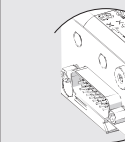
Z_ ▲	L_ ▲	W_ ▲	L_ ▲	V_	K_ ▲	O_ ▲	G_	J_	R_ +	N0	Y8
											
2 valves 2/2 NC	2 valves 3/2 NC (valid as 5/3 OC)	2 valves 3/2 NO (valid as 5/3 PC)	3/2 NC + 3/2 NO	Monostable 5/2	Bistable 5/2	5/3 CC	3/2 NC high flow	3/2 NO high flow	Shut-off valve	Dummy valve	Bypass
See page B2.57	See page B2.57	See page B2.57	See page B2.57	See page B2.57	See page B2.57	See page B2.57	See page B2.58	See page B2.58	See page B2.59	See page B2.60	See page B2.60



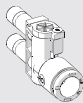
▲ Can only be used with 8 control bases.

+ Requires inlet port X slave synchronisation.

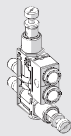
ELECTRICAL CONNECTION

4-position		6-8-12-position
		
D-Sub 9-pin multipole	IO-Link M12x1 5 pin coding A	D-Sub 26-pin multipole
See page B2.82	See page B2.82	See page B2.90

Y-FITTING

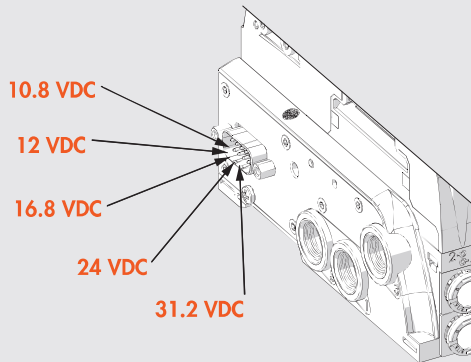
R2

Y-fitting
See page B2.61

MULTI-FUNCTION MODULE


Fittings with pneumatic functions
See page B2.92

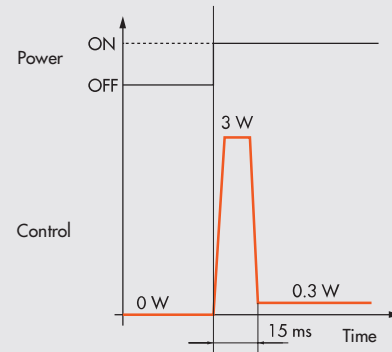
SOME CHARACTERISTICS OF EB 80 BOXI SYSTEMS

THE SAME ISLAND CAN BE SUPPLIED 10.8 - 31.2 VDC



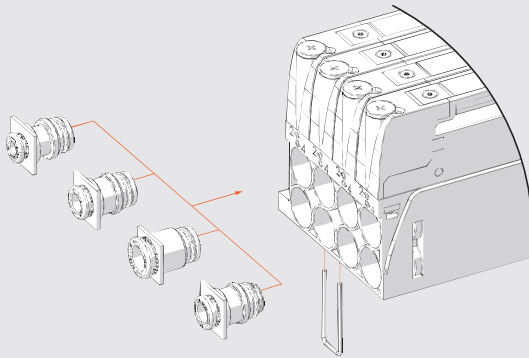
ONLY 0.3 W FOR EACH SOLENOID VALVE

- Speed-up solenoid valve control:
 - high power for a few milliseconds ensures high performance and rapid and safe switching;
 - reduced holding power resulting in reduced temperatures and energy saving.



INTERCHANGEABLE CARTRIDGE FITTINGS

- For pipes $\varnothing$ 4 (5/32"), 6, 8 (5/16"), 1/4"

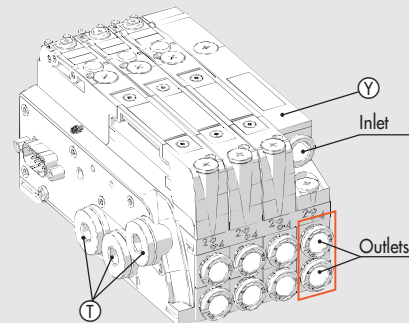


FRONT SUPPLY AND EXHAUSTS

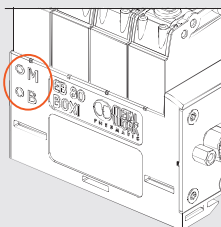
On the BOXI islands, a Bypass module (Y) can be mounted in any position instead of a solenoid valve so as to obtain all front pneumatic connections.

In the case of 6-8-12-position islands, the additional power supply can be used (see page B2.90), so that no electrical control is lost and the number of useful valves remains unchanged.

The side inlets must be closed with A7 1/4 plugs (T).



TYPE OF DATA IN THE BASES



● M = only one electrical control for each position. Can only be used with valves with one solenoid pilot, types V, J, G and R. If you use a N dummy or Y bypass valve, it is occupied an electric position.

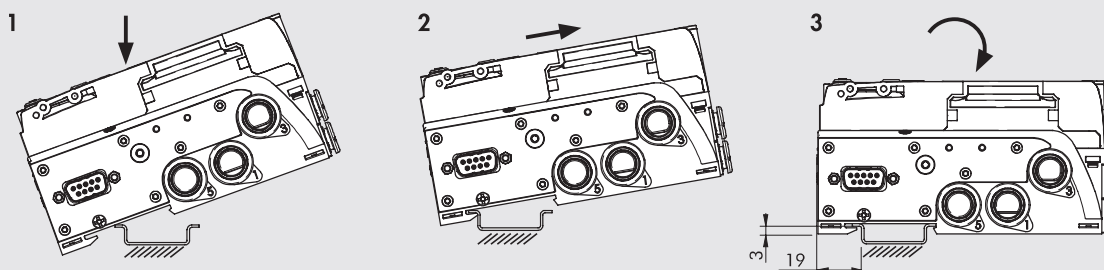
○ M = 2 electrical controls for each position. It can be used for all types of valves. If you use a V, G, J or R type valves (with only one solenoid pilot), N dummy or Y bypass valve, both electrical positions get occupied.

EB 80 BOXI - 4-POSITION VALVE ISLAND

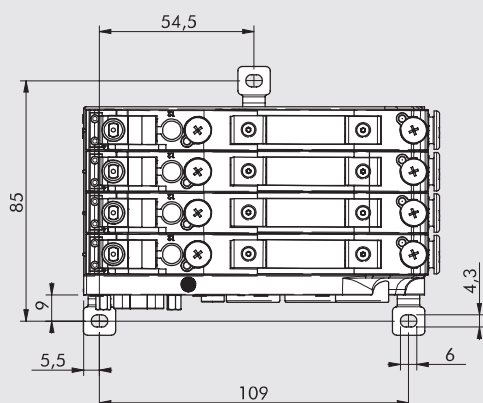
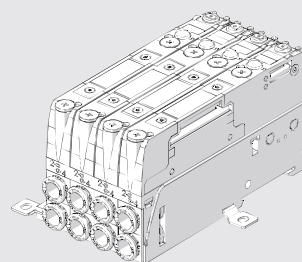
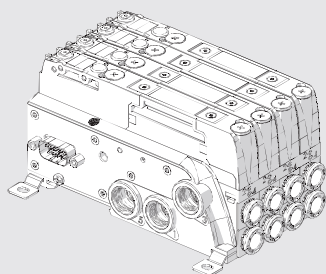


FIXING OPTIONS

Fixing on a DIN bar: fixing on a DIN bar in the sequence indicated.

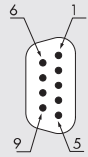


Fixing by means of brackets: 3 brackets are already included in each EB 80 BOXI pack. Push them firmly into the appropriate seats on the base up to the "click".



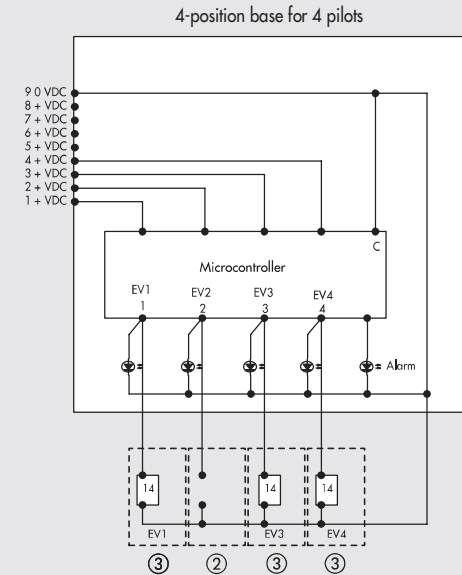
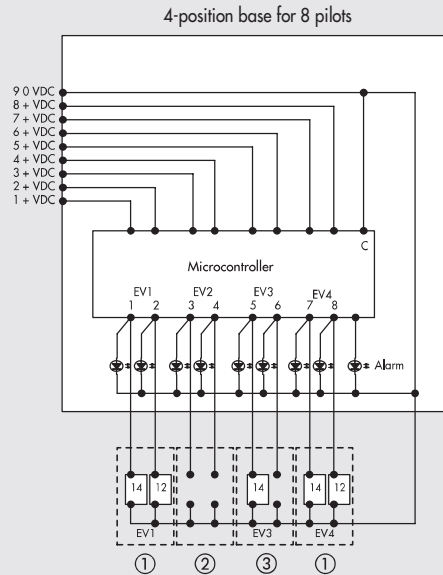
EB 80 BOXI WIRING DIAGRAM

D-Sub 9-PIN CONNECTOR



Examples of types of valves:

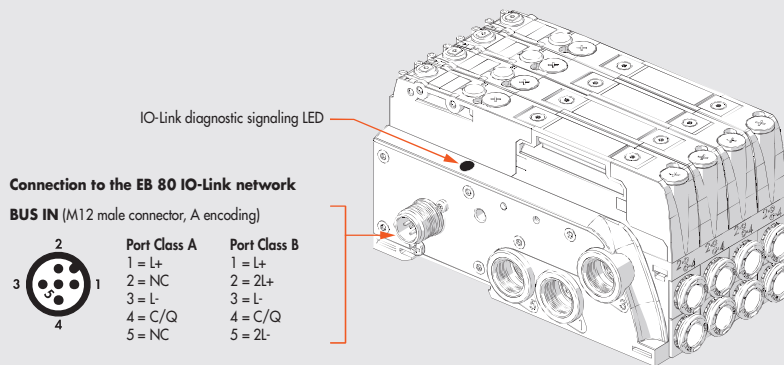
- ① Valve with 2 solenoid pilots
- ② Dummy valve or bypass
- ③ Valve with 1 solenoid pilot



VALVES

EB 80 BOXI - 4-POSITION VALVE ISLAND

EB 80 BOXI IO-Link WIRING DIAGRAM



TECHNICAL DATA		IO-Link version 1.1	
Fieldbus		230.4 (COM3)	
Communication speed	Kbps	1046 (hex 0x0416) / 8 (hex 0x000008)	
Vendor ID / Device ID		2.8	
Minimum cycle time	ms	1 byte of Input / 1 byte of Output	
Process data length		12 -10% 24 +30%	
Supply voltage range (M8 connector)	VDC	10.8 *	
Minimum operating voltage	VDC	31.2	
Maximum operating voltage	VDC	32 ***	
Maximum admissible voltage	VDC	min 20, max 30	
IO-Link power supply (L+L - Bus IN connector)	VDC	Module protected from overload and polarity inversion. Outputs protected from overloads.	
Protection		M12 male, A-coded - Port Class A - Port Class B.	
Connections		IO-Link: via local LED lights and software messages. Outputs: via local LED	
Diagnostics**		See EB 80 Boxi IO-Link instruction manual	
Power supply current absorption		8	
Maximum number of pilots		0 = non-active; 1 = active	
Data bit value		Configurable for each output: non-active, holding of the state, setting of a preset state	
State of outputs in the absence of communication			

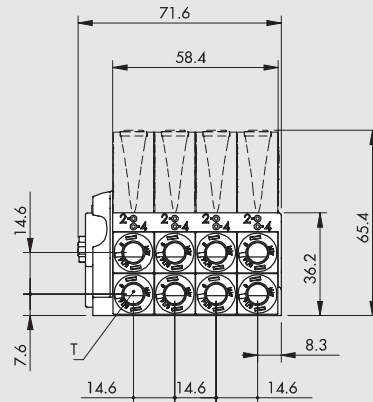
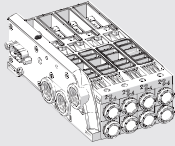
* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

** Refer to the user manual for a detailed description.

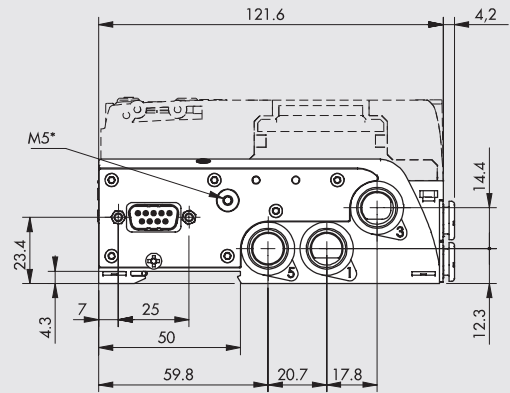
*** IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

DIMENSIONS - ORDERING CODES

EB 80 BASE BOXI WITH D-Sub 9-PIN MULTIPOLE ELECTRICAL CONNECTION



* Pilot (only for servo-assisted version)



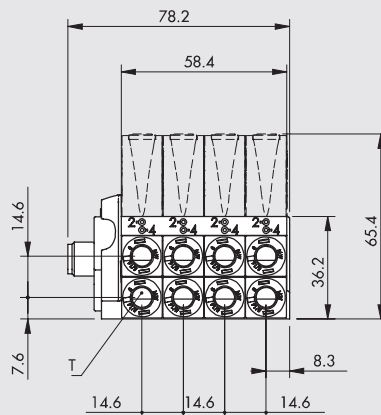
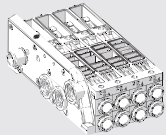
Port threads 1, 3, 5 in G (BSP)

		Code	
	T - Pipe fitting	4 CONTROLS	8 CONTROLS
Servo-assisted	without cartridges	0228BGX4M1111	0228BGX8M1111
	Ø 4 (5/32")	0228BGX4M4444	0228BGX8M4444
	Ø 6	0228BGX4M6666	0228BGX8M6666
	Ø 8 (5/16")	0228BGX4M8888	0228BGX8M8888
	Ø 1/4"	0228BGX4M2222	0228BGX8M2222
Non-servo-assisted	without cartridges	0228BG14M1111	0228BG18M1111
	Ø 4 (5/32")	0228BG14M4444	0228BG18M4444
	Ø 6	0228BG14M6666	0228BG18M6666
	Ø 8 (5/16")	0228BG14M8888	0228BG18M8888
	Ø 1/4"	0228BG14M2222	0228BG18M2222

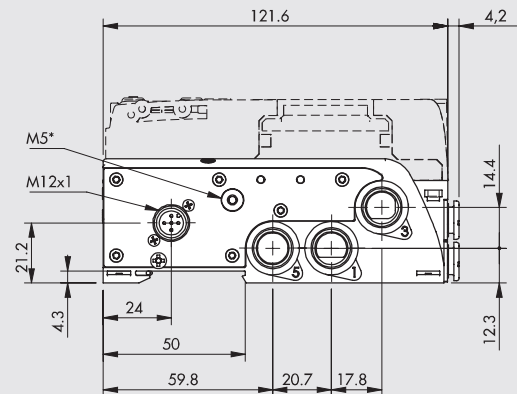
Port threads 1, 3, 5 in NPT

		Code	
	T - Pipe fitting	4 CONTROLS	8 CONTROLS
Servo-assisted	without cartridges	0228BUX4M1111	0228BUX8M1111
	Ø 4 (5/32")	0228BUX4M4444	0228BUX8M4444
	Ø 6	0228BUX4M6666	0228BUX8M6666
	Ø 8 (5/16")	0228BUX4M8888	0228BUX8M8888
	Ø 1/4"	0228BUX4M2222	0228BUX8M2222
Non-servo-assisted	without cartridges	0228BU14M1111	0228BU18M1111
	Ø 4 (5/32")	0228BU14M4444	0228BU18M4444
	Ø 6	0228BU14M6666	0228BU18M6666
	Ø 8 (5/16")	0228BU14M8888	0228BU18M8888
	Ø 1/4"	0228BU14M2222	0228BU18M2222

EB 80 BASE BOXI WITH ELECTRICAL CONNECTION IO-Link (M12x1)



* Pilot (only for servo-assisted version)



Port threads 1, 3, 5 in G (BSP)

		Code
	T - Pipe fitting	8 CONTROLS
Servo-assisted	without cartridges	0228BGX8L1111
	Ø 4 (5/32")	0228BGX8L4444
	Ø 6	0228BGX8L6666
	Ø 8 (5/16")	0228BGX8L8888
	Ø 1/4"	0228BGX8L2222
Non-servo-assisted	without cartridges	0228BG18L1111
	Ø 4 (5/32")	0228BG18L4444
	Ø 6	0228BG18L6666
	Ø 8 (5/16")	0228BG18L8888
	Ø 1/4"	0228BG18L2222

Port threads 1, 3, 5 in NPT

		Code
	T - Pipe fitting	8 CONTROLS
Servo-assisted	without cartridges	0228BUX8L1111
	Ø 4 (5/32")	0228BUX8L4444
	Ø 6	0228BUX8L6666
	Ø 8 (5/16")	0228BUX8L8888
	Ø 1/4"	0228BUX8L2222
Non-servo-assisted	without cartridges	0228BU18L1111
	Ø 4 (5/32")	0228BU18L4444
	Ø 6	0228BU18L6666
	Ø 8 (5/16")	0228BU18L8888
	Ø 1/4"	0228BU18L2222

KEY TO CODING OF THE EB 80 BOXI WITHOUT VALVES

0228B FAMILY	G PORT THREADS 1, 3, 5	1 PILOTING	8 NUMBER OF SOLENOID PILOT CONTROLS	M ELECTRICAL CONNECTION	4 1° position (from left)	4 2° position	4 3° position	4 4° position
0228B EB 80 BOXI	G 1/4" G (BSP) U 1/4" NPT	1 Non-servo-assisted X Servo-assisted	4 4 controls 8 8 controls	M D-Sub 9-pin multipole connection M D-Sub 9-pin multipole connection L IO-Link, M12x1	1 The whole base without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")			

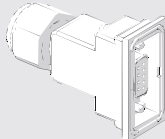
KEY TO CODING OF THE EB 80 BOXI COMPLETE WITH VALVES

0228B FAMILY	G PORT THREADS 1, 3, 5	1 PILOTING	8 NUMBER OF SOLENOID PILOT CONTROLS	M ELECTRICAL CONNECTION	4 1° position (from left)	4 2° position	4 3° position	4 4° position	0 MANUAL CONTROL	V V K I VALVES
0228B EB 80 BOXI	G 1/4" (BSP) U 1/4" NPT	1 Non-servo-assisted X Servo-assisted	4 4 controls 8 8 controls	M D-Sub 9-pin multipole connection M D-Sub 9-pin multipole connection L IO-Link, M12x1	1 The whole base without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")				0 Monostable 1 Bistable	V 5/2 monostable G 3/2 NC high flow J 3/2 NO high flow + R Shut-off valve Y Bypass N Dummy valve (plug) Z 2 valves 2/2 NC I 2 valves 3/2 NC W 2 valves 3/2 NO L 3/2 NC + 3/2 NO V 5/2 monostable K 5/2 bistable O 5/3 CC G 3/2 NC high flow J 3/2 NO high flow + R Shut-off valve N Dummy valve (plug)

+ Requires inlet port X slave synchronisation.

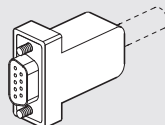
ACCESSORIES

STRAIGHT IP65 9-PIN PLUG CONNECTOR KIT



Code	Description	Weight [g]
02269G0000	Straight D-Sub 9-PIN IP65 connector kit	20

STRAIGHT IP40 9-PIN PLUG CONNECTOR KIT



Code	Description	Weight [g]
0226180102	Straight D-Sub 9-PIN connector kit	20

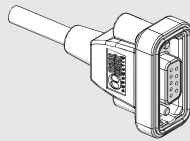
CABLE



Code	Description	Weight [g/m]
0226107201	10-PIN cable	60

Specify the number of metres desired.

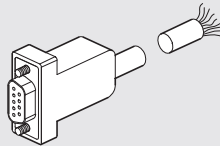
① PRE-WIRED STRAIGHT IP65 9-PIN PLUG CONNECTOR KIT



Code	Description	Weight [g/m]
02269G0100	Straight D-Sub 9-PIN IP65 connector + cable L = 1 m	80
02269G0250	Straight D-Sub 9-PIN IP65 connector + cable L = 2.5 m	170
02269G0500	Straight D-Sub 9-PIN IP65 connector + cable L = 5 m	320
02269G1000	Straight D-Sub 9-PIN IP65 connector + cable L = 10 m	620
02269G2000	Straight D-Sub 9-PIN IP65 connector + cable L = 20 m	1220
02269H0100*	Straight D-Sub 9-PIN IP65 connector, UL H-FLEX CL6, cable L = 1 m	80
02269H0250*	Straight D-Sub 9-PIN IP65 connector, UL H-FLEX CL6, cable L = 2.5 m	170
02269H0500*	Straight D-Sub 9-PIN IP65 connector, UL H-FLEX CL6, cable L = 5 m	320
02269H1000*	Straight D-Sub 9-PIN IP65 connector, UL H-FLEX CL6, cable L = 10 m	620

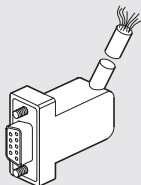
* Very flexible cables, class 6 according to IEC 60228

② PRE-WIRED STRAIGHT IP40 9-PIN PLUG CONNECTOR KIT



Code	Description	Weight [g/m]
0226900100	Straight D-Sub 9-PIN connector + cable L = 1 m	80
0226900250	Straight D-Sub 9-PIN connector + cable L = 2.5 m	170
0226900500	Straight D-Sub 9-PIN connector + cable L = 5 m	320
0226900750	Straight D-Sub 9-PIN connector + cable L = 7.5 m	470
0226901000	Straight D-Sub 9-PIN connector + cable L = 10 m	620
0226901500	Straight D-Sub 9-PIN connector + cable L = 15 m	920
0226902000	Straight D-Sub 9-PIN connector + cable L = 20 m	1220
0226905000	Straight D-Sub 9-PIN connector + cable L = 50 m	3020

② PRE-WIRED 90° IP40 9-PIN PLUG CONNECTOR



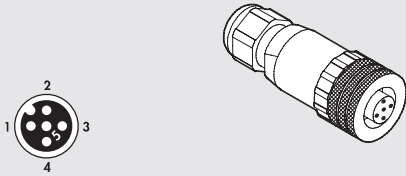
Code	Description	Weight [g/m]
0226910100	90° D-Sub 9-PIN connector + cable L = 1 m	80
0226910250	90° D-Sub 9-PIN connector + cable L = 2.5 m	170
0226910500	90° D-Sub 9-PIN connector + cable L = 5 m	320
0226910750	90° D-Sub 9-PIN connector + cable L = 7.5 m	470
0226911000	90° D-Sub 9-PIN connector + cable L = 10 m	620
0226911500	90° D-Sub 9-PIN connector + cable L = 15 m	920

WIRING DIAGRAM FOR PRE-WIRED 9-PIN PLUG CONNECTORS



Position of electrical contact	Colour of the corresponding wire Metal Work cable IP40 connector	Colour of the corresponding wire (DIN 47100) IP65 connector	Function	4-position base	8-position base
	②	①			
1	green/black	white	Out 1 + VDC	solenoid pilot 14 valve 1	solenoid pilot 14 valve 1
2	white	brown	Out 2 + VDC	solenoid pilot 14 valve 2	solenoid pilot 12 valve 1
3	blue/black	green	Out 3 + VDC	solenoid pilot 14 valve 3	solenoid pilot 14 valve 2
4	blue	yellow	Out 4 + VDC	solenoid pilot 14 valve 4	solenoid pilot 12 valve 2
5	yellow/black	grey	Out 5 + VDC	/	solenoid pilot 14 valve 3
6	yellow	pink	Out 6 + VDC	/	solenoid pilot 12 valve 3
7	red/black	blue	Out 7 + VDC	/	solenoid pilot 14 valve 4
8	green	red	Out 8 + VDC	/	solenoid pilot 12 valve 4
9	white/black	black	COM 0VDC	common	common

STRAIGHT CONNECTOR FOR M12, A-CODED

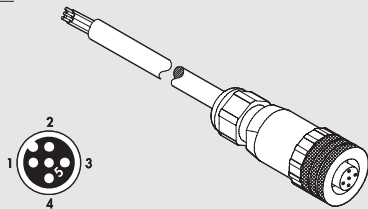


Code	Description
W0970513001	5-PIN M12x1 straight connector

Note: Can be used for IO-Link

STRAIGHT CONNECTOR WITH WIRE FOR M12, A-CODED

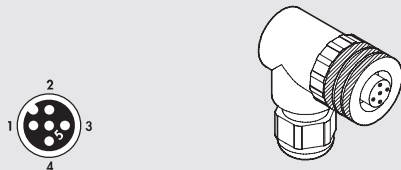
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray



Code	Description
W0970513002	5-PIN M12x1 straight connector with wire L = 5 m

Note: Can be used for IO-Link

90° CONNECTOR FOR M12, A-CODED

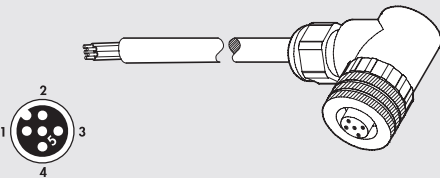


Code	Description
W0970513003	M12x1 5-PIN 90° connector

Note: Can be used for IO-Link

90° CONNECTOR WITH WIRE FOR M12, A-CODED

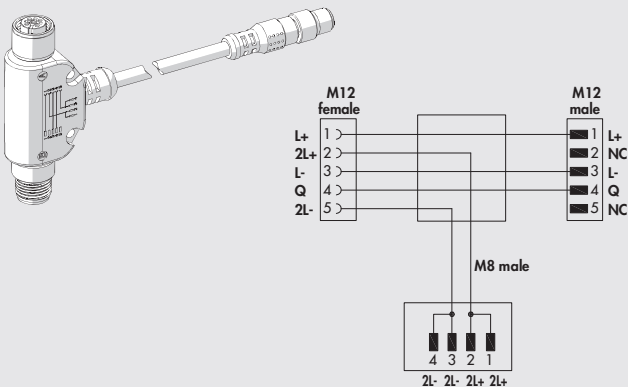
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray



Code	Description
W0970513004	M12x1 5-PIN 90° connector with wire L = 5 m

Note: Can be used for IO-Link

T-CONNECTOR M12 A-CODED / M8 MALE FOR AUXILIARY POWER

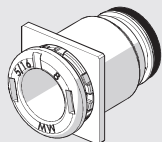


Code	Description
0240009070	T - connector for auxiliary power

Note: Can be used for IO-Link

SPARE PARTS

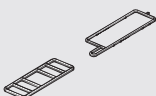
CARTRIDGE



Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

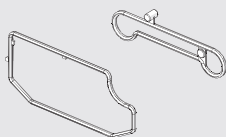
BASE-VALVE GASKET



Code	Description
02282R1002	EB 80 base-valve gasket kit

Comes in 10-pc. packs

GASKETS BETWEEN BASE AND COVER SHEET METAL



Code	Description
02282R1006	EB 80 BOXI kit of gaskets between base and cover sheet metal

Comes in 10-pc. packs

FIXING FOOT



Code	Description
02282R4002	EB 80 BOXI fixing foot

Comes in 3-pc. packs

KIT PNEUMATIC MOTION® EB 80 BOXI

The EB 80 BOXI complete with electrical connector, cable, fittings and silencers can be supplied under one ordering code only.

REQUEST THE KIT CODE BY SPECIFYING:

- The EB 80 BOXI code
- The code of the single connector or pre-wired connector
- The fitting and the quantity desired. We suggest choosing one among those listed below ▲
- The silencer and the quantity desired. We suggest choosing one among those listed below ◆

Example

0228BG18M66660KKKK
02269G0250
n° 1 2L01010
n° 2 W0970530053

▲ 1/4" FITTINGS FOR BOXI PNEUMATIC SUPPLIES *

Ø Pipe	Straight male cylindrical code (R1)	L rotary elbow, male, code (R34)
4	2L01003	2L34003
6	2L01008	2L34008
8	2L01010	2L34010
10	2L01012	2L34013
12	2001019	-

* Normally, one is used for port 1

◆ SILENCERS FOR EB 80 BOXI OUTLET PORTS **

SFE silencer with stainless steel mesh
SPLF silencer made of resin with felt

** Normally, two are used for ports 3 and 5

Code
W0970530053
W0970530073

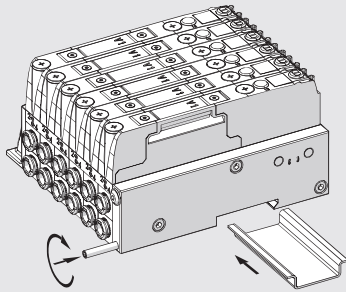


EB 80 BOXI - 6-8-12-POSITION VALVE ISLAND

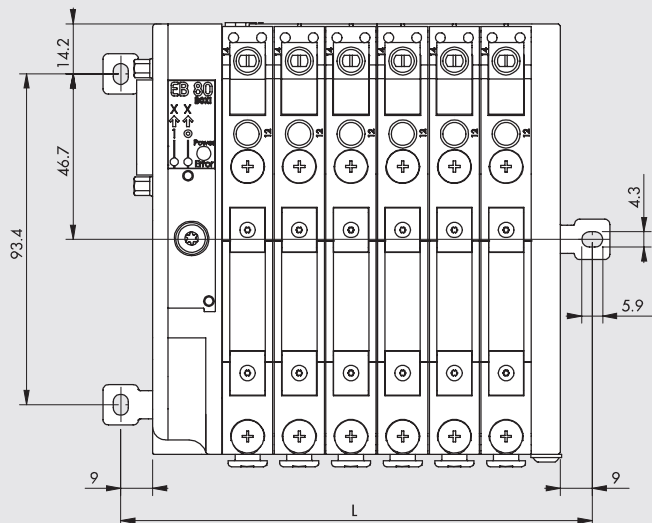
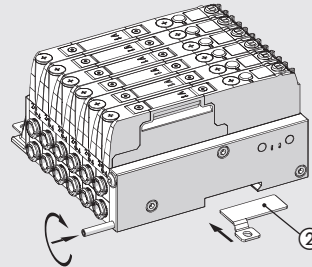
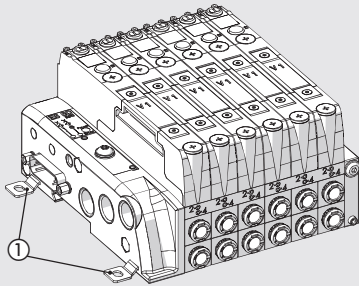


FIXING OPTIONS

Fixing on a DIN bar: tighten the screw on the end plate.



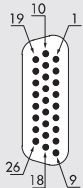
Fixing by means of brackets: the 3 brackets are already included in each EB 80 BOXI island. On the pressure inlet side, push the two brackets ① firmly into the appropriate seats on the base up to the "click". Tighten the screw on the end plate to secure the third bracket ②.



Boxi island	L (mm)
6 position	133
6 position with additional pneumatic supply	153
8 position	162
8 position with additional pneumatic supply	182.5
12 position	221
12 position with additional pneumatic supply	241

WIRING DIAGRAM

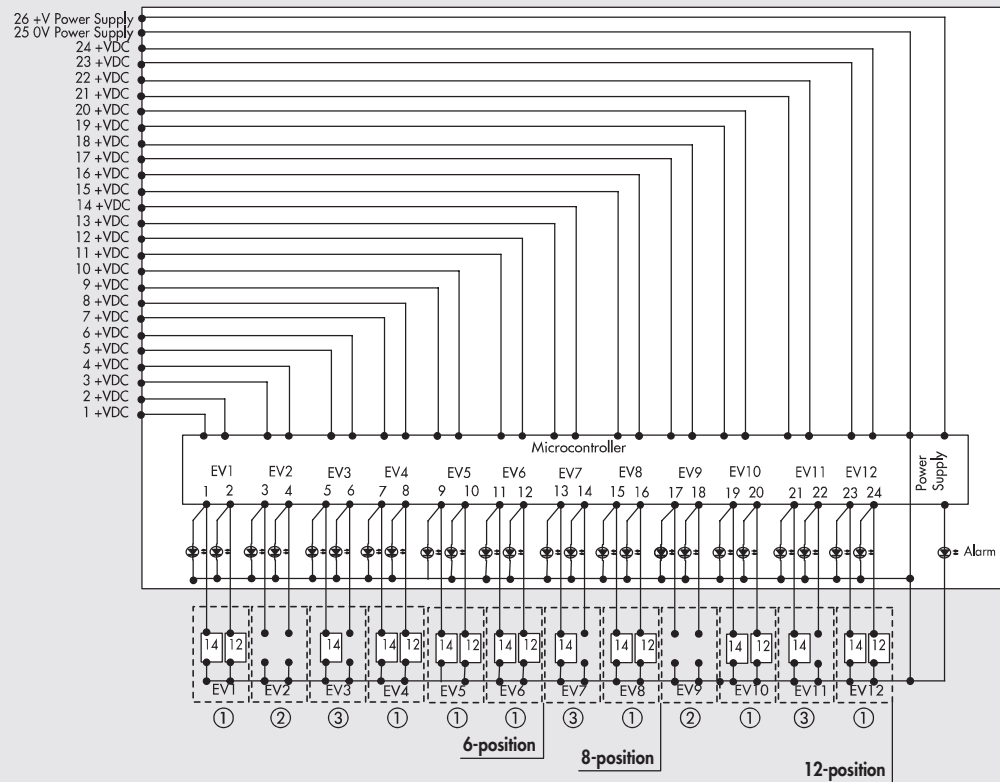
D-Sub 26-PIN CONNECTOR



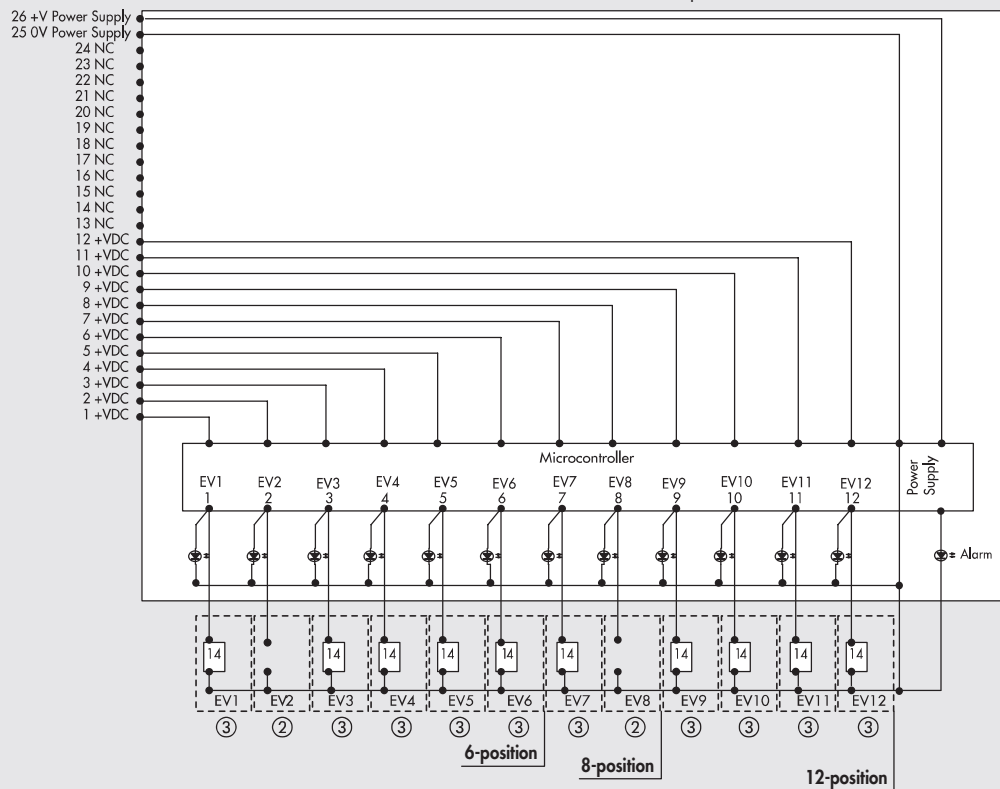
Examples of types of valves:

- ① Valve with 2 solenoid pilots
- ② Dummy valve or bypass
- ③ Valve with 1 solenoid pilot

Base with 2 electric controls at each valve position



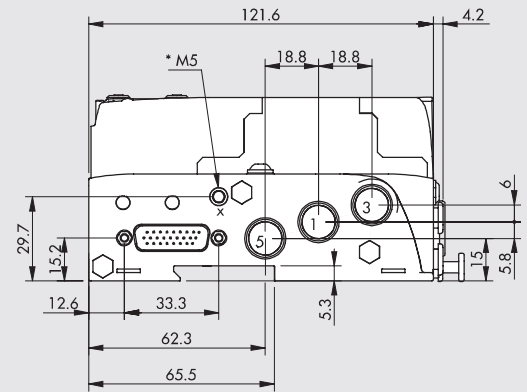
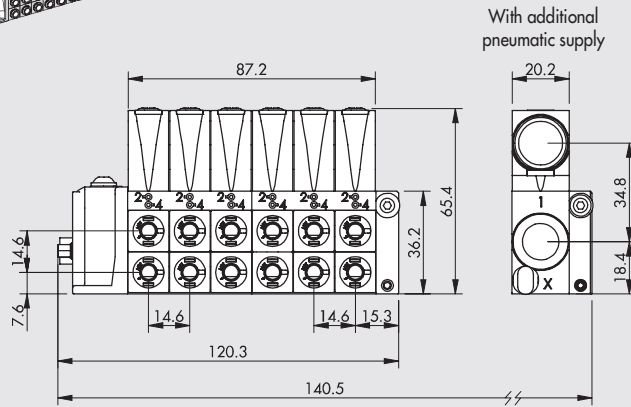
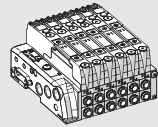
Base with 1 electric control at each valve position



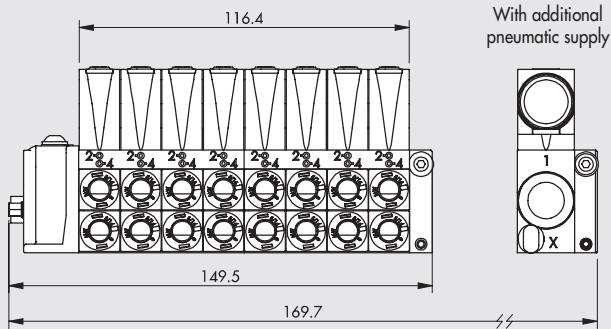
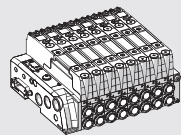
DIMENSIONS

6-POSITION

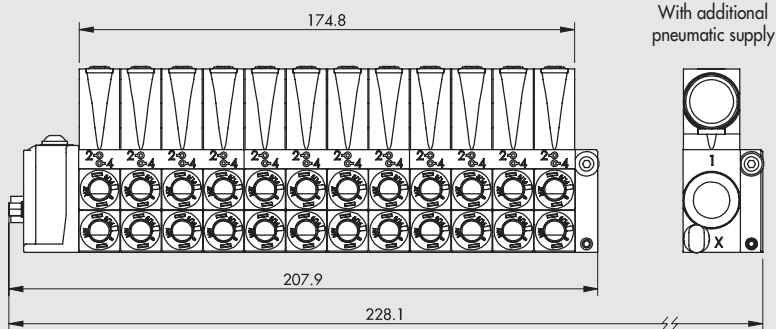
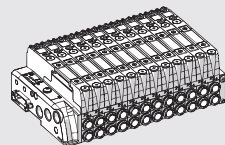
* Pilot (only for servo-assisted version)



8-POSITION



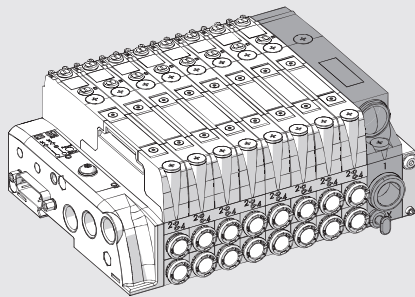
12-POSITION



ADDITIONAL PNEUMATIC SUPPLY

During the configuration of the BOXI island, it is possible to insert, in the final position, an additional dedicated pneumatic supply and exhaust module, in order to increase the inlet and exhaust air flow rate of the island. **The module cannot be inserted into already assembled islands.** It is recommended in cases where there is simultaneous operation of several solenoid valves, with a flow rate request exceeding 3000 Nl/min*, or when it becomes important to have a quick pressure relief from ports 3 and 5. It can be requested with a silenced exhaust or with a conveyed exhaust with fittings for Ø 8 - Ø 10, Ø 12 or Ø 1/2" pipes.

* Indicative value, depending on the operating pressure, the supply hoses and the specific needs of the application.



Relief	Symbol	Pipe fitting	Configuration ID
Silenced		Ø 8 (5/16")	M100B00
		Ø 10	M200B00
		Ø 12	M300B00
		Ø 1/2"	M500B00
Conveyed		2 x Ø 8 (5/16")	M100B10
		2 x Ø 10	M200B20
		2 x Ø 12	M300B30
		2 x Ø 1/2"	M500B50

CONFIGURATION SEQUENCE

EB 80 BOXI FAMILY	0 8	1 6	E 0 2 6	G	1	8 8 8 4 4 6 6 6	0	V V K I V V K I	M 1 0 0 B 0 0
	NUMBER		ELECTRICAL CONNECTION	PORT THREADS 1, 3, 5	PILOTING	FITTINGS FOR PORTS 2-4 (Starting from the left)	MANUAL VALVE CONTROL	VALVES	ADDITIONAL PNEUMATIC SUPPLY (Optional)
	Positions	Electrical controls							
BOXI	06	06	E026 Multi-pole Connection, D-Sub 26 pin	G 1/4" G (BSP) U 1/4" NPT	1 Non-servo-assisted X Servo-assisted	1 Without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")	0 Monostable 1 Bistable ● 9 Without valves	▲ Z 2 valves 2/2 NC ▲ I 2 valves 3/2 NC ▲ W 2 valves 3/2 NO ▲ L 3/2 NC + 3/2 NO V 5/2 monostable ▲ K 5/2 bistable ▲ O 5/3 CC G 3/2 NC high flow J 3/2 NO high flow + R Shut-off valve Y Bypass N Dummy valve (plug) ● 9 None	SILENCED EXHAUST M100B00 Pipe fitting Ø 8 (5/16") M200B00 Pipe fitting Ø 10 M300B00 Pipe fitting Ø 12 M500B00 Pipe fitting Ø 1/2" CONVEYED EXHAUST M100B10 Pipe fitting Ø 8 (5/16") M200B20 Pipe fitting Ø 10 M300B30 Pipe fitting Ø 12 M500B50 Pipe fitting Ø 1/2"
	08	08							
	12	12							
		24							

▲ Only for version with 12, 16 or 24 electrical controls.

+ Requires inlet port X slave synchronisation.

● The entire island without valves.

Example of configuration sequence for an island with valves

BOXI 12 24 E026 G 1 6666688888 1 IIKKKIIKKK M100B00

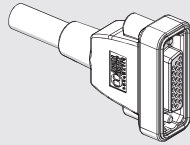
Example of configuration sequence for an island without valves

BOXI 12 24 E026 G 1 6666688888 9 9999999999 M100B00

As with the EB 80 islands, a full configuration sequence is required when ordering (see examples). The sales code for the desired configuration will be created by our sales departments.

ACCESSORIES

PRE-WIRED STRAIGHT D-Sub 26 PIN HIGH DENSITY PLUG CONNECTOR KIT



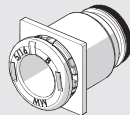
Code	Description	Weight [g]
02269K0100	Straight D-Sub HD 26 PIN IP65 connector + cable L = 1 m	160
02269K0250	Straight D-Sub HD 26 PIN IP65 connector + cable L = 2.5 m	350
02269K0500	Straight D-Sub HD 26 PIN IP65 connector + cable L = 5 m	680
02269K1000	Straight D-Sub HD 26 PIN IP65 connector + cable L = 10 m	1300
02269K2000	Straight D-Sub HD 26 PIN IP65 connector + cable L = 20 m	2540

Position of electrical contact	Colour of the corresponding wire (DIN 47100)	Function for EB 80 BOXI
1	White	Out 1
2	Brown	Out 2
3	Green	Out 3
4	Yellow	Out 4
5	Grey	Out 5
6	Pink	Out 6
7	Blue	Out 7
8	Red	Out 8
9	Black	Out 9
10	Violet	Out 10
11	Grey + Pink ring	Out 11
12	Red + Blue ring	Out 12
13	White + Green ring	Out 13

Position of electrical contact	Colour of the corresponding wire (DIN 47100)	Function for EB 80 BOXI
14	Brown + Green ring	Out 14
15	White + Yellow ring	Out 15
16	Yellow + Brown ring	Out 16
17	White + Grey ring	Out 17
18	Grey + Brown ring	Out 18
19	White + Pink ring	Out 19
20	Pink + Brown ring	Out 20
21	White + Blue ring	Out 21
22	Brown + Blue ring	Out 22
23	White + Red ring	Out 23
24	Brown + Red ring	Out 24
25	White + Black ring	0VDC
26	Brown + Black ring	+ VDC

SPARE PARTS

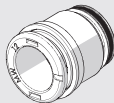
CARTRIDGE FOR BASES



Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

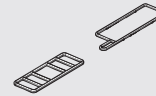
CARTRIDGE FOR ADDITIONAL PNEUMATIC SUPPLY



Code	Description	Ø
02282R2110	EB 80 silencer cartridge kit	silencer
02282R2113	EB 80 Ø 8 power supply round cartridge kit	8 (5/16")
02282R2114	EB 80 Ø 10 power supply round cartridge kit	10
02282R2115	EB 80 Ø 12 power supply round cartridge kit	12
02282R2118	EB 80 Ø 1/2 power supply round cartridge kit	1/2"

Comes in 10-pc. packs

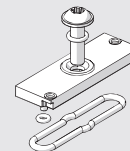
BASE-VALVE GASKET



Code	Description
02282R1002	EB 80 base-valve gasket kit

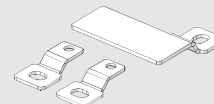
Comes in 10-pc. packs

SERVO SELECTOR



Code	Description
02282R9002	Kit servo selector with OR

FIXING FOOT



Code	Description
02282R4003	Kit fixing foots

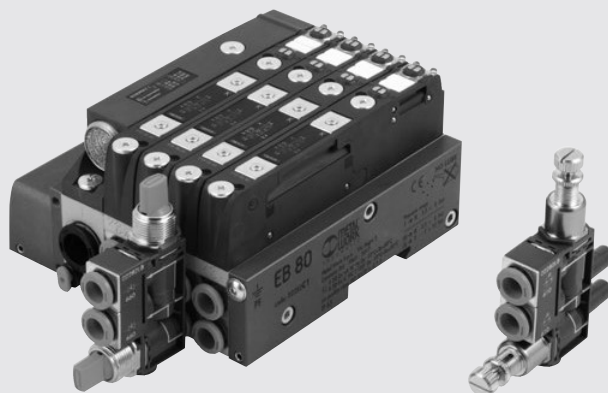
EB 80 MULTI-FUNCTION MODULE

The multi-function module is an important extension of the possibilities offered by the EB 80 systems to manage the performance of actuators controlled by individual solenoid valves. For each port, it can regulate the pressure and the flow rate, provide manual sectioning, display the presence of pressurized air and much more besides.

In line with the modular EB 80 configuration, the multi-function module is designed to ensure maximum flexibility: it can be installed at any time; the function connected to port 2 may differ from that connected to port 4 (e.g. regulating the pressure at output 2 and the air flow at port 4); the modules can be mounted in series one after the other; the cartridge fittings for the pipes can be replaced at any time and are the same as those used in the EB 80 valve bases.

Given that the air input pipes have a $\varnothing 8$ mm, the multi-function module must be inserted in the EB 80 bases with cartridges suitable for $\varnothing 8$ fittings; but if the base to which you want to connect has a cartridge of a different diameter, you only need to buy a multi-function fitting with $\varnothing 8$ cartridges and replace those of the base with those of the module.

The code and the pneumatic diagram are laser etched on the technopolymer body.



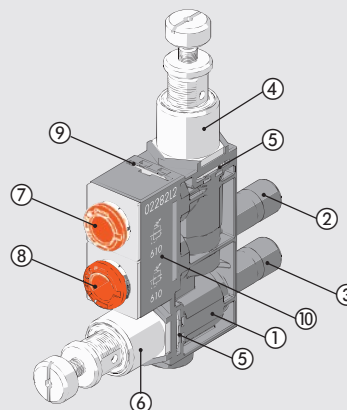
TECHNICAL DATA

Operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to + 50
	°F	14 to 122
Fluid		Unlubricated air
Air quality required		ISO 8573-1 class 4-7-3
Functions		Unidirectional flow regulator, bidirectional flow regulator, pressure regulator, quick-relief valve, check valve, 2- or 3-way shut-off valve, pneumatic valve, pressure display, calibrated choke.
Air inlet		Tubes for $\varnothing 8$ mm fittings
Air delivery		Cartridge fittings for pipes $\varnothing 4$ (5/32"), $\varnothing 6$, $\varnothing 1/4"$, $\varnothing 8$ (5/16")
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene

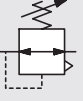
N.B.: For more specific technical data, please refer to the chapters for individual function-modules

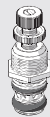
COMPONENTS

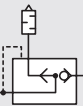
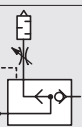
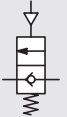
- ① BODY: technopolymer
- ② TUBE to be inserted into port 2 of the EB 80 base
- ③ TUBE to be inserted into port 4 of the EB 80 base
- ④ PNEUMATIC FUNCTION relating to port 2
- ⑤ CLIP for the pneumatic function, steel
- ⑥ PNEUMATIC FUNCTION relating to port 4
- ⑦ Cartridge FITTING for port 2
- ⑧ Cartridge FITTING for port 4
- ⑨ CLIP for the cartridges
- ⑩ CODE AND DIAGRAM, laser etched

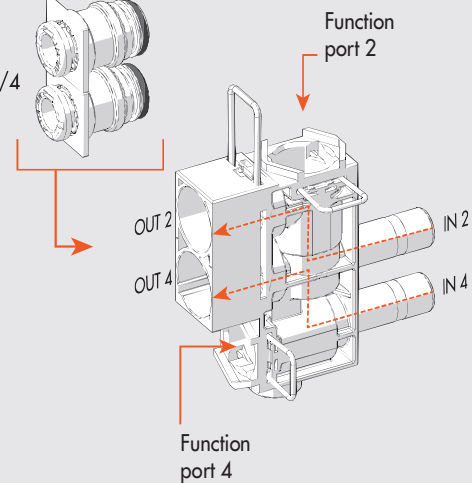
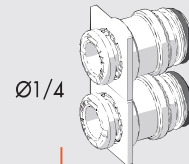
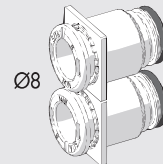
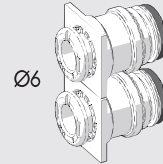
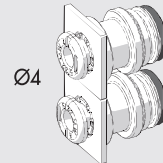


EXPLODED FUNCTION DIAGRAM

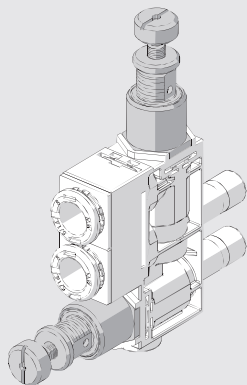
PNV	REG	LAM	V2V	V3V
				
3-way pneumatic valve	Pressure regulator	Pressure indicator	Shut-off valve 2-way	Shut-off valve 3-way
				
Code 670	Code 610	Code 680 / 682	Code 650	Code 660
See page B2.96	See page B2.97	See page B2.98	See page B2.99	See page B2.99

RFL	RFF
	
Flow regulator unidirectional	Flow regulator bidirectional
	
Code 410	Code 411
See page B2.100	See page B2.102

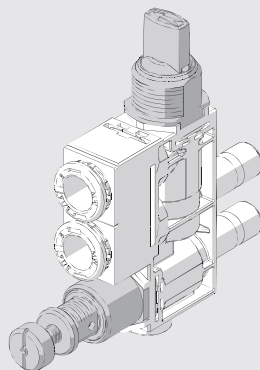
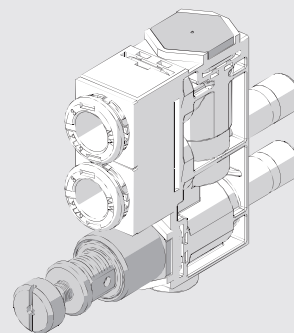
VSRC	VSRS	VSRR	P2V	VNR	NF
					
Quick-exhaust valve conveyed	Quick-exhaust valve silenced	Quick-exhaust valve regulated	Unidirectional 2-way pneumatic valve	Check valve	No function
					
Code 630	Code 631	Code 632	Code 671	Code 640	Code 000
See page B2.103	See page B2.103	See page B2.104	See page B2.106	See page B2.107	See page B2.108



EXAMPLES OF MODULARITY

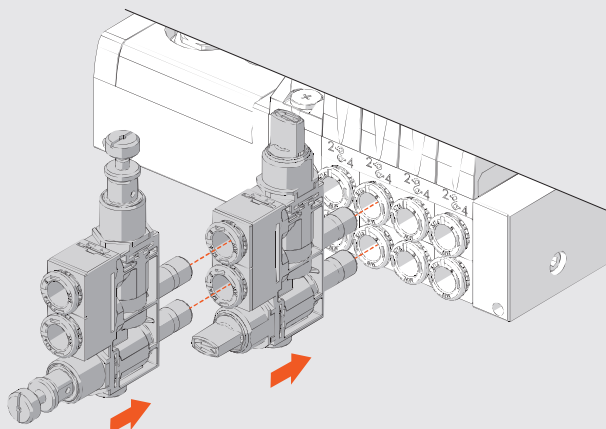


SAME FUNCTIONS ON PORTS 2 AND 4

FUNCTION ON PORT 2 DIFFERENT FROM
THAT ON PORT 4

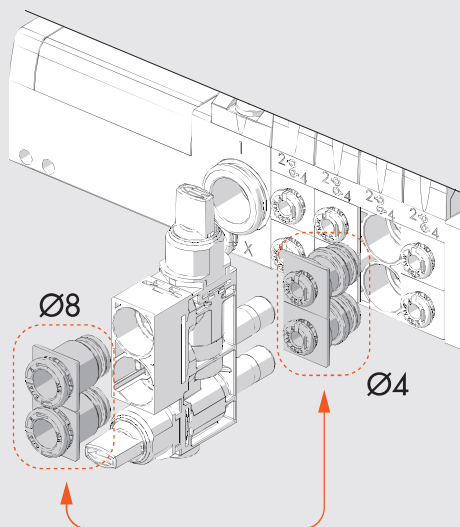
FUNCTION ON ONE PORT ONLY

SERIES ASSEMBLING



REPLACING THE CARTRIDGES

When fittings for pipes other than $\varnothing 8$ pipes are mounted on the base, choose a multi-function module with $\varnothing 8$ fittings and invert them with those of the base.



KEY TO CODES

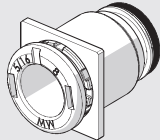
02282	L	6	610	410
FAMILY	SUBSYSTEM	FITTINGS	FUNCTION PORT 2 (Top)	FUNCTION PORT 4 (Bottom)
02282 EB 80	L Multi-function module	2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")	000 NF - No function 410 RFL - Flow regulator unidirectional 411 RFL - Flow regulator bidirectional 610 REG - Pressure regulator 630 VSRC - Quick-exhaust valve, conveyed 631 VSRS - Quick-exhaust valve, silenced 632 VSRR - Quick-exhaust valve, regulated 640 VNR - Check valve 650 V2V - 2-way shut-off valve 660 V3V - 3-way shut-off valve 670 PNV - 3-way pneumatic valve 671 P2V - Unidirectional 2-way pneumatic valve 680 LAM - Orange pressure indicator 682 LAM - Green pressure indicator 7_ * RFF - Calibrated choke unidirectional - type V 8_ * RFF - Calibrated choke bidirectional - type B	000 NF - No function 410 RFL - Flow regulator unidirectional 411 RFL - Flow regulator bidirectional 610 REG - Pressure regulator 630 VSRC - Quick-exhaust valve, conveyed 631 VSRS - Quick-exhaust valve, silenced 632 VSRR - Quick-exhaust valve, regulated 640 VNR - Check valve 650 V2V - 2-way shut-off valve 660 V3V - 3-way shut-off valve 670 PNV - 3-way pneumatic valve 671 P2V - Unidirectional 2-way pneumatic valve 680 LAM - Orange pressure indicator 682 LAM - Green pressure indicator 7_ * RFF - Calibrated choke unidirectional - type V 8_ * RFF - Calibrated choke bidirectional - type B

* The last two digits indicate the narrowing Ø.

02 = Ø 0.2 mm	05 = Ø 0.5 mm	10 = Ø 1.0 mm
03 = Ø 0.3 mm	06 = Ø 0.6 mm	13 = Ø 1.3 mm
04 = Ø 0.4 mm	08 = Ø 0.8 mm	15 = Ø 1.5 mm

SPARE PARTS

CARTRIDGE



Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

NOTES

EB 80 3-WAY PNEUMATIC VALVE – PNV

It is a normally closed 3/2 valve driven pneumatically via a $\varnothing 4$ pipe. It intercepts the air flow leaving the EB 80 valve. If the PNV is activated, the flow opens up, when it is de-activated the pressure is discharged downstream.

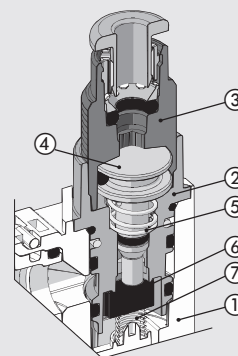


TECHNICAL DATA

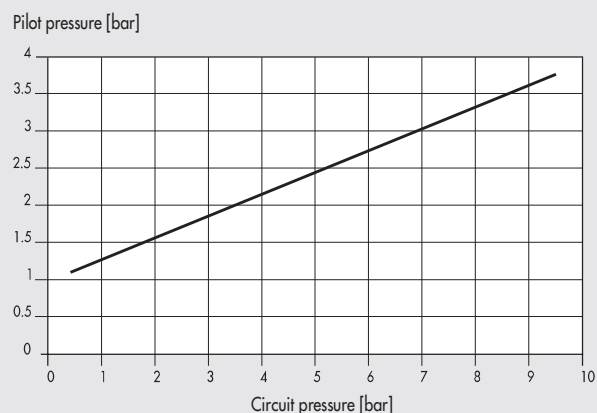
		$\varnothing 4$ (5/32")	$\varnothing 6$	$\varnothing 8$ (5/16")	$\varnothing 1/4"$
Max. operating pressure	bar			10	
	MPa			1	
	psi			145	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	110	380	420	380
Flow rate at 6.3 bar free exhaust	Nl/min			80	
Minimum pilot pressure				See graph	

COMPONENTS

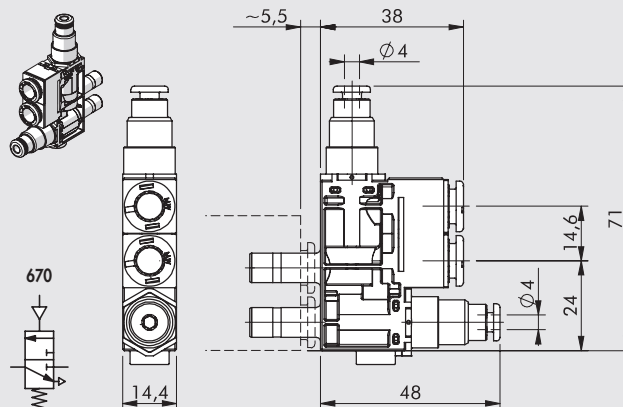
- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ PILOT INSERT: nickel-plated brass
- ④ PISTON ROD: brass
- ⑤ CLAMPING SPRING: stainless steel
- ⑥ SEAL: NBR
- ⑦ POPPET SPRING: stainless steel



MINIMUM PILOT PRESSURE



DIMENSIONS



EB 80 PRESSURE REGULATOR - REG

It regulates the pressure coming from the EB 80 base to individual branches.
It comes with an overpressure relief device.

It can be used as an economizer: if the thrust in a cylinder must be exerted in one direction, e.g. at the piston rod output, while a lower thrust is required in the other direction, a lot of energy can be saved by inserting the pressure regulator into the port connected to piston rod retraction.

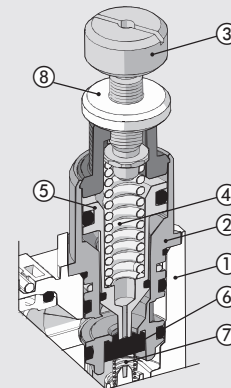


TECHNICAL DATA

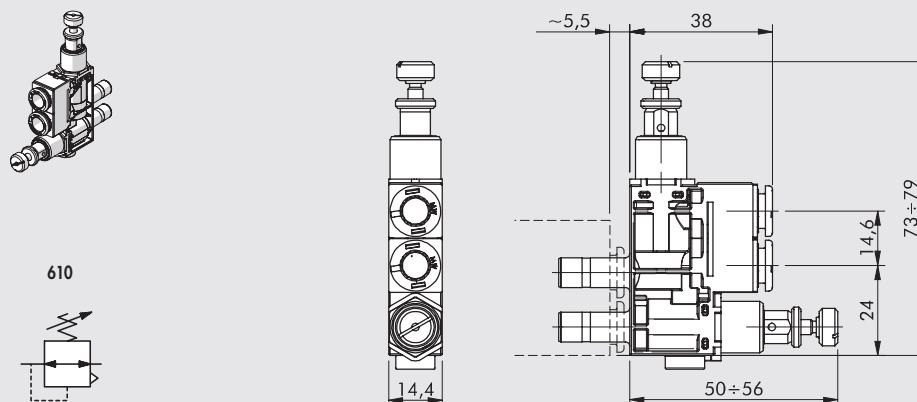
		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Setting range		1 to 8 bar - 0.1 to 0.8 MPa - 14.5 to 116 psi			
Input pressure	bar	2 to 10			
	MPa	0.2 to 1			
	psi	30 to 145			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar	Nl/min	80	130	150	130
Flow rate on exhaust at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	300	380	400	380
Adjustment		Manual or using a screwdriver			
Notes on use		The pressure must always be set upwards			

COMPONENTS

- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ ADJUSTING SCREW: nickel-plated brass
- ④ ADJUSTING SPRING: steel
- ⑤ PISTON ROD: brass
- ⑥ SHUTTER: NBR
- ⑦ POPPET SPRING: stainless steel
- ⑧ ADJUSTING SCREW RING NUT: nickel-plated brass



DIMENSIONS



EB 80 PRESSURE INDICATOR - LAM

Also called pneumatic lamp, it optically indicate the presence of compressed air in the circuit.
If there is no pressure, the transparent technopolymer bell is empty; if there is pressure an orange or a green sign is indicated.



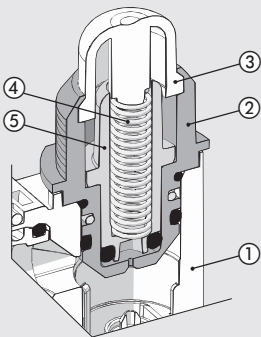
VALVES

EB 80 - PRESSURE INDICATOR - LAM

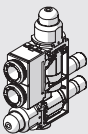
TECHNICAL DATA					
Ø of cartridge fitting		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Operating pressure	bar	2 to 10			
	MPa	0.2 to 1			
	psi	29 to 145			
Flow rate at 6.3 bar ΔP 1 bar	NI/min	130	500	600	500
Colour with pressure		Orange - Green			

COMPONENTS

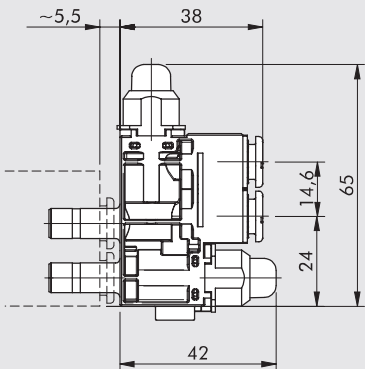
- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ COVER: clear technopolymer
- ④ RETURN SPRING: stainless steel
- ⑤ MOBILE INDICATOR: technopolymer



DIMENSIONS



680/682



EB 80 SHUT-OFF VALVE - V2V-V3V

It shuts off the flow of air coming from the EB 80 via a manual command. Two versions are available: the two-way unidirectional V2V valve and the V3V 3-way valve. The latter, when deactivated, intercepts the flow from the EB 80 valve and relieves downstream pressure.

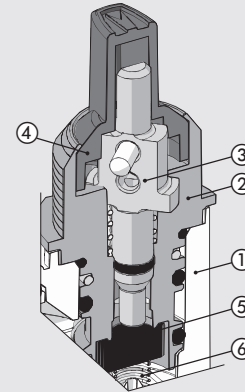


TECHNICAL DATA

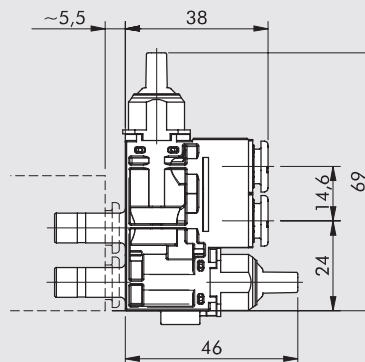
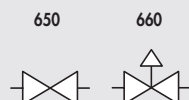
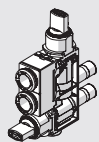
		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Max. operating pressure	bar			10	
	MPa			1	
	psi			145	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	120	370	420	370
Flow rate of the V3V when relieving at 6.3 bar	Nl/min			110	

COMPONENTS

- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ ROD: brass
- ④ KNOB: technopolymer
- ⑤ VALVE: NBR
- ⑥ VALVE COMPRESSION SPRING: stainless steel



DIMENSIONS



EB 80 FLOW REGULATOR - RFL

It regulates the air flow rate, and hence the speed, in pneumatic actuators. Two versions are available: the bidirectional one regulating the flow in both directions and the unidirectional one regulating the flow when the EB 80 valve is relieving.

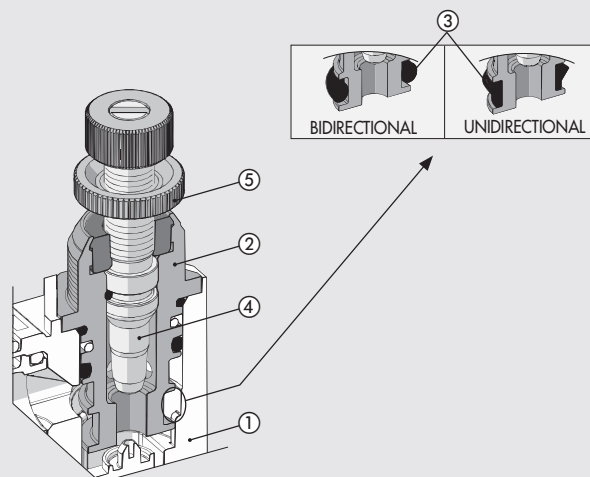


TECHNICAL DATA

[illegible]

COMPONENTS

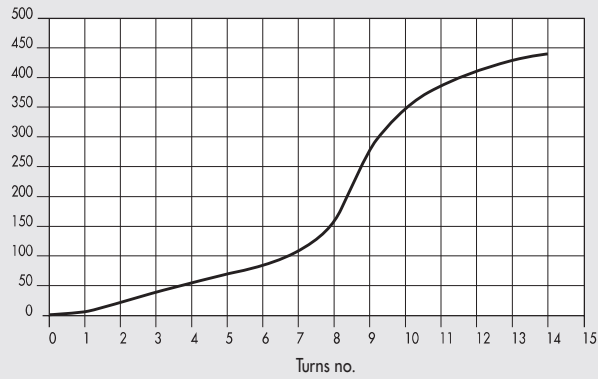
- ① BODY: technopolymer
- ② SEAL SUPPORT: nickel-plated brass
- ③ GASKET: NBR
- ④ ADJUSTING NEEDLE: brass
- ⑤ NEEDLE RING NUT: nickel-plated brass



FLOW RATE CHARTS AT 6.3 bar DEPENDING ON THE TURNS EFFECTED BY THE REGULATION OF THE NEDDLE

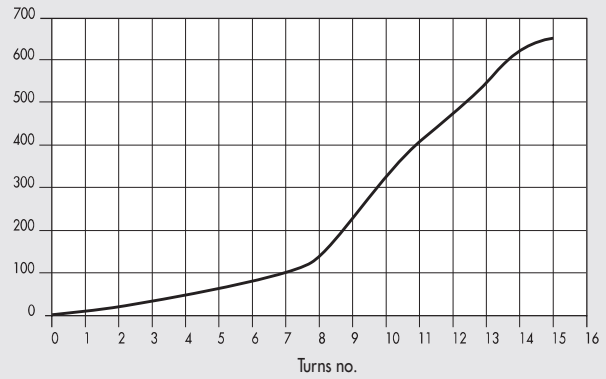
RFL Ø4

Flow rate [Nl/min]



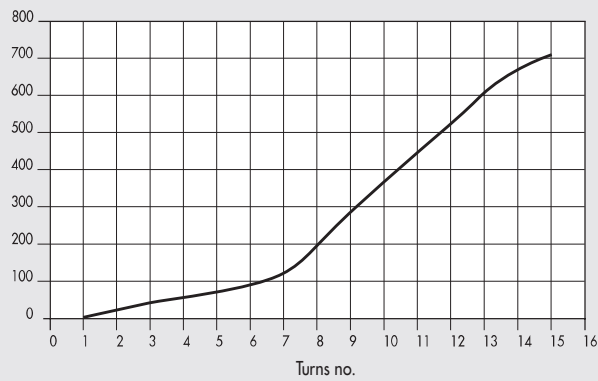
RFL Ø6 - Ø1/4

Flow rate [Nl/min]



RFL Ø8

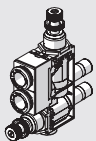
Flow rate [Nl/min]



VALVES

EB 80 - FLOW REGULATOR - RFL

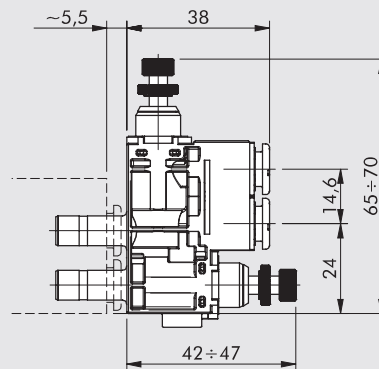
DIMENSIONS



410



411



EB 80 CALIBRATED CHOKE - RFF

It regulates the air flow rate, and hence the speed, in pneumatic actuators. This is done by means of a choke of a calibrated diameter. In order to obtain the desired air flow rate, you can choose different choking diameters. Compared to adjustable versions, the main advantage is that it does not require any adjustments during the assembly of the machine and prevents from subsequent tampering. Two versions are available: the bidirectional one regulating the flow in both directions and the unidirectional one regulating the flow when the EB 80 valve is relieving.

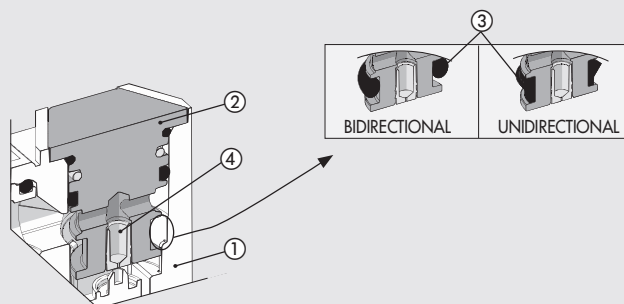


TECHNICAL DATA

Ø of cartridge fitting		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Max. operating pressure	bar			10	
	MPa			1	
	psi			145	
Flow rates				See tables	
Adjustment				Fixed	
Operating system				Calibrated hole	

COMPONENTS

- ① BODY: technopolymer
- ② SEAL SUPPORT: nickel-plated brass
- ③ GASKET: NBR
- ④ THROTTLE CARTRIDGE: brass



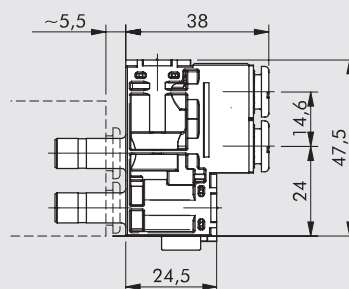
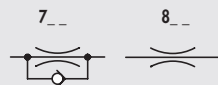
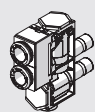
EXHAUST FLOW RATE AT 6.3 bar UNIDIRECTIONAL VERSION [Nl/min]

Choke [mm]	Ø 4	Ø 6 - Ø 1/4	Ø 8
Ø 0.2	240	550	640
Ø 0.3	242	552	642
Ø 0.4	245	555	645
Ø 0.5	250	560	650
Ø 0.6	255	565	660
Ø 0.8	265	570	690
Ø 1.0	275	580	710
Ø 1.3	290	610	750
Ø 1.5	300	620	800

CHOKE FLOW-RATE AT 6 bar WITH FREE EXHAUST

Choke [mm]	Flow rate [Nl/min]
Ø 0.2	2
Ø 0.3	4
Ø 0.4	7
Ø 0.5	13
Ø 0.6	15
Ø 0.8	32
Ø 1.0	50
Ø 1.3	85
Ø 1.5	110

DIMENSIONS



It speeds up the relieving of air coming from the actuators to the EB 80 and releases it into the atmosphere.

If the air coming from the actuators is polluted, it prevents it from entering into the EB 80 island, where it could risk to damage the valves.

Air relieving can be either silenced with a stainless steel wire or conveyed via an automatic fitting.



Ø of cartridge fitting		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1 1/4"
Operating pressure	bar MPa psi			1 to 10 0.1 to 1 14.5 to 145	
Inlet flow rate at 6.3 bar ΔP 1 bar	Nl/min	90	210	270	210
Exhaust flow rate at 6.3 bar	Nl/min	330	700	750	700

- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ VALVE: brass
- ④ SILENCER: stainless steel wire
- ⑤ GASKET: NBR

A technical drawing of a 3D-printed part, likely a mechanical component. The drawing shows a cross-section of the part, revealing internal features. Numbered callouts (1 through 5) point to specific features: 1 points to a central vertical hole, 2 points to a horizontal hole on the right side, 3 points to a horizontal hole on the left side, 4 points to a small hole on the left side, and 5 points to a small hole on the right side. The part has a complex, multi-faceted shape with various holes and internal structures.

A technical drawing of a mechanical assembly, likely a pump or motor component. It shows a cross-section of a housing with internal components. A callout 'A' points to a specific part of the assembly, which appears to be a seal or a bearing component.

EB 80 QUICK-EXHAUST VALVE WITH FLOW REGULATOR - VSRR

It speeds up the relieving of air coming from the actuators to the EB 80, releases it into the atmosphere and regulates the flow rate. It relieves the air coming from the utilities and regulates the quality of flow precisely by operating the knob provided.

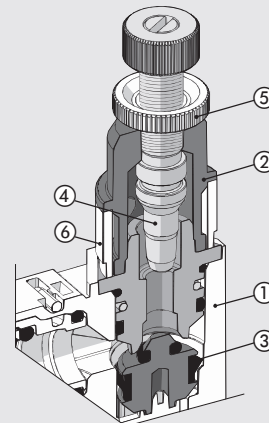


TECHNICAL DATA

[illegible]

COMPONENTS

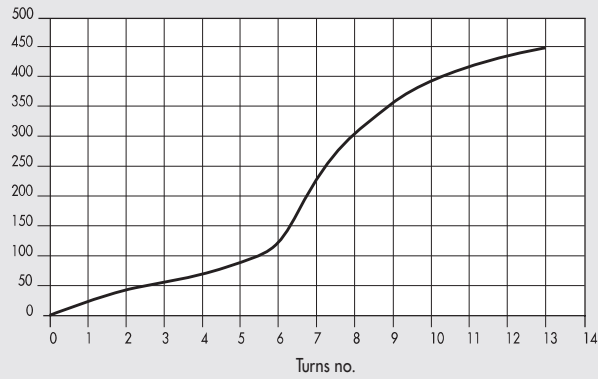
- ① BODY: technopolymer
- ② SEAL SUPPORT: nickel-plated brass
- ③ GASKET: NBR
- ④ ADJUSTING NEEDLE: brass
- ⑤ NEEDLE RING NUT: nickel-plated brass
- ⑥ SILENCER: sintered bronze



EXHAUST FLOW CHARTS AT 6.3 bar DEPENDING ON THE TURNS EFFECTED BY THE REGULATION OF THE NEEDLE

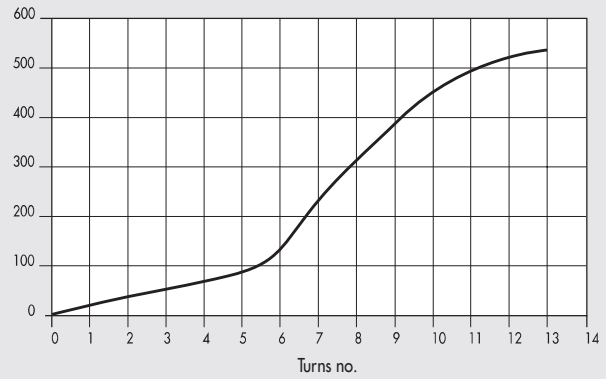
VSRR Ø4

Flow rate [Nl/min]



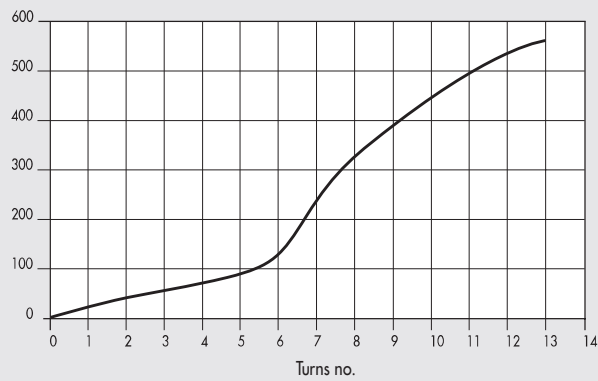
VSRR Ø6 - Ø1/4

Flow rate [Nl/min]



VSRR Ø8

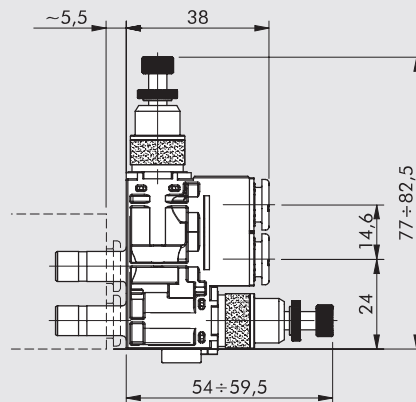
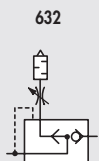
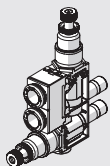
Flow rate [Nl/min]



VALVES

EB 80 - QUICK-EXHAUST VALVE WITH FLOW REGULATOR - VSRR

DIMENSIONS



EB 80 UNIDIRECTIONAL 2-WAY PNEUMATIC VALVE – P2V

Unidirectional normally closed 2/2 valve pneumatically driven via a $\varnothing 4$ pipe.
Can intercept the flow of air coming from the EB 80 valve.
When enabled, it opens the flow; when disabled it closes the pressurised circuit.

N.B.: Given the direction of the flow, it cannot be used to block the flow of air coming out of a cylinder.

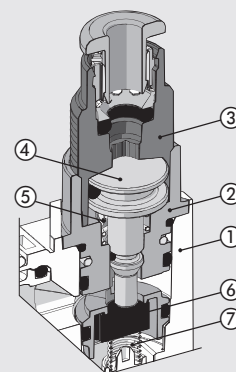


TECHNICAL DATA

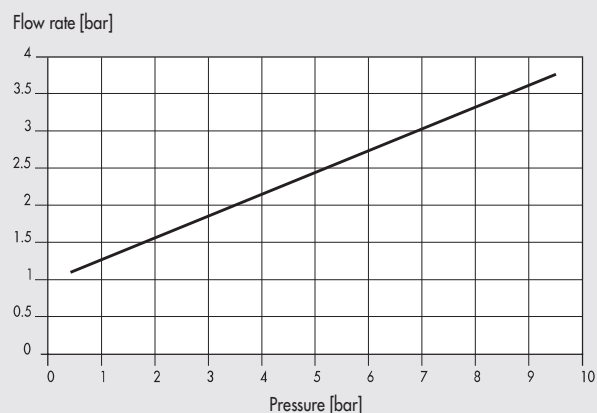
		$\varnothing 4$ (5/32")	$\varnothing 6$	$\varnothing 8$ (5/16")	$\varnothing 1/4$ "
Max. operating pressure	bar			10	
	MPa			1	
	psi			145	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	110	370	420	370
Minimum pilot pressure		See graph			

COMPONENTS

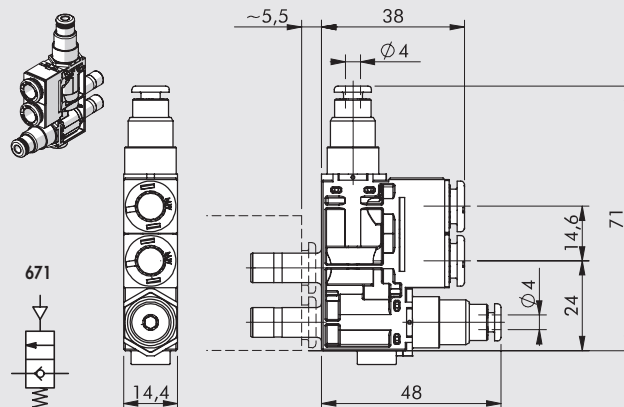
- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ PILOT INSERT: nickel-plated brass
- ④ PISTON ROD: brass
- ⑤ CLAMPING SPRING: stainless steel
- ⑥ SEAL: NBR
- ⑦ POPPET SPRING: stainless steel



MINIMUM PILOT PRESSURE



DIMENSIONS



EB 80 CHECK VALVE - VNR

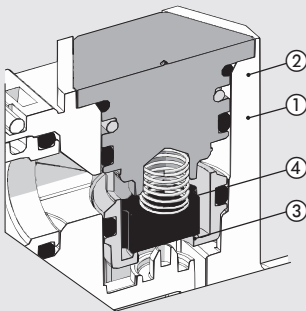
Check valve. Full flow from the EB 80 valve to the utility. It prevents the air flow from reversing downstream the VNR.



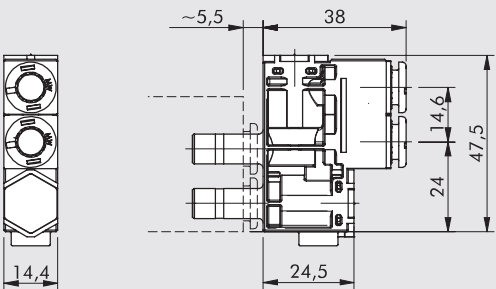
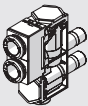
TECHNICAL DATA					
Ø of cartridge fitting		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Operating pressure	bar			0.5 to 10	
	MPa			0.05 to 1	
	psi			7.2 to 145	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	350	420	450	420

COMPONENTS

- ① BODY: technopolymer
- ② INSERT: nickel-plated brass
- ③ VALVE: NBR
- ④ VALVE COMPRESSION SPRING: stainless steel



DIMENSIONS



EB 80 NO FUNCTION - NF

To be used when, on one of the two-way network, no pneumatic function is required.
The flow conveys directly from the inlet to the output fitting without any variation.

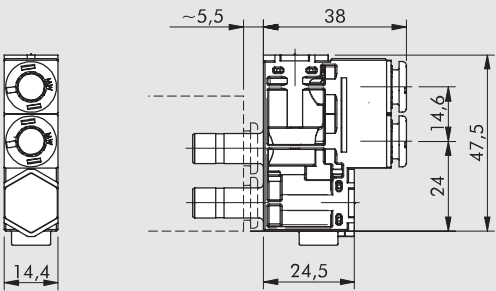
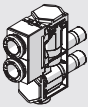


VALVES

EB 80 - NO FUNCTION - NF

TECHNICAL DATA					
Ø of cartridge fitting		Ø 4 (5/32")	Ø 6	Ø 8 (5/16")	Ø 1/4"
Max. operating pressure	bar			10	
	MPa			1	
	psi			145	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	130	500	600	500

DIMENSIONS



NOTES

EB 80 SPLASH AREA



The splash-area assembly kits have been designed and developed for the Food & Beverage industry and, in general, for use in all the situations in which it is advisable to separate the solenoid valves from areas where there are fluids.

The kit can be used to fix a standard EB 80 island to a sheet metal plate, perforated by the customer, with compressed air fittings and pipes installed downstream.

Two models are available, one designed to accommodate 3-8 valves and one 8-12 valves. Other configurations can be made on specific request.

The plate is available in two optional materials: anticorodal 6082 anodized aluminium and AISI 304 stainless steel.

Threaded holes are provided in the splash-area side of the plate for air supply, relief, control and utilities.

The EB 80 islands of any type can be fixed to the kit, with either multi-pin or fieldbus connection and signal modules, provided that they have one pneumatic supply source to avoid changing the pitch between valves, and the ports 2 and 4 have $\varnothing 8$ fittings and the ports 1 and 3 have $\varnothing 12$ fittings. The valve island can be used with silenced relief provided that the threaded port of the plate is closed.



TECHNICAL DATA

General technical data

See page B2.4

Protection rating at the splash-area side

IP67

Versions

3 to 8 positions; 8 to 12 positions

Bases configurable with this number of valves

For maximum 8-position version: 3, 4, 6, 7, 8 valves

For the maximum 12-position version: 8, 9, 10, 11, 12 valves

Pneumatic fittings

1/4" supply and discharge

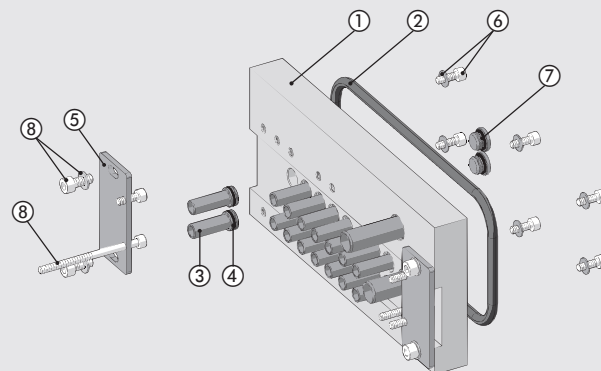
M5 piloting

1/8" delivery

N.B.: The valve island to be used with the splash-area must be configured with $\varnothing 8$ mm fittings on ports 2 and 4 and $\varnothing 12$ mm fittings on ports 1, 3 and 5.

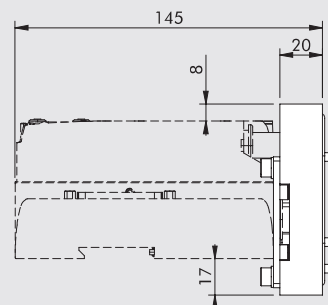
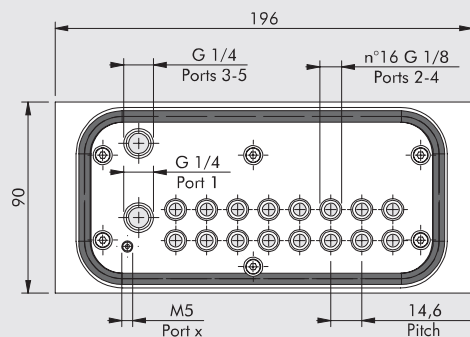
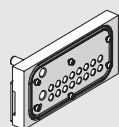
COMPONENTS

- ① SPLASH-AREA PLATE: 6082 anodized aluminium or AISI 304 stainless steel
- ② SPLASH-AREA GASKET: NBR
- ③ EXTENSIONS: nickel-plated brass
- ④ GASKETS: NBR
- ⑤ FIXING BRACKET: AISI 304 stainless steel
- ⑥ SCREWS AND WASHERS: stainless steel
- ⑦ 1/8" PLUGS: nickel-plated brass (to cover unused outputs)
- ⑧ SCREWS AND WASHERS: zinc-plated steel

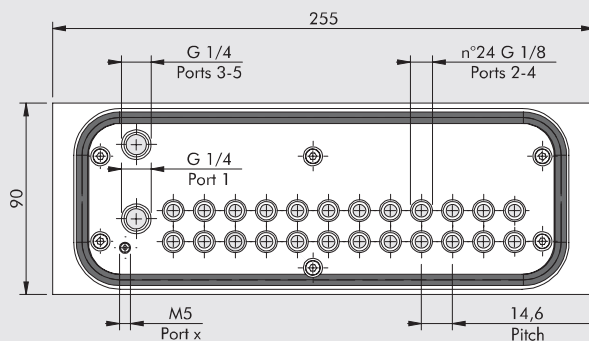
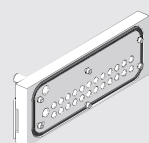


DIMENSIONS AND ORDERING CODES

3 to 8 POSITION



8 to 12 POSITION



Code	Description	Weight [g]
02282R7080	EB 80 splash-area kit 3-8 positions aluminum	919
02282R7081	EB 80 splash-area kit 3-8 positions stainless steel	2354
02282R7120	EB 80 splash-area kit 8-12 positions aluminum	1189
02282R7121	EB 80 splash-area kit 8-12 positions stainless steel	3046

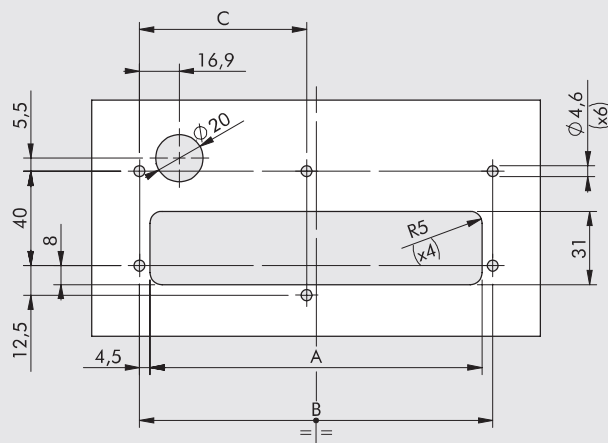
DIMENSIONS FOR THE DRILLING OF THE FIXING INTERFACE

3 to 8 POSITION

A	B	C
140.6	149.9	70.8

8 to 12 POSITION

A	B	C
199	208	100



KEY TO CODES

02282	R	7	08	0
FAMILY	CATEGORY	SUBSYSTEM	NUMBER OF POSITIONS	MATERIAL
02282 EB 80	R Spares and accessories	7 Splash-area	08 8 positions 12 12 positions	0 Anodized aluminum plate 6082 1 Plate AISI 304

NOTES

VALVES

HDM + MULTI-POLE CONNECTION

HDMs are the ideal solution for those requiring the unbeatable performance, flexibility and modularity of Multimach valves combined with sturdy mechanics and a high degree of protection against external agents. Each valve is enclosed in a reinforced technopolymer protective shell that acts as a shock-absorber and prevents the infiltration of dirt. The class of protection is IP65.

The smooth, rounded design makes HDMs ideal for applications requiring frequent washing without the deposit of residues. All the pneumatic connections are on one side, with built-in push-in fittings. The user interface is on another side so that the fitter and the service engineer have everything at hand.

Flexibility is total: there are 1-16 valves, input and output terminals for pipes of different sizes and intermediate modules for separate inputs and outputs. One very important new feature is that valves of different capacities can be mounted as required. Three different valve sizes can be combined at will. This means a valve can be replaced at any time by another one offering a different performance. It only takes a few seconds to replace or add a valve.

To do this, merely loosen the two grub screws fixing the valve to the adjacent ones. Since the electrical signal is relayed from one valve to the next by means of gold-plated contacts connected to an electronic board, the electrical connections are entirely automatic.

The ratio of the HDM's flow rate to its dimensions is unrivalled – miniaturisation and efficiency have reached a peak.

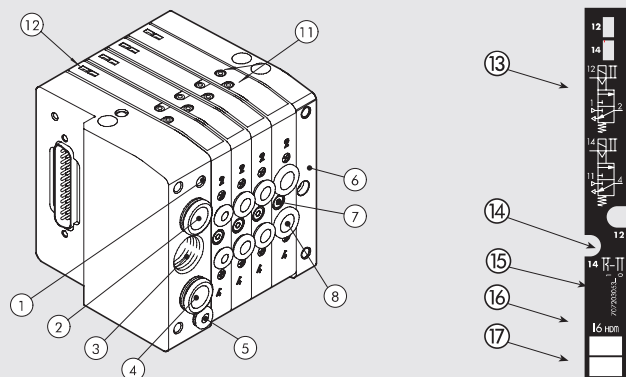


TECHNICAL DATA

Valve port connections	Ø 4,6,8,10 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 or Ø12 mm automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port				
Connection on the end-plate for the supply of pilots	Automatic fitting Ø 4 mm				
Maximum number of pilots	16				
Maximum number of valves	16 (same as the max. no. of pilots)				
Operating temperature range	°C -10 to +60				
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous				
Pressure range	bar X (pilot supply) 3 to 7 1-11 (valve supply) vacuum at 10				
Terminal 1-1	3 to 7				
Terminal 1	3 to 7				
Voltage range	24VDC ± 10%				
Power	W 0.9				
Control	PNP or NPN				
Insulation class	F155				
Degree of protection	IP65 (with conveyed exhaust)				
Solenoid rating	100% ED				
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	11.5 mm Ø 4	11.5 mm Ø 6	14 mm Ø 8	23 mm Ø 8 23 mm Ø 10
version 5/2 and 3/2		200	500	650	1000 1200
version 5/3		200	300	300	500
TRA/TRR 2x3/2 monostable at 6 bar	ms		8 / 45		8 / 60
TRA/TRR 5/2 monostable at 6 bar	ms		8 / 33		9 / 60
TRA/TRR 5/2 bistable at 6 bar	ms		20 / 20		8 / 8
TRA/TRR 5/3 cc monostable at 6 bar	ms		20 / 20		15 / 15
Note on use	Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.				
Compatibility with oils	See chapter Z1				

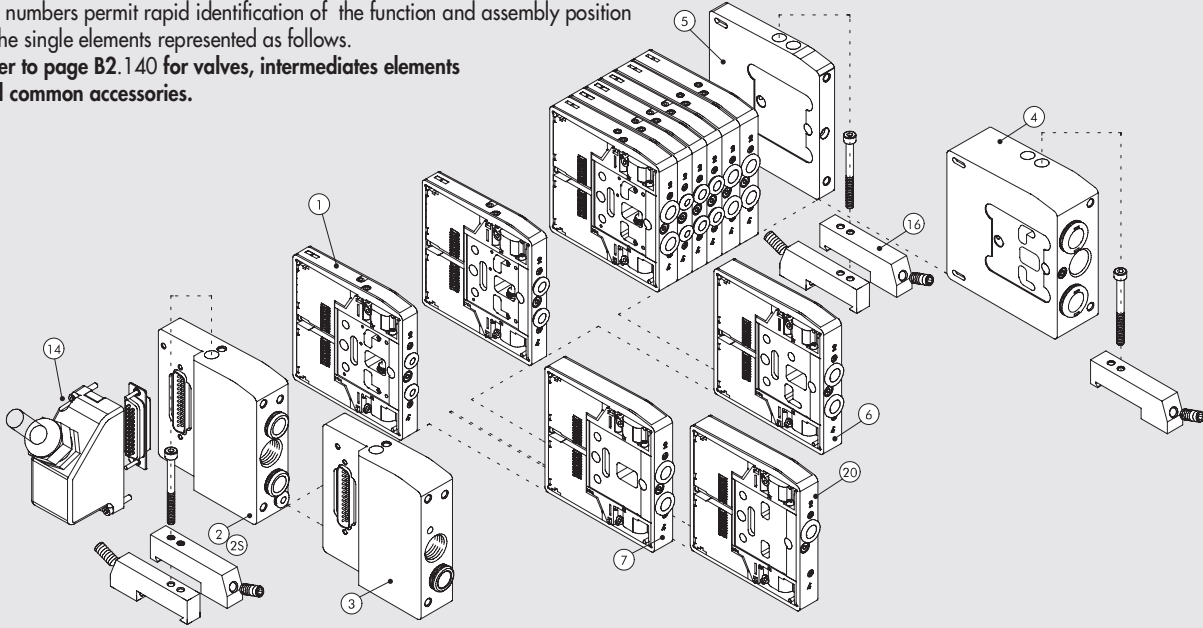
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate or right end-plate 1-11
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 4, 6, 8 or 10 mm
- ⑨ Manual control
- ⑩ LED (LED on, solenoid valve energised)
- ⑪ Pneumatic symbol
- ⑫ Identification of the monostable or bistable manual control
- ⑬ Valve ordering code
- ⑭ Valve identification code
- ⑮ Blank space for valve number

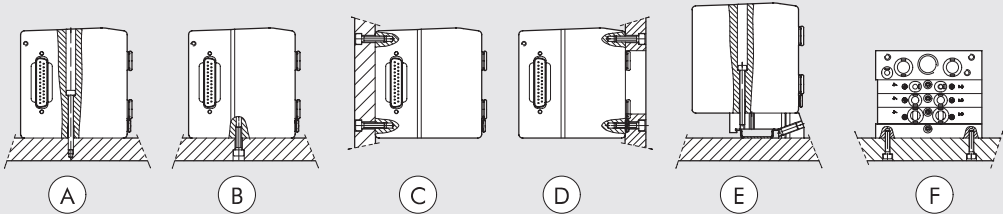


THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.140 for valves, intermediates elements and common accessories.



FIXING THE BASE

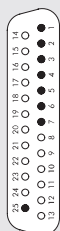


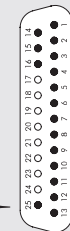
- Ⓐ Fixing from above using the 1 or 1-11 input terminal and the blind terminal.
 - Ⓑ Ⓒ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
 - Ⓓ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
 - Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
 - Ⓕ Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.
- Note: The sole fixing admitted is the one showed.**

SYNOPTIC, SIZES AND VERSIONS

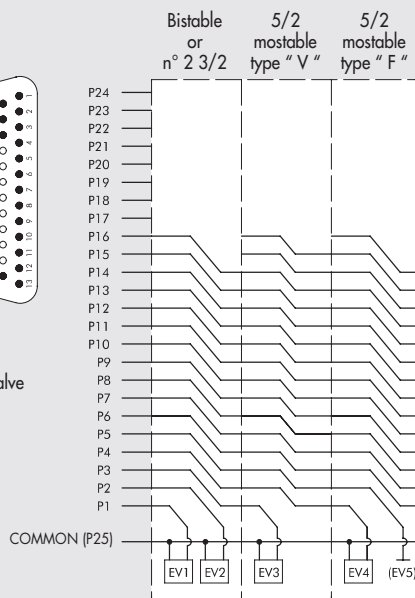
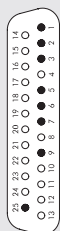
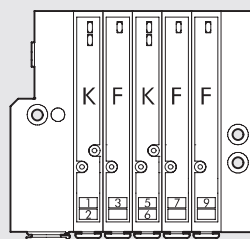
H D M VALVE	2 INPUT END-PLATE	8 ELECTRICAL BASE	M MANUAL TYPE	I6 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 4 - 1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 pipe Ø 10 3 End-plate 1 pipe Ø 10 25 End-plate 1-11 pipe Ø 12	8 D-Sub 25 wire	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 right-end-plate 1-11 pipe Ø12 5 blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 8S Cartridge 8 - 23 mm 10 Cartridge 10	14 IP65 25-wire shell 16 n° 2 brackets for DIN bar

* Uses a single PIN (like the V) and occupies 2 signals.



NPN - Com (+)

NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.



Technical drawing of the M5500-25P1 connector, showing front, side, and detail views with dimensions in mm.

Front View Dimensions:

- Overall height: 88.8
- Mounting hole spacing (center-to-center): 80
- Mounting hole diameter: $\varnothing 10$
- Mounting hole pitch: M 5x9
- Mounting hole offset from top: 10.5
- Mounting hole offset from bottom: 19
- Mounting hole offset from side: 6
- Mounting hole offset from center: 13
- Mounting hole offset from bottom edge: 23.2
- Mounting hole offset from side edge: 10
- Mounting hole offset from bottom edge: 6.7
- Mounting hole offset from side edge: 9
- Mounting hole offset from bottom edge: 43.7
- Mounting hole offset from side edge: 64.2
- Mounting hole offset from bottom edge: 76.5
- Mounting hole offset from side edge: 80
- Mounting hole offset from bottom edge: 88.8
- Mounting hole offset from side edge: 88.8

Side View Dimensions:

- Overall width: 86.1
- Mounting hole diameter: $\varnothing 10$
- Mounting hole pitch: M 5x9
- Mounting hole offset from top: 10.5
- Mounting hole offset from bottom: 19
- Mounting hole offset from side: 6
- Mounting hole offset from center: 13
- Mounting hole offset from bottom edge: 23.2
- Mounting hole offset from side edge: 10
- Mounting hole offset from bottom edge: 6.7
- Mounting hole offset from side edge: 9
- Mounting hole offset from bottom edge: 43.7
- Mounting hole offset from side edge: 64.2
- Mounting hole offset from bottom edge: 76.5
- Mounting hole offset from side edge: 80
- Mounting hole offset from bottom edge: 88.8
- Mounting hole offset from side edge: 88.8

Detail View Dimensions:

- Overall width: 86.1
- Mounting hole diameter: $\varnothing 10$
- Mounting hole pitch: M 5x9
- Mounting hole offset from top: 10.5
- Mounting hole offset from bottom: 19
- Mounting hole offset from side: 6
- Mounting hole offset from center: 13
- Mounting hole offset from bottom edge: 23.2
- Mounting hole offset from side edge: 10
- Mounting hole offset from bottom edge: 6.7
- Mounting hole offset from side edge: 9
- Mounting hole offset from bottom edge: 43.7
- Mounting hole offset from side edge: 64.2
- Mounting hole offset from bottom edge: 76.5
- Mounting hole offset from side edge: 80
- Mounting hole offset from bottom edge: 88.8
- Mounting hole offset from side edge: 88.8

Other Dimensions:

- Mounting hole offset from top: 10.5
- Mounting hole offset from bottom: 19
- Mounting hole offset from side: 6
- Mounting hole offset from center: 13
- Mounting hole offset from bottom edge: 23.2
- Mounting hole offset from side edge: 10
- Mounting hole offset from bottom edge: 6.7
- Mounting hole offset from side edge: 9
- Mounting hole offset from bottom edge: 43.7
- Mounting hole offset from side edge: 64.2
- Mounting hole offset from bottom edge: 76.5
- Mounting hole offset from side edge: 80
- Mounting hole offset from bottom edge: 88.8
- Mounting hole offset from side edge: 88.8

Ⓐ = Holes for 25-pin IP51 connectors
(for example, code 0226180101)

Code	Description	Weight [g]
0227301200	End-plate HDM 1-11-25D Ø10	370

This end-plate allows for supplies to be differentiated

- Port 2
- Port 4
- Pilot supply

[illegible]

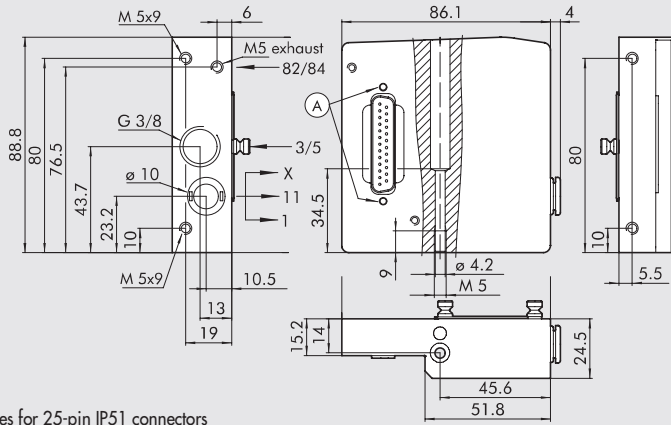
Ⓐ = Holes for 25-pin IP51 connectors
(for example, code 0226180101)

Code	Description	Weight [g]
0227301220	End-plate HDM 1-11-25D Ø12	370

This end-plate allows for supplies to be differentiated

- Port 2
- Port 4
- Pilot supply

③ END-PLATE 1-25D - PIPE Ø10

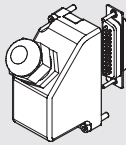


Ⓐ = Holes for 25-pin IP51 connectors
(for example, code 0226180101)

Code	Description	Weight [g]
0227301201	End-plate HDM 1-25D Ø10	370

ACCESSORIES

⑭ 45° CONNECTOR KIT, 25 WIRES IP65



Code	Description	Weight [g]
0226180107	45° connector kit, 25 wires IP 65	65

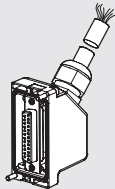
CABLES



Code	Description	Weight [g/m]
0226107201	10-wire cable	60
0226107101	19-wire cable	122
0226107102	25-wire cable	130

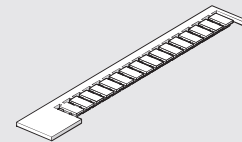
Specify the number of metres desired.

PRE-WIRED 45° CONNECTOR KIT, 25 WIRES IP65



Code	Description	Weight [g]
0226960100	Connector IP 65 + 25-wire 45° cable L = 1 m	190
0226960250	Connector IP 65 + 25-wire 45° cable L = 2.5 m	390
0226960500	Connector IP 65 + 25-wire 45° cable L = 5 m	740

IDENTIFICATION PLATE KIT



Code	Description
0226107000	Identification plate kit

Comes in 16-pc. packs

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTOR

25 PIN

Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	9	red/black	17	orange/white	25	green/black
2	red/brown	10	brown/white	18	green		
3	white/black	11	red/orange	19	yellow/black		
4	red/blue	12	light blue	20	white		
5	black/orange	13	yellow/white	21	blue/white		
6	yellow/red	14	yellow	22	brown		
7	black/brown	15	red/green	23	green/white		
8	white/red	16	orange	24	red		

HDM + AS-Interface

VALVES

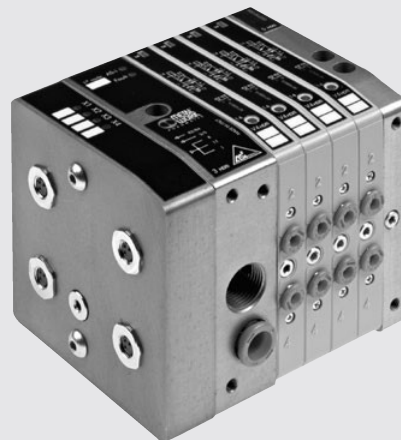
HDM + AS-Interface

The HDM+AS-Interface system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and AS-I connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an AS-I island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6, 8 or 10; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65. The arrangement of the functions continues the traditional optimisation of the HDMs: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections on the other side; the connectors for AS-I cables on the opposite side longitudinally, so that several valve islands can be arranged in line, fixed on a DIN bar.

There are many AS-I terminal variants to meet all possible requirements:

- with 1 node, for controlling up to 4 valve solenoid pilots;
- with 2 nodes, for controlling up to 8 solenoid pilots;
- with 1 node for output and input for controlling up to 4 solenoid pilots and receiving up to 4 input signals. The input connectors are M8 or M12;
- with 2 nodes for output and input for controlling up to 8 solenoid pilots and receiving up to 8 input signals with M8 connectors;
- power supply with the AS-I yellow cable only;
- power supply with two cables: the yellow AS-I cable and the black power supply cable.
- traditional V.2.1 addressing or extended AB V.3.0 address for an increase in the node numbers which can be connected up to 62 and for a better diagnostics

Note: if you use valves 85 type or 10 exploiting their flow capacity it is necessary that the feeding pressure is at least 6 bar (to avoid the pressure to decrease too much on the pilots).

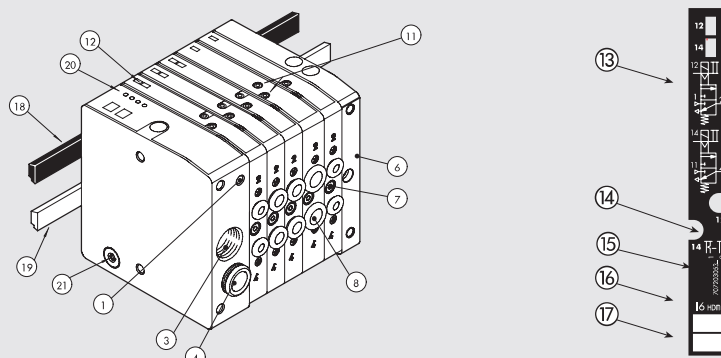


TECHNICAL DATA

Valve port connections	Ø 4,6,8,10 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 or 12* automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port				
Maximum number of pilots	Terminal with 1 node = 4 / terminal with 2 node = 8				
Maximum number of valves	Terminal with 1 node = 4 (same as the max. no. of pilots) / terminal with 2 node = 8 (same as the max. no. of pilots)				
Operating temperature range	°C	-10 to +60			
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous				
Pressure range		X (pilot supply) 3 to 7 bar		1-11 (valve supply) vacuum at 10 bar	
	Terminal 1-11				
	Terminal 1	3 to 7 bar			
Voltage range		24VDC ±10%			
Power for each pilot	W	0.9			
Solenoid Pilot Insulation class		F155			
Degree of protection		IP 65 (with conveyed exhaust, and unused INPUTS sealed with caps/plugs)			
Solenoid rating		100% ED			
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	11.5 mm Ø 4	11.5 mm Ø 6	14 mm Ø 8	23 mm Ø 8
	version 5/2 and 3/2	200	500	650	1000
	version 5/3	200	300	300	500
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45			8 / 60
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33			9 / 60
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20			8 / 8
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20			15 / 15
Note on use	Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.				
	*with right-end-plate 1-11				
Compatibility with oils	See chapter Z1				

COMPONENTS

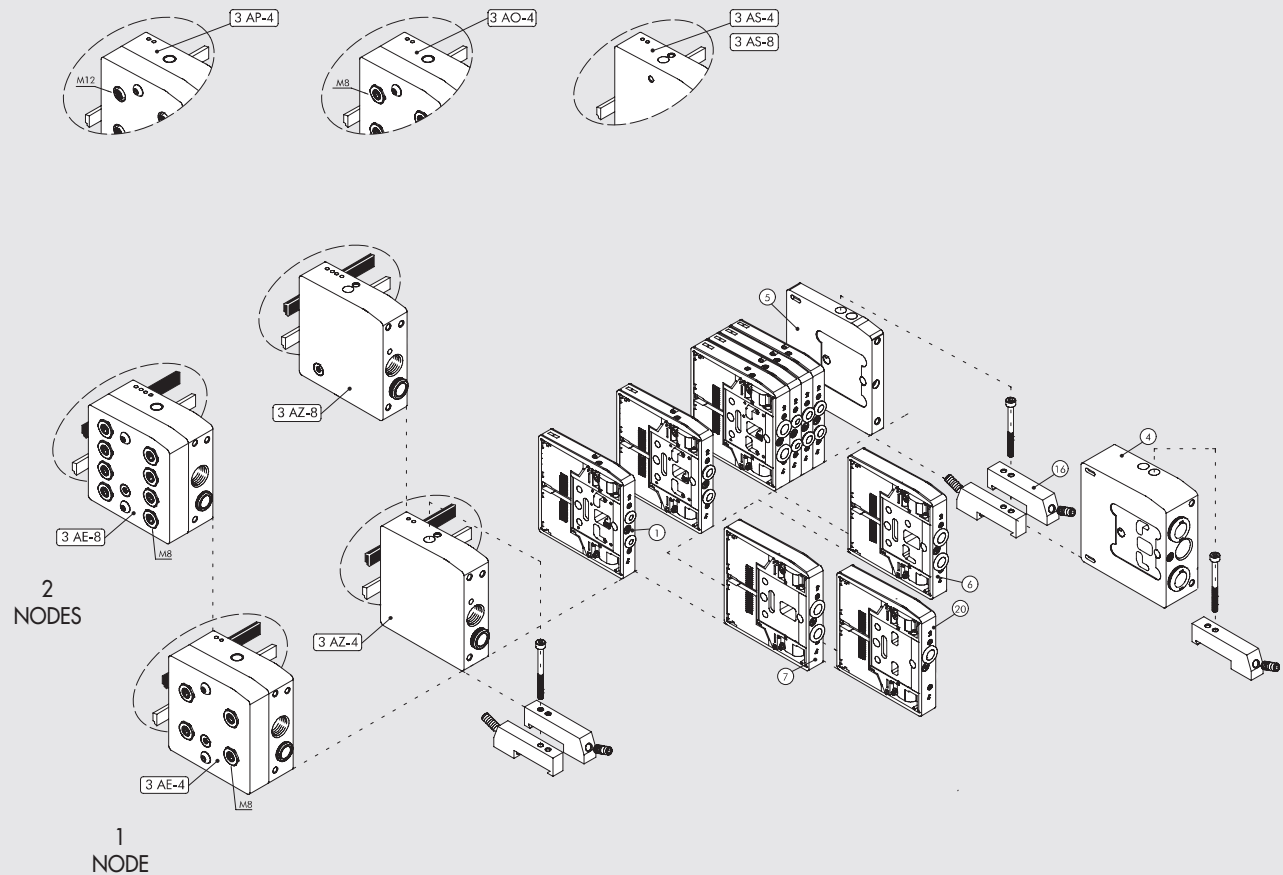
- Exhaust - Solenoid pilot 82/84
- Threaded connection of exhausts 3/5
- Valve supply - port 1-11-X
- Blind end-plate or right-end-plate 1-11
- Screw for valve wall-mounting
- Utility port for pipe Ø 4, 6, 8, 10 mm
- Manual control
- LED (LED on, solenoid valve energised)
- Pneumatic symbol
- Identification of the monostable or bistable manual control
- Valve ordering code
- Valve identification code
- Blank space for valve number
- Black cable for 24V (if present)
- AS-INTERFACE yellow cable
- AS-INTERFACE led



THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

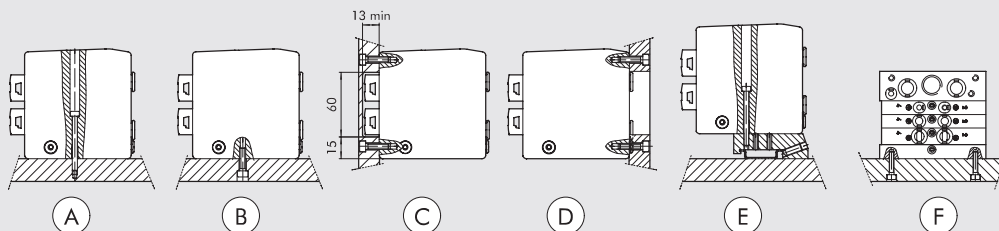
Refer to page B2.140 for valves, intermediates elements and common accessories.



VALVES

HDM + AS-Interface

FIXING THE BASE



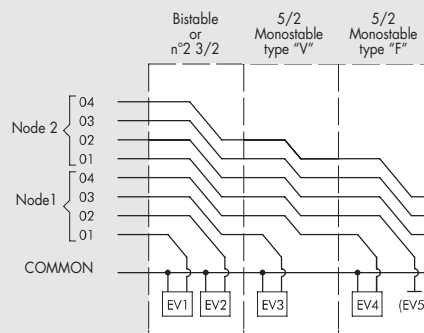
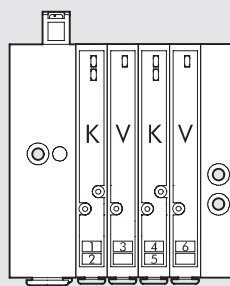
- Ⓐ Fixing from above using the 1 or 1-11 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the front of the terminals. An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.

Note: The sole fixing admitted is the one showed.

H D M VALVE	3 INPUT END-PLATE	A S - 4 ELECTRICAL BASE	M MANUAL TYPE	16 - W 8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	3 End-plate 1	Version with standard address AS-4 1 node, 4 out, yellow cable AS-8 2 nodes, 8 out, yellow cable AO-4 1 node, 4 out e 4 in M8, yellow cable AP-4 1 node, 4 out e 4 in M12, yellow cable AZ-4 1 node, 4 out, yellow cable and black cable AZ-8 2 nodes, 8 out, yellow cable and black cable AE-4 1 node, 4 out e 4 in M8, yellow cable and black cable AE-8 2 nodes, 8 out e 8 in M8, yellow cable and black cable	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 right-end-plate 1-11 pipe Ø12 5 blind end-plate 6 Passing-intermede 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 85 Cartridge 8 - 23 mm 10 Cartridge 10	16 n° 2 brackets for DIN bar

WIRING DIAGRAM

A diagram of a four-door refrigerator. The leftmost door is a freezer compartment with a single handle. The next three doors are refrigerator compartments, each with a double handle. The doors are labeled K, F, K, F from left to right. The bottom of the doors has a grid with numbers 1 through 7. The grid is divided into two rows: the top row contains 1, 3, 5, 7 and the bottom row contains 2, 4, 6, 8.



Code	Description	Weight [g]
0227301202	End-plate HDM 1 AS-4 1 node, 4 Out, yellow cable	465
0227301208	End-plate HDM 1 AS-8 2 nodes, 8 Out, yellow cable	454

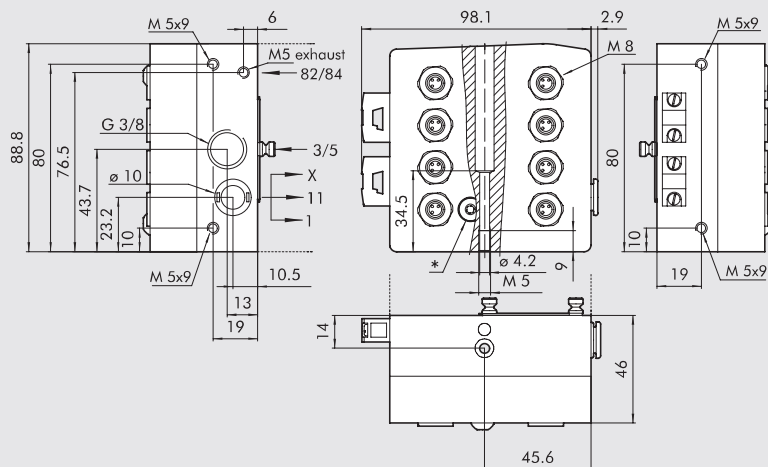
Code	Description	Weight [g]
0227301218	End-plate HDM 1 AO-4	759
	1 node, 4 Out and 4 In M8, yellow cable	

Code	Description	Weight [g]
0227301212	End-plate HDM 1 AP-4 1 node, 4 Out and 4 In M12, yellow cable	756

[illegible]

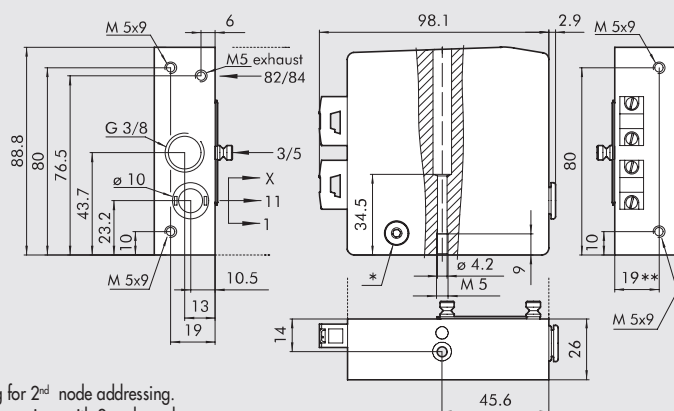
Code	Description	Weight [g]
0227301214	End-plate HDM 1 AE-4	761
	1 node, 4 Out and 4 In M8, yellow cable and black cable	

③ END-PLATE 1 AE-8, M8



Code	Description	Weight [g]
0227301216	End-plate HDM 1 AE-8 2 nodes, 8 Out and 8 In M8, yellow cable and black cable	773

③ END-PLATE 1 AZ-4, AZ-8

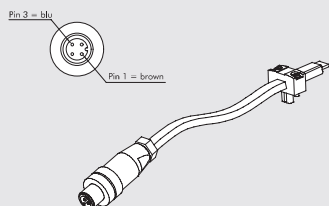


* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only
** 21 for AZ-8

Code	Description	Weight [g]
0227301204	End-plate HDM 1 AZ-4 1 node, 4 Out, yellow cable and black cable	467
0227301210	End-plate HDM 1 AZ-8 2 nodes, 8 Out, yellow cable and black cable	456

ACCESSORIES

AS-interface ADDRESS CONNECTOR KIT



Code	Description
0226950150	AS-interface address connector cable L = 1 m

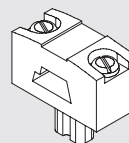
M8 - M12 PLUG



Code	Description
0240009039	PLUG M8
0240009040	PLUG M12

SPARES

AS-interface CONNECTOR KIT



Code	Description
0226950151	AS-interface connector kit

HDM + PROFIBUS-DP



The HDM+PROFIBUS system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an PROFIBUS island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6, 8 or 10; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65.

The arrangement of the functions continues the traditional optimisation of the HDM: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections are on the other side, and the electrical connectors and selectors are at the end of the island.

It is advisable to grounding the system to prevent electrical or electrostatic discharge from damaging the electronic circuit.



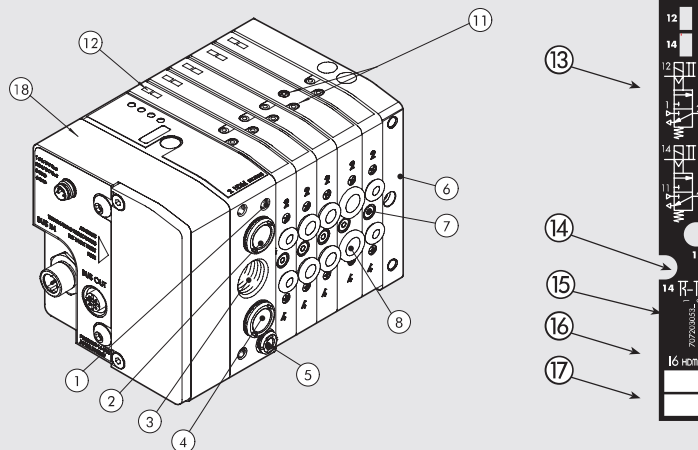
VALVES

HDM + PROFIBUS-DP

TECHNICAL DATA							
Valve port connections		Ø 4,6,8,10 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 or 12* automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port					
Connection on the end-plate 1-11 for the supply of pilots		Automatic fitting Ø 4 mm					
Maximum number of pilots		16					
Maximum number of valves		16 (same as the max. no. of pilots)					
Operating temperature range		-10 to +60 °C					
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous					
Pressure range		X (pilot supply)		1-11 (valve supply)			
	Terminal 1-11	3 to 7 bar		vacuum at 10 bar			
	Terminal 1	3 to 7 bar					
Voltage range		24 VDC ±10%					
		(slave protected against overload and reverse polarity)					
Power for each pilot		0.9 W					
Solenoid Pilot Insulation class		F155					
Degree of protection		IP65 (with conveyed exhaust, and that - in case of no use - the BUS OUT connector gets plugged)					
Solenoid rating		100% ED					
Flow rate at 6.3 bar ΔP 1 bar		Nl/min	11.5 mm Ø 4	11.5 mm Ø 6	14 mm Ø 8	23 mm Ø 8	23 mm Ø 10
	version 5/2 and 3/2		200	500	650	1000	1200
	version 5/3		200	300	300	500	500
TRA/TRR 2x3/2 monostable at 6 bar		ms	8 / 45			8 / 60	
TRA/TRR 5/2 monostable at 6 bar		ms	8 / 33			9 / 60	
TRA/TRR 5/2 bistable at 6 bar		ms	20 / 20			8 / 8	
TRA/TRR 5/3 cc monostable at 6 bar		ms	20 / 20			15 / 15	
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air.					
		*with right-end-plate 1-11					
Compatibility with oils		See chapter Z1					
Profibus-DP module for HDM valves							
Protection		Outputs protected against overloads and shortcircuits					
Max input power (all valves ON)		~500 mA					
Addressing		By rotary selectors					
Highest settable address number		99					
Default address		3					
Peripheral defect diagnosis		Local LED indicator and relay to Master					
Defects reported		Output shortcircuit or overload. Auxiliary power supply failure. Profibus communication active.					
Module status in the event of peripheral defect		The “peripheral defect” bit is active and accessible at the master station.					
Data bit value		0 = not enabled 1 = enabled					
Output status in the absence of communication		Disabled					

COMPONENTS

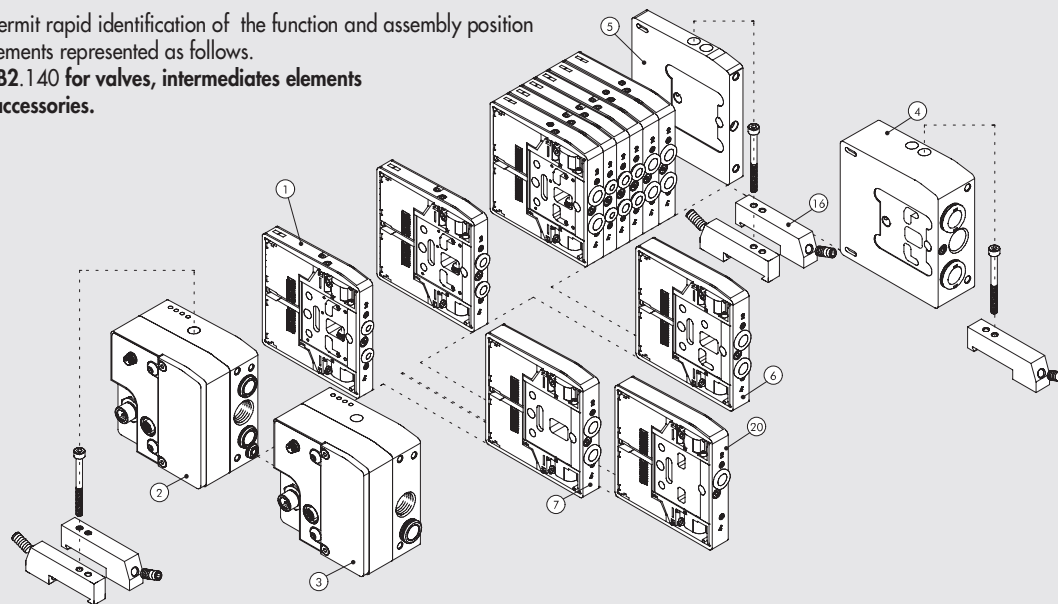
- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate or right-end-plate-1-11
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 4, 6, 8 or 10 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ Profibus terminal



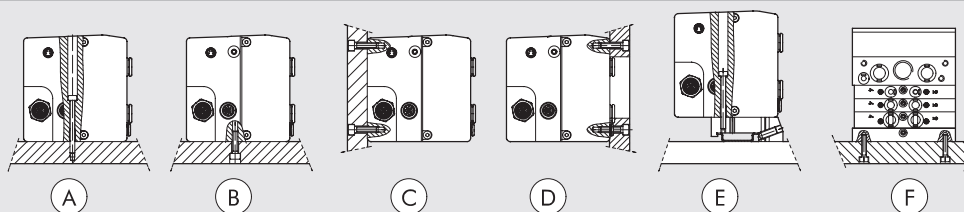
THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

Refer to page B2.140 for valves, intermediates elements and common accessories.



FIXING THE BASE



- Ⓐ Fixing from above using the 1 or 1-11 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.

Note: The sole fixing admitted is the one showed.

SYNOPTIC, SIZES AND VERSIONS

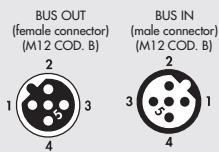
H D M	2	P	M	I6 - W 8 - W 6 - O 4 - L 8 - 5	1 6
VALVE	INPUT END-PLATE	ELECTRICAL BASE	MANUAL TYPE	TYPE OF VALVE	FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	P Profibus-DP	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 right-end-plate 1-11 pipe Ø12 5 blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 85 Cartridge 8 - 23 mm 10 Cartridge 10	16 n° 2 brackets for DIN bar

* Uses a single PIN (like the V) and occupies 2 signals.

WIRING DIAGRAM

- 1 = +24V bus (brown)
2 = +24V valve (white)
3 = GND (blue)
4 = GND (black)

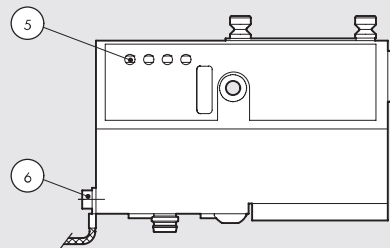
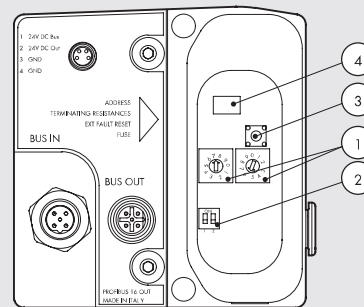
POWER SUPPLY (M8)



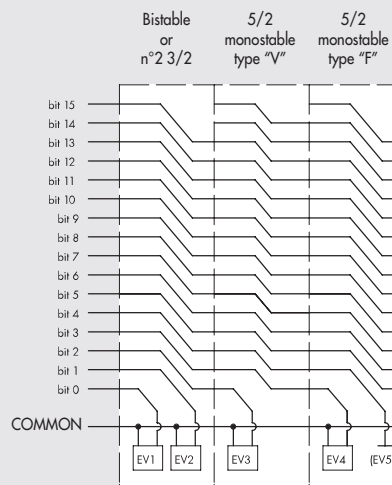
- 1 = +5V *
2 = A
3 = OV*
4 = B
5 = Shield

- * DO NOT CONNECT PIN 1 and PIN 3: to be used only for feeding of the external terminating resistors.
- For correct communication, use Profibus cables at least 1 metre long.
- The shield should be evenly distributed around the thread. Should this not be possible, the shield can be connected to pin 5. Both of these methods can also be used in combination.

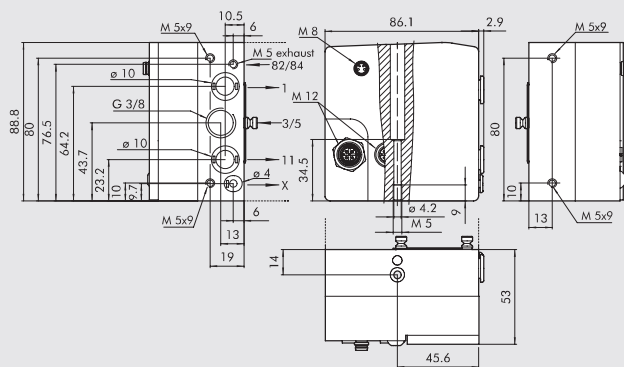
- ① Addressing
② Terminal resistances
③ Reset button faulty
④ Resettable fuse
⑤ Indicator Led
⑥ Grounding



NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.

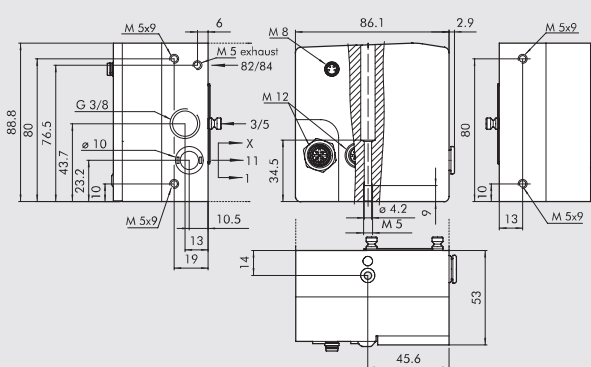


② END-PLATE 1-11 PROFIBUS-DP



Code	Description	Weight [g]
0227301231	End-plate HDM 1-11 PROFIBUS	730

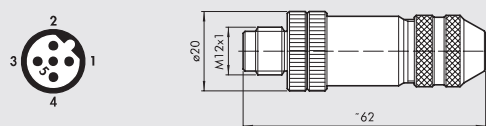
③ END-PLATE 1 PROFIBUS-DP



Code	Description	Weight [g]
0227301230	End-plate HDM 1 PROFIBUS	730

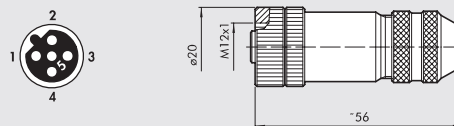
ACCESSORIES

M12 MALE CONNECTOR OUT-BUS



Code	Description
0240009035	M12 male connector B coding

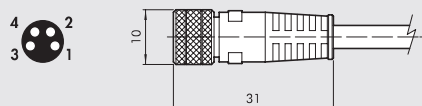
M12 FEMALE CONNECTOR IN-BUS



Code	Description
0240009036	M12 female connector B coding

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

* Very flexible cables, class 6 according to IEC 60228

M8 - M12 PLUG



Code	Description
0240009039	Plug M8
0240009040	Plug M12

HDM + EtherNet/IP



The HDM+EtherNet/IP system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact.

The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an EtherNet/IP island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6, 8 or 10; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65. The arrangement of the functions continues the traditional optimisation of the HDM: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections are on the other side, and the electrical connectors and selectors are at the end of the island.

It is advisable to grounding the system to prevent electrical or electrostatic discharge from damaging the electronic circuit.



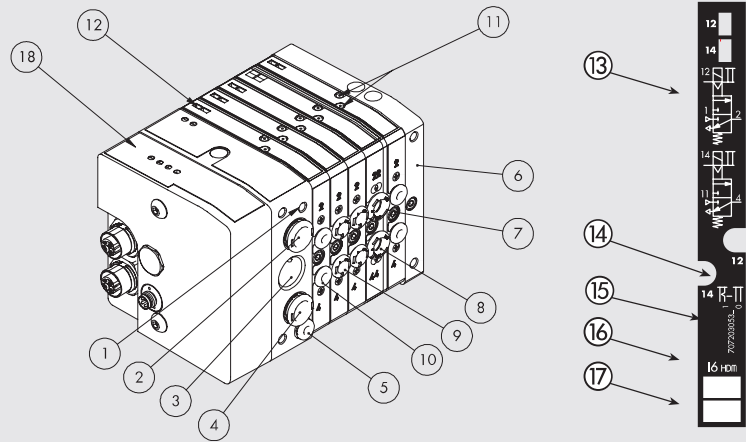
VALVES

HDM + EtherNet/IP

TECHNICAL DATA						
Valve port connections		Ø 4,6,8,10 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 or 12* automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port				
Connection on the end-plate 1-11 for the supply of pilots		Automatic fitting Ø 4 mm				
Maximum number of pilots		16				
Maximum number of valves		16 (same as the max. no. of pilots)				
Operating temperature range		°C -10 to +60				
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous				
Pressure range		X (pilot supply) 3 to 7 bar		1-11 (valve supply) vacuum at 10 bar		
Terminal 1-11		3 to 7 bar				
Terminal 1		24 VDC ±10% (slave protected against overload and reverse polarity)				
Voltage range		0.9 F155				
Power for each pilot		W				
Solenoid Pilot Insulation class		IP65 (with conveyed exhaust, and that - in case of no use - the BUS OUT connector gets plugged)				
Degree of protection		100% ED				
Solenoid rating		NI/min				
Flow rate at 6.3 bar ΔP 1 bar		11.5 mm Ø 4	11.5 mm Ø 6	14 mm Ø 8	23 mm Ø 8	23 mm Ø 10
version 5/2 and 3/2		200	500	650	1000	1200
version 5/3		200	300	300	500	500
TRA/TRR 2x3/2 monostable at 6 bar		ms 8 / 45		8 / 60		
TRA/TRR 5/2 monostable at 6 bar		ms 8 / 33		9 / 60		
TRA/TRR 5/2 bistable at 6 bar		ms 20 / 20		8 / 8		
TRA/TRR 5/3 cc monostable at 6 bar		ms 20 / 20		15 / 15		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air.				
		*with right-end-plate 1-11				
Compatibility with oils		See chapter Z1				
EtherNet/IP module for HDM valves						
Field buses		EtherNet/IP - 10/100 Mbit/s - Half-duplex - Full-duplex - Supports Auto-Negotiation				
Factory settings		Module name: Cmseries - Address IP 192.168.192.30				
Addressing		Software DHCP/BOOTP				
Voltage range		24VDC ± 10%				
Maximum number of pilots (Out)		16				
Maximum number of valves		16 (depending on the maximum number of solenoids)				
Icc bus supply current		Nominal Icc 120 mA - Instantaneous Icc (< 2 ms) 450 mA				
Maximum absorption of a valve distribution block with 16 mono-stable valves		Nominal Icc with 120mA OFF valves - Nominal Icc with 580 mA ON valves				
Protections		Module protected against overload and polarity reversal. Outputs protected against overloads and short-circuits				
Connections		Field bus: 2 M12 Female, D-coded, internal switch				
		Supply: M8 4 pin - input: M8 3 pin				
Data bit value		0 = not enabled - 1 = enabled				
Output status in the absence of communication		Disabled				

COMPONENTS

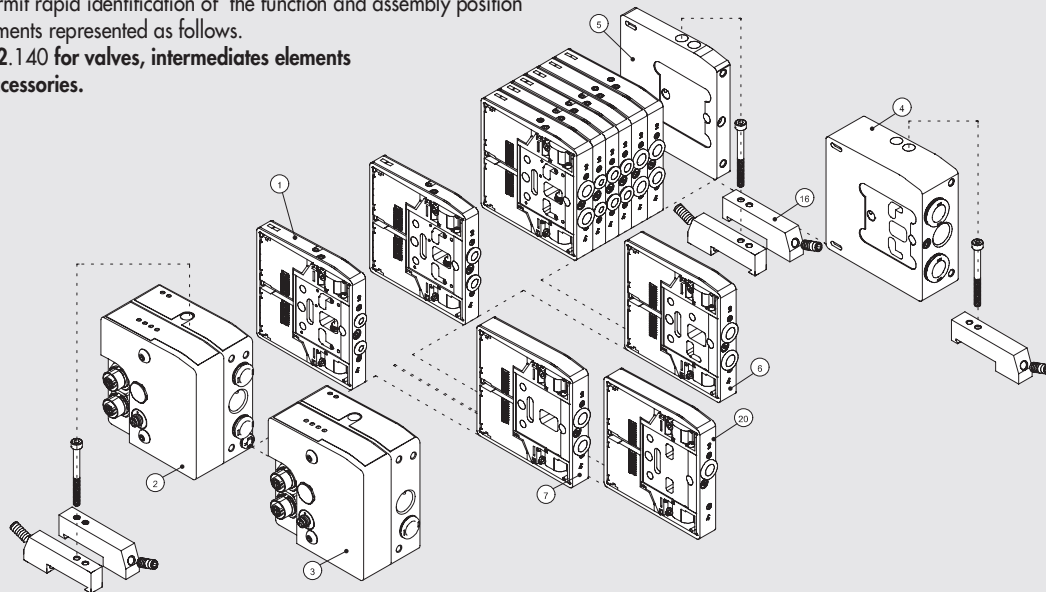
- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate or right-end-plate-1-11
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 4, 6, 8 or 10 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ Profibus EtherNet/IP



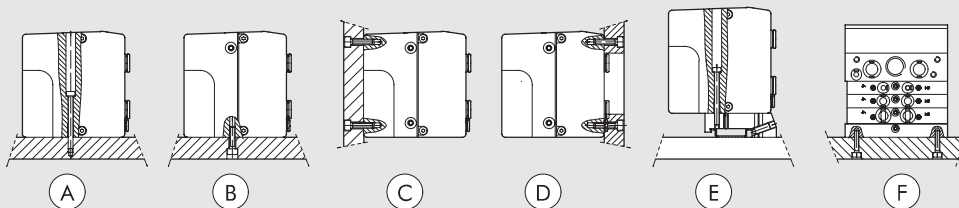
THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

Refer to page B2.140 for valves, intermediates elements and common accessories.



FIXING THE BASE



- Ⓐ Fixing from above using the 1 or 1-11 input terminal and the blind terminal.
- Ⓑ Ⓒ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
- Ⓓ Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
An opening for the pipes is made in the plate.
- Ⓔ Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
- Ⓕ Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.

Note: The sole fixing admitted is the one showed.

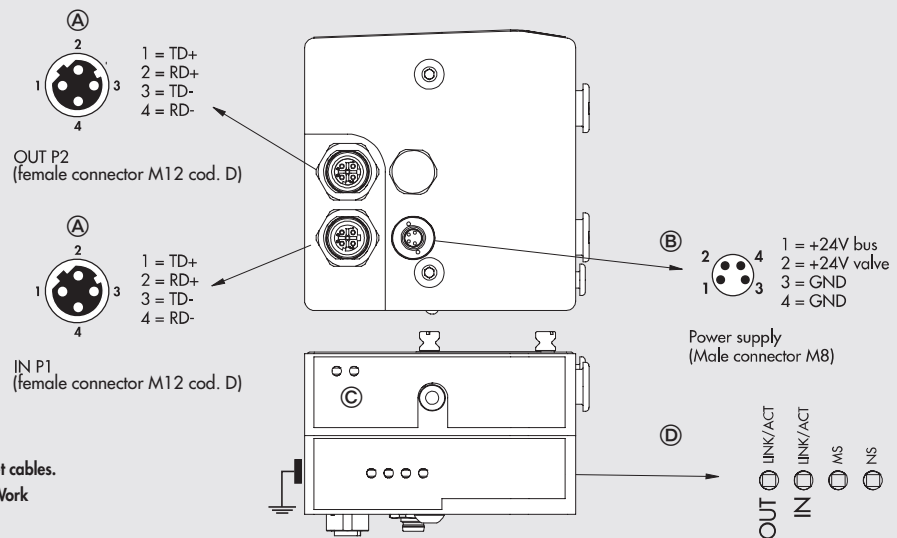
SYNOPTIC, SIZES AND VERSIONS

H D M VALVE	2 INPUT END-PLATE	EN ELECTRICAL BASE	M MANUAL TYPE	I6 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	EN EtherNet/IP	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 right-end-plate 1-11 pipe Ø12 5 blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 85 Cartridge 8 - 23 mm 10 Cartridge 10	16 n° 2 brackets for DIN bar

* Uses a single PIN (like the V) and occupies 2 signals.

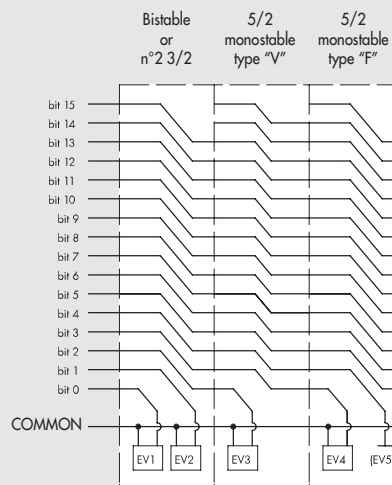
WIRING DIAGRAM

- Ⓐ Connection to the EtherNet/IP network
- Ⓑ Connection for node supply and auxiliary valve supply
- Ⓒ HDM diagnostics indicator light
- Ⓓ EtherNet/IP diagnostics indicator light

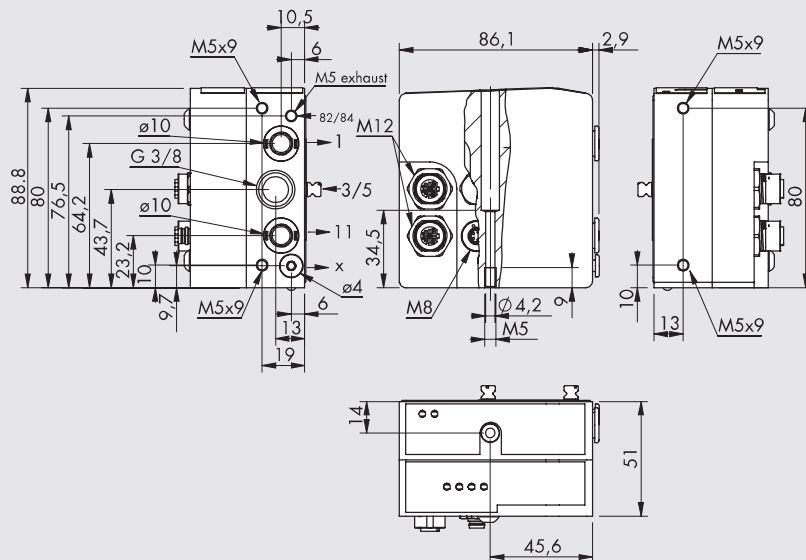
**WARNING**

For correct communication use only Industrial Ethernet cables.
Cat. 5 / Class D 100 MHz, like the one in the Metal Work catalogue.

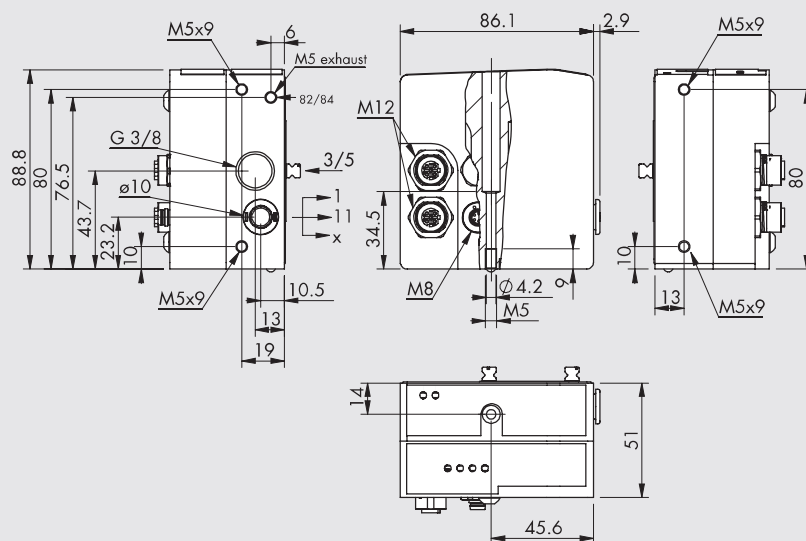
NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.



Code	Description	Weight [g]
0227301242	End-plate HDM 1-11	730
	EtherNet/IP	



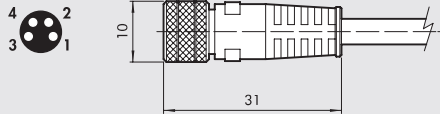
Code	Description	Weight [g]
0227301243	End-plate HDM 1 EtherNet/IP	730



ACCESSORIES

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

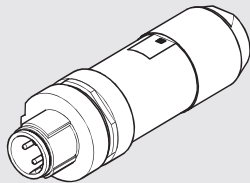
* Very flexible cables, class 6 according to IEC 60228

M12 PLUG



Code	Description
0240009040	Plug M12

M12 BUS CONNECTOR, D-CODED



Code	Description
0240005051	M12 BUS connector, D-coded

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP...)

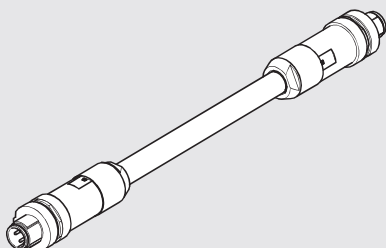
BUS CABLE



Code	Description
0240005220	BUS cable L = 20 m

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP...)

STRAIGHT CONNECTOR FOR M12-M12 BUS, D-CODED

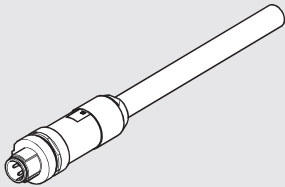


Code	Description
0240005103	Straight connector for M12-M12 BUS, D-coded, with 3 m cable
0240005105	Straight connector for M12-M12 BUS, D-coded, with 5 m cable
0240005110	Straight connector for M12-M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP...)

STRAIGHT CONNECTOR FOR M12 BUS, D-CODED

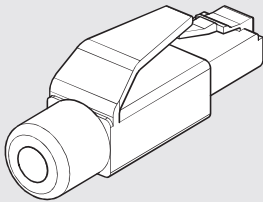
Pin	Cable color
1	Yellow
2	White
3	Red
4	Blue



Code	Description
0240005093	Straight connector for M12 BUS, D-coded, with 3 m cable
0240005095	Straight connector for M12 BUS, D-coded, with 5 m cable
0240005100	Straight connector for M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

RJ45 CONNECTOR



Code	Description
0240005050	RJ45 connector with 4 contacts according to IEC 60603-7

NOTES

HDM + CANopen



The HDM+CANopen system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. Two versions of end-plate are available: one can handle up to 16 controls (16 Out) and one up to 16 controls and 8 inputs (16 Out + 8 In). The input connectors are M12. Two inputs can be connected to each connector. The functions are arranged to ensure the same optimisation as the HDMs. The user interface is all on one side to facilitate the work of the fitter and service engineer. All pneumatic connections are on one side; the electrical connectors and selectors are on top of the island.



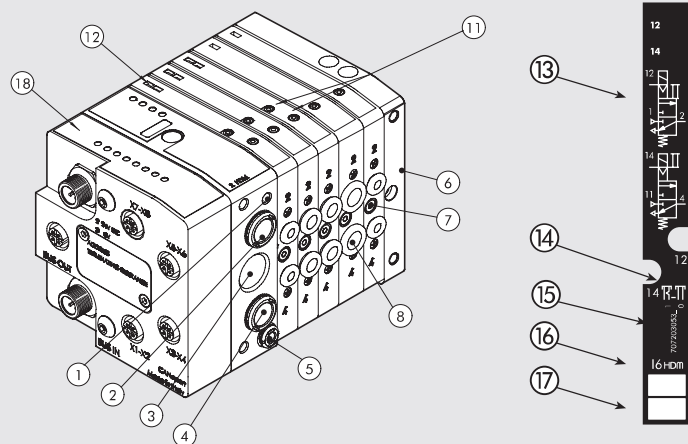
VALVES

HDM + CANopen

TECHNICAL DATA							
Valve port connections		Ø 4,6,8,10 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 or 12* automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port					
Connection on the end-plate 1-11 for the supply of pilots		Automatic fitting Ø 4 mm					
Maximum number of pilots		16					
Maximum number of valves		16 (same as the max. no. of pilots)					
Operating temperature range		-10 to +60 °C					
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous					
Pressure range		X (pilot supply) 3 to 7 bar		1-11 (valve supply) vacuum at 10 bar			
		Terminal 1-11					
		Terminal 1					
Voltage range		3 to 7 bar 24VDC ±10% (slave protected against overload and reverse polarity)					
Power for each pilot		0.9 W					
Solenoid Pilot Insulation class		F155					
Degree of protection		IP65 (with conveyed exhausts and with not used connectors plugged)					
Solenoid rating		100% ED					
Flow rate at 6.3 bar ΔP 1 bar		Nl/min	11.5 mm Ø 4	11.5 mm Ø 6	14 mm Ø 8	23 mm Ø 8	23 mm Ø 10
		version 5/2 and 3/2	200	500	650	1000	1200
		version 5/3	200	300	300	500	500
TRA/TRR 2x3/2 monostable at 6 bar		ms	8 / 45			8 / 60	
TRA/TRR 5/2 monostable at 6 bar		ms	8 / 33			9 / 60	
TRA/TRR 5/2 bistable at 6 bar		ms	20 / 20			8 / 8	
TRA/TRR 5/3 cc monostable at 6 bar		ms	20 / 20			15 / 15	
Note on use		Insert the pipes in the fittings, before passing air through the valves,otherwise the gasket may be pulled out of its seat by the flow of air. * with right-end-plate 1-11 See chapter Z1					
Compatibility with oils							
CANopen module for HDM valves							
Protection		Outputs protected against overloads and shortcircuits					
Max input power (all valves ON)		~800 mA					
Addressing		By DIP SWITCH					
Highest settable address number		127					
Default address		1					
Peripheral defect diagnosis		Local LED indicator and relay to Master					
Defects reported		Output shortcircuit or overload. Auxiliary power supply failure. CANopen communication active.					
Module status in the event of peripheral defect		The “peripheral defect” bit is active and accessible at the master station.					
Data bit value		0 = not enabled 1 = enabled					
Output status in the absence of communication		Disabled					
INPUT module for HDM valves							
Sensor supply voltage		24 VDC ±10% (depending on the supply of the CANopen module)					
Max sensor power (distributed over eight connectors)		mA	40				
Type of input		PNP for sensor 2-3 wires according to EN 60947-5-2					
Protection		Protected inputs against overload and short-circuit					
Active INPUT signalling		One LED for each INPUT					

COMPONENTS

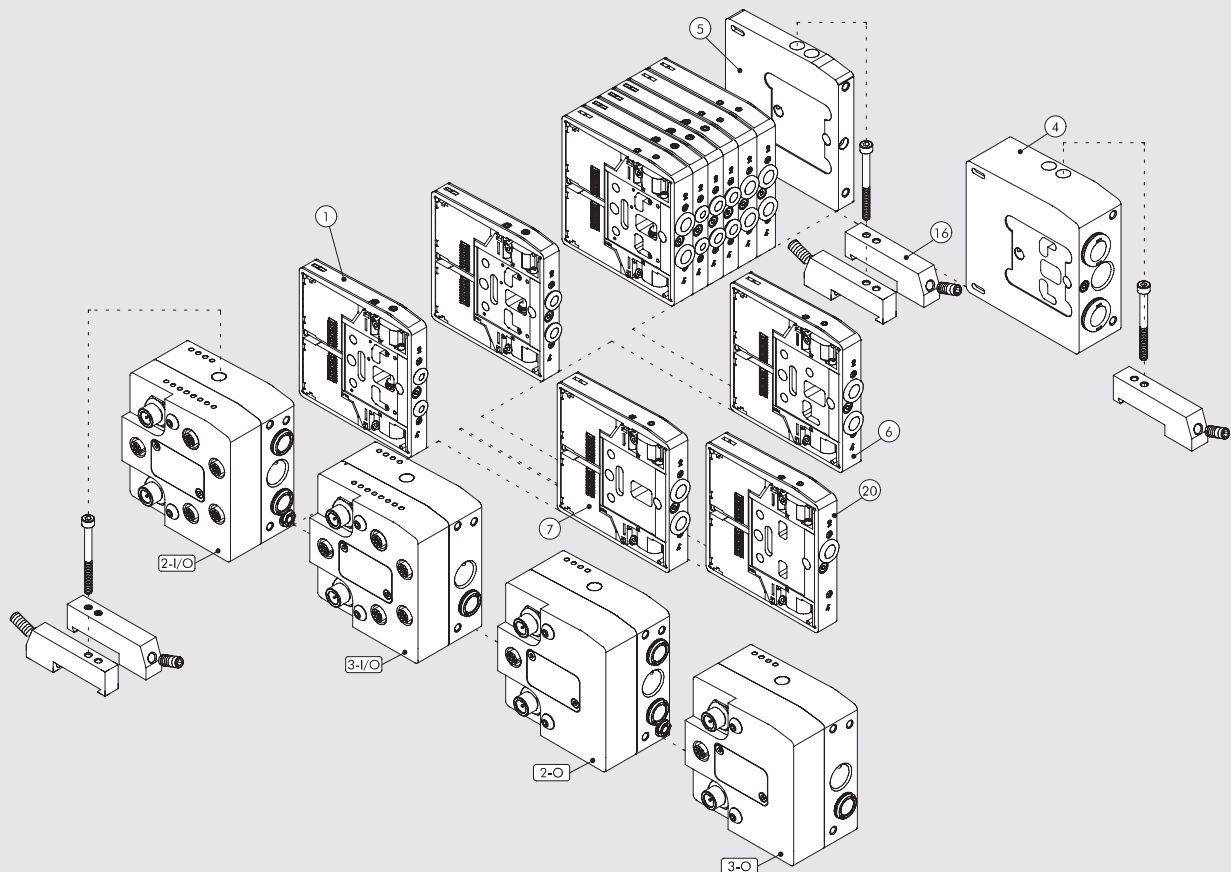
- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate or right-end-plate 1-11
- ⑦ Screw for valve wall-mounting
- ⑧ Utility port for pipe Ø 4, 6, 8 or 10 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CANopen terminal



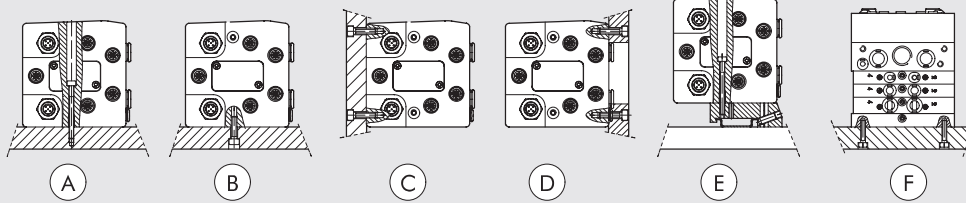
THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.

Refer to page B2.140 for valves, intermediate elements and common accessories.



FIXING THE BASE



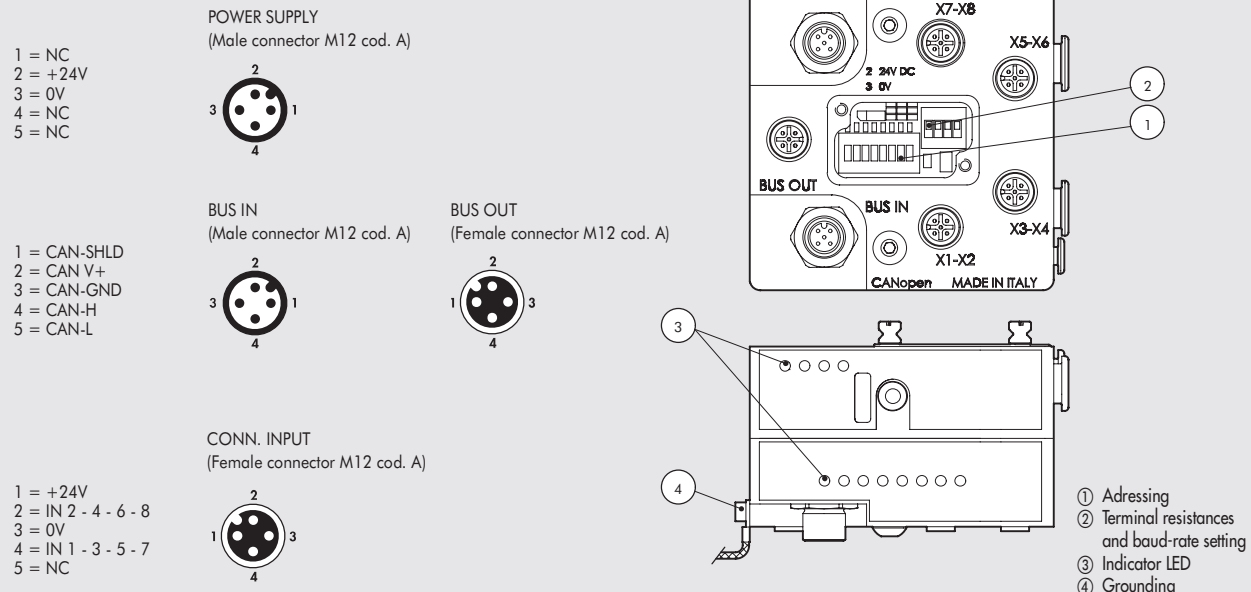
- (A) Fixing from above using the 1 or 1-11 input terminal and the blind terminal.
 (B) (C) Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
 (D) Fixing from above using the 1 or 1-11 input terminal and the blind terminal, using the M5 threads on the front of the terminals.
 An opening for the pipes is made in the plate.
 (E) Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate, using the push-in bracket code 0227301600.
 (F) Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.
Note: The sole fixing admitted is the one showed.

SYNOPTIC, SIZES AND VERSIONS

H D M VALVE	2 INPUT END-PLATE	CAN O ELECTRICAL BASE	M MANUAL TYPE	16 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 6 FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	CAN O CANopen 16 OUTPUT CAN I/O CANopen 8 INPUT e 16 OUTPUT	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 right-end-plate 1-11 pipe Ø12 5 blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 85 Cartridge 8 - 23 mm 10 Cartridge 10	16 n° 2 brackets for DIN bar

* Uses a single PIN (like the V) and occupies 2 signals.

WIRING DIAGRAM



Code	Description	Weight [g]
0227301251	End-plate 1-11	745
	HDM CANopen	
	OUTPUT	

Handles 16 OUTPUTS (solenoid pilots)

[illegible]

Code	Description	Weight [g]
0227301253	End-plate 1	746
	HDM CANopen OUTPUT	

Handles 16 OUTPUTS (solenoid pilots)

[illegible]

Code	Description	Weight [g]
0227301250	End-plate 1-11	734
	HDM CANopen	
	IN-OUT	

Handles 16 OUTPUTS and 8 INPUTS

[illegible]

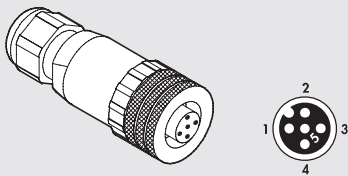
Code	Description	Weight [g]
0227301252	End-plate 1	735
	HDM CANopen	
	IN-OUT	

Handles 16 OUTPUTS and 8 INPUTS

ACCESSORIES

STRAIGHT CONNECTOR FOR CANopen POWER SUPPLY

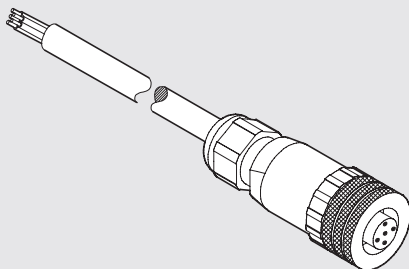
Code	Description
W0970513001	5-pin M12x1 straight connector



STRAIGHT CONNECTOR WITH CANopen POWER CABLE

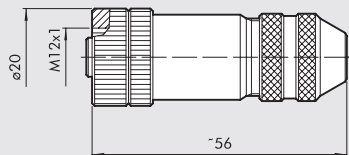
Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

Code	Description
W0970513002	5-pin M12x1 straight connector with wire L = 5 m



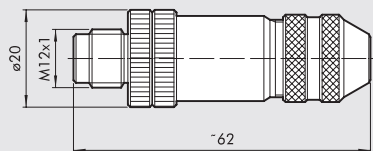
FEMALE CONNECTOR FOR CANopen BUS-IN

Code	Description
0240009055	M12 female connector, A coding

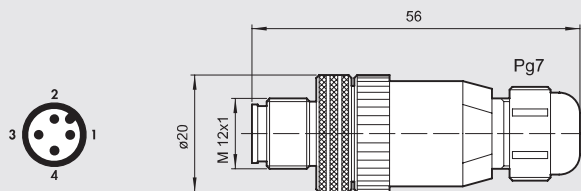


MALE CONNECTOR FOR CANopen BUS-OUT

Code	Description
0240009038	Male connector Bus A coding



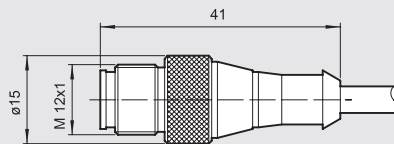
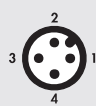
STRAIGHT CONNECTOR WITHOUT CABLE FOR CANopen INPUT



Code	Description
0240009021	Straight fitting without cable

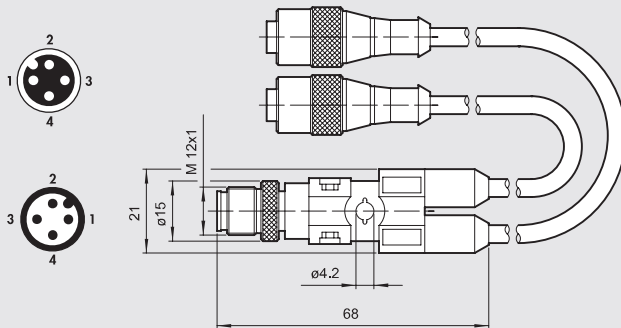
STRAIGHT CONNECTOR WITH CABLE FOR CANopen INPUT

Pin	Cable colour
1	Brown
2	White
3	Blue
4	Black



Code	Description
0240009002	Straight, with 1.5 m cable
0240009003	Straight, with 5 m cable

Y-DISTRIBUTOR WITH CABLE AND M12 STRAIGHT CONNECTORS FOR CANopen INPUT



Code	Description
0240009031	Y-Distributor cable 0.6 m
0240009032	Y-Distributor cable 1.5 m

M12 PLUG FOR BUS OUT E INPUT CANopen

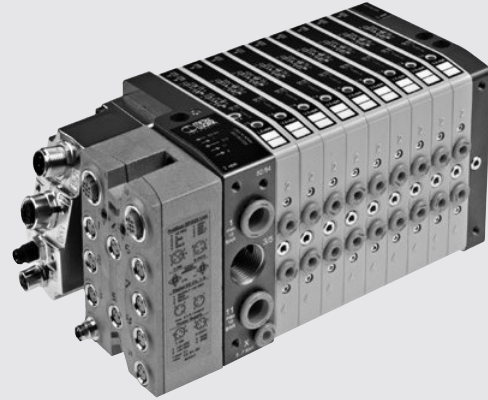


Code	Description
0240009040	Plug M12

An advanced field bus system interfacing with the Multimach world. B&R has developed a new standard for automation, called FORMULA X. For further details about features, functions and qualities of this system, reference must be made to the B&R documentation, also available on the web site www.br-automation.com

An overview is given below.

The X-system is a system handling analogue and digital inputs and outputs for local or remote use, which B&R defines as decentralised backplane. Different types of modules are available. We present those designed for connection with Multimach and HDM valve islands. We only indicate the B&R's code root, since each type of module comes in different variants, that differ by number of signals handled, that can be 8, 16 or 24, and by type of signal, that can be input, output or input/output indifferently. Common to all the modules is the presence of 4 connections: a signal input, a signal output for the following modules, a power input (24V DC), a power output for the following modules.



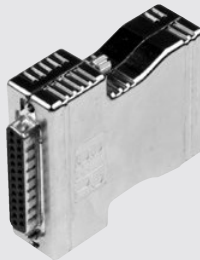
VALVES

HDM + B&R

B&R CONNECTORS AND MODULES

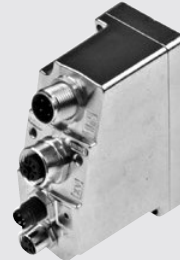
IP20 7XV---50-11 SMART CONNECTOR

It is a plug connector with IP20 protection that contains the X system electronics. It can be connected with HDM islands, using the special input end-plate, type 1, code 0227301207 or the special input end-plate type 1-11, code 0227301206.



IP67 7XV---50-51 SMART CONNECTOR

It is a plug connector with IP67 protection, that contains the X system electronics. It can be connected with HDM islands, using the special input end-plate type 1, code 0227301207, or the special input end-plate, type 1-11 code 0227301206.



X67 I/O SYSTEM MODULES

These are modules with IP67 protection, connected to the X system, for handling inputs and outputs. It is interesting to note that their size is such that they can be fixed directly to the HDM input end-plate type 1-11, code 0227301206

(N.B. NOT to be fixed to the HDM end-plate type 1, code 0227301207).

X67 BUS CONTROLLER MODULES

These are modules with protection IP67, receiving a signal according to one of the DP Profibus, CAN open, Device Net, Ethernet Powerlink protocols (the module code differs obviously according to the protocol being controlled). The output signal is according to the X-system.

These are gateways converting the signals of a field bus into an X-system. These modules control the inputs and/or outputs via the M8 connectors provided. They can be fixed directly to the HDM input end-plate type 1-11, code 0227301206

(N.B. NOT to be fixed to the HDM end-plate, type 1, code 0227301207).

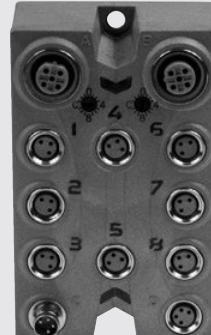
X2X



X2X



PROFIBUS-DP
DEVICE-NET
CAN-OPEN
ETHERNET

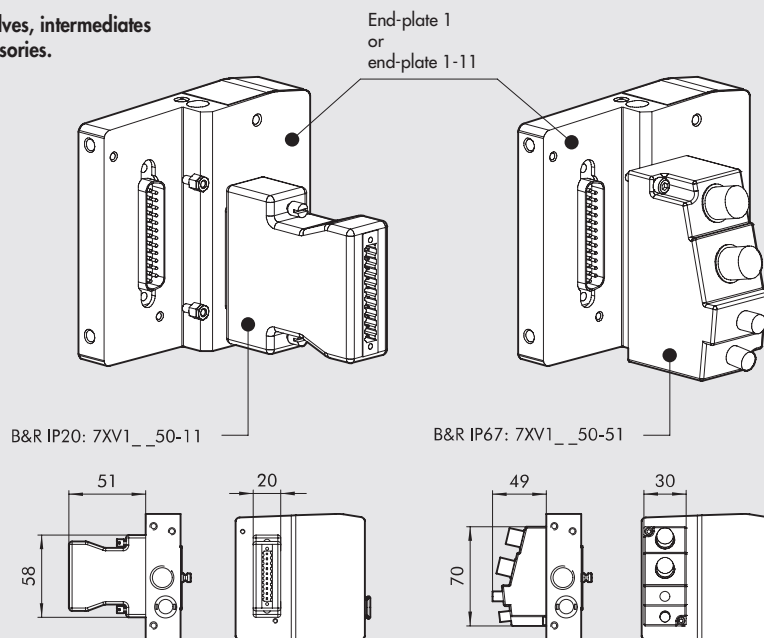


X2X

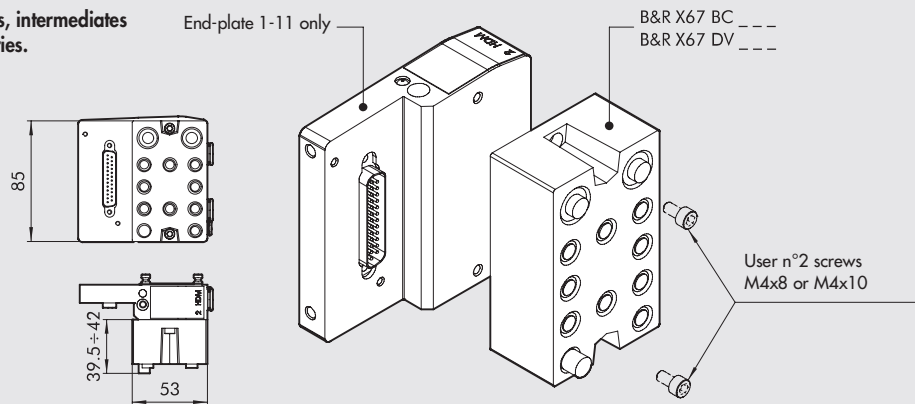


APPLICATIONS OF B&R MODULES TO HDM END-PLATES

Refer to page B2.140 for valves, intermediates elements and common accessories.



Refer to page B2.140 for valves, intermediates elements and common accessories.

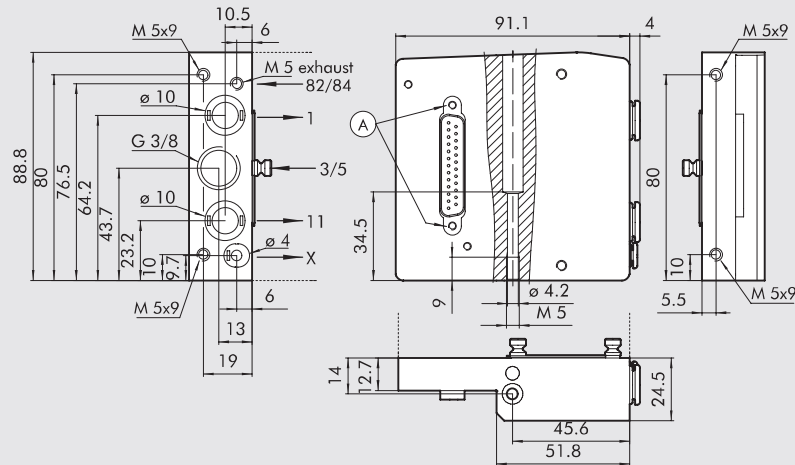


SYNOPTIC, SIZES AND VERSIONS

H D M	2	B & R	M	I 6 - W 8 - W 6 - O 4 - L 8 - 5	1 6
VALVE	INPUT END-PLATE	ELECTRICAL BASE	MANUAL TYPE	TYPE OF VALVE	FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	B&R Fit for B&R	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 4 Right-end-plate 1-11 pipe Ø12 5 Blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8 - 14 mm 85 Cartridge 8 - 23 mm 10 Cartridge 10	16 n° 2 brackets for DIN bar

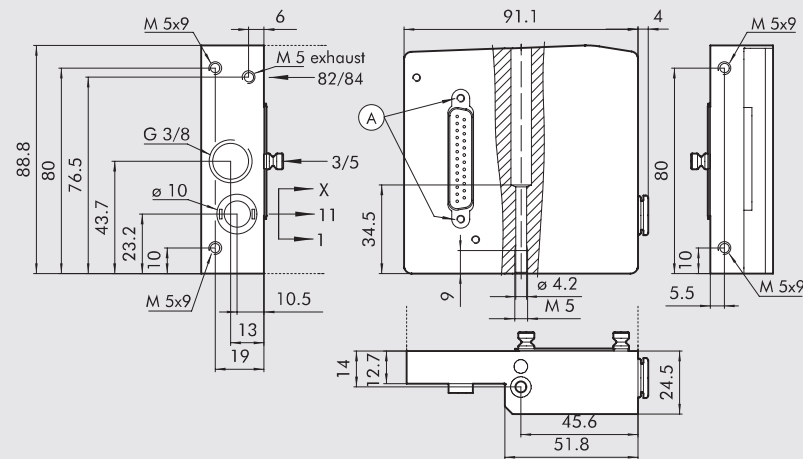
* Uses a single PIN (like the V) and occupies 2 signals.

HDM 1-11 END-PLATE FOR B&R



Code	Description	Weight [g]
0227301206	HDM 1-11 end-plate kit for B&R	340

HDM 1 END-PLATE FOR B&R



Code	Description	Weight [g]
0227301207	HDM 1 end-plate kit for B&R	380

NOTES

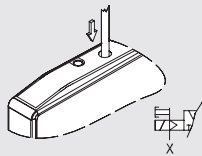
HDM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES

HDM valve can be included in islands with any available input terminal. The same valve can be connected to the multiple connection end-plate and all the field bus end-plates.

Note: if you use valves 8S type or 10 exploiting their flow capacity, it is appropriate to choose the inlet end plate 1-11 type by feeding the pilots separately (to avoid the pressure to decrease too much on the pilots). If you use simultaneously more than one valve 8S or 10 it is necessary to potentiate the pneumatic feeding by inserting end plates having 12 mm pipe and/or through intermediate modules

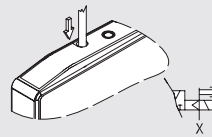


MANUAL CONTROLS



MONOSTABLE OVERRIDE PORT 2
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V, F, and O reposition.
 - The type K valve remains switched



MONOSTABLE OVERRIDE PORT 4
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V, F, and O reposition.
 - The type K valve remains switched

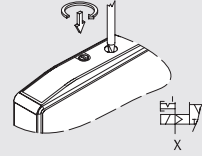
With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

N.B.: The pilot power supply X must be present.

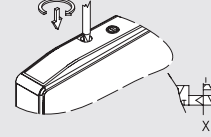
- The reference code for the monostable control ends in 0 (2 for type F).

Example: 707203053 - 1
0



BISTABLE OVERRIDE PORT 2
servo-assisted

- Press the manual control right in then turn it clockwise 90 degrees and leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L, V, F, and O reposition.
 - The type K valve remains switched



BISTABLE OVERRIDE PORT 4
servo-assisted

- Press the manual control right in then turn it 90 degrees clockwise and leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L, and O reposition.
 - The type K valve remains switched

With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

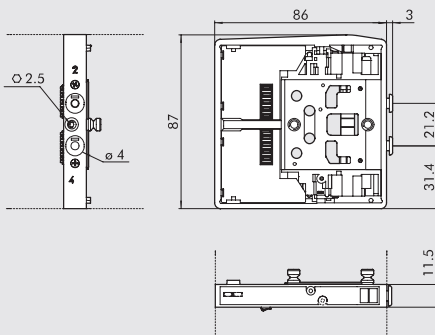
N.B.: The pilot power supply X must be present.

- The reference code for the monostable control ends in 1 (3 for type F).

Example: 707203053 - 1
0

1 VALVE DIMENSIONS HDM Ø 4

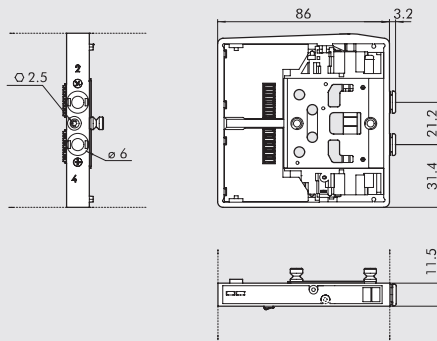
*uses a single PIN (like the V) and occupies 2 signals

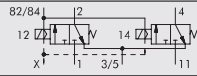
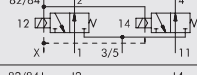
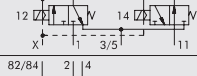
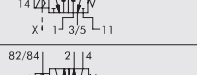
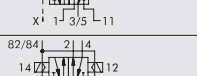
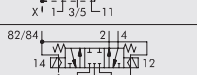
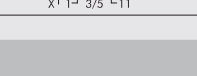


Symbol		Code	Manual control	Weight [g]
HDM I4		7071030530 7071030531	monostable bistable	130
HDM W4		7071030630 7071030631	monostable bistable	130
HDM L4		7071030730 7071030731	monostable bistable	130
HDM V4		7071030130 7071030131	monostable bistable	115
HDM *F4		7071030132 7071030133	monostable bistable	115
HDM K4		7071030110 7071030111	monostable bistable	130
HDM O4		7071030210 7071030211	monostable bistable	130

① VALVE DIMENSIONS HDM Ø 6

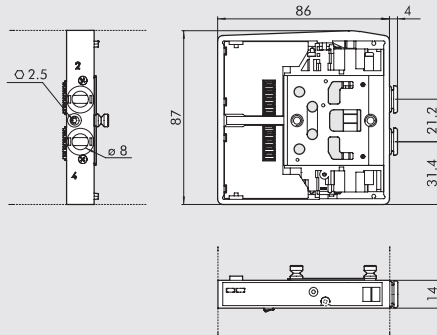
*uses a single PIN (like the V) and occupies 2 signals

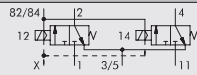
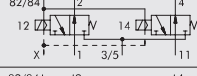
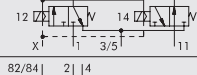
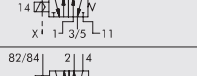
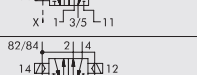
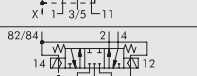
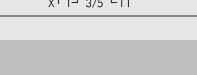


Symbol		Code	Manual control	Weight [g]
HDM I6		7072030530	monostable	130
		7072030531	bistable	
HDM W6		7072030630	monostable	130
		7072030631	bistable	
HDM L6		7072030730	monostable	130
		7072030731	bistable	
HDM V6		7072030130	monostable	115
		7072030131	bistable	
*F6		7072030132	monostable	115
		7072030133	bistable	
HDM K6		7072030110	monostable	130
		7072030111	bistable	
HDM O6		7072030210	monostable	130
		7072030211	bistable	

① VALVE DIMENSIONS HDM Ø 8

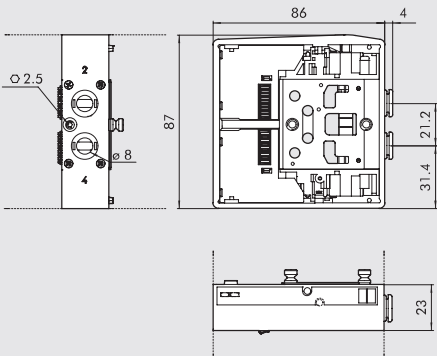
*uses a single PIN (like the V) and occupies 2 signals

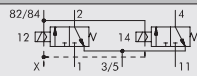
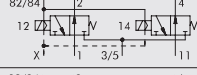
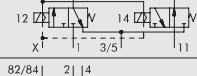
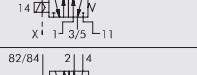
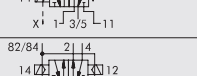
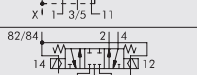
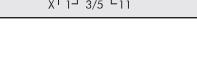


Symbol		Code	Manual control	Weight [g]
HDM I8		7073030530	monostable	140
		7073030531	bistable	
HDM W8		7073030630	monostable	140
		7073030631	bistable	
HDM L8		7073030730	monostable	140
		7073030731	bistable	
HDM V8		7073030130	monostable	130
		7073030131	bistable	
*F8		7073030132	monostable	130
		7073030133	bistable	
HDM K8		7073030110	monostable	140
		7073030111	bistable	
HDM O8		7073030210	monostable	140
		7073030211	bistable	

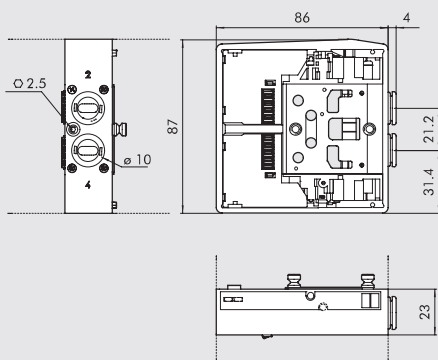
① VALVE DIMENSIONS HDM Ø 8S

*uses a single PIN (like the V) and occupies 2 signals



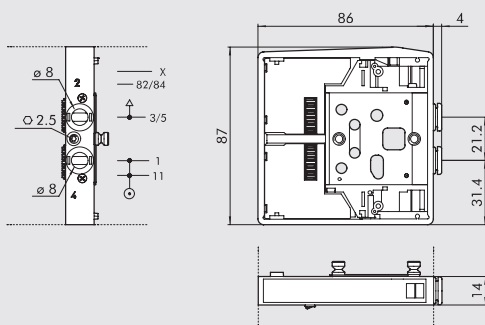
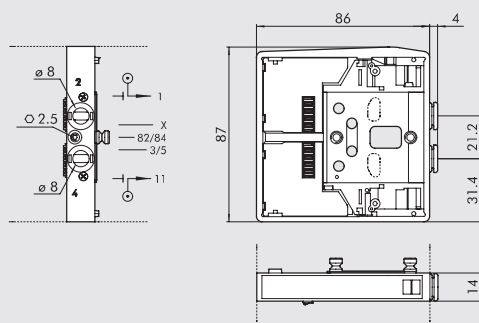
Symbol		Code	Manual control	Weight [g]
HDM I8S		7077030530	monostable	260
		7077030531	bistable	
HDM W8S		7077030630	monostable	260
		7077030631	bistable	
HDM L8S		7077030730	monostable	260
		7077030731	bistable	
HDM V8S		7077030130	monostable	241
		7077030131	bistable	
*F8S		7077030132	monostable	241
		7077030133	bistable	
HDM K8S		7077030110	monostable	253
		7077030111	bistable	
HDM O8S		7077030210	monostable	262
		7077030211	bistable	

*uses a single PIN (like the V) and occupies 2 signals

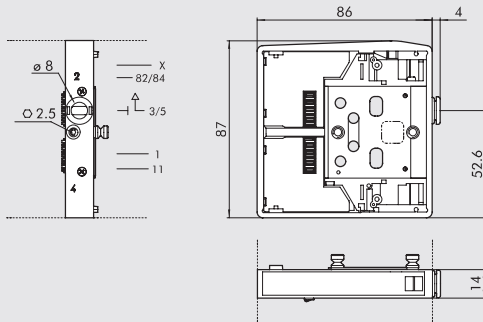


Symbol		Code	Manual control	Weight [g]
Hdm I10		7078030530 7078030531	monostable bistable	250
Hdm W10		7078030630 7078030631	monostable bistable	250
Hdm L10		7078030730 7078030731	monostable bistable	250
Hdm V10		7078030130 7078030131	monostable bistable	231
Hdm *F10		7078030132 7078030133	monostable bistable	231
Hdm K10		7078030110 7078030111	monostable bistable	243
Hdm O10		7078030210 7078030211	monostable bistable	252

Code	Description	Weight [g]
0227301301	Intermediate through HDM	120

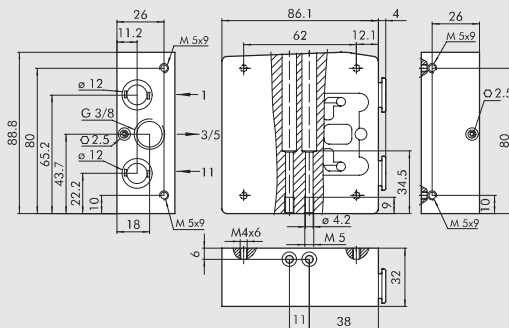
[illegible]

20 INTERMEDIATE EXHAUST SWITCH



Code	Description	Weight [g]
0227301303	Intermediate exhaust switch HDM	125

4 RIGHT-END-PLATE 1-11 PIPE Ø 12

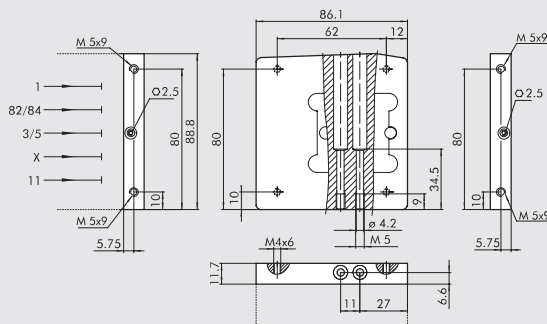


Code	Description	Weight [g]
0227301221	Rigth-end-plate HDM 1-11 Ø 12	630

This end-plate allows for supplies to be differentiated:

- Port 2
- Port 4

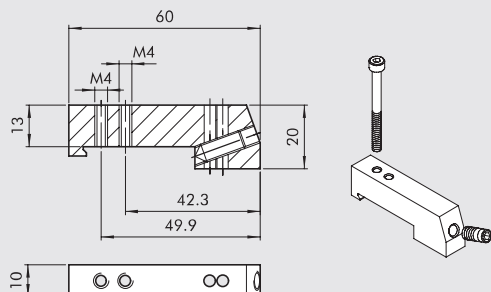
5 BLIND END-PLATE



Code	Description	Weight [g]
0227301500	Blind end-plate HDM	230

ACCESSORIES

16 CONNECTION BRACKETS ON DIN BAR

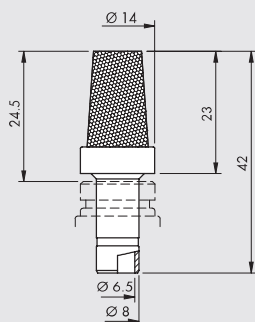


Code	Description	Weight [g]
------	-------------	------------

0227301600	Connection brackets on din bar HDM/CM	30
------------	---------------------------------------	----

Supplied complete with one M4x45 screws and one M6 grub screw
Individually packed

SILENCER FOR FITTING, Ø 8

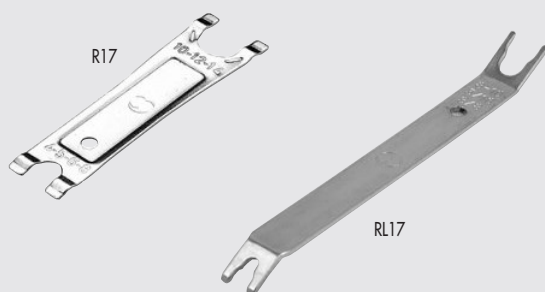


Code	Description	Flow rate at 6.3 bar [l/min]	Weight [g]
------	-------------	------------------------------	------------

W0970530084	Silencer for fitting, Ø 8	2400	15
-------------	---------------------------	------	----

At the 3/5-exhaust port of the intermediate throughreference 6 and of the exhaust switch reference 20

R17 - PIPE RELEASE SPANNER

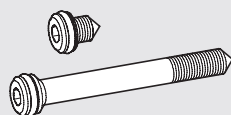


Code	Rif.	Length [mm]	Ø Tube
------	------	-------------	--------

2L17001	RL17	140	from 3 to 10
2017001	R17	95	from 4 to 14

SPARES

GRUB SCREW KIT



Code	Description
------	-------------

0227301800	Grub screw for Multimach HDM/CM
------------	---------------------------------

Comes in 1 + 1 pc. packs

THE VALVE IN DETAIL

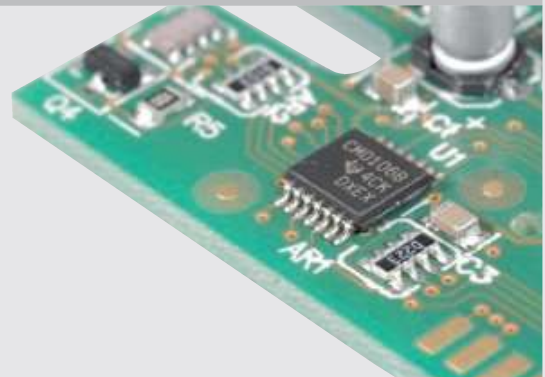
Clever Multimach valves can be used to form autonomous and intelligent valve island subsystems. Each valve has a microchip that performs a series of functions connected with operation and dialogue with the valves before and after it. Valves communicate via serial transmission. CM refers to the communication protocol patented by Metal Work. It is a field-bus in its own right, designed specifically for very easy control of islands of pneumatic solenoid valves. CM valves have a diagnosis system that detects electrical faults. It can also be used to verify during installation that all connections are correct. Multi-pole connections and field buses with different communication protocols are available for controlling the valve distribution island. Addressing of single outputs is not required as the connection number of each solenoid pilot is assigned automatically based on the position occupied by the valve.


VALVES

CM CLEVER MULTIMACH

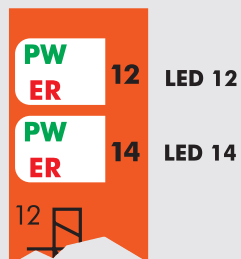
SMART VALVE

Each valve comes with a microchip that controls operation and dialogue with the other valves.



LOCAL DIAGNOSTICS

Each Clever Multimach valve has a LED diagnostic system that identifies immediately whether a pilot is energized, the contact is interrupted or there is a short-circuit.



LED 14	LED 12	DESCRIPTION OF THE FAULT
OFF ○	OFF ○	No fault, EV1-EV2=OFF
ON (green) ●	OFF ○	No fault, EV1=ON - EV2=OFF
ON (green) ●	ON (green) ●	No fault, EV1-EV2=ON
OFF ○	ON (green) ●	No fault, EV1=OFF - EV2=ON
RED (flashing) ⦿	OFF ○	Solenoid pilot EV1 interrupted or disconnected
OFF ○	RED (flashing) ⦿	Solenoid pilot EV2 interrupted or disconnected
ON (red) ●	OFF ○	Solenoid pilot EV1 short circuit
OFF ○	ON (red) ●	Solenoid pilot EV2 short circuit
GREEN (flashing) ⦿	OFF ○	Data update time out, communication faulty

INPUT MODULES

With a suitably arranged Clever Center, you can insert add-on modules.

When connecting buses, the add-on modules can only be used for e PNP INPUTs.

With a multi-pole connection, the following INPUTs and OUTPUTs can be used:

- DIGITAL INPUTS, as cylinder sensors for example
- DIGITAL OUTPUTS
- ANALOGUE INPUTS (but the LEDs do not light up)
- ANALOGUE OUTPUTS (but the LEDs do not light up)

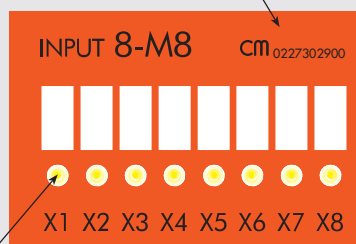
They can be combined, even on the same module. You can choose between PNP or NPN connections via a dip switch-type selector. All the INPUTS/OUTPUTS must be the same type, i.e. all PNP or NPN.



MAXIMUM EXTENSION OF ADD-ON MODULES

Up to 4 modules can be connected, giving a total of 32 input signals.

Ordering code

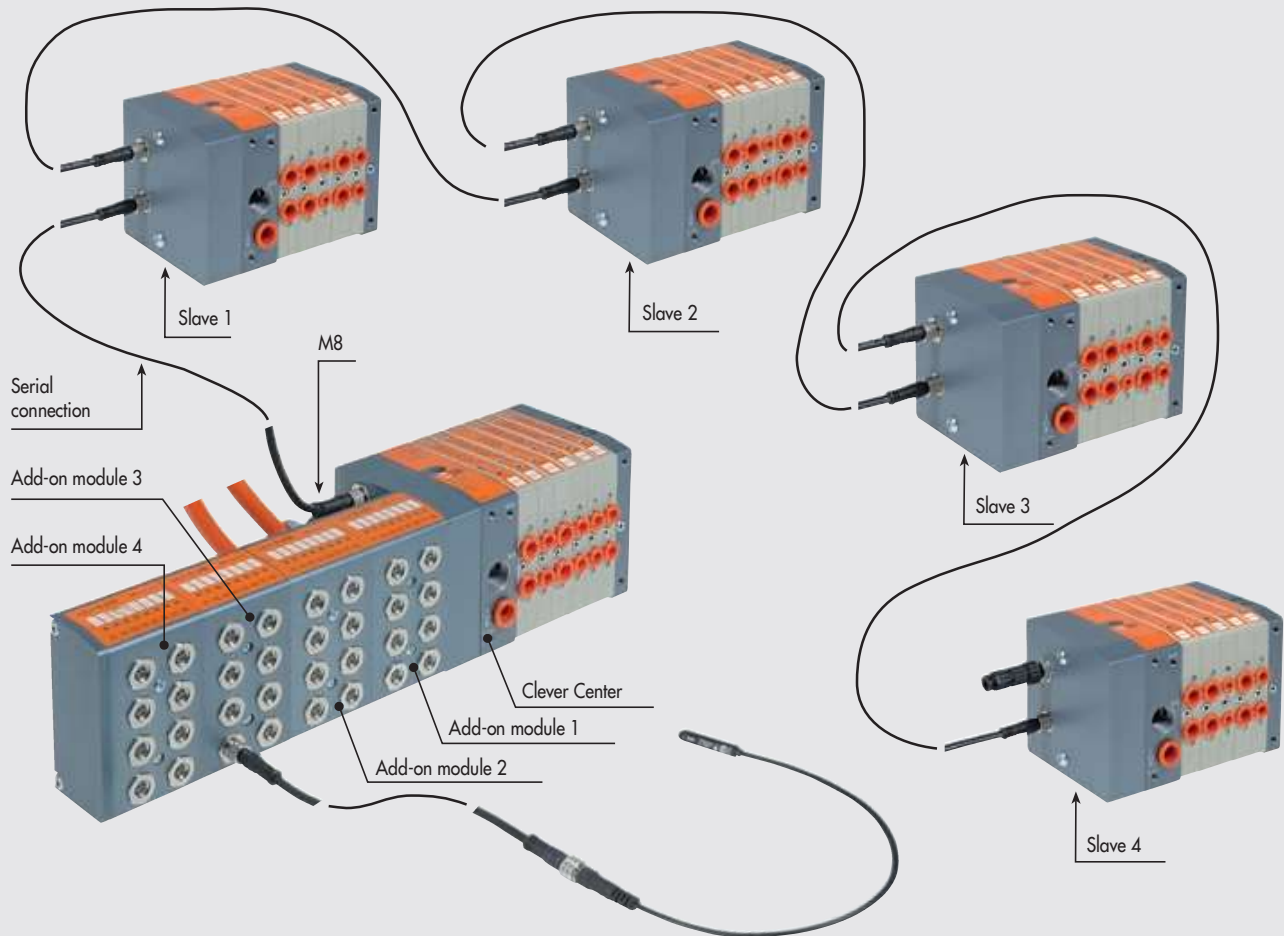


A yellow LED for each input/output
(visible for digital types)



EXAMPLE OF A CM LAYOUT

The Clever Center can relay command signals to other islands of "slaves". Transmission, in serial mode, is via a cable with M8 connectors. Commands can be sent from the first slave island to other slave islands in cascade, again via cables with M8 connectors. Addresses are assigned automatically, based on intuitive sequential logic. This means that other slaves can be added downstream at any time, until all available outputs are in use.

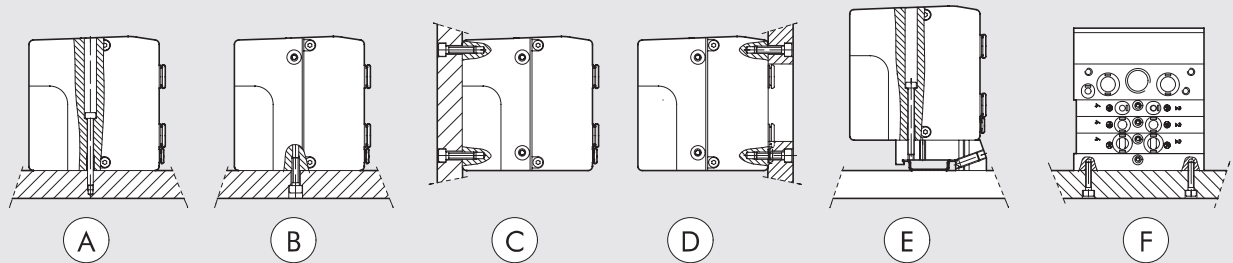


NOTES

TECHNICAL DATA

Valve port connections	Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate 1-11 for the supply of pilots	Automatic fitting Ø 4 mm		
Maximum number of pilots	See input end-plate technical data		
Maximum number of valves	See input end-plate technical data		
Operating temperature range	-10 to +60 °C		
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	11.5 mm Ø 4	11.5 mm Ø 6
version 5/2 and 3/2		200	500
version 5/3		200	300
Pressure range		X (pilot supply)	1-11 (valve supply)
end-plate 1-11		3 to 7 bar	vacuum at 10 bar
end-plate 1			
Voltage range		3 to 7 bar	
		24 VDC ±10%	
		(slave protected against overload and reverse polarity)	
Power for each pilot	W	0.9	
Solenoid Pilot Insulation class		F155	
Degree of protection		IP65 (with conveyed exhaust, and that - in case of no use)	
Diagnostics and protections		Local via PC/PLC fault led. For defects signalled look at the manual.	
		Outlets protected against overload and short-circuit	
Solenoid rating		100% ED	
Maximum latency time of the serial transmission	ms	<10	
TRA/TRR 2x3/2 monostable at 6 bar	ms	8 / 45	
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33	
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20	
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20	
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the gasket may be pulled out of its seat by the flow of air.	
Compatibility with oils		See chapter Z1	
Add-on module			
Sensor supply voltage		24 VDC ±10%	
Maximum current for each single connector	mA	200	
Maximum current for each module	mA	400	
Maximum total current of all the modules	mA	1000	
Input impedance	KΩ	3.9	
Max input voltage	Vcc	-5 to +30	
Type of input		With field bus: PNP	
		With multi-pole connection: PNP/NPN configurable via DIP SWITCH	
Protection		Protected inputs against overload and short-circuit	
Active input signalling		One LED for each INPUT	

FIXING THE BASE



- (A) Fixing from above using the 1 or 1-1 input end-plate and the blind end-plate.
- (B) (C) Fixing from above using the 1 or 1-1 input end-plate and the blind end-plate, using the M5 threads on the bottom and the rear of the end-plates.
- (D) Fixing from above using the 1 or 1-1 input end-plate and the blind end-plate, using the M5 threads on the front of the end-plates.
An opening for the pipes is made in the plate.
- (E) Fixing on the DIN bar with end-plate 1 or 1-1 and blind end-plate, using the push-in bracket code 0227301600.
- (F) Lateral fixing using the blind end-plate, and its the M4 threads on the side lateral.
- Note: The sole fixing admitted is the one showed.**

KEY TO CODES – CLEVER MULTIMACH **cm**

C M	2	I / O	M	I6 - W8 - W6 - O4 - L8 - 5	M8 - M8 - 15 - 16
VALVE	INPUT END-PLATE	FUNCTION	MANUAL TYPE	TYPE OF VALVE	FURTHER DETAILS
Clever	2 End-plate 1-11	O Multi-pole connection, valves only	M Monostable manual control	I n° 2 3/2 NC	● M8 Module 8 input M8
Multimach	3 End-plate 1	I/O Multi-pole connection, valves and inputs	B Bistable manual control	W n° 2 3/2 NO	* 14 Shell 44 pin
		ADD Additional (slave) valves only		L 3/2 NO + 3/2 NC	* 15 Shell 44 + 44 pin
		PN O Profinet IO, valves only		V 5/2 monostable	16 n° 2 brackets for DIN bar
		PN I/O Profinet IO, valves and inputs		K 5/2 bistable	
		EC O EtherCAT, valves only		O 5/3 monostable	
		EC I/O EtherCAT, valves and inputs		5 Blind end-plate	
		EN O EtherNet/IP, valves only		6 Passing-intermediate	
		EN I/O EtherNet/IP, valves and inputs		7 Blind intermediate	
		CAN O CANopen, valves only		20 Exhaust section	
		CAN I/O CANopen, valves and inputs		4 Cartridge 4	
				6 Cartridge 6	
				8 Cartridge 8	

- Not applicable with (add-on) ADD end-plate
- * For multi-pole connection only

NOTES

VALVES

CM CLEVER MULTIMACH

cm + MULTI-POLE CONNECTION

CM end-plates + multi-pole connection can be used for connection to the PC/PLC using a 44-pin cable and connector.

The end-plates with provisions for INPUT/OUTPUT add-on modules are connected using an extra 44-pin cable.

Both valves and INPUTs/OUTPUTs can be PNP or NPN configured.



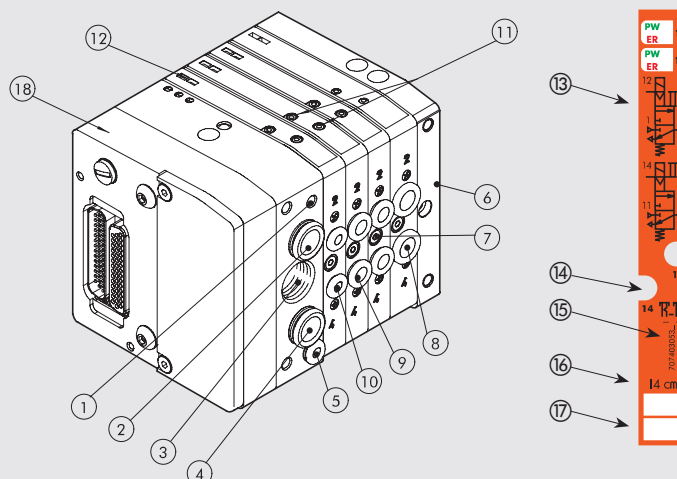
TECHNICAL DATA

Maximum number of pilots	32
Maximum number of valves	32 (same as the max. no. of pilots)
Voltage range	24VDC $\pm 10\%$
DC input current without valve modules	Nominal I _{cc} 30 mA - Instantaneous I _{cc} (≤ 25 ms) 650 mA
Max input current with all valves ON	1.5

Refer to page B2.148 for general technical data

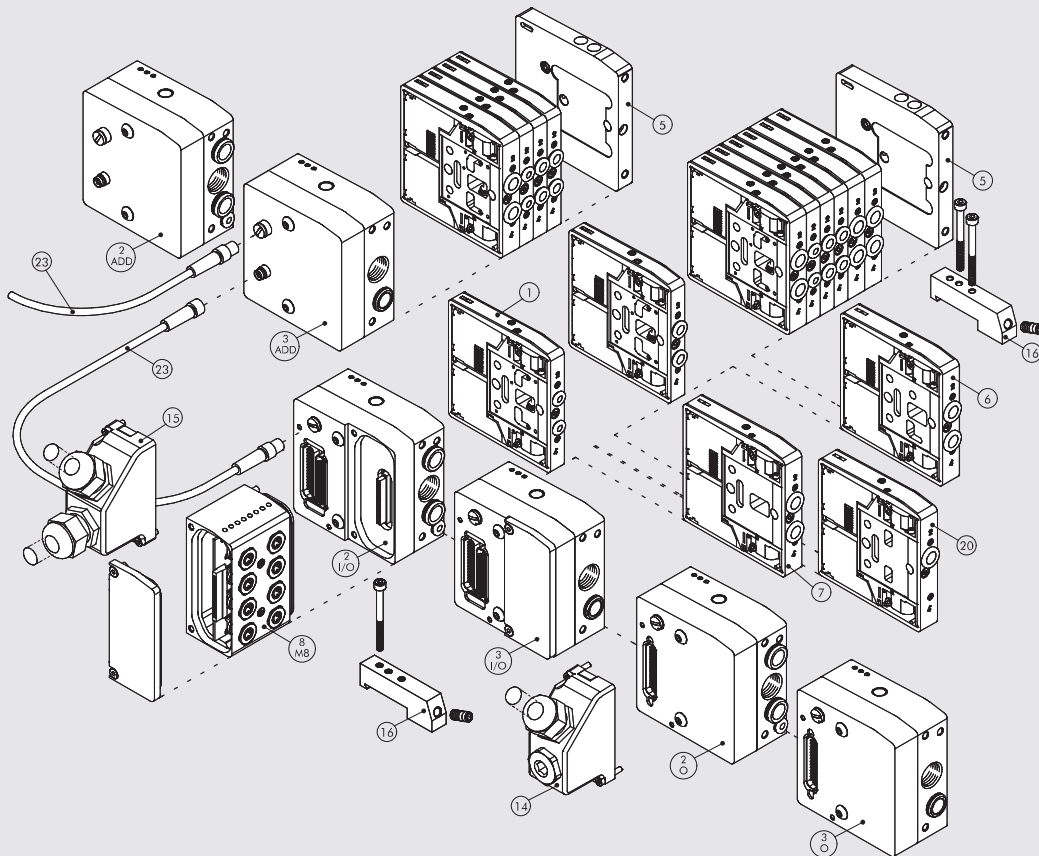
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ ⑨ ⑩ Utility port for pipe $\varnothing$ 4, 6 or 8 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ Clever Center end-plate multi-pole connection



VALVE ISLAND CONFIGURATION

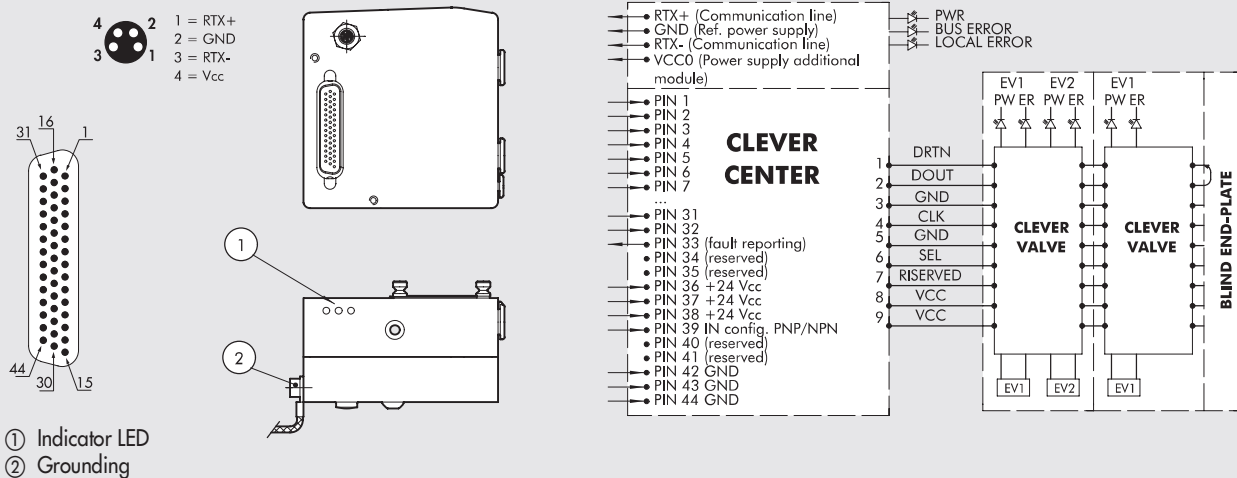
The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.170 for valves, intermediates elements and common accessories.



VALVES

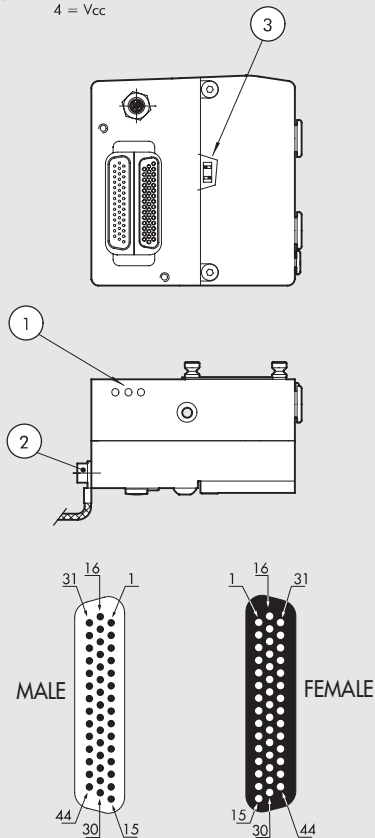
CM + MULTI-POLE CONNECTION

WIRING DIAGRAM FOR THE CLEVER CENTER TERMINAL - VALVES ONLY



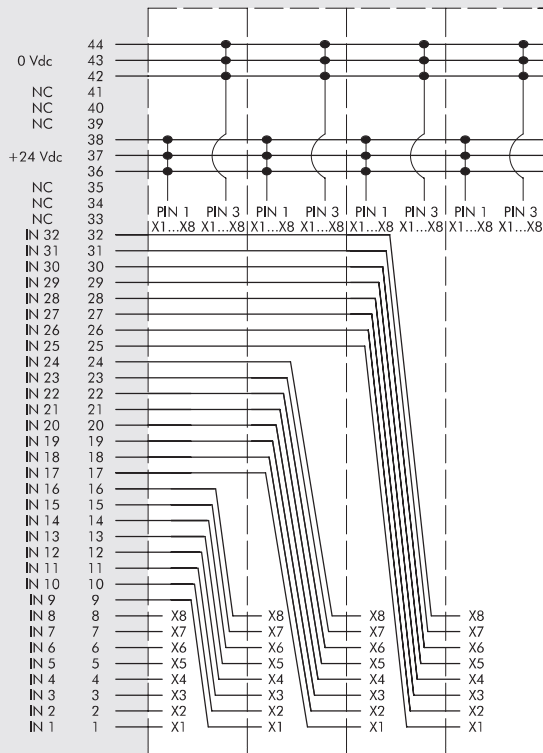
WIRING DIAGRAM FOR THE CLEVER CENTER TERMINAL FOR VALVES AND INPUTS/OUTPUTS

- 1 = RTX +
 2 = GND
 3 = RTX -
 4 = Vcc

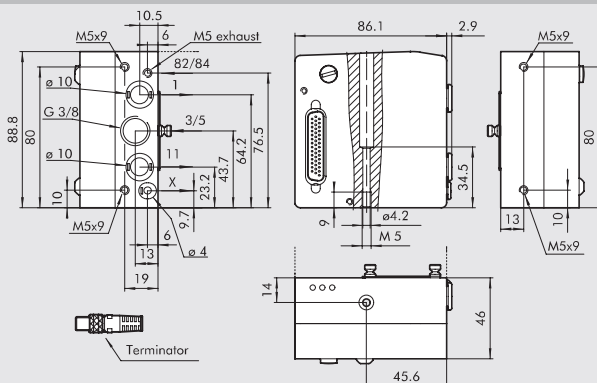


- ① Indicator LED
 ② Grounding
 ③ Input selector type PNP/NPN

INPUT CONNECTION DIAGRAM

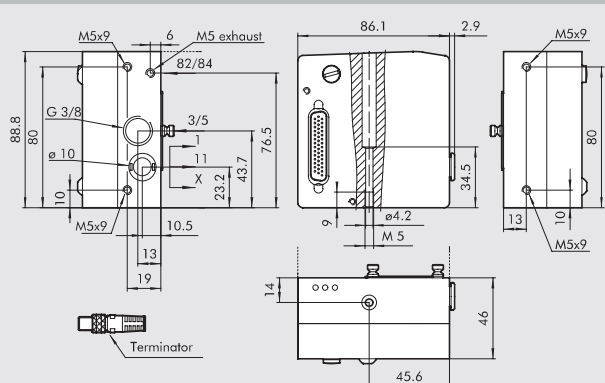


2 - O OUTPUT END-PLATE 1-11



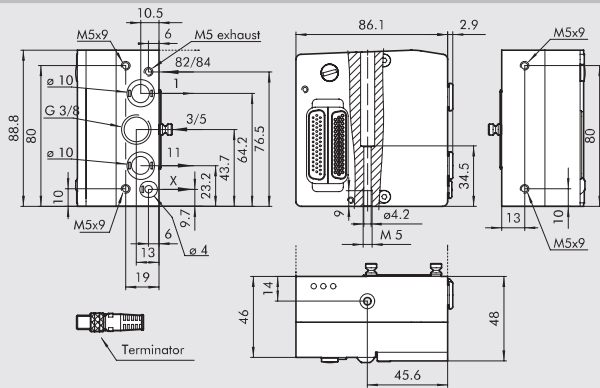
Code	Description	Weight [g]
0227302200	End-plate CM kit 1-11 OUT	722
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		

3 - O OUTPUT END-PLATE 1



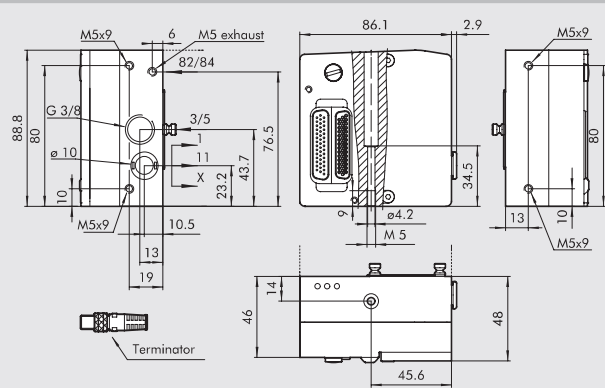
Code	Description	Weight [g]
0227302201	End-plate CM kit 1 OUT	722
Note: terminator included		

2 - I/O INPUT/OUTPUT END-PLATE 1-11



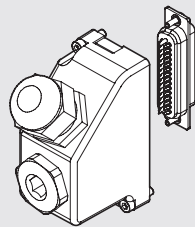
Code	Description	Weight [g]
0227302223	End-plate CM kit 1-11 IN/OUT	722
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		

3 - I/O INPUT/OUTPUT END-PLATE 1



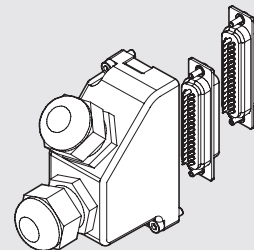
Code	Description	Weight [g]
0227302225	End-plate CM kit 1 IN/OUT	722
Note: terminator included		

14 44-PIN CUP CONNECTOR KIT IP 65



Code	Description	Weight [g]
0226180108	44-pin cup connector kit IP 65	60

15 44+44 PIN CUP CONNECTOR KIT IP 65 FOR I/O



Code	Description	Weight [g]
0226180109	44+44 pin cup connector kit IP 65 for I/O	80

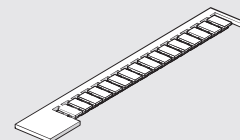
CABLES



Code	Description	Weight [g/m]
0226107201	10-wire cable	60
0226107101	19-wire cable	122
0226107102	25-wire cable	130
0226107103	44-wire cable	160

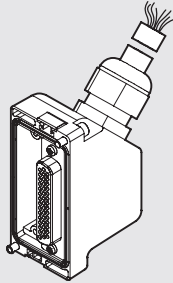
Specify the number of metres desired

IDENTIFICATION PLATE KIT FOR 44-PIN CONNECTOR



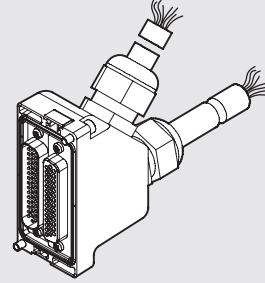
Code	Description
0226107000	Identification plate kit
Comes in 16-pc. packs	

44-PIN PRE-WIRED CUP CONNECTOR



Code	Description	Weight [g]
0226950500	Connet. IP 65 + cable 44-wire L = 5 m	740

44+44-PIN PRE-WIRED CUP CONNECTOR



Code	Description	Weight [g]
0226980500	Connet. IP 65 + cable 44 + 44-wire L = 5 m	1550

WIRING DIAGRAM FOR THE 44-PIN CUP CONNECTOR KIT

44 PIN FEMALE PRE-WIRED FOR VALVE

Position of electrical contact	Corresponding wire colour	Function
1	white	Out 1
2	brown	Out 2
3	green	Out 3
4	yellow	Out 4
5	gray	Out 5
6	pink	Out 6
7	blue	Out 7
8	violet	Out 8
9	gray + pink ring	Out 9
10	red + blue ring	Out 10
11	white + green ring	Out 11
12	brown + green ring	Out 12
13	white + yellow ring	Out 13
14	yellow + brown ring	Out 14
15	white + gray ring	Out 15
16	gray + brown ring	Out 16
17	white + pink ring	Out 17
18	pink + brown ring	Out 18
19	white + blue ring	Out 19
20	brown + blue ring	Out 20
21	white + red ring	Out 21
22	brown + red ring	Out 22
23	white + black ring	Out 23
24	brown + black ring	Out 24
25	gray + green ring	Out 25
26	yellow + gray ring	Out 26
27	pink + green ring	Out 27
28	yellow + pink ring	Out 28
29	green + blue ring	Out 29
30	yellow + blue ring	Out 30
31	green + red ring	Out 31
32	yellow + red ring	Out 32
33	green + black ring	Fault reporting
34	gray + blue ring	NC
35	gray + red ring	NC
36	red + green ring	+24VDC
37	red + brown ring	+24VDC
38	red + black ring	+24VDC
39	yellow + black ring	Config. PNP/NPN
40	pink + red ring	NC
41	pink + blue ring	NC
42	black + green ring	0 VDC
43	black + pink ring	0 VDC
44	black + red ring	0 VDC

44 PIN MALE PRE-WIRED FOR INPUT/OUTPUT

Position of electrical contact	Corresponding wire colour	Function
1	white	In 1
2	brown	In 2
3	green	In 3
4	yellow	In 4
5	gray	In 5
6	pink	In 6
7	blue	In 7
8	violet	In 8
9	gray + pink ring	In 9
10	red + blue ring	In 10
11	white + green ring	In 11
12	brown + green ring	In 12
13	white + yellow ring	In 13
14	yellow + brown ring	In 14
15	white + gray ring	In 15
16	gray + brown ring	In 16
17	white + pink ring	In 17
18	pink + brown ring	In 18
19	white + blue ring	In 19
20	brown + blue ring	In 20
21	white + red ring	In 21
22	brown + red ring	In 22
23	white + black ring	In 23
24	brown + black ring	In 24
25	gray + green ring	In 25
26	yellow + gray ring	In 26
27	pink + green ring	In 27
28	yellow + pink ring	In 28
29	green + blue ring	In 29
30	yellow + blue ring	In 30
31	green + red ring	In 31
32	yellow + red ring	In 32
33	green + black ring	NC
34	gray + blue ring	NC
35	gray + red ring	NC
36	red + green ring	+24VDC
37	red + brown ring	+24VDC
38	red + black ring	+24VDC
39	yellow + black ring	NC
40	pink + red ring	NC
41	pink + blue ring	NC
42	black + green ring	0 VDC
43	black + pink ring	0 VDC
44	black + red ring	0 VDC

The CM + Profinet IO system has been designed with a pneumatic input end-plate that can contain all the electronic equipment, indicators and connectors. This system is very compact and sturdy and is housed in a thick aluminium body that protects sensitive components from impact and falls. The end-plate is available in two electric versions: one handling up to 64 solenoids (64 OUTs) and one handling up to 64 solenoids (64 OUTs) and 32 inputs (32 INs).

Grounding is recommended to protect the electronic circuit against electric or electrostatic charges.

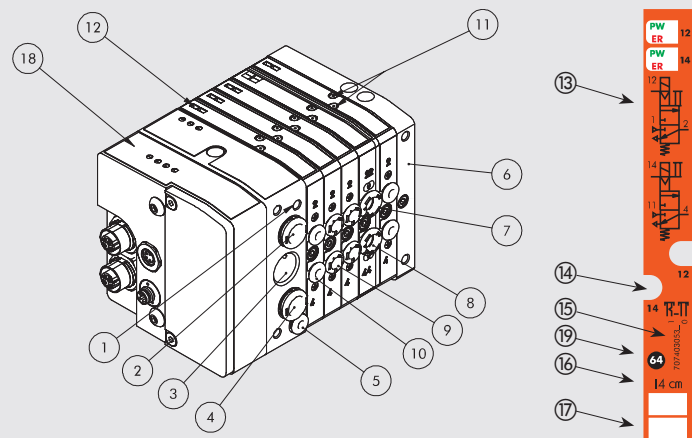
N.B. For the system to handle more than 32 pilots (33 to 64), it must be made up of valves bearing a label marked 64. If one or more valves are not marked 64, each island cannot handle more than 32 pilots.



TECHNICAL DATA	
Field buses	Profinet IO - 100 Mbit/s - Full-duplex
Factory settings	Supports RT communication, Shared Device, Identification & Maintenance 1-4 Module name: Cmseries Address IP 0.0.0.0 Software DCP 24VDC $\pm$ 10%
Addressing	64
Voltage range	64 (same as the max. no. of pilots)
Maximum number of pilots (Out)	32
Maximum number of valves	Nominal lcc 120 mA - Instantaneous lcc (< 2 ms) 450 mA
Maximum number of inputs (INs)	Instantaneous lcc (< 2 ms) 900 mA
lcc bus supply current	Nominal lcc with 900 mA OFF valves – nominal lcc with 2700 mA ON valves
lcc valve supply current	Module protected against overload and polarity reversal. Outputs protected against overloads and short-circuits
Maximum absorption of a valve island with 64 monostable valves	Field bus: 2 M12 Female, D-coded, internal switch supply: M8 4 pin input: M8 3 pin
Protections	Using local LEDs and software messages
Connections	Outputs: using local LEDs and status bytes Inputs: using local LEDs and status bytes N.B.: Refer to the user manual for a detailed description
BUS diagnostics	0 = not enabled 1 = enabled Disabled
Data bit value	
Output status in the absence of communication	
See page B2.148 for general technical data	

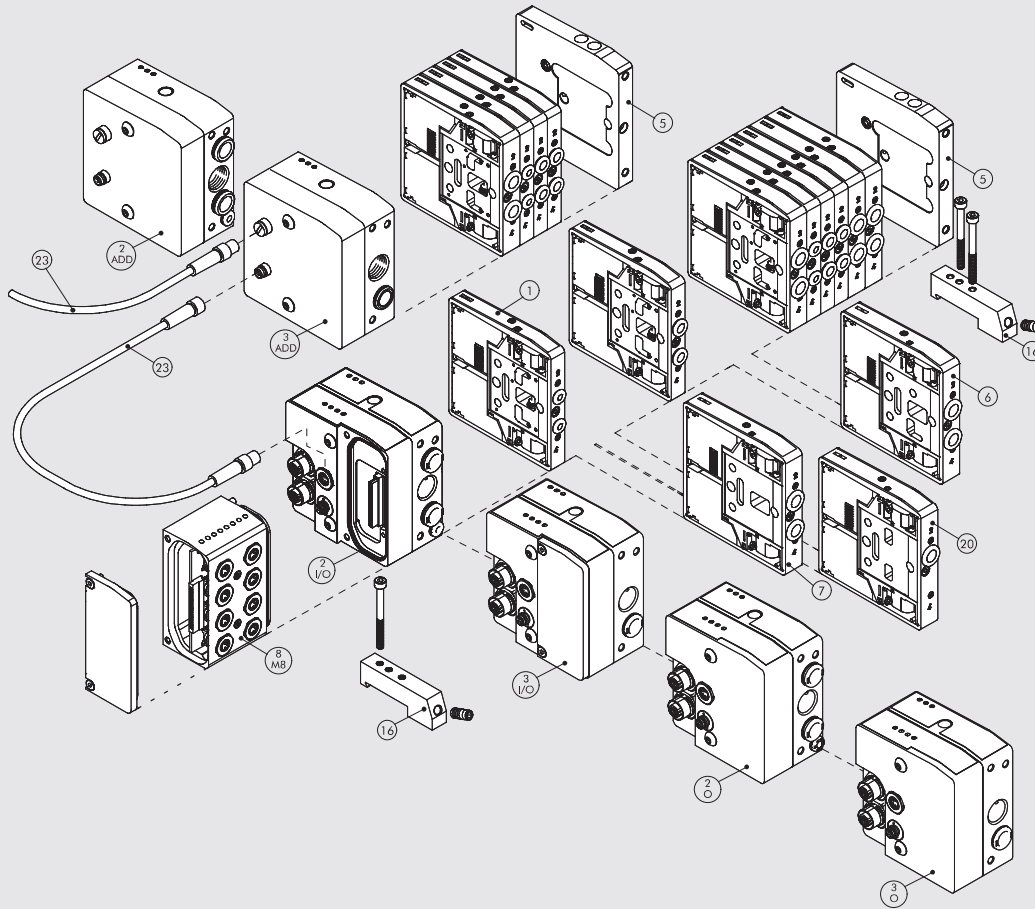
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ ⑨ ⑩ Utility port for pipe $\varnothing$ 4, 6 or 8 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CM Profinet IO end-plate
- ⑲ 64 = when present, it means that the valve is suitable for installation on islands with a field bus with up to 64 pilots, otherwise the limit is 32 pilots.

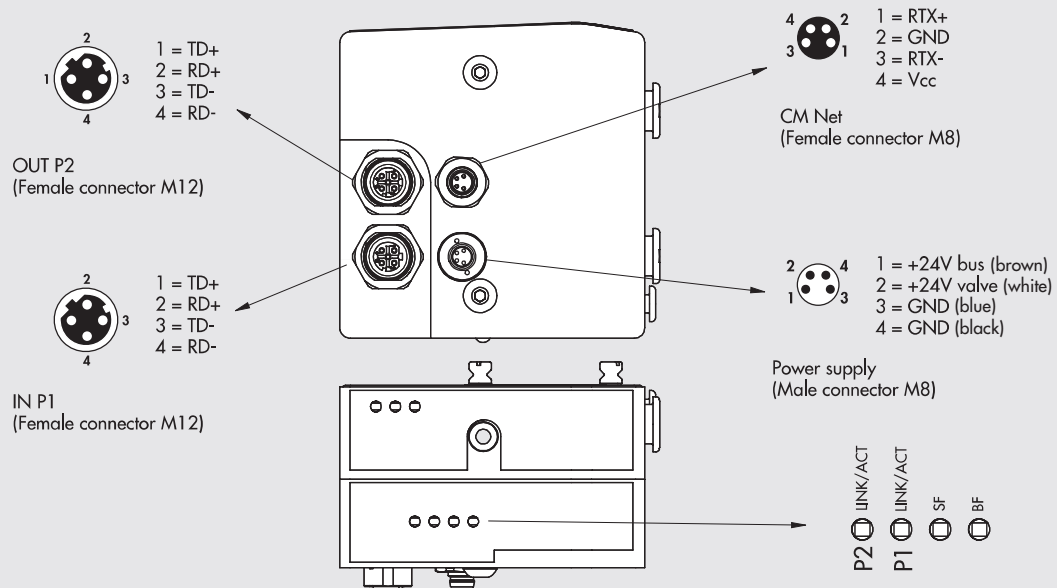


VALVE ISLAND CONFIGURATION

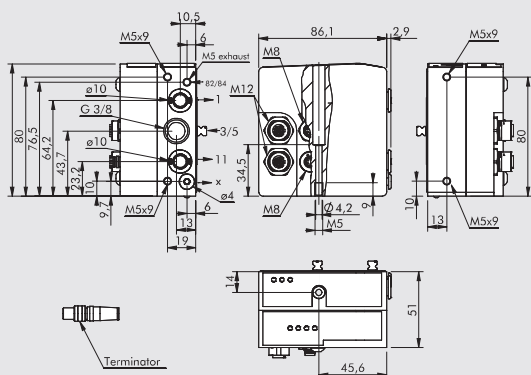
The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.170 for valves, intermediates elements and common accessories.



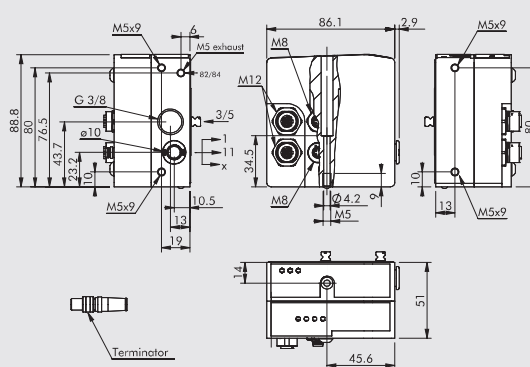
WIRING DIAGRAM



(3 - ○) END-PLATE 1 Profinet IO OUTPUT



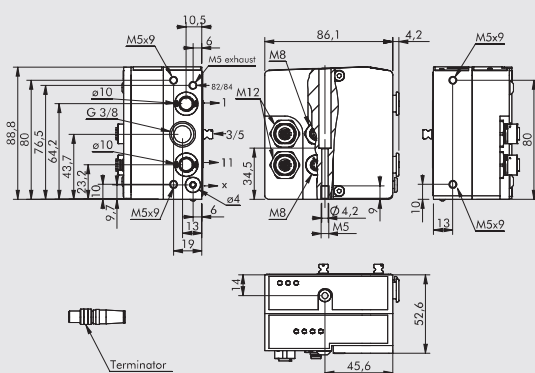
Code	Description	Weight [g]
0227302230	End-plate CM 1-11 Profinet IO OUTPUT	683
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		



Code	Description	Weight [g]
0227302231	End-plate CM 1 Profinet IO OUTPUT	686

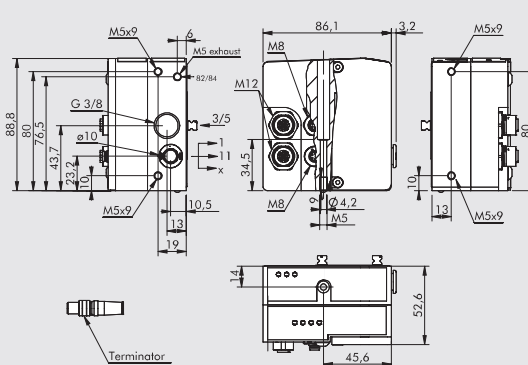
Note: terminator included

(2 - I/O) END-PLATE 1-11 Profinet IO INPUT/OUTPUT



Code	Description	Weight [g]
0227302232	End-plate CM 1-11 Profinet IO IN/OUT	643
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		

(3 - I/O) END-PLATE 1 Profinet IO INPUT/OUTPUT

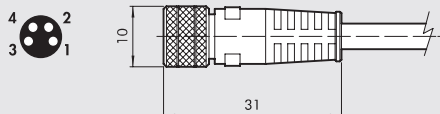


Code	Description	Weight [g]
0227302233	End-plate CM 1 Profinet IO IN/OUT	645

Note: terminator included

M8 CONNECTOR FOR POWER SUPPLY

Pin	Cable colour
1	brown
2	white
3	blue
4	black



Code	Description
0240009060	M8 4-pin female connector for power supply, cable L = 3 m
0240009037	M8 4-pin female connector for power supply, cable L = 5 m
0240009058	M8 4-pin female connector for power supply, cable L = 10 m
0240009059	M8 4-pin female connector for power supply, cable L = 15 m
0240009P60 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m
0240009P37 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m
0240009P58 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m
0240009P59 *	M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m

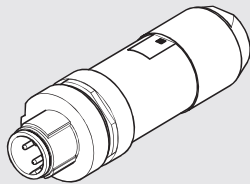
* Very flexible cables, class 6 according to IEC 60228

M12 PLUG



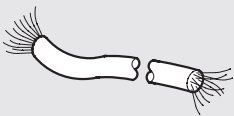
Code	Description
0240009040	Plug M12

M12 BUS CONNECTOR, D-CODED



Code	Description
0240005051	M12 BUS connector, D-coded

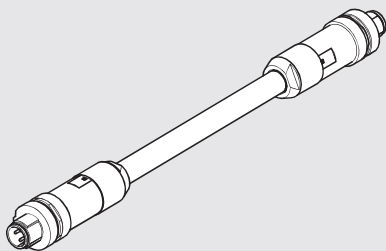
BUS CABLE



Code	Description
0240005220	BUS cable L = 20 m

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

STRAIGHT CONNECTOR FOR M12-M12 BUS, D-CODED

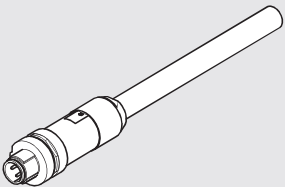


Code	Description
0240005103	Straight connector for M12-M12 BUS, D-coded, with 3 m cable
0240005105	Straight connector for M12-M12 BUS, D-coded, with 5 m cable
0240005110	Straight connector for M12-M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

STRAIGHT CONNECTOR FOR M12 BUS, D-CODED

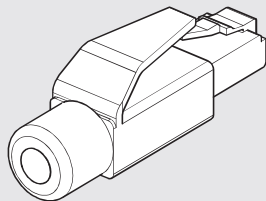
Pin	Cable color
1	Yellow
2	White
3	Red
4	Blue



Code	Description
0240005093	Straight connector for M12 BUS, D-coded, with 3 m cable
0240005095	Straight connector for M12 BUS, D-coded, with 5 m cable
0240005100	Straight connector for M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

RJ45 CONNECTOR



Code	Description
0240005050	RJ45 connector with 4 contacts according to IEC 60603-7

NOTES

The CM + EtherCAT system has been designed with a pneumatic input end-plate that can contain all the electronic equipment, indicators and connectors.

This system is very compact and sturdy and is housed in a thick aluminium body that protects sensitive components from impact and falls.

The end-plate is available in two electric versions: one handling up to 64 solenoids (64 OUTs) and one handling up to 64 solenoids (64 OUTs) and 32 inputs (32 INs). Grounding is recommended to protect the electronic circuit against electric or electrostatic charges.

N.B. For the system to handle more than 32 pilots (33 to 64), it must be made up of valves bearing a label marked 64. If one or more valves are not marked 64, each island cannot handle more than 32 pilots.



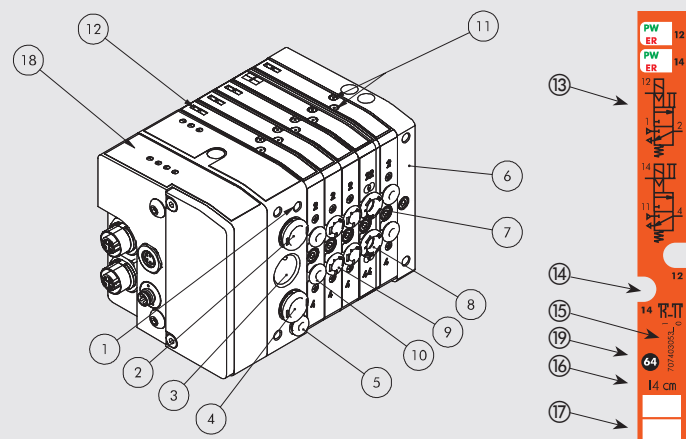
TECHNICAL DATA

Field buses	EtherCAT - 100 Mbit/s - Full-duplex - Supports auto-negotiation
Factory settings	Module name: Cmseries
Minimum cycle time	100 µs
Addressing	Autoincrement Address - Second Slave Address
Voltage range	24VDC ± 10%
Maximum number of pilots (Out)	64 (8 byte)
Maximum number of valves	64 (same as the max. no. of pilots)
Maximum number of inputs (INs)	32 (4 byte + 1 status byte)
Icc bus supply current	Nominal Icc 120 mA - Instantaneous Icc (< 2 ms) 450 mA
Icc valve supply current	Instantaneous Icc (< 2 ms) 900 mA
Maximum absorption of a valve island with 64 monostable valves	Nominal Icc with 900 mA OFF valves – nominal Icc with 2700 mA ON valves
Protections	Module protected against overload and polarity reversal. Outputs protected against overloads and short-circuits
Connections	Field bus: 2 M12 Female, D-coded, internal switch supply: M8 4 pin input: M8 3 pin
BUS diagnostics	Using local LEDs and software messages Outputs: using local LEDs and status bytes Inputs: using local LEDs and status bytes N.B.: Refer to the user manual for a detailed description
Data bit value	0 = not enabled 1 = enabled
Output status in the absence of communication	Disabled

See page B2.148 for general technical data

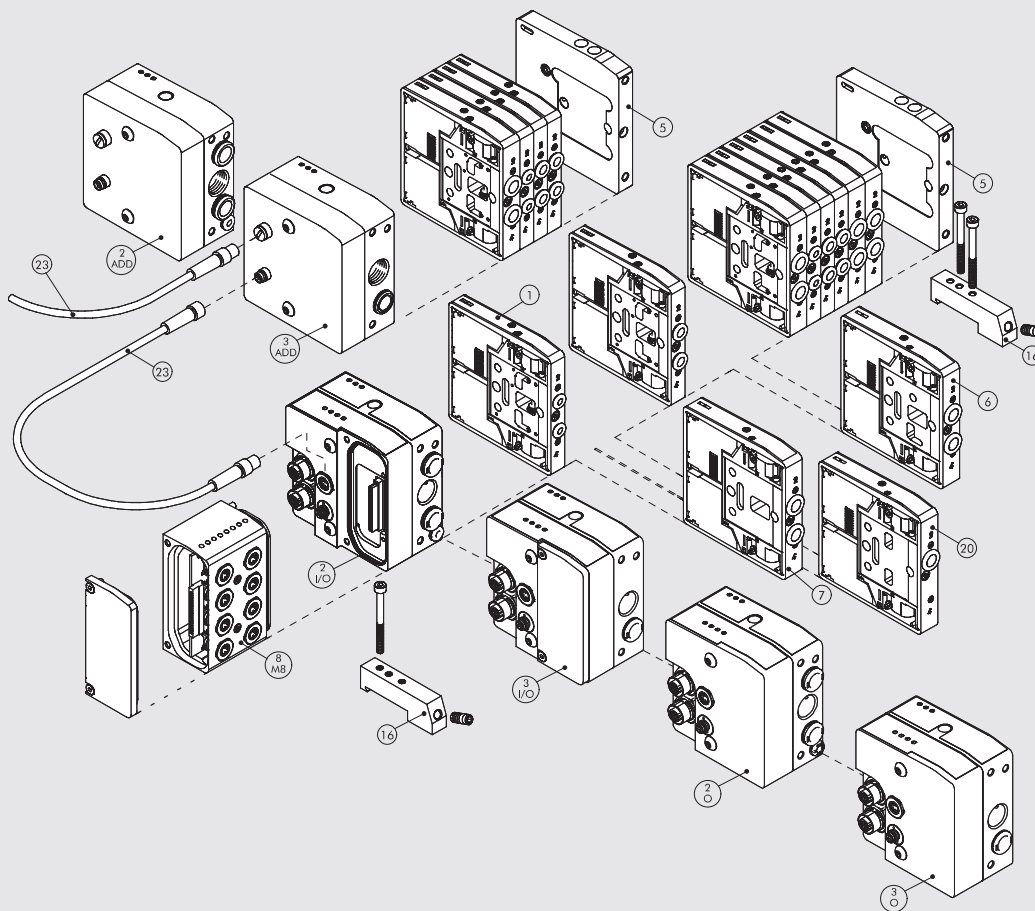
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ ⑨ ⑩ Utility port for pipe Ø 4, 6 or 8 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CM EtherCAT end-plate
- ⑲ 64 = when present, it means that the valve is suitable for installation on islands with a field bus with up to 64 pilots, otherwise the limit is 32 pilots.

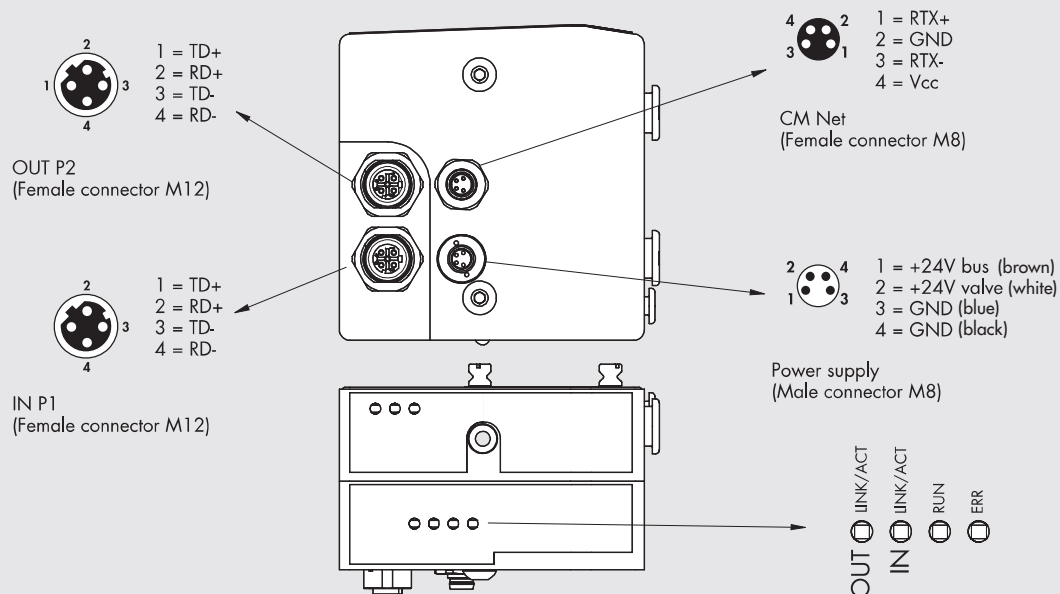


VALVE ISLAND CONFIGURATION

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.170 for valves, intermediate elements and common accessories.



WIRING DIAGRAM



A diagram showing a ciliated tube with a gap. The left part of the tube is curved and has many fine cilia extending from its outer surface. The right part is a straight section that is missing a segment in the middle, with cilia extending from its right end.

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

[illegible]

Pin	Cable color
1	Yellow
2	White
3	Red
4	Blue

Code	Description
0240005093	Straight connector for M12 BUS, D-coded, with 3 m cable
0240005095	Straight connector for M12 BUS, D-coded, with 5 m cable
0240005100	Straight connector for M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

NOTES

The CM + Ether/IP system has been designed with a pneumatic input end-plate that can contain all the electronic equipment, indicators and connectors. This system is very compact and sturdy and is housed in a thick aluminium body that protects sensitive components from impact and falls. The end-plate is available in two electric versions: one handling up to 64 solenoids (64 OUTs) and one handling up to 64 solenoids (64 OUTs) and 32 inputs (32 INs).

Grounding is recommended to protect the electronic circuit against electric or electrostatic charges.

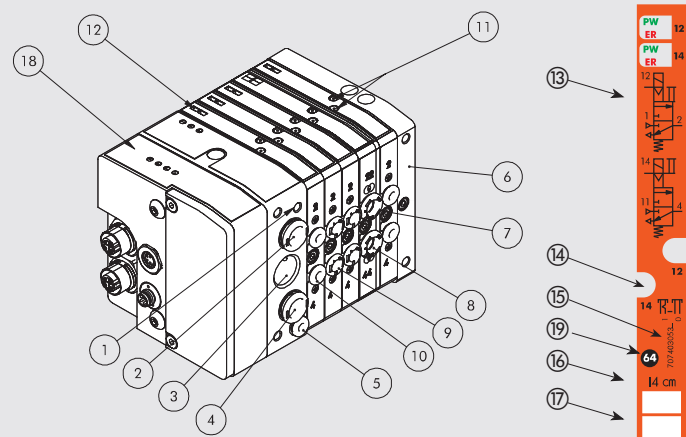
N.B. For the system to handle more than 32 pilots (33 to 64), it must be made up of valves bearing a label marked 64. If one or more valves are not marked 64, each island cannot handle more than 32 pilots.



TECHNICAL DATA	
Field buses	EtherNet/IP - 10/100 Mbit/s - Half-duplex - Full-duplex - Supports auto-negotiation
Factory settings	Module name: Cmseries Address IP 0.0.0.0 Software DCP
Addressing	24VDC ± 10%
Voltage range	64
Maximum number of pilots (Out)	64 (same as the max. no. of pilots)
Maximum number of valves	32
Maximum number of inputs (INs)	Nominal lcc 120 mA - Instantaneous lcc (< 2 ms) 450 mA
lcc bus supply current	Instantaneous lcc (< 2 ms) 900 mA
lcc valve supply current	Nominal lcc with 900 mA OFF valves – nominal lcc with 2700 mA ON valves
Maximum absorption of a valve island with 64 monostable valves	Module protected against overload and polarity reversal. Outputs protected against overloads and short-circuits
Protections	Field bus: 2 M12, D-coded, internal switch supply: M8 4 pin input: M8 3 pin
Connections	Using local LEDs and software messages Outputs: using local LEDs and status bytes Inputs: using local LEDs and status bytes N.B.: Refer to the user manual for a detailed description
BUS diagnostics	0 = not enabled 1 = enabled
Data bit value	Disabled
Output status in the absence of communication	
See page B2.148 for general technical data	

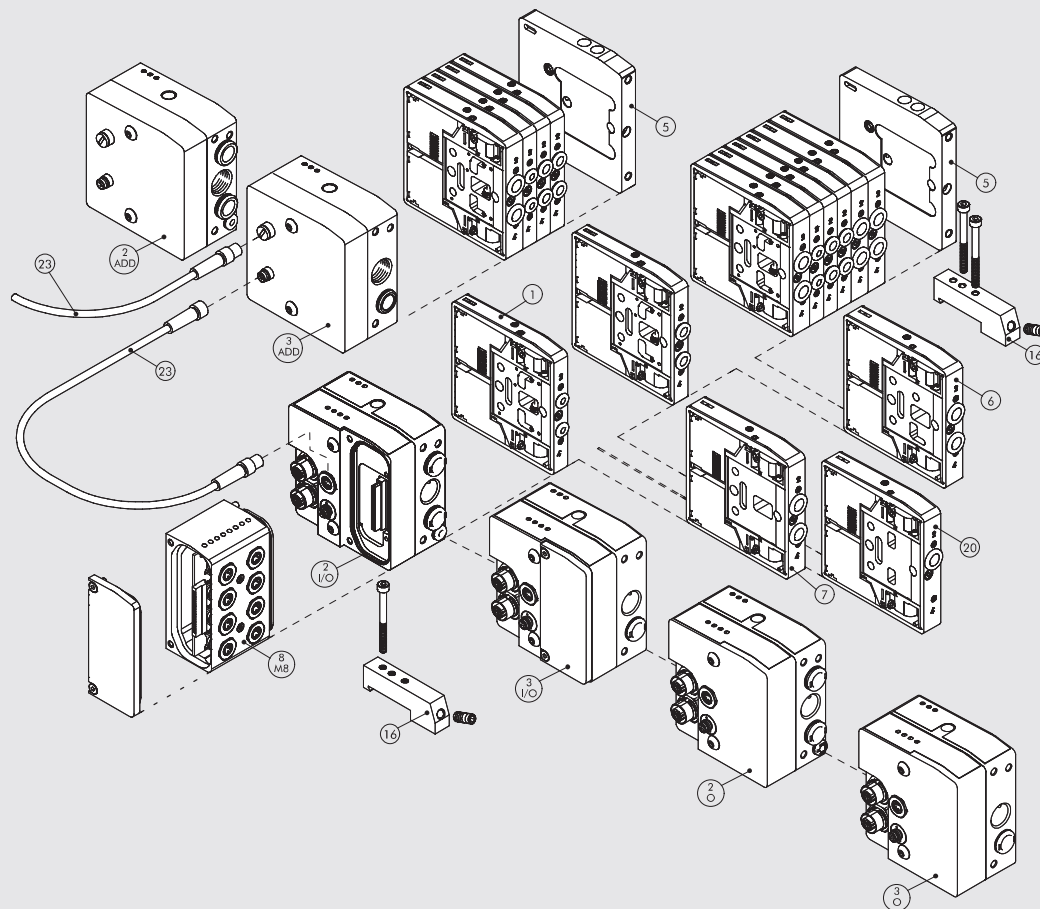
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ ⑨ ⑩ Utility port for pipe Ø 4, 6 or 8 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CM EtherNet/IP end-plate
- ⑲ 64 = when present, it means that the valve is suitable for installation on islands with a field bus with up to 64 pilots, otherwise the limit is 32 pilots.

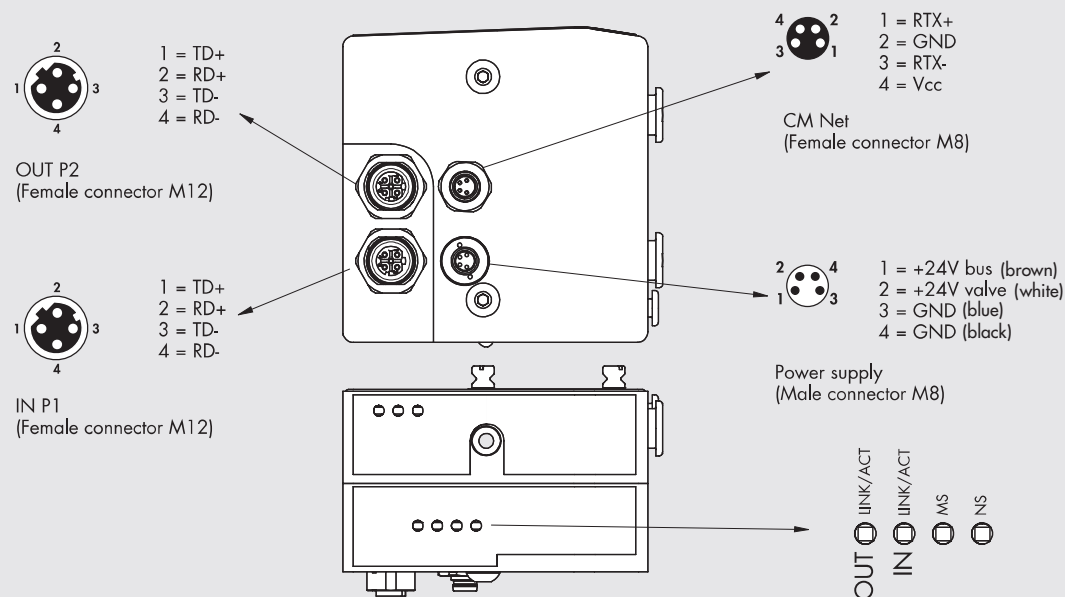


VALVE ISLAND CONFIGURATION

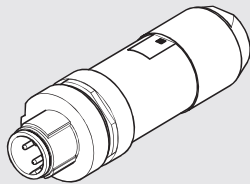
The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.170 for valves, intermediate elements and common accessories.



WIRING DIAGRAM



M12 BUS CONNECTOR, D-CODED



Code	Description
0240005051	M12 BUS connector, D-coded

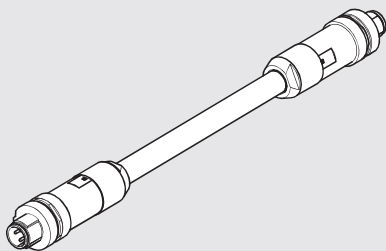
BUS CABLE



Code	Description
0240005220	BUS cable L = 20 m

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

STRAIGHT CONNECTOR FOR M12-M12 BUS, D-CODED

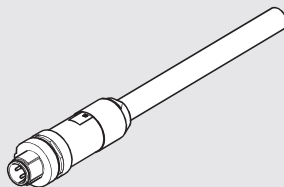


Code	Description
0240005103	Straight connector for M12-M12 BUS, D-coded, with 3 m cable
0240005105	Straight connector for M12-M12 BUS, D-coded, with 5 m cable
0240005110	Straight connector for M12-M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

STRAIGHT CONNECTOR FOR M12 BUS, D-CODED

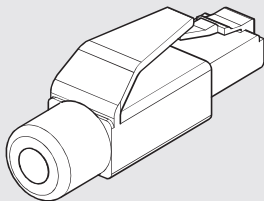
Pin	Cable color
1	Yellow
2	White
3	Red
4	Blue



Code	Description
0240005093	Straight connector for M12 BUS, D-coded, with 3 m cable
0240005095	Straight connector for M12 BUS, D-coded, with 5 m cable
0240005100	Straight connector for M12 BUS, D-coded, with 10 m cable

Note: Can be used for BUS units in the EtherNet family (Profinet IO, EtherCAT, EtherNet/IP....)

RJ45 CONNECTOR



Code	Description
0240005050	RJ45 connector with 4 contacts according to IEC 60603-7

NOTES

The CM+CANopen system has been designed with a pneumatic input end-plate that can contain all the electronic equipment, indicators and connectors. This system is very compact and sturdy and is housed in a thick aluminium body that protects sensitive components impact and falls. The end-plate is available in two electric versions: one handling up to 64 solenoids (64 OUTs) and one handling up to 64 solenoids (64 OUTs) and 32 inputs (32 INs).

Grounding is recommended to protect the electronic circuit against electric or electrostatic charges.

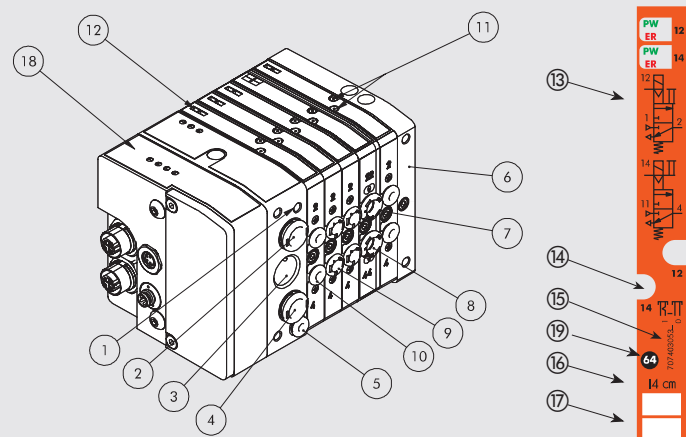
N.B. For the system to handle more than 32 pilots (33 to 64), it must be made up of valves bearing a label marked 64. If one or more valves are not marked 64, each island cannot handle more than 32 pilots.



TECHNICAL DATA	
Field buses	CANopen - Complies with CiA DS401 specifications
Factory settings	Module name: Cmseries Address 4
Addressing	Hardware via dip Switch
Voltage range	24VDC $\pm$ 10%
Maximum number of pilots (Out)	64
Maximum number of valves	* 64 (same as the max. no. of pilots)
Maximum number of inputs (INs)	32
Icc bus supply current	Nominal Icc 30 mA - Instantaneous Icc (< 5 ms) 640 mA
Icc valve supply current	Instantaneous Icc (< 5 ms) 1100 mA
Maximum absorption of a valve island with 64 monostable valves	Nominal Icc with 900 mA OFF valves - nominal Icc with 2700 mA ON valves
Protections	Module protected against overload and polarity reversal. Outputs protected against overloads and short-circuits
Connections	Field bus: M12 Male inputs, 5 pins, A-coded; M12 Female outputs, 5 poles, A-coded supply: M8 4 pin input: M8 3 pin
BUS diagnostics	Using local LEDs and software messages Outputs: using local LEDs and status bytes Inputs: using local LEDs and status bytes N.B.: Refer to the user manual for a detailed description
Data bit value	0 = not enabled 1 = enabled Disabled
Output status in the absence of communication	
* N.B.: In case of "slaves" islands, the CANopen "clever center" can contain up to 34 valves (pilots can be even up to 64). See page B2.148 for general technical data	

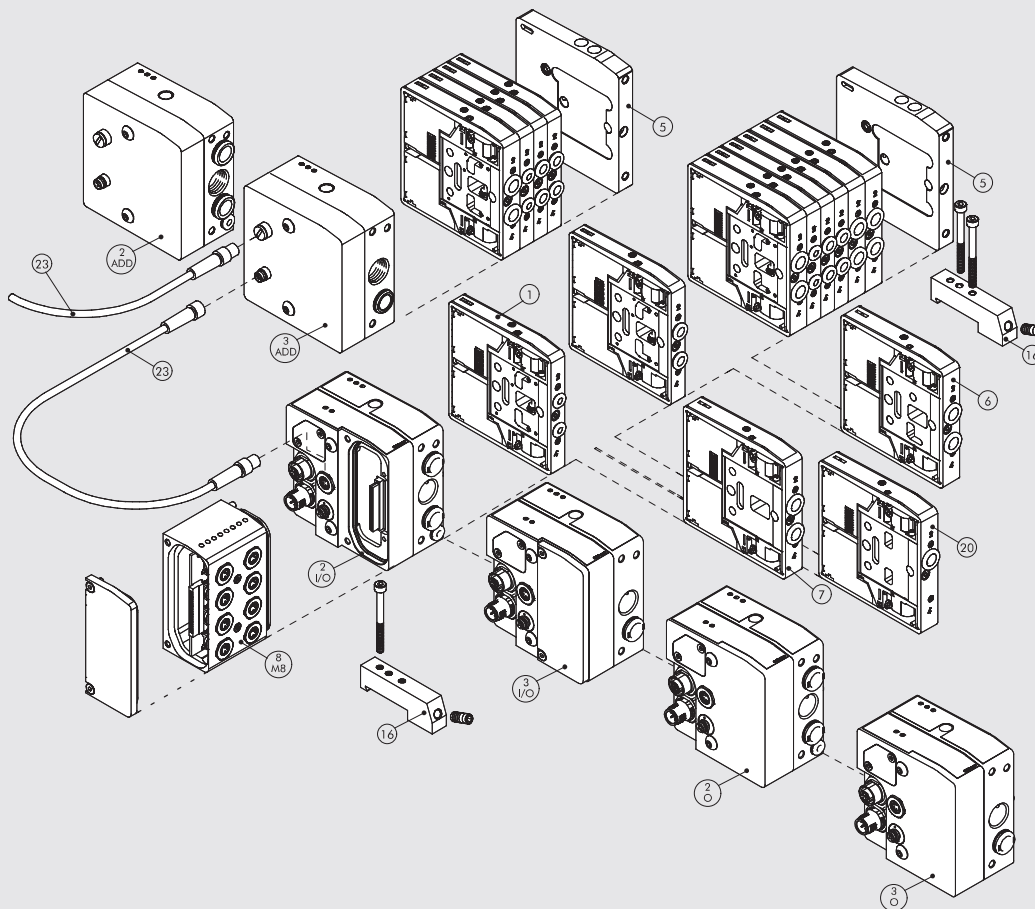
COMPONENTS

- ① Exhaust - Solenoid pilot 82/84
- ② Valve supply - port 1
- ③ Threaded connection of exhausts 3/5
- ④ Valve supply - port 11
- ⑤ Electrical control supply X
- ⑥ Blind end-plate
- ⑦ Screw for valve wall-mounting
- ⑧ ⑨ ⑩ Utility port for pipe Ø 4, 6 or 8 mm
- ⑪ Manual control
- ⑫ LED (LED on, solenoid valve energised)
- ⑬ Pneumatic symbol
- ⑭ Identification of the monostable or bistable manual control
- ⑮ Valve ordering code
- ⑯ Valve identification code
- ⑰ Blank space for valve number
- ⑱ CM CANopen end-plate
- ⑲ 64 = when present, it means that the valve is suitable for installation on islands with a field bus with up to 64 pilots, otherwise the limit is 32 pilots.

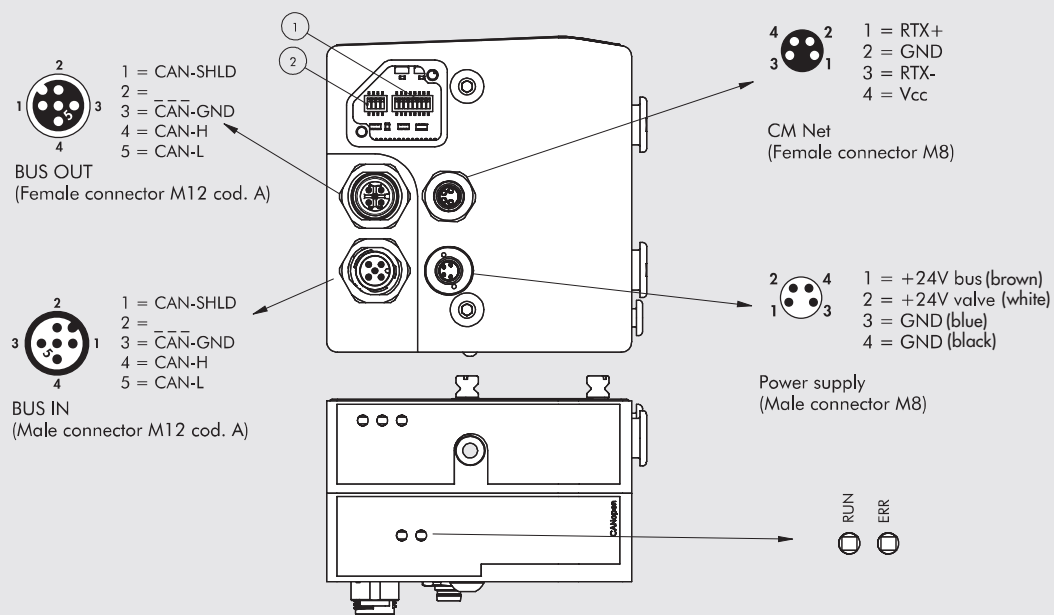


VALVE ISLAND CONFIGURATION

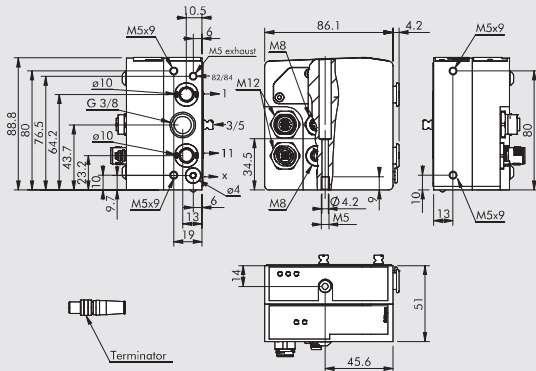
The numbers permit rapid identification of the function and assembly position of the single elements represented as follows.
Refer to page B2.168 for valves, intermediate elements and common accessories.



WIRING DIAGRAM

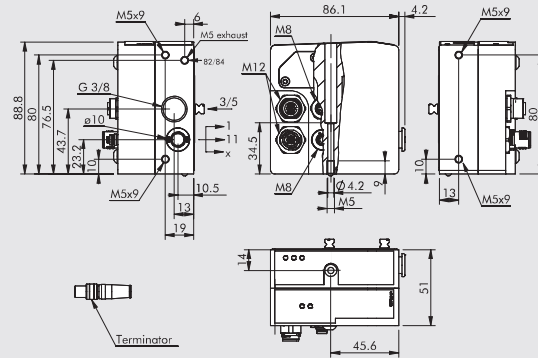


2 - O END-PLATE 1-11 CANopen OUTPUT



Code	Description	Weight [g]
0227302238	End-plate CM 1-11 CANopen OUTPUT	678
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		

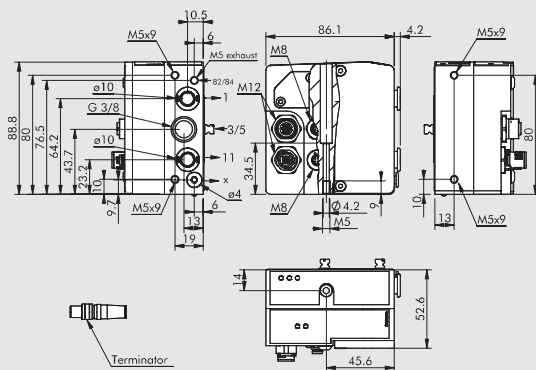
3 - O END-PLATE 1 CANopen OUTPUT



Code	Description	Weight [g]
0227302239	End-plate CM 1 CANopen OUTPUT	680

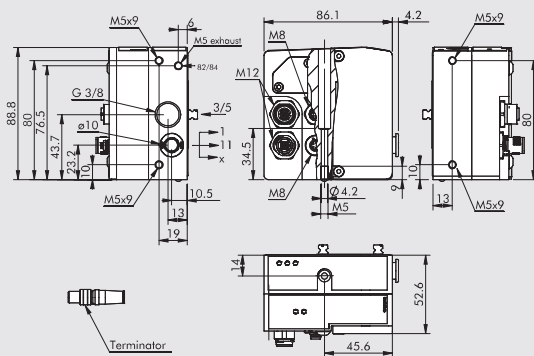
Note: terminator included

2 - I/O END-PLATE 1-11 CANopen INPUT/OUTPUT



Code	Description	Weight [g]
0227302240	End-plate CM 1-11 CANopen IN/OUT	632
This end-plate allows for supplies to be differentiated: port 2, port 4 and pilot supply		
Note: terminator included		

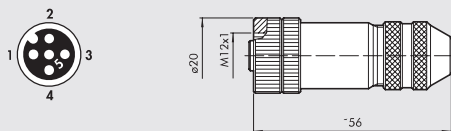
3 - I/O END-PLATE 1 CANopen INPUT/OUTPUT



Code	Description	Weight [g]
0227302241	End-plate CM 1 CANopen IN/OUT	635

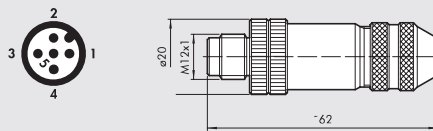
Note: terminator included

FEMALE CONNECTOR FOR CANopen BUS-IN



Code	Description
0240009055	M12 female connector, A-coded

MALE CONNECTOR FOR CANopen BUS-OUT



Code	Description
0240009038	M12 male connector, A-coded

CABLE FOR CANopen BUS

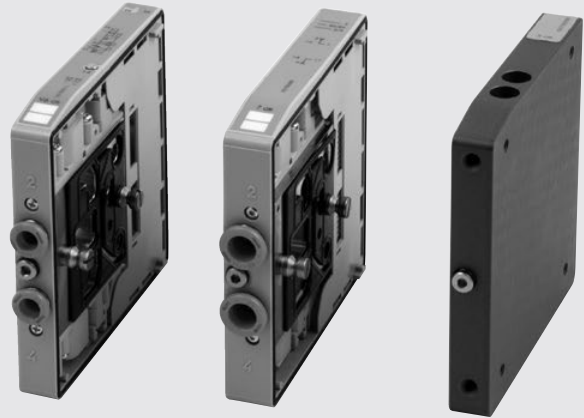


Code	Description
0240005250	Cable for CANopen bus 20 m

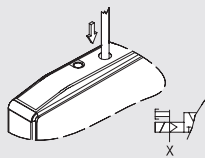
NOTES

CM - VALVES, INTERMEDIATES ELEMENTS AND ACCESSORIES

CM valve can be included in islands with any available input terminal.
The same valve can be connected to the multiple connection end-plate and all the field bus end-plates.

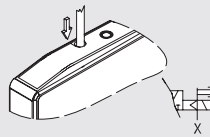


MANUAL CONTROLS



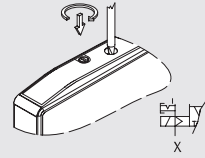
MONOSTABLE OVERRIDE PORT 2
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched



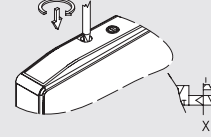
MONOSTABLE OVERRIDE PORT 4
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched



BISTABLE OVERRIDE PORT 2
servo-assisted

- Press the manual control right in then turn it clockwise 90 degrees and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L, V and O reposition.
 - The type K valve remains switched



BISTABLE OVERRIDE PORT 4
servo-assisted

- Press the manual control right in then turn it 90 degrees clockwise and Leave it in position.
- Rotate the manual control 90 degrees anticlockwise, and then release it:
 - The manual control returns to the home position.
 - Valves type I, W, L and O reposition.
 - The type K valve remains switched

N.B.: The pilot power supply X must be present.

N.B.: The pilot power supply X must be present.

N.B.: The pilot power supply X must be present.

N.B.: The pilot power supply X must be present.

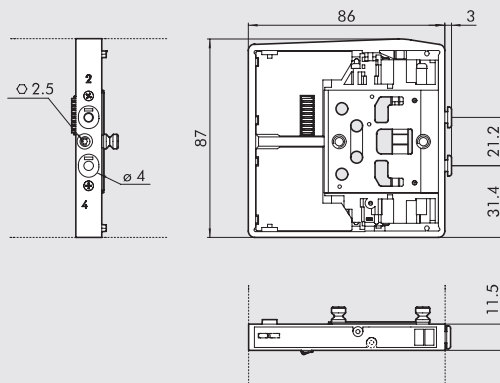
- The reference code for the monostable control ends in "0".

Example: 707403053 - 0

- The reference code for the bistable control ends in "1".

Example: 707403053 - 1

1 VALVE DIMENSIONS CM Ø 4



Symbol		Code	Manual control	Weight [g]
CM		7074030530	monostable	130
I4		7074030531	bistable	
CM		7074030630	monostable	130
W4		7074030631	bistable	
CM		7074030730	monostable	130
L4		7074030731	bistable	
CM		7074030130	monostable	115
V4		7074030131	bistable	
CM		7074030110	monostable	130
K4		7074030111	bistable	
CM		7074030210	monostable	130
O4		7074030211	bistable	

[illegible]

Symbol		Code	Manual control	Weight [g]
cm I6		7075030530 7075030531	monostable bistable	130
cm W6		7075030630 7075030631	monostable bistable	130
cm L6		7075030730 7075030731	monostable bistable	130
cm V6		7075030130 7075030131	monostable bistable	115
cm K6		7075030110 7075030111	monostable bistable	130
cm O6		7075030210 7075030211	monostable bistable	130

[illegible]

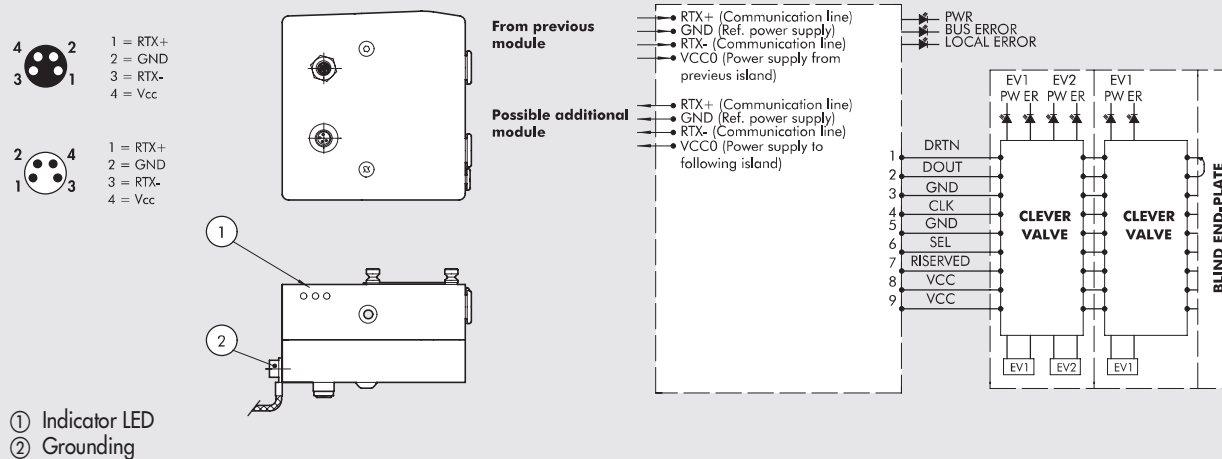
Symbol		Code	Manual control	Weight [g]
cm		7076030530	monostable	140
I8		7076030531	bistable	
cm		7076030630	monostable	140
W8		7076030631	bistable	
cm		7076030730	monostable	140
L8		7076030731	bistable	
cm		7076030130	monostable	130
V8		7076030131	bistable	
cm		7076030110	monostable	140
K8		7076030111	bistable	
cm		7076030210	monostable	140
O8		7076030211	bistable	

This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply

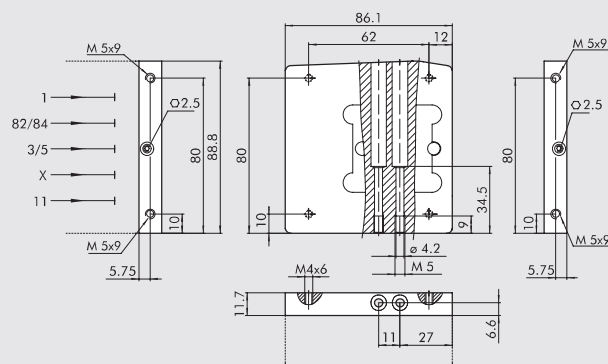
[illegible]

Code	Description	Weight [g]
0227302226	End-plate CM kit 1 ADD	770

WIRING DIAGRAM FOR THE ADDITIONAL TERMINAL

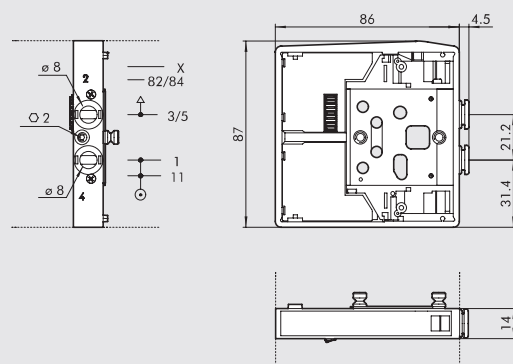


5 BLIND END-PLATE



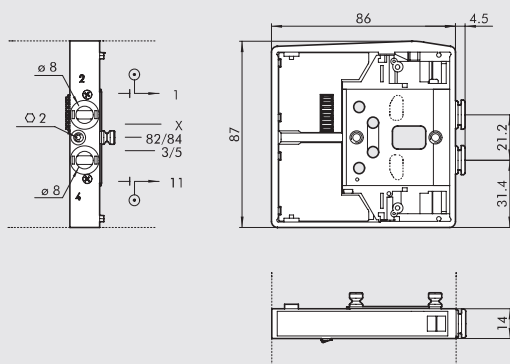
Code	Description	Weight [g]
0227302500	Blind end-plate CM	230

6 INTERMEDIATE THROUGH



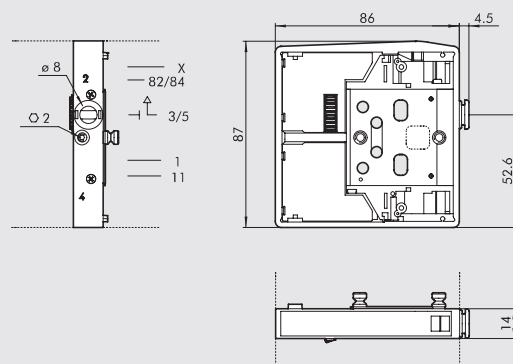
Code	Description	Weight [g]
0227302301	Intermediate through CM	120

7 INTERMEDIATE BLIND



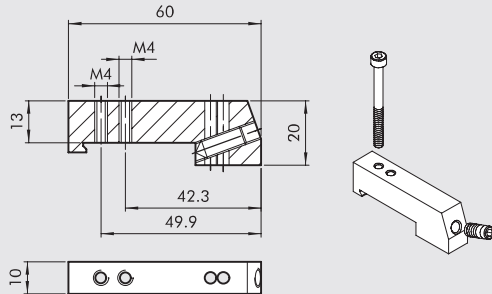
Code	Description	Weight [g]
0227302302	Intermediate blind CM	117

20 INTERMEDIATE EXHAUST SWITCH



Code	Description	Weight [g]
0227302303	Intermediate exhaust switch CM	125

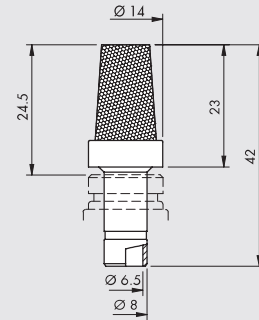
16 CONNECTION BRACKETS ON DIN BAR



Code	Description	Weight [g]
0227301600	Connection brackets on din bar HDM/CM	30

Supplied complete with one M4x45 screws and one grub screw
Individually packed

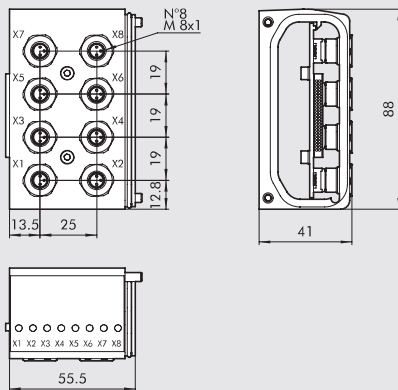
SILENCER FOR FITTING, Ø 8



Code	Description	Flow rate at 6.3 bar [l/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15

At the 3/5-exhaust port of the intermediate through reference 6
and the exhaust switch reference 20

8 - M8 8-INPUT M8 ADD-ON MODULE (for BUS) – INPUTs / OUTPUTs (for multi-pole connection)



Code	Description	Weight [g]
0227302900	M8 8-input module CM	273

FIELD BUS CONNECTION

INPUT PNP
1 = + 24 VDC
3 = 0VDC
4 = INPUT



MULTI-POLE CONNECTION

INPUT PNP
1 = + 24 VDC
3 = 0VDC
4 = INPUT



OUTPUT PNP
1 = + 24 VDC
3 = 0VDC
4 = INPUT

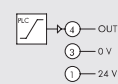


DIP SWITCH



OFF

OUTPUT ANALOGIC



OUTPUT NPN
1 = + 24 VDC
3 = 0VDC
4 = INPUT

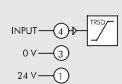


DIP SWITCH



OFF

INPUT ANALOGIC

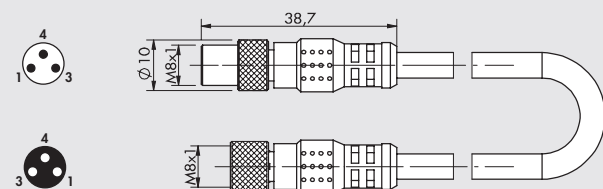


M8 PLUG



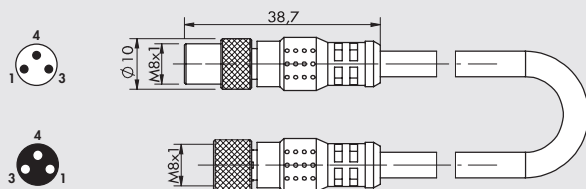
Code	Description
0240009039	Plug M8

M8 INPUT CONNECTOR



Code	Description
0240009009	M8-M8 straight connector with 3 m cable

M8 ADAPTER CABLE FOR CONNECTION OF THE PRESSURE SWITCH

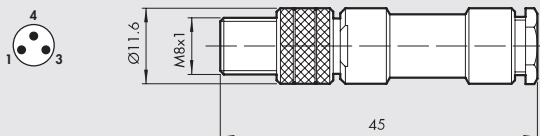


Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

Note: Can be used for connecting 1/8-1/4, Syntesi[®], Skillair[®], PRS L pressure switches to the M8 additional module. Contact type NO (Normally open)

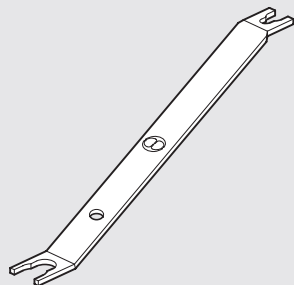
M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

DISTRIBUTORS M8 INPUT CONNECTOR



Code	Description
0240009010	M8 3-pin straight connector

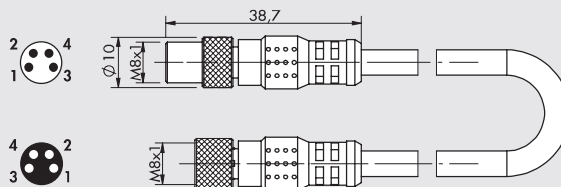
R17 - DISASSEMBLY KEY



Length = 140 mm

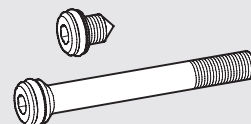
Code	Description	Ø Tube	Tube
2L17001	RL17	from Ø 3 to Ø 10	For R fitting and Fox fitting

23 M8 PREWIRED CONNECTOR FOR VALVE ISLANDS CONNECTIONS



Code	Description
0240005003	M8 prewired connector for valve islands conn. CM L = 5 m
0240005005	M8 prewired connector for valve islands conn. CM L = 1 m
0240005006	M8 prewired connector for valve islands conn. CM L = 3 m
0240005008	M8 prewired connector for valve islands conn. CM L = 10 m

GRUB SCREW KIT



Code	Description
0227301800	Grub screw for Multimach HDM/CM

Comes 1 + 1 packs

NOTES

MULTIMACH

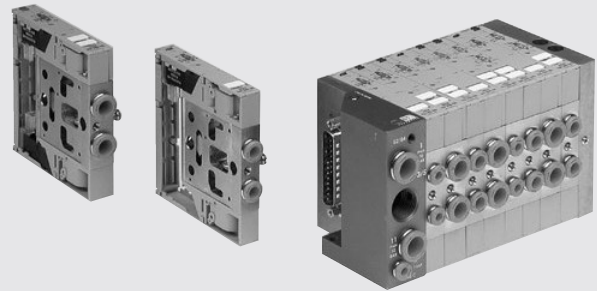


Multimach is not a mere valve, it is an electropneumatic distribution "island" - a single block ready for connection to power and air delivery pipes and a multi-pin cable.

All the pneumatic connections are situated on one side with built-in push-in fittings. The user interface is on the other side so that the fitter or serviceman has everything within an easy reach: manual controls, active valve signalling lights, compressed air system diagram, valve identification plates.

The user can count on four different orientations for the electric connector. Multimach provides full flexibility in the application of valves: 1 to 24 valves, power plates and drain for pipes of various sizes, electric 9- or 25-pin plug connector. But the real novelty, is the possibility of mounting valves of different flow rates: three different valves can be mounted at a time and a valve can be replaced with another of a different flow rate. This revolutionary concept enables the user to optimise space and costs and adapt the unit to different performance requirements.

The ratio between the flow rate of the Multimach system and sizes is incomparable: the top in terms of miniaturisation and efficiency.



VALVES

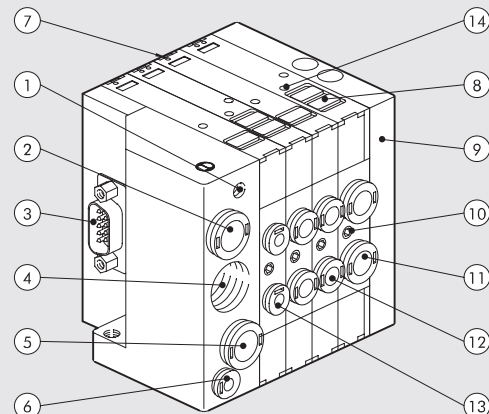
MULTIMACH

TECHNICAL DATA

Valve port connections			Ø 4,6,8 mm automatic fitting for ports 2 and 4 / power supply port for Ø8 or Ø10 automatic fitting / 3/8 thread for exhaust port, M5 thread for exhaust pilot port		
Connection on the end-plate for the supply of pilots			Automatic fitting Ø 4		
Operating temperature range			-10 to +60 °C		
Fluid			Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve - wall-mounting			According to the end-plate used: see page B2.176		
Flow rate at 6 bar ΔP 1bar		Nl/min	11 mm Ø 4: 200	11 mm Ø 6: 500	14 mm Ø 8: 700
Voltage range			24 VDC ±10%		
Power			1.2 W		
Insulation class			F155		
Degree of protection			IP51		
Solenoid rating			100% ED		
Pressure range			X (pilot supply)	1-11 (valve supply)	
	Terminal 1-11	bar	3 to 7 max	vacuum at 10 bar	
	Terminal 1	bar		3 to 7	
	Terminal 1 reduced	bar		3 to 7	
TRA/TRR 2x3/2 monostable at 6 bar		ms	8 / 45		
TRA/TRR 5/2 monostable at 6 bar		ms	8 / 33		
TRA/TRR 5/2 bistable at 6 bar		ms	20 / 20		
TRA/TRR 5/3 cc monostable at 6 bar		ms	20 / 20		
Note on use			Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.		
Compatibility with oils			See chapter Z1		

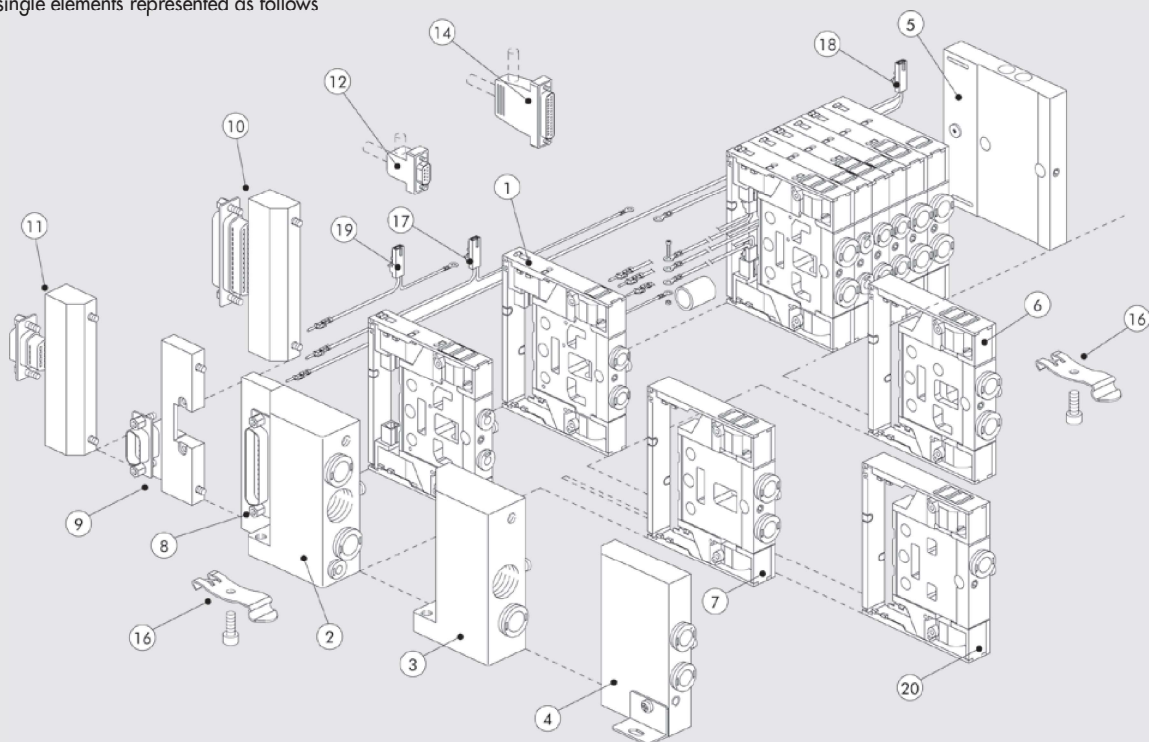
COMPONENTS

- ① Exhaust - Solenoid pilot
- ② Valve supply - port 1
- ③ Electrical multiple connection with 9 or 25 pins
- ④ Threaded connection of exhausts 3/5
- ⑤ Valve supply
- ⑥ Electrical control supply
- ⑦ LED (LED on, solenoid valve energised)
- ⑧ Removable identification labels
- ⑨ Blind end-plate
- ⑩ Screw for valve wall-mounting
- ⑪ Utility port for pipe Ø 8 mm
- ⑫ Utility port for pipe Ø 6 mm
- ⑬ Utility port for pipe Ø 4 mm
- ⑭ Manual control

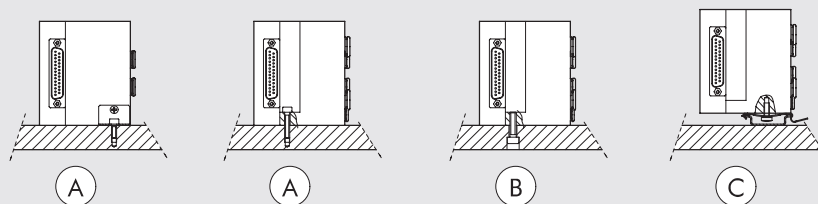


THE MULTIMACH WORLD: FLEXIBILITY

The numbers permit rapid identification of the function and assembly position of the single elements represented as follows



FIXING THE BASE



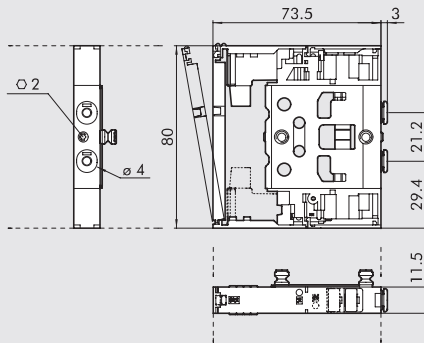
- Ⓐ Fixing with reduced end-plate 1, CODE 0227300300, supplied complete with bracket
- Ⓑ Fixing with end-plate 1-11 CODE 0227300200 or with end-plate CODE 0227300201
- Ⓒ Fixing with end-plate 1-11 CODE 0227300200 or with end-plate 1 CODE 0227300201 using the M4-thread found on the M5 end-plate
- Ⓓ Fixing on the DIN bar with end-plate 1-11 CODE 0227300 using the reduced end-plate 1 CODE 0227300300 or end-plate CODE 0227300201 using the push-in bracket CODE 0227300600.

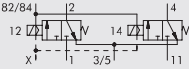
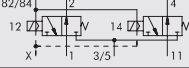
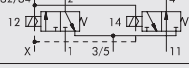
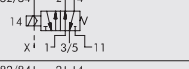
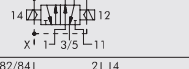
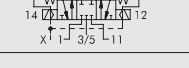
If you have to remove the base from the bar, this is rapid and can be performed without using any tools.

SYNOPTIC, SIZES AND VERSIONS

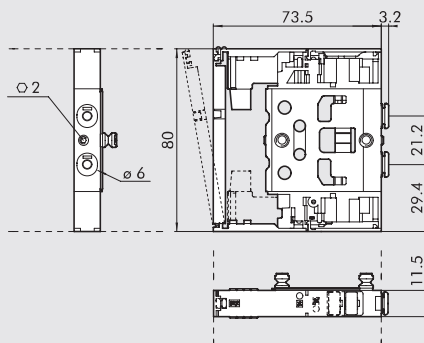
M 5 1 VALVE	2 INPUT END-PLATE	8 ELECTRICAL BASE	16 - W 8 - W 6 - O 4 - L 8 - 5 TYPE OF VALVE	1 4 FURTHER DETAILS
Multimach IP51	2 End-plate 1-11 3 End-plate 1 4 Reduced End-plate 1	8 Axial 25-wire connector base 9 Axial 9-wire connector base 10 25-wire rear connector base 11 9-wire rear connector base	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable 5 Blind end-plate 6 Passing-intermediate 7 Blind intermediate 20 Exhaust section 4 Cartridge 4 6 Cartridge 6 8 Cartridge 8	12 9-wire connector 14 25-wire connector 16 Brackets for DIN bar

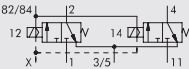
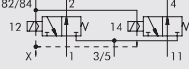
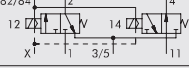
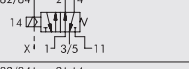
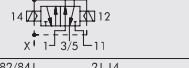
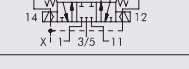
① VALVE DIMENSIONS Ø 4



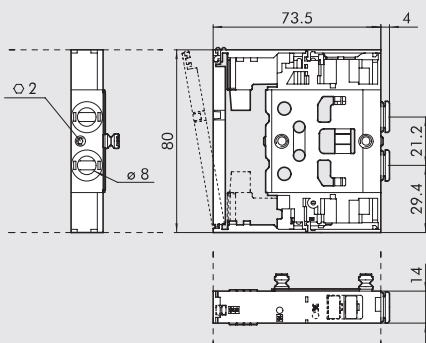
Symbol		Code	Manual control	Weight [g]
I4		7068030532	monostable	118
W4		7068030632	monostable	118
L4		7068030732	monostable	118
V4		7068030132	monostable	100
K4		7068030112	monostable	114
O4		7068030212	monostable	115

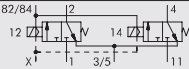
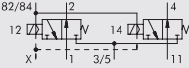
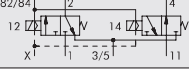
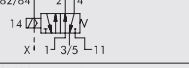
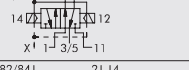
① VALVE DIMENSIONS Ø 6



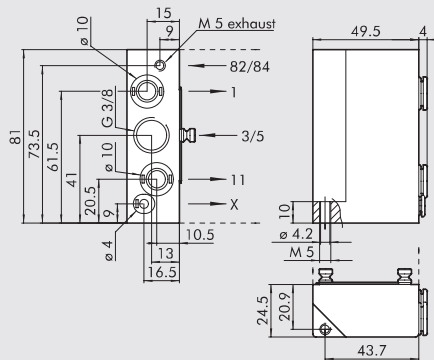
Symbol		Code	Manual control	Weight [g]
I6		7069030532	monostable	110
W6		7069030632	monostable	110
L6		7069030732	monostable	110
V6		7069030132	monostable	90
K6		7069030112	monostable	107
O6		7069030212	monostable	108

① VALVE DIMENSIONS Ø 8



Symbol		Code	Manual control	Weight [g]
I8		7070030532	monostable	124
W8		7070030632	monostable	124
L8		7070030732	monostable	124
V8		7070030132	monostable	105
K8		7070030112	monostable	120
O8		7070030212	monostable	121

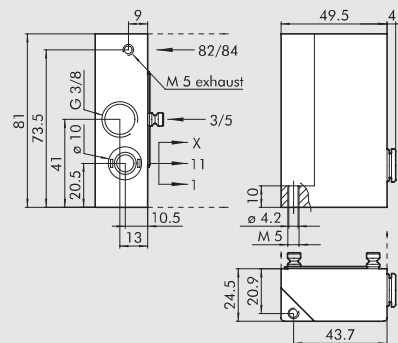
② END-PLATE 1-11



Code	Description	Weight [g]
0227300200	End-plate kit 1-11	223

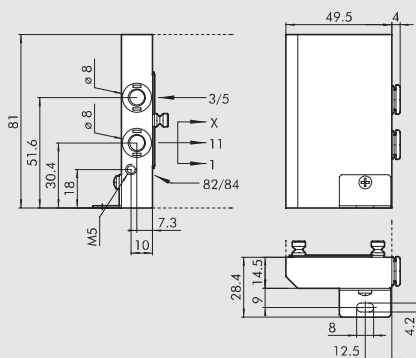
This end-plate allows for supplies to be differentiated:
port 2, port 4 and pilot supply

③ END-PLATE 1



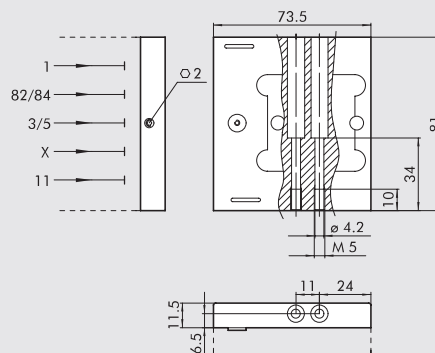
Code	Description	Weight [g]
0227300201	End-plate kit 1	224

④ REDUCED END-PLATE 1



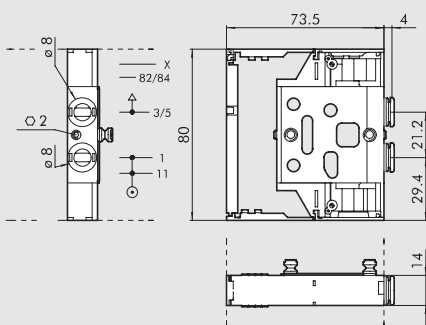
Code	Description	Weight [g]
0227300300	Reduced end-plate kit 1	148

⑤ BLIND END-PLATE



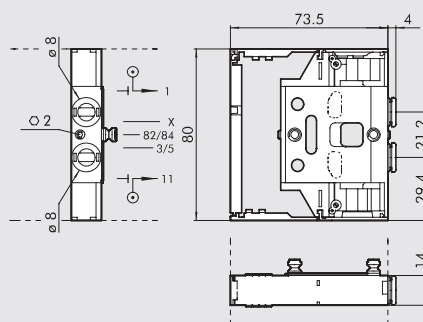
Code	Description	Weight [g]
0227300500	Blind end-plate	168

⑥ INTERMEDIATE THROUGH



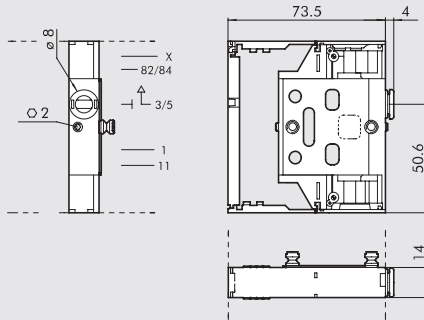
Code	Description	Weight [g]
0227300301	Intermediate through	92

⑦ INTERMEDIATE BLIND



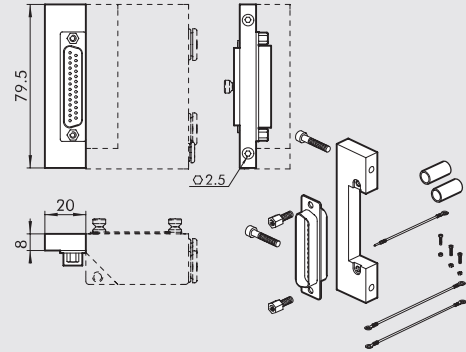
Code	Description	Weight [g]
0227300302	Intermediate blind	89

20 INTERMEDIATE EXHAUST SWITCH



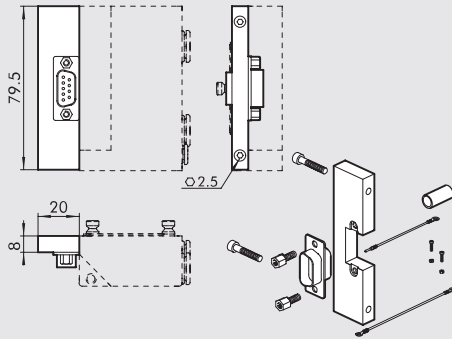
Code	Description	Weight [g]
0227300303	Intermediate exhaust switch	95

8 AXIAL CONNECTOR BASE, 25 WIRES



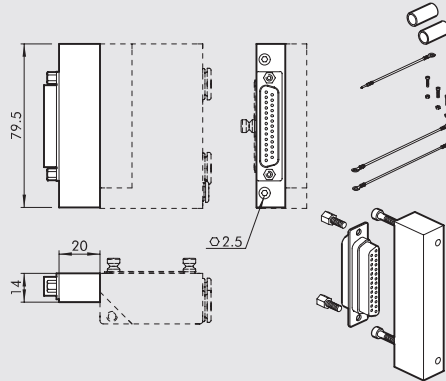
Code	Description	Weight [g]
0226180001	Axial connector base kit, 25 wires	54

9 AXIAL CONNECTOR BASE, 9 WIRES



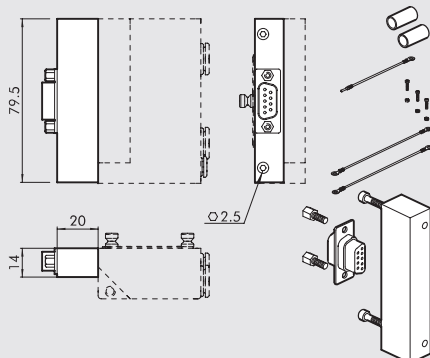
Code	Description	Weight [g]
0226180002	Axial connector base kit, 9 wires	51

10 REAR CONNECTOR BASE, 25 WIRES



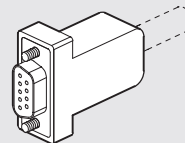
Code	Description	Weight [g]
0226180003	Rear connector base kit, 25 wires	73

11 REAR CONNECTOR BASE, 9 WIRES



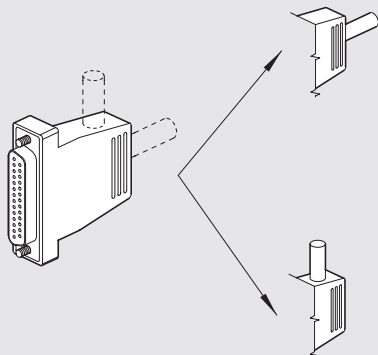
Code	Description	Weight [g]
0226180004	Rear connector base kit, 9 wires	77

12 STRAIGHT CONNECTOR KIT, 9 WIRES



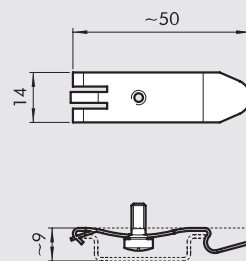
Code	Description	Weight [g]
0226180102	Straight connector kit, 9 wires	20

14 STRAIGHT AND 90° CONNECTOR KIT, 25 WIRES



Code	Description	Weight [g]
0226180101	Straight and 90° connector kit, 25 wires	48

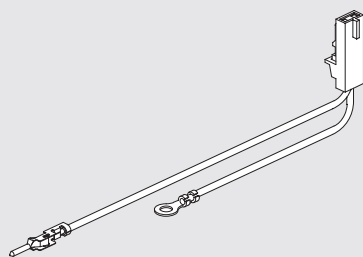
16 CONNECTION BRACKETS ON THE BAR OMEGA (DIN EN 50022)



Code	Description	Weight [g]
0227300600	Connection brackets on din bar	8

Individually packed

17 18 19 CONNECTOR KIT + WIRE



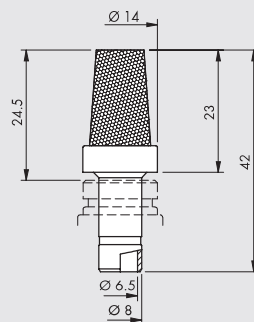
Code	Description	Weight [g]
0226180399	Connector kit + wire 1-6*	3
0226180400	Connector kit + wire 7-12**	4
0226180401	Connector kit + wire 13-30***	5

* For valve connection from 1st to 6th position counting from the connector

** For valve connection from 7th to 12th position, counting from the connector

*** For valve connection from 13th to 30th position, counting from the connector

SILENCER FOR FITTING, Ø 8



Code	Description	Flow rate at 6.3 bar [Nl/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15

At the 3/5-exhaust port of the reduced end-plate 1 ref. 4
and of the intermediate through of the exhaust switch ref. 20

CABLES

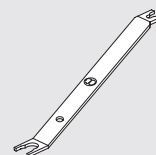
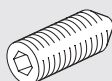
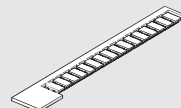
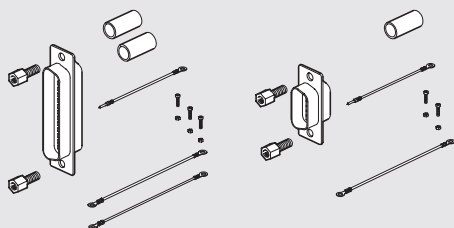
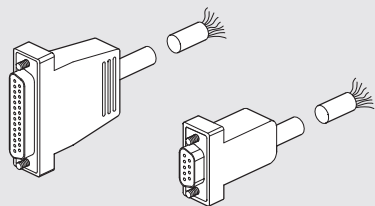


Code	Description	Weight [g/m]
0226107201	10-wire cable	60
0226107101	19-wire cable	122
0226107102	25-wire cable	130

Specify the number of metres desired

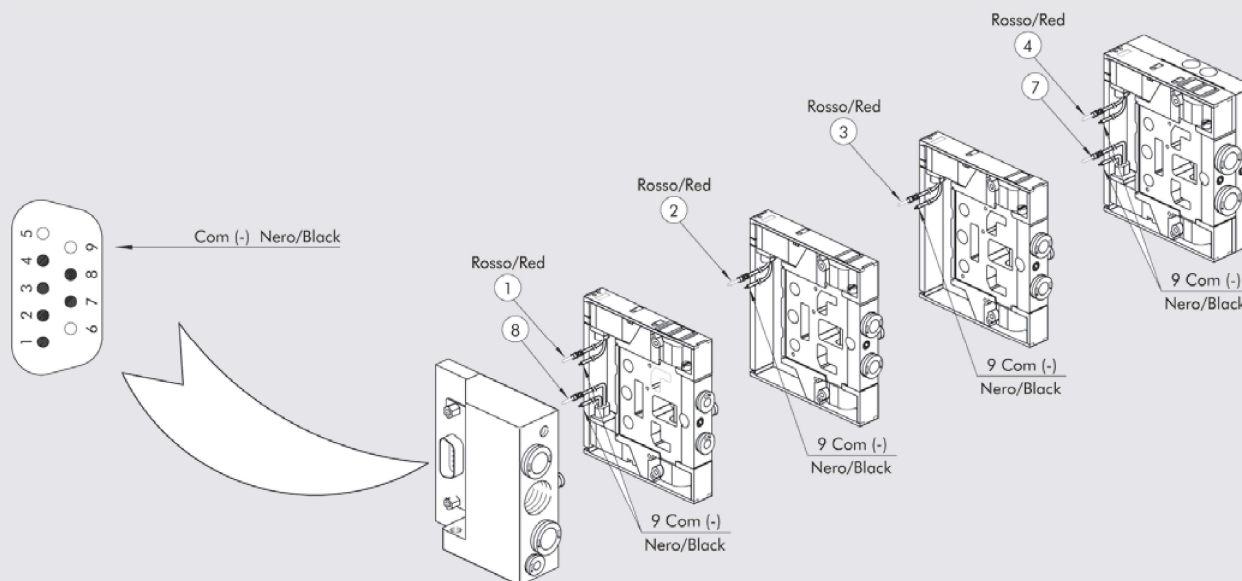
NOTES

MULTIMACH



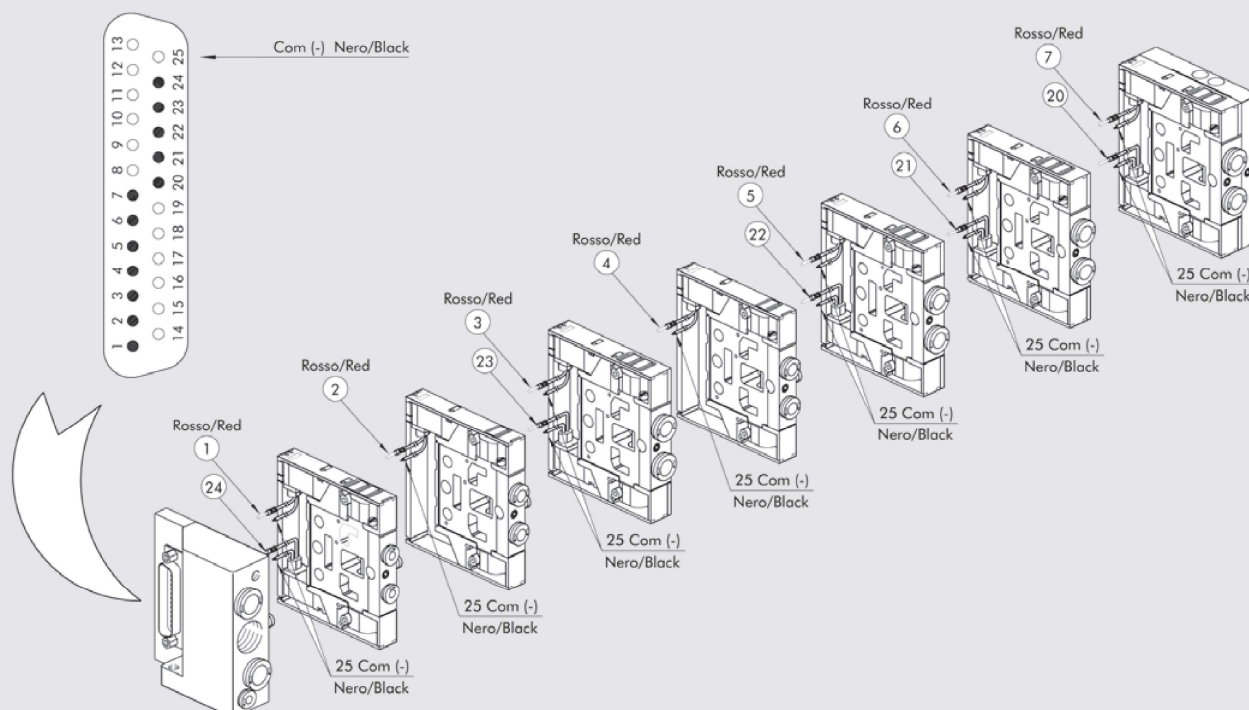
WIRING DIAGRAM OF THE 9-PIN CONNECTOR

Note: available with positive common wire on request.



WIRING DIAGRAM OF THE 25-PIN CONNECTOR

Note: available with positive common wire on request.



PROFIBUS-DP FOR MULTIMACH AND BASES FOR PLT-10 MULTIPLE CONNECTION



The expandable modular slaves for Multimach and bases for PLT-10 multiple connection follow the same application philosophy of total modularity common to the Multimach system. With full freedom, the slave can be configured by fitting the various modules offered:

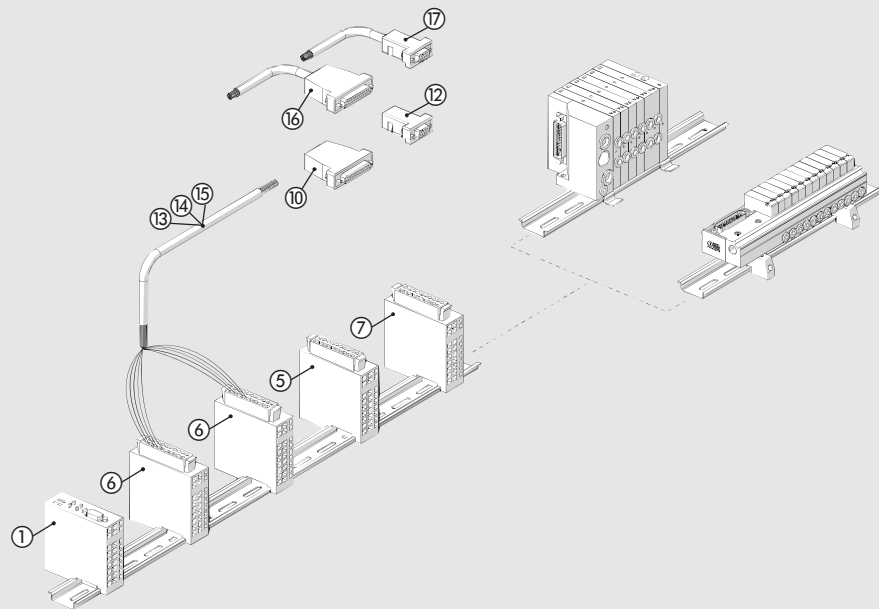
- The slave is mounted on a 35 mm DIN bar, next to the Multimach unit.
 - The slave is connected to the island via the multiple spring connector of the digital 8-output modules with the 9-pin or 25-pin valve island plug connector, using multi-pin cables.
 - Using 1, 2 or 3 digital 8-output modules, it is possible to manage 8, 16 or 24 controls of either one or different valve islands
 - Up to 32 additional modules can be fitted alongside the digital 8-output modules to manage other inputs and outputs.
- These modules are electrically connected together, using a small plate-connector (housed under the modules, inside the DIN bar).
- There are 4 other types of modules available: for 8 digital inputs; for 8 digital outputs; for 4 analogue inputs and for 4 analogue outputs.
 - With this system, a maximum of total 256 Inputs/Outputs can be managed with just one slave!



TECHNICAL DATA

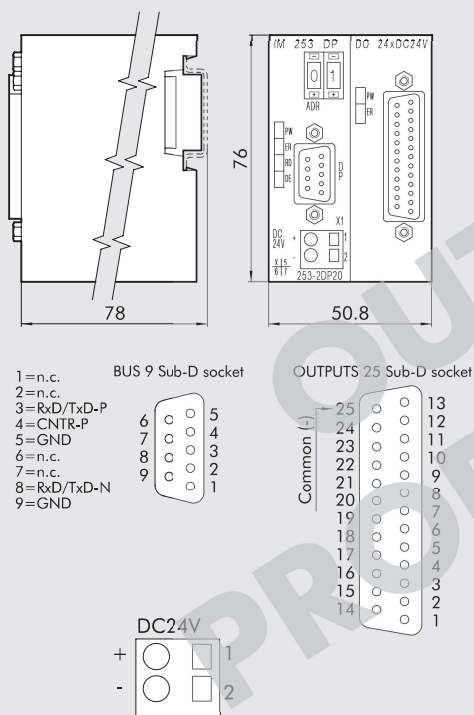
Supply voltage	24 VDC + 20% - 15%
EMC and ESD test	in compliance with IEC 801-2/IEC 801/4 (up to level 3: 8kV/2kV)
Resistance to vibration and impacts test	according to IEC68-2-6/IEC 68-2-27 (1g/12g)
Operating temperature range	°C 0 to 60
Storage temperature	°C -40 to + 85
Admitted relative humidity	95%
Assembly	On Omega bar (DIN EN 50022) size 35 x 7 or 35 x 15

THE MULTIMACH WORLD: SLAVES, INPUTS AND OUTPUTS

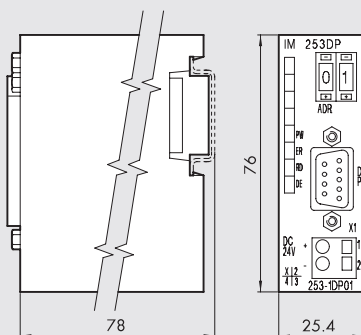


For the connection of the solenoid valve island to the Profibus ① system, the cables ⑬, ⑭, ⑮ must be electrically connected to the digital 8-output modules ⑥. If the number of valve controls is less than or equal to 8, use the 10-pin cable and one module ⑥. If it is less than or equal to 16, use the 19-pin cable and two modules ⑥. With up to 24 valve controls, use 25-pin plug connectors ⑩, the 9-pin plug connector ⑫ or pre-wired connectors ⑯ or ⑰. You can connect each DIGITAL 8-OUTPUT module ⑥ to a solenoid valve island.

① SLAVE PROFIBUS-DP 24 OUTPUT



① SLAVE PROFIBUS-DP



Code
0240004002

Slave kit
Slave PROFIBUS+DO24xDC24V

Technical data

PROFIBUS-Interface	RS485: 9 pins D-Sub
Transmission speed	9.6 kBaud up to 12 Mbaud
Max number of modules which can be connected	31 (depending on the maximum current)
Output interface	25 pins D-Sub
Number of outputs	24
Output data	4 Byte (3used +1)
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24V (out excluded)	800 mA

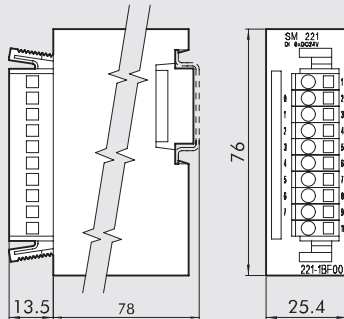
Code
0240004003

Description
Slave PROFIBUS-DP

Technical data

PROFIBUS-DP Interface	RS485: 9 pins D-Sub
Transmission speed	9.6 kBaud up to 12 Mbaud
Max number of modules which can be connected	32 (depending on the maximum current)
Nominal supply voltage	24 VDC
Absorption 24V	70 mA

⑤ 8-DIGITAL INPUT MODULE

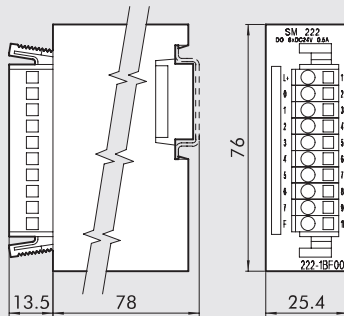


Code	Description
0240004053	DI 8xDC24V unit

Technical data

Nominal input voltage	24 VDC
Number of inputs	8
Input data	1 Byte
Input voltage at "1"	15...28.8V
Output voltage at "0"	0...5V
Response time	3 ms
Internal Bus voltage	5V
Absorption 5V BUS	20 mA

⑥ 8-DIGITAL OUTPUT MODULE

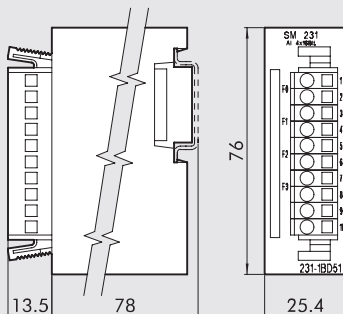


Code	Description
0240004051	DO 8xDC24V 0.5A unit

Technical data

Nominal voltage	24 VDC
Number of outputs	8
Output data	1 Byte
Absorption for each channel	1A (max 8A)
Internal Bus voltage	5V
Absorption 5V BUS	70 mA

⑦ 4-ANALOG INPUT MODULE

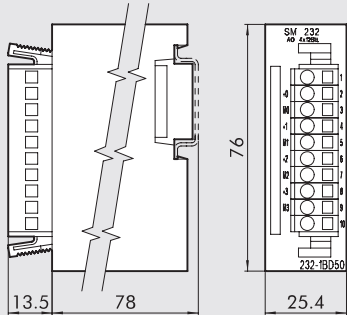


Code	Description
0240004054	AI 4X16 BIT unit

Technical data

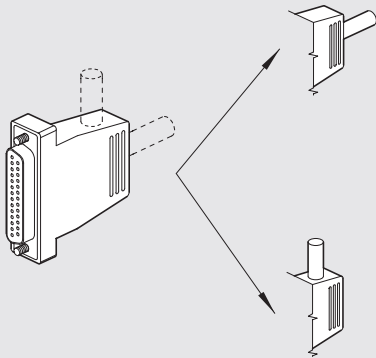
Number of Inputs	4
Input data	8 Byte
Input range	Voltage 0 to 50 mV, 0...10V, ± 4 mV, ± 4 V, ± 10 V, Current 0/4...20 mA, ± 20 mA
	Temperature Pt100, Pt1000, Ni100, Ni1000
	Resistance 60 Ω , 600 Ω , 3000 Ω , 16000 Ω
	Thermoelements J, K, N, R, T, S
Resolution	12/16 Bit
Input resistance	20M Ω voltage, 85 Ω current
Time	5...70 ms
Internal Bus voltage	5V
Absorption 5V BUS	280 mA

⑧ 4-ANALOG OUTPUT MODULE



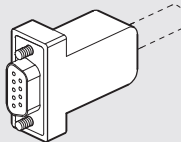
Code	Description
0240004055	AO 4X12 BIT unit
Technical data	
Number of outputs	4
Output data	8 Byte
Output range	Voltage 0...10V, $\pm 10V$, 1...5V Current 0...20 mA, 4...20 mA, ± 20 mA
Resolution	12 BIT
Output resistance	Minimum voltage 1 k Ω , Maximum current 500 Ω
Conversion time	0.45 ms
Internal Bus voltage	5 V
Absorption 5V BUS	75 mA

⑪ 25-PIN PLUG CONNECTOR KIT



Code	Description	Weight [g]
0226180101	25-pin plug connector	48

⑫ 9-PIN PLUG CONNECTOR, STRAIGHT



Code	Description	Weight [g]
0226180102	9-pin plug connector	20

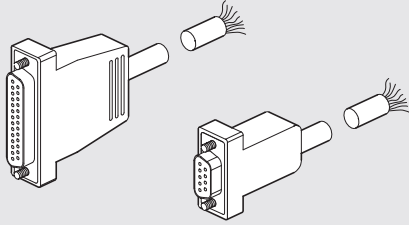
⑬ ⑭ ⑮ CABLES



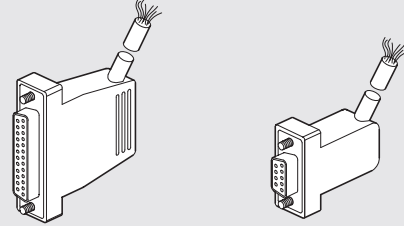
Code	Description	Weight [g/m]
0226107201	10-wire cable	60
0226107101	19-wire cable	122
0226107102	25-wire cable	130

Indicate the desired length in metres

NOTES

16 17 STRAIGHT PRE-WIRED CONNECTOR KIT


Code	Description	Weight [g]
0226900100	Straight D-Sub 9-PIN connector + cable L = 1 m	80
0226900250	Straight D-Sub 9-PIN connector + cable L = 2.5 m	170
0226900500	Straight D-Sub 9-PIN connector + cable L = 5 m	320
0226900750	Straight D-Sub 9-PIN connector + cable L = 7.5 m	470
0226901000	Straight D-Sub 9-PIN connector + cable L = 10 m	620
0226901500	Straight D-Sub 9-PIN connector + cable L = 15 m	920
0226902000	Straight D-Sub 9-PIN connector + cable L = 20 m	1220
0226905000	Straight D-Sub 9-PIN connector + cable L = 50 m	3020
0226920100	Straight D-Sub 25-PIN connector + cable L = 1 m	132
0226920250	Straight D-Sub 25-PIN connector + cable L = 2.5 m	320
0226920500	Straight D-Sub 25-PIN connector + cable L = 5 m	636

16 17 PRE-WIRED 90° CONNECTOR


Code	Description	Weight [g]
0226910100	90° D-Sub 9-PIN connector + cable L = 1 m	80
0226910250	90° D-Sub 9-PIN connector + cable L = 2.5 m	170
0226910500	90° D-Sub 9-PIN connector + cable L = 5 m	320
0226910750	90° D-Sub 9-PIN connector + cable L = 7.5 m	470
0226911000	90° D-Sub 9-PIN connector + cable L = 10 m	620
0226911500	90° D-Sub 9-PIN connector + cable L = 15 m	920
0226930100	90° D-Sub 25-PIN connector + cable L = 1 m	132
0226930250	90° D-Sub 25-PIN connector + cable L = 2.5 m	320
0226930500	90° D-Sub 25-PIN connector + cable L = 5 m	636

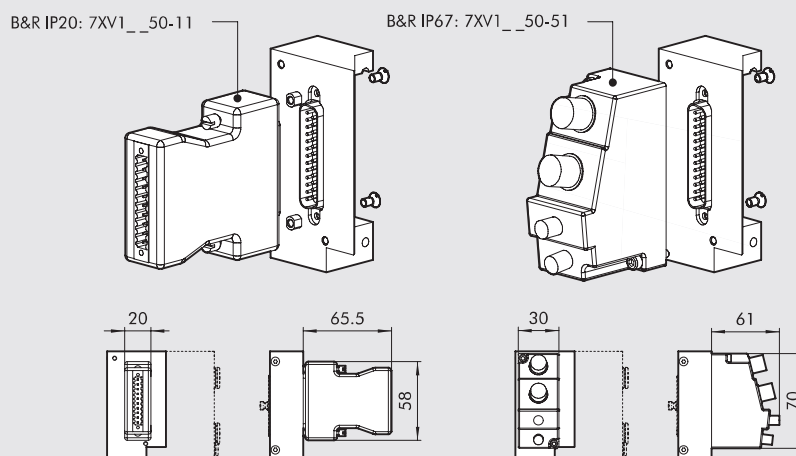
WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTORS

25 PIN				9 PIN			
Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black	1	green/black
2	red/brown	11	red/orange	20	white	2	white
3	white/black	12	light blue	21	blue/white	3	blue/black
4	red/blue	13	yellow/white	22	brown	4	blue
5	black/orange	14	yellow	23	green/white	5	yellow/black
6	yellow/red	15	red/green	24	red	6	yellow
7	black/brown	16	orange	25	green/black	7	red/black
8	white/red	17	orange/white			8	green
9	red/black	18	green			9	white/black

NOTES

A large, industrial-grade hydraulic valve manifold, likely a 4/3-way valve, with multiple ports and a complex internal structure. The manifold is made of metal and has a series of ports on the right side, each with a protective cap. The top of the manifold has a series of labels and markings, including "4/3-WAY" and "1000". The left side of the manifold has a large, cylindrical port. The manifold is shown from a perspective view, highlighting its complex internal structure and multiple ports.

Refer to page **B2.177** for valves, intermediates elements and common accessories.



B2.188

INPUT/OUTPUT PROFIBUS-DP IP 67 M12



The Profibus-DP IP 67 is a robust metallic slave that can be connected flexibly using M12 connectors to outputs and solenoid valves and/or inputs.

Each connector can be used freely for:

- 1 Output + 1 diagnostic Input
- 2 Outputs
- 1 Output + 1 Input
- 2 Inputs
- 1 Input + 1 diagnostic Input

Each slave can handle a total of 16 signals, each according to one of the above combinations.

Diagnostics provides information on the type and location of the error of each channel with:

- de-activation of the coupling point "involved" and not the complete module;
- signal to the controller;
- display with local LEDs.

One single slave or an island of solenoid valves complete with slave and connectors can be ordered. The catalogue shows the 1/8" and 1/4" valve islands in the 70 series and the ISO5599 valve islands, size 1 and size 2.



VALVES

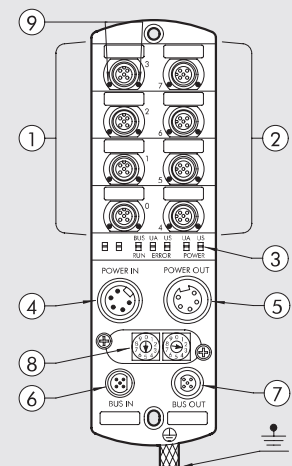
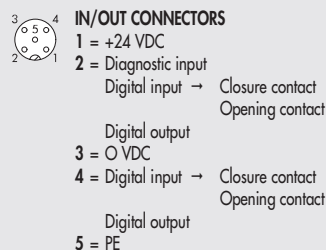
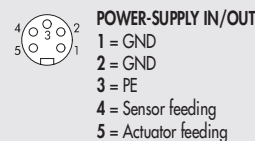
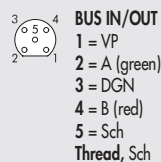
INPUT/OUTPUT PROFIBUS-DP IP 67 M12

TECHNICAL DATA

Application	8 inputs or outputs + 8 inputs or outputs or diagnostic
Supply voltage	24 VDC (18V.....30,2V), according to EN 61131-2
Degree of protection	IP67
Temperature	0 to 55°C (32 to 131° F)
Field Bus Data	Transmission protocol Profibus-DP EN 50170
	Transmission mode synchronous or Freeze-Mode
	Transmission speed 12MBit/s
	Addresses rotating switches BCD, 0.....99
Inputs Output Technical Data	Type pnp proximity sensors or EN 61131-2 compatible mechanical limit switch
	Supply 24 VDC (18-30.2V) to EN 61131-2; ≥ 200 mA for M12 coupling point.
	Indicator One LED for each
Output Technical Data	Voltage 24 VDC (18-30.2V) output, to EN 61131-2; cumulative I ≥ 9 A
	Maximum current for each actuator 1.6 A, system protected by fuse in case of short-circuit
	Maximum current contemporary 10W
	Maximum signal exchange frequency 20 Hz Ohm, 20 Hz induction
	Indicator LED One LED for each output
Autotest	Field bus RUN-LED
	Insufficient voltage signal LED + alarm signal to master
	Short-circuit sensor INPUT or OUTPUTS Red LED for channel on M12 coupling point
Autotest	Desina® (pin 2) PIN 2 diagnostic with red LED for M12 coupling point and signal to master
N.B.: for the disposition of the contact, please look at the connectors at the following pages	

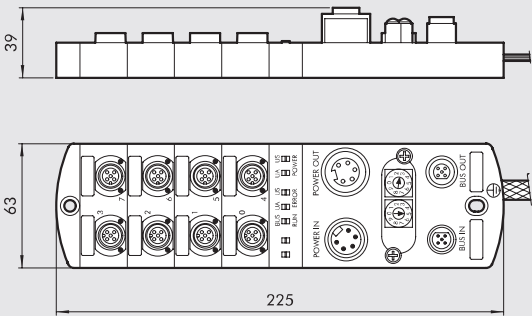
COMPONENTS

- ① ② IN-OUT diagnostic connectors
- ③ Led Power, Error, Run
- ④ IN feeding connector
- ⑤ OUT feeding connector
- ⑥ IN BUS connector
- ⑦ OUT BUS connector
- ⑧ Rotating switches for addressing
- ⑨ Diagnostic LED for single channel

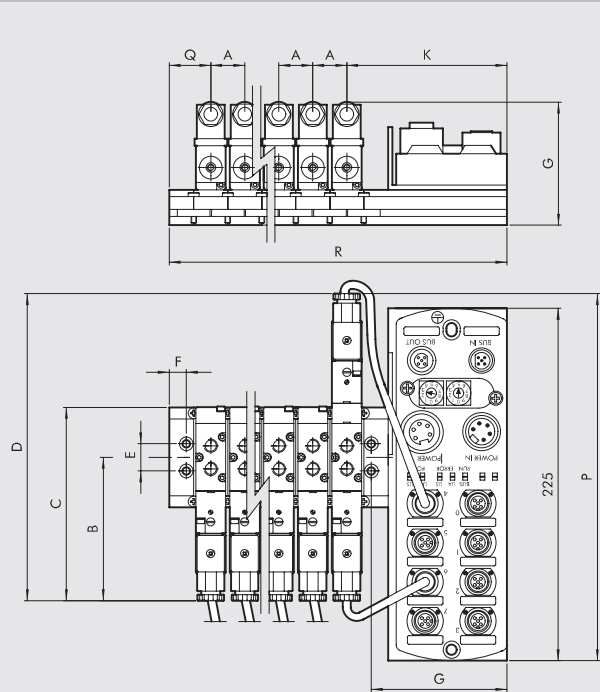


SLAVE IP67

Code	Description
0240008001	8 I/O + 8 I/O/autotest Profibus



IP67 SLAVE, COMPLETE WITH SERIES 70 VALVES



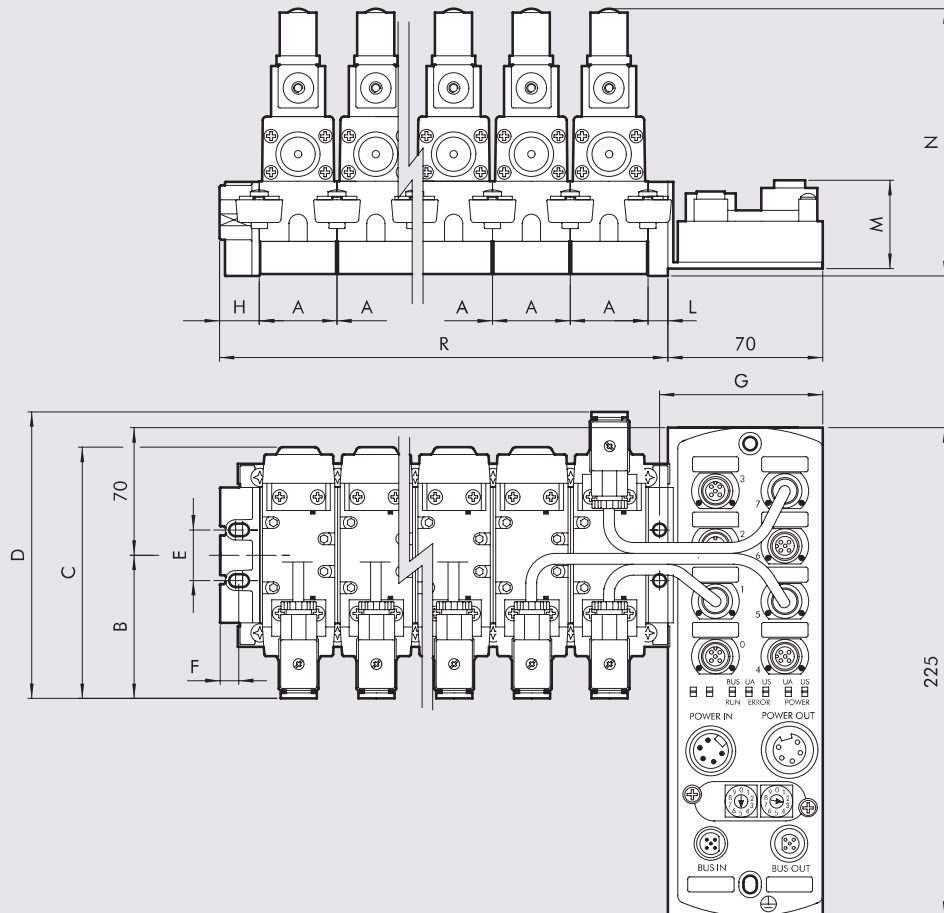
A	B	C	D	E	F	G	K	P	Q	R
1/8" Manifold										
25	105	142	225	20	12.5	85.8	103.5	230	305	Q + K + (A x *n ² -1)
1/8" Multiple										
25	105	142	225	20	7	98	115	230	24	Q + K + (A x *n ² -1)
1/4" Manifold										
27	112	156	239	25	10	85.5	104.5	237	31.5	Q + K + (A x *n ² -1)
1/4" Multiple										
27	112	156	239	25	7	98	118	237	27	Q + K + (A x *n ² -1)

*n = number of mounted valves
N.B.: the unit is supplied complete with cables for valves

SYNOPTIC, SIZES AND VERSIONS

B U S	P	V	B	O	0 2	D D
	P Profibus	V IP67	B 70 1/8" C 70 1/4"	O Multiple base	02 2 positions 04 4 positions 06 6 positions 08 8 positions 10 10 positions 12 12 positions 14 14 positions 16 16 positions	D SOV 23 SOS NO - SOV 33 SOS NO H SOV 23 SOS NC - SOV 33 SOS NC Z SOV 23 SOB 00 - SOV 33 SOB 00 M SOV 25 SOS 0 - SOV 35 SOS 00 J SOV 25 SOB 00 - SOV 35 SOB 00 G SOV 26 SOS CC - SOV 36 SOS CC E SOV 26 SOS OC - SOV 36 SOS OC B SOV 26 SOS PC - SOV 36 SOS PC A Blanking plate

IP67 SLAVE, COMPLETE WITH ISO VALVES



VALVES

INPUT/OUTPUT PROFIBUS-DP IP 67 M12

	A	B	C	D	E	F	G	H	L	M	N	P	R
ISO1	43	80	140	158	28	10.5	76.4	22	11	47	150	230	H + L + (A x *n°)
ISO2	56	90	165	180	35	12.5	77.5	26	14	61	178	240	H + L + (A x *n°)

*n = number of mounted valves

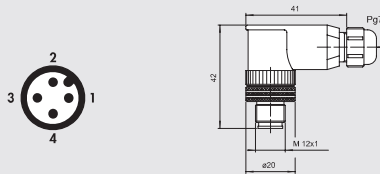
N.B.: the unit is supplied complete with cables for valves

SYNOPTIC, SIZES AND VERSIONS

B U S	P	V	D	1	0 2	M M
	P Profibus	V IP67	D ISO1 E ISO2	1 Manifold base side	02 2 positions 04 4 positions 06 6 positions 08 8 positions 10 10 positions 12 12 positions 14 14 positions 16 16 positions	M ISV 55 SOS 00 - ISV 65 SOS 00 J ISV 55 SOB 00 - ISV 65 SOB 00 G ISV 56 SOS CC - ISV 66 SOS CC E ISV 56 SOS OC - ISV 66 SOS OC B ISV 56 SOS PC - ISV 66 SOS PC A Blanking plate

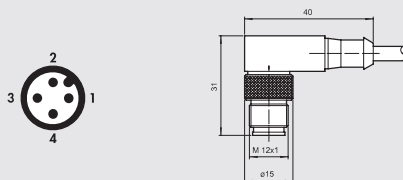
ACCESSORIES

90° ELBOW WITHOUT CABLE



Code	Description
0240009001	90° Elbow without cable

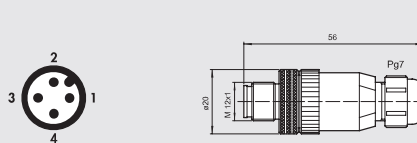
90° ELBOW WITH CABLE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black

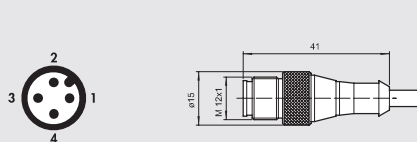
Code	Description
0240009022	90° curve with cable 1.5 m
0240009023	90° curve with cable 5 m

STRAIGHT FITTING WITHOUT CABLE



Code	Description
0240009021	Straight fitting without cable

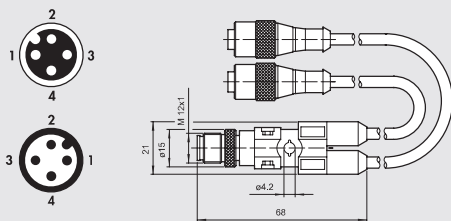
STRAIGHT FITTING WITH CABLE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black

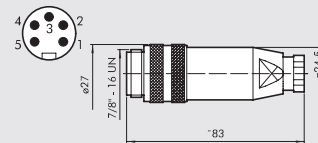
Code	Description
0240009002	Straight, with 1.5 m cable
0240009003	Straight, with 5 m cable

Y-DISTRIBUTOR WITH CABLE AND M12 STRAIGHT CONNECTORS



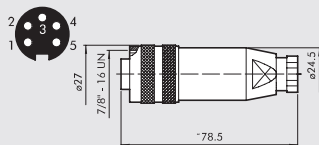
Code	Description
0240009031	Y-Distributor cable 0.6 m
0240009032	Y-Distributor cable 1.5 m

MALE CONNECTOR FOR FEEDING "IN"



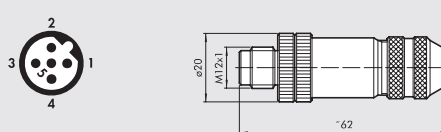
Code	Description
0240009033	Male connector "IN" feeding

FEMALE CONNECTOR FOR FEEDING "OUT"



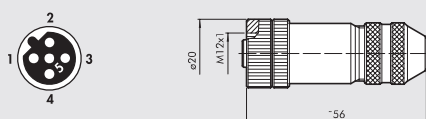
Code	Description
0240009034	Female connector "OUT" feeding

M12 MALE CONNECTOR OUT-BUS



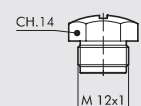
Code	Description
0240009035	M12 male connector B coding

M12 FEMALE CONNECTOR IN-BUS



Code	Description
0240009036	M12 female connector B coding

PLUG M12



Code	Description
0240009040	M12 plug

The Profibus-DP "COMPACT" input module is a sturdy and compact IP67 slave that can be used for connecting up to 8 inputs. A series of diagnostic functions provides information on the state of operation through lights and signals to the controller.

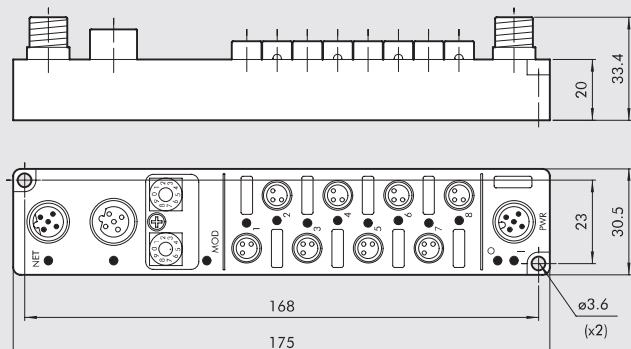


TECHNICAL DATA

Application	8 PNP inputs
Power supply	24 VDC (13-28 V)
Index of protection	IP67
Temperature range	-20 to +70°C RH 5-95% - no condensate
Field Bus technical data	DP-VO Profibus to EN 50170
Transmission protocol	Synchronous or Freeze-Mode
Transmission mode	Up to 12 MBit/s
Transfer rate	Rotary switches, 1...99
Addresses	PNP proximity sensors or IEE 1131-2 compact mechanical stop
Input technical data	24 VDC (18 to 28 V)
Type	One green LED for each input
Power supply	2...5 V
Signal	10...30 V
Input 0 signal voltage	"NET" LED+alarm signal to master
Input 1 signal voltage	Red LED for each channel at M8 connection point M8 (600 mA)
Diagnosis	
Field bus	
INPUT short-circuit sensor	

SLAVE IP67

Code	Description
0240008002	IP67 M8 PROFIBUS INPUT



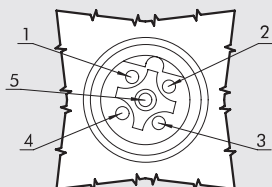
PIN ASSIGNMENT

PROFIBUS CONNECTORS

BUS OUT

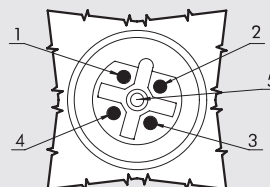
M12 female connector
B coding for profibus

- 1 - 5 VDC power
- 2 - Bus A
- 3 - GND
- 4 - Bus B
- 5 - Shield

**BUS IN**

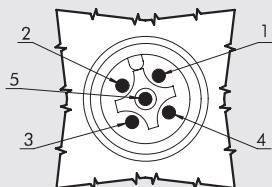
M12 male connector
B coding for profibus

- 1 - 5 VDC power
- 2 - Bus A
- 3 - GND
- 4 - Bus B
- 5 - Shield

**POWER CONNECTOR**

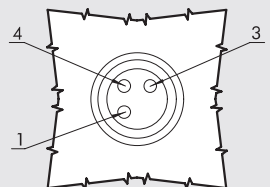
M12 male connector
A coding

- 1 - Power supply module and input
- 2 - NC
- 3 - GND
- 4 - GND
- 5 - Grounding

**INPUT CONNECTORS**

M8 three-pole female connector
A coding

- 1 - 24VDC
- 3 - GND
- 4 - INPUT



LED ASSIGNMENT

NETWORK

- (red): slave not configured or not communicating with master
- (green): slave configured and communicating with master

MODULE FAILURE

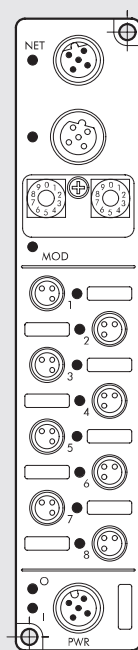
- (red): check signal LEDs

Channel LEDs (inputs)

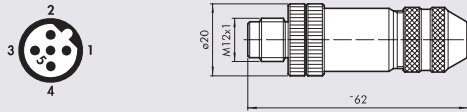
- (green): input enabled
- (red): sensor faulty, +24V power supply short-circuit

NOT USED**INPUT MODULE POWER SUPPLY**

- (green): on



M12 BUS-OUT MALE CONNECTOR



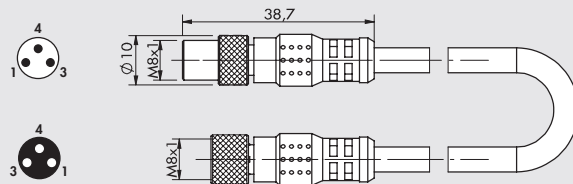
Code	Description
0240009035	M12 male connector, B coding

M8-M12 PLUG



Code	Description
0240009039	M8 plug
0240009040	M12 plug

M8 ADAPTER CABLE FOR CONNECTION OF THE PRESSURE SWITCH

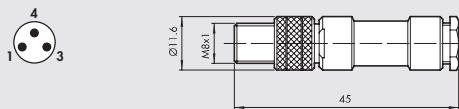


Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

Note: Can be used for connecting 1/8-1/4, Syntesi®, Skillair®, PRS L pressure switches. Contact type NO (Normally open).

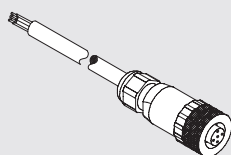
M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

M8 INPUT CONNECTOR



Code	Description
0240009010	M8 3-pin straight connector

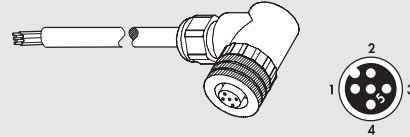
M12 STRAIGHT SUPPLY CONNECTOR WITH CABLE



Code	Description
W0970513002	5-pin M12x1 straight connector with 5 m cable

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

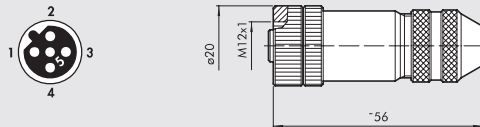
M12 90° SUPPLY CONNECTOR WITH CABLE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

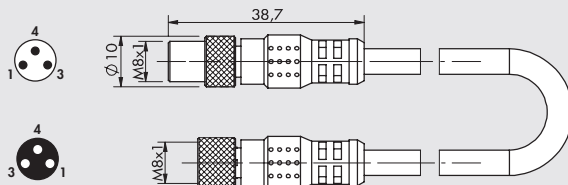
Code	Description
W0970513004	M12x1 5-pin 90° connector with 5 m cable

M12 BUS-IN FEMALE CONNECTOR



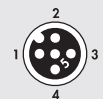
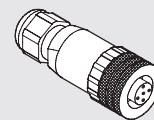
Code	Description
0240009036	M12 female connector, B coding

M8 INPUT CONNECTOR WITH CABLE



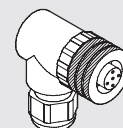
Code	Description
0240009009	M8-M8 straight connector with 3 m cable

M12 STRAIGHT SUPPLY CONNECTOR



Code	Description
W0970513001	5-pin M12x1 straight connector

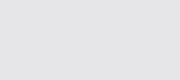
M12 90° SUPPLY CONNECTOR



Code	Description
W0970513003	M12x1 5-pin 90° connector

NOTES

SUMMARY PROCESS VALVES MULTIPLE FLUIDS

	MULTIPLE-FLUID PROCESS VALVES		B3.2
	SOLENOID VALVES, SERIES EV-FLUID		B3.4
	SOLENOID VALVES, SERIES EV-FLUID, DIRECT ACTING		B3.5
	SOLENOID VALVES, SERIES EV-FLUID, SERVO-ASSISTED ACTION		B3.11
	SOLENOID VALVES, SERIES EV-FLUID, MIXED ACTION		B3.15
	COILS AND CONNECTORS FOR EV-FLUID SERIES SOLENOID VALVES		B3.17
	ACTUATED VALVES SERIES RV-FLUID		B3.19
	ACTUATED BALL VALVES SERIES RV-FLUID		B3.20
	ACTUATED BUTTERFLY VALVES SERIES RV-FLUID		B3.30
	ROTARY ACTUATOR SERIES R4		B3.33
	- ACCESSORIES PARTS FOR ACTUATED VALVES SERIES RV-FLUID - SPARES PARTS FOR ACTUATED VALVES SERIES RV-FLUID	 	B3.40 B3.41

MULTIPLE-FLUID PROCESS VALVES

There are products designed for normal operation with compressed air that are not suited for application in certain industrial sectors. Let's take, for example, fluid metering plants, steam-conveying plants or chemicals treatment plants. These applications, which are identified by the generic term of "process industry", require the use of component parts that are designed and manufactured with specific materials, undergo special treatments and engineered solutions, featuring particular requirements.

This section of the catalogue illustrates a vast range of products best suited to intercept and control the flow of fluids, such as water, steam, mineral oil and numerous chemicals.

More specifically, the range includes solenoid valves (series EV-FLUID) and ball or butterfly valves with a rotary actuator (series RV-FLUID).

Solenoid valves can be classified according to their function (2/2 NC, 2/2 NO, 3/2 NC and NO), type of operation (direct-acting, servo-assisted action or mixed action), the threading of ports, the size of the orifice, the material of the body (brass or stainless steel) and the gasket materials.

Ball-acting valves can be classified according to their function (2- or 3-way), the threading of ports, the orifice, the actuator interface (to ISO 5211), the material of the body (brass or stainless steel) and the gasket materials.

Butterfly valves, which can be the "Wafer" type for installation between pipes or the Lug type for installation at the end of the system, are generally made of painted cast iron and come with orifices in various diameters and gaskets in different materials.

The main materials used for gaskets are NBR, FKM-FPM, EPDM and PTFE.

NBR is used at medium temperatures with water, air, mineral oils and hydrocarbon media; FKM.FPM is used at medium-high temperatures, with the exception of steam; EPDM is best suited for steam and detergents; PTFE is suitable for general use at high temperatures. The precise temperature range is specified for each family. The compatibility table can be consulted by logging on to www.metalwork.it.



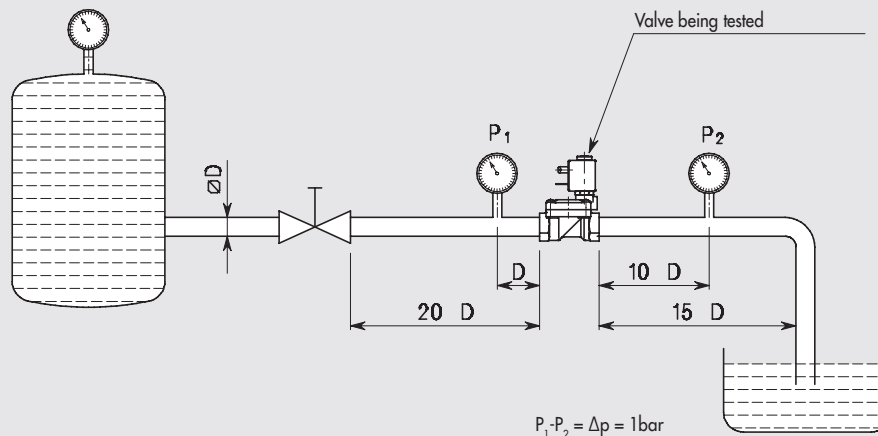
CALCULATING THE FLOW RATE

Each valve has a flow coefficient K_v .

Given the acceptable pressure drop, the media type and the working pressure, with this data it is possible to calculate the flow rate and the sizing.

This coefficient is determined by way of experimentation, according to the standard VDE 2173 and it represents the quantity of water passing through the valve in 1 minute with a differential pressure of 1 bar and a temperature between 5°C and 40°C.

K_v coefficient measuring circuit



$K_v = m^3/h$	Hydraulic coefficient
$Q = m^3/h$	Flow rate
$Q_n = m^3n/h$	Portata normale (20°C 760 mmhg)
$P_1 = bar$	Absolute upstream pressure (Gauge pressure +1)
$P_2 = bar$	Absolute outlet pressure (gauge pressure +1)
$\Delta p = bar$	Pressure drop (differential pressure between inlet and outlet)
$\rho = kg/dm^3$	Relative density referred to water (water 4°C = 1)
$\rho_n = kg/dm^3$	Normal density referred to air
$G = kg/h$	Mass
$t = °C$	Inlet fluid temperature
$V_1 = m^3/kg$	Inlet specific volume
$V_2 = m^3/kg$	Outlet specific volume referred to pressure " P_2 " and temperature " t "

Liquids: $Q = K_v \sqrt{\frac{\Delta p}{\rho}}$

Gas: $\Delta p = \Delta p < \frac{P_1}{2} \quad Q_n = 514 \times K_v \sqrt{\frac{\Delta p \times P_2}{\rho_n \times (273 + t)}}$

$\Delta p = \Delta p > \frac{P_1}{2} \quad Q_n = 257 \times K_v \frac{P_1}{\sqrt{\rho_n (273 + t)}}$

Air: $\Delta p = \Delta p < \frac{P_1}{2} \quad Q_n = 26 \times K_v \sqrt{\Delta p \times P_2}$

$\Delta p = \Delta p > \frac{P_1}{2} \quad Q_n = K_v \times P_1 \times 13$

Vapour: $\Delta p = \Delta p < \frac{P_1}{2} \quad G = 31.6 \times K_v \sqrt{\frac{\Delta p}{V_2}}$

$\Delta p = \Delta p > \frac{P_1}{2} \quad G = 31.6 \times K_v \sqrt{\frac{P_1}{V_1}}$

Below are some examples of specific gravities of liquid substances, gases or vapours

Liquid substances

Liquid	Temperature °C	Specific weight kg/dm ³
Water, sea	77°F	1.025
Water, pure	4	1
Ethylene glycol	25	1.1
Milk	15	1.035

Gases and vapours at 20°C and 1atm*

Gases or vapours	Relative density to air	Specific weight gr/dm ³
Air *	1.00	1.205
nitrogen (atmospheric)	0.97	1.172
Water vapor	0.62	0.749

* NTP - Normal Temperature and Pressure - is defined as air at 20°C and 1 atm. Specific gravity is the ratio between the density (mass per unit volume) of the actual gas and the density of air, specific density has no dimension. The density of air at NTP is 1.205 kg/m³.

SOLENOID VALVES, SERIES EV-FLUID

The EV-FLUID series consists of a vast range of solenoid valves, with a brass or stainless steel body, suited to intercept the different types of fluid. Available in 2/2 or 3/2, normally closed or normally open, and with different types of action: direct, servo-assisted or mixed (also called assisted-lift).

The size of the inlet and outlet threads, as well as that of the nominal orifice, can be chosen from among a vast range.

Versions with NBR, FKM/FPM, EPDM or PTFE gaskets are available, depending on the models.

The coils, which are designed and optimized specifically for this type of solenoid valves, are available for operation with different voltage ratings. They are divided by power and dimension into four types (type 2, type 3, type 4 and type 5). The coupling between each solenoid valve and the type of matching coil is illustrated in the dedicated section of the catalogue.



RESPONSE TIME

The Response time of a solenoid valve series EV-FLUID, is the period passing between the energisation (or de-energisation) of the coil and the moment when the outlet pressure reaches the 50% of its peak.

The response time depends from the type of valve, the nature of the medium, the pressure and the current (AC or DC), if these value are measured at the moment of electrical connection or disconnection.

Tipologia	Response time at 6 bar [ms]		Notes
	Opening (TRA)	Closing (TRR)	
2 and 3 ways direct acting NC	8	25	with liquids +50% to +150% depending on the viscosity
2 and 3 ways direct acting NO	25	8	
Servo-assisted NC			
3/8" - 1/2"	30	50	
3/4" - 1"	50	70	
Servo-assisted NO			
3/8" - 1/2"	50	30	
3/4" - 1"	70	50	

For Servo-assisted 1 1/4" - 1 1/2" - 2" the response times vary about the model and operating conditions (viscosity, fluid, temperature, etc.)

NOTES

SOLENOID VALVES, SERIES EV-FLUID, DIRECT ACTING

In direct-acting EV-FLUID series solenoid valves the orifice is closed (or opened) by the movement of a rubber poppet placed on a moving core made of ferromagnetic steel.

The moving core, which is normally kept in the resting position by a spring, is moved thanks to the action of the magnetic field generated by the coil that is mounted on the valve. The sleeve supporting the coil can be retracted or incorporated into the valve body (depending on the model).

Available functions are 2/2 NC, 2/2 NO and 3/2 NC (3/2 NO available on request for some models)

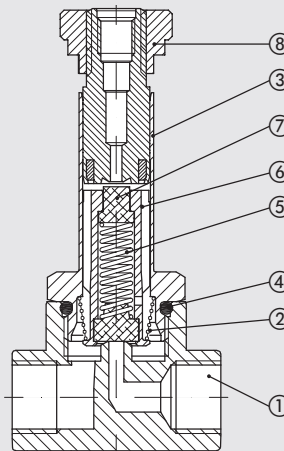
These solenoid valves can operate at a minimum pressure of 0 bar.



TECHNICAL DATA		NBR	FPM/FKM	EPDM	PTFE
Max operating frequency (with air)	Hz	2			
Power consumption		DC: 5 - 6.5 - 10 - 27 W / AC: 8 - 11 - 15 - 30 VA			
Voltage available		12 - 24VDC / 24 - 110 - 220 VAC 50/60 Hz			
Voltage tolerance	%	DC: ± 10 / AC: -10 to +15			
Type of protection		IP 65 with connector			
Fluid temperature	°C	-10 to +90	-10 to +140	-10 to +140	-10 to +180
Ambient temperature	°C	with coil C.I.F: -10 to +55; con with coil C.I.H: -10 to +80			
Maximum fluid viscosity		25 cSt (mm ² /s)			
Pressure range, flow rate, weight		See dimensions and ordering codes			
Maximum coil nut torque	Nm	1.5			
Threaded connections standard		ISO 228-1			
Usable fluids / Materials compatibility		Valves that can be used with neutral or slightly aggressive liquid and gas fluids. (Refer to the tables of chemical compatibility of materials in contact with the fluid on www.metalwork.it or contact Metal Work technical service)			

COMPONENTS

- ① BODY: brass or stainless steel
- ② SPRING: stainless steel
- ③ SLEEVE
- ④ GASKET
- ⑤ SPRING: stainless steel
- ⑥ MOBILE CORE
- ⑦ GASKET
- ⑧ RING NUT FOR COIL FIXING



OPERATING CHART

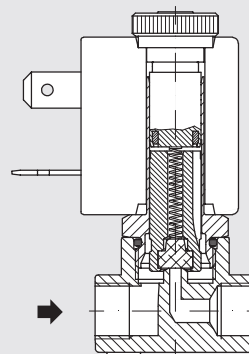
2-WAY DIRECT ACTING

Two-way solenoid valves have an inlet and an outlet connection in the valve body; the orifice is opened or closed by the poppet incorporated in the moving core.

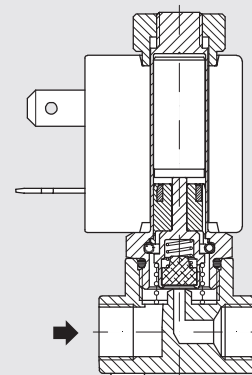
Normally-closed version (2/2 NC): in the resting position, the fluid is intercepted by the poppet; when connected to an electrical supply, the orifice opens allowing the inlet to feed the user port.

Normally-open version (2/2 NO): in the resting position, the orifice is opened and the air is supplied through the user port. When connected to an electrical supply, the orifice closes. In both cases, operation only depends on the magnetic field produced by the passage of current through the coil. Solenoid valves can work at zero pressure.

NORMALLY CLOSED (NC)



NORMALLY OPEN (NO)



3-WAY DIRECT ACTING

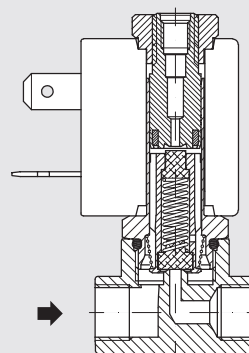
Three-way solenoid valves have an inlet connection and a user port in the valve body, plus an exhaust connection in the fixed core; the inlet and outlet orifices are opened or closed directly by the poppets in the moving core.

Normally-closed version (3/2 NC): in the resting position, the incoming fluid is intercepted by the poppet and the user port communicates with the exhaust port. When connected to an electric supply, the inlet orifice opens, and the inlet port communicates with the user port. The exhaust port is closed.

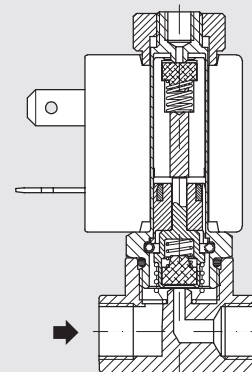
Normally-open version (3/2 NO): in the resting position, the orifice is opened and the air is supplied through the user port. The exhaust port is closed. When connected to an electric supply, the inlet orifice closes and the exhaust port communicates with the user port. In both cases, operation only depends on the magnetic field produced by the coil.

Solenoid valves can work at zero pressure.

NORMALLY CLOSED (NC)



NORMALLY OPEN (NO)

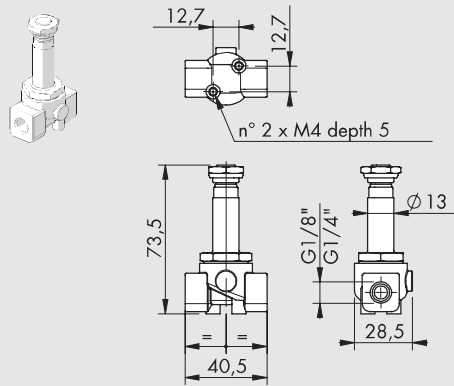


NOTES

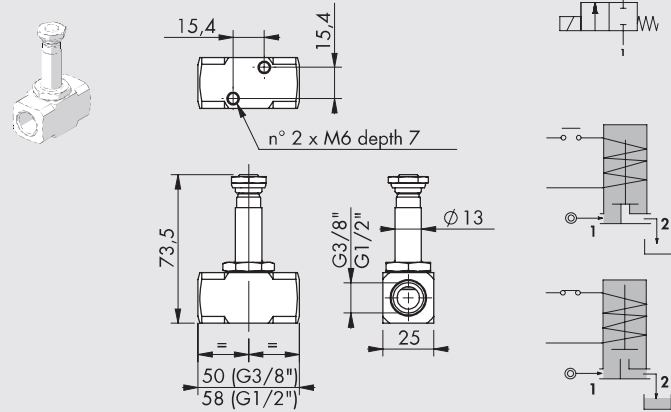
DIMENSIONS AND ORDERING CODES

VERSION 2/2 NC, BRASS VALVE BODY

G1/8" - G1/4"



G3/8" - G1/2"



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_910100001	1/8"	1.5	0.07	2	0 to 30	0 to 26	80	180
W_910100002	1/8"	2	0.1	2	0 to 22	0 to 20	80	180
W_910100010	1/4"	2.5	0.15	2	0 to 16	0 to 14	80	180
W_910100011	1/4"	3.5	0.32	2	0 to 10	0 to 8	80	180
W_910100012	1/4"	4.5	0.41	2	0 to 6.5	0 to 3.5	80	180
W_910100013	1/4"	5.2	0.47	5	0 to 10	0 to 9	80	180
W_910100017	1/4"	6.4	0.64	5	0 to 5	0 to 4.5	80	180
W_910100020	3/8"	4	0.36	2	0 to 8	0 to 5	80	240
W_910100021	3/8"	3.5	0.32	2	0 to 10	0 to 8	80	240
W_910100022	3/8"	4.5	0.41	2	0 to 6.5	0 to 3.5	80	240
W_910100030	1/2"	5.2	0.47	5	0 to 10	0 to 9	80	240
W_910100031	1/2"	6.4	0.64	5	0 to 5	0 to 4.5	80	240
W_910100032	1/2"	3.5	0.32	2	0 to 10	0 to 8	80	240

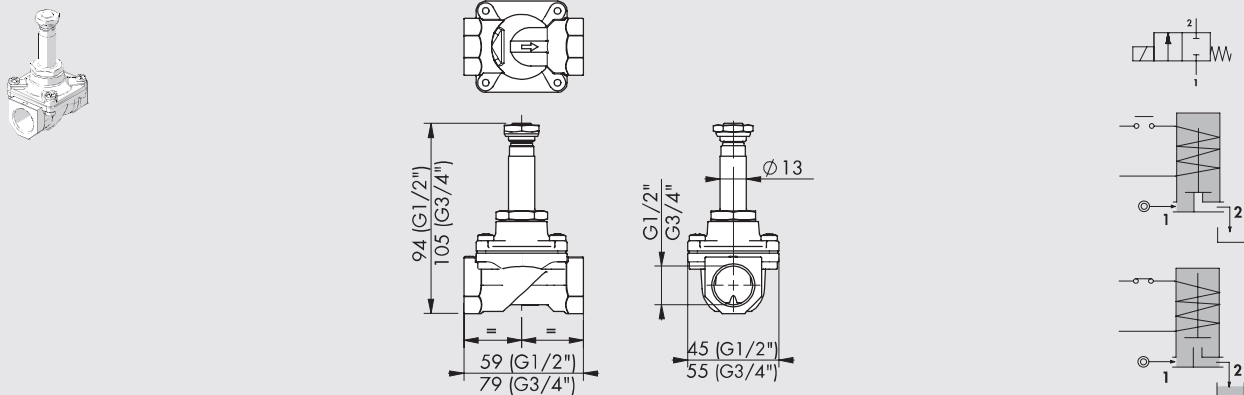
To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets
T for PTFE gaskets

* The maximum operating pressure is limited to use within the indicated differential pressure range.
The maximum allowable pressure for steam is 6 bar with PTFE gaskets and 2.5 bar with EPDM gaskets.

VERSION 2/2 NC, BRASS VALVE BODY AND DIAPHRAGM POPPET



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_910700001	1/2"	12	2.2	5	0 to 0.8	0 to 0.4	5	330
W_910700002	3/4"	18	4.5	5	0 to 0.2	0 to 0.12	5	630

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

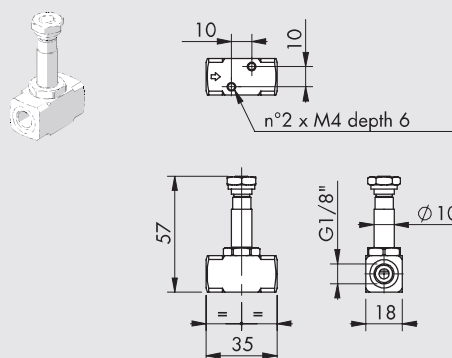
* The maximum operating pressure is limited to use within the indicated differential pressure range.

VALVES

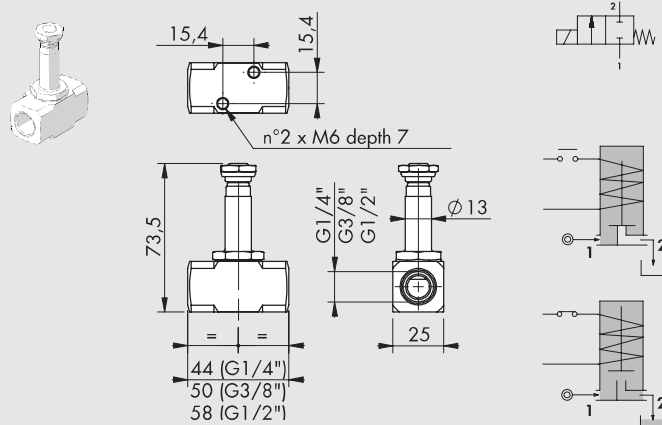
SOLENOID VALVES, SERIES EV-FLUID, DIRECT ACTING

VERSION 2/2 NC, STAINLESS STEEL VALVE BODY

G1/8"



G1/4" - G3/8" - G1/2"



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_910300001 ▲	1/8"	1.5	0.06	3	0 to 16	0 to 16	50	100
W_910300002 ▲	1/8"	2.5	0.14	3	0 to 8	0 to 5.5	50	100
W_910300003 ▲	1/8"	3.1	0.19	3	0 to 5.5	0 to 2	50	100
W_910300010	1/4"	2	0.1	2	0 to 22	0 to 20	100	240
W_910300011	1/4"	3.5	0.32	2	0 to 10	0 to 8	100	240
W_910300020	3/8"	3.5	0.32	2	0 to 10	0 to 8	100	240
W_910300021	3/8"	5.2	0.47	5	0 to 10	0 to 9	100	240
W_910300022	3/8"	6.4	0.64	5	0 to 5	0 to 4.5	100	240
W_910300030	1/2"	5.2	0.47	5	0 to 10	0 to 9	100	240
W_910300031	1/2"	6.4	0.64	5	0 to 5	0 to 4.5	100	240
W_910300032	1/2"	3.5	0.32	5	0 to 20	0 to 19	100	240

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

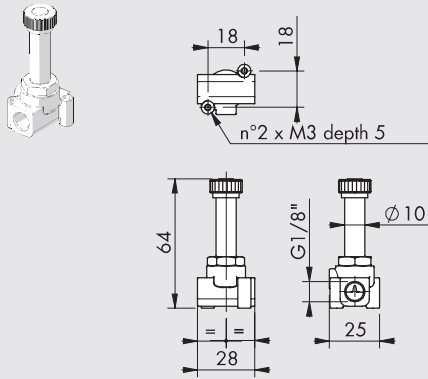
V for FKM/FPM gaskets
T for PTFE gaskets

* The maximum operating pressure is limited to use within the indicated differential pressure range.
The maximum allowable pressure for steam is 6 bar with PTFE gaskets and 2.5 bar with EPDM gaskets.
▲ Not available in the T version (PTFE gasket)

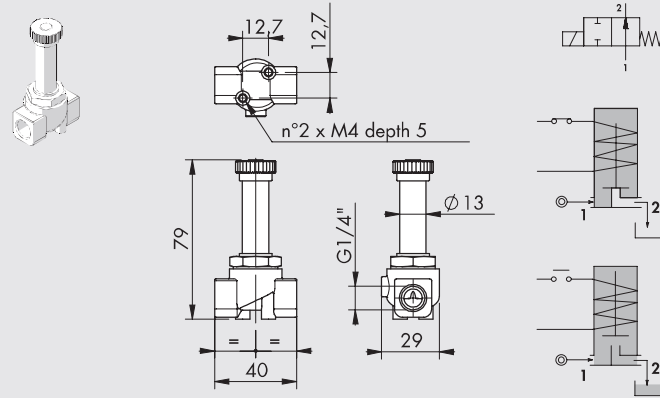
NOTES

VERSION 2/2 NO, BRASS VALVE BODY

G1/8"



G1/4"



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_910800003	1/8"	2	0.09	3	0 to 8	0 to 8	50	80
W_910800004	1/8"	2.5	0.14	3	0 to 4.5	0 to 4.5	50	80
W_910800008	1/4"	2.5	0.15	2	0 to 12	-	50	180
W_910800009	1/4"	3.5	0.32	2	0 to 7	-	50	180
W_910800010	1/4"	4.5	0.41	2	0 to 4.5	-	50	180
W_910800011	1/4"	5.2	0.47	2	0 to 3	-	50	180
W_910810009	1/4"	3.5	0.32	2	-	0 to 4	50	180
W_910810010	1/4"	4.5	0.41	2	-	0 to 3	50	180
W_910810011	1/4"	5.2	0.47	2	-	0 to 2.2	50	180

To complete the code enter:

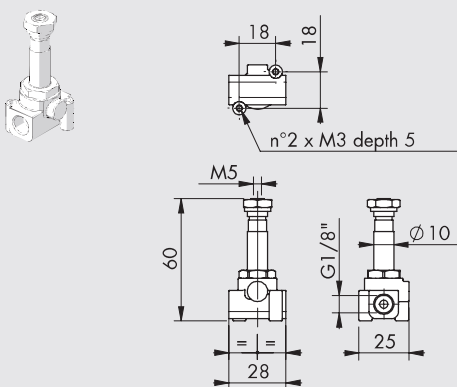
O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

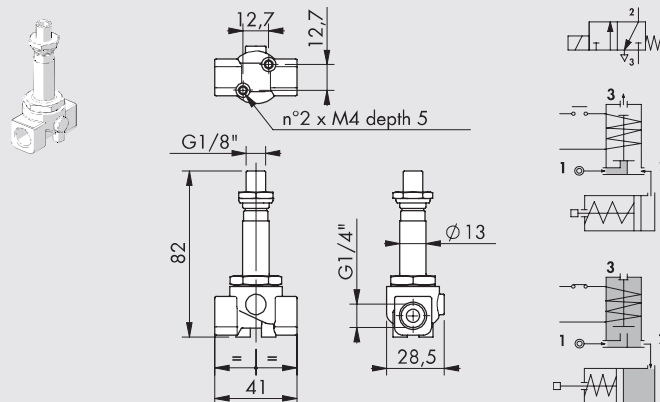
* The maximum operating pressure is limited to use within the indicated differential pressure range.
The maximum allowable pressure for steam is 2.5 bar.

VERSION 3/2 NC, BRASS VALVE BODY

G1/8"



G1/4"



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_911000002	1/8"	1.5	0.06	3	0 to 10	0 to 10	11	60
W_911000003	1/8"	2	0.09	3	0 to 6	0 to 6	6.5	60
W_911000004	1/4"	1.5	0.07	2	0 to 20	0 to 20	22	200
W_911000005	1/4"	2	0.11	2	0 to 13	0 to 13	14	200
W_911000006	1/4"	2.5	0.16	2	0 to 10	0 to 10	11	200

To complete the code enter:

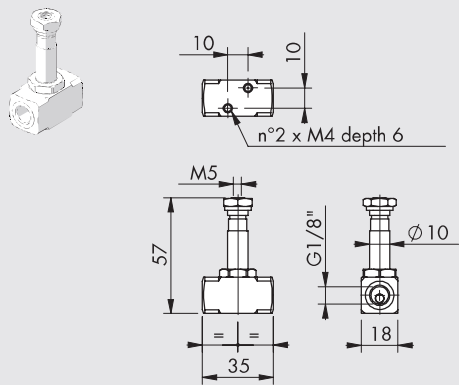
O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

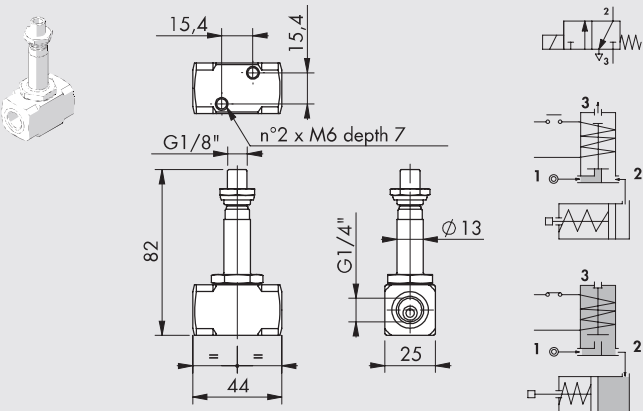
* The maximum operating pressure is limited to use within the indicated differential pressure range.

VERSION 3/2 NC, STAINLESS STEEL VALVE BODY

G1/8"



G1/4"



Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
					AC	DC		
W_911200002	1/8"	1.5	0.06	3	0 to 10	0 to 10	11	100
W_911200003	1/8"	2	0.09	3	0 to 6	0 to 6	6.5	100
W_911200005	1/4"	2	0.11	2	0 to 13	0 to 13	14	240
W_911200006	1/4"	2.5	0.16	2	0 to 10	0 to 10	11	240

To complete the code enter:

0 for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

* The maximum operating pressure is limited to use within the indicated differential pressure range.

NOTES

SOLENOID VALVES, SERIES EV-FLUID, SERVO-ASSISTED ACTION

Servo-assisted valves in the EV-FLUID series are used with larger orifices, without giving up the pressure. Indeed, in this type of valves, the fluid pressure helps keep the main valve seal closed. In the 2/2 NC version, when the coil is not energized, the seal connected to the diaphragm keeps the flow blocked between the inlet and outlet ports. The closure of the diaphragm is assisted by the pressure of the media that, flowing through a small hole, fills the chamber above the diaphragm.

When the coil is energized, the solenoid pilot allows the fluid in the upper chamber to exhaust and the diaphragm to open, thus allowing the fluid to flow through the upper orifice.

In the 2/2 NO version, when the coil is not energized, the fluid between the inlet and outlet ports is open and the chamber above the diaphragm is empty. When the coil is energized, the pilot allows the media in the upper chamber to flow down to the diaphragm, thus allowing the orifice to close through the seal connected to the diaphragm.

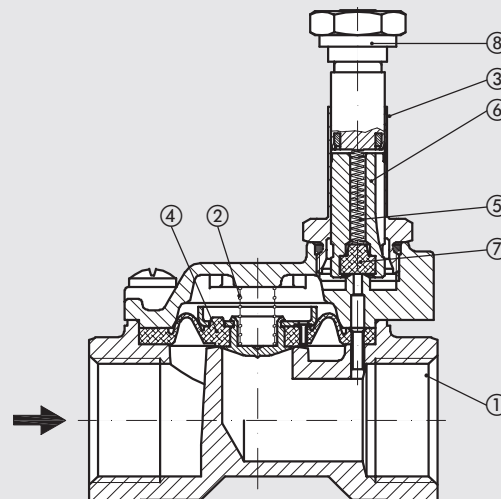
Available functions are 2/2 NC and 2/2 NO, brass valve body with NBR ,FKM/FPM or EPDM seals, or stainless steel valve body with FKM/FPM seals. In general, these solenoid valves operate at a minimum working pressure over 0 bar.



TECHNICAL DATA		NBR	FPM/FKM	EPDM
Max operating frequency (with air)	Hz	2		
Power consumption		DC: 6.5 - 10 W / AC: 8 - 15 VA		
Voltage available		12 - 24VDC / 24 - 110 - 220 VAC 50/60 Hz		
Voltage tolerance	%	DC: ± 10 / AC: -10 to +15		
Type of protection		IP 65 with connector		
Fluid temperature	°C	-10 to +90	-10 to +140	-10 to +140
Ambient temperature	°C	with coil C.I.F: -10 to +55; con with coil C.I.H: -10 to +80		
Maximum fluid viscosity		25 cSt (mm ² /s)		
Pressure range, flow rate, weight		See dimensions and ordering codes		
Maximum coil nut torque	Nm	1.5		
Threaded connections standard		ISO 228-1		
Usable fluids / Materials compatibility		Valves that can be used with neutral or slightly aggressive liquid and gas fluids. (Refer to the tables of chemical compatibility of materials in contact with the fluid on www.metalwork.it or contact Metal Work technical service)		

COMPONENTS

- ① BODY: brass or stainless steel
- ② SPRING: stainless steel
- ③ SLEEVE
- ④ DIAPHRAGM
- ⑤ SPRING: stainless steel
- ⑥ MOBILE CORE
- ⑦ GASKET
- ⑧ RING NUT FOR COIL FIXING



SERVO-ASSISTED ACTION DESIGN

With larger orifices, the static pressure to be controlled with the magnetic field produced by the coil increases: for this reason these models, in which the fluid helps the main poppet to open or close, are used.

Normally closed (2/2 NC) version: with an inlet and outlet port in the valve body; when the coil is not energized, the fluid is intercepted by the main poppet that can be either a diaphragm or a piston.

In this mode, the fluid flows through a small hole in the diaphragm and acts on the two sides of the main poppet and helps to close it.

When connected to an electrical supply, the secondary, or piloting, orifice opens, thus allowing the fluid to exhaust, which closes the main poppet.

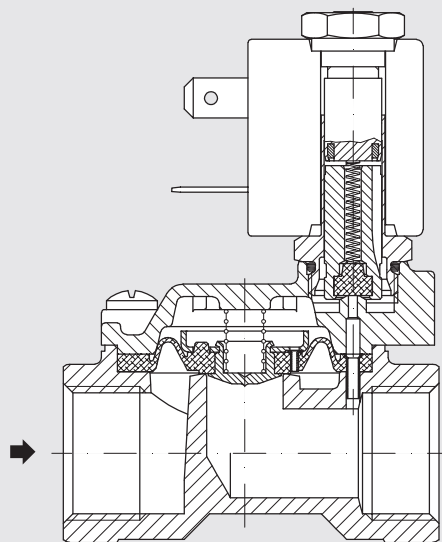
This generates increased force in the lower part of the main actuator, which acts on the opening, the poppet is raised from the orifice and the air supply is entirely connected to the user port.

Operation in these versions does not depend only on the magnetic field produced by the coil, it only needs a minimum input pressure that moves the diaphragm or piston, controlling its rigidity and keeping it raised from the main orifice (minimum working Δp).

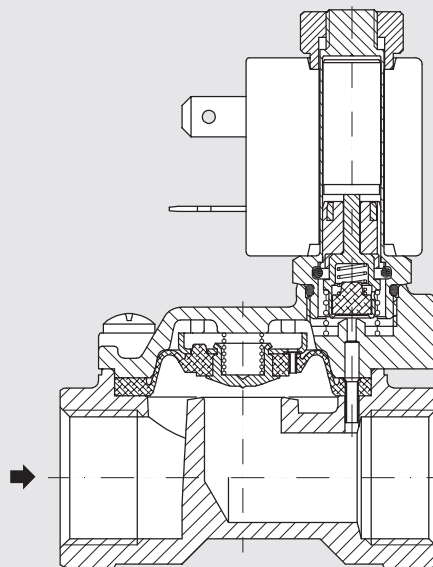
Normally open version (2/2 NO): with an inlet port and a user port in the valve body; when the secondary poppet is not energized, it communicates with the user port; a minimum pressure difference between the air supply and the user port allows the main poppet to open. When connected to an electric supply, the secondary orifice closes and the balance between the pressures on the two sides of the main poppet closing on the main orifice is restored.

A minimum operating pressure is required in this version as well.

NORMALLY CLOSED (NC)

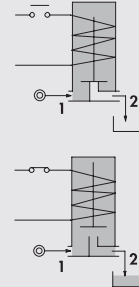
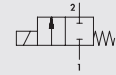
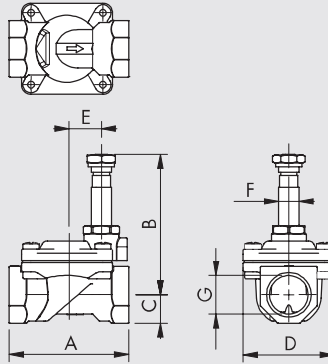
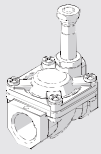


NORMALLY OPEN (NO)



DIMENSIONS AND ORDERING CODES

VERSION 2/2 NC, BRASS VALVE BODY



Code	G	A	B	C	D	E	F	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
											AC	DC		
W_910200001	1/4"	49	65	11	32	16	10	10	1.5	3	0.15 to 15	0.15 to 15	25	180
W_910200002	3/8"	49	65	11	32	16	10	10	1.7	3	0.15 to 15	0.15 to 15	25	190
W_910200003	3/8"	59	70	14	45	17	10	12	2.2	3	0.15 to 15	0.15 to 15	25	370
W_910200004	1/2"	59	70	14	45	17	10	12	2.5	3	0.15 to 15	0.15 to 15	25	340
W_910200005	3/4"	79	76	18	55	22	10	18	5.5	3	0.15 to 13	0.15 to 13	25	600
W_910200006	1"	96	84	20	72	30	10	25	10.2	3	0.15 to 10	0.15 to 10	25	1000
W_910200007	1 1/4"	142	105	28	102	43	13	37	18	2	0.15 to 10	0.15 to 10	20	2880
W_910200008	1 1/2"	142	105	28	102	43	13	37	21	2	0.15 to 10	0.15 to 10	20	2730
W_910200009	2"	158	115	35	119	48	13	50	36	2	0.15 to 10	0.15 to 10	20	4180

To complete the code enter:

O for NBR gaskets

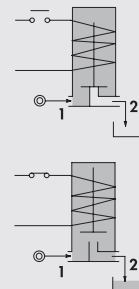
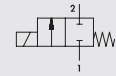
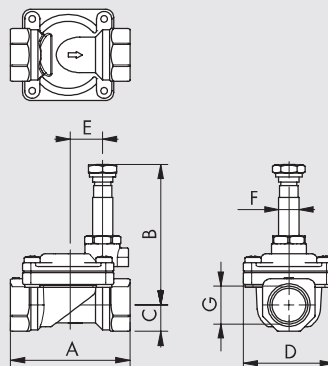
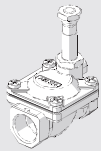
V for FKM/FPM gaskets

E for EPDM gaskets

* The maximum operating pressure is limited to use within the indicated differential pressure range.

The maximum allowable pressure for steam is 2.5 bar.

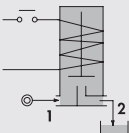
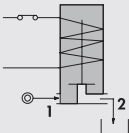
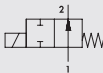
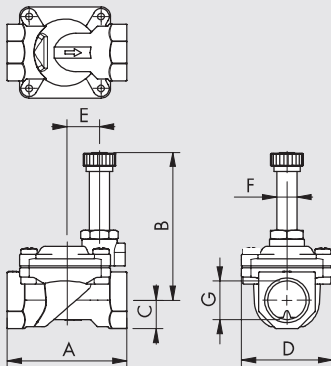
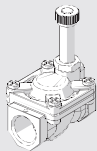
VERSION 2/2 NC, STAINLESS STEEL VALVE BODY, FKM/FPM GASKETS



Code	G	A	B	C	D	E	F	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
											AC	DC		
WV910400001	3/8"	59	70	11	45	17	10	12	2.2	3	0.15 to 15	0.15 to 15	25	250
WV910400002	1/2"	59	70	13	45	17	10	12	2.5	3	0.15 to 15	0.15 to 15	25	270
WV910400003	3/4"	80	75	16	54	22	10	18	5.5	3	0.15 to 13	0.15 to 13	25	500
WV910400004	1"	100	84	20	72	30	10	25	10.2	3	0.15 to 10	0.15 to 10	25	900

* The maximum operating pressure is limited to use within the indicated differential pressure range.
The maximum allowable pressure for steam is 2.5 bar.

VERSION 2/2 NO, BRASS VALVE BODY



Code	G	A	B	C	D	E	F	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
											AC	DC		
W_910900001	1/4"	49	68	11	32	16	10	10	1.5	3	0.15 to 15	0.15 to 15	25	180
W_910900003	3/8"	59	73	14	45	17	10	12	1.7	3	0.15 to 15	0.15 to 15	25	370
W_910900004	1/2"	59	73	14	45	17	10	12	2.5	3	0.15 to 15	0.15 to 15	25	340
W_910900005	3/4"	79	79	18	54	22	10	18	5.5	3	0.15 to 13	0.15 to 13	25	600
W_910900006	1"	96	88	20	72	30	10	25	10.2	3	0.15 to 10	0.15 to 10	25	1000

To complete the code enter:

0 for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

* The maximum operating pressure is limited to use within the indicated differential pressure range.
The maximum allowable pressure for steam is 2.5 bar.

NOTES

B3.14

SOLENOID VALVES, SERIES EV-FLUID, MIXED ACTION

In this type of solenoid valve, the moving core is connected to the diaphragm and it directly intercepts the secondary orifice.
The same coil-actuated moving core drags the diaphragm that opens or closes the main orifice.
These two combined actions allow these two models to operate at a zero pressure.
These valves are available with 2/2 NC function, brass body and FKM/FPM gaskets.



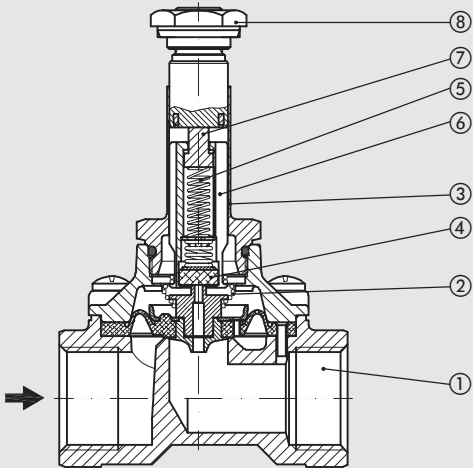
VALVES

SOLENOID VALVES, SERIES EV-FLUID, MIXED ACTION

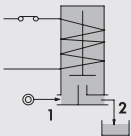
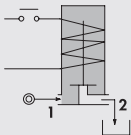
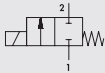
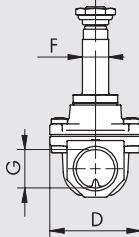
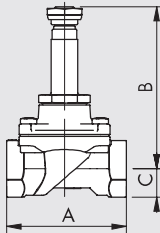
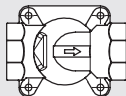
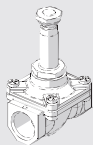
TECHNICAL DATA		FPM/FKM
Max operating frequency (with air)	Hz	2
Power consumption		DC: 27 W / AC: 30 VA
Voltage available		12 - 24VDC / 24 - 110 - 220 VAC 50/60 Hz
Voltage tolerance	%	DC: ±10 / AC: -10 to +15
Type of protection		IP 65 with connector
Fluid temperature	°C	-10 to +90
Ambient temperature	°C	with coil C.I.H: -10 to +80
Maximum fluid viscosity		25 cSt (mm²/s)
Pressure range, flow rate, weight		See dimensions and ordering codes
Maximum coil nut torque	Nm	1.5
Threaded connections standard		ISO 228-1
Usable fluids / Materials compatibility		Valves that can be used with neutral or slightly aggressive liquid and gas fluids. (Refer to the tables of chemical compatibility of materials in contact with the fluid on www.metalwork.it or contact Metal Work technical service)

COMPONENTS

- ① BODY: brass
- ② SPRING: stainless steel
- ③ SLEEVE: stainless steel
- ④ GASKET
- ⑤ SPRING: stainless steel
- ⑥ MOBILE CORE: stainless steel
- ⑦ GASKET
- ⑧ RING NUT FOR COIL FIXING



VERSION 2/2 NC, BRASS VALVE BODY, FKM/FPM GASKETS



Code	G	A	B	C	D	F	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Differential pressure [bar]		Max pressure * [bar]	Weight [g]
										AC	DC		
WV910600003	3/8"	59	80	14	45	13	12	2	5	0 to 12	0 to 10	25	400
WV910600004	1/2"	59	80	14	45	13	12	2.2	5	0 to 12	0 to 10	25	370
WV910600005	3/4"	79	88	18	54	13	18	4.5	5	0 to 9	-	25	610
WV910600006	1"	96	94	20	72	13	25	8.5	5	0 to 7	-	25	1020
WV910610005	3/4"	79	88	18	54	13	18	4.5	5	-	0 to 9	25	610
WV910610006	1"	96	94	20	72	13	25	8.5	5	-	0 to 8	25	1020

* The maximum operating pressure is limited to use within the indicated differential pressure range.

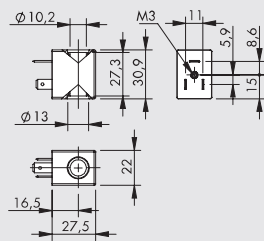
NOTES

COILS AND CONNECTORS FOR EV-FLUIDSERIES SOLENOID VALVES

These coils have been optimized specifically for use with EV-Fluid series solenoid valves. They come in different voltage ratings and powers, depending on power supply needs and level of performance requested of the valve on which they are installed. They come into 4 types (type 2, type 3, type 4 and type 5). The types differ one from the other in terms of size, type of electrical connection, orifice and output power. ATEX and UL versions are available on request



COILS SIDE 22 mm TYPE 3

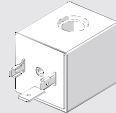
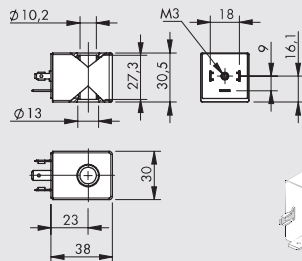


- Voltage tolerance: -10% to +15% AC version / $\pm 10\%$ DC version
- Degree of protection: IP65 EN60529 with connector
- Ambient temperature: -10°C to +55°C

- Duty Cycle: 100%
- Connector: **DIN 43650 B**

Code	Abbrev.	Nominal voltage	Absorption	Index of protection
W0911100001	Coil 22 Ø10 Type 3, 6.5W 12VDC	12VDC	6.5W	H
W0911100002	Coil 22 Ø10 Type 3, 6.5W 24VDC	24VDC	6.5W	H
W0911100003	Coil 22 Ø10 Type 3, 8VA 24V 50/60Hz	24V 50/60Hz	8VA	H
W0911100004	Coil 22 Ø10 Type 3, 8VA 110V 50/60Hz	110V 50/60Hz	8VA	H
W0911100005	Coil 22 Ø10 Type 3, 8VA 220V 50/60Hz	220V 50/60Hz	8VA	H

COILS SIDE 30 mm TYPE 4

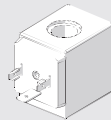
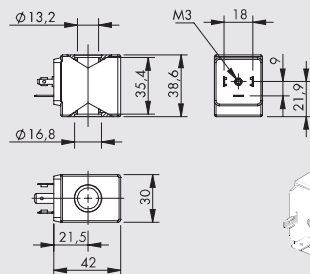


- Voltage tolerance: -10% to +15% AC version / $\pm 10\%$ DC version
- Degree of protection: IP65 EN60529 with connector
- Ambient temperature: -10°C to +55°C

- Duty Cycle: 100%
- Connector: **DIN 43650 A**

Code	Abbrev.	Nominal voltage	Absorption	Index of protection
W0911100006	Coil 30 Ø10 Type 4, 5W 12VDC	12VDC	5W	F
W0911100007	Coil 30 Ø10 Type 4, 5W 24VDC	24VDC	5W	F
W0911100008	Coil 30 Ø10 Type 4, 11VA 24V 50/60Hz	24V 50/60Hz	11VA	F
W0911100009	Coil 30 Ø10 Type 4, 11VA 110V 50/60Hz	110V 50/60Hz	11VA	F
W0911100010	Coil 30 Ø10 Type 4, 11VA 220V 50/60Hz	220V 50/60Hz	11VA	F

COILS SIDE 30 mm TYPE 2

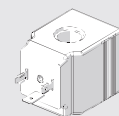
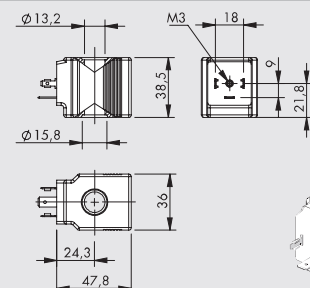


- Voltage tolerance: -10% to +15% AC version / $\pm 10\%$ DC version
- Degree of protection: IP65 EN60529 with connector
- Ambient temperature: -10°C to +55°C

- Duty Cycle: 100%
- Connector: **DIN 43650 A**

Code	Abbrev.	Nominal voltage	Absorption	Classe isolamento
W0911100011	Coil 30 Ø13 Type 2, 10W 12VDC	12VDC	10W	F
W0911100012	Coil 30 Ø13 Type 2, 10W 24VDC	24VDC	10W	F
W0911100013	Coil 30 Ø13 Type 2, 15VA 24V 50/60Hz	24V 50/60Hz	15VA	F
W0911100014	Coil 30 Ø13 Type 2, 15VA 110V 50/60Hz	110V 50/60Hz	15VA	F
W0911100015	Coil 30 Ø13 Type 2, 15VA 220V 50/60Hz	220V 50/60Hz	15VA	F

COILS SIDE 36 mm TYPE 5

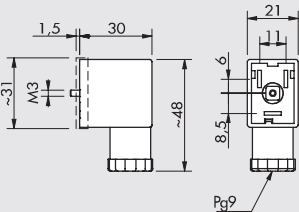


- Voltage tolerance: -10% to +15% AC version / $\pm 10\%$ DC version
- Degree of protection: IP65 EN60529 with connector
- Ambient temperature: -10°C to +80°C

- Duty Cycle: 100%
- Connector: **DIN 43650 A**

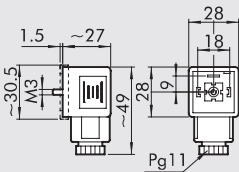
Code	Abbrev.	Nominal voltage	Absorption	Index of protection
W0911100016	Coil 36 Ø13 Type 5, 27W 12VDC	12VDC	27W	H
W0911100017	Coil 36 Ø13 Type 5, 27W 24VDC	24VDC	27W	H
W0911100018	Coil 36 Ø13 Type 5, 30VA 24V 50/60Hz	24V 50/60Hz	30VA	H
W0911100019	Coil 36 Ø13 Type 5, 30VA 110V 50/60Hz	110V 50/60Hz	30VA	H
W0911100020	Coil 36 Ø13 Type 5, 30VA 220V 50/60Hz	220V 50/60Hz	30VA	H

CONNECTOR SIDE 22 mm DIN 43650 B-IND FOR COIL TYPE 3



Code	Type	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9

CONNECTOR SIDE 30 mm DIN 43650 - A FOR COILS TYPE 2, 4, 5



Code	Type	Colour	Ø Cable
W0970520033	Standard	Black	PG11
W0970520034	LED 24V	Transparent	PG11
W0970520035	LED 110V	Transparent	PG11
W0970520036	LED 220V	Transparent	PG11
W0970520037	LED + VDR 24V	Transparent	PG11
W0970520038	LED + VDR 110V	Transparent	PG11
W0970520039	LED + VDR 220V	Transparent	PG11

NOTES

ACTUATED VALVES SERIES RV-FLUID



Actuated valves in the RV-FLUID series consist of a pneumatic rotary actuator series R4 that controls a ball or a butterfly valve.

Ball valves come in the 2- and the 3-way version, with nickel-plated brass or stainless steel body.

Butterfly valves are available with a painted cast iron body and nickel-plated cast iron lens. The actuator is the rack-and-pinion type, with an aluminium body processed with thick hard anodization and powder-coated heads.

It is available in the single-acting version or double-acting version, and allows the valve to rotate by 90 degrees with limit switch adjustment on both ends.

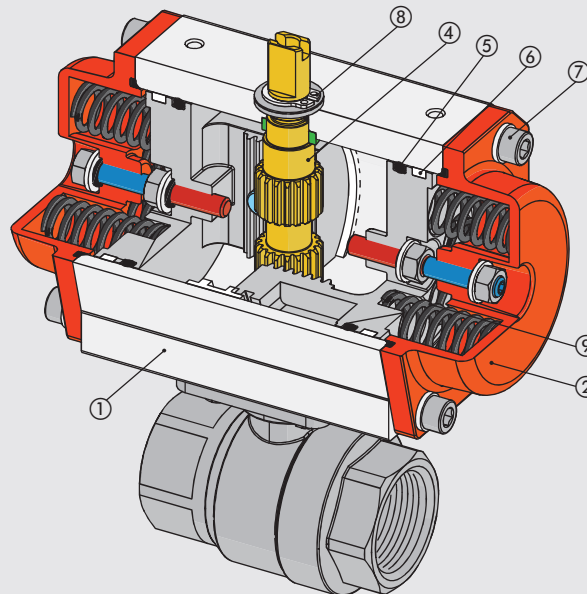
Operation is the pinion-and-rack type, a technology characterised by the constant supply of torque during the entire rotation.

The control valve can be applied either directly to the actuator thanks to the NAMUR VDI/VDE-3845 interface or remotely using the threaded connections on the body.

A specific accessory (switch box) can be installed on the actuator to detect the limit switch positions.



COMPONENTS OF THE PNEUMATIC ROTARY ACTUATOR SERIES R4 (COMMON TO ALL TYPES OF RV-FLUID VALVES)



- | | |
|---|---|
| ① BODY: hard anodized extruded aluminium | ⑧ SEEGER: zinc-plated carbon steel |
| ② END CAP: pressure die-cast aluminium with polyester powdercoating | ⑨ SPRINGS (for single-acting versions only): carbon steel with polyester powder coating |
| ③ PISTON: anodized pressure die-cast aluminium | |
| ④ SHAFT WITH PINION: nickel-plated carbon steel | |
| ⑤ GASKETS: NBR | |
| ⑥ SLIDING GUIDES: acetal resin | |
| ⑦ SCREWS AND WASHERS: stainless steel | |

ACTUATED BALL VALVES SERIES RV-FLUID

Actuated ball valves are the floating type, available in the 2- and 3-way versions (the latter with an L- or T-shaped ball holes). The body is made of nickel-plated moulded brass or micro-cast stainless steel with PTFE seats.

All valves are available with GAS female threading, while the ones made of stainless steel can also be supplied with a wafer-type flanged connection.



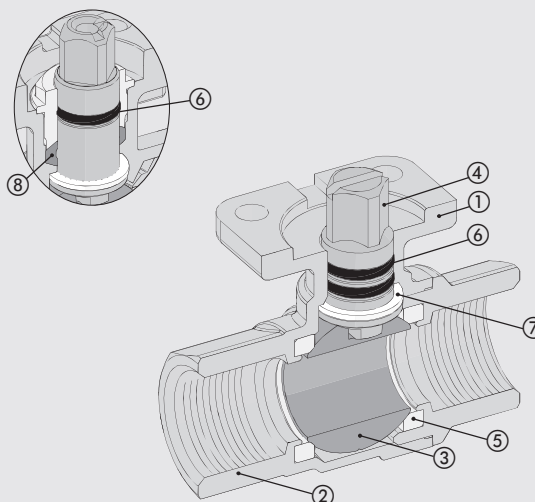
TECHNICAL DATA		BRASS	STAINLESS STEEL
VALVES			
Max operating pressure *	bar	40	63
	MPa	4	6.3
	psi	580	913.5
Fluid temperature	°C	-20 to +130	-25 to +180
Ambient temperature	°C	-20 to +80	
Usable fluids / Materials compatibility		Valves that can be used with neutral or slightly aggressive liquid and gas fluids. (Refer to the tables of chemical compatibility of materials in contact with the fluid on www.metalwork.it or contact Metal Work technical service)	
Nominal diameter (DN)	mm	8 to 80	8 to 80
Mounting position		Any, except that with actuator downwards, which is not recommended	
Threaded connections standard		ISO 7-1	
Note		High- and low-temperature versions on request	
ROTARY ACTUATOR			
Operating pressure	bar	6 to 10	
	MPa	0.6 to 1	
	psi	87 to 145	
Ambient temperature	°C	-20 to +80	
Fluid		20 µm filtered, unlubricated air	

* The maximum working pressure varies with temperature. See the "Max. pressure/temperature chart".

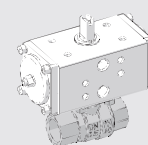
2-WAY AND 3-WAY BRASS ACTUATED BALL VALVES COMPONENTS

- ① BODY: nickel-plated brass
- ② SLEEVE: nickel-plated brass
- ③ BALL: nickel-plated brass
- ④ PIN: brass
- ⑤ BALL SEATS: teflon®
- ⑥ PIN GASKETS (O-rings): FKM/FPM
- ⑦ ANTI-FRICTION RING: teflon®
- ⑧ SEAL: teflon®

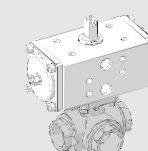
Close-up of 2-way 1/4", 3/8" and 3-way versions



2-WAY

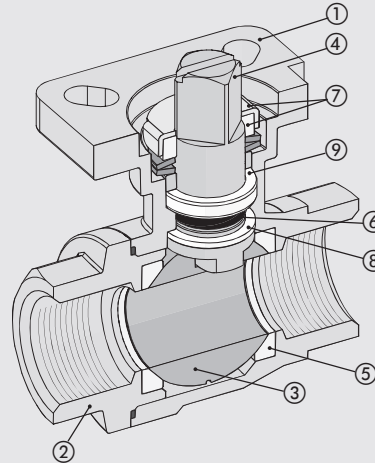


3-WAY

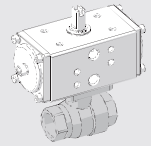


2-WAY AND 3-WAY STAINLESS STEEL ACTUATED BALL VALVES COMPONENTS

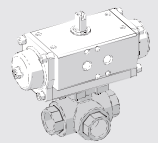
- ① BODY: AISI 316 stainless steel
- ② SLEEVE: AISI 316 stainless steel
- ③ BALL: AISI 316 stainless steel
- ④ PIN: AISI 316 stainless steel
- ⑤ BALL SEATS: loaded teflon®
- ⑥ PIN GASKET (O-ring): FKM/FPM
- ⑦ NUT AND NUT HOLDER: AISI 304 stainless steel
- ⑧ ANTI-FRICTION RING: teflon®
- ⑨ SEAL: teflon®



2-WAY



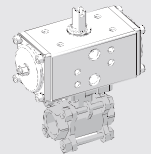
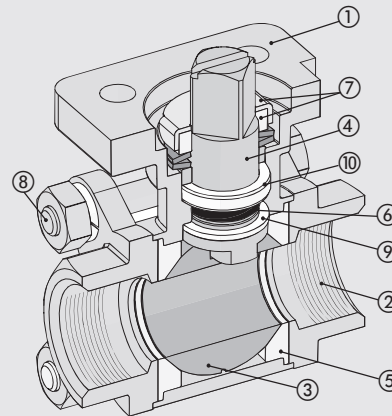
3-WAY



VALVES

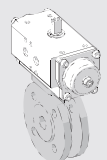
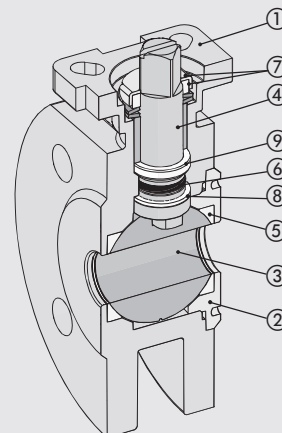
3-PIECE STAINLESS STEEL ACTUATED BALL VALVES COMPONENTS

- ① BODY: AISI 316 stainless steel
- ② FLANGED SLEEVE: AISI 316 stainless steel
- ③ BALL: AISI 316 stainless steel
- ④ PIN: AISI 316 stainless steel
- ⑤ BALL SEATS: loaded teflon®
- ⑥ PIN GASKET (O-ring): FKM/FPM
- ⑦ NUT AND NUT HOLDER: AISI 304 stainless steel
- ⑧ TIE ROD: AISI 316 stainless steel
- ⑨ ANTI-FRICTION RING: teflon®
- ⑩ SEAL: teflon®



WAFER STAINLESS STEEL ACTUATED BALL VALVES COMPONENTS

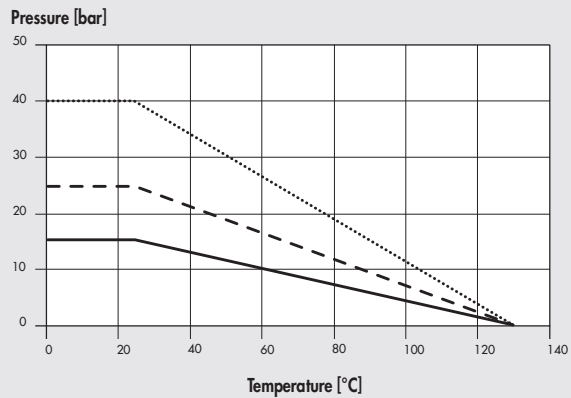
- ① BODY: AISI 316 stainless steel
- ② RING: AISI 316 stainless steel
- ③ BALL: AISI 316 stainless steel
- ④ PIN: AISI 316 stainless steel
- ⑤ BALL SEATS: loaded teflon®
- ⑥ PIN GASKET (O-ring): FKM/FPM
- ⑦ NUT AND NUT HOLDER: AISI 304 stainless steel
- ⑧ ANTI-FRICTION RING: teflon®
- ⑨ SEAL: teflon®



ACTUATED VALVES SERIES RV-FLUID

MAX. PRESSURE/TEMPERATURE CHART

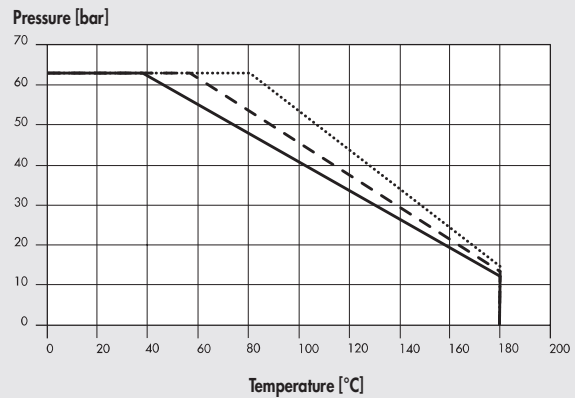
2-way and 3-way brass actuated ball valves



..... 1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4" ——— 3"

— — — 1 1/2" - 2" - 2 1/2"

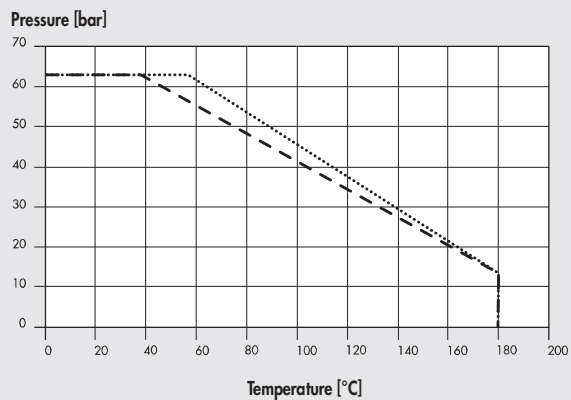
2-way and 3-piece stainless steel actuated ball valves



..... 1/4" - 3/8" - 1/2" - 3/4" - 1" ——— 2" - 3"

— — — 1 1/4" - 1 1/2"

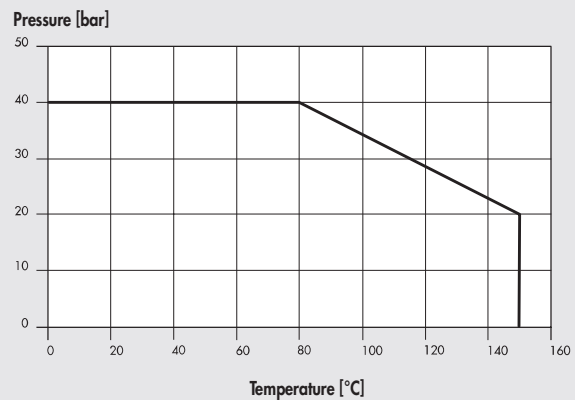
3-way stainless steel actuated ball valves



..... 1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"

— — — 1 1/2" - 2"

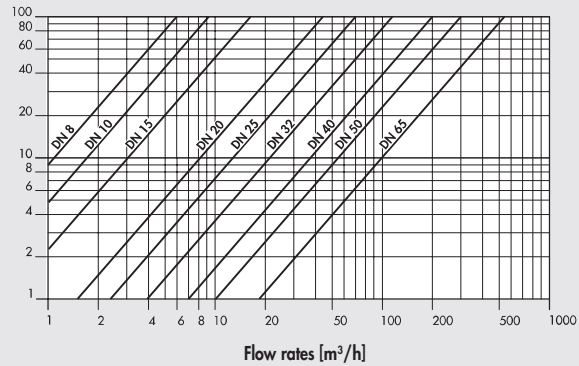
WAFER stainless steel actuated ball valves

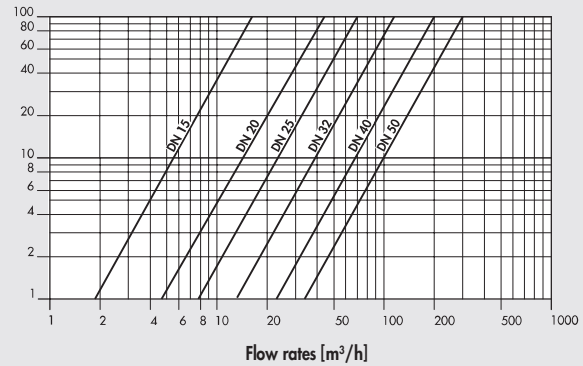


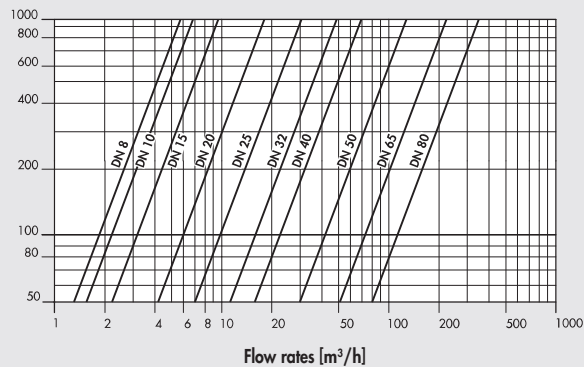
——— 1/2" - 2"

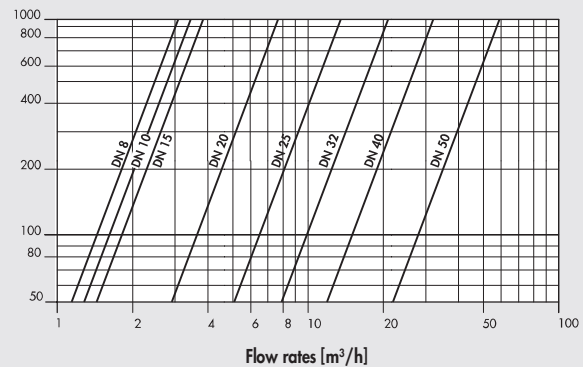
NOTES

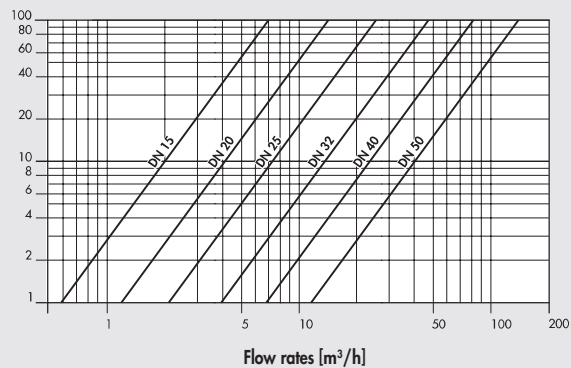
LOAD LOSS CHART (reference fluid water at 20°C)
2-way brass actuated ball valves

 Load loss [$\Delta P = \text{mbar}$]

3-way brass actuated ball valves

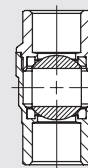
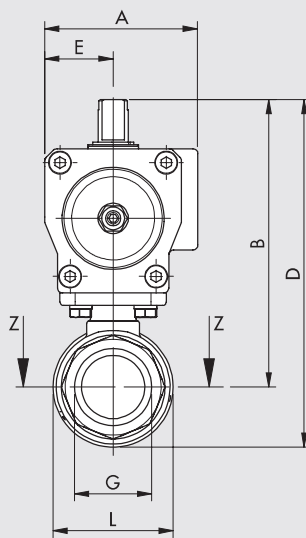
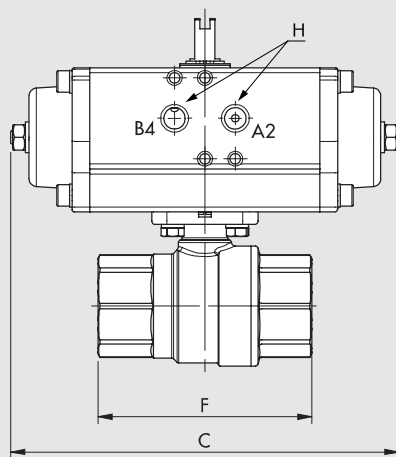
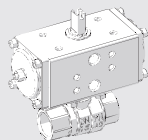
 Load loss [$\Delta P = \text{mbar}$]

2-way and 3-piece stainless steel actuated ball valves

 Load loss [$\Delta P = \text{mbar}$]

3-way stainless steel actuated ball valves

 Load loss [$\Delta P = \text{mbar}$]

WAFFER stainless steel actuated ball valves

 Load loss [$\Delta P = \text{mbar}$]


2-WAYS BRASS ACTUATED BALL VALVES



SEZ. Z-Z

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300090	8	1/4"	60.5	115	160	130.5	27	75	1/8"	33	5.9	40	42	1342
W0900300091	10	3/8"	60.5	115	160	130.5	27	75	1/8"	33	9.4	40	42	1320
W0900300092	15	1/2"	60.5	106	160	122	27	61	1/8"	32	17	40	42	1147
W0900300093	20	3/4"	75	121	139	140	33.5	69.5	1/8"	39	41	40	50	1515
W0900300094	25	1"	86	141	152	164.5	38	84.5	1/4"	48	70	40	63	2338
W0900300095	32	1 1/4"	86	151	152	181	38	98.5	1/4"	60	121	40	63	2670
W0900300096	40	1 1/2"	94	173	205	208	42.5	110	1/4"	70	200	25	75	2959
W0900300097	50	2"	94	184	205	227	42.5	130	1/4"	86	292	25	75	5360
W0900300098	65	2 1/2"	104	213	230	266.5	49	161	1/4"	106.5	535	25	85	8436
W0900300099	80	3"	104	225	230	292	49	183	1/4"	134	850	25	85	10750

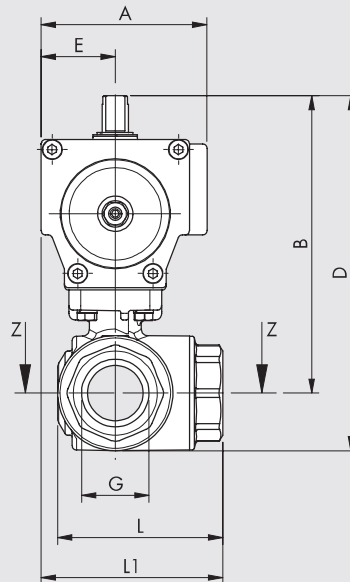
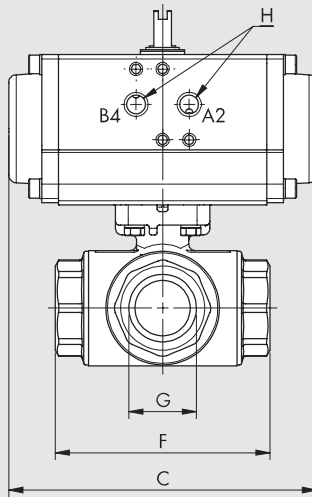
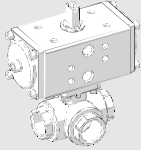
* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

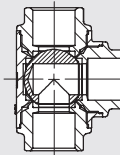
Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300101	8	1/4"	49	103	117	120	23.5	75	1/8"	33	5.9	40	32	832
W0900300102	10	3/8"	49	103	117	120	23.5	75	1/8"	33	9.4	40	32	810
W0900300103	15	1/2"	49	94.5	117	110.5	23.5	61	1/8"	32	17	40	32	637
W0900300104	20	3/4"	49	98	117	117.5	23.5	69.5	1/8"	39	41	40	32	735
W0900300105	25	1"	60.5	113.5	160	137.5	27	84.5	1/8"	48	70	40	42	1408
W0900300106	32	1 1/4"	75	135.5	139	165	33.5	98.5	1/8"	60	121	40	50	1940
W0900300107	40	1 1/2"	86	156.5	152	191.5	38	110	1/4"	70	200	25	63	2759
W0900300108	50	2"	86	167.5	152	210.5	38	130	1/4"	86	292	25	63	3590
W0900300109	65	2 1/2"	86	186.5	152	239.5	38	161	1/4"	106.5	535	25	63	5206
W0900300110	80	3"	94	214.5	205	281.5	42.5	183	1/4"	134	850	25	75	8820

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

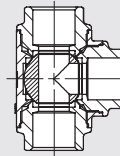
3-WAYS BRASS ACTUATED BALL VALVES



SEZ. Z-Z



L-shaped ball hole



T-shaped ball hole

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code for L-shaped ball hole	Code for T-shaped ball hole	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	L1	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300141	W0900300151	8	1/4"	60.5	114.5	160	131.5	27	64.5	1/8"	49.5	59	5.9	40	42	1625
W0900300142	W0900300152	10	3/8"	60.5	114.5	160	131.5	27	64.5	1/8"	49.5	59.5	9.4	40	42	1597
W0900300143	W0900300153	15	1/2"	75	126	139	143	33.5	64.5	1/8"	49.5	66	17	40	50	1741
W0900300144	W0900300154	20	3/4"	86	146	152	167	38	76	1/4"	59.5	76	41	40	63	2614
W0900300145	W0900300155	25	1"	86	150	152	176	38	97	1/4"	74.5	86.5	70	40	63	3117
W0900300146	W0900300156	32	1 1/4"	94	181	205	217	42.5	118	1/4"	95.5	101.5	121	40	75	6465
W0900300147	W0900300157	40	1 1/2"	94	183.5	205	221.5	42.5	135	1/4"	105	110	200	25	75	6737
W0900300148	W0900300158	50	2"	104	204.5	230	247.5	49	157	1/4"	121.5	127.5	292	25	85	9586

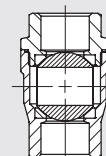
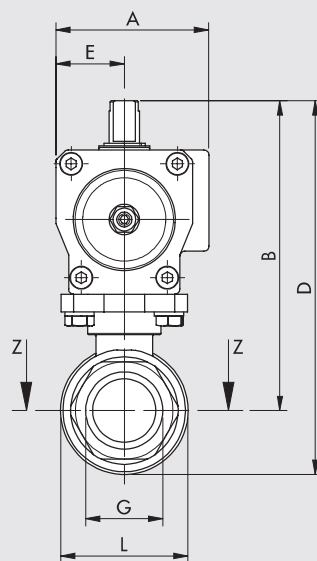
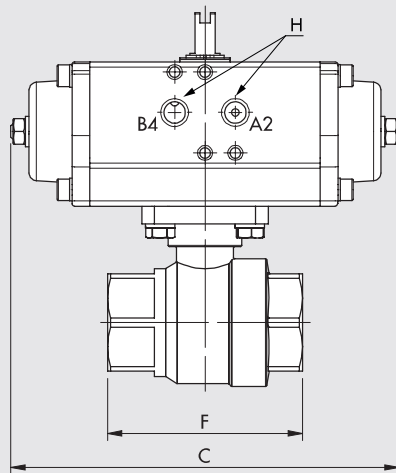
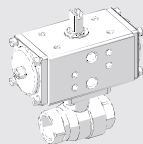
* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

Code for L-shaped ball hole	Code for T-shaped ball hole	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	L1	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300121	W0900300131	8	1/4"	49	103	117	120	23.5	64.5	1/8"	49.5	56	5.9	40	32	1115
W0900300122	W0900300132	10	3/8"	49	103	117	120	23.5	64.5	1/8"	49.5	56	9.4	40	32	1087
W0900300123	W0900300133	15	1/2"	49	103	117	120	23.5	64.5	1/8"	49.5	56	17	40	32	961
W0900300124	W0900300134	20	3/4"	75	130	139	151	33.5	76	1/8"	59.5	71.5	41	40	50	1884
W0900300125	W0900300135	25	1"	75	134.5	139	160	33.5	97	1/8"	74.5	82	70	40	50	2387
W0900300126	W0900300136	32	1 1/4"	75	149	139	185	33.5	118	1/8"	95.5	92.5	121	40	50	4165
W0900300127	W0900300137	40	1 1/2"	86	167	152	205	38	135	1/4"	105.5	105.5	200	25	63	4967
W0900300128	W0900300138	50	2"	86	178	152	221	38	157	1/4"	121.5	116.5	292	25	63	6356

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

2-WAYS STAINLESS STEEL ACTUATED BALL VALVES



SEZ. Z-Z

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300009	10	1/4"	60.5	113.5	160	131	27	56	1/8"	35	5.6	63	42	1300
W0900300010	10	3/8"	60.5	113.5	160	131	27	56	1/8"	35	6.8	63	42	1280
W0900300011	15	1/2"	60.5	113.5	160	131	27	57	1/8"	35	9.6	63	42	1300
W0900300012	20	3/4"	75	131	139	152	33.5	64	1/8"	42	17.9	63	50	1690
W0900300013	25	1"	86	149.5	152	175	38	77	1/4"	51	30	63	63	2540
W0900300014	32	1 1/4"	86	157.5	152	189.5	38	90	1/4"	64	49	63	63	2980
W0900300015	40	1 1/2"	94	180	205	218	42.5	105	1/4"	76	68	63	75	5310
W0900300016	50	2"	94	190	205	233.5	42.5	125	1/4"	91	126	63	75	6270

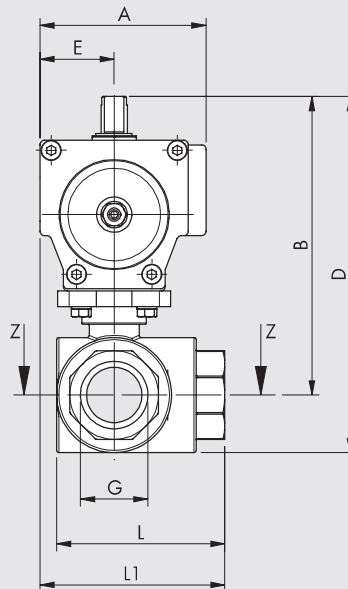
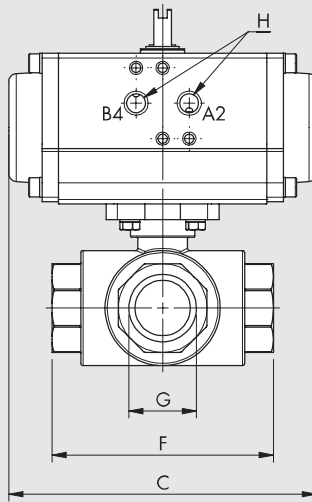
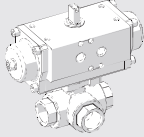
* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

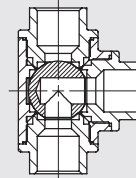
Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300001	10	1/4"	49	102	117	119.5	23.5	56	1/8"	35	5.6	63	32	790
W0900300002	10	3/8"	49	102	117	119.5	23.5	56	1/8"	35	6.8	63	32	770
W0900300003	15	1/2"	49	102	117	119.5	23.5	57	1/8"	35	9.6	63	32	790
W0900300004	20	3/4"	49	108	117	129	23.5	64	1/8"	42	17.9	63	32	910
W0900300005	25	1"	60.5	122.5	160	147.5	27	77	1/8"	51	30	63	42	1610
W0900300006	32	1 1/4"	75	142	139	173.5	33.5	90	1/8"	64	49	63	50	2250
W0900300007	40	1 1/2"	86	163.5	152	201.5	38	105	1/4"	76	68	63	63	3540
W0900300008	50	2"	94	188	205	233.5	42.5	125	1/4"	91	126	63	75	5800

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

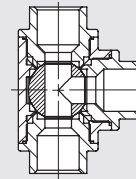
3-WAYS STAINLESS STEEL ACTUATED BALL VALVES



SEZ. Z-Z



L-shaped ball hole



T-shaped ball hole

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code for L-shaped ball hole	Code for T-shaped ball hole	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	L1	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300161	W0900300171	8	1/4"	86	140.5	152	158.5	38	75	1/4"	55.5	75.5	3.2	63	63	2500
W0900300162	W0900300172	10	3/8"	86	140.5	152	158.5	38	75	1/4"	55.5	75.5	3.4	63	63	2470
W0900300163	W0900300173	15	1/2"	86	140.5	152	158.5	38	75	1/4"	55.5	75.5	3.8	63	63	2430
W0900300164	W0900300174	20	3/4"	86	144.5	152	165.5	38	85	1/4"	63.5	80.5	7.7	63	63	2740
W0900300165	W0900300175	25	1"	94	167	205	193	42.5	100	1/4"	76	92.5	13.7	63	75	4760
W0900300166	W0900300176	32	1 1/4"	94	176	205	210	42.5	122	1/4"	95	103.5	20.5	63	75	6280
W0900300167	W0900300177	40	1 1/2"	120	204.5	275	243.5	55	131	1/4"	104.5	120.5	31.5	63	100	10480
W0900300168	W0900300178	50	2"	134	243.5	309	293	63.5	158	1/4"	129	142.5	58	63	115	16610

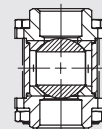
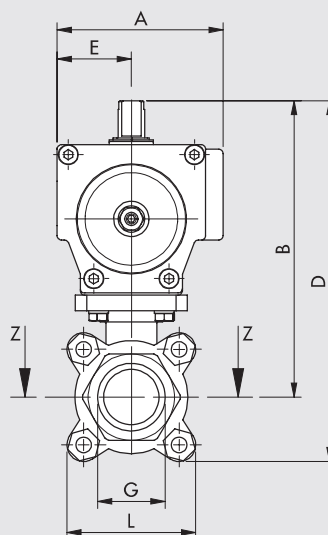
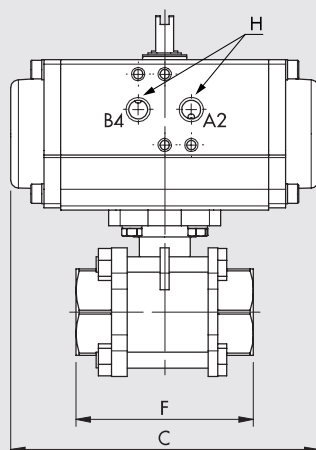
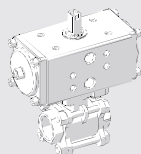
* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

Code for L-shaped ball hole	Code for T-shaped ball hole	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	L1	Kv factor [m ³ /h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300080	W0900300112	8	1/4"	60.5	113.5	160	131.5	27	75	1/8"	55.5	64.5	3.2	63	42	1570
W0900300081	W0900300113	10	3/8"	60.5	113.5	160	131.5	27	75	1/8"	55.5	64.5	3.4	63	42	1540
W0900300082	W0900300114	15	1/2"	60.5	113.5	160	131.5	27	75	1/8"	55.5	64.5	3.8	63	42	1500
W0900300083	W0900300115	20	3/4"	60.5	117.5	160	138.5	27	85	1/8"	63.5	69.5	7.7	63	42	1810
W0900300084	W0900300116	25	1"	75	135	139	161	33.5	100	1/8"	76	83.5	13.7	63	50	2460
W0900300085	W0900300117	32	1 1/4"	86	159.5	152	193.5	38	122	1/4"	95	99	20.5	63	63	4510
W0900300086	W0900300118	40	1 1/2"	94	180	205	219	42.5	131	1/4"	104.5	108	31.5	63	75	6560
W0900300087	W0900300119	50	2"	94	191	205	240.5	42.5	158	1/4"	129	121.5	58	63	75	9210

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

3-PIECE STAINLESS STEEL ACTUATED BALL VALVES



SEZ. Z-Z

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

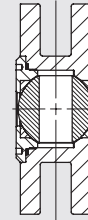
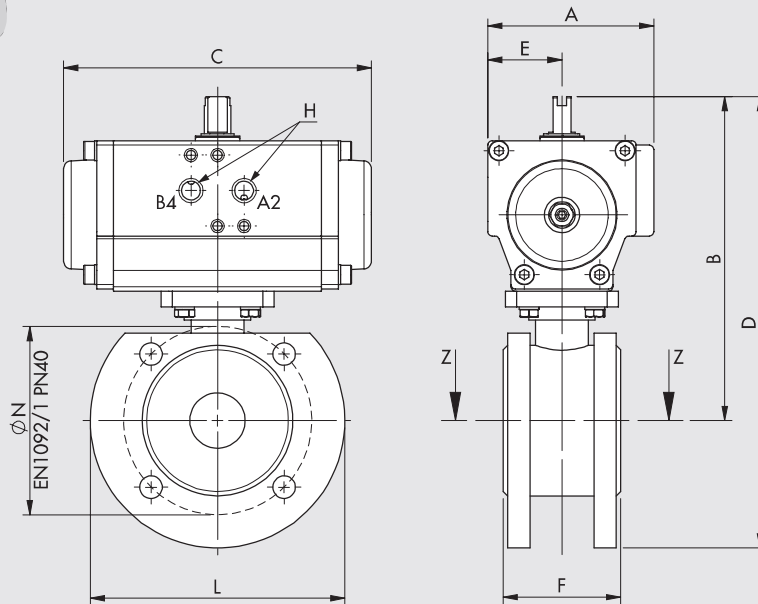
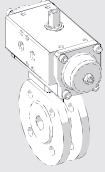
Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300201	10	1/4"	75	121	139	141	33.5	48	1/8"	40	5.6	63	50	1610
W0900300202	10	3/8"	75	121	139	141	33.5	48	1/8"	40	6.8	63	50	1600
W0900300203	15	1/2"	75	125	139	146	33.5	54	1/8"	42	9.6	63	50	1650
W0900300204	20	3/4"	86	145.5	152	171.5	38	73	1/4"	52	17.9	63	63	2660
W0900300205	25	1"	94	166	205	195	42.5	80	1/4"	58	30	63	75	4590
W0900300206	32	1 1/4"	94	174	205	210	42.5	90	1/4"	72	49	63	75	5250
W0900300207	40	1 1/2"	94	180	205	220.5	42.5	102	1/4"	81	68	63	75	6150
W0900300208	50	2"	104	198.5	230	244.5	49	118	1/4"	92	126	63	85	8390
W0900300209	65	2 1/2"	120	244.5	275	312.5	55	151	1/4"	154	226	63	100	14020
W0900300210	80	3"	163	318	392	398.5	80	182	1/4"	182	355	63	145	22400

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

Code	DN (nominal diameter)	G	A	B	C	D	E	F	H	L	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300181	10	1/4"	49	98	117	118	23.5	48	1/8"	40	5.6	63	32	830
W0900300182	10	3/8"	49	98	117	118	23.5	48	1/8"	40	6.8	63	32	820
W0900300183	15	1/2"	49	102	117	123	23.5	54	1/8"	42	9.6	63	32	870
W0900300184	20	3/4"	60.5	118.5	160	144.5	27	73	1/8"	52	17.9	63	42	1730
W0900300185	25	1"	75	134	139	163	33.5	80	1/8"	58	30	63	50	2290
W0900300186	32	1 1/4"	86	157.5	152	193.5	38	90	1/4"	72	49	63	63	3480
W0900300187	40	1 1/2"	86	163.5	152	204	38	102	1/4"	81	68	63	63	4380
W0900300188	50	2"	94	188	205	234	42.5	118	1/4"	92	126	63	75	6460
W0900300189	65	2 1/2"	94	220	205	288	42.5	151	1/4"	154	226	63	75	10100
W0900300190	80	3"	120	257.5	275	338	55	182	1/4"	182	355	63	100	17900

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

WAFER STAINLESS STEEL ACTUATED BALL VALVES


SEZ. Z-Z

- Position of the ball with "B4" port powered actuator for double-acting versions.
- Position of the ball with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code	DN (nominal diameter)	A	B	C	D	E	F	H	L	ØN	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300031	15	86	159	152	206.5	38	36	1/4"	95	65	22.3	40	63	2910
W0900300032	20	86	164	152	216.5	38	38	1/4"	105	75	47.7	40	63	3280
W0900300033	25	94	178.5	205	236	42.5	53	1/4"	115	85	83.5	40	75	5300
W0900300034	32	94	190.5	205	260.5	42.5	53	1/4"	140	100	150.4	40	75	6470
W0900300035	40	94	196.5	205	271.5	42.5	65	1/4"	150	110	255	40	75	7570
W0900300036	50	104	215	230	297.5	49	78	1/4"	165	125	435	40	85	10200

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

Code	DN (nominal diameter)	A	B	C	D	E	F	H	L	ØN	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300021	15	60.5	132	160	179	27	36	1/8"	95	65	22.3	40	42	1980
W0900300022	20	60.5	137	160	189	27	38	1/8"	105	75	47.7	40	42	2350
W0900300023	25	75	146.5	139	204	33.5	53	1/8"	115	85	83.5	40	50	3000
W0900300024	32	86	174	152	244	38	53	1/4"	140	100	150.4	40	63	4700
W0900300025	40	86	180	152	255	38	65	1/4"	150	110	255	40	63	5800
W0900300026	50	86	188	152	270.5	38	78	1/4"	165	125	435	40	63	6970

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

ACTUATED BUTTERFLY VALVES SERIES RV-FLUID

Actuated throttle valves with a Wafer-type connection and centred disc are mainly used to choke and regulate large flow rates. The body is made of painted cast iron, nickel-plated cast iron lens with EPDM seals. A position indicator can be applied to the actuator using special position-sensing switch-boxes.



VALVES

ACTUATED VALVES SERIES RV-FLUID

TECHNICAL DATA

VALVES

Max operating pressure *	bar	16
	MPa	1.6
	psi	232
Fluid temperature	°C	-10 to +120
Ambient temperature	°C	-20 to +80
Usable fluids / Materials compatibility	Valves that can be used with neutral or slightly aggressive liquid and gas fluids. (Refer to the tables of chemical compatibility of materials in contact with the fluid on www.metalwork.it or contact Metal Work technical service)	
Nominal diameter (DN)	mm	50 to 200
Mounting position	Any, except that with actuator downwards, which is not recommended	
Note	High- and low-temperature versions on request	

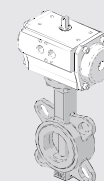
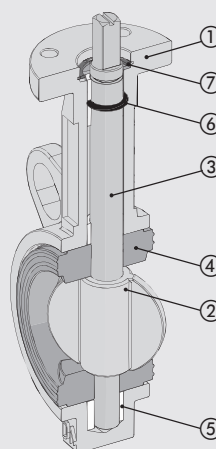
ROTARY ACTUATOR

Operating pressure	bar	6 to 10
	MPa	0.6 to 1
	psi	87 to 145
Ambient temperature	°C	-20 to +80
Fluid	20 µm filtered, unlubricated air	

* The maximum working pressure varies with temperature. See the "Max. pressure/temperature chart".

COMPONENTS

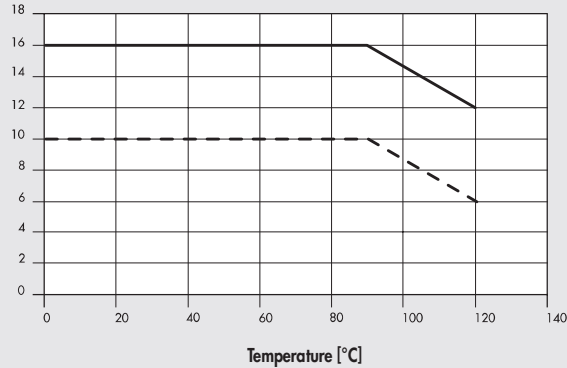
- ① BODY: lamellar cast iron coated with epoxy-resin enamel
- ② DISK: nickel-plated spheroidal cast iron
- ③ ROD: AISI 420 stainless steel
- ④ SLEEVE: EPDM
- ⑤ ROD GUIDE BUSHING: teflon®
- ⑥ ROD SEALS: FKM/FPM
- ⑦ SEEGER: zinc-plated carbon steel



MAX. PRESSURE/TEMPERATURE CHART

Actuated Butterfly valves

Pressure [bar]

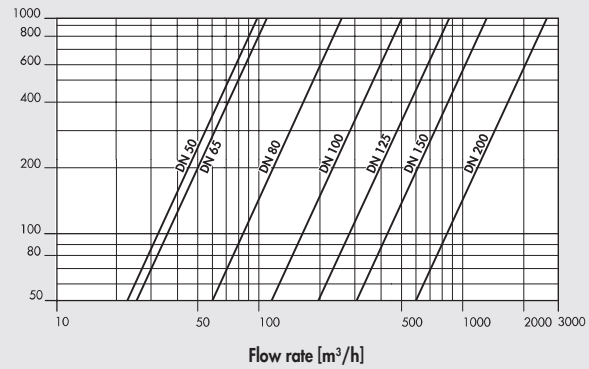


--- Installation between flanges
 ——— Installation at end of lines

LOAD LOSS CHART (reference fluid water at 20°C)

Actuated Butterfly valves

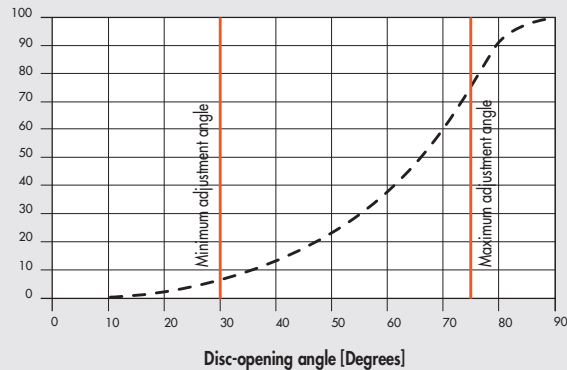
Load loss [ΔP = mbar]



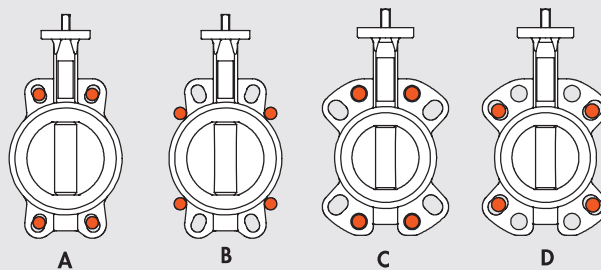
FLOW RATE TO THE DISC-OPENING ANGLE CHART

Actuated Butterfly valves

Flow rate [%]



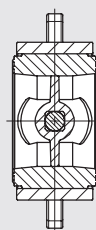
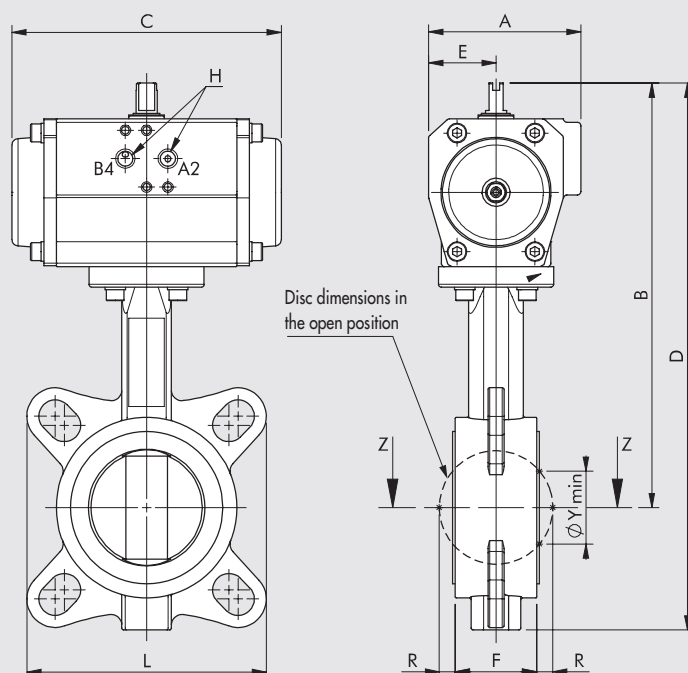
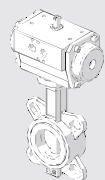
CONFIGURATION FLANGE FIXING SCREWS



Type flange	Valve size						
	50	65	80*	100	125	150	200
PN6 EN1092	A	A	D	B	A	A	A
PN10 EN1092	A	A	C	A	A	A	A
PN16 EN1092	A	A	C	A	A	A	A
#150 ANSI B16.5	A	A	D	A	A	A	A

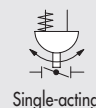
* For DN80 PN10-16 with 4 holes see configuration D.

ACTUATED BUTTERFLY VALVES



SEZ. Z-Z

- Position of the disc with "B4" port powered actuator for double-acting versions.
- Position of the disc with actuator at rest for single-acting versions.



Single-acting



Double-acting

SINGLE-ACTING

Code	DN (nominal diameter)	A	B	C	D	E	F	H	L	R	ØY min	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300051	50	94	246	205	308	42.5	43	1/4"	121	5	31	99	16	75	5470
W0900300052	65	94	256	205	325	42.5	46	1/4"	135	9	45	108	16	75	5770
W0900300053	80	104	280	230	370	49	46	1/4"	146	17	65	261	16	85	8030
W0900300054	100	120	314.5	275	422.5	55	52	1/4"	108	26	90	518	16	100	11120
W0900300055	125	134	352.5	309	471.5	63.5	56	1/4"	119	34	110	883	16	115	16600
W0900300056	150	134	372.5	309	504	63.5	56	1/4"	131	50	146	1364	16	115	18100
W0900300057	200	163	435	392	601	80	60	1/4"	156	71	194	2716	16	145	34000

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

DOUBLE-ACTING

Code	DN (nominal diameter)	A	B	C	D	E	F	H	L	R	ØY min	Kv factor [m³/h]	Max pressure * [bar]	R4 rotary actuator bore	Weight [g]
W0900300041	50	86	229.5	152	291.5	38	43	1/4"	121	5	31	99	16	63	3700
W0900300042	65	86	239.5	152	308.5	38	46	1/4"	135	9	45	108	16	63	4000
W0900300043	80	86	253.5	152	343.5	38	46	1/4"	146	17	65	261	16	63	4800
W0900300044	100	94	290	205	397.5	42.5	52	1/4"	108	26	90	518	16	75	7200
W0900300045	125	94	300	205	419	42.5	56	1/4"	119	34	110	883	16	75	9200
W0900300046	150	104	330	230	461.5	49	56	1/4"	131	50	146	1364	16	85	12000
W0900300047	200	134	402.5	309	568.5	80	60	1/4"	156	71	194	2716	16	115	24200

* The maximum operating pressure varies with the temperature. See the "Max. pressure/temperature chart".

ROTARY ACTUATOR SERIES R4

Sturdy, compact rotary actuators, suitable for operating industrial valves with ISO 5211 mounting flange and 0-90° swivel angle.

The R4 actuator is the double-rack type, a technology that ensures constant twisting torque during rotation.

The control valve can be fitted directly to the actuator using the NAMUR VDI\VDE-3845 interface or can be controlled remotely using the existing G (BSP) threaded connections.

On the actuator, you can install specific accessories for the detection of limit switch positions (switch box).

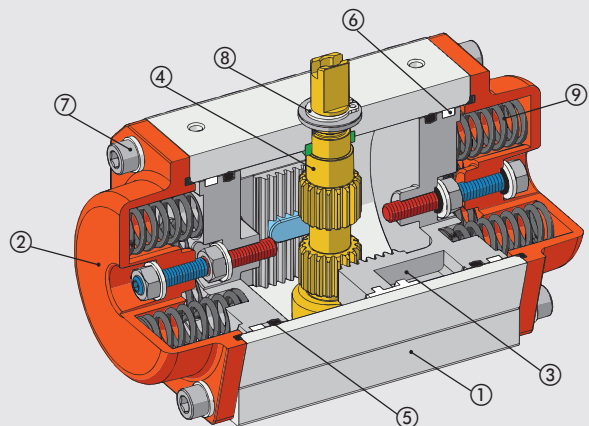
Given its specific application, the R4 actuator features high torque and reduced bending moment supported by the shaft.



TECHNICAL DATA			Ø 32	Ø 42	Ø 50	Ø 63	Ø 75	Ø 85	Ø 100	Ø 115	Ø 125	Ø 145
Operating pressure		bar	3 to 8									
		MPa	0.3 to 0.8									
		psi	43 to 116									
Temperature range		°C	-20 to +80									
Fluid			20 µm filtered, unlubricated air									
Rotation angle			90° ±5° (90°±3° for Ø 32)									
Valve fixing interface			According to ISO 5211 and DIN 3337									
Female bottom key			Double square type (star)									
Power interface			According to NAMUR VDI\VDE-3845									
Interface for fixing accessories at the top			According to NAMUR VDI\VDE-3845									
Category ATEX			Ex II 2G Ex h IIC T5 Gb Ex II 2D Ex h IIIC T95°C Db									
Assembly position			Any. Upward power takeoff not recommended									
Versions			Single-acting / Double-acting									
Nominal torque at 6 bar		Nm	7.6	13.0	18.5	33.0	70.2	106.9	166.4	274.5	361.1	520.2
Maximum idle rotation	double acting	s	0.5	0.5	0.6	0.7	0.7	0.9	0.9	1.1	1.1	1.1
	single acting	s	-	0.5	0.6	0.9	1	1.3	1.3	1.6	2.1	2.1
Internal volume	double acting	liters	0.07	0.18	0.23	0.45	0.61	0.98	1.8	2.8	3.7	4.9
	single acting	liters	-	0.072	0.092	0.18	0.244	0.392	0.72	1.12	1.48	1.96

COMPONENTS

- ① BODY: extruded aluminium with hard anodisation
- ② END CAP: pressure die-cast aluminium with polyester powdercoating
- ③ PISTON: anodized pressure die-cast aluminium
- ④ SHAFT WITH PINION: nickel-plated carbon steel
- ⑤ GASKETS: NBR
- ⑥ SLIDING GUIDES: acetal resin
- ⑦ SCREWS AND WASHERS: stainless steel
- ⑧ SEEGER: zinc-plated carbon steel
- ⑨ SPRINGS (for single-acting versions only): carbon steel with polyester powder coating



DIMENSIONING

CHOOSING THE ACTUATOR

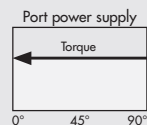
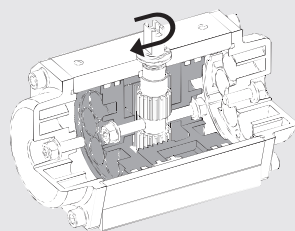
Actuators are chosen by ensuring that the available torque is greater than the torque required by the application, taking into account a safety margin. When used for actuating valves, which is a typical case for this series of actuators, the interface flange and the power takeoff dimension (seat for connection with the valve shaft) must also be verified.

When using ball valves, you need to know the operating torque according to which a minimum safety factor must be considered to ensure correct operation over time, even in the worst operating conditions. As a general rule, the safety factor must be at least 25% but in some applications and, for some valve manufacturers, it is recommended to be up until 50%.

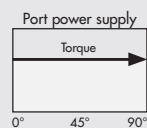
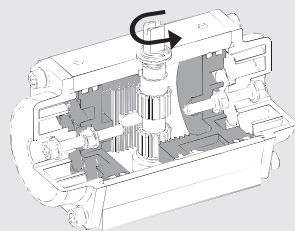
• DOUBLE-ACTING VERSION

During rotation, the double-acting actuator provides constant torque at each position and in both directions with the same supply pressure.

Powered B4: closing (0°)



Powered A2: opening (90°)



Example

Valve operating torque	50 Nm
Safety factor required	25% (12.5 Nm)
Minimum actuator torque required	$50 \text{ Nm} + 12.5 \text{ Nm} = 62.5 \text{ Nm}$
Actuator supply pressure	6 bar

Chosen bore

Based on the supplied torque at 6 bar	75
(see table "pair of double-acting actuator")	70.2 Nm (> 62.5 Nm)

Actual safety factor $(70.2 \text{ Nm} - 50 \text{ Nm}) / 50 \text{ Nm} = 40\%$

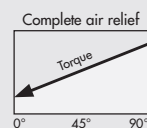
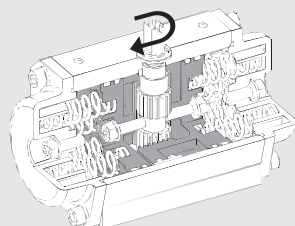
• SINGLE-ACTING VERSION

During rotation, the single-acting actuator provides variable torque depending on the angle.

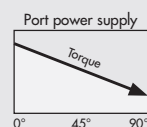
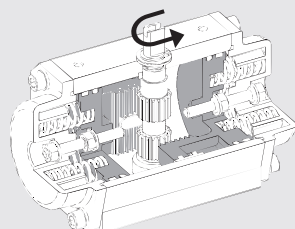
On opening, the maximum torque value is at 0° and then decreases as the compressed springs counteract the movement of the pistons and accumulate energy that is made available when rotation is reversed.

On closing, the maximum torque value is at 90° and then decreases due to the release of the springs.

NOT powered: closing (0°)



Powered A2: opening (90°)



Example

Valve operating torque	50 Nm
Safety factor required	30% (15 Nm)
Minimum actuator torque required	$50 \text{ Nm} + 15 \text{ Nm} = 65 \text{ Nm}$
Actuator supply pressure	6 bar

Chosen bore

Based on the supplied torque at 6 bar	115
(see table "pair of double-acting actuator")	106 Nm a 0° (> 65 Nm)

Actual safety factor $(106 \text{ Nm} - 50 \text{ Nm}) / 50 \text{ Nm} = 112\%$

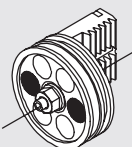
TORQUE OF DOUBLE-ACTING ACTUATORS [Nm]

Ø	Supply pressure [bar]							
	1	2	3	4	5	6	7	8
32	-	-	-	5	6.3	7.6	8.8	10
42	-	-	6.5	8.7	10.9	13	15.2	17.3
50	3	6.1	9.2	12.3	15.4	18.5	21.5	24.6
63	5.5	11	16.5	22	27.5	33	38.5	44
75	11.7	23.4	35.1	46.8	58.5	70.2	81.9	93.6
85	17.8	35.6	53.4	71.2	89	106.9	124.7	142.4
100	27.7	55.4	83.2	110.9	138.6	166.4	194.1	221.8
115	45.7	91.5	137.2	183	228.7	274.5	320.2	366
125	60.1	120.3	180.5	240.7	300.9	361.1	421.2	481.4
145	86.7	173.4	260.1	346.8	433.5	520.2	606.9	693.6

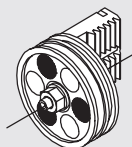
TORQUE OF SINGLE-ACTING ACTUATORS [Nm]

Ø	Springs per side	Supply pressure [bar]												Non-powered spring torque	
		3		4		5		6		7		8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
42	3	-	-	-	-	7.1	4.1	9.3	6.3	11.5	8.5	13.7	10.7	6.8	3.8
	4	-	-	-	-	-	-	8.1	4.1	10.2	6.2	12.4	8.4	9	5
50	3	5.7	3.5	8.9	6.6	12	9.6	15.1	12.7	18.1	15.7	21.2	18.8	5.7	3.5
	4	-	-	7.7	4.7	10.8	7.7	13.9	10.8	16.9	13.8	20.2	16.9	7.7	4.7
	5	-	-	-	-	9.6	5.8	12.7	8.9	15.7	11.9	18.8	15	9.6	5.8
	6	-	-	-	-	8.4	3.9	11.5	7	14.5	10	17.6	13.1	11.5	7
63	3	9.4	6.3	14.9	11.7	20.4	17.2	25.9	22.7	31.4	28.2	36.9	33.7	10.2	7.2
	4	-	-	12.3	8.3	17.8	13.8	23.3	19.3	28.8	24.8	34.3	30.3	13.7	9.7
	5	-	-	-	-	15.4	10.4	20.9	15.9	26.4	21.4	31.9	26.9	17.1	12.1
	6	-	-	-	-	13	7	18.5	12.5	24	18	29.5	23.5	20.5	14.5
75	3	22.5	12.6	34.2	24.4	46	36.1	57.7	47.8	69.4	59.5	81.1	71.2	22.5	12.6
	4	-	-	30	16.9	41.8	28.6	53.5	40.3	65.2	52	76.9	63.7	30	16.9
	5	-	-	-	-	37.6	21.1	49.3	32.8	61	44.5	72.7	56.2	37.6	21.1
	6	-	-	-	-	33.4	13.6	45.1	25.3	56.8	37	68.5	48.7	45.1	25.3
85	3	34.5	18.9	52.4	36.7	70.2	54.5	88	72.3	105.8	90.1	123.6	107.9	34.5	18.9
	4	-	-	46.1	25.2	63.9	43	81.7	60.8	99.5	78.6	117.3	96.4	46.1	25.2
	5	-	-	-	-	57.6	31.5	75.4	49.3	93.2	67.1	111	84.9	57.6	31.5
	6	-	-	-	-	51.5	20	69.1	37.8	86.9	55.6	104.7	73.4	69.1	37.8
100	3	53.2	30	80.9	57.7	108.7	85.4	136.4	113.1	164.1	140.8	191.8	168.5	53.2	30
	4	-	-	70.9	40	98.7	67.7	126.4	95.4	154.1	123.1	181.8	150.8	70.9	40
	5	-	-	-	-	88.7	50	116.4	77.7	144.1	105.4	171.8	133.1	88.7	50
	6	-	-	-	-	78.7	32.2	106.4	60	134.1	87.7	161.8	115.4	106.4	60
115	3	84.3	53	130	98.8	175.8	144.5	221.6	190.3	267.3	236	313	281.7	84.3	53
	4	-	-	112.3	70.7	158.1	116.4	203.9	162.2	249.6	207.9	295.3	253.6	112.3	70.7
	5	-	-	-	-	140.4	88.3	186.2	134.1	231.9	179.8	277.6	225.5	140.4	88.3
	6	-	-	-	-	122.7	60.2	168.5	106	214.2	151.7	259.9	197.4	168.5	106
125	3	116.8	63.7	177	123.9	237.3	184.1	297.5	244.2	357.6	304.3	417.7	364.4	116.8	63.7
	4	-	-	155.7	85	216	145.2	276.2	205.3	336.3	265.4	396.4	325.5	155.7	85
	5	-	-	-	-	194.7	106.3	254.9	166.4	315	226.5	375.1	286.6	194.7	106.3
	6	-	-	-	-	173.4	67.4	233.6	127.5	293.7	187.6	353.8	247.7	233.6	127.5
145	3	158	92	245	179	332	265	418	352	505	439	592	526	168	102
	4	-	-	211	123	298	210	384	269	471	383	558	470	224	136
	5	-	-	-	-	264	154	350	240	437	327	524	414	280	170
	6	-	-	-	-	230	98	316	184	403	271	490	358	336	204

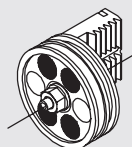
N.B.: All single-acting actuators come with the maximum quantity of springs that can be fitted to each side, which means that the user can dispense lower torques as required by simply removing unnecessary springs. If the quantity of springs is reduced, carefully check that the residual springs are positioned correctly.



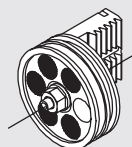
2 springs



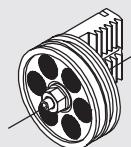
3 springs



4 springs

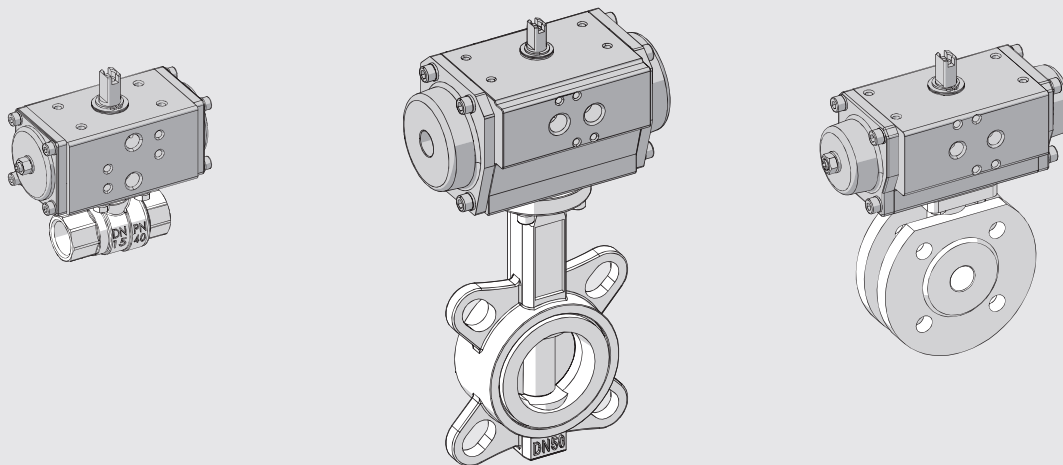


5 springs



6 springs

EXAMPLES OF APPLICATION

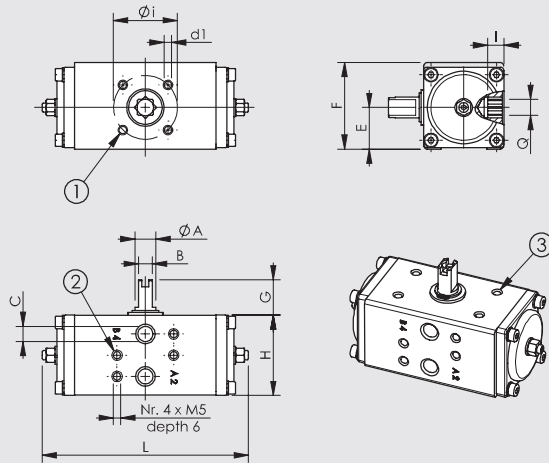


NOTES

DIMENSIONS AND ORDERING CODES

DIMENSIONS Ø 32 - 42 - 50 - 63

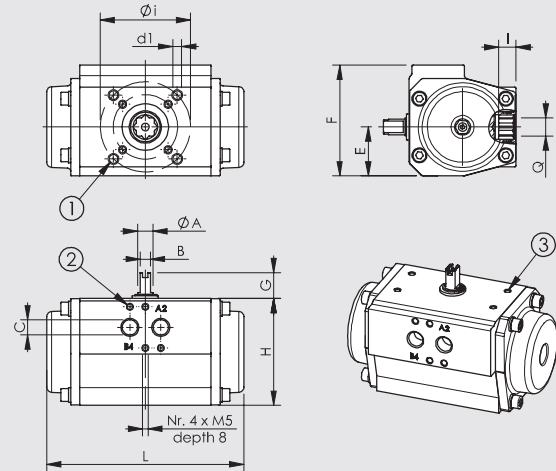
Ø 32



- ① Flange connection according to UNI 5211 and DIN 3337
- ② Supply interface according to NAMUR VDI/VDE-3845
- ③ Holes for fixing accessories according to NAMUR VDI/VDE-3845



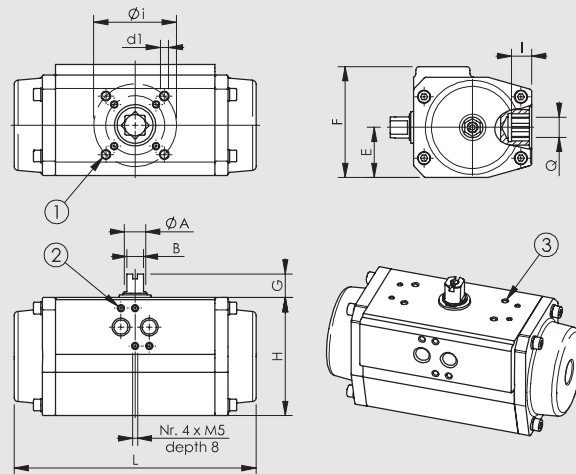
Ø 42 - 50 - 63



FLANGE ISO 5211	ϕi	$d1$
F03	36	M5 depth 8
F04	42	M5 depth 8
F05	50	M6 depth 9
F07	70	M8 depth 12
F10	102	M10 depth 15
F12	125	M12 depth 18

Ø	Type	Code	Flange ISO 5211	Q	I	ØA	B	C	G	E	F	H	L	Weight [g]
32	Double-acting	W790A032GQ009DA	F03	9	10	12	8	1/8"	20	23.5	49	45	117	420
		W790B032GQ009DA	F04	9	10	12	8	1/8"	20	23.5	49	45	117	420
42	Double-acting	W79AC042GQ009DA	F03 / F05	9	10	12	8	1/8"	20	27	60.5	57	160	870
		W79AC042GQ011DA	F03 / F05	11	13	12	8	1/8"	20	27	60.5	57	160	870
		W790B042GQ009DA	F04	9	10	12	8	1/8"	20	27	60.5	57	160	870
		W790B042GQ011DA	F04	11	13	12	8	1/8"	20	27	60.5	57	160	870
	Single-acting	W79AC042GQ009SR	F03 / F05	9	10	12	8	1/8"	20	27	60.5	57	160	930
		W79AC042GQ011SR	F03 / F05	11	13	12	8	1/8"	20	27	60.5	57	160	930
		W790B042GQ009SR	F04	9	10	12	8	1/8"	20	27	60.5	57	160	930
		W790B042GQ011SR	F04	11	13	12	8	1/8"	20	27	60.5	57	160	930
50	Double-acting	W79AC050GQ009DA	F03 / F05	9	10	12	8	1/8"	20	33.5	75	67	139	1070
		W79AC050GQ011DA	F03 / F05	11	13	12	8	1/8"	20	33.5	75	67	139	1070
		W790B050GQ009DA	F04	9	10	12	8	1/8"	20	33.5	75	67	139	1070
		W790B050GQ011DA	F04	11	13	12	8	1/8"	20	33.5	75	67	139	1070
	Single-acting	W79AC050GQ009SR	F03 / F05	9	10	12	8	1/8"	20	33.5	75	67	139	1200
		W79AC050GQ011SR	F03 / F05	11	13	12	8	1/8"	20	33.5	75	67	139	1200
		W790B050GQ009SR	F04	9	10	12	8	1/8"	20	33.5	75	67	139	1200
		W790B050GQ011SR	F04	11	13	12	8	1/8"	20	33.5	75	67	139	1200
63	Double-acting	W79AD063GQ009DA	F03 / F05 / F07	9	10	12	8	1/4"	20	38	86	83	152	1600
		W79AD063GQ011DA	F03 / F05 / F07	11	13	12	8	1/4"	20	38	86	83	152	1600
		W79AD063GQ014DA	F03 / F05 / F07	14	16	12	8	1/4"	20	38	86	83	152	1600
		W790B063GQ009DA	F04	9	10	12	8	1/4"	20	38	86	83	152	1600
		W790B063GQ011DA	F04	11	13	12	8	1/4"	20	38	86	83	152	1600
		W790B063GQ014DA	F04	14	16	12	8	1/4"	20	38	86	83	152	1600
	Single-acting	W79AD063GQ009SR	F03 / F05 / F07	9	10	12	8	1/4"	20	38	86	83	152	1800
		W79AD063GQ011SR	F03 / F05 / F07	11	13	12	8	1/4"	20	38	86	83	152	1800
		W79AD063GQ014SR	F03 / F05 / F07	14	16	12	8	1/4"	20	38	86	83	152	1800
		W790B063GQ009SR	F04	9	10	12	8	1/4"	20	38	86	83	152	1800
		W790B063GQ011SR	F04	11	13	12	8	1/4"	20	38	86	83	152	1800
		W790B063GQ014SR	F04	14	16	12	8	1/4"	20	38	86	83	152	1800

DIMENSIONS Ø 75 - 85 - 100 - 115 - 125 - 145



- ① Flange connection according to UNI 5211 and DIN 3337
 ② Supply interface according to NAMUR VDI/VDE-3845
 ③ Holes for fixing accessories according to NAMUR VDI/VDE-3845



FLANGE ISO 5211	ϕ_i	d_1
F04	42	M5 depth 8
F05	50	M6 depth 9
F07	70	M8 depth 12
F10	102	M10 depth 15
F12	125	M12 depth 18

Ø	Type	Code	Flange ISO 5211	Q	I	ØA	B	C	G	E	F	H	L	Weight [g]
75	Double-acting	W790D075GQ011DA	F05 / F07	11	13	18	14	1/4"	20	42.5	94	100	205	2800
		W790D075GQ014DA	F05 / F07	14	16	18	14	1/4"	20	42.5	94	100	205	2800
		W790D075GQ017DA	F05 / F07	17	20	18	14	1/4"	20	42.5	94	100	205	2800
		W790B075GQ011DA	F04	11	13	18	14	1/4"	20	42.5	94	100	205	2800
		W790B075GQ014DA	F04	14	16	18	14	1/4"	20	42.5	94	100	205	2800
		W790B075GQ017DA	F04	17	20	18	14	1/4"	20	42.5	94	100	205	2800
	Single-acting	W790D075GQ011SR	F05 / F07	11	13	18	14	1/4"	20	42.5	94	100	205	3370
		W790D075GQ014SR	F05 / F07	14	16	18	14	1/4"	20	42.5	94	100	205	3370
		W790D075GQ017SR	F05 / F07	17	20	18	14	1/4"	20	42.5	94	100	205	3370
		W790B075GQ011SR	F04	11	13	18	14	1/4"	20	42.5	94	100	205	3370
		W790B075GQ014SR	F04	14	16	18	14	1/4"	20	42.5	94	100	205	3370
85	Double-acting	W790D085GQ014DA	F05 / F07	14	16	18	14	1/4"	20	49	104	110	230	4200
	Double-acting	W790D085GQ017DA	F05 / F07	17	20	18	14	1/4"	20	49	104	110	230	4200
	Single-acting	W790D085GQ014SR	F05 / F07	14	16	18	14	1/4"	20	49	104	110	230	4830
	Single-acting	W790D085GQ017SR	F05 / F07	17	20	18	14	1/4"	20	49	104	110	230	4830
	Double-acting	W790D085GQ014SR	F05 / F07	14	16	18	14	1/4"	20	49	104	110	230	4830
100	Double-acting	W790D100GQ014DA	F05 / F07 / F10	14	16	18	14	1/4"	20	55	120	125	275	5800
		W790D100GQ017DA	F05 / F07 / F10	17	20	18	14	1/4"	20	55	120	125	275	5800
		W790D100GQ022DA	F05 / F07 / F10	22	25	18	14	1/4"	20	55	120	125	275	5800
	Single-acting	W790D100GQ014SR	F05 / F07 / F10	14	16	18	14	1/4"	20	55	120	125	275	6820
		W790D100GQ017SR	F05 / F07 / F10	17	20	18	14	1/4"	20	55	120	125	275	6820
		W790D100GQ022SR	F05 / F07 / F10	22	25	18	14	1/4"	20	55	120	125	275	6820
115	Double-acting	W790E115GQ017DA	F07 / F10	17	20	36	27	1/4"	30	63.5	134	142	309	9200
	Double-acting	W790E115GQ022DA	F07 / F10	22	25	36	27	1/4"	30	63.5	134	142	309	9200
	Single-acting	W790E115GQ017SR	F07 / F10	17	20	36	27	1/4"	30	63.5	134	142	309	10300
	Single-acting	W790E115GQ022SR	F07 / F10	22	25	36	27	1/4"	30	63.5	134	142	309	10300
125	Double-acting	W790E125GQ017DA	F07 / F10	17	20	36	27	1/4"	30	69.5	141	155	362	11900
	Double-acting	W790E125GQ022DA	F07 / F10	22	25	36	27	1/4"	30	69.5	141	155	362	11900
	Single-acting	W790E125GQ017SR	F07 / F10	17	20	36	27	1/4"	30	69.5	141	155	362	14200
	Single-acting	W790E125GQ022SR	F07 / F10	22	25	36	27	1/4"	30	69.5	141	155	362	14200
145	Double-acting	W790F145GQ022DA	F10 / F12	22	25	36	27	1/4"	30	80	163	175	392	15500
	Single-acting	W790F145GQ022SR	F10 / F12	22	25	36	27	1/4"	30	80	163	175	392	19000

KEY TO CODES

W79	0A		032	G		Q0		09		DA				
	FLANGE		DIAMETER	CONNECTIONS		TYPE OF POWER TAKEOFF		POWER TAKEOFF DIMENSIONS		TYPE				
Rotary actuator series R4	0A	F03	032	Ø 32	G	Supply port threading G (BSP)	Q0	Star type (double square 45° offset)	09	9 mm	DA	Double-acting		
	0B	F04	042	Ø 42					11	11 mm			SR	Single-acting
	0D	F05 - F07	050	Ø 50					14	14 mm				
	0E	F07 - F10	063	Ø 63					17	17 mm				
	0F	F10 - F12	075	Ø 75					22	22 mm				
	AC	F03 - F05	085	Ø 85										
	AD	F03 - F05 - F07	100	Ø 100										
	DE	F05 - F07 - F10	115	Ø 115										
			125	Ø 125										
			145	Ø 145										

N.B.: The orderable configurations are shown on the previous pages.

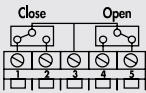
NOTES

ACCESSORIES PARTS FOR ACTUATED VALVES SERIES RV-FLUID

VALVES

ACCESSORIES AND SPARES PARTS FOR ACTUATED VALVES SERIES RV-FLUID

SWITCH BOX WITH ELECTROMECHANICAL MICROSWITCHES FOR ACTUATOR



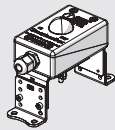
Voltage: max 125/250 VAC
Current: min 30 mA
 max 2.5 A
Temperature: -25°C to +125°C
Charge: IP67



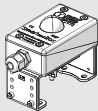
Code	Description	Weight [g]
W0900300915	Switch box with electromechanical microswitches for actuator bore 32	196



W0900300916	Switch box with electromechanical microswitches for actuator bore 42 - 63	152
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W0900300917	Switch box with electromechanical microswitches for actuator bore 115 - 145	384
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W0900300919	Switch box with electromechanical microswitches for actuator bore 75 - 100	384
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Note: switch boxes with inductive sensors and Atex certification are available on request.

POSITION INDICATOR FOR ACTUATOR



Code	Description	Weight [g]
W0900300930	Position indicator for actuator bore 32 - 63	16



W0900300931	Position indicator for actuator bore 75 - 100	22
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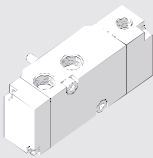
W0900300933	Position indicator for actuator bore 32 - 100 (only without switch box)	52
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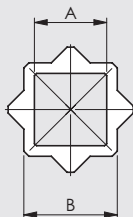
W0900300932	Position indicator for actuator bore 115 - 145	26
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CONTROL VALVES WITH NAMUR INTERFACE

Refer to page B1.53



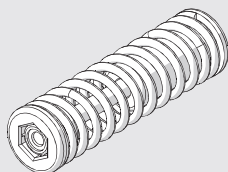
KIT SQUARED ADAPTOR



Code	Description	A	B	L	Weight [g]
W0900301001	Kit squared adaptor RV-FLUID 08/11	8	11	12	7
W0900301002	Kit squared adaptor RV-FLUID 09/11	9	11	12	6
W0900301006	Kit squared adaptor RV-FLUID 09/13	9	13	12	11
W0900301007	Kit squared adaptor RV-FLUID 11/13	11	13	12	7
W0900301008	Kit squared adaptor RV-FLUID 11/14	11	14	16	13
W0900301003	Kit squared adaptor RV-FLUID 14/17	14	17	17	19
W0900301005	Kit squared adaptor RV-FLUID 14/22	14	22	22	65
W0900301009	Kit squared adaptor RV-FLUID 16/22	16	22	22	52
W0900301004	Kit squared adaptor RV-FLUID 17/22	17	22	22	48

Note: adaptors according to ISO 5211 - DIN 3337 in AISI 316 stainless steel

SPRINGS KIT FOR SINGLE-ACTING VERSION

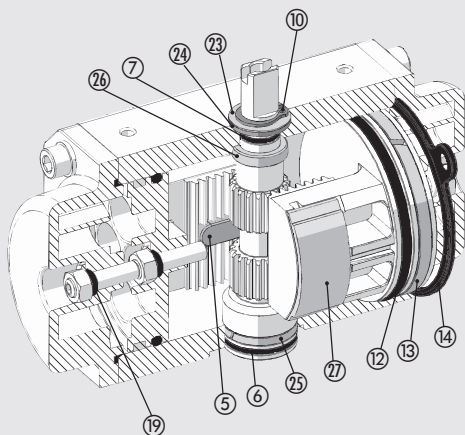


Code	Ø	Quantity per kit
W0900303002	42	8
W0900303003	50	12
W0900303004	63	12
W0900303005	75	12
W0900303006	85	12
W0900303007	100	12
W0900303008	115	12
W0900303009	125	12
W0900303010	145	12

Note: the springs are supplied pre-compressed with a special support to facilitate installation. Do not remove the spring from its support for any reason whatsoever.

SPARES PARTS FOR ACTUATED VALVES SERIES RV-FLUID

GASKETS KIT AND SLIDING ELEMENTS



Code	Ø	Parts
W0900302001	32	6-7-10-12-13-14-19-23-24-25-26-27
W0900302002	42	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302003	50	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302004	63	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302005	75	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302006	85	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302007	100	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302008	115	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302009	125	5-6-7-10-12-13-14-19-23-24-25-26-27
W0900302010	145	5-6-7-10-12-13-14-19-23-24-25-26-27



● SYNTESI	C1
● BIT	C2
● SKILLAIR	C3
● NEW DEAL	C4
● ONE	C5
● PRECISION REGULATORS AND PRESSURE CONTROL	C6
● FLOW AND PRESSURE SENSORS	C7

SUMMARY Syntesi®

● GENERAL TECHNICAL DATA Syntesi® C1.4

● Syntesi® KEY TO CODES C1.8



● Syntesi® FILTER  C1.9



● Syntesi® DEPURATOR  C1.12



● Syntesi® ACTIVE CARBON FILTER  C1.15



● Syntesi® REGULATOR  C1.18



● Syntesi® IN-SERIES REGULATOR  C1.21



● Syntesi® PILOT OPERATED REGULATOR  C1.24



● PROPORTIONAL PRECISION PRESSURE REGULATOR SYNTRONIC SERIES  C6.19



● Syntesi® FILTER-REGULATOR  C1.28



● Syntesi® LUBRICATOR  C1.33



● Syntesi® SHUT-OFF-VALVE  C1.36



● Syntesi® PROGRESSIVE STARTER  C1.39



● Syntesi® PRESSURE SWITCHES

 C1.41



● Syntesi® AIR TAKE-OFF

2 WAYS 4 WAYS

C1.43



● FR + LUB Syntesi®

 C1.45



● V3V + FR + LUB Syntesi®

 C1.48



● FIL + DEP Syntesi®

 C1.51



● FIL + LUB Syntesi®

 C1.53

● Syntesi® ACCESSORIES

 C1.55

● Syntesi® SPARE PARTS

 C1.58

Syntesio® is an important milestone achieved by Metal Work, the result of thirty years' experience producing air-treatment units. It has been studied in minute detail to obtain the best possible performance in a reduced space and with limited weight. The capacity is much higher than that of other units of the same size.

This modular unit features a very simple yet effective system that requires no brackets, stay bolts or yoke for assembling the elements.

The basic version of Syntes® incorporates numerous functions that are not provided or are only optional with traditional units. Examples are padlockable knobs, additional pneumatic ports on the front and back, flow options from left to right or vice versa, regulators with compensation system - which are accurate even when the upstream pressure changes, with rapid downstream pressure relief - full indelible marking, automatic condensate drain even in size 1, and 360° visual inspection of oil and condensate levels. The basic materials, technopolymer and nickel-plated brass have excellent corrosion resistance. An anti-corrosion version is available with stainless steel components (screws, plates) or Geomet®-reated ones (regulator springs).



UNITS

GENERAL TECHNICAL DATA Syntesi®

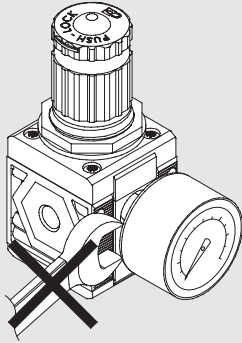
[illegible]

ANTI-CORROSION VERSION

Differences compared to the standard version:

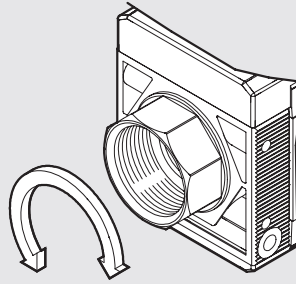
- stainless steel screws
- stainless steel plate for R, FR, V3V knobs
- Geomet[®]-treated regulator spring and filter-regulator

FIXING TO FRONT PORTS



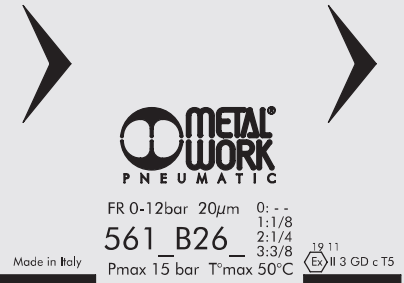
Do not use a spanner for fixing taper threaded elements to the front ports. Mount by hand and apply a liquid sealant (not teflon®).

ROTARY BUSHINGS



3/4" and 1" bushings in Size 2 rotate freely to facilitate assembly operations.

LASER MARKING

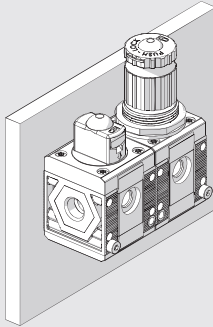


The following is marked indelibly on the body:

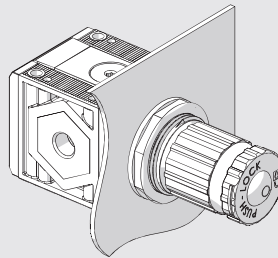
- Metal Work trademark
- Code
- Maximum pressure and temperature
- Degree of filtration or pressure range, where relevant
- Week and year of manufacture
- Atex category
- Made in Italy

MOUNTING OPTIONS

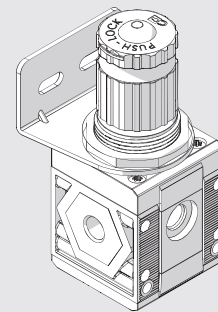
On the wall, using two screws



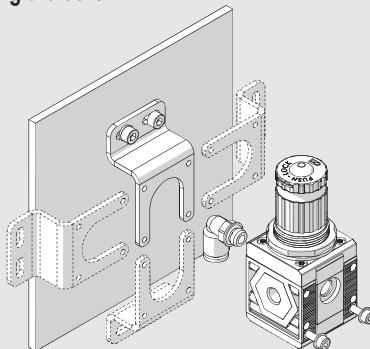
On a panel



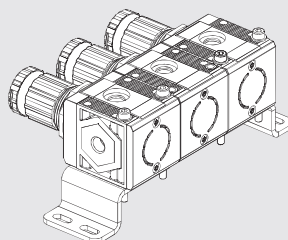
Using knob bracket



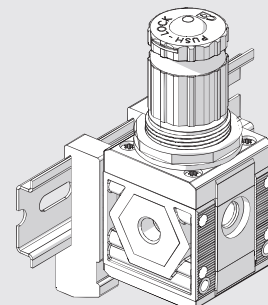
Using a bracket



The bracket can be secured in any position, and the fittings can be mounted on the pressure gauge air intake at the back of the unit.



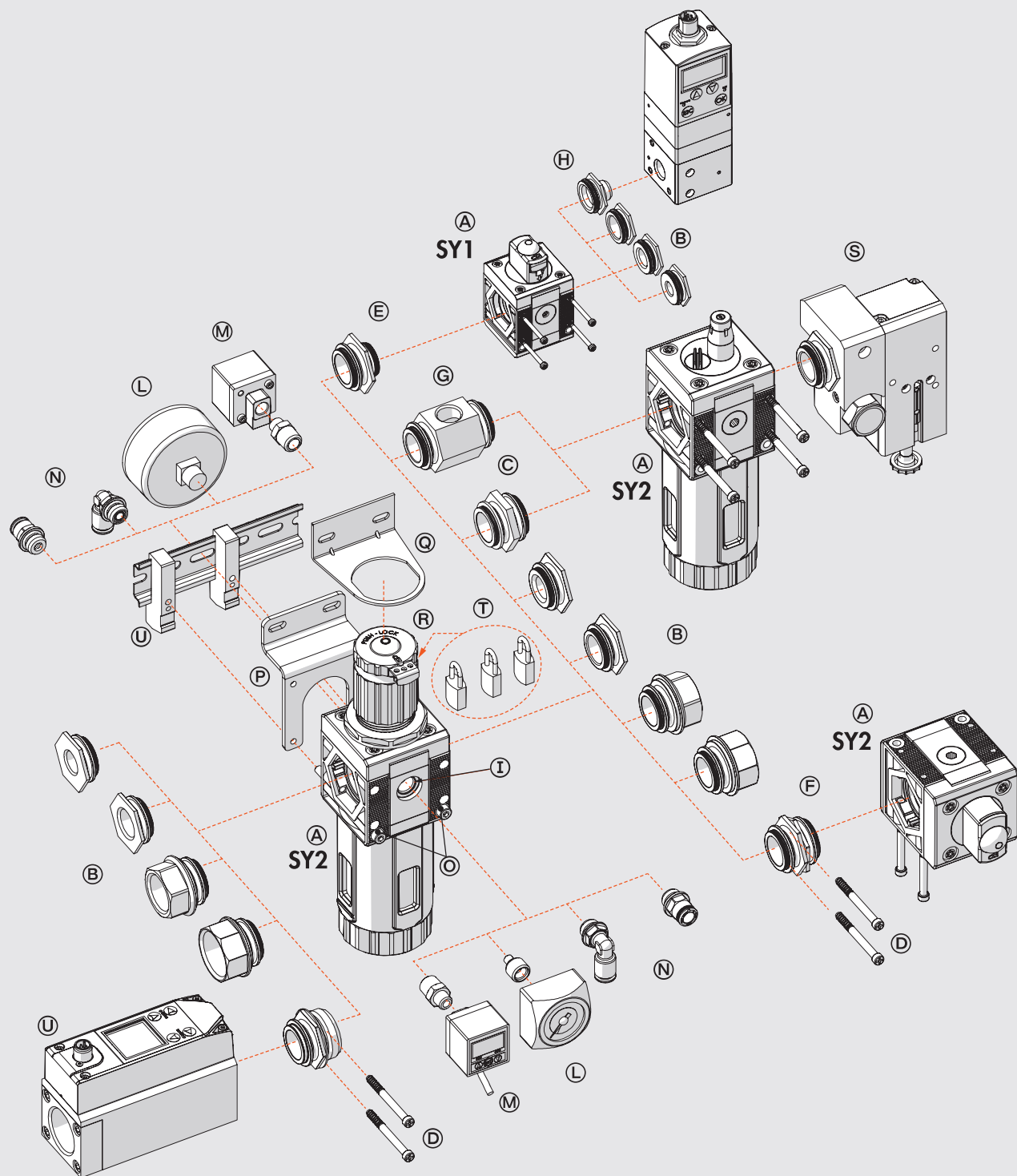
On a DIN EN50022 bar with the apposite adaptor



MODULARITY AND FLEXIBILITY

UNITS

GENERAL TECHNICAL DATA Syntesi®



The various elements of Syntesi® ④ can be connected to the air feed and delivery circuit using pneumatic nickel brass or passivated aluminium ports ⑤ and can be fixed together using nipples ⑥.

The nipples and ports are easy to remove by unscrewing the two front screws ⑦. This solution has numerous advantages:

- Reduced overall dimensions.
- Free composition of multiple elements, without the need for brackets, stay bolts or yoke.
- The threads for the fittings are metallic, allowing high tightening torques, also for tapered threads.
- Maximum flexibility: a unit can be transformed at any time by adding an element or replacing a port with another one, e.g. 1/4" instead of 1/8".
- The air intake port can be the same or different from the outlet port, as desired.

Standard Syntesi® ports are: 1/8", 1/4", 3/8" for size 1; 3/8", 1/2", 3/4", 1" for size 2.

It may be necessary to use a vice to insert the bushes into size 2.

The nipples have different functions:

- Nipple ⑥ joins two elements of the same size together.
- Size adaptor ⑧ can be used to connect an element in the Syntesi® 2 series with one in the Syntesi® 1 series.
- The 90° adaptor ⑨ can be used to connect two 90° angled elements. For example, it can help directing the regulator knob or the control knob of a sectioning valve towards the user.
- The two-way air intake ⑩ is a simple and cost-effective system which, besides connecting two elements together, has 2 opposing threaded air intakes.
- The adaptor for Regtronic ⑪ can be used to fix the Regtronic 1/4" proportional valve to a Syntesi® size 1 element.

Additional ports ⑫. On the front and back of ALL Syntesi® elements there is a port (1/8" for size 1, 1/4" for size 2) that can be used for pressure gauges ⑬, pressure switches ⑭ or, given the high flow rate, as additional air take-off ⑮. These ports are downstream of the element, so, for example, a regulator port can supply air at a set pressure or a filter port can supply filtered air (not valid for activated carbon filter and depurator).

Wall fixing. Only two through screws ⑦ are needed. No bulky brackets or additional flanges are required. The bracket ⑯ can be used to separate the unit from the fixing wall, e.g. to mount a fitting to the rear port.

Fixing on a DIN EN50022 bar. Can be done using the bracket kit ⑰.

Regulator fixing bracket ⑱. Regulators and filter-regulators can also be fixed using a steel bracket ⑱ that embraces the bell.

Padlockable knob ⑲. The knobs of regulators, filter-regulator and sectioning valves can all be padlocked. The steel plate is included in the supply. You can insert up to two 3 mm diameter padlocks ⑲ on size 1 and three padlocks on size 2. As an alternative, the sectioning valve can have a steel plate suitable for a single 6 mm diameter padlock.

Safety valve ⑳. The unit can incorporate a series 70 SAFE AIR® safety valve.

Flowmeter series FLUX 1-2 ㉑. The unit can incorporate a series FLUX 1 or FLUX 2 flow meter.

SYNTESI® KEY TO CODES

KEY TO CODES SINGLE ELEMENT

56	1	1	F	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	F Filter	Varies from element to element	0 Without bushing
5X Syntesi		1 1/8" port	D Depurator		1 1/8" port
anti-corrosion		2 1/4" port	C Active carbon filter		2 1/4" port
		3 3/8" port	R Pressure regulator		3 3/8" port
	2 Size 2	0 Without bushing	B Filter-regulator		0 Without bushing
		3 3/8" port	L Lubricator		3 3/8" port
		4 1/2" port	● V Shut off valve		4 1/2" port
		5 3/4" port	▲ A Progressive starter		5 3/4" port
		6 1" port	▲ S Pressure switches		6 1" port
			P Air take-off		
			▲■ G Syntronic		

- The anti-corrosion version of this element is only available in manual or pneumatic type.
- ▲ Not available in the anti-corrosion version.
- Not available in size 2.

KEY TO CODES UNIT COMPOSED OF TWO OR THREE ELEMENTS

56	1	1	V	10	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT 1	TYPE	ELEMENT 2	TYPE	ELEMENT 3	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port	F Filter	Varies from element to element	F Filter	Varies from element to element	F Filter	Varies from element to element	1 1/8" port
5X Syntesi		2 1/4" port	D Depurator		D Depurator		D Depurator		2 1/4" port
anti-corrosion		3 3/8" port	C Active carbon filter		C Active carbon filter		C Active carbon filter		3 3/8" port
		3 3/8" port	R Pressure regulator		R Pressure regulator		R Pressure regulator		3 3/8" port
	2 Size 2	3 3/8" port	B Filter-regulator		B Filter-regulator		B Filter-regulator		3 3/8" port
		4 1/2" port	L Lubricator		L Lubricator		L Lubricator		4 1/2" port
		5 3/4" port	● V Shut off valve		● V Shut off valve		● V Shut off valve		5 3/4" port
		6 1" port	▲ A Progressive starter		▲ A Progressive starter		▲ A Progressive starter		6 1" port
			▲ S Pressure switches		▲ S Pressure switches		▲ S Pressure switches		
			P Air take-off		P Air take-off		P Air take-off		
			▲■ G Syntronic		▲■ G Syntronic		▲■ G Syntronic		

- The anti-corrosion version of this element is only available in manual or pneumatic type.
- ▲ Not available in the anti-corrosion version.
- Not available in size 2.

The job of the filter is to retain liquid or solid impurities present in the compressed air. The incoming air is moved by the centrifuge unit, so that liquid particles, which are heavier, are projected against the walls of the container and force to adhere to it. As they accumulate, they create drops that deposit on the bottom by gravity.

The remaining solid particles are held back by the porous filtering element. The condensate is maintained in a quiet state to prevent the deposited impurities from re-entering the circulation. The condensate drains out through the drain cock provided.

The RMSA drain discharges when the pressure in the filter drops to zero. Alternatively the condensate can be drained by hand by pressing the button.

The RA drain discharges condensate from the container automatically whenever necessary, regardless of the pressure level.

The SAC tap drains the condensate only as the result of sudden changes in compressed air requests.

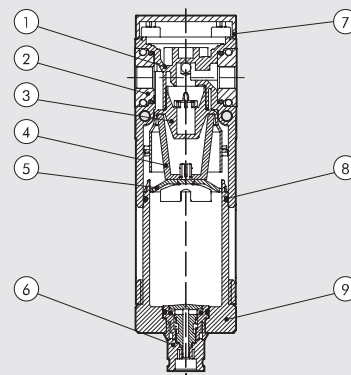
On the front and back there is a port (1/8" for size 1 and 1/4" for size 2) that can be used with pressure gauges, pressure switches or as an additional filtered air intake.



TECHNICAL DATA		FIL SY1			FIL SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.4 20 (white) - output air purity class ISO8573-1: 4.7.4 50 (blue) - output air purity class ISO8573-1: 5.7.4						
Max. input pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1200	1300	3400	3800	3800	
	scfm	32	42	46	120	135	135	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1300	1650	1750	4500	5200	5200	
	scfm	46	58	62	159	184	184	
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Weight	g	178	173	164	488	461	457	445
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs. Note: the maximum input pressure for the RA version must not exceed 10 bar Compressed air or other inert gases						
Fluid								
Condensate bowl capacity	cm³	30			70			
Mounting position		Vertical			Vertical			
Port for additional air take-off		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500			1500			
	scfm	18			53			

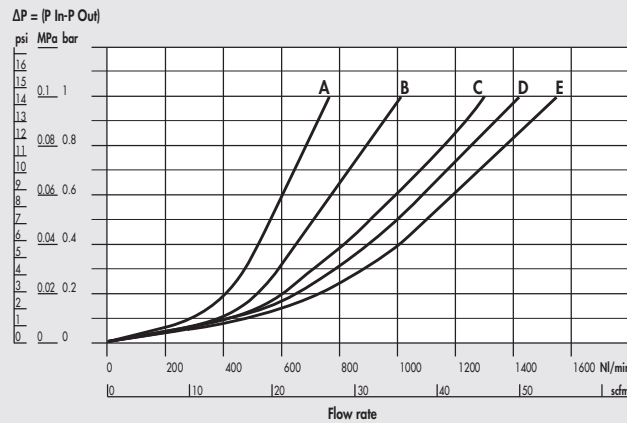
COMPONENTS

- ① Technopolymer filter body
- ② IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ③ Technopolymer centrifuge
- ④ Sintered HDPE filter cartridge
- ⑤ Technopolymer screen
- ⑥ Drain (RMSA)
- ⑦ Technopolymer plate
- ⑧ NBR o-ring gaskets
- ⑨ Clear technopolymer bowl

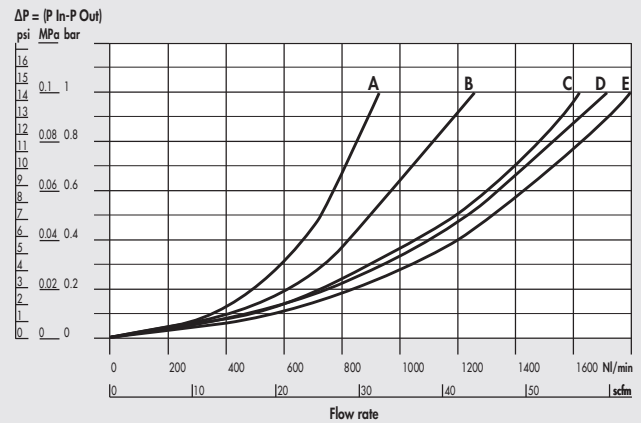


FLOW CHARTS

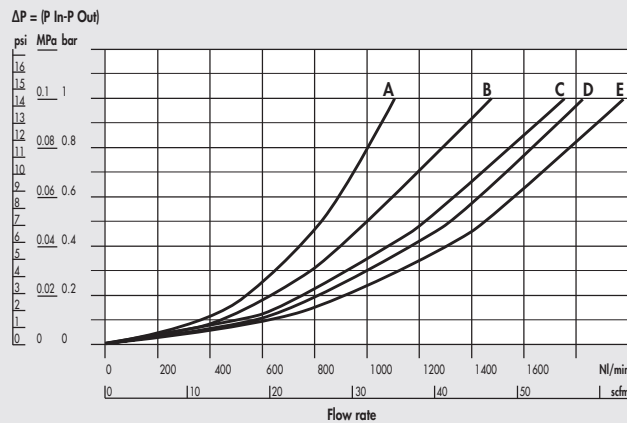
FIL Syntesi® SY1 1/8"



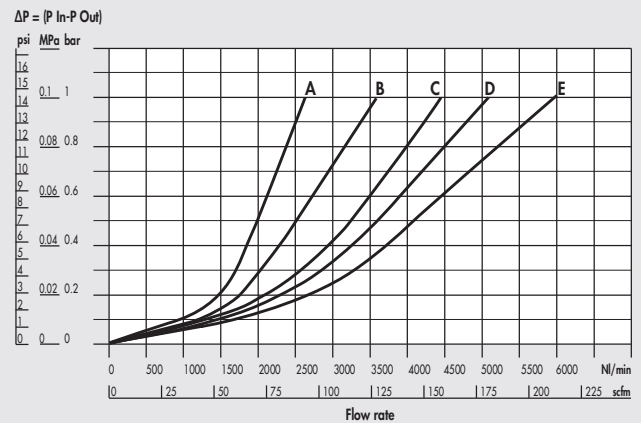
FIL Syntesi® SY1 1/4"



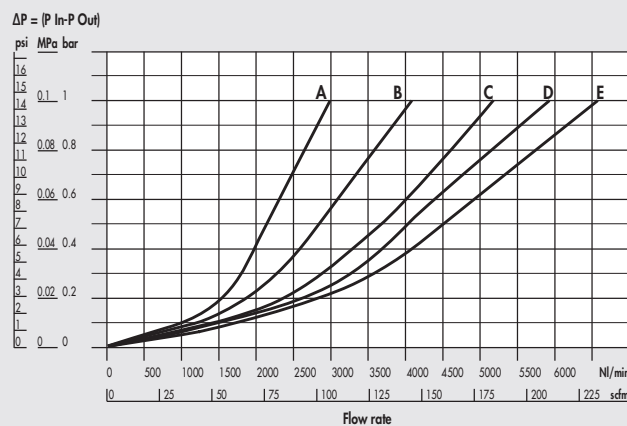
FIL Syntesi® SY1 3/8"



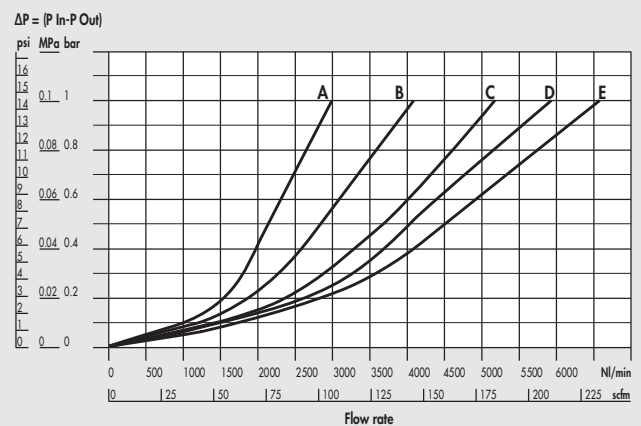
FIL Syntesi® SY2 3/8"



FIL Syntesi® SY2 1/2"



FIL Syntesi® SY2 3/4"-1"

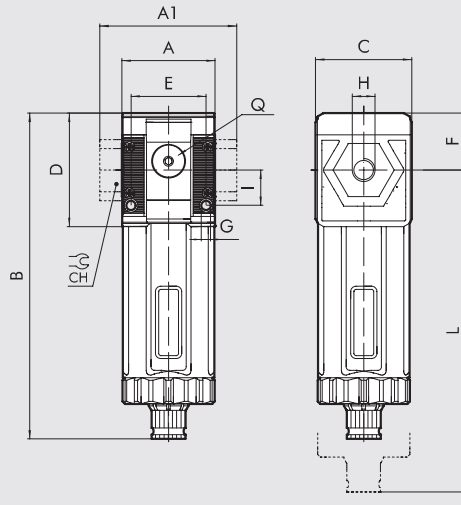


A = 2.5 bar - 0.25 MPa - 36 psi
 B = 4 bar - 0.4 MPa - 58 psi

C = 6.3 bar - 0.63 MPa - 91 psi
 D = 8 bar - 0.8 MPa - 116 psi

E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	RMSA			178			
	RA/SAC			182			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	RMSA			202			
	RA/SAC			206			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	F	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	F Filter	10 5 µm, RMSA 20 20 µm, RMSA 30 50 µm, RMSA 40 5 µm, RA 50 20 µm, RA 60 50 µm, RA 11 5 µm, SAC 21 20 µm, SAC 31 50 µm, SAC	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port
	2 Size 2	0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port			0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

SAC: Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

UNITS

Syntesi® FILTER

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	Code	Description
Syntesi® SY1 FILTER		Syntesi® SY2 FILTER		Syntesi® SY2 FILTER	
5610F100	FIL SY1 5 RMSA without bushings	5620F100	FIL SY2 5 RMSA without bushings	5626F106	FIL SY2 1 5 RMSA
5610F200	FIL SY1 20 RMSA without bushings	5620F200	FIL SY2 20 RMSA without bushings	5626F206	FIL SY2 1 20 RMSA
5610F400	FIL SY1 5 RA without bushings	5620F400	FIL SY2 5 RA without bushings	5626F406	FIL SY2 1 5 RA
5610F500	FIL SY1 20 RA without bushings	5620F500	FIL SY2 20 RA without bushings	5626F506	FIL SY2 1 20 RA
5611F101	FIL SY1 1/8 5 RMSA	5623F103	FIL SY2 3/8 5 RMSA		
5611F201	FIL SY1 1/8 20 RMSA	5623F203	FIL SY2 3/8 20 RMSA		
5611F401	FIL SY1 1/8 5 RA	5623F403	FIL SY2 3/8 5 RA		
5611F501	FIL SY1 1/8 20 RA	5623F503	FIL SY2 3/8 20 RA		
5612F102	FIL SY1 1/4 5 RMSA	5624F104	FIL SY2 1/2 5 RMSA		
5612F202	FIL SY1 1/4 20 RMSA	5624F204	FIL SY2 1/2 20 RMSA		
5612F402	FIL SY1 1/4 5 RA	5624F404	FIL SY2 1/2 5 RA		
5612F502	FIL SY1 1/4 20 RA	5624F504	FIL SY2 1/2 20 RA		
5613F103	FIL SY1 3/8 5 RMSA	5625F105	FIL SY2 3/4 5 RMSA		
5613F203	FIL SY1 3/8 20 RMSA	5625F205	FIL SY2 3/4 20 RMSA		
5613F403	FIL SY1 3/8 5 RA	5625F405	FIL SY2 3/4 5 RA		
5613F503	FIL SY1 3/8 20 RA	5625F505	FIL SY2 3/4 20 RA		

NOTE

Anti-corrosion version

5X

Example

5X11F101 FIL SY1 1/8 5 RMSA anti-corrosion

SYNTESI® DEPURATOR

The job of the filter purifier is to separate liquid and solid particles dispersed in the compressed air with a high degree of efficiency. This separation is achieved by means of a special filtering element called a "coalescence cartridge".

It is particularly indicated for eliminating traces of oil present in the compressed air. The air flow rate must remain below the maximum values to achieve the desired degree of purification. Beyond this value, there may be a decline in the quality of air from the purifier.

On the front and back there is a port (1/8" for size 1 and 1/4" for size 2) that can be used with pressure gauges, pressure switches or as an additional air intake. **The air taken from here is not purified.**



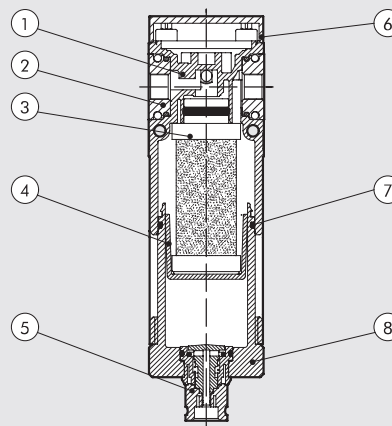
UNITS

Syntesi® DEPURATOR

TECHNICAL DATA		DEP SY1			DEP SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	0.01 - output air purity class ISO8573-1: 1.7.2 1 - output air purity class ISO8573-1: 3.7.3						
Max. input pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	460			620			
	scfm	9			37			
Maximum suggested flow rate		See graph on the next page						
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	N.B.: flow rates higher than the recommended value reduces purification efficiency From -10 to +50						
Weight	g	194	189	180	483	456	452	440
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.						
Fluid		Compressed air or other inert gases						
Bowl capacity	cm³	15			40			
Mounting position		Vertical			Vertical			
Port for additional air take-off (not purified air)		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar	Nl/min	500			1500			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Notes on use		It is advisable to mount a 5 µm filter upstream of the purifier to retain solid particles						

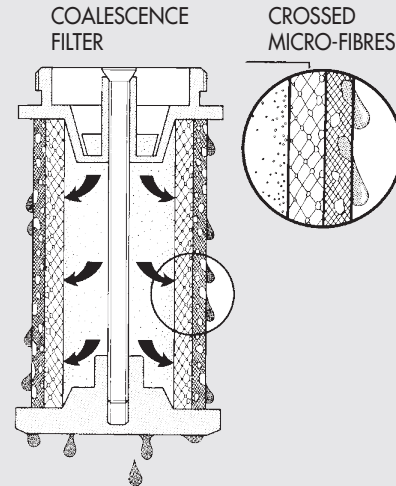
COMPONENTS

- ① Technopolymer depurator body
- ② IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ③ Coalescence cartridge
- ④ Technopolymer cartridge support
- ⑤ Drain (RMSA)
- ⑥ Technopolymer plate
- ⑦ NBR o-ring gaskets
- ⑧ Clear technopolymer bowl



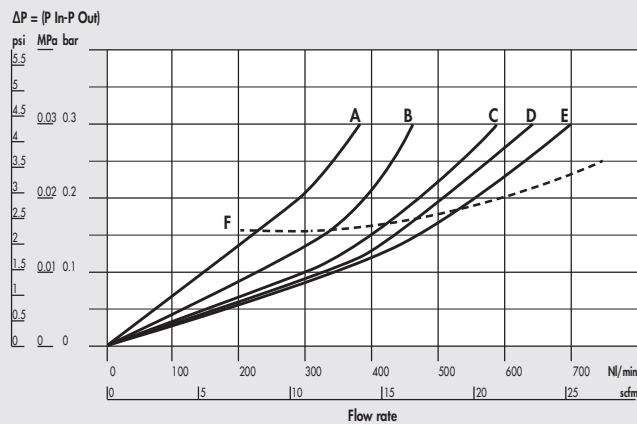
HOW THE COALESCENCE CARTRIDGE WORKS

Air from the mains – full of impurities – flows into the coalescence cartridge and then passes through the crossed micro-fibres that make up the cartridge. During this movement the liquid particles come into contact with the crossed micro-fibres and adhere to them. Due to the air pressure and gravity they join up with other micro-drops at each cross-over point and gradually increase in volume, leading to the physical phenomenon called coalescence. When they stop moving, the drops deposit on the outside of the cartridge, from which they detach and drop to the bottom. Since the volume of liquid leaving the cartridge is exactly the same as the drops arriving, the coalescence cartridge ought to work indefinitely. Solid particles are caught with the same efficiency but, unlike drops, they are not drained out and clog the cartridge. To get round this problem, it is necessary to mount a 5µm prefilter before the fine oil filter to separate the solid particles first.

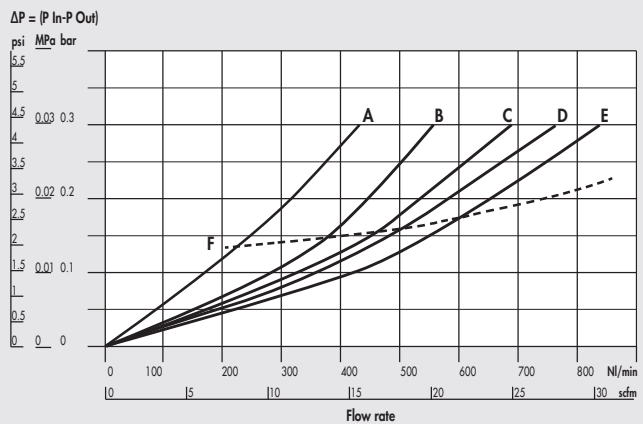


FLOW CHARTS

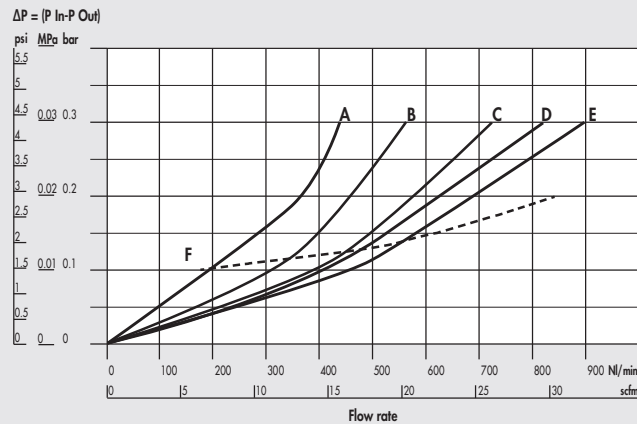
DEP Syntesi® SY1 1/8"



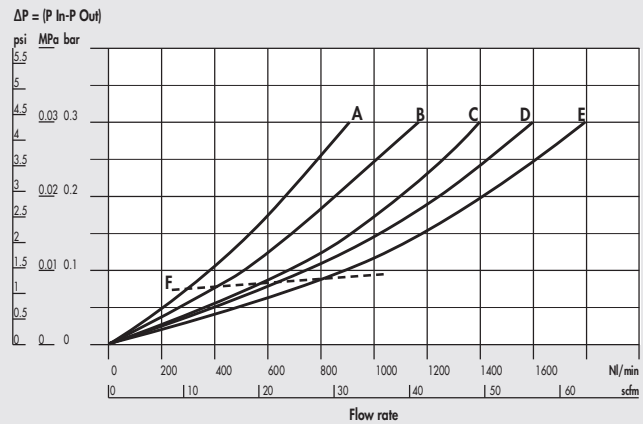
DEP Syntesi® SY1 1/4"



DEP Syntesi® SY1 3/8"



DEP Syntesi® SY2 3/8"

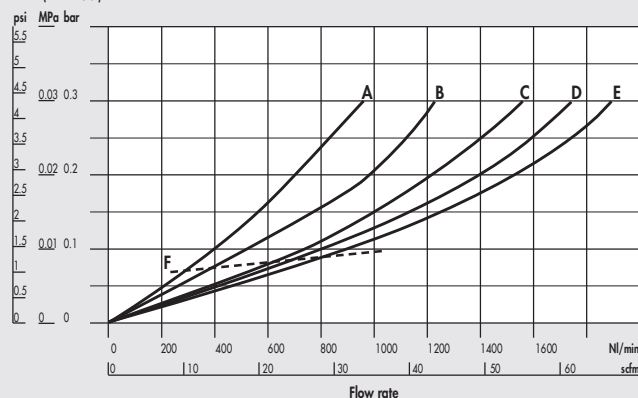


A = 2.5 bar - 0.25 MPa - 36 psi
B = 4 bar - 0.4 MPa - 58 psi

C = 6.3 bar - 0.63 MPa - 91 psi
D = 8 bar - 0.8 MPa - 116 psi

E = 10 bar - 1 MPa - 145 psi
F = max suggested flow

DEP Syntesi® SY2 1/2"

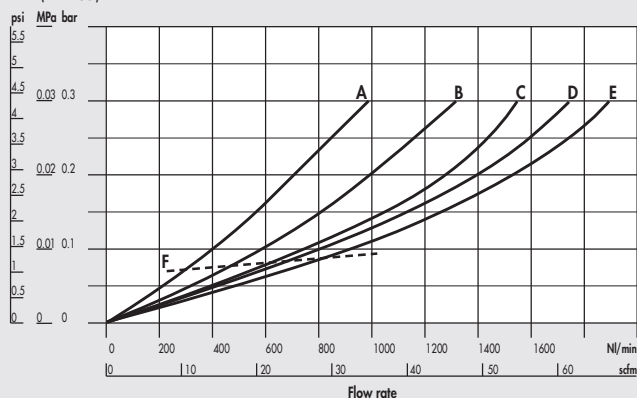
 $\Delta P = (P \text{ In-P Out})$ 

A = 2.5 bar - 0.25 MPa - 36 psi
 B = 4 bar - 0.4 MPa - 58 psi

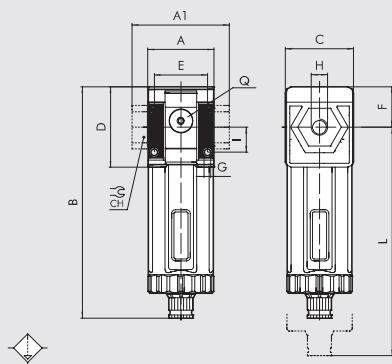
C = 6.3 bar - 0.63 MPa - 91 psi
 D = 8 bar - 0.8 MPa - 116 psi

E = 10 bar - 1 MPa - 145 psi
 F = max suggested flow

DEP Syntesi® SY2 3/4" - 1"

 $\Delta P = (P \text{ In-P Out})$ 

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42					60.5	
A1	-	-	44	-	-	95	95
B	RMSA 148			178			
	SAC 152			182			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	RMSA 202			245			
	SAC 206			249			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	D	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	D Depurator	10 0.01 μm RMSA	0 Without bushing
5X Syntesi		1 1/8" port		11 0.01 μm SAC	1 1/8" port
anti-corrosion		2 1/4" port		30 1 μm RMSA	2 1/4" port
		3 3/8" port		31 1 μm SAC	3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
Syntesi® SY1 DEPURATOR		Syntesi® SY2 DEPURATOR		Anti-corrosion version
5610D100	DEP SY1 RMSA without bushings	5620D100	DEP SY2 RMSA without bushings	5X-----
5611D101	DEP SY1 1/8 RMSA	5623D103	DEP SY2 3/8 RMSA	Example
5612D102	DEP SY1 1/4 RMSA	5624D104	DEP SY2 1/2 RMSA	5X11D101
5613D103	DEP SY1 3/8 RMSA	5625D105	DEP SY2 3/4 RMSA	DEP SY1 1/8 RMSA anti-corrosion
		5626D106	DEP SY2 1 RMSA	

SYNTESI® ACTIVE CARBON FILTER



Activated-carbon filtering systems achieve the highest standard of purification possible in industrial applications. They eliminate all traces of oils, solvents and hydrocarbons, and remove unpleasant odours. The operating principle uses activated carbon, which absorbs most of the polluting particles in the air thanks to minute holes in the granules of carbon.

On the front and back there is a port (1/8" for size 1 and 1/4" for size 2) that can be used with pressure gauges, pressure switches or as an additional air intake. **The air taken from here is not filtered by the activated-carbon cartridge.**

Cartridge life and efficiency can be increased by using pre-filtered (5µm) and purified (0.01µm) air.

The cartridge must be replaced at set intervals as there is no difference in load loss between an efficient cartridge and a saturated one.

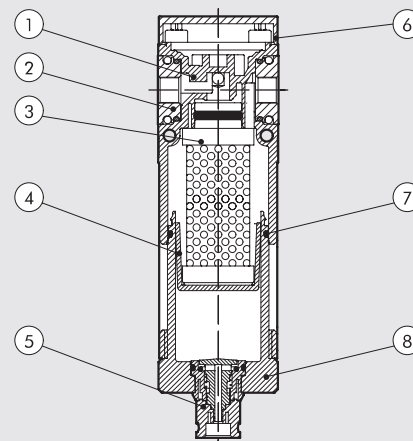
N.B.: to ensure the performance and duration stated on the data sheet, the load loss (ΔP) must not exceed 75 mbar.



TECHNICAL DATA		FIL CA SY1			FIL CA SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Residual oil at 20°C *	mg/m ³	0.003 - output air purity class ISO8573-1: 1.7.1						
Duration of cartridge *	hours	4000			4000			
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	350			800			
	scfm	12			28			
N.B.: flow rates higher than the recommended value reduces purification efficiency								
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Weight	g	195	190	181	483	456	452	440
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure						
Fluid		0.01 µm filtered and deperated air						
Mounting position		In any position			In any position			
Additional air take-off port (unfiltered air from cartridge CA)		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500			1500			
	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Notes on use		Upstream it's necessary to mount a coalescence filter depurator of 0.01µm.						
* if the load loss of 75 mbar is not exceeded								

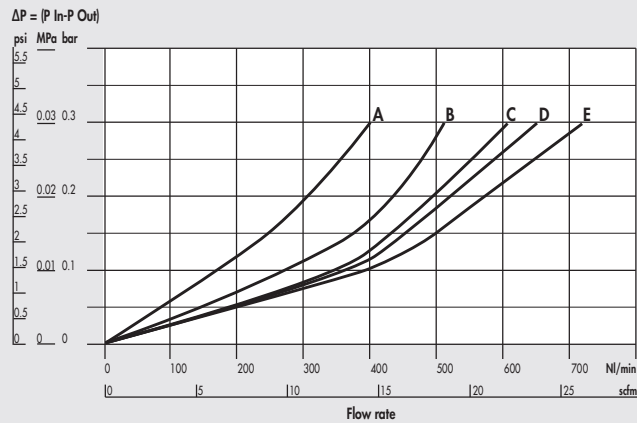
COMPONENTS

- ① Technopolymer depurator body
- ② IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ③ Active carbon cartridge
- ④ Technopolymer cartridge support
- ⑤ Drain (RMSA)
- ⑥ Technopolymer plate
- ⑦ NBR o-ring gasket
- ⑧ Clear technopolymer bowl

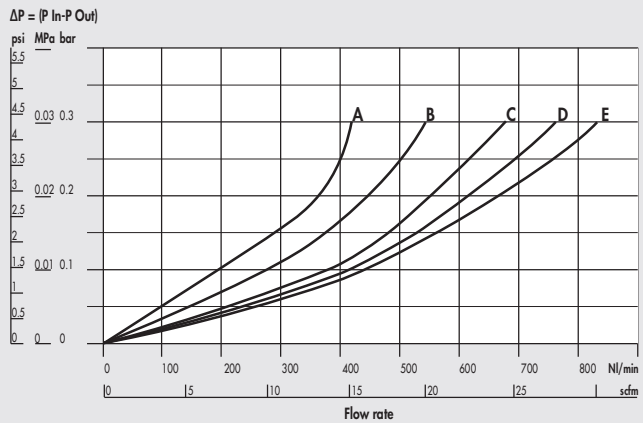


FLOW CHARTS

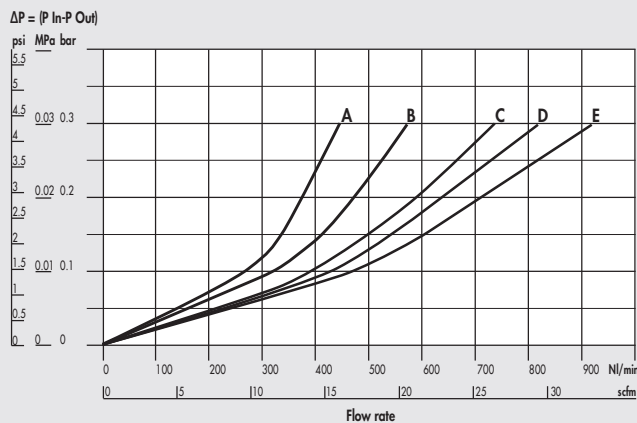
FIL CA Syntesi® SY1 1/8"



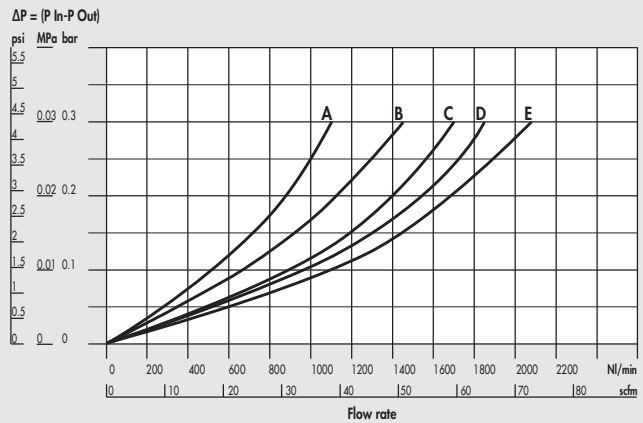
FIL CA Syntesi® SY1 1/4"



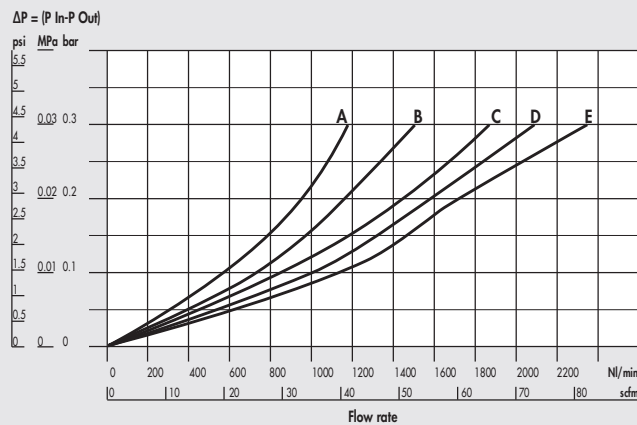
FIL CA Syntesi® SY1 3/8"



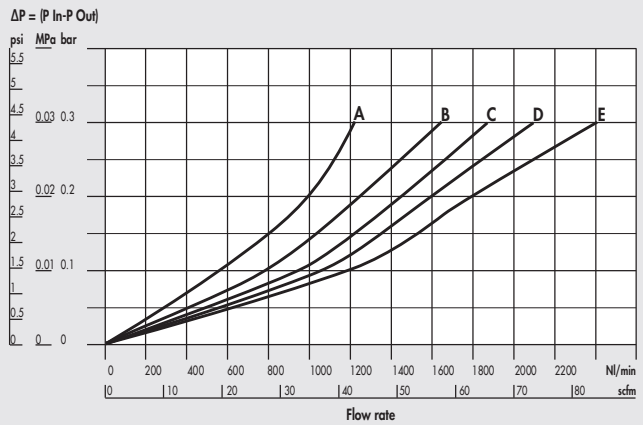
FIL CA Syntesi® SY2 3/8"



FIL CA Syntesi® SY2 1/2"



FIL CA Syntesi® SY2 3/4" - 1"

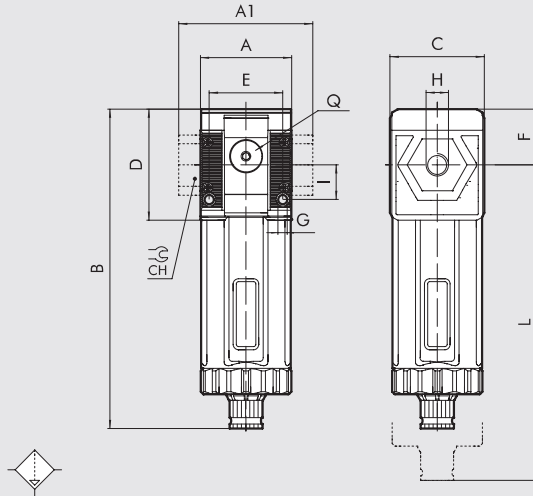


A = 2.5 bar - 0.25 MPa - 36 psi
 B = 4 bar - 0.4 MPa - 58 psi

C = 6.3 bar - 0.63 MPa - 91 psi
 D = 8 bar - 0.8 MPa - 116 psi

E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42				60.5		
A1	-	-	44	-	-	95	95
B	RMSA				178		
C			44		61		
CH			-	-	-	32	36
D		51.5			70.5		
E		33.5			47.5		
F		25.8			38.2		
G		Hole for M4 screws			Hole for M5 screws		
I		16			22.5		
L		RMSA				245	
Q (no. 2 additional air takes-off)		1/8"			1/4"		

KEY TO CODES

56	1	1	C	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	C Active carbon filter	10 RMSA	0 Without bushing
5X Syntesi anti-corrosion		1 1/8" port			1 1/8" port
		2 1/4" port			2 1/4" port
		3 3/8" port			3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

RMSA: Drain with manual condensate discharge and automatic discharge at zero pressure.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
FILTRO CARBONI ATTIVI Syntesi® SY1		FILTRO CARBONI ATTIVI Syntesi® SY2		Anti-corrosion version
5610C100	AC SY1 RMSA without bushings	5620C100	AC SY2 RMSA without bushings	5X-----
5611C101	AC SY1 1/8 RMSA	5623C103	AC SY2 3/8 RMSA	Example
5612C102	AC SY1 1/4 RMSA	5624C104	AC SY2 1/2 RMSA	5X11C101 AC SY1 1/8 RMSA anti-corrosion
5613C103	AC SY1 3/8 RMSA	5625C105	AC SY2 3/4 RMSA	
		5626C106	AC SY2 1 RMSA	

UNITS

Syntesi® REGULATOR

Syntes® pressure regulator is based on the rolling diaphragm principle, which offers numerous advantages compared to systems using a flat diaphragm:

- Increased stroke, allowing wider valve aperture and hence greater flow rate.
- Decreased dynamic and pick-up friction, and hence quicker response and enhanced sensitivity.
- Greater accuracy in maintaining the pressure setting, both with both variable flow rates and different supply pressures.

The regulator includes a compensation system that keeps the pressure setting virtually constant, even when the upstream pressure changes. This is achieved mainly by the design of the valve, which is pneumatically balanced.

If the downstream pressure rises above the threshold value, the air is discharged (relief valve) until it drops below the maximum value.

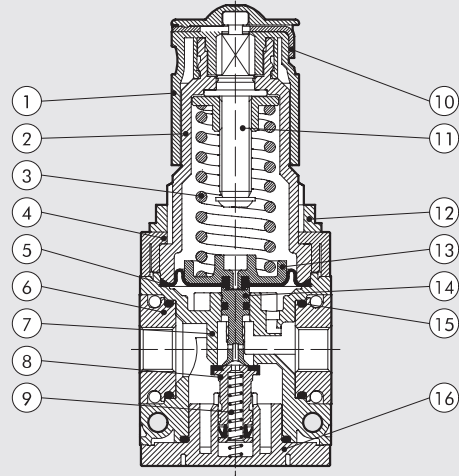
A special device relieves downstream pressure rapidly when the upstream pressure drops to zero. This means the regulator can be positioned between a valve and a cylinder because the air can flow in both directions, towards the cylinder with regulated pressure, or return towards the valve during relief.

The knob is the push-lock type – once the pressure has been set, press it and it locks in position. In this position you can pull out the plate and attach two padlocks on size 1 or three padlocks on size 2 in order to avoid possible tampering. On the front and back there is a port (1/8" for size 1 and 1/4" size 2) that can be used with pressure gauges, pressure switches or as an additional regulated air intake.

[illegible]

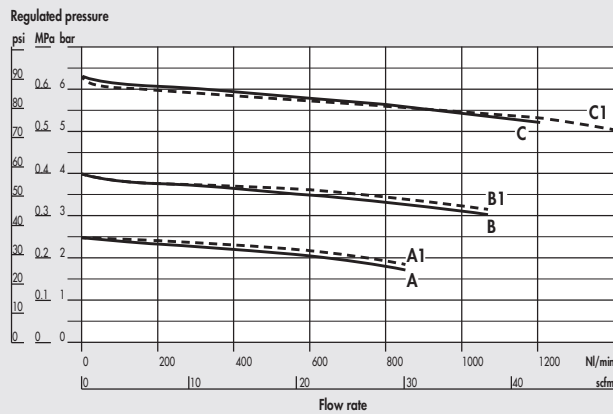
COMPONENTS

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring (with Geomet® treatment for anti-corrosion version)
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑦ Technopolymer regulator body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ NBR o-ring gasket
- ⑯ Technopolymer plug

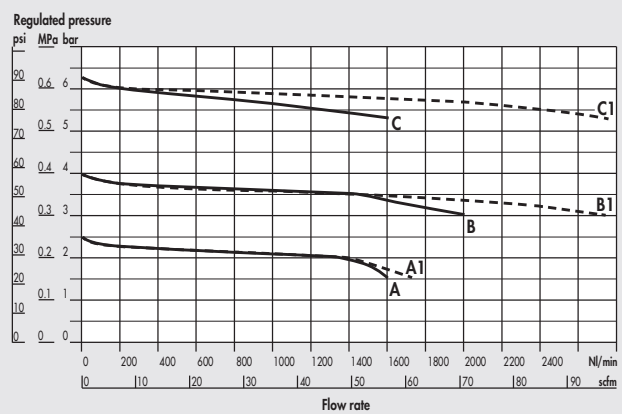


FLOW CHARTS

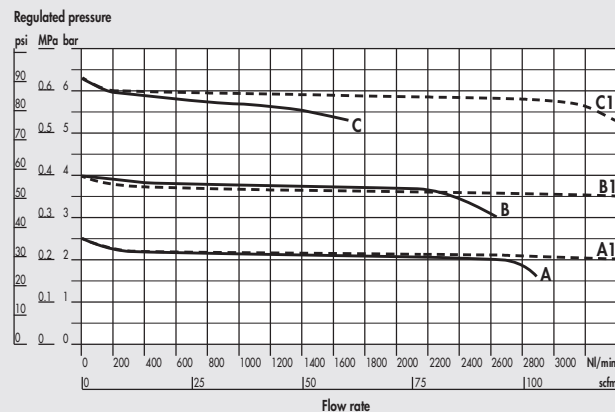
REG Syntesi® SY1 1/8"



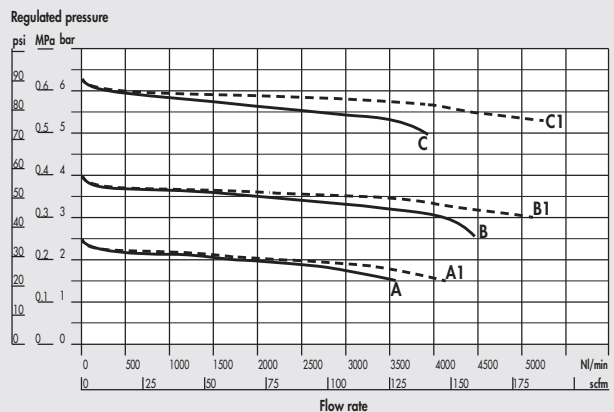
REG Syntesi® SY1 1/4"



REG Syntesi® SY1 3/8"



REG Syntesi® SY2 3/8"

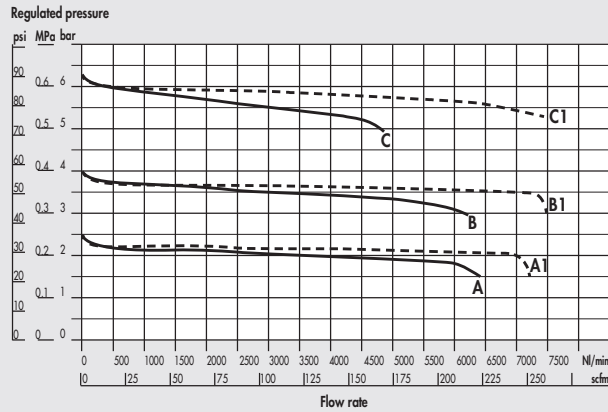


A = P In 7 bar - P Out 2.5 bar
B = P In 7 bar - P Out 4 bar

C = P In 7 bar - P Out 6.3 bar
A1 = P In 10 bar - P Out 2.5 bar

B1 = P In 10 bar - P Out 4 bar
C1 = P In 10 bar - P Out 6.3 bar

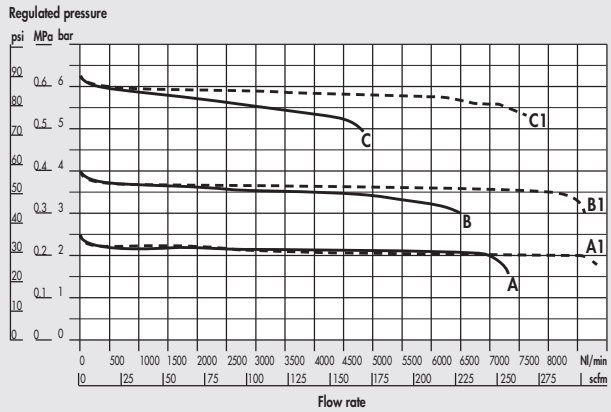
REG Syntesi® SY2 1/2"



A = P In 7 bar - P Out 2.5 bar
B = P In 7 bar - P Out 4 bar

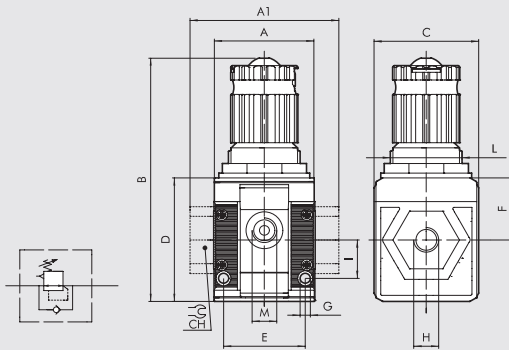
C = P In 7 bar - P Out 6.3 bar
A1 = P In 10 bar - P Out 2.5 bar

REG Syntesi® SY2 3/4" - 1"



B1 = P In 10 bar - P Out 4 bar
C1 = P In 10 bar - P Out 6.3 bar

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	102			139			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	M30x1.5			M38x2			
M (pressure gauge port or air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	R	14	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1 2 Size 2	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port 0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port	R Pressure regulator	● 10 0 to 2 bar + 12 0 to 4 bar 14 0 to 8 bar 16 0 to 12 bar	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port 0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

● Not available in the anti-corrosion version. + Anti-corrosion version available only in size 1.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	Code	Description
Syntesi® SY1 REGULATOR		Syntesi® SY2 REGULATOR		Syntesi® SY2 REGULATOR	
5610R140	REG SY1 08 without bushings	5620R140	REG SY2 08 without bushings	5626R146	REG SY2 1 08
5610R160	REG SY1 012 without bushings	5620R160	REG SY2 012 without bushings	5626R166	REG SY2 1 012
5611R141	REG SY1 1/8 08	5623R143	REG SY2 3/8 08	NOTE Anti-corrosion version 5X _____ Example 5X11R141 REG SY1 1/8 08 anti-corrosion	
5611R161	REG SY1 1/8 012	5623R163	REG SY2 3/8 012		
5612R142	REG SY1 1/4 08	5624R144	REG SY2 1/2 08		
5612R162	REG SY1 1/4 012	5624R164	REG SY2 1/2 012		
5613R143	REG SY1 3/8 08	5625R145	REG SY2 3/4 08		
5613R163	REG SY1 3/8 012	5625R165	REG SY2 3/4 012		

SYNTESI® IN-SERIES REGULATOR



The in-series regulator is used to take air at a set pressure from the ports on the front and back of the body, while the pneumatic inlet and outlet ports are connected directly.

It is possible for instance to assemble several regulators side by side, all supplied at the same pressure, and obtain different regulated pressures, regardless of the pressure of the previous module.

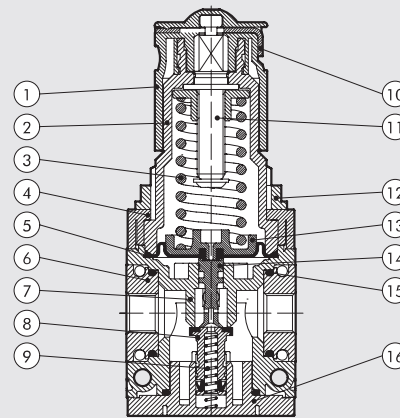
The in-series regulator uses the same construction principles as the standard regulator, so the advantages are the same, such as compensation for upstream pressure changes, relief valve, rapid relief of the downstream pressure and a padlockable push-lock knob.



TECHNICAL DATA	IN-SERIES REGULATOR SY1			IN-SERIES REGULATOR SY2			
Threaded inlet port, through	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Utility threaded port		1/8"				1/4"	
Max. input pressure		15				13	
		1.5				1.3	
		217				188	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)		330				540	
		12				19	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)		500				1000	
		18				35	
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)		70				100	
		2.5				3.5	
Min/max temperature at 10 bar; 1 MPa; 145 psi		From -10 to +50			From -10 to +50		
Full outflow with zero inlet pressure				Included			
Padlockable knob				Included			
Upstream pressure compensation				Included, via balanced valve			
Weight	g	193	188	179	546	519	515
Fluid					503		
Mounting position				Compressed air or other inert gases			
Wall fixing screws				In any position			
Notes on use				No. 2 M4 screws	No. 2 M5 screws		
				The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.			
				On request version without overpressure exhaust			

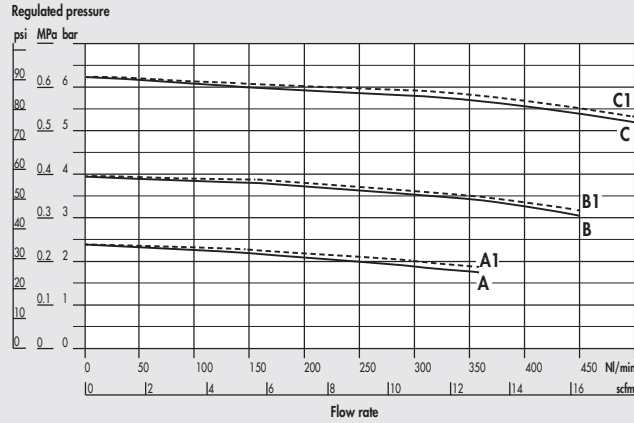
COMPONENTS

- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring (with Geomet® treatment for anti-corrosion version)
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑦ Technopolymer body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ NBR o-ring gaskets
- ⑯ Technopolymer plug



FLOW CHARTS

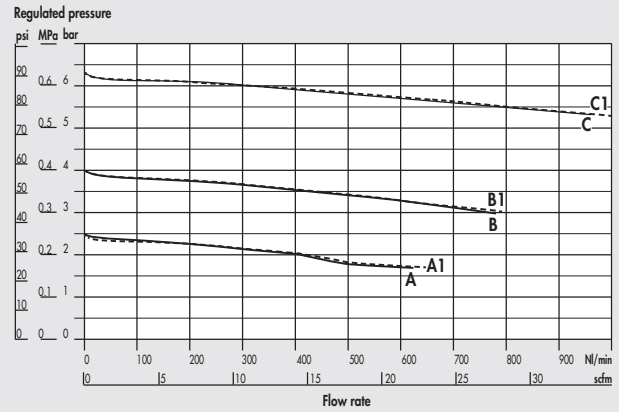
IN-SERIES REGULATOR Syntesi® SY1 1/4" - 1/8" - 3/8"



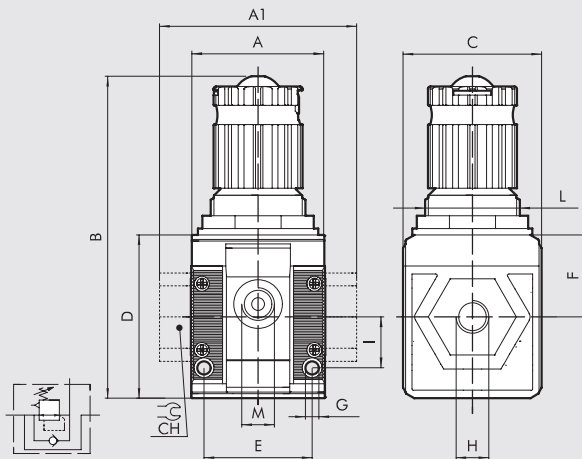
A = P In 7 bar - P Out 2.5 bar
 B = P In 7 bar - P Out 4 bar
 C = P In 7 bar - P Out 6.3 bar

A1 = P In 10 bar - P Out 2.5 bar
 B1 = P In 10 bar - P Out 4 bar
 C1 = P In 10 bar - P Out 6.3 bar

IN-SERIES REGULATOR Syntesi® SY2 3/8" - 1/2" - 3/4" - 1"

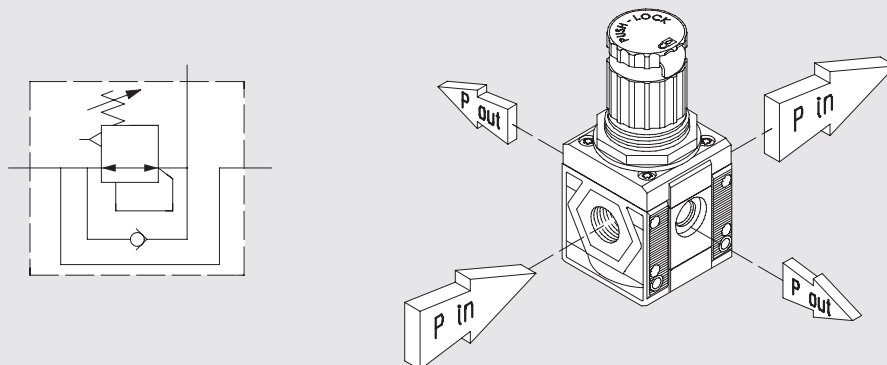


DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	102			139			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	M30x1.5			M38x2			
M (use)	1/8"			1/4"			

FUNCTION DIAGRAM



56	1	1	R	24	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	IN-SERIES REGULATOR SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	R Pressure regulator	● 20 0 to 2 bar	0 Without bushing
5X Syntesi		1 1/8" port		+ 22 0 to 4 bar	1 1/8" port
anti-corrosion		2 1/4" port		24 0 to 8 bar	2 1/4" port
		3 3/8" port		26 0 to 12 bar	3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

- ### PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

Code	Description	Code	Description	NOTE
Syntesi® SY1 IN-SERIES REGULATOR		Syntesi® SY2 IN-SERIES REGULATOR		Anti-corrosion version
5610R240	In-series REG SY1 08 without bushings	5620R240	In-series REG SY2 08 without bushings	5X _____
5610R260	In-series REG SY1 012 without bushings	5620R260	In-series REG SY2 012 without bushings	Example
				5X11R241 In-series REG SY1 1/8 08 anti-corrosion
5611R241	In-series REG SY1 1/8 08	5623R243	In-series REG SY2 3/8 08	
5611R261	In-series REG SY1 1/8 012	5623R263	In-series REG SY2 3/8 012	
5612R242	In-series REG SY1 1/4 08	5624R244	In-series REG SY2 1/2 08	
5612R262	In-series REG SY1 1/4 012	5624R264	In-series REG SY2 1/2 012	
5613R243	In-series REG SY1 3/8 08	5625R245	In-series REG SY2 3/4 08	
5613R263	In-series REG SY1 3/8 012	5625R265	In-series REG SY2 3/4 012	
		5626R246	In-series REG SY2 1 08	
		5626R266	In-series REG SY2 1 012	

NOTES

SYNTESI® PILOT OPERATED REGULATOR

The pilot operated regulator can adjust pressure remotely via a pneumatic command.

The two rolling diaphragms offer several advantages:

- increased stroke, which allows greater opening of the valve and hence increased flow rate;
- reduced dynamic and pickup friction, which results in increased response speed and high sensitivity;
- high precision in maintaining the set pressure, both with variable flow rates and different inlet pressures.

The design features the same construction characteristics as those used for a standard regulator, so the advantages are the same, namely: compensation of the regulated pressure varies with the upstream pressure; presence of a relieving valve and downstream pressure quick relieving.

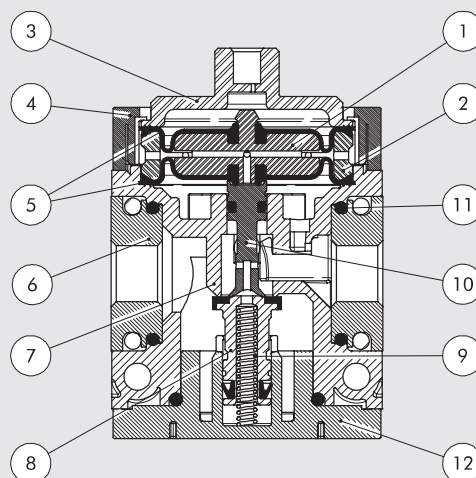


TECHNICAL DATA

TECHNICAL DATA		REG SY1			REG SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1700	3300	5500	5500	7300	
(inlet pressure 10 bar)	scfm	32	60	116	194	194	258	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1000	2800	3550	6800	6800	7700	
(inlet pressure 10 bar)	scfm	53	99	120	240	240	272	
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70			100			
	scfm	2.5			3.5			
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Full outflow with zero inlet pressure		Included						
Upstream pressure compensation		Included, via balanced valve						
Weight	g	149	144	135	456	429	425	413
Fluid		Compressed air or other inert gases						
Mounting position		In any position						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar		500			1400			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)		18			50			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Notes on use		The pressure must always be set upwards.						

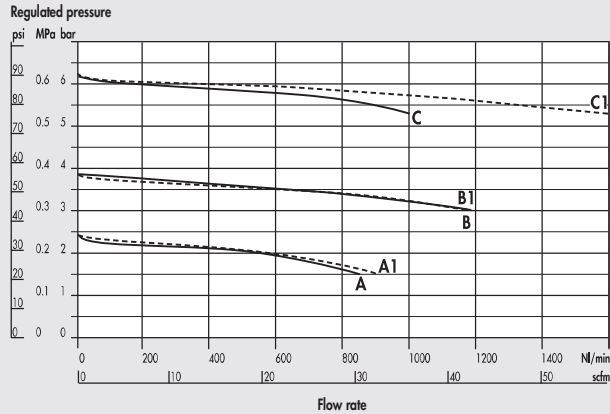
COMPONENTS

- ① Anodized aluminium plate
- ② Anodized aluminium diaphragm washer
- ③ Anodized aluminium upper cap
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑦ Technopolymer regulator body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Stainless steel valve spring
- ⑩ Technopolymer rod
- ⑪ NBR o-ring gasket
- ⑫ Technopolymer plug

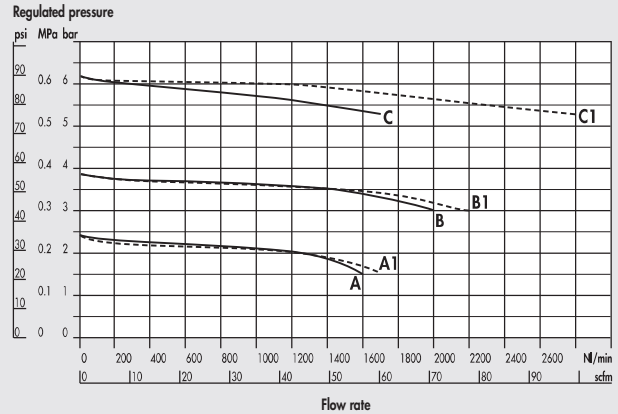


FLOW CHARTS

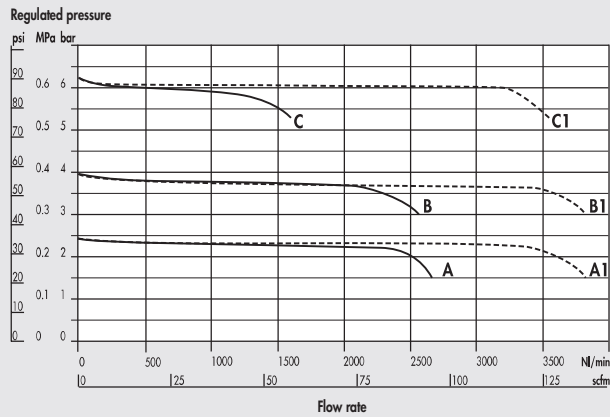
REG PIL Syntesi® SY1 1/8"



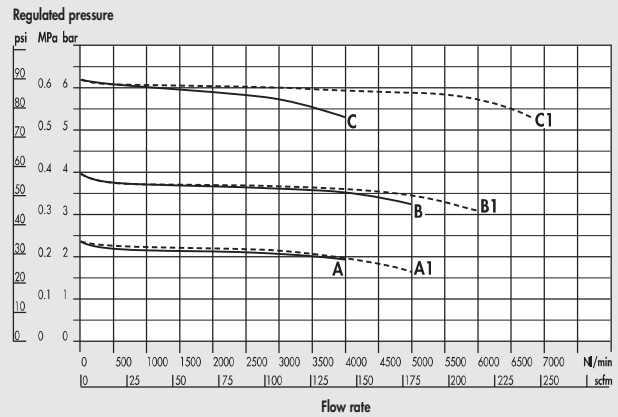
REG PIL Syntesi® SY1 1/4"



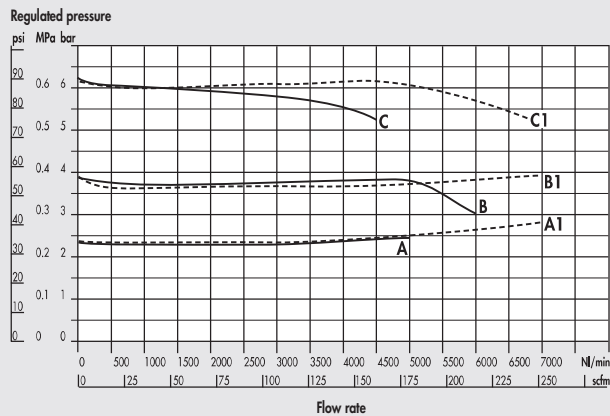
REG PIL Syntesi® SY1 3/8"



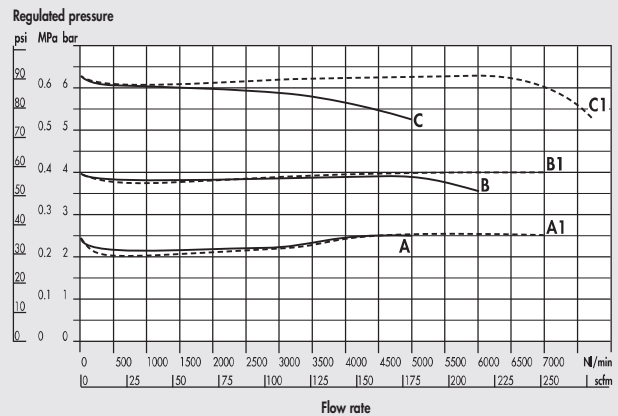
REG PIL Syntesi® SY2 3/8"



REG PIL Syntesi® SY2 1/2"



REG PIL Syntesi® SY2 3/4" - 1"

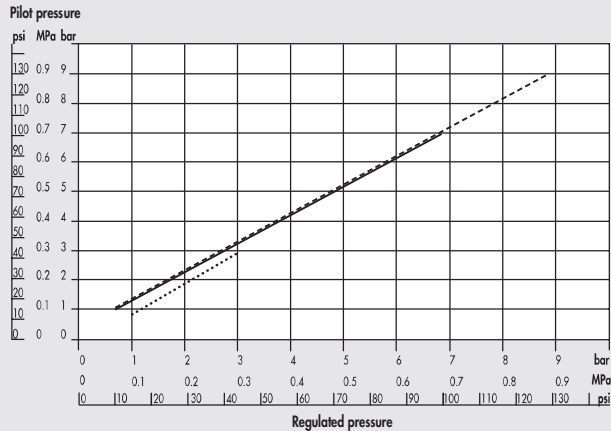


A = P In 7 bar - P Out 2.5 bar
 B = P In 7 bar - P Out 4 bar
 C = P In 7 bar - P Out 6.3 bar

A1 = P In 10 bar - P Out 2.5 bar
 B1 = P In 10 bar - P Out 4 bar
 C1 = P In 10 bar - P Out 6.3 bar

PILOTING CURVES

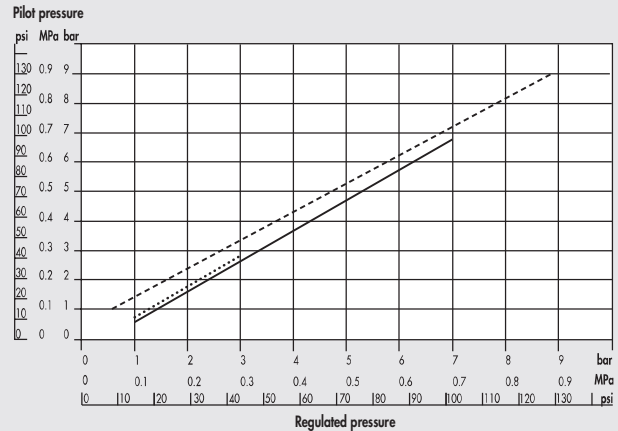
REG PIL Syntesi® SY1



..... P In 4 bar

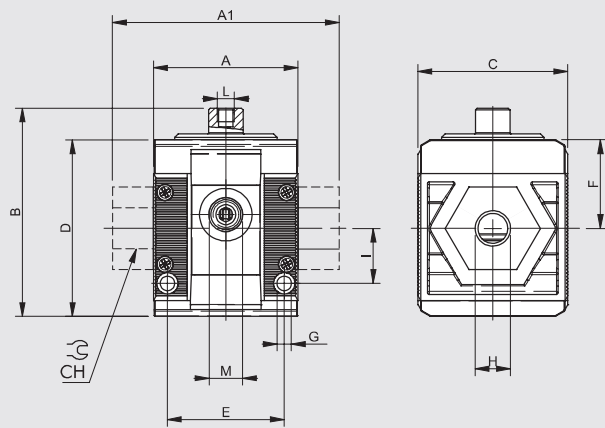
_____ P In 7 bar

REG PIL Syntesi® SY2



----- P In 10 bar

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	63			81			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L (pilot)	M5			M5			
M (pressure gauge port or air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	R	00	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	R Pressure regulator	00 Pilot operated	0 Without bushing
5X Syntesi anti-corrosion		1 1/8" port			1 1/8" port
		2 1/4" port			2 1/4" port
		3 3/8" port			3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

UNITS

Syntesi® PILOT OPERATED REGULATOR

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
Syntesi® SY1 PILOT OPERATED REGULATOR		Syntesi® SY2 PILOT OPERATED REGULATOR		Anti-corrosion version
5610R000	REG PIL SY1 without bushings	5620R000	REG PIL SY2 without bushings	5X-----
5611R001	REG PIL SY1 1/8	5623R003	REG PIL SY2 3/8	Example
5612R002	REG PIL SY1 1/4	5624R004	REG PIL SY2 1/2	5X11R001 REG PIL SY1 1/8 anti-corrosion
5613R003	REG PIL SY1 3/8	5625R005	REG PIL SY2 3/4	
		5626R006	REG PIL SY2 1	

NOTES

UNITS

Syntesi® PILOT OPERATED REGULATOR

SYNTESI® FILTER-REGULATOR

This device combines in a single unit the functions of filtration, condensate separation and pressure regulation.

It is made up of the same elements forming the filter and the regulator, so the performance and advantages are the same:

- Separation of condensate and larger liquid and solid particles by centrifugation.
- Three condensate drain options (RMSA, RA and SAC).
- 360° visually inspection of the condensate level, via transport spy-holes.
- Rolling diaphragm regulator, allowing maximum precision and flow rate, and minimal friction.
- Compensation for upstream pressure changes.
- Pressure relief valve.
- Quick downstream pressure relief.
- Padlockable push-lock knob.
- Front and rear ports for pressure gauges, pressure switches or, considering the high flow rate, for use as additional filtered and regulated air take-off.



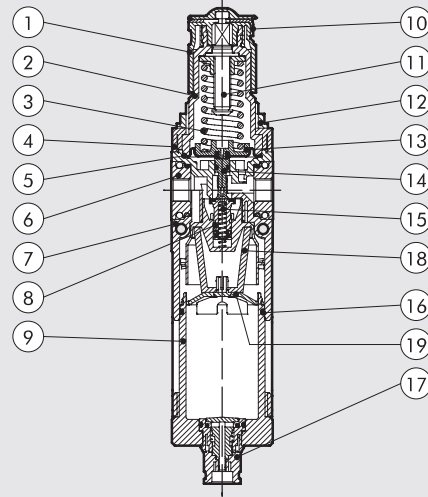
UNITS

Syntesi® FILTER-REGULATOR

TECHNICAL DATA		FR SY1			FR SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.4 20 (white) - output air purity class ISO8573-1: 4.7.4 50 (blue) - output air purity class ISO8573-1: 5.7.4						
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	500	800	2200	3200	4300	5200	
(inlet pressure 10 bar)	scfm	18	28	78	113	152	184	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1300	2000	3000	5800	7200	7400	
(inlet pressure 10 bar)	scfm	46	71	106	205	255	262	
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70			100			
	scfm	2.5			3.5			
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Full outflow with zero inlet pressure		Included						
Padlockable knob		Included						
Upstream pressure compensation		Included, via balanced valve						
Weight	g	244	239	230	623	596	592	580
Fluid		Compressed air or other inert gases						
Mounting position		Vertical						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar	Nl/min	500			1400			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18			50			
Bowl capacity	cm³	30			70			
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-off. Note: the maximum input pressure for the RA version must not exceed 10 bar						
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Notes on use		The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. On request version without overpressure exhaust.						
		</						

COMPONENTS

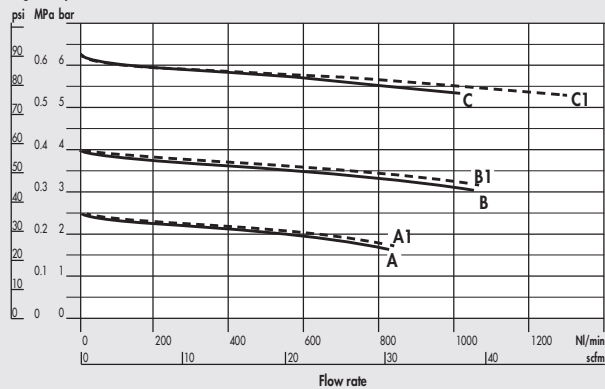
- ① Technopolymer adjusting knob
- ② Technopolymer bell
- ③ Steel adjusting spring (with Geomet® treatment for anti-corrosion version)
- ④ Technopolymer flange
- ⑤ Rolling diaphragm
- ⑥ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑦ Technopolymer body
- ⑧ OT58 brass valve, with NBR vulcanized gasket
- ⑨ Clear technopolymer bowl
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ OT58 brass adjusting screw
- ⑫ Technopolymer ring nut
- ⑬ Technopolymer plate
- ⑭ Technopolymer rod
- ⑮ Stainless steel valve spring
- ⑯ O-ring NBR gaskets
- ⑰ Drain (RMSA)
- ⑱ Sintered HDPE filter cartridge
- ⑲ Technopolymer screen



FLOW CHARTS

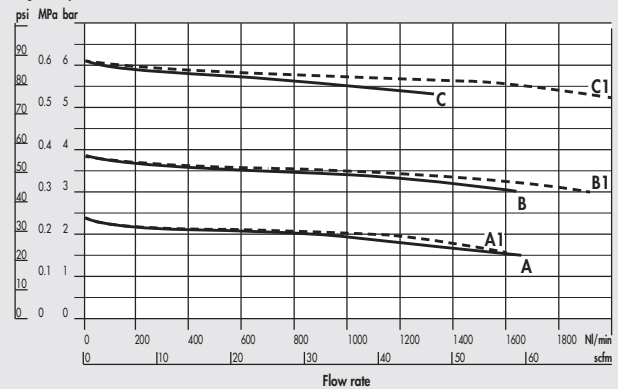
FR Syntesi® SY1 1/8"

Regulated pressure



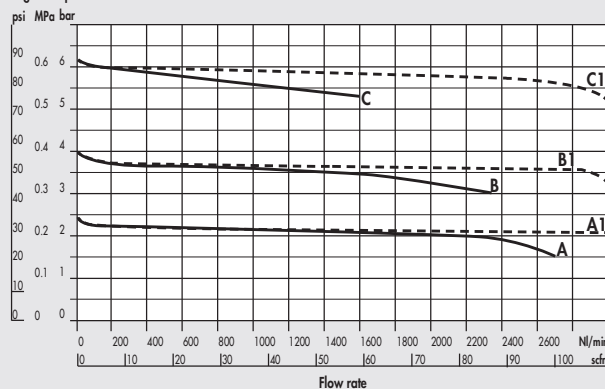
FR Syntesi® SY1 1/4"

Regulated pressure



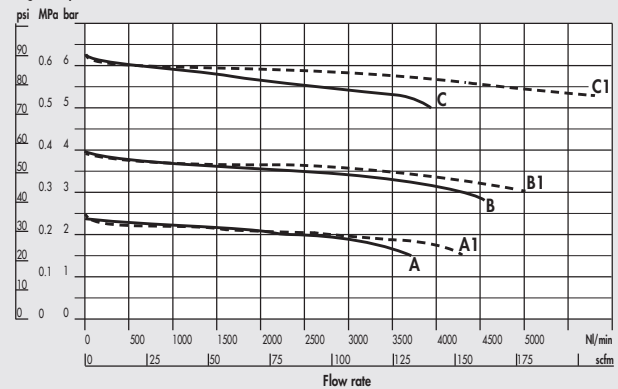
FR Syntesi® SY1 3/8"

Regulated pressure



FR Syntesi® SY2 3/8"

Regulated pressure

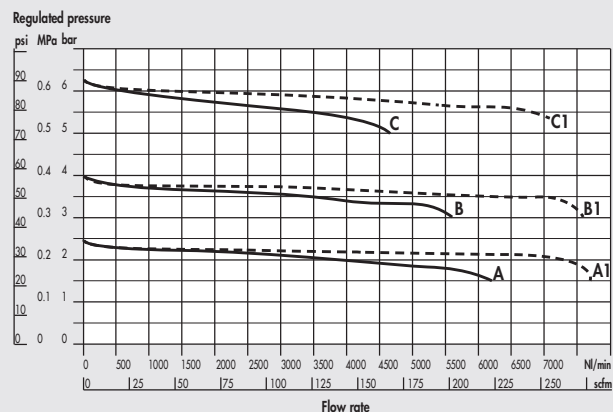


A = P In 7 bar - P Out 2.5 bar
B = P In 7 bar - P Out 4 bar

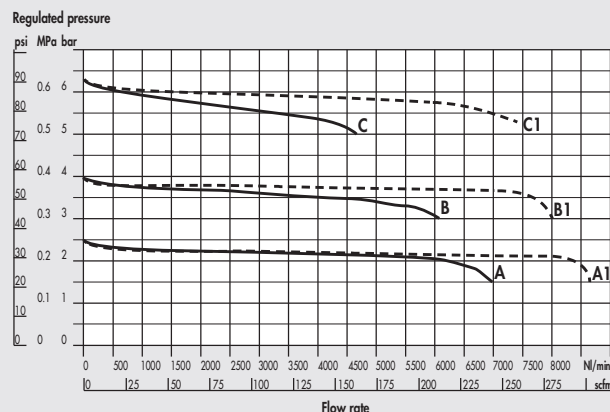
C = P In 7 bar - P Out 6.3 bar
A1 = P In 10 bar - P Out 2.5 bar

B1 = P In 10 bar - P Out 4 bar
C1 = P In 10 bar - P Out 6.3 bar

FR Syntesi® SY2 1/2"



FR Syntesi® SY2 3/4" - 1"

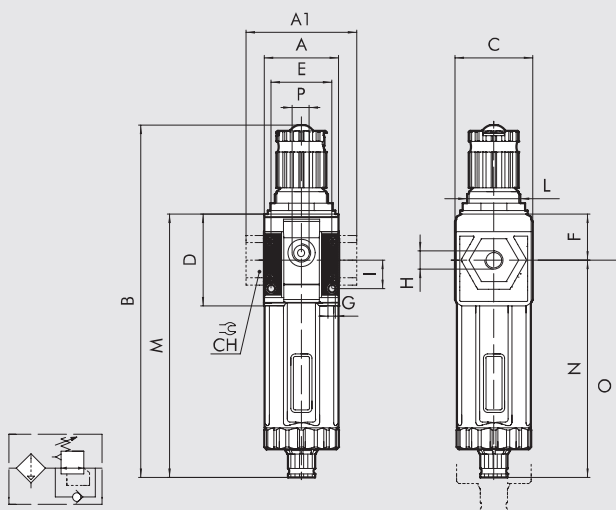


A = P In 7 bar - P Out 2.5 bar
B = P In 7 bar - P Out 4 bar

C = P In 7 bar - P Out 6.3 bar
A1 = P In 10 bar - P Out 2.5 bar

B1 = P In 10 bar - P Out 4 bar
C1 = P In 10 bar - P Out 6.3 bar

DIMENSIONS



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	RMSA 198			246			
	RA/SAC 202			250			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	M30x1.5			M38x2			
M	RMSA 148			178			
	RA/SAC 152			182			
N	RMSA 122.2			139.8			
	RA/SAC 126.2			143.8			
O	RMSA 202			245			
	RA/SAC 206			249			
P (pressure gauge port or additional air takes-off)	1/8"			1/4"			

NOTES

KEY TO CODES

56	1	1	B	24	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1	0 Without bushing	B Filter-regulator	● 10 5 µm, RMSA, 0 to 2 bar	0 Without bushing
		1 1/8" port		● 20 20 µm, RMSA, 0 to 2 bar	1 1/8" port
		2 1/4" port		● 30 50 µm, RMSA, 0 to 2 bar	2 1/4" port
		3 3/8" port		● 40 5 µm, RA, 0 to 2 bar	3 3/8" port
	2 Size 2	0 Without bushing		● 50 20 µm, RA, 0 to 2 bar	0 Without bushing
		3 3/8" port		● 60 50 µm, RA, 0 to 2 bar	3 3/8" port
		4 1/2" port		● 11 5 µm, SAC, 0 to 2 bar	4 1/2" port
		5 3/4" port		● 21 20 µm, SAC, 0 to 2 bar	5 3/4" port
		6 1" port		● 31 50 µm, SAC, 0 to 2 bar	6 1" port
				✚ 12 5 µm, RMSA, 0 to 4 bar	
				✚ 22 20 µm, RMSA, 0 to 4 bar	
				✚ 32 50 µm, RMSA, 0 to 4 bar	
				✚ 42 5 µm, RA, 0 to 4 bar	
				✚ 52 20 µm, RA, 0 to 4 bar	
				✚ 62 50 µm, RA, 0 to 4 bar	
				✚ 13 5 µm, SAC, 0 to 4 bar	
				✚ 23 20 µm, SAC, 0 to 4 bar	
				✚ 33 50 µm, SAC, 0 to 4 bar	
				14 5 µm, RMSA, 0 to 8 bar	
				24 20 µm, RMSA, 0 to 8 bar	
				34 50 µm, RMSA, 0 to 8 bar	
				44 5 µm, RA, 0 to 8 bar	
				54 20 µm, RA, 0 to 8 bar	
				64 50 µm, RA, 0 to 8 bar	
				15 5 µm, SAC, 0 to 8 bar	
				25 20 µm, SAC, 0 to 8 bar	
				35 50 µm, SAC, 0 to 8 bar	
				16 5 µm, RMSA, 0 to 12 bar	
				26 20 µm, RMSA, 0 to 12 bar	
				36 50 µm, RMSA, 0 to 12 bar	
				46 5 µm, RA, 0 to 12 bar	
				56 20 µm, RA, 0 to 12 bar	
				66 50 µm, RA, 0 to 12 bar	
				17 5 µm, SAC, 0 to 12 bar	
				27 20 µm, SAC, 0 to 12 bar	
				37 50 µm, SAC, 0 to 12 bar	

● Not available in the anti-corrosion version.

✚ Anti-corrosion version available only in size 1.

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.

NOTES

UNITS

Syntesi® FILTER-REGULATOR

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
FILTER-REGULATOR Syntesi® SY1		FILTER-REGULATOR Syntesi® SY2		
5610B140	FR SY1 5 08 RMSA without bushings	5620B140	FR SY2 5 08 RMSA without bushings	NOTE Anti-corrosion version 5X_____ Example 5X11B141 FR SY1 1/8 5 08 RMSA anti-corrosion
5610B240	FR SY1 20 08 RMSA without bushings	5620B240	FR SY2 20 08 RMSA without bushings	
5610B440	FR SY1 5 08 RA without bushings	5620B440	FR SY2 5 08 RA without bushings	
5610B540	FR SY1 20 08 RA without bushings	5620B540	FR SY2 20 08 RA without bushings	
5610B160	FR SY1 5 012 RMSA without bushings	5620B160	FR SY2 5 012 RMSA without bushings	
5610B260	FR SY1 20 012 RMSA without bushings	5620B260	FR SY2 20 012 RMSA without bushings	
5610B460	FR SY1 5 012 RA without bushings	5620B460	FR SY2 5 012 RA without bushings	
5610B560	FR SY1 20 012 RA without bushings	5620B560	FR SY2 20 012 RA without bushings	
5611B141	FR SY1 1/8 5 08 RMSA	5623B143	FR SY2 3/8 5 08 RMSA	
5611B241	FR SY1 1/8 20 08 RMSA	5623B243	FR SY2 3/8 20 08 RMSA	
5611B441	FR SY1 1/8 5 08 RA	5623B443	FR SY2 3/8 5 08 RA	
5611B541	FR SY1 1/8 20 08 RA	5623B543	FR SY2 3/8 20 08 RA	
5611B161	FR SY1 1/8 5 012 RMSA	5623B163	FR SY2 3/8 5 012 RMSA	
5611B261	FR SY1 1/8 20 012 RMSA	5623B263	FR SY2 3/8 20 012 RMSA	
5611B461	FR SY1 1/8 5 012 RA	5623B463	FR SY2 3/8 5 012 RA	
5611B561	FR SY1 1/8 20 012 RA	5623B563	FR SY2 3/8 20 012 RA	
5612B142	FR SY1 1/4 5 08 RMSA	5624B144	FR SY2 1/2 5 08 RMSA	
5612B242	FR SY1 1/4 20 08 RMSA	5624B244	FR SY2 1/2 20 08 RMSA	
5612B442	FR SY1 1/4 5 08 RA	5624B444	FR SY2 1/2 5 08 RA	
5612B542	FR SY1 1/4 20 08 RA	5624B544	FR SY2 1/2 20 08 RA	
5612B162	FR SY1 1/4 5 012 RMSA	5624B164	FR SY2 1/2 5 012 RMSA	
5612B262	FR SY1 1/4 20 012 RMSA	5624B264	FR SY2 1/2 20 012 RMSA	
5612B462	FR SY1 1/4 5 012 RA	5624B464	FR SY2 1/2 5 012 RA	
5612B562	FR SY1 1/4 20 012 RA	5624B564	FR SY2 1/2 20 012 RA	
5613B143	FR SY1 3/8 5 08 RMSA	5625B145	FR SY2 3/4 5 08 RMSA	
5613B243	FR SY1 3/8 20 08 RMSA	5625B245	FR SY2 3/4 20 08 RMSA	
5613B443	FR SY1 3/8 5 08 RA	5625B445	FR SY2 3/4 5 08 RA	
5613B543	FR SY1 3/8 20 08 RA	5625B545	FR SY2 3/4 20 08 RA	
5613B163	FR SY1 3/8 5 012 RMSA	5625B165	FR SY2 3/4 5 012 RMSA	
5613B263	FR SY1 3/8 20 012 RMSA	5625B265	FR SY2 3/4 20 012 RMSA	
5613B463	FR SY1 3/8 5 012 RA	5625B465	FR SY2 3/4 5 012 RA	
5613B563	FR SY1 3/8 20 012 RA	5625B565	FR SY2 3/4 20 012 RA	
		5626B146	FR SY2 1 5 08 RMSA	
		5626B246	FR SY2 1 20 08 RMSA	
		5626B446	FR SY2 1 5 08 RA	
		5626B546	FR SY2 1 20 08 RA	
		5626B166	FR SY2 1 5 012 RMSA	
		5626B266	FR SY2 1 20 012 RMSA	
		5626B466	FR SY2 1 5 012 RA	
		5626B566	FR SY2 1 20 012 RA	

NOTES

The pneumatic lubricator is the simplest way of efficiently lubricating the actuators linked to a circuit. As compressed air flows towards the lubricator, it encounters a flexible diaphragm which partially blocks the way, creating a small pressure difference between the inlet and outlet air. Being at the higher pressure, the oil in the bowl is pumped through a tube with a filter towards the regulation pin.

The quantity of oil can be metered accurately since the drops can be viewed through the transparent dome.

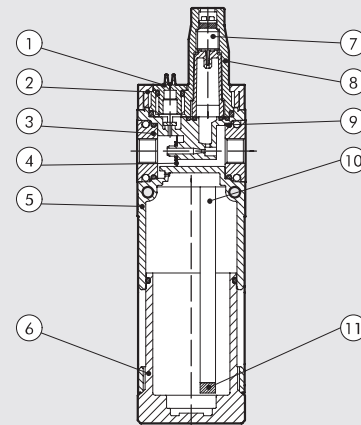
Filling with oil must take place in the absence of pressure, unscrewing the plug next to the dome. On the front and back there is a port (1/8" for size 1 and 1/4" for size 2) that can be used with pressure gauges, pressure switches or as an additional air intake.



TECHNICAL DATA		LUB SY1			LUB SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Type of lubrication		Oil mist						
Version		Manual filling from the top						
Max. input pressure		bar			13			
		MPa			1.3			
		psi			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)		1300	1700	2200	2300	3900	3900	
		46	60	78	81	138	138	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)		1600	3000	3650	3650	6100	6100	
		57	106	129	129	216	216	
Min/max temperature at 10 bar; 1 MPa; 145 psi		°C			From -10 to +50			
Weight		185	180	171	480	453	449	437
Fluid		Compressed air or other inert gases						
Quantity of filled oil		cm³			130			
Mounting position		Vertical			Vertical			
Port for additional air take-off		1/8", front and rear, lubricated air			1/4", front and rear, lubricated air			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)		NI/min			800			
		scfm			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Recommended oils		ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)						
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system. Do not use cleaning oils, brake fluid oils or solvents in general.						
		For the best lubrication results, set the drip rate to one drop for 300-600 NI.						

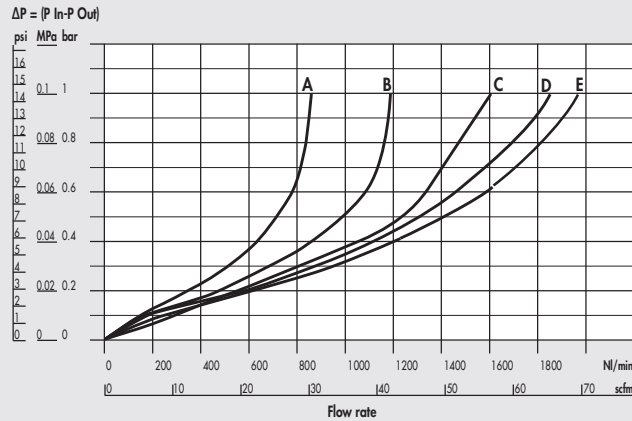
COMPONENTS

- ① Technopolymer oil filling plug
- ② Technopolymer flange
- ③ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ④ Venturi NBR diaphragm
- ⑤ Technopolymer body
- ⑥ Clear technopolymer bowl
- ⑦ OT 58 brass oil flow regulation needle
- ⑧ Clear technopolymer cover
- ⑨ NBR o-ring gasket
- ⑩ Rilsan[®] oil suction pipe
- ⑪ Oil filter

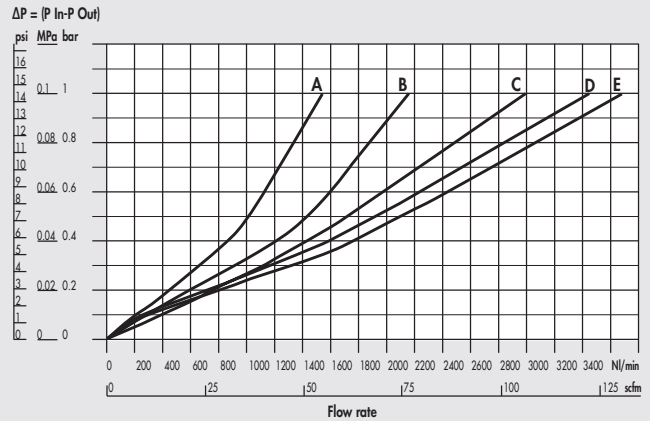


FLOW CHARTS

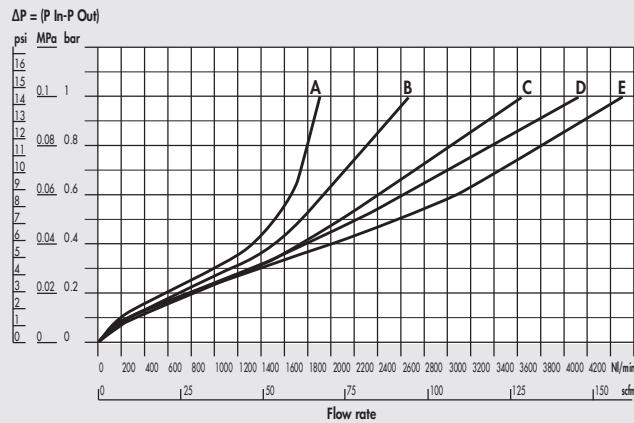
LUB Syntesi® SY1 1/8"



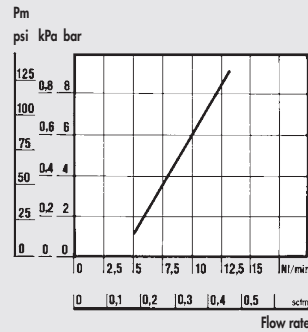
LUB Syntesi® SY1 1/4"



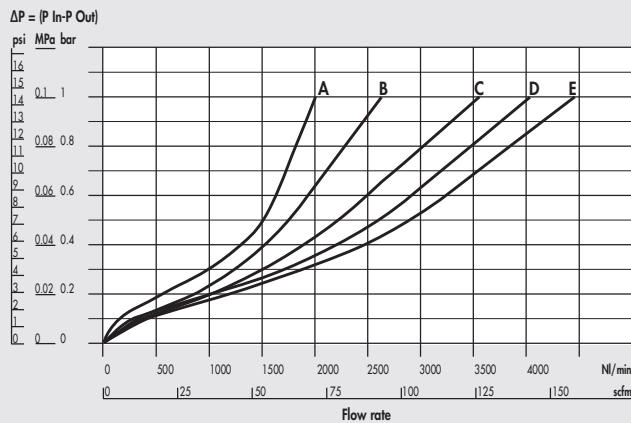
LUB Syntesi® SY1 3/8"



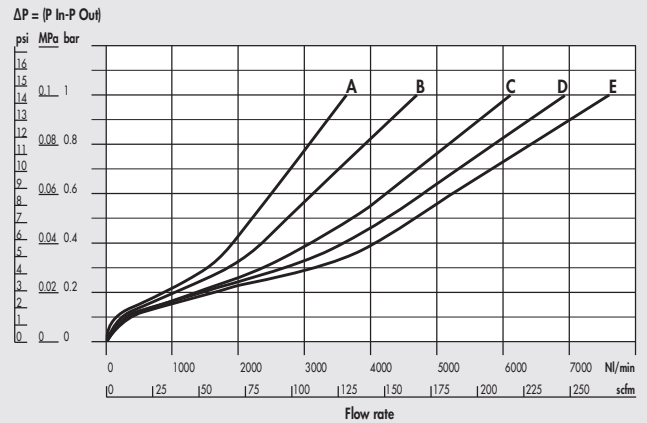
Minimum operating flow chart SY1



LUB Syntesi® SY2 3/8"



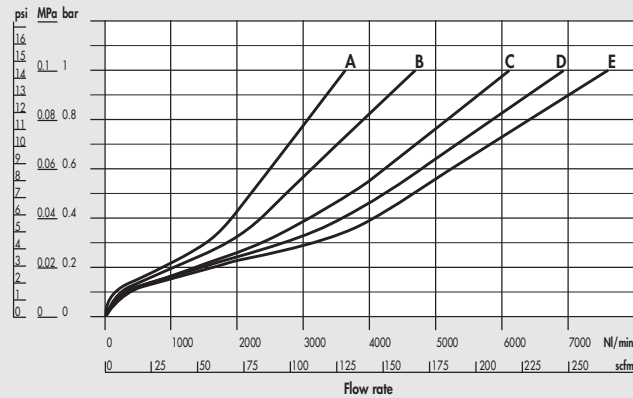
LUB Syntesi® SY2 1/2"



A = 2.5 bar - 0.25 MPa - 36 psi
B = 4 bar - 0.4 MPa - 58 psi

C = 6.3 bar - 0.63 MPa - 91 psi
D = 8 bar - 0.8 MPa - 116 psi

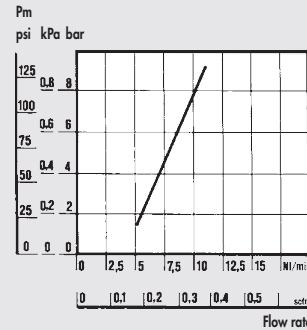
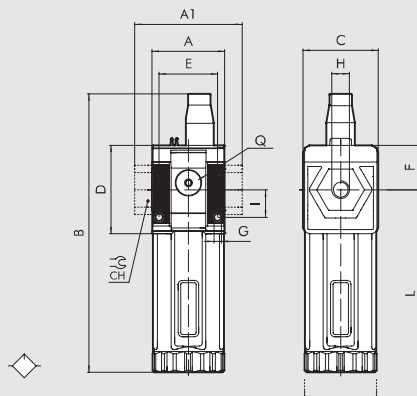
E = 10 bar - 1 MPa - 145 psi

LUB Syntesi® SY2 3/4" - 1"
 $\Delta P = (P_{in} - P_{out})$


A = 2.5 bar - 0.25 MPa - 36 psi
 B = 4 bar - 0.4 MPa - 58 psi

C = 6.3 bar - 0.63 MPa - 91 psi
 D = 8 bar - 0.8 MPa - 116 psi

E = 10 bar - 1 MPa - 145 psi

Minimum operating flow chart SY2

DIMENSIONS


	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	162			200.5			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	158			193			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56 SYNTESI	1 SIZE	1 THREADED INPUT CONNECTION	L ELEMENT	10 OIL FILLING	1 THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	L Lubricator	10 Manual filling from the top	0 Without bushing
5X Syntesi anti-corrosion		1 1/8" port			1 1/8" port
		2 1/4" port			2 1/4" port
		3 3/8" port			3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
LUBRIFICATORE Syntesi® SY1		LUBRIFICATORE Syntesi® SY2		Anti-corrosion version
5610L100	LUB SY1 without bushings	5620L100	LUB SY2 without bushings	5X
5611L101	LUB SY1 1/8	5623L103	LUB SY2 3/8	Example
5612L102	LUB SY1 1/4	5624L104	LUB SY2 1/2	5X11L101 LUB SY1 1/8 anti-corrosion
5613L103	LUB SY1 3/8	5625L105	LUB SY2 3/4	
		5626L106	LUB SY2 1	

SYNTESI® SHUT-OFF VALVE

This device separates the compressed air circuit from the main air supply. It is a three-way valve that relieves the downstream system in the closed position. This makes it useful for maintenance operations or when the air supply to a machine or piece of equipment needs to be shut off.

Manual, pneumatic, electro-pneumatic and assisted electro-pneumatic control versions are available. The last version must be used if the inlet pressure is outside the electro-pneumatic valve operating range, so for particularly low or high pressures.

The version with manual control can be locked and you can enter up to two padlocks on size 1 and up to three on size 2 when the valve is in the closed position. As an alternative, a version with a single Ø7 hole is available for a single padlock. On the front and back there is a port (1/8" for size 1 and 1/4" size 2) that can be used with pressure gauges, pressure switches or as an additional air intake.

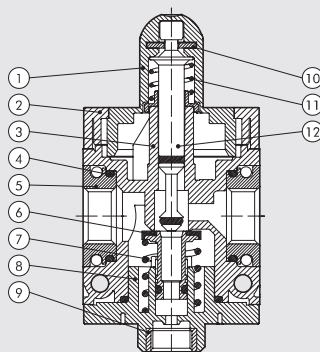


TECHNICAL DATA

		V3V SY1			V3V SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Threaded discharge port		1/8"			1/4"			
Type of control		Manual - pneumatic - Elpn - Elpn pilot-assisted			Manual - Pneumatic - Cnomo elpn - Cnomo elpn pilot-assisted			
Max inlet pressure for pneumatic and solenoid pilot-assisted versions	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Inlet pressure for solenoid version	bar	3 - 10			3 - 10			
	MPa	0.3 - 1			0.3 - 1			
	psi	43 - 145			43 - 145			
Pilot pressure for pneumatic and solenoid pilot-assisted versions	bar	3 - 10			3 - 10			
	MPa	0.3 - 1			0.3 - 1			
	psi	43 - 145			43 - 145			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	800	1000	1100	2800	3000	3000	
	scfm	28	35	39	99	106	106	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1100	1500	1600	3600	4000	4000	
	scfm	39	53	57	127	141.5	141.5	
Exhaust flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500			2000			
	scfm	18			71			
Min/max temperature at 10 bar; 1 MPa; 145 psi		°C From -10 to +50			From -10 to +50			
Padlockable knob					Included			
Weight	g	197	192	183	476	449	445	433
Fluid		Compressed air or other inert gases						
Mounting position		In any position						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500			1500			
	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Coil capacity for electro-pneumatic version		12 VDC and 24 VDC = 2W; 24 VAC, 110 VAC and 220 VAC = 3.5 VA						
Hand operator of electro-pneumatic versions		Bistable: horizontal = OFF, vertical = ON (see drawing page C1.40)						

COMPONENTS

- ① Technopolymer knob
- ② Technopolymer hinge
- ③ Technopolymer body
- ④ NBR o-ring gasket
- ⑤ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑥ OT58 brass valve with NBR vulcanized gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer plug
- ⑨ OT58 brass threaded insert
- ⑩ Zinc-plated steel plate for knob locking (stainless steel for anti-corrosion version)
- ⑪ Stainless steel spring stem recovery
- ⑫ OT58 brass stem



V10 - Steel plate with Ø3.5 holes for locking with 2 padlocks (SY1) or 3 padlocks (SY2).



SY1



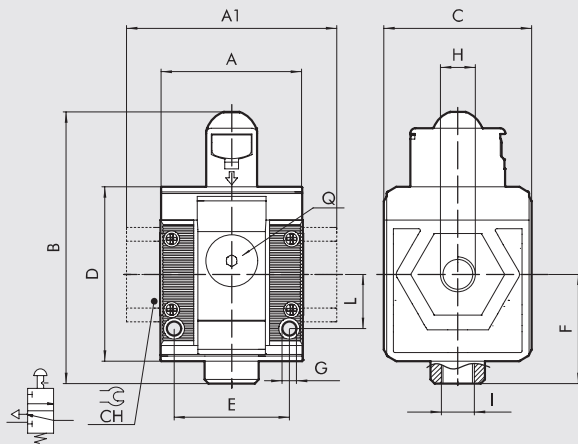
SY2

V11 - Steel plate with a single Ø7 hole for docking with a single padlock (compatible with most of the padlocks available from the trade with a Ø5mm arch).



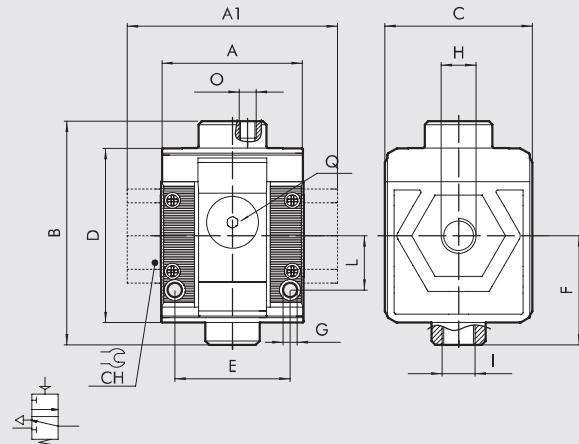
DIMENSIONS

MANUAL



SY1-SY2

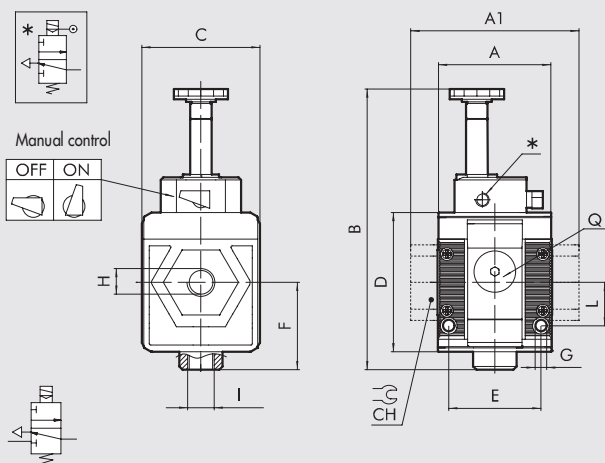
PNEUMATIC



SY1-SY2

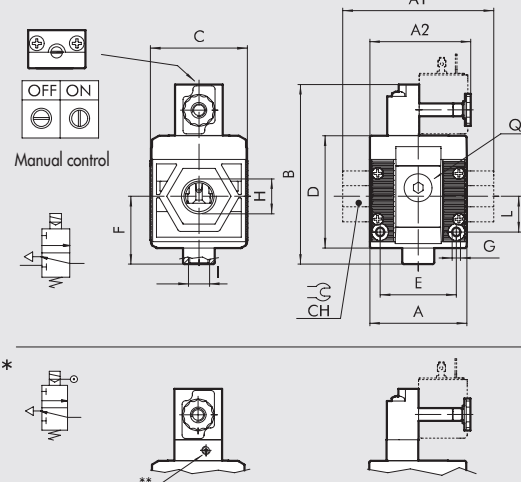
SOLENOID/SOLENOID PILOT-ASSISTED*

SY1



CNOMO SOLENOID / CNOMO SOLENOID PILOT-ASSISTED*

SY2



N.B.: Before assembling other Syntesi elements after the V3V, remember to mount the coil on the V3V itself.

	MANUAL							PNEUMATIC							SOLENOID/SOLENOID PILOT-ASSISTED			CNOMO SOLENOID/CNOMO SOLENOID PILOT-ASSISTED			
	SIZE 1			SIZE 2				SIZE 1			SIZE 2				SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5				42			60.5				42			60.5			
A1	-	-	44	-	-	95	95	-	-	44	-	-	95	95	-	-	44	-	-	95	95
A2	-			-				-			-				-			65			
B	80			109				66			94				104			-			
Cnomo	-			-				-			-				-			113			
Cnomo pilot ass.	-			-				-			-				-			126			
C	44			61				44			61				44			61			
CH	-			-	-	32	36	-			-	-	32	36	-			-	-	32	36
D	51.5			70.5				51.5			70.5				51.5			70.5			
E	33.5			47.5				33.5			47.5				33.5			47.5			
F	32.2			42.7				32.2			42.7				32.2			42.7			
G	Hole for M4 screws			Hole for M5 screws				Hole for M4 screws			Hole for M5 screws				Hole for M4 screws			Hole for M5 screws			
I (exhaust)	1/8"			1/4"				1/8"			1/4"				1/8"			1/4"			
L	16			22.5				16			22.5				16			22.5			
O (pilot)	-			-				M5			1/8"				-			-			
Q (no. 2 additional air takes-off)	1/8"			1/4"				1/8"			1/4"				1/8"			1/4"			
** Pilot	-			-				-			-				M5			M5			

KEY TO CODES

56	1	1	V	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	V Shut-off valve	10 Manual with Ø3.5 hole for padlocks	0 Without bushing
5X Syntesi anti-corrosion		1 1/8" port		* 11 Manual with Ø7 hole for padlock	1 1/8" port
		2 1/4" port		20 Pneumatic	2 1/4" port
	2 Size 2	3 3/8" port		● 30 Solenoid pilot-assisted	3 3/8" port
		0 Without bushing		● 70 Solenoid	0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

* Compatible with most of the padlocks available from the trade with a Ø5mm arch.

● Not available in the anti-corrosion version.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
Syntesi® SY1 SHUT-OFF VALVE		Syntesi® SY2 SHUT-OFF VALVE		Anti-corrosion version
5610V100	V3V SY1 manual without bushings	5620V100	V3V SY2 manual without bushings	5X - - - - -
5611V101	V3V SY1 1/8 manual	5623V103	V3V SY2 3/8 manual	Example
5612V102	V3V SY1 1/4 manual	5624V104	V3V SY2 1/2 manual	5X11V101 V3V SY1 1/8 anti-corrosion
5613V103	V3V SY1 3/8 manual	5625V105	V3V SY2 3/4 manual	
		5626V106	V3V SY2 1 manual	
5610V200	V3V SY1 pneumatic without bushings	5620V200	V3V SY2 pneumatic without bushings	
5611V201	V3V SY1 1/8 pneumatic	5623V203	V3V SY2 3/8 pneumatic	
5612V202	V3V SY1 1/4 pneumatic	5624V204	V3V SY2 1/2 pneumatic	
5613V203	V3V SY1 3/8 pneumatic	5625V205	V3V SY2 3/4 pneumatic	
		5626V206	V3V SY2 1 pneumatic	
5610V300	V3V SY1 elpn pilot-assisted without bushings	5620V300	V3V SY2 elpn pilot-assisted Cnomo without bushings	
5611V301	V3V SY1 1/8 elpn pilot-assisted	5623V303	V3V SY2 3/8 elpn pilot-assisted Cnomo	
5612V302	V3V SY1 1/4 elpn pilot-assisted	5624V304	V3V SY2 1/2 elpn pilot-assisted Cnomo	
5613V303	V3V SY1 3/8 elpn pilot-assisted	5625V305	V3V SY2 3/4 elpn pilot-assisted Cnomo	
		5626V306	V3V SY2 1 elpn pilot-assisted Cnomo	
5610V700	V3V SY1 elpn without bushings	5620V700	V3V SY2 elpn Cnomo without bushings	
5611V701	V3V SY1 1/8 elpn	5623V703	V3V SY2 3/8 elpn Cnomo	
5612V702	V3V SY1 1/4 elpn	5624V704	V3V SY2 1/2 elpn Cnomo	
5613V703	V3V SY1 3/8 elpn	5625V705	V3V SY2 3/4 elpn Cnomo	
		5626V706	V3V SY2 1 elpn Cnomo	

NOTES

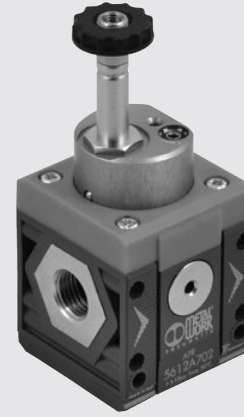
UNITS

Syntesi® SHUT-OFF VALVE

The progressive starter is a pneumatic component that allows air enter the circuit gradually, thereby avoiding excessive pressure bursts.

A sophisticated system of internal valves allows two separate stages of operation. During the first stage, a quantity of air that can be regulated via a pin flows from the APR. The second stage starts when the downstream pressure reached 40 to 60% of the upstream pressure, during which full-port flow is achieved. When the mechanism is deactivated, the air flow is cut off and the downstream circuit is relieved.

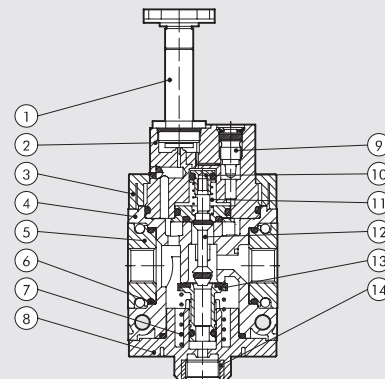
The progressive starter is particularly useful on machinery where it is important to prevent actuators from moving rapidly and out of control, or where, for safety reasons, the air in-feed needs to be gentle and gradual. It, however, there is a major leak in the downstream system, it may never be possible to achieve the pressure required to open the valve completely.



TECHNICAL DATA		APR SY1			APR SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Threaded discharge port		1/8"			1/4"			
Type of control		Solenoid			Solenoid - Cnomo solenoid			
Inlet pressure	bar	3 - 10			3 - 10			
	MPa	0.3 - 1			0.3 - 1			
	psi	43 - 145			43 - 145			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1000	1100	2800	3600	3600	
	scfm	32	39	39	99	127	127	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1250	1500	1600	4400	4800	4800	
	scfm	44	53	57	156	170	170	
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500			2700			
	scfm	18			96			
Maximum flow rate start-up, at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	170			700			
with regulation pin completely unscrewed	scfm	6			25			
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Weight	g	203	198	189	503	476	472	460
Fluid		Compressed air or other inert gases						
Mounting position		In any position						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar	Nl/min	500			1500			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Coil capacity for electro-pneumatic version		12 VDC and 24 VDC = 2W; 24 VAC, 110 VAC and 220 VAC = 3.5 VA						
Hand operator		Bistable: horizontal = OFF, vertical = ON (see drawing page C1.40)						

COMPONENTS

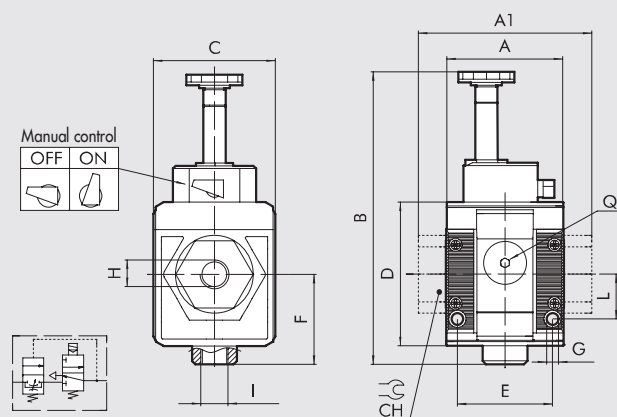
- ① Sleeve ø8
- ② Anodized aluminium upper block
- ③ Technopolymer flange
- ④ Technopolymer body
- ⑤ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑥ O-ring NBR gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer bottom plug
- ⑨ OT58 brass progressive start regulation pin
- ⑩ OT58 brass internal valve
- ⑪ Stainless steel spring stem recovery
- ⑫ OT58 brass stem
- ⑬ OT58 brass main valve with vulcanized gasket
- ⑭ OT58 brass threaded insert



DIMENSIONS

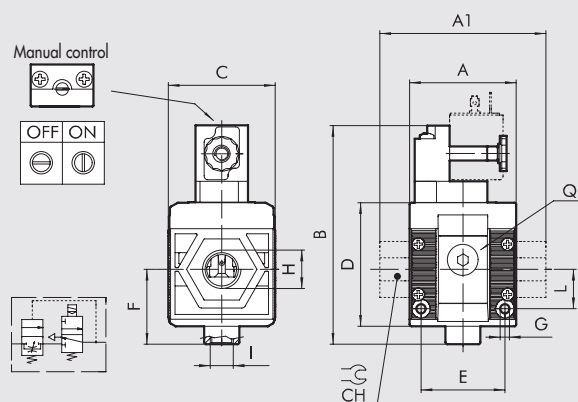
SOLENOID

SY1-SY2



CNOMO SOLENOID

SY2



N.B.: Before assembling other Syntesi elements after the APR, remember to mount the coil on the APR itself.

	SOLENOID SIZE 1			SOLENOID / CNOMO SOLENOID SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42				60.5		
A1	-	-	44	-	-	95	95
B	105				131		
C	-				125		
CH	44				61		
D	-			-	-	32	36
E	51.5				70.5		
F	33.5				47.5		
G	32.2				42.7		
I (exhaust)	Hole for M4 screws				Hole for M5 screws		
L	1/8"				1/4"		
Q (no. 2 additional air takes-off)	16				22.5		
	1/8"				1/4"		

KEY TO CODES

56	1	1	A	70	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	A Progressive starter APR	70 Solenoid * 71 Cnomo solenoid	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port
	2 Size 2	0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port			0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

* Only for size 2

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	Code	Description
Syntesi® SY1 PROGRESSIVE STARTER			Syntesi® SY2 PROGRESSIVE STARTER	Syntesi® SY2 PROGRESSIVE STARTER	
5610A700	APR SY1 elpn without bushings	5620A700	APR SY2 elpn without bushings	5620A710	APR SY2 elpn Cnomo without bushings
5611A701	APR SY1 1/8 elpn	5623A703	APR SY2 3/8 elpn	5623A713	APR SY2 3/8 elpn Cnomo
5612A702	APR SY1 1/4 elpn	5624A704	APR SY2 1/2 elpn	5624A714	APR SY2 1/2 elpn Cnomo
5613A703	APR SY1 3/8 elpn	5625A705	APR SY2 3/4 elpn	5625A715	APR SY2 3/4 elpn Cnomo
		5626A706	APR SY2 1 elpn	5626A716	APR SY2 1 elpn Cnomo

SYNTESI® PRESSURE SWITCHES



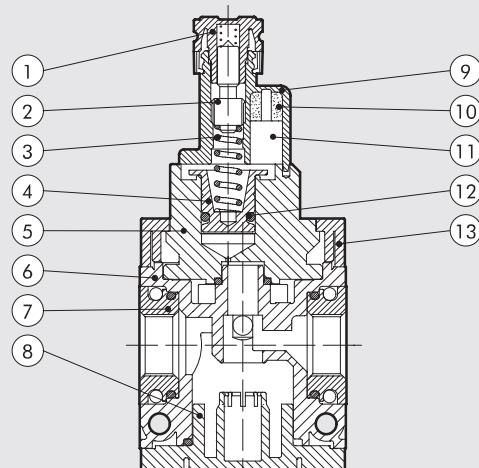
Syntesi® pressure switches feature a high degree of miniaturisation and a modern attractive design.
As they are extremely modular, the Syntesi® series can be installed facing up or down.
They come ready assembled with a 2-metre cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.
It can be regulated via a knurled push-lock handle.
On the front and back there is a port (1/8" for size 1 and 1/4" size 2) that can be used with pressure gauges or as an additional air intake.



TECHNICAL DATA		SY1 PRESSURE SWITCHES			SY2 PRESSURE SWITCHES			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Adjustable pressure interval	bar	0.5 to 10			0.5 to 10			
Hysteresis (not adjustable)	bar	From 0.4 to 0.8 (See diagram)						
Maximum pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Min/Max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to 50			From -10 to 50			
Maximum current	A	2			2			
Maximum voltage	V	250			250			
Outside diameter of cable	mm	4.9			4.9			
Number of wires and cross section		3 x 0.5 mm ²			3 x 0.5 mm ²			
Contacts		Normally-Open (NO) and Normally-Closed (NC)						
Protection		IP65			IP65			
Number of switchings		5 x 10 ⁶			5 x 10 ⁶			
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous						
Mounting position		In any position						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min scfm	500 18			1500 53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
Weight	g	255	250	241	443	416	412	400

COMPONENTS

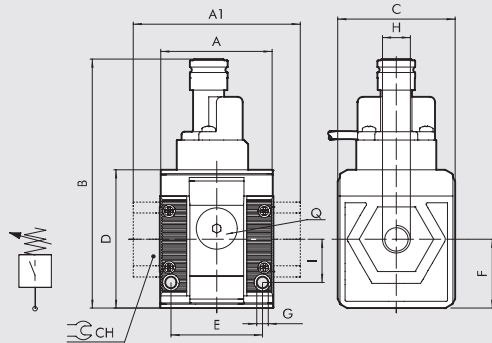
- ① Technopolymer adjusting "push lock" handle
- ② OT58 brass adjusting screw
- ③ Steel piston spring
- ④ OT58 brass piston
- ⑤ Aluminium top plug
- ⑥ Technopolymer body
- ⑦ IN/OUT bushing made of OT58 nickel-plated brass
or passivated aluminium for 3/4" - 1"
- ⑧ Technopolymer bottom plug
- ⑨ Technopolymer pressure switch body
- ⑩ Resin finish for IP65
- ⑪ Electrical contact
- ⑫ O-ring NBR gasket
- ⑬ Technopolymer flange



UNITS

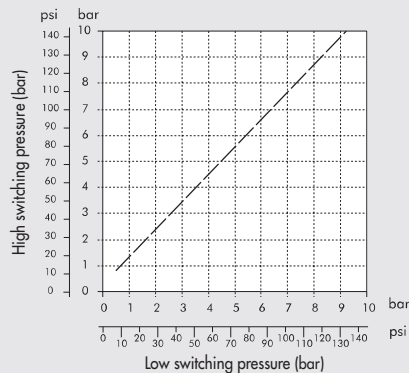
Syntesi® PRESSURE SWITCHES

DIMENSIONS



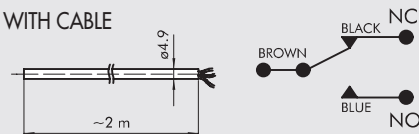
	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	93			101			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	33.5			47.5			
F	25.6			32.5			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

HYSTERESIS GRAPH

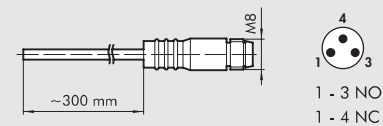


WIRING DIAGRAM

VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



KEY TO CODES

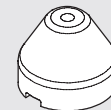
56	1	1	S	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	S Pressure switches	10 2 m cable 20 300 mm cable with M8 connector	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port
	2 Size 2	0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port			0 Without bushing 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description
Syntesi® SY1 PRESSURE SWITCHES	
5610S100	Pressure switch 2 m cable SY1 without bushings
5611S101	Pressure switch 2 m cable SY1 1/8"
5612S102	Pressure switch 2 m cable SY1 1/4"
5613S103	Pressure switch 2 m cable SY1 3/8"
5610S200	Pressure switch M8 SY1 connector without bushings
5611S201	Pressure switch M8 connector SY1 1/8"
5612S202	Pressure switch M8 connector SY1 1/4"
5613S203	Pressure switch M8 connector SY1 3/8"

Code	Description
Syntesi® SY2 PRESSURE SWITCHES	
5620S100	Pressure switch 2 m cable SY2 without bushings
5623S103	Pressure switch 2 m cable SY2 3/8"
5624S104	Pressure switch 2 m cable SY2 1/2"
5625S105	Pressure switch 2 m cable SY2 3/4"
5626S106	Pressure switch 2 m cable SY2 1"
5620S200	Pressure switch M8 SY2 connector without bushings
5623S203	Pressure switch M8 connector SY2 3/8"
5624S204	Pressure switch M8 connector SY2 1/2"
5625S205	Pressure switch M8 connector SY2 3/4"
5626S206	Pressure switch M8 connector SY2 1"

ACCESSOIRES:
SECURITY KNOB

Code	Description
9200703	Security knob APR / pressure switch

NOTE: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

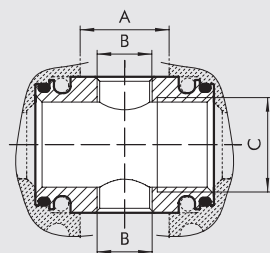
The air take-off is a connecting element that is mounted between two Syntesi® modules. The 2-way version, made of metal and having restrained dimensions, has a threaded port upwards and one downwards. The 4-way version, in technopolymer, has a threaded port on each side. This gives or four additional air outlets for use as required. All Syntesi® modules come with two threaded ports, one on the front and one on the back, for use as air take-off.



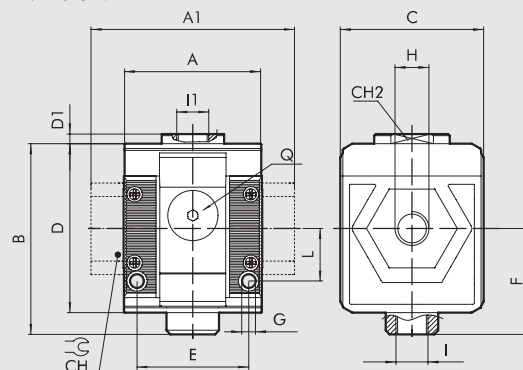
TECHNICAL DATA		AIR TAKE-OFF, SY1		AIR TAKE-OFF, SY2	
Version		PA 2-way	PA 4-way	PA 2-way	PA 4-way
Flow rate of the air take-off at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1550	500 - 2000	7000	1500 - 4500
	scfm	55	18 - 71	248	53 - 160
Maximum pressure	bar	15		13	
	MPa	1.5		1.3	
	psi	217		188	
Min/Max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to 50		From -10 to 50	
Weight	g	62	100	75	306
Fluid		Compressed air or other inert gases			

DIMENSIONS

2-WAY VERSION

[illegible]

4-WAY VERSION



	SIZE 1			SIZE 2			
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	42			60.5			
A1	-	-	44	-	-	95	95
B	58			81			
C	44			61			
CH	-			-	-	32	36
CH2	19			-			
D	51.5			70.5			
D1	3			-			
E	33.5			47.5			
F	32.2			42.7			
G	Hole for M4 screws			Hole for M5 screws			
I	1/8"			1/4"			
I1	1/4"			3/8"			
L	16			22.5			
Q (no. 2 add. air takes-off)	1/8"			1/4"			

56	1	1	P	20	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing	P Air take-off	20 4-way	0 Without bushing
5X Syntesi anti-corrosion		1 1/8" port			1 1/8" port
		2 1/4" port			2 1/4" port
		3 3/8" port			3 3/8" port
	2 Size 2	0 Without bushing			0 Without bushing
		3 3/8" port			3 3/8" port
		4 1/2" port			4 1/2" port
		5 3/4" port			5 3/4" port
		6 1" port			6 1" port

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE CODES

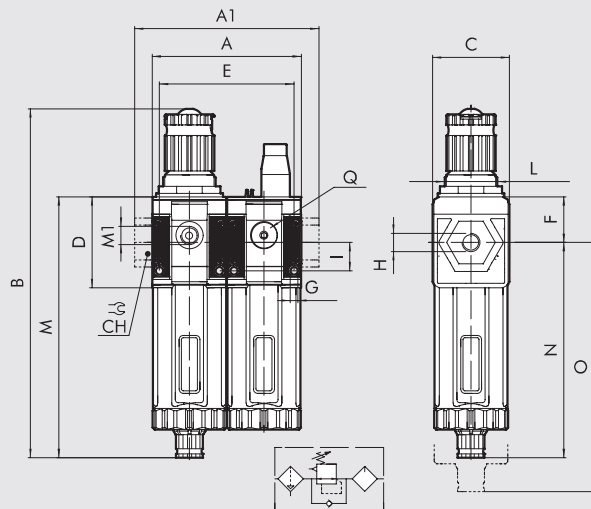
NOTE
Anti-corrosion version
5X _____
Example
5X11P201 PA 4-way SY1 1/8 anti-corrosion

For full details and list of components refer to the sections about filter-regulator and the lubricator.



TECHNICAL DATA		FR + LUB SY1			FR + LUB SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.- 20 (white) - output air purity class ISO8573-1: 4.7.- 50 (blue) - output air purity class ISO8573-1: 5.7.-						
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	350			1200			
(P In=10 bar)	scfm	12			42.5			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1400			4000			
(P In=10 bar)	scfm	50			141.5			
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70			100			
	scfm	2.5			3.5			
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Padlockable knob		Included						
Upstream pressure compensation		Included, via balanced valve						
Weight	g	414	409	400	1074	1047	1043	1031
Fluid		Compressed air or other inert gases						
Mounting position		Vertical			Vertical			
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar	Nl/min	500 (FR) - 450 (LUB)			1400 (FR) - 800 (LUB)			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18 (FR) - 16 (LUB)			49.5 (FR) - 28 (LUB)			
Filter bowl capacity (condensate)	cm³	30			70			
Quantity of filled oil	cm³	60			130			
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. SAC: automatic drain with condensate discharge. Operates by pressure drop - requires variable air take-offs. Note: the maximum input pressure for the RA version must not exceed 10 bar						
Recommended oils		ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)						
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			

DIMENSIONS



	SIZE 1			SIZE 2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	84			121			
A1	-	-	86	-	-	156	156
B	RMSA			246			
	RA/SAC			250			
C	44			61			
CH	-			32			
D	51.5			70.5			
E	75.3			108			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	M30x1.5			M38x2			
M	RMSA			178			
	RA/SAC			182			
M1 (pressure gauge port)	1/8"			1/4"			
N	RMSA			139.8			
	RA/SAC			143.8			
O	RMSA			245			
	RA/SAC			249			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1 2 Size 2	1 1/8" port 2 1/4" port 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port	B Filter-regulator	● 10 5 µm, RMSA, 0 to 2 bar ● 20 20 µm, RMSA, 0 to 2 bar ● 30 50 µm, RMSA, 0 to 2 bar ● 40 5 µm, RA, 0 to 2 bar ● 50 20 µm, RA, 0 to 2 bar ● 60 50 µm, RA, 0 to 2 bar ● 11 5 µm, SAC, 0 to 2 bar ● 21 20 µm, SAC, 0 to 2 bar ● 31 50 µm, SAC, 0 to 2 bar + 12 5 µm, RMSA, 0 to 4 bar + 22 20 µm, RMSA, 0 to 4 bar + 32 50 µm, RMSA, 0 to 4 bar + 42 5 µm, RA, 0 to 4 bar + 52 20 µm, RA, 0 to 4 bar + 62 50 µm, RA, 0 to 4 bar + 13 5 µm, SAC, 0 to 4 bar + 23 20 µm, SAC, 0 to 4 bar + 33 50 µm, SAC, 0 to 4 bar 14 5 µm, RMSA, 0 to 8 bar 24 20 µm, RMSA, 0 to 8 bar 34 50 µm, RMSA, 0 to 8 bar 44 5 µm, RA, 0 to 8 bar 54 20 µm, RA, 0 to 8 bar 64 50 µm, RA, 0 to 8 bar 15 5 µm, SAC, 0 to 8 bar 25 20 µm, SAC, 0 to 8 bar 35 50 µm, SAC, 0 to 8 bar 16 5 µm, RMSA, 0 to 12 bar 26 20 µm, RMSA, 0 to 12 bar 36 50 µm, RMSA, 0 to 12 bar 46 5 µm, RA, 0 to 12 bar 56 20 µm, RA, 0 to 12 bar 66 50 µm, RA, 0 to 12 bar 17 5 µm, SAC, 0 to 12 bar 27 20 µm, SAC, 0 to 12 bar 37 50 µm, SAC, 0 to 12 bar	L Lubricator	10 Manual filling from the top	1 1/8" port 2 1/4" port 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

● Not available in the anti-corrosion version.

+ Anti-corrosion version available only in size 1.

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
FR + LUB Syntesi [®] SY1		FR + LUB Syntesi [®] SY2		Anti-corrosion version
5611B24L101	FR+LUB SY1 1/8 20 08 RMSA	5623B24L103	FR+LUB SY2 3/8 20 08 RMSA	5X-----
5611B54L101	FR+LUB SY1 1/8 20 08 RA	5623B54L103	FR+LUB SY2 3/8 20 08 RA	Example
5612B24L102	FR+LUB SY1 1/4 20 08 RMSA	5624B24L104	FR+LUB SY2 1/2 20 08 RMSA	5X11B54L101 FR+LUB SY1 1/8 20 08 RA anti-corrosion
5612B54L102	FR+LUB SY1 1/4 20 08 RA	5624B54L104	FR+LUB SY2 1/2 20 08 RA	
5613B24L103	FR+LUB SY1 3/8 20 08 RMSA	5625B24L105	FR+LUB SY2 3/4 20 08 RMSA	
5613B54L103	FR+LUB SY1 3/8 20 08 RA	5625B54L105	FR+LUB SY2 3/4 20 08 RA	
		5626B24L106	FR+LUB SY2 1 20 08 RMSA	
		5626B54L106	FR+LUB SY2 1 20 08 RA	

NOTES

V3V + FR + LUB SYNTESI®

For full details and list of components refer to the sections about shut-off valve, filter-regulator and lubricator.

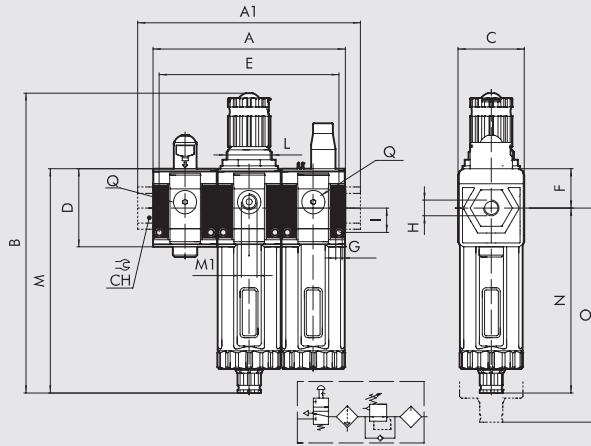


UNITS

V3V + FR + LUB Syntesi®

TECHNICAL DATA		V3V + FR + LUB SY1			V3V + FR + LUB SY2			
Threaded port		1/8'	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	5 (yellow) - output air purity class ISO8573-1: 3.7.- 20 (white) - output air purity class ISO8573-1: 4.7.- 50 (blue) - output air purity class ISO8573-1: 5.7.-						
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	250			1200			
(P In=10 bar)	scfm	9			42.5			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1050			4000			
(P In=10 bar)	scfm	37			141.5			
Relief valve flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	70			100			
	scfm	2.5			3.5			
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Full outflow with zero inlet pressure		Included			Included			
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500			2000			
	scfm	18			71			
Padlockable knob		Included with both V3V and regulator						
Upstream pressure compensation		Included, via balanced valve						
Weight	g	598	593	584	1479	1452	1448	1436
Fluid		Compressed air or other inert gases						
Mounting position		Vertical			Vertical			
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar	Nl/min	500 (V3V) - 500 (FR) - 450 (LUB)			1500 (V3V) - 1400 (FR) - 800 (LUB)			
(0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18 (V3V) - 18 (FR) - 16 (LUB)			53 (V3V) - 49.5 (FR) - 28 (LUB)			
Filter bowl capacity	cm³	30			70			
Quantity of filled oil	cm³	60			130			
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs. Note: the maximum input pressure for the RA version must not exceed 10 bar						
Recommended oils		ISO and UNI FD22 (Energol HPL; Spinesso; Mobil DTE; Tellus oil)						
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			
		</						

OVERALL DIMENSIONS



	SIZE 1			SIZE 2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	126				181.5		
A1	-	-	128	-	-	217	217
B	RMSA			246			
	RA/SAC			250			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	117.1			168.5			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	M30x1.5			M38x2			
M	RMSA			178			
	RA/SAC			182			
M1 (pressure gauge port)	1/8"			1/4"			
N	RMSA			139.8			
	RA/SAC			143.8			
O	RMSA			245			
	RA/SAC			249			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	V	10	B	24	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	ELEMENT	DEGREE OF FILTRATION, TYPE OF CONDENSATE DRAIN AND SETTING RANGE	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi 5X Syntesi anti-corrosion	1 Size 1 2 Size 2	1 1/8" port 2 1/4" port 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port	V V3V	10 Manual with Ø3.5 hole for padlocks 11 Manual with Ø7 hole for padlock	B Filter-regulator	● 10 5 µm, RMSA, 0 to 2 bar ● 20 20 µm, RMSA, 0 to 2 bar ● 30 50 µm, RMSA, 0 to 2 bar ● 40 5 µm, RA, 0 to 2 bar ● 50 20 µm, RA, 0 to 2 bar ● 60 50 µm, RA, 0 to 2 bar ● 11 5 µm, SAC, 0 to 2 bar ● 21 20 µm, SAC, 0 to 2 bar ● 31 50 µm, SAC, 0 to 2 bar + 12 5 µm, RMSA, 0 to 4 bar + 22 20 µm, RMSA, 0 to 4 bar + 32 50 µm, RMSA, 0 to 4 bar + 42 5 µm, RA, 0 to 4 bar + 52 20 µm, RA, 0 to 4 bar + 62 50 µm, RA, 0 to 4 bar + 13 5 µm, SAC, 0 to 4 bar + 23 20 µm, SAC, 0 to 4 bar + 33 50 µm, SAC, 0 to 4 bar 14 5 µm, RMSA, 0 to 8 bar 24 20 µm, RMSA, 0 to 8 bar 34 50 µm, RMSA, 0 to 8 bar 44 5 µm, RA, 0 to 8 bar 54 20 µm, RA, 0 to 8 bar 64 50 µm, RA, 0 to 8 bar 15 5 µm, SAC, 0 to 8 bar 25 20 µm, SAC, 0 to 8 bar 35 50 µm, SAC, 0 to 8 bar 16 5 µm, RMSA, 0 to 12 bar 26 20 µm, RMSA, 0 to 12 bar 36 50 µm, RMSA, 0 to 12 bar 46 5 µm, RA, 0 to 12 bar 56 20 µm, RA, 0 to 12 bar 66 50 µm, RA, 0 to 12 bar 17 5 µm, SAC, 0 to 12 bar 27 20 µm, SAC, 0 to 12 bar 37 50 µm, SAC, 0 to 12 bar	L Lubricator	10 Manual filling from the top	1 1/8" port 2 1/4" port 3 3/8" port 4 1/2" port 5 3/4" port 6 1" port

● Not available in the anti-corrosion version.

+ Anti-corrosion version available only in size 1.

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.

UNITS

V3V + FR + LUB Syntesi®

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
V3V + FR + LUB Syntesi® SY1		V3V + FR + LUB Syntesi® SY2		Anti-corrosion version
5611V10B24L101	V3V+FR+LUB SY1 1/8 20 08 RMSA	5623V10B24L103	V3V+FR+LUB SY2 3/8 20 08 RMSA	5X-----
5611V10B54L101	V3V+FR+LUB SY1 1/8 20 08 RA	5623V10B54L103	V3V+FR+LUB SY2 3/8 20 08 RA	Example
5612V10B24L102	V3V+FR+LUB SY1 1/4 20 08 RMSA	5624V10B24L104	V3V+FR+LUB SY2 1/2 20 08 RMSA	5X11V10B54L101 V3V+FR+LUB SY1 1/8 20 08 RA
5612V10B54L102	V3V+FR+LUB SY1 1/4 20 08 RA	5624V10B54L104	V3V+FR+LUB SY2 1/2 20 08 RA	anti-corrosion
5613V10B24L103	V3V+FR+LUB SY1 3/8 20 08 RMSA	5625V10B24L105	V3V+FR+LUB SY2 3/4 20 08 RMSA	
5613V10B54L103	V3V+FR+LUB SY1 3/8 20 08 RA	5625V10B54L105	V3V+FR+LUB SY2 3/4 20 08 RA	
		5626V10B24L106	V3V+FR+LUB SY2 1 20 08 RMSA	
		5626V10B54L106	V3V+FR+LUB SY2 1 20 08 RA	

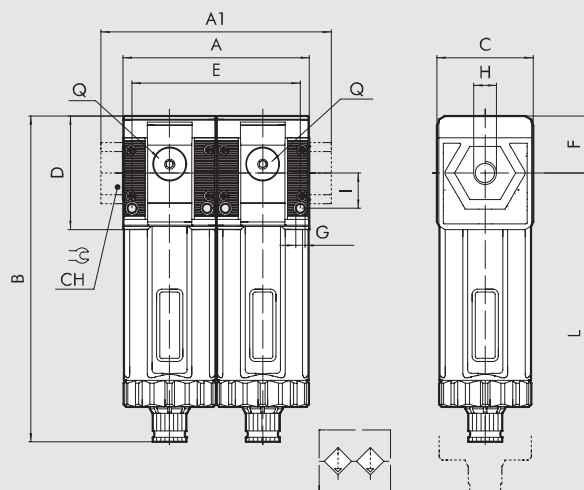
NOTES

For full details and list of components refer to the sections about filter and depurator.



TECHNICAL DATA		FIL + DEP SY1			FIL + DEP SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Purifier degree of filtration	µm	0.01 - output air purity class ISO8573-1: 1.7.2 1 - output air purity class ISO8573-1: 3.7.3						
Filter degree of filtration	µm	5 (yellow)						
Max. inlet pressure	bar	15			13			
	MPa	1.5			1.3			
	psi	217			188			
Suggested flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	550			1050			
	scfm	9			37			
Maximum suggested flow rate		Look at the chart on the depurator page C1.12			Look at the chart on the depurator page C1.12 / C1.13			
		N.B.: flow rates higher than the recommended value reduces purification efficiency						
Min/max temperature at 10 bar; 1 MPa; 145 psi	°C	From -10 to +50			From -10 to +50			
Weight	g	358	353	344	942	915	911	899
Purifier condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure						
Filter condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure						
		RA: automatic drain with condensate discharge, independent of pressure and flow rate.						
		Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.						
		SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.						
		Note: the maximum input pressure for the RA version must not exceed 10 bar						
Fluid		Compressed air or other inert gases						
Bowl capacity filter/depurator	cm³	30/15			70/40			
Mounting position		Vertical			Vertical			
Port for additional air take-off		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate (not purified air)	Nl/min	500			1500			
at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			

DIMENSIONS



	SIZE 1			SIZE 2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
A	84			121			
A1	-	-	86	-	-	217	217
B	RMSA			178			
	RA/SAC			182			
C	44			61			
CH	-			-	-	32	36
D	51.5			70.5			
E	75.3			108			
F	25.8			38.2			
G	Hole for M4 screws			Hole for M5 screws			
I	16			22.5			
L	RMSA			245			
	RA/SAC			249			
Q (no. 2 additional air takes-off)	1/8"			1/4"			

KEY TO CODES

56	1	1	F	10	D	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port	F Filter	10 5 µm, RMSA	D Depurator	10 0.01 µm RMSA	1 1/8" port
5X Syntesi anti-corrosion	2 Size 2	2 1/4" port		40 5 µm, RA		11 0.01 µm SAC	2 1/4" port
		3 3/8" port		11 5 µm, SAC		30 1 µm RMSA	3 3/8" port
		3 3/8" port				31 1 µm SAC	3 3/8" port
		4 1/2" port					4 1/2" port
		5 3/4" port					5 3/4" port
		6 1" port					6 1" port

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge. **Operates by pressure drop – requires variable air take-offs.**

PURCHASE ORDER CODES HAVING A MORE FREQUENT USE

N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description	NOTE
FIL + DEP Syntesi® SY1		FIL + DEP Syntesi® SY2		Anti-corrosion version
5611F10D101	FIL+DEP SY1 1/8 05 RMSA	5623F10D103	FIL+DEP SY2 3/8 05 RMSA	5X _____
5611F40D101	FIL+DEP SY1 1/8 05 RA	5623F40D103	FIL+DEP SY2 3/8 05 RA	Example
				5X11F40D101 FIL+DEP SY1 1/8 05 RA anti-corrosion
5612F10D102	FIL+DEP SY1 1/4 05 RMSA	5624F10D104	FIL+DEP SY2 1/2 05 RMSA	
5612F40D102	FIL+DEP SY1 1/4 05 RA	5624F40D104	FIL+DEP SY2 1/2 05 RA	
5613F10D103	FIL+DEP SY1 3/8 05 RMSA	5625F10D105	FIL+DEP SY2 3/4 05 RMSA	
5613F40D103	FIL+DEP SY1 3/8 05 RA	5625F40D105	FIL+DEP SY2 3/4 05 RA	
		5626F10D106	FIL+DEP SY2 1 05 RMSA	
		5626F40D106	FIL+DEP SY2 1 05 RA	

For full details and list of components refer to the sections about filter and lubricator.

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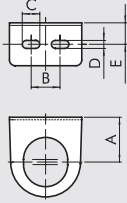
KEY TO CODES

56	1	1	F	10	L	10	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	DEGREE OF FILTRATION AND TYPE OF CONDENSATE DRAIN	ELEMENT	OIL FILLING	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	1 1/8" port	F Filter	5 µm, RMSA	L Lubricator	10 Manual filling from the top	1 1/8" port
5X Syntesi anti-corrosion		2 1/4" port		20 µm, RMSA			2 1/4" port
		3 3/8" port		30 50 µm, RMSA			3 3/8" port
	2 Size 2	3 3/8" port		40 5 µm, RA			3 3/8" port
		4 1/2" port		50 20 µm, RA			4 1/2" port
		5 3/4" port		60 50 µm, RA			5 3/4" port
		6 1" port		11 5 µm, SAC			6 1" port
				21 20 µm, SAC			
				31 50 µm, SAC			

SAC: automatic drain with condensate discharge. **Operates by pressure drop – requires variable air take-offs.**

Code	Description	Code	Description	NOTE
FIL + LUB Syntesis SY1		FIL + LUB Syntesis SY2		Anti-corrosion version
5611F20L101	FIL+LUB SY1 1/8 20 RMSA	5623F20L103	FIL+LUB SY2 3/8 20 RMSA	5X-----
5611F50L101	FIL+LUB SY1 1/8 20 RA	5623F50L103	FIL+LUB SY2 3/8 20 RA	Example
				5X11F50L101 FIL+LUB SY1 1/8 20 RA anti-corrosion
5612F20L102	FIL+LUB SY1 1/4 20 RMSA	5624F20L104	FIL+LUB SY2 1/2 20 RMSA	
5612F50L102	FIL+LUB SY1 1/4 20 RA	5624F50L104	FIL+LUB SY2 1/2 20 RA	
5613F20L103	FIL+LUB SY1 3/8 20 RMSA	5625F20L105	FIL+LUB SY2 3/4 20 RMSA	
5613F50L103	FIL+LUB SY1 3/8 20 RA	5625F50L105	FIL+LUB SY2 3/4 20 RA	
		5626F20L106	FIL+LUB SY2 1 20 RMSA	
		5626F50L106	FIL+LUB SY2 1 20 RA	

MOUNTING BRACKET FOR REG. AND FR KNOB



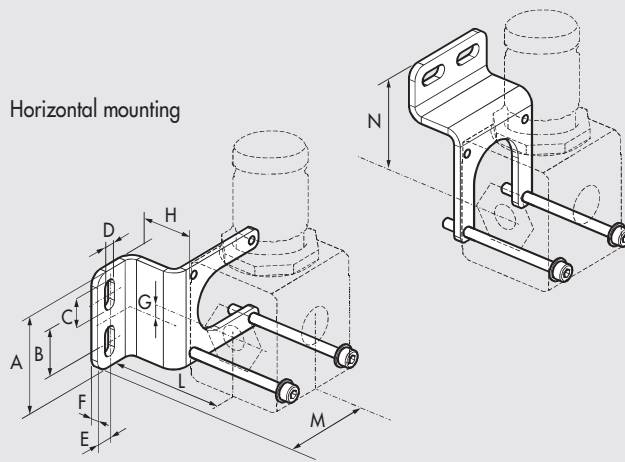
Code	Description
9200701	SF100 - BIT-ND 1/4 - SY1
9400701	SF200 - ND-3/8 1/2 - SY2

Code	A	B	C	D	E
9200701	32	20	12	5.5	14.2
9400701	42	40	12	5.5	15

MOUNTING BRACKET

Vertical mounting

Horizontal mounting



Code	Description
9200716X	Mounting bracket SY1
9200717X	Mounting bracket SY2

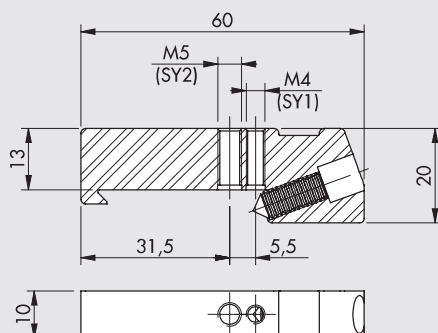
Note: Supplie complete with screws and washers.

Max torque 0.8 Nm for SY1 - Max torque 2.0 Nm for SY2

Codes to be used for units in the standard and the anti-corrosion version

Code	A	B	C	D	E	F	G	H	L	M	N
9200716X	41.5	20	12.7	5.5	7	3	0.8	25	43.8	46.5	47
9200717X	60	40	12.7	5.5	8	3	1.3	30	57.5	58.3	59.5

CONNECTION BRACKETS ON THE BAR (DIN EN50022)



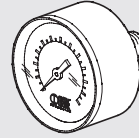
Code	Description
9200718X	Connection brackets on DIN bar, SY1 - SY2

Note: 2 pieces per pack complete with screws and washers.

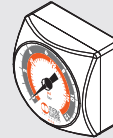
Max torque 0.8 Nm for SY1 - Max torque 2.0 Nm for SY2

Codes to be used for units in the standard and the anti-corrosion version

PRESSURE GAUGES

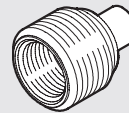


Code	Description
9700101	M 40 1/8 012
9700102	M 40 1/8 04
9800101	M 50 1/8 012
9800102	M 50 1/8 04
9900101	M 63 1/4 012



9700109	M 40x40 1/8 04
9700110	M 40x40 1/8 012

ADAPTERS FOR PRESSURE GAUGES (SY2)



Code	Description
9210005	1/4 adapter for 1/8 pressure gauge

COIL 22 mm FOR APR AND V3V ELPN



Code	Description
W0215000151	Coil 22 Ø 8 BA 2W-12VDC
W0215000101	Coil 22 Ø 8 BA 2W-24VDC
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC

Electrical connection DIN 43650 B-IND

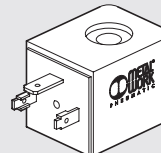
"UL" AND "CSA" COILS 22 mm



Code	Description
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR

Electrical connection DIN 43650 B-IND

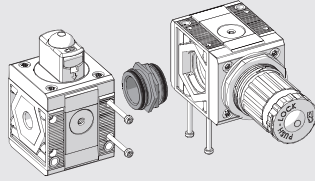
COIL 30 mm FOR APR AND V3V ELPN



Code	Description
W0210010100	Coil 30 Ø 8 2W-24VDC
W0210011100	Coil 30 Ø 8 3.5VA-24VAC 50/60 HZ
W0210012100	Coil 30 Ø 8 3.5VA-110VAC 50/60 HZ
W0210013100	Coil 30 Ø 8 3.5VA-220VAC 50/60 HZ

Electrical connection DIN 43650 - A

90° CONNECTING ELEMENT KIT

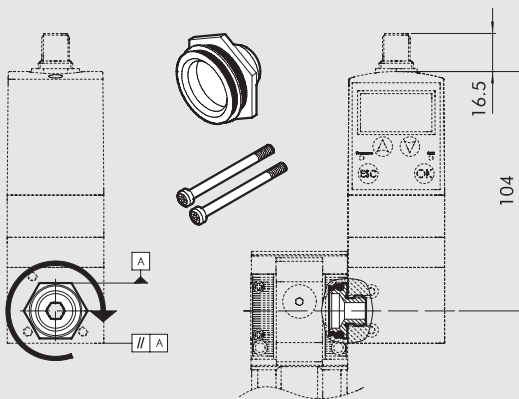


Code	Description
9210009	90° SY1 connection element kit
9210019	90° SY2 connection element kit
9210009X	90° anti-corrosion SY1 connection element kit
9210019X	90° anti-corrosion SY2 connection element kit

Max torque 0.4 Nm for SY1

Max torque 2.5 Nm for SY2

KIT CONNECTING REGTRONIC 1/4 (PAGE C6.12) AND GS REGULATOR (PAGE C6.2)



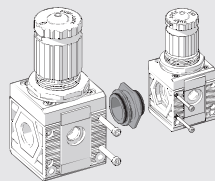
Code	Description
9210004	Adapter for regtronic 1/4 SY1

Max torque for screw, 0.4 Nm

Instructions:

- 1) Screw the connecting bushing onto the REGTRONIC 1/4 as far as it will go.
Use sealant on the G1/4 thread to provide a further seal.
- 2) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of REGTRONIC 1/4 (see diagram).
- 3) Insert the bushing into the Syntesi® unit.
- 4) Tighten the two self-tapping screws in the Syntesi® unit to a torque of 0.4 Nm max.

SY1 - SY2 SIZE ADAPTER



Code	Description
9210006	SY1 - SY2 size adapter
9210006X	SY1 - SY2 size adapter anti-corrosion

Max torque for screw, 0.4 Nm for SY1

Max torque for screw, 2.5 Nm for SY2

SY1 - SY2 KIT FOR CONNECTION TO FLUX 1 - 2



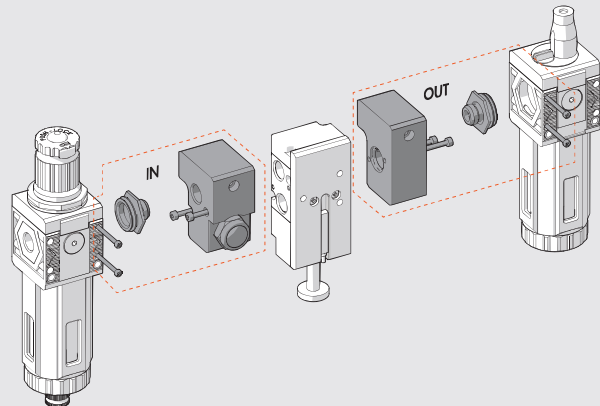
Code	Description
900099A002	Adapter FLUX 1 - SY1
900099A003	Adapter FLUX 2 - SY2

Max torque for screw, 0.4 Nm for SY1

Max torque for screw, 2.5 Nm for SY2

See page C7.18 for the assembly diagram.

SY1 - SY2 KIT FOR CONNECTION TO SERIE 70 SAFE AIR® VALVES



Code	Description
9210015	IN 1/4 SY1 block accessory
9210016	OUT 1/4 SY1 block accessory
9210022	IN 3/8 SY1 block accessory
9210023	OUT 3/8 SY1 block accessory

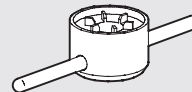
9210017	IN 3/8 SY2 block accessory
9210018	OUT 3/8 SY2 block accessory
9210020	IN 1/2 SY2 block accessory
9210021	OUT 1/2 SY2 block accessory

Max torque for screw, 0.4 Nm for SY1

Max torque for screw, 2.5 Nm for SY2

See page B1.155 for the assembly diagram.

BOWL DISASSEMBLY SPANNER



Code	Description
9170601	CS TF - TL BIT/SY1
9210050	CS TF - TL SY2

WALL-FIXING SCREW



Code	Description
9210030	M4 x 55 fixing screw SY1
9210031	M5 x 75 fixing screw SY2

Max torque 0.8 Nm for SY1

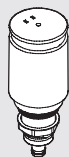
Max torque 2.0 Nm for SY2

PADLOCK



Code	Description
9062401	Padlock

AUTOMATIC DRAIN (RA)



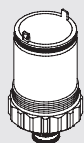
Code	Description
9000802	RA automatic drain spare part

AUTOMATIC DRAIN (SAC)



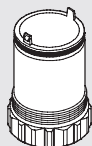
Code	Description
9000803	Spares SAC automatic drain

BOWL RMSA/RA/SAC



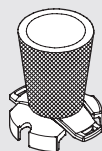
Code	Description
9210100	Bowl FIL FR DEP RMSA SY1
9210101	Bowl FIL FR RA SY1
9210102	Bowl FIL FR DEP SAC SY1
9210105	Bowl FIL FR DEP RMSA SY2
9210106	Bowl FIL FR RA SY2
9210107	Bowl FIL FR DEP SAC SY2

LUBRICATOR BOWL



Code	Description
9210110	Bowl LUB SY1
9210115	Bowl LUB SY2

FILTERING ELEMENT



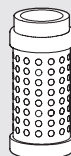
Code	Description
9210150	Filtering element 5µm (yellow) SY1
9210151	Filtering element 20µm (white) SY1
9210152	Filtering element 50µm (blue) SY1
9210155	Filtering element 5µm (yellow) SY2
9210156	Filtering element 20µm (white) SY2
9210157	Filtering element 50µm (blue) SY2

PURIFIER FILTERING ELEMENT



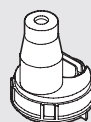
Code	Description
9210160	Cartridge 0.01µm DEP SY1
9210165	Cartridge 0.01µm DEP SY2
9210162	Cartridge 1µm DEP SY1
9210167	Cartridge 1µm DEP SY2

AC FILTERING ELEMENT (ACTIVE CARBON)



Code	Description
9210161	Cartridge AC SY1
9210166	Cartridge AC SY2

TRANSPARENT LUBRICATOR COVER



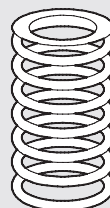
Code	Description
9210180	Transparent cover LUB SY1
9210185	Transparent cover LUB SY2

LUBRICATOR OIL-FILLING CAP



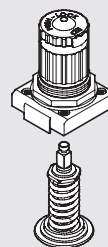
Code	Description
9210181	Oil-filling cap LUB SY1
9210186	Oil-filling cap LUB SY2

SPRINGS FOR REGULATORS AND FR



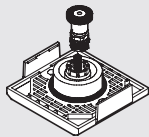
Code	Description
9210190	Spares MO 02 SY1
9210191	Spares MO 04 SY1/SY1 anti-corrosion
9210192	Spares MO 08 SY1
9210193	Spares MO 012 SY1
9210195	Spares MO 02 SY2
9210196	Spares MO 04 SY2
9210197	Spares MO 08 SY2
9210198	Spares MO 012 SY2
9210192X	Spares 08 SY1 anti-corrosion
9210193X	Spares 012 SY1 anti-corrosion
9210197X	Spares 08 SY2 anti-corrosion
9210198X	Spares 012 SY2 anti-corrosion

BELL FOR REG AND FR



Code	Description
9210200	Bell 02 SY1
9210201	Bell 04 SY1
9210202	Bell 08 SY1
9210203	Bell 012 SY1
9210220	Bell 02 SY2
9210221	Bell 04 SY2
9210222	Bell 08 SY2
9210223	Bell 012 SY2
9210202X	Bell 08 SY1 anti-corrosion
9210203X	Bell 012 SY1 anti-corrosion
9210222X	Bell 08 SY2 anti-corrosion
9210223X	Bell 012 SY2 anti-corrosion

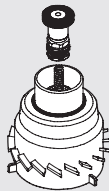
POPPET FOR REG



Code	Description
9210210	Poppet REG SY1
9210230	Poppet REG SY2
9210210X	Poppet REG SY1 anti-corrosion
9210230X	Poppet REG SY2 anti-corrosion

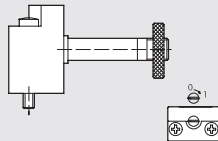
NOTES

POPPET FOR FR



Code	Description
9210211	Poppet FR 5µm SY1
9210212	Poppet FR 20µm SY1
9210213	Poppet FR 50µm SY1
9210231	Poppet FR 5µm SY2
9210232	Poppet FR 20µm SY2
9210233	Poppet FR 50µm SY2

CNOMO CONTROL FOR V3V AND APR SY2



Code	Description
9453922	Elpn Cnomo control kit, manual bistable

NOTES

UNITS

Syntesi® SPARE PARTS

NOTES

UNITS



NOTES

UNITS

NOTES

UNITS



NOTES

UNITS

NOTES

UNITS

SUMMARY bit



bit STANDARD

	● GENERAL TECHNICAL DATA bit	C2.2
	● bit FILTER	 C2.4
	● bit DEPURATOR	 C2.6
	● bit MICRO-REGULATOR	 C2.8
	● bit PADLOCKABLE MICROREGULATOR	 C2.10
	● bit FILTER-REGULATOR	 C2.11
	● bit LUBRICATOR	 C2.13
	● bit TAKE-OFF	 C2.16
	● FIL + REG + LUB bit	 C2.17
	● FR + LUB bit	 C2.19
	● FIL + DEP bit	 C2.21
	● FIL + LUB bit	 C2.22

bit SERIES F FOR WATER

	● GENERAL TECHNICAL DATA bit SERIES F FOR WATER	C2.23
	● bit SERIES F FILTER FOR WATER	 C2.24
	● bit SERIES F REGULATOR FOR WATER	 C2.26
	● bit SERIES F FILTER-REGULATOR FOR WATER	 C2.29

ACCESSORIES AND SPARE PARTS

	● bit ACCESSORIES	 C2.32
	● bit SPARE PARTS	 C2.33

GENERAL TECHNICAL DATA **bit**

The units in the **bit** range feature:

- reduced dimensions
- negligible load loss
- long life
- excellent quality-to-price ratio

Thanks to its technical features the **bit** air treatment range is particularly suitable for de-centralized use near the final actuators.



TECHNICAL DATA

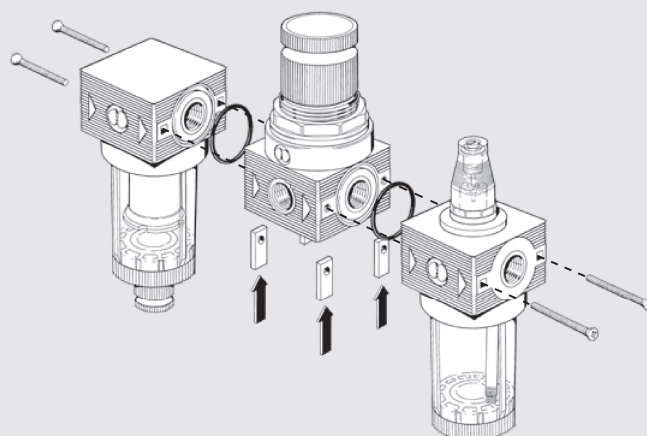
		BIT 1/8"	BIT 1/4"
Threaded port		1/8"	1/4"
Degree of filtration	µm	5 (yellow) 20 (white) 50 (blue)	
Degree of purification		99.97% α 0.01 µm	
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	350	
	scfm	12	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	- 10° to + 50°	
	°F	14° to 122°	
Elements		Filter - Regulator - Lubricator - Filter-regulator - Depurator	
Mounting		Units: FRL, FR + L, F + L, F + D	
Fluid		By means of the bracket provided	
Compatibility with oils		Compressed air	
		See chapter Z1	

ASSEMBLY

Use ASSEMBLY PLATES (code 9170201) to assemble the **bit** elements correctly.

Assembly procedure:

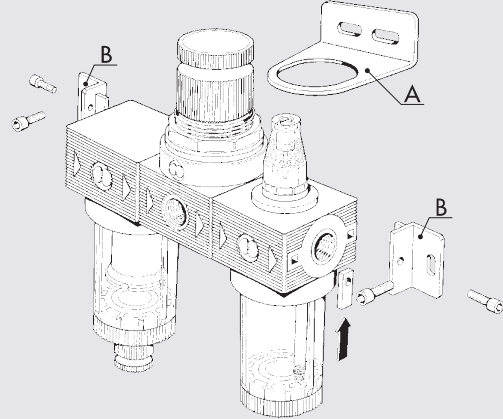
- Fit the plates right into the slots under the body of the **bit** element
- Check that there O-rings round the threaded outlet
- Assemble the elements, making sure that the flow run in the direction of the arrows marked on the body.



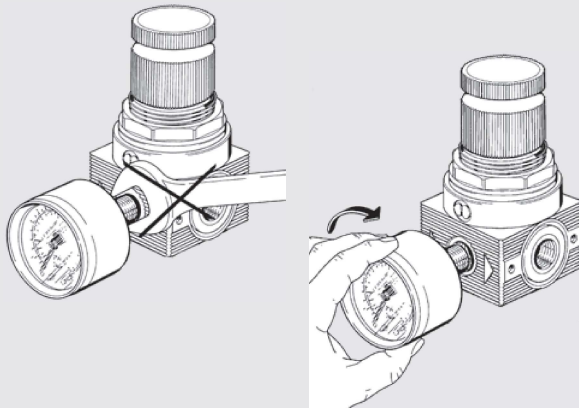
WALL MOUNTING

The wall fixing of a **bit** unit can be made through:

- Fixing bracket R/FR code 9200701 (A)
- Wall fixing plates code 9170301 (B)

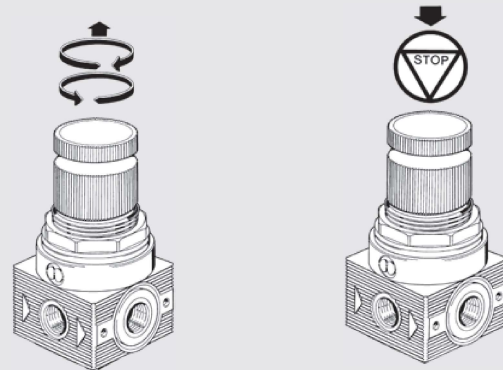


GENERAL RULES - USE AND MAINTENANCE



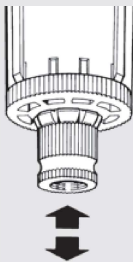
MOUNTING THE GAUGE

The gauge must be mounted by hand without using a spanner. Use fluid sealants to provide a good seal. N.B. Do not use Teflon.



SETTING THE PRESSURE

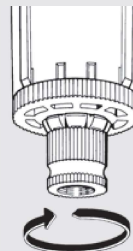
The air pressure must always be set upwards. The knob can be locked so that the set pressure cannot be altered.



With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.



Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

bit FILTER

The units in the **bit** range feature:

- reduced dimensions
- negligible load loss
- long life
- excellent quality-to-price ratio

Thanks to its technical features the **bit** air treatment range is particularly suitable for de-centralized use near the final actuators.

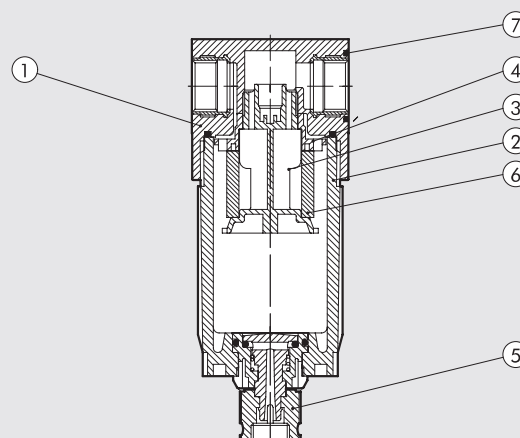


TECHNICAL DATA

		BIT 1/8"	BIT 1/4"
Threaded port		1/8"	1/4"
Degree of filtration	µm	5 (yellow) 20 (white) 50 (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.6 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	860	
	scfm	30.5	
Flow rate at 6.3 bar (0.6 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1200	
	scfm	42.5	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	40	
Wall fixing screws		M4 by means of the bracket provided	
Bowl capacity	cm ³	16	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge .	
		Operates by pressure drop – requires variable air take-offs.	
		Compressed air	
Fluid			

COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Clear technopolymer bowl
- ③ Technopolymer baffle plug
- ④ Technopolymer centrifuge
- ⑤ Condensate drain (RMSA)
- ⑥ HDPE sintered filter cartridge
- ⑦ NBR gaskets



FLOW CHARTS

FIL

$$\Delta P = (P_m - P_v)$$

psi kPa bar

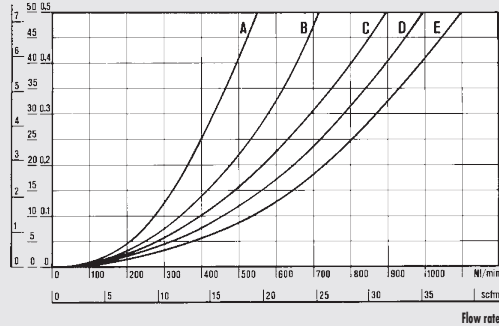
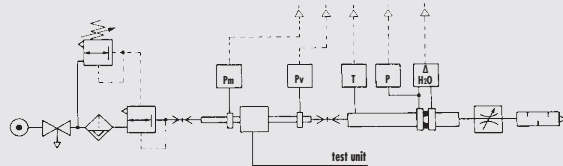


Chart referring to a filter with 1/4 ports



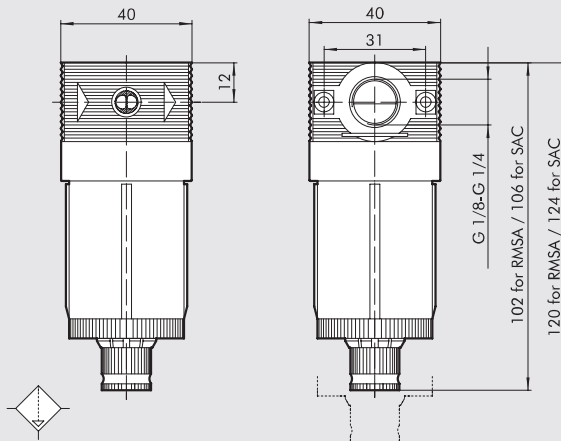
**Department
of Mechanics**
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
(B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
(C) = 6 bar - 0.6 MPa - 87 psi

DIMENSIONS



ORDERING CODES

Code	Description
5101001	FIL BIT 1/8 5 RMSA
5101004	FIL BIT 1/8 5 SAC
5101002	FIL BIT 1/8 20 RMSA
5101005	FIL BIT 1/8 20 SAC
5101003	FIL BIT 1/8 50 RMSA
5101006	FIL BIT 1/8 50 SAC
5201001	FIL BIT 1/4 5 RMSA
5201004	FIL BIT 1/4 5 SAC
5201002	FIL BIT 1/4 20 RMSA
5201005	FIL BIT 1/4 20 SAC
5201003	FIL BIT 1/4 50 RMSA
5201006	FIL BIT 1/4 50 SAC

SYNOPTIC, SIZES AND VERSIONS

FIL ELEMENT	BIT SIZE	1/8 THREADED PORT	5 DEGREE OF FILTRATION	RMSA CONDENSATE DRAIN
FIL	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

UNITS

bit FILTER

bit DEPURATOR

Coalescing mini-depurator

- Space saving
- Minimum load loss as the flow rate varies
- All-round condensate level viewing



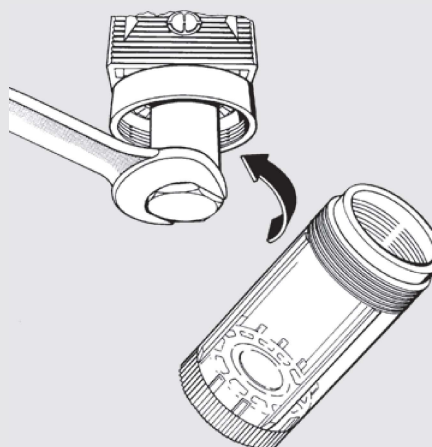
UNITS

bit DEPURATOR

TECHNICAL DATA		DEP BIT 1/8"	DEP BIT 1/4"
Threaded port		1/8"	1/4"
Degree of purification		99.97% 0.01 µm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Suggested flow at 6 bar	Nl/min	200	
	scfm	7	
Maximum suggested flow rate		See next page	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	65	
Wall fixing screws		M4 by means of the bracket provided	
Bowl capacity	cm ³	16	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.	
Fluid		Filtered 5 µm compressed air	
Notes		A It is advisable to mount a 5 m filter upstream the depurator acting as a rough filter.	

USE AND MAINTENANCE

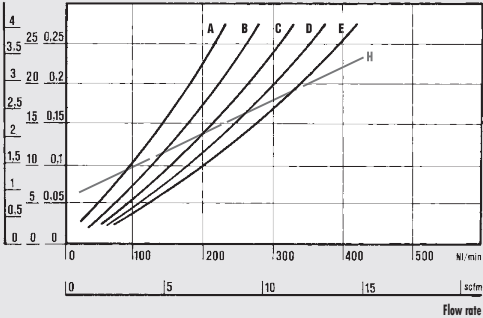
When replacing the coalescing cartridge, unscrew the bowl and then unscrew the screen of the cartridge assembly. Then replace the cartridge. Use a no. 3 compass spanner to unscrew the bowl.



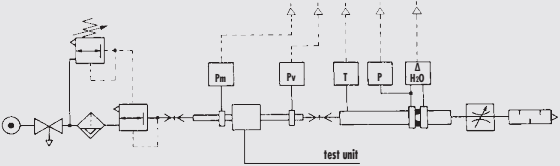
FLOW CHARTS

DEP

$\Delta P = (P_m - P_v)$
psi kPa bar



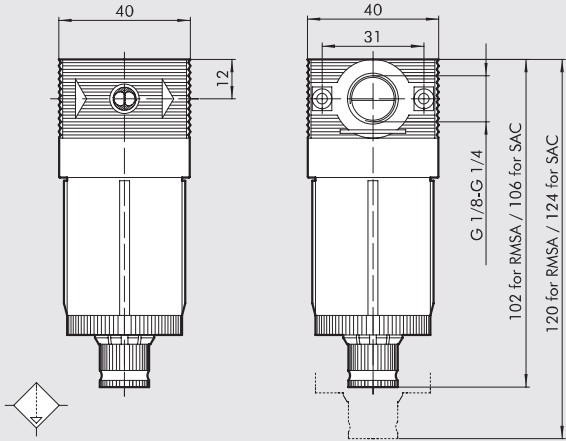
**Department
of Mechanics**
Turin Polytechnic



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- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi
- (H) = maximum flow rate recommended for optimal operation

DIMENSIONS



ORDERING CODES

Code	Description
5112001	DEP BIT 1/8 RMSA
5212001	DEP BIT 1/4 RMSA

SYNOPTIC, SIZES AND VERSIONS

DEP ELEMENT	BIT SIZE	1/8 THREADED PORT	RMSA CONDENSATE DRAIN
DEP	BIT	1/8 1/4	RMSA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

bit MICRO-REGULATOR

Micro-regulator with rolling diaphragm.

- Preset pressure stability as the upstream pressure varies.
- High flow rates with reduced pressure drops
- Quick overpressure exhaust

Versions available

bit FC: controlled relief to allow greater accuracy in regulation by means of slight continuous air relief.

bit for water: used to regulate the pressure in water circuits; without blowoff valve

bit SR: for use when the downstream circuit needs to be relieved quickly as the upstream pressure drops. Mount the SR regulator between the power supply valve and the point of use.

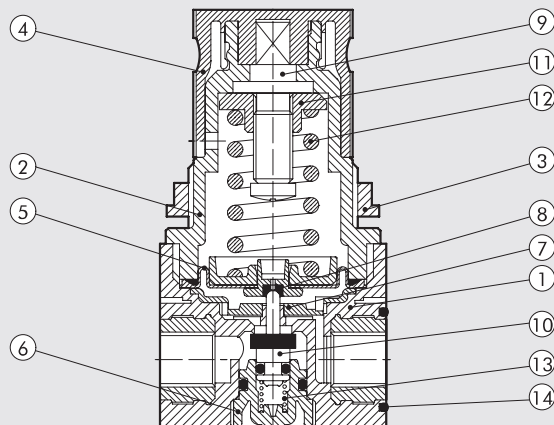


TECHNICAL DATA

		MR BIT 1/8"	MR BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	340	
	scfm	12	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	600	
	scfm	21	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	80	
Wall fixing screws		M4 by means of the bracket provided	
Gauge port		G 1/8"	
Mounting position		In any position	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Notes		The regulator pressure must always be set upwards.	
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Technopolymer bell
- ③ Technopolymer fixing ring nut
- ④ Technopolymer knob
- ⑤ Rolling diaphragm
- ⑥ Technopolymer plug
- ⑦ Technopolymer anti-vibration screen
- ⑧ NBR relieving gasket
- ⑨ OT58 brass adjusting screws
- ⑩ OT58 valve with NBR vulcanized gasket
- ⑪ OT58 brass nut
- ⑫ Steel adjusting spring
- ⑬ Stainless steel valve compression spring
- ⑭ NBR gaskets



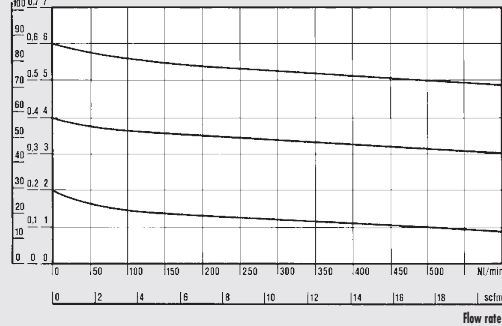
FLOW CHARTS

MR

$P_m = 0.7 \text{ MPa}$; 7 bar; 102 psi

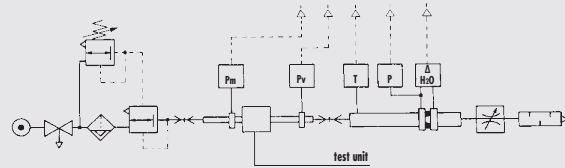
Inlet pressure

psi kPa bar



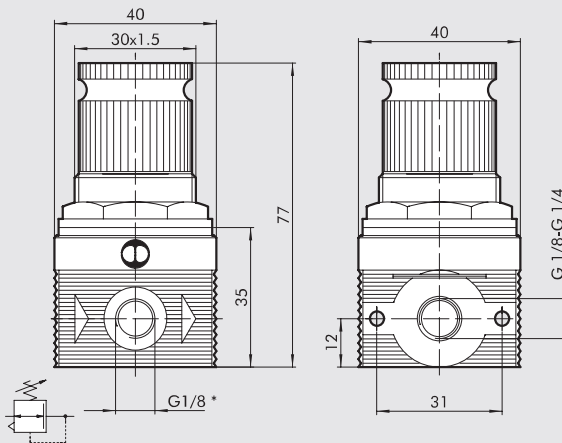
**Department
of Mechanics**

Turin Polytechnic



- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

DIMENSIONS



* Pressure gauge port

SYNOPTIC, SIZES AND VERSIONS

MR ELEMENT	BIT SIZE	FC VERSION	1/8 THREADED PORT	02 CONDENSATE DRAIN
MR	BIT	FC = Controlled relief SR = Quickly relieved = Standard	1/8" 1/4"	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar
MRA		Without relief (for WATER)		

ORDERING CODES

Code	Description
MICROREGULATOR (MR)	
5107004	MR BIT 1/8 012
5107001	MR BIT 1/8 02
5107002	MR BIT 1/8 04
5107003	MR BIT 1/8 08
5207004	MR BIT 1/4 012
5207001	MR BIT 1/4 02
5207002	MR BIT 1/4 04
5207003	MR BIT 1/4 08
MICROREGULATOR WITH CONTROLLED RELIEF	
5111001	MR BIT FC 1/8 02
5111002	MR BIT FC 1/8 04
5211001	MR BIT FC 1/4 02
5211002	MR BIT FC 1/4 04
MICROREGULATOR WITH QUICK RELIEF	
5102001	MR BIT SR 1/8 02
5102002	MR BIT SR 1/8 04
5102003	MR BIT SR 1/8 08
5102004	MR BIT SR 1/8 012
5202001	MR BIT SR 1/4 02
5202002	MR BIT SR 1/4 04
5202003	MR BIT SR 1/4 08
5202004	MR BIT SR 1/4 012
WATER MICROREGULATOR	
5108001	MRA BIT 1/8 02
5108002	MRA BIT 1/8 04
5108003	MRA BIT 1/8 08
5108004	MRA BIT 1/8 012
5208001	MRA BIT 1/4 02
5208002	MRA BIT 1/4 04
5208003	MRA BIT 1/4 08
5208004	MRA BIT 1/4 012

UNITS

bit MICRO-REGULATOR

bit PADLOCKABLE MICROREGULATOR

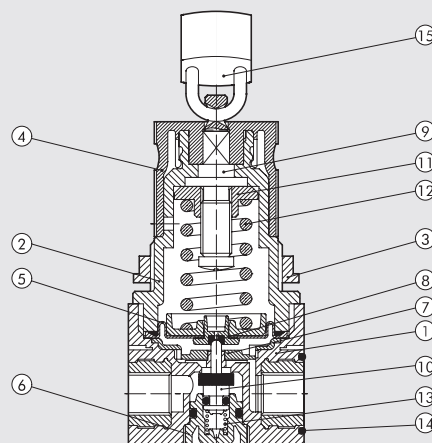
The padlockable microregulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

Refer to the bit microregulator for technical data and flow curves.

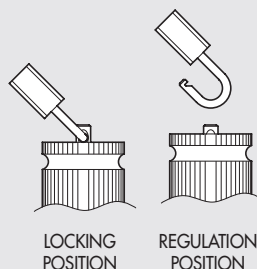
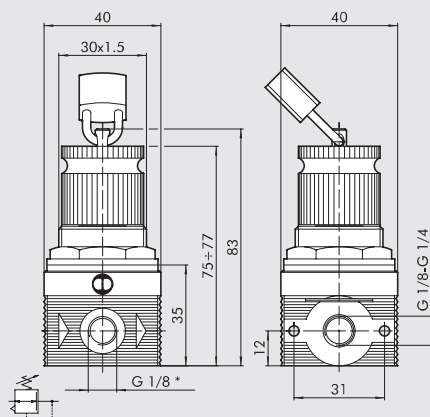


COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Technopolymer bell
- ③ Technopolymer fixing ring nut
- ④ Technopolymer knob
- ⑤ Rolling diaphragm
- ⑥ Technopolymer plug
- ⑦ Technopolymer anti-vibration screen
- ⑧ NBR relieving gasket
- ⑨ Nickel-plated brass OT58 adjusting screws
- ⑩ OT58 valve with NBR vulcanized gasket
- ⑪ OT58 brass nut
- ⑫ Steel adjusting spring
- ⑬ Stainless steel valve compression spring
- ⑭ NBR gaskets
- ⑮ Padlock



DIMENSIONS



* Pressure gauge port

ORDERING CODES

Code	Description
5110001	MR BIT KEY 1/8 02
5110002	MR BIT KEY 1/8 04
5110003	MR BIT KEY 1/8 08
5110004	MR BIT KEY 1/8 012
5210001	MR BIT KEY 1/4 02
5210002	MR BIT KEY 1/4 04
5210003	MR BIT KEY 1/4 08
5210004	MR BIT KEY 1/4 012

SYNOPTIC, SIZES AND VERSIONS

MR ELEMENT	BIT SIZE	KEY TYPE	1/8 THREADED PORT	02 SETTING RANGE
MR	BIT	Padlockable	1/8 1/4	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar

bit FILTER-REGULATOR



Filter regulator with rolling diaphragm.

- High flow rate with reduced pressure drop
- Excellent degree of condensate separation
- Semi-automatic or automatic drain
- All-round condensate level viewing

The degree of filtration is shown by the colour of the cartridge:

yellow = 5 μm , white = 20 μm , blue = 50 μm .



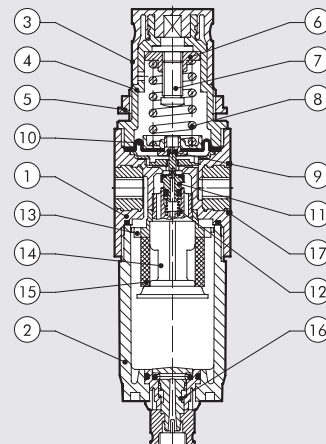
TECHNICAL DATA		FR BIT 1/8"	FR BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration	μm	5 (yellow) - 20 (white) - 50 (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	290	
	scfm	10	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	600	
	scfm	21	
Max temperature at 1 MPa; 10 bar; 145 psi	$^{\circ}\text{C}$	50	
	$^{\circ}\text{F}$	122	
Weight	g	110	
Wall fixing screws		M4 by means of the bracket provided	
Bowl capacity	cm^3	16	
Mounting position		Vertical	
Gauge port		G 1/8"	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge .	
		Operates by pressure drop – requires variable air take-offs.	
		Compressed air	
		The regulator pressure must always be set upwards.	
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

UNITS

bit FILTER-REGULATOR

COMPONENTS

- ① Technopolymer body with OT58 threaded element
- ② Clear technopolymer bowl
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ Technopolymer fixing ring nut
- ⑥ OT58 brass nut
- ⑦ OT58 brass adjusting screw
- ⑧ Steel adjusting spring
- ⑨ NBR relieving gasket
- ⑩ Rolling diaphragm
- ⑪ OT58 valve with NBR vulcanized gasket
- ⑫ Stainless steel valve compression spring
- ⑬ Technopolymer centrifuge
- ⑭ Technopolymer baffle plug
- ⑮ HDPE sintered filter cartridge
- ⑯ Condensate drain (RMSA)
- ⑰ NBR gaskets



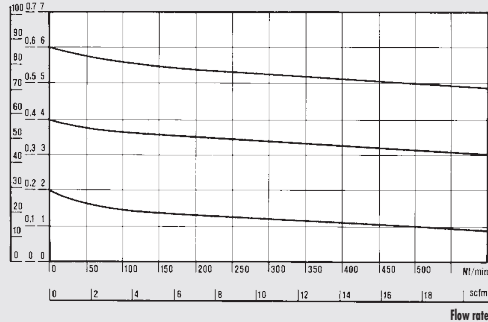
FLOW CHARTS

FR

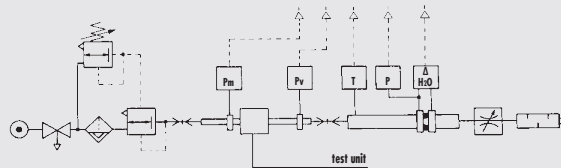
 $P_m = 0.7 \text{ MPa}$; 7 bar; 102 psi

Inlet pressure

psi kPa bar

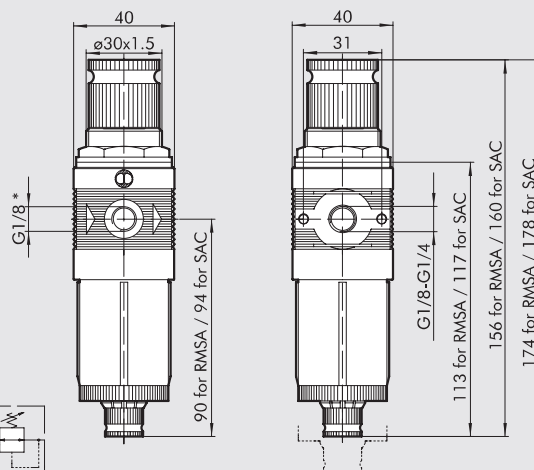


**Department
of Mechanics**
Turin Polytechnic



- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

DIMENSIONS



* Pressure gauge port

SYNOPTIC, SIZES AND VERSIONS

FR ELEMENT	BIT SIZE	1/8 THREADED PORT	5 DEGREE OF FILTRATION	02 SETTING RANGE	RMSA CONDENSATE DRAIN
FR	BIT	1/8 1/4	5 = 5 μm 20 = 20 μm 50 = 50 μm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
SAC: automatic drain with condensate discharge .

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
5105001	FR BIT 1/8 5 02 RMSA
5105013	FR BIT 1/8 5 02 SAC
5105002	FR BIT 1/8 20 02 RMSA
5105014	FR BIT 1/8 20 02 SAC
5105003	FR BIT 1/8 50 02 RMSA
5105015	FR BIT 1/8 50 02 SAC
5105004	FR BIT 1/8 5 04 RMSA
5105016	FR BIT 1/8 5 04 SAC
5105005	FR BIT 1/8 20 04 RMSA
5105017	FR BIT 1/8 20 04 SAC
5105006	FR BIT 1/8 50 04 RMSA
5105018	FR BIT 1/8 50 04 SAC
5105007	FR BIT 1/8 5 08 RMSA
5105019	FR BIT 1/8 5 08 SAC
5105008	FR BIT 1/8 20 08 RMSA
5105020	FR BIT 1/8 20 08 SAC
5105009	FR BIT 1/8 50 08 RMSA
5105021	FR BIT 1/8 50 08 SAC
5105010	FR BIT 1/8 5 012 RMSA
5105022	FR BIT 1/8 5 012 SAC
5105011	FR BIT 1/8 20 012 RMSA
5105023	FR BIT 1/8 20 012 SAC
5105012	FR BIT 1/8 50 012 RMSA
5105024	FR BIT 1/8 50 012 SAC
5205001	FR BIT 1/4 5 02 RMSA
5205013	FR BIT 1/4 5 02 SAC
5205002	FR BIT 1/4 20 02 RMSA
5205014	FR BIT 1/4 20 02 SAC
5205003	FR BIT 1/4 50 02 RMSA
5205015	FR BIT 1/4 50 02 SAC
5205004	FR BIT 1/4 5 04 RMSA
5205016	FR BIT 1/4 5 04 SAC
5205005	FR BIT 1/4 20 04 RMSA
5205017	FR BIT 1/4 20 04 SAC
5205006	FR BIT 1/4 50 04 RMSA
5205018	FR BIT 1/4 50 04 SAC
5205007	FR BIT 1/4 5 08 RMSA
5205019	FR BIT 1/4 5 08 SAC
5205008	FR BIT 1/4 20 08 RMSA
5205020	FR BIT 1/4 20 08 SAC
5205009	FR BIT 1/4 50 08 RMSA
5205021	FR BIT 1/4 50 08 SAC
5205010	FR BIT 1/4 5 012 RMSA
5205022	FR BIT 1/4 5 012 SAC
5205011	FR BIT 1/4 20 012 RMSA
5205023	FR BIT 1/4 20 012 SAC
5205012	FR BIT 1/4 50 012 RMSA
5205024	FR BIT 1/4 50 012 SAC

UNITS

bit FILTER-REGULATOR

Mini-lubricator with high lubrication stability.

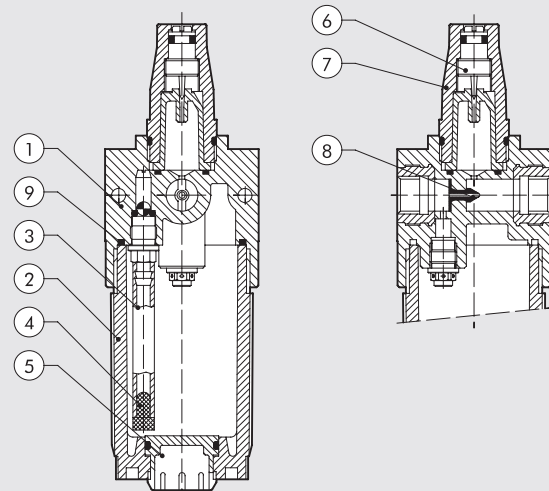
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates
- Micrometric regulation of lubricant flow
- All-round oil level viewing



TECHNICAL DATA		LUB BIT 1/8"	LUB BIT 1/4"
Threaded port		1/8"	1/4"
Type of lubrication		Oil mist	
Bowl capacity	cm ³	26.5	
Lubricator version		Manual filling with the bowl disassembled	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	400	
	scfm	14	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	710	
	scfm	25	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	40	
Wall fixing screws		M4 by means of the bracket provided	
Mounting position		Vertical	
Fluid		Filtered compressed air	

COMPONENTS

- ① Technopolymer body with OT58 threaded elements
- ② Clear technopolymer bowl
- ③ Rilsan oil suction pipe
- ④ Filter
- ⑤ Technopolymer plug
- ⑥ Oil flow adjustment regulation needle made of OT58 brass
- ⑦ Clear technopolymer cover
- ⑧ NBR Venturi diaphragm
- ⑨ NBR gaskets

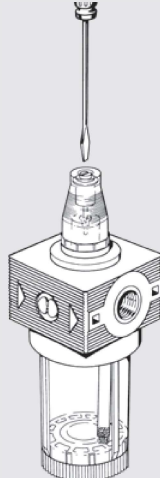


GENERAL RULES - USE AND MAINTENANCE

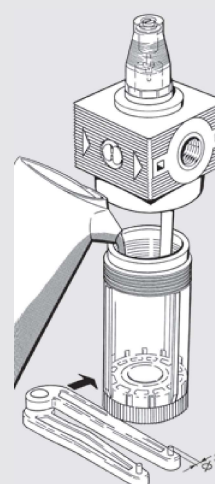
Use a no. 3 compass spanner to unscrew the bowl.

- Fit the lubricator as close as possible to the point of use
- Fill the bowl with oil before pressurizing the system
- Do not use cleaning oil, brake fluid or solvents in general
- For correct lubrication, set the drip rate to approximately 1 drop every 300-600 NI via the adjusting screw.
- Recommended lubricants:
ISO and UNI FD22
E.g. Energol HLP 22 (BP) – Spinesso 22 (Esso)
- Mobil DTE 22 (Mobil) – Tellus Oil 22 (Shell).

REGULATING LUBRICATION



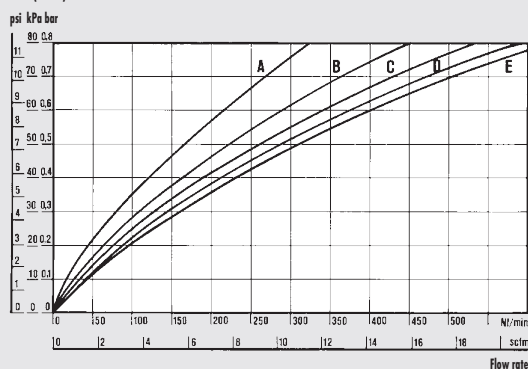
FILLING THE BOWL WITH OIL



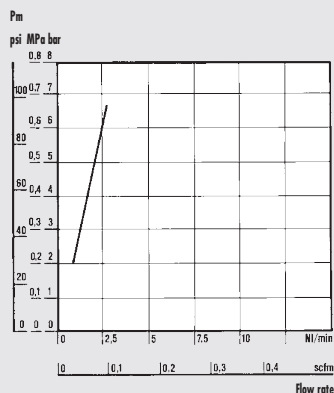
FLOW CHARTS

LUB

$$\Delta P = (P_m - P_v)$$



LUB 1/8-1/4

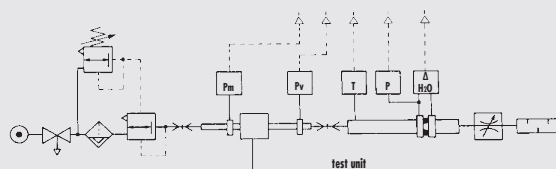


MINIMUM OPERATION FLOW CHARTS

Minimum flow tests were performed in compliance with ISO/DP 6301/2.



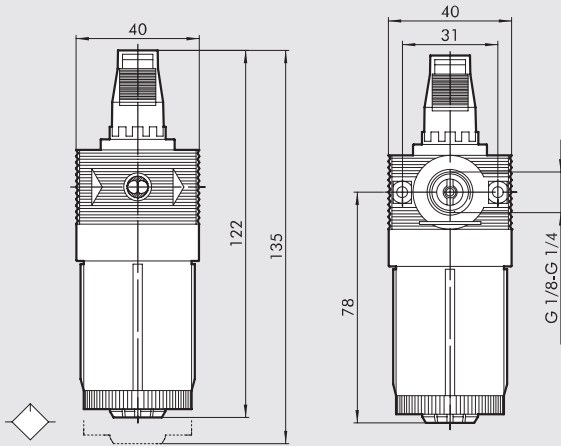
**Department
of Mechanics**
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- | | |
|--------------------------------|---------------------------------|
| (A) = 2 bar - 0.2 MPa - 29 psi | (D) = 8 bar - 0.8 MPa - 116 psi |
| (B) = 4 bar - 0.4 MPa - 58 psi | (E) = 10 bar - 1 MPa - 145 psi |
| (C) = 6 bar - 0.6 MPa - 87 psi | |

DIMENSIONS



ORDERING CODES

Code	Description
5103001	LUB BIT 1/8
5203001	LUB BIT 1/4

NOTES

UNITS

bit LUBRICATOR

bit TAKE-OFF

- The air take-off takes air from the FRL unit irrespective of the assembly position.
- It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered, regulated, lubricated, etc.).



TECHNICAL DATA

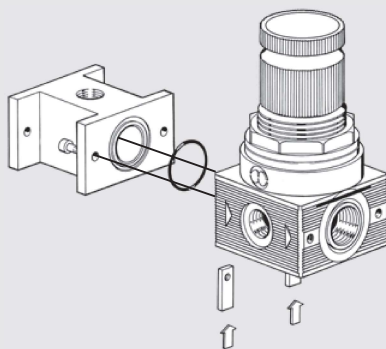
		PA
Maximum operating pressure	MPa	1.3
	bar	13
	psi	188
Maximum working temperature at 1 MPa; 10 bar; 145 psi	°C	50
	°F	

UNITS

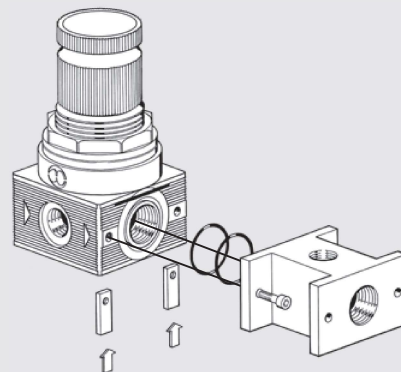
bit TAKE-OFF

CONNECTION DIAGRAMS AND APPLICATION

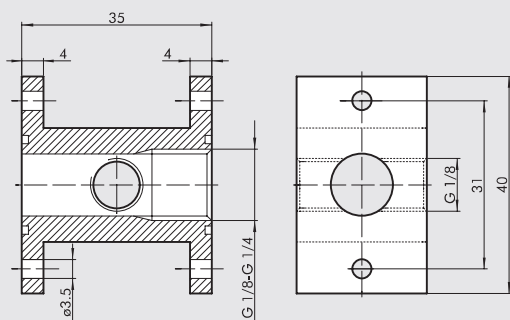
Mounting the air take-off at the inlet:
only use two screws and the O-rings supplied in the PA kit.



Mounting the air take-off at the outlet:
only use two screws and the O-rings supplied in the PA kit. Seal is provided by the contact between O-rings.



DIMENSIONS



ORDERING CODES

Code	Description
9100401	PA 1/8 - 1/4 BIT

FIL + REG + LUB bit



Complete mini-FRL unit with rolling diaphragm.

- High flow rates with reduced pressure drop
- Excellent degree of condensate separation
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates

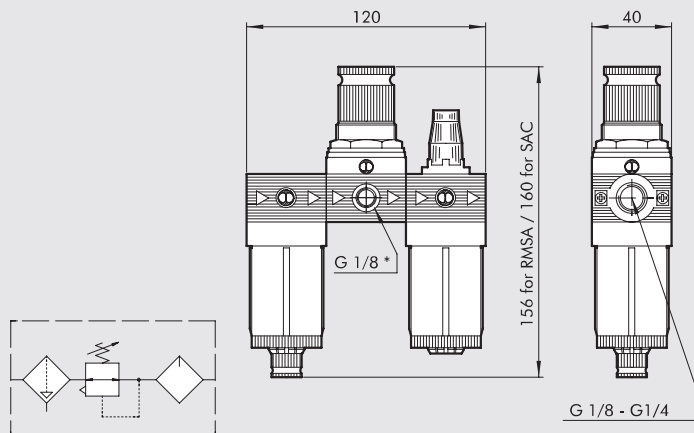


TECHNICAL DATA		F + R + L BIT 1/8"	F + R + L BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration	µm	5 (yellow) 20 (white) 50 (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	150	
	scfm	5.3	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	280	
	scfm	10	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	160	
Wall fixing screws		M4 by means of the bracket provided	
Gauge port		G1/8"	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
		Operates by pressure drop – requires variable air take-offs.	
Fluid		Compressed air	
Notes		See chapters regarding individual elements.	

UNITS

FIL + REG + LUB bit

DIMENSIONS



* Pressure gauge port

SYNOPTIC, SIZES AND VERSIONS

FRL	BIT	1/8	5	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FRL	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
5104008	FRL BIT 1/8 20 08 RMSA
5104011	FRL BIT 1/8 20 012 RMSA
5204008	FRL BIT 1/4 20 08 RMSA
5204011	FRL BIT 1/4 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with 0-2 bar or 0-4 bar setting range
- with SAC condensate discharge

NOTES

UNITS

FIL + REG + LUB bit

FR + LUB bit



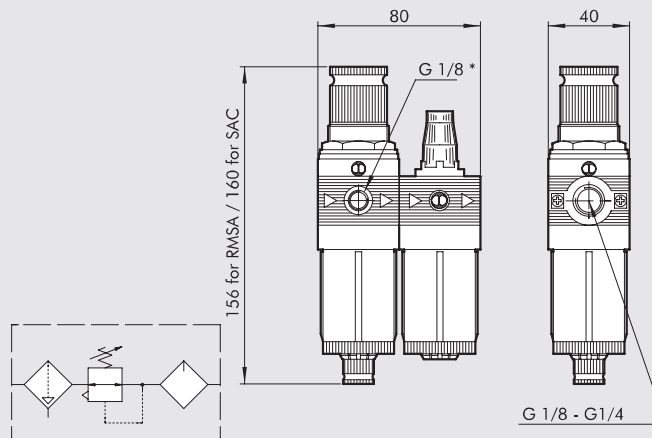
Compact FR + L unit with rolling diaphragm.

- High flow rates with reduced pressure drop
- Excellent degree of condensate separation
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates



TECHNICAL DATA		FR + L BIT 1/8"	FR + L BIT 1/4"
Threaded port		1/8"	1/4"
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration	µm	5 (yellow) 20 (white) 50 (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	140	
	scfm	5	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	260	
	scfm	9.2	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	170	
Wall fixing screws		M4 by means of the bracket provided	
Gauge port		G1/8"	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
Fluid		Operates by pressure drop – requires variable air take-offs.	
Notes		Compressed air See chapters regarding individual elements.	

DIMENSIONS



* Pressure gauge port

UNITS

FR + LUB bit

SYNOPTIC, SIZES AND VERSIONS

FR+L	BIT	1/8	5	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FR+L	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure
SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
5106008	FR+L BIT 1/8 20 08 RMSA
5106011	FR+L BIT 1/8 20 012 RMSA
5206008	FR+L BIT 1/4 20 08 RMSA
5206011	FR+L BIT 1/4 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with 0-2 bar or 0-4 bar setting range
- with SAC condensate discharge

NOTES

UNITS

FR + LUB bit

FIL + DEP bit



Compact filter + depurator unit for fine filtering followed by purification by coalescence.

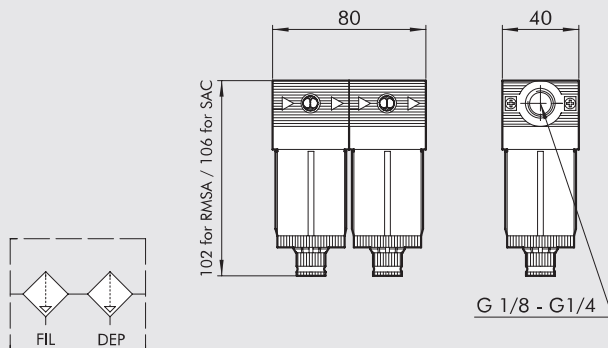
- All-round condensate level viewing
- Condensate drainage - manual/semi-auto (RMSA) or automatic (SAC) on the filter
- 5 µm filter element.



TECHNICAL DATA

		F + D BIT 1/8"	F + D BIT 1/4"
Threaded port		1/8"	1/4"
Degree of purification		5 µm filter – 99.97% depurator at 0.01 µm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Maximum suggested flow rate		Please look at the flow rate curves at page C2.7	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	110	
Wall fixing screws		M4 by means of the bracket provided	
Mounting position		Vertical	
Condensate drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
		Operates by pressure drop – requires variable air take-offs.	
		See chapters regarding individual elements	
Notes			

DIMENSIONS



SYNOPTIC, SIZES AND VERSIONS

F+D	BIT	1/4	5	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN
F+D	BIT	1/8 1/4	5 µm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
5114001	F+D BIT 1/8 5 RMSA - RMSA
5114002	F+D BIT 1/8 5 SAC - RMSA
5214001	F+D BIT 1/4 5 RMSA - RMSA
5214002	F+D BIT 1/4 5 SAC - RMSA

FIL + LUB bit

Compact filter + lubricator unit with different degrees of filtration and high lubrication stability.

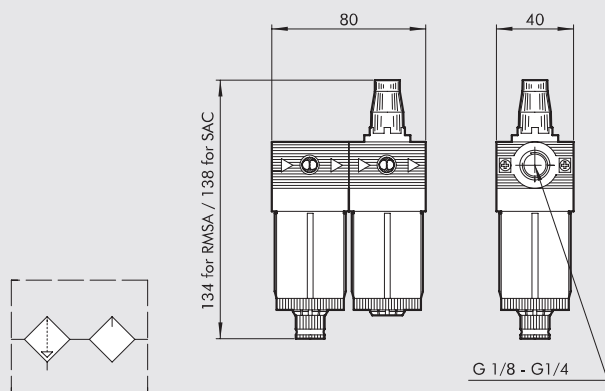
- Excellent degree of condensate separation
- Semi-automatic and automatic condensate drainage
- Lubrication activates at low flow rates
- All-round oil and condensate level viewing



TECHNICAL DATA

		F + L BIT 1/8"	F + L BIT 1/4"
Threaded port		1/8"	1/4"
Degree of filtration	µm	5 (yellow) - 20 (white) - 50 (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	300	
	scfm	10.6	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 1 bar (0.1 MPa to 1.4 psi)	Nl/min	600	
	scfm	21.2	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	g	90	
Wall fixing screws		M4 by means of the bracket provided	
Mounting position		Vertical	
Condensed drain		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge.	
Notes		Operates by pressure drop – requires variable air take-offs. See chapters regarding individual elements	

DIMENSIONS



SYNOPTIC, SIZES AND VERSIONS

F+L	BIT	1/4	5	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN
F+L	BIT	1/8 1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	RMSA SAC

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
5113002	F+L BIT 1/8 20 RMSA
5213002	F+L BIT 1/4 20 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC condensate discharge

GENERAL TECHNICAL DATA

bit SERIES F FOR WATER



Filtering and/or water pressure regulation units, characterized by the use of materials certified to specific standards on products for use in contact with foodstuff or drinking water.

Declarations of conformity and release test reports are available on request for those who need them to certify our product incorporated in their own systems.

The white colour surface finish of the body was chosen to enhance the highly hygienic properties of the product.

If the pressure regulator works with incompressible fluids (water) and there is a valve leak, the downstream pressure could rise up to reach the inlet pressure and then it re-stabilizes with water consumption.

If necessary, consider the possibility of installing a safety valve that relieves any excess pressure.

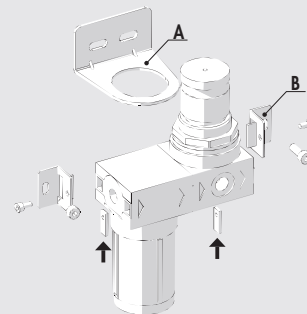


TECHNICAL DATA		BIT F 1/8"	BIT F 1/4"
Threaded port		1/8"	1/4"
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Max temperature at 10 bar (1 MPa; 145 psi)	°C	50	
	°F	122	
Elements		Filter - Regulator - Filter regulator	
Mounting		Fixed to a wall, using fixing plate code 9170301 and M4 screws, or fixing bracket code 9200701 for the threaded regulator and filter-regulator bell.	
		Panel-mounted using the threaded bell of the regulator or filter-regulator (Ø hole 30-32 mm).	
Fluid		Water, air and fluids compatible with the materials used	

WALL MOUNTING

The wall fixing of a bit unit can be made through:

- Fixing bracket R/FR code 9200701 (A)
- Wall fixing plates code 9170301 (B)



MATERIALS

COMPONENTS IN CONTACT WITH THE FLUID

Designation	Material	Certifications
Body	Hostaform® C13031	European Regulation (EU) 10/2011, KTW, W270, WRAS, ACS, NSF61
Threaded body inserts	CW510L low-lead brass	Approved for compliance with the UBA List, NSF/ANSI 372
Transparent bowl	TR90 Grilamid®	European Regulation (EU) 10/2011, KTW, W270, WRAS, NSF61
Rolling diaphragm	0477 NBR 70 telato	DM174/04, WRAS, ACS, NSF61
Valve	AISI 303 stainless steel	Approved for compliance with the UBA List
	with vulcanized gasket 0477 NBR 70	DM174/04, WRAS, ACS, NSF61
Valve spring	AISI 302 stainless steel	Approved for compliance with the UBA List
Gaskets	0477 NBR 70	DM174/04, WRAS, ACS, NSF61
Filter cartridge	GUR X192	European Regulation (EU) 10/2011,
Centrifuge	Hostaform® C13031	European Regulation (EU) 10/2011, KTW, W270, WRAS, ACS, NSF61
Baffle plug	Hostaform® C13031	European Regulation (EU) 10/2011, KTW, W270, WRAS, ACS, NSF61

COMPONENTS NOT IN CONTACT WITH THE FLUID

Designation	Material
Bell	Technopolymer
Fixing ring nut	Technopolymer
Nut	OT58 brass
Adjusting screw	OT58 brass
Adjusting spring	Steel

bit SERIES F FILTER FOR WATER

Water filter characterized by the use of materials certified to specific standards on products for use in contact with foodstuff or drinking water. Declarations of conformity and release test reports are available on request for those who need them to certify our product incorporated in their own systems.

The white colour surface finish of the body was chosen to enhance the highly hygienic properties of the product.

The transparent bowl was designed to make it possible to check the state of the filter cartridge.

Unlike compressed air filters, the bowl has no drain holes.

The cartridge filtration degree is 20 µm.

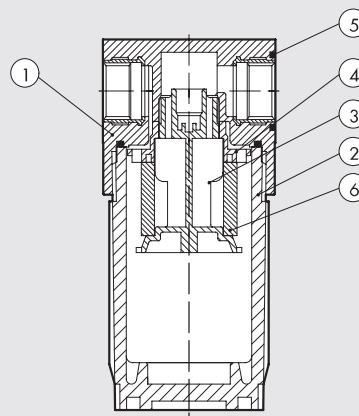


TECHNICAL DATA

		FIL BIT F 1/8"	FIL BIT F 1/4"
Threaded port		1/8"	1/4"
Degree of filtration	µm	20 (white)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa ± 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	l/min	13	14.5
	cfm	0.46	0.51
Max temperature at 10 bar (1 MPa; 145 psi)	°C	50	
	°F	122	
Weight	g	40	
Internal volume	cm ³	40	
Mounting position		In any position	
Fluid		Water, air and fluids compatible with the materials used	

COMPONENTS

- ① Body with threaded inserts
- ② Transparent bowl
- ③ Baffle plug
- ④ Centrifuge
- ⑤ Gaskets
- ⑥ Filter cartridge

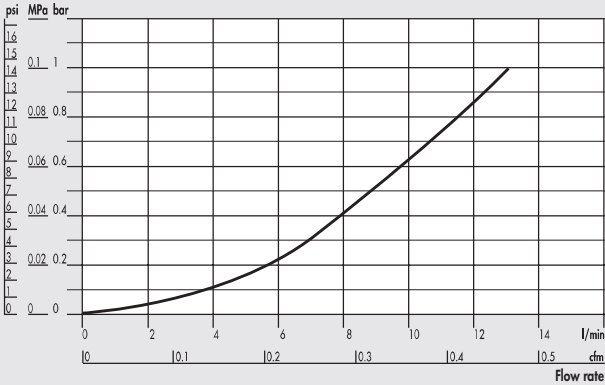


N.B.: For details on the materials used, please refer to the section "general technical data".

FLOW CHARTS

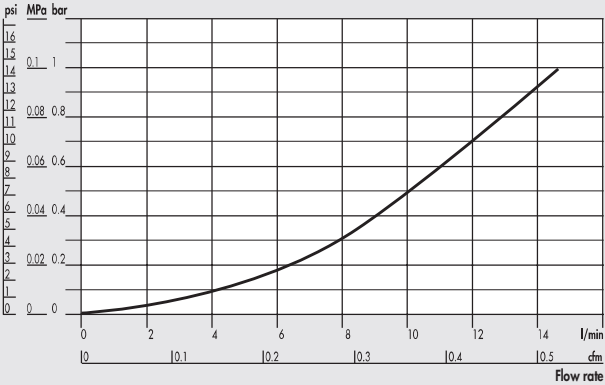
FIL BIT F 1/8"

$\Delta P = (P \text{ In-P Out})$

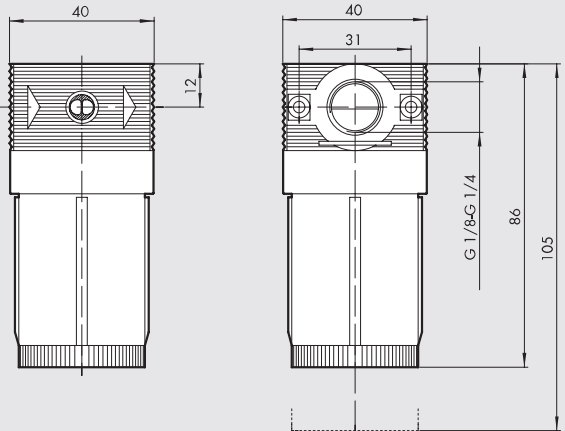


FIL BIT F 1/4"

$\Delta P = (P \text{ In-P Out})$



DIMENSIONS



ORDERING CODES

Code	Description
5101002F	FIL BIT F 1/8 20
5201002F	FIL BIT F 1/4 20

NOTES

bit SERIES F REGULATOR FOR WATER

Water regulator characterized by the use of materials certified to specific standards on products for use in contact with foodstuff or drinking water. Declarations of conformity and release test reports are available on request for those who need them to certify our product incorporated in their own systems.

The white colour surface finish of the body was chosen to enhance the highly hygienic properties of the product.

Versions with brass threaded inlet and outlet ports and side sockets for pressure gauges and other uses with engineering plastic thread are available. There is also a version with inlet and outlet ports incorporated directly in the engineering plastic body, without requiring further threaded ports for pressure gauges.

If the pressure regulator works with incompressible fluids (water) and there is a valve leak, the downstream pressure could rise up to reach the inlet pressure and then it re-stabilizes with water consumption.

If necessary, consider the possibility of installing a safety valve that relieves any excess pressure.

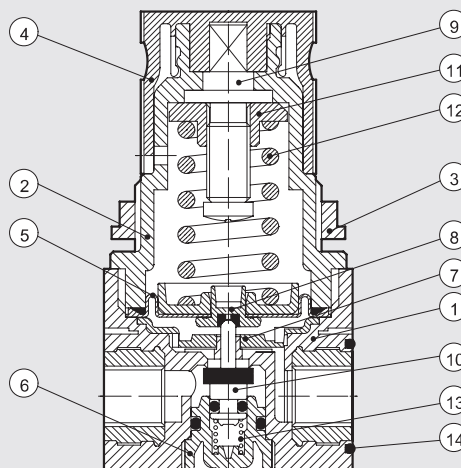


TECHNICAL DATA

		REG BIT F 1/8"	REG BIT F 1/4"
Threaded port		1/8"	1/4"
Setting range	bar	0 to 2; 0 to 4; 0 to 8; 0 to 12	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa ÷ 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	l/min	6.5	7
	scfm	0.23	0.25
Max temperature at 10 bar (1 MPa; 145 psi)	°C	50°	
	°F	122°	
Weight	g	80	
Versions		With 1/8" or 1/4" brass threaded ports and 1/8" pressure gauge port. With 1/4" engineering plastic threaded ports, without pressure gauge ports	
Mounting position		In any position	
Fluid		Water, air and fluids compatible with the materials used	
Notes		The pressure must always be set upwards.	
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

COMPONENTS

- ① Body with incorporated threads or threaded inserts
- ② Bell
- ③ Fixing ring nut
- ④ Knob
- ⑤ Rolling diaphragm
- ⑥ Plug
- ⑦ Anti-vibration screen
- ⑧ Plate with gasket
- ⑨ Adjusting screws
- ⑩ Valve gasket
- ⑪ Nut
- ⑫ Adjusting spring
- ⑬ Valve spring
- ⑭ Gaskets



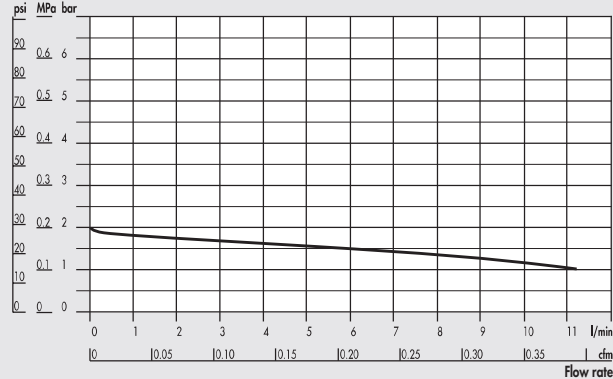
N.B.: For details on the materials used, please refer to the section "general technical data".

FLOW CHARTS

REG BIT F 1/8" O-2

Pm = 0.9 MPa; 9 bar; 130 psi

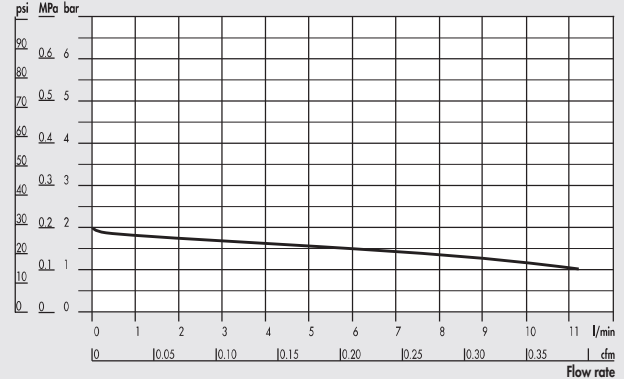
Regulated pressure



REG BIT F 1/4" O-2

Pm = 0.9 MPa; 9 bar; 130 psi

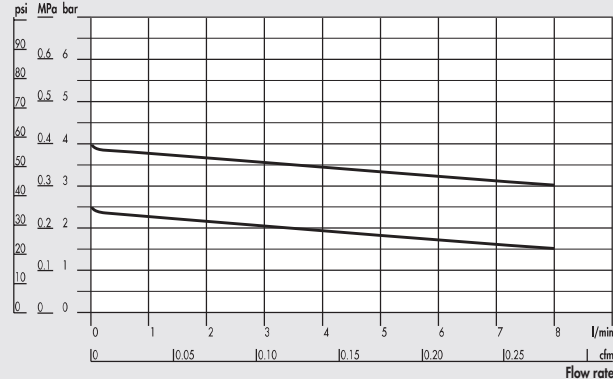
Regulated pressure



REG BIT F 1/8" O-4

Pm = 0.9 MPa; 9 bar; 130 psi

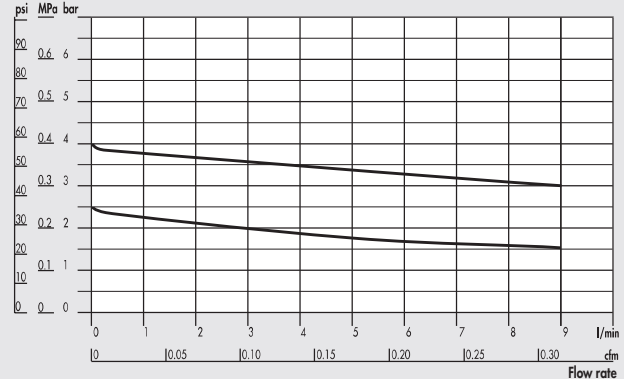
Regulated pressure



REG BIT F 1/4" O-4

Pm = 0.9 MPa; 9 bar; 130 psi

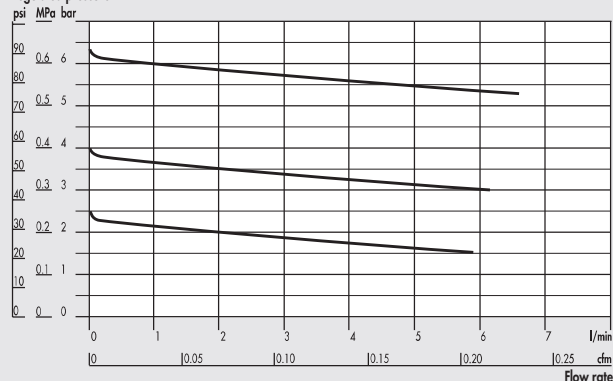
Regulated pressure



REG BIT F 1/8" O-8; 0-12

Pm = 0.9 MPa; 9 bar; 130 psi

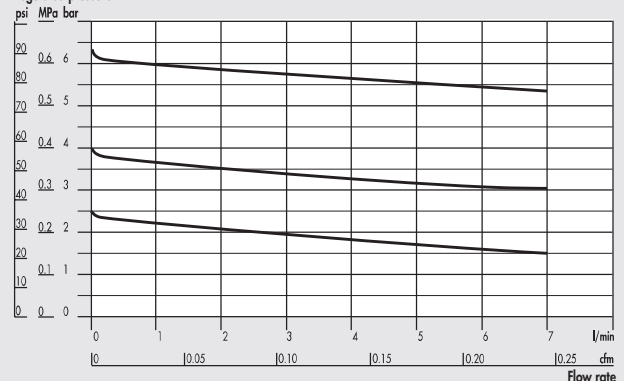
Regulated pressure



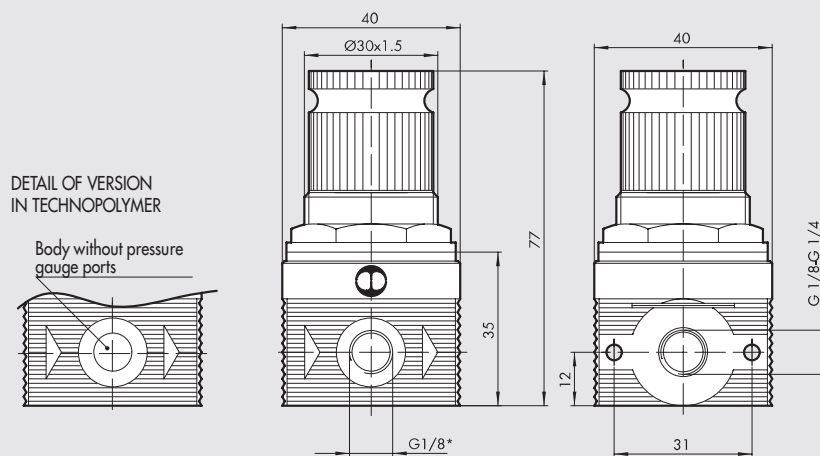
REG BIT F 1/4" O-8; 0-12

Pm = 0.9 MPa; 9 bar; 130 psi

Regulated pressure



DIMENSIONS



* Pressure gauge port (not supplied in the technopolymer version)

ORDERING CODES

Code	Description
REGULATOR WITH BRASS PORTS	
5108001F	REG BIT F 1/8 02
5108002F	REG BIT F 1/8 04
5108003F	REG BIT F 1/8 08
5108004F	REG BIT F 1/8 012
5208001F	REG BIT F 1/4 02
5208002F	REG BIT F 1/4 04
5208003F	REG BIT F 1/4 08
5208004F	REG BIT F 1/4 012

REGULATOR WITH TECHNOPOLYMER PORTS **

5228001F	REG BIT F 1/4 TP 02
5228002F	REG BIT F 1/4 TP 04
5228003F	REG BIT F 1/4 TP 08
5228004F	REG BIT F 1/4 TP 012

** Without pressure gauge ports

NOTES

UNITS

bit SERIES F REGULATOR FOR WATER

bit SERIES F FILTER-REGULATOR FOR WATER



Filter-regulator characterized by the use of materials certified to specific standards on products for use in contact with foodstuff or drinking water. Declarations of conformity and release test reports are available on request for those who need them to certify our product incorporated in their own systems. The white colour surface finish of the body was chosen to enhance the highly hygienic properties of the product.

The transparent bowl was designed to make it possible to check the state of the filter cartridge. The transparent bowl was designed to make it possible to check the state of the filter cartridge.

Unlike compressed air filters, the bowl has no drain holes.

The cartridge filtration degree is 20 µm.

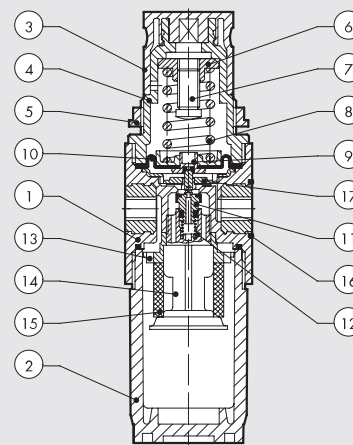
If the pressure regulator works with incompressible fluids (water) and there is a valve leak, the downstream pressure could rise up to reach the inlet pressure and then it re-stabilizes with water consumption. If necessary, consider the possibility of installing a safety valve that relieves any excess pressure.



TECHNICAL DATA		FR BIT F 1/8"	FR BIT F 1/4"
Threaded port		1/8"	1/4"
Setting range	bar	0 to 2; 0 to 4; 0 to 8; 0 to 12	
Degree of filtration	µm	20 (white)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa ÷ 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	l/min	6	6
	cfm	0.21	0.21
Max temperature at 10 bar (1 MPa; 145 psi)	°C	50	
	°F	122	
Weight	g	110	
Mounting position		In any position	
Fluid		Water, air and fluids compatible with the materials used	
Notes		The pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

COMPONENTS

- ① Body with threaded inserts
- ② Bowl
- ③ Knob
- ④ Bell
- ⑤ Fixing ring nut
- ⑥ Nut
- ⑦ Adjusting screws
- ⑧ Adjusting spring
- ⑨ Plate with gasket
- ⑩ Rolling diaphragm
- ⑪ Valve
- ⑫ Valve spring
- ⑬ Centrifuge
- ⑭ Baffle plug
- ⑮ Filter cartridge
- ⑯ Gaskets
- ⑰ Anti-vibration screen



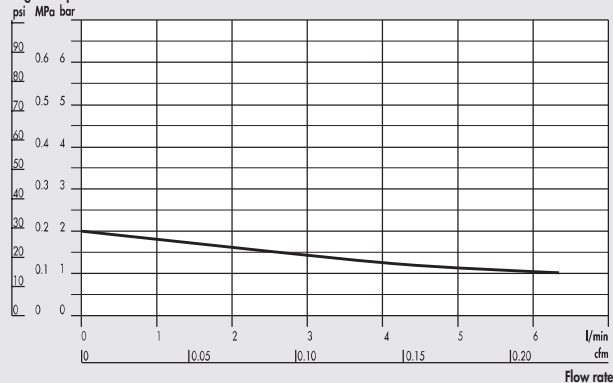
N.B.: For details on the materials used, please refer to the section "general technical data".

FLOW CHARTS

FR BIT F 1/8" O-2

Pm = 0.9 MPa; 9 bar; 130 psi

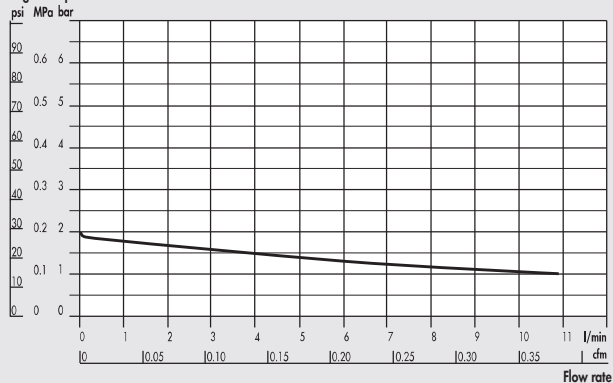
Regulated pressure



FR BIT F 1/4" O-2

Pm = 0.9 MPa; 9 bar; 130 psi

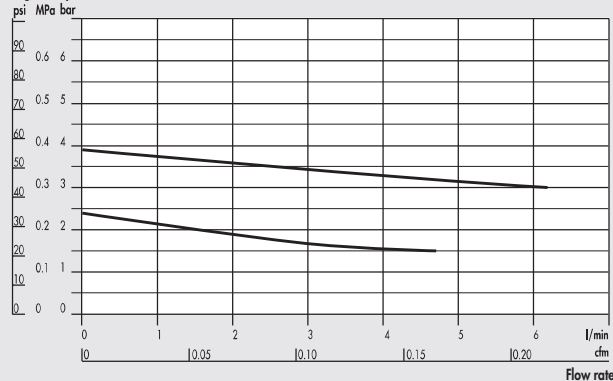
Regulated pressure



FR BIT F 1/8" O-4

Pm = 0.9 MPa; 9 bar; 130 psi

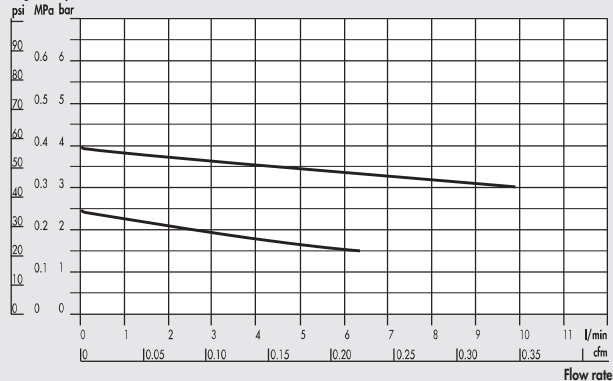
Regulated pressure



FR BIT F 1/4" O-4

Pm = 0.9 MPa; 9 bar; 130 psi

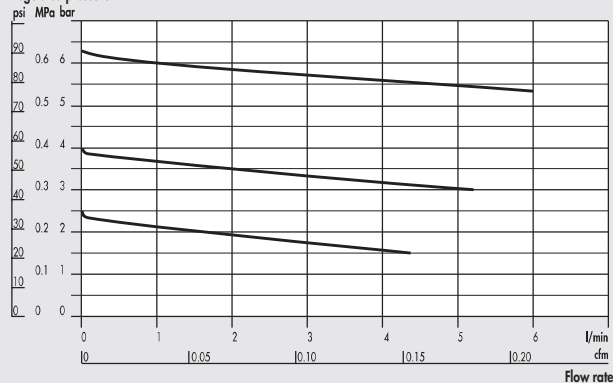
Regulated pressure



FR BIT F 1/8" O-8; O-12

Pm = 0.9 MPa; 9 bar; 130 psi

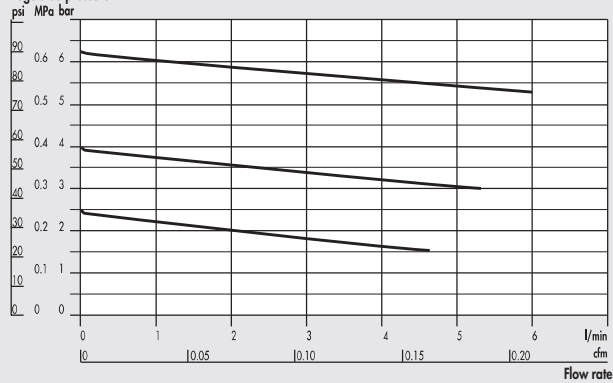
Regulated pressure



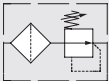
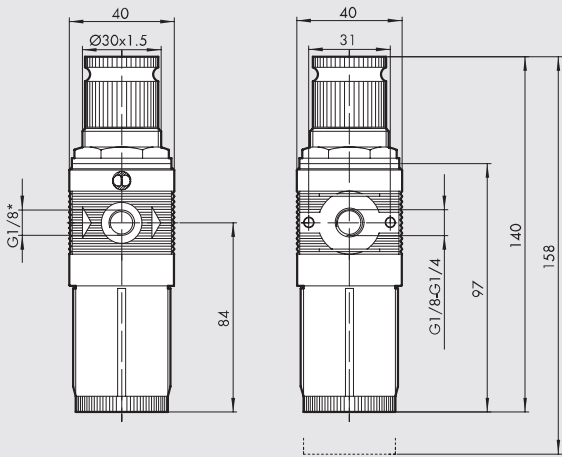
FR BIT F 1/4" O-8; O-12

Pm = 0.9 MPa; 9 bar; 130 psi

Regulated pressure



DIMENSIONS



* Pressure gauge port

ORDERING CODES

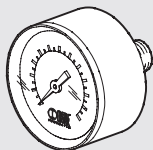
Code	Description
5105102F	FR BIT F 1/8 20 02
5105105F	FR BIT F 1/8 20 04
5105108F	FR BIT F 1/8 20 08
5105111F	FR BIT F 1/8 20 012
5205102F	FR BIT F 1/4 20 02
5205105F	FR BIT F 1/4 20 04
5205108F	FR BIT F 1/4 20 08
5205111F	FR BIT F 1/4 20 012

NOTES

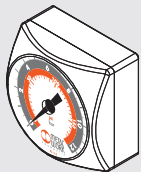
bit ACCESSORIES

ACCESSORIES FOR STANDARD bit AND SERIES F bit FOR WATER

PRESSURE GAUGE



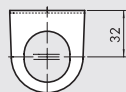
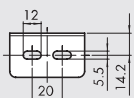
Code	Description
9700102 *	M 40 1/8 04
9700101 *	M 40 1/8 012



9700109 *	M 40x40 1/8 04
9700110 *	M 40x40 1/8 012

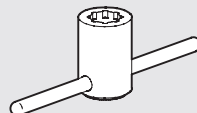
* Cannot be used with water

R/FR FIXING BRACKET



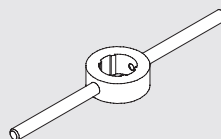
Code	Description
9200701	SF100 - BIT - ND 1/4 - SY1

DOME DISASSEMBLY SPANNER



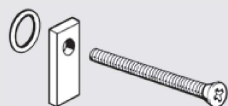
Code	Description
9220701	Cover LUB spanner

COVER DISASSEMBLY SPANNER



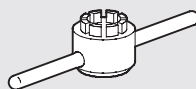
Code	Description
9170401	CS CS BIT

ASSEMBLY PLATE (PAIR)



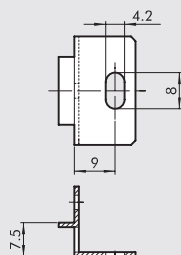
Code	Description
9170201	PAB 1/8 - 1/4 BIT

REDUCER PLUG DISASSEMBLY SPANNER



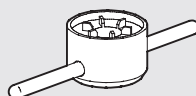
Code	Description
9170501	CS OTR BIT

WALL MOUNTING BRACKET (PAIR)



Code	Description
9170301	SFB 1/8 - 1/4 BIT

BOWL DISASSEMBLY SPANNER



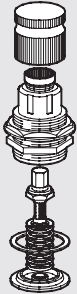
Code	Description
9170601	CS TF - TL BIT - SY1

bit SPARE PARTS



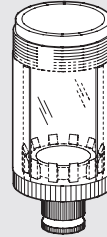
SPARE PARTS FOR STANDARD bit

UPPER COVER FOR MR



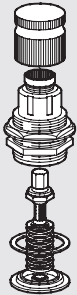
Code	Description
9250805	Spares CS 1/8 1/4 BIT 02
9250806	Spares CS 1/8 1/4 BIT 04
9250807	Spares CS 1/8 1/4 BIT 08
9250808	Spares CS 1/8 1/4 BIT 012

FILTER AND FILTER-REGULATOR BOWL



Code	Description
9255001	Spares TF 1/8 1/4 BIT RMSA
9255101	Spares TF 1/8 1/4 BIT SAC

UPPER COVER FOR MR FC



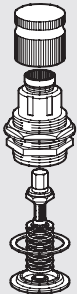
Code	Description
9250817	Spares CS FC 1/8 1/4 BIT 02
9250818	Spares CS FC 1/8 1/4 BIT 04

AUTOMATIC DRAIN (SAC)



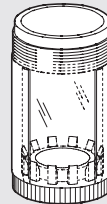
Code	Description
9000803	Spares SAC automatic drain

UPPER COVER FOR MRA



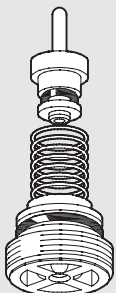
Code	Description
9250809	Spares CSA 1/8 - 1/4 BIT 02
9250814	Spares CSA 1/8 - 1/4 BIT 04
9250815	Spares CSA 1/8 - 1/4 BIT 08
9250816	Spares CSA 1/8 - 1/4 BIT 012

LUBRICATOR BOWL



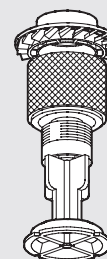
Code	Description
9251402	Spares TL 1/8 1/4 BIT

COMPLETE POPPET FOR MR AND MRA



Code	Description
9250705	Spares poppet for MR
9250706	Spares poppet for MR-SR (rapid drain)
9250708	Spares poppet for MRA

FILTER ELEMENT

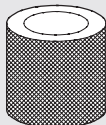


Code	Description
9251708	Spares FP 1/8-1/4 BIT 5 (yellow)
9251709	Spares FP 1/8-1/4 BIT 20 (white)
9251710	Spares FP 1/8-1/4 BIT 50 (blue)

UNITS

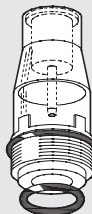
bit SPARE PARTS

FILTER CARTRIDGE



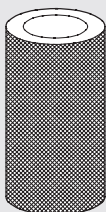
Code	Description
9251808	Spares filter cartridge BIT 5 (yellow)
9251809	Spares filter cartridge BIT 20 (white)
9251810	Spares filter cartridge BIT 50 (blue)

TRANSPARENT LUBRICATOR COVER



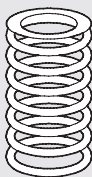
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

DEPURATOR FILTER ELEMENT



Code	Description
9251712	Spares FP DEP. 1/8 1/4 BIT

SPRING FOR MR, FR



Code	Description
9250610	Spares MO 02 BIT
9250611	Spares MO 04 BIT
9250612	Spares MO 08 BIT
9250613	Spares MO 012 BIT

COMPLETE POPPET FOR FR



Code	Description
9250905	Spares OTFR 1/8 1/4 BIT 5 (yellow)
9250906	Spares OTFR 1/8 1/4 BIT 20 (white)
9250907	Spares OTFR 1/8 1/4 BIT 50 (blue)

NOTES

SPARE PARTS FOR SERIES F bit FOR WATER

FILTER ELEMENT



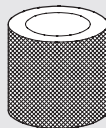
Code	Description
9251709	Spares FP 1/8-1/4 BIT 20 (white)

SPRING FOR REG F, FR F



Code	Description
9250610	Spares MO 02 BIT
9250611	Spares MO 04 BIT
9250612	Spares MO 08 BIT
9250613	Spares MO 012 BIT

FILTER CARTRIDGE



Code	Description
9251809	Spares filter cartridge BIT 20 (white)

NOTES

NOTES

UNITS

SUMMARY Skillair®

● GENERAL TECHNICAL DATA Skillair® C3.4



● Skillair® FILTER  C3.7



● Skillair® DEPURATOR  C3.11



● Skillair® ACTIVE CARBON FILTER  C3.14



● DIAPHRAGM DRIER SERIES DRY 100 Skillair®  C3.17



● Skillair® REGULATOR  C3.20



● Skillair® 100 IN-SERIES REGULATOR  C3.24



● Skillair® PADLOCKABLE REGULATOR  C3.25



● Skillair® PILOT REGULATOR  C3.27



● Skillair® PILOT PADLOCKABLE REGULATOR  C3.29



● Skillair® 300 PILOT OPERATED REGULATOR  C3.30



● Skillair® FILTER REGULATOR  C3.31



● Skillair® LUBRICATOR  C3.34

	● Skillair® SHUT-OFF VALVE	 C3.38
	● Skillair® PROGRESSIVE START VALVE	 C3.43
	● Skillair® PROGRESSIVE STARTER	 C3.45
	● Skillair® AIR TAKE-OFF	 C3.49
	● Skillair® PRESSURE SWITCHES	 C3.50
	● Skillair® SUB-BASE AND ADAPTER BASE	 C3.52
	● FIL + REG + LUB Skillair®	 C3.54
	● FR + LUB Skillair®	 C3.56
	● V3V + FR + LUB Skillair®	 C3.58
	● FIL + LUB Skillair®	 C3.60
	● FIL + DEP Skillair®	 C3.62
	● Skillair® ACCESSORIES	 C3.64
	● Skillair® SPARES PARTS	 C3.65

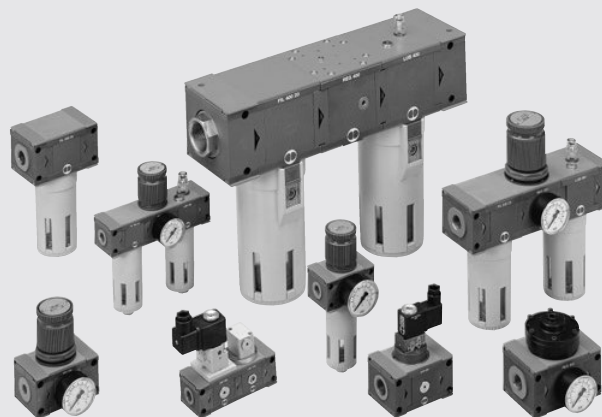
GENERAL TECHNICAL DATA Skillair®

The superior technology of Skillair® FRL units is the expression of Metal Work innovation. The FRL system is the brainchild of a joint study by Metal Work engineers and researchers from the Department of Mechanics in Turin. The integration of metal alloys and super-resistant techno-polymers is the result of co-operation between CESAP (European Centre for the Development of Plastic Applications) and leading international companies such as Du Pont, EMS Chemie and Hoechst. The installation of advanced processing and quality control systems guarantees the reliability of Skillair® FRLs.

Technical features

The Skillair® units incorporate very interesting technological features:

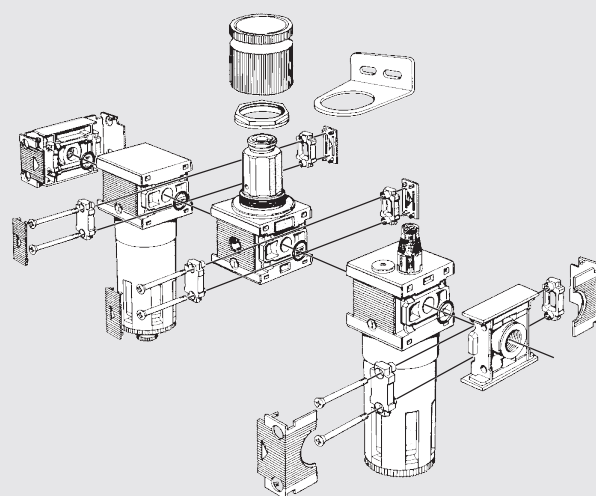
- Compactness: with the same flow capacity our unit is one of the smallest on the market.
- Modularity: various elements such as filters, reducers, lubricators, 3-way valves, progressive actuators and air take-offs can be combined at will. With the modular system the FRL units can be removed without disturbing the pipes.
- Easy maintenance: Any of the elements or the entire unit can be removed without disturbing the remaining part or pipes.



TECHNICAL DATA		SK 100		SK 200		SK 300			SK 400				
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	µm	5 - 20 - 50											
Degree of purification	µm	99.97% α 0.01											
Setting range	bar	0 to 2 0 to 4 0 to 8 0 to 12											
Max. input pressure	MPa	1.5		1.3		1.3			1.3				
	bar	15		13		13			13				
	psi	217		188		188			188				
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	From 1100 to 20000											
ΔP 0.5 bar (0.05 MPa to 7 psi)													
Fluid		Lubricated or unlubricated compressed air											
Temperature range at 1 MPa; 10 bar; 145 psi	°C	-10 to +50											
	°F	14 to 122											
Elements comprising the range		Filter, Depurator, Regulator, Pilot operated regulator, In-series Regulator, Filter-regulator, Lubricator with various lubricant filling systems, Circuit Shut-off Valve, Progressive Actuator.											
Compatibility with oils		See chapter Z1											

Skillair® MODULARITY

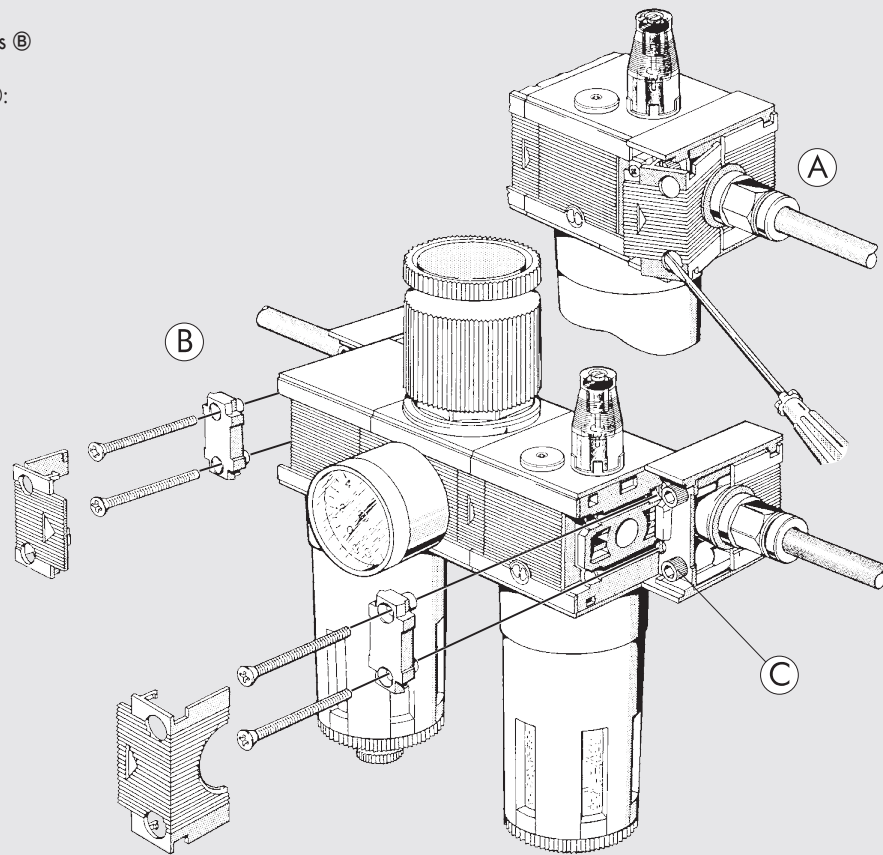
The FRL units can be removed from the system without disturbing the pipes. This can be done with a single element or with the entire system. Assemble the unit so that the air flows in the direction marked by the arrows.



DISASSEMBLING THE UNIT – WALL FIXING

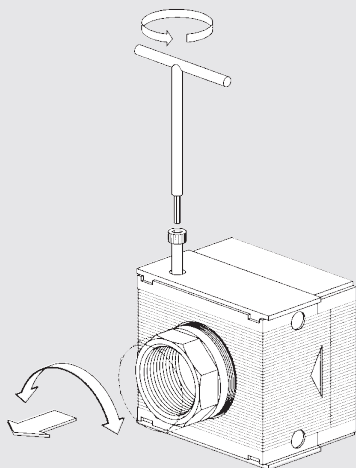
How to disassemble Skillair® end plates:

- Remove the plate (A).
- Unscrew the screws and remove the cams (B) to disassemble the unit.
- Screws to fix the end plates to the wall (C):
Series 100: M4x50
Series 200: M5x60
Series 300: M5x70
Series 400: M6x110



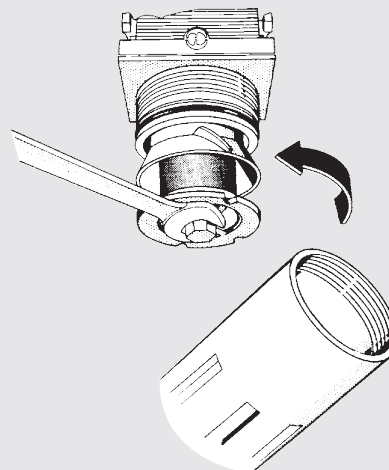
Skillair® 400 - ROTARY SLIDING JOINT

The series 400 comes with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance. For correct assembly and disassembly, loosen the screw in the end plate before screwing in or unscrewing the bush.



CLEANING AND/OR REPLACING THE FILTER ELEMENTS

Before unscrewing the bowl to replace the filter elements, check that the line is no longer pressurized. Replace as shown in the diagram.

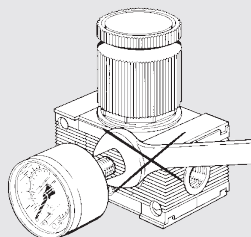


GENERAL RULES FOR USE AND MAINTENANCE

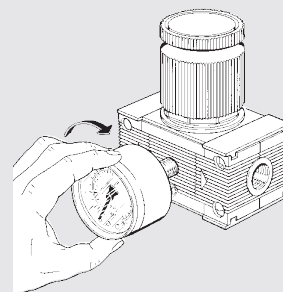
MOUNTING THE PRESSURE GAUGE

- ① Do not use a spanner.
- ② The gauge must be mounted by hand. Use liquid sealants only. Do not use Teflon.

①



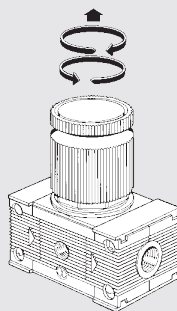
②



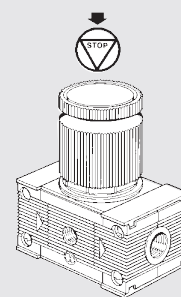
SETTING THE PRESSURE

- ③ **N.B.: the pressure in standard regulators must always be set upwards.** Before setting the pressure, check that the knob is raised.
- ④ When the required pressure has been reached, press the knob downwards.

③



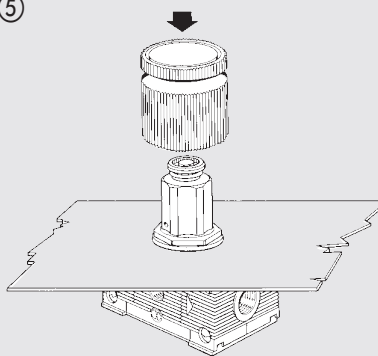
④



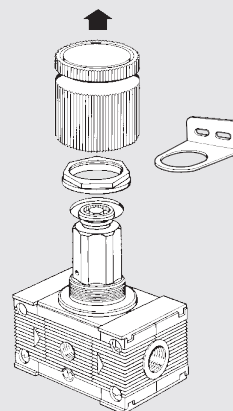
MOUNTING THE REGULATOR AND FILTER-REGULATOR

- ⑤ Panel mounting: remove the knob and lock the regulator with the ring nut.
- ⑥ Wall mounting: use a suitable bracket (see Skillair® accessories).

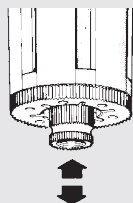
⑤



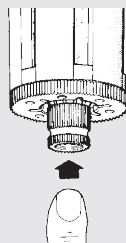
⑥



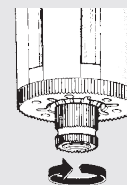
SEMI-AUTO CONDENSATE DRAIN FOR FILTER, FILTER-REGULATOR AND DEPURATOR



The semi-auto condensate drain is the normally open type. When there is pressure in the bowl, the drain closes. When there is no pressure in the bowl, it opens and the condensate drains out.



If necessary, it is possible to drain the condensate whilst the bowl is pressurised. The simple manual operation of "pushing up the valve" will allow the condensate to drain.



When rotating the button clockwise, the valve becomes in locked position, and can only work when the button is returned to the central position.

The Job of the filter is to remove any solid or liquid impurities from the air generated by the compressor.

Incoming air is rotated by the centrifuge unit. The heaviest liquid and solid particles are projected against the walls of the container and forced to adhere to it. As they accumulate they form drops that deposit on the bottom by gravity. The remaining solid particles are held back by the porous element depending on the filtering threshold.

The accumulated condensate is drained out through the drain - automatically when there is no pressure in the filter, or by hand pressing the button.

An automatic drain is available. It automatically eliminates condensate from the container whenever necessary, whatever the pressure.

The transparent windows allow to view the level of condensation at 360°.



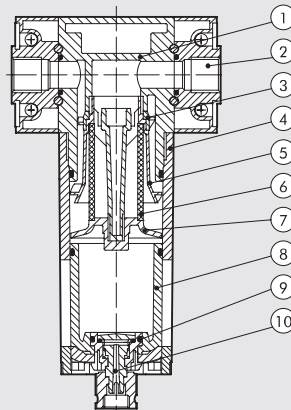
TECHNICAL DATA		FIL 100		FIL 200			FIL 300			FIL 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	µm	5 - 20 - 50		5 - 20 - 50			5 - 20 - 50			5 - 20 - 50			
Max. input pressure	MPa	1.5		1.3			1.3			1.3			1.3
	bar	15		13			13			13			13
	psi	217		188			188			188			188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NI/min	1400		2400			3800			16500			20000
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	50		85			135			590			710
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NI/min	2000		3100			5300			-			-
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	71		110			188			-			-
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50			50			50			50
	°F	122		122			122			122			122
Weight	kg	0.4		0.7			1.4			5.2			6
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			M6 x 110
Bowl capacity	cm³	22		45			75			270			270
Mounting position		Vertical		Vertical			Vertical			Vertical			Vertical
Drain		RMSA - SAC		RMSA - SAC - RA			RMSA - RA			RMSA - RA			RMSA - RA
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure											
		RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.											
		SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.											
		Compressed air.											
Fluid													
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

UNITS

Skillair® FILTER

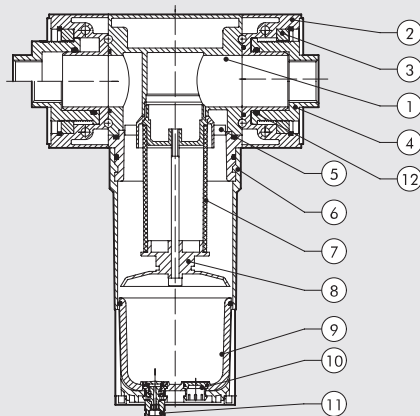
COMPONENTS FIL 100 - 200 - 300

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer centrifuge
- ④ Bowl: technopolymer for FIL 100 and FIL 200, metal for FIL 300
- ⑤ Technopolymer baffle
- ⑥ Sintered HDPE filter cartridge
- ⑦ Technopolymer screen
- ⑧ Clear technopolymer glass
- ⑨ NBR gaskets
- ⑩ Drain (RMSA)



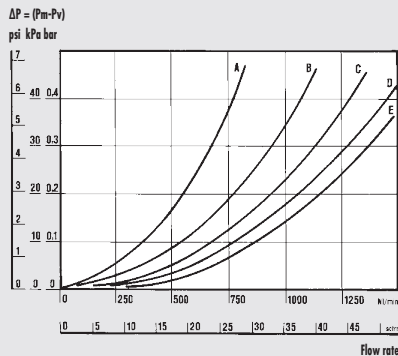
COMPONENTS FIL 400

- ① Aluminium body
- ② Aluminium end plate
- ③ OT58 brass retaining ring
- ④ Anodized aluminium threaded bush, axial adjustment
- ⑤ Technopolymer centrifuge
- ⑥ Aluminium bowl
- ⑦ Sintered bronze filter cartridge
- ⑧ Aluminium screen
- ⑨ Clear technopolymer glass
- ⑩ Technopolymer plug
- ⑪ Drain (RMSA)
- ⑫ NBR gaskets

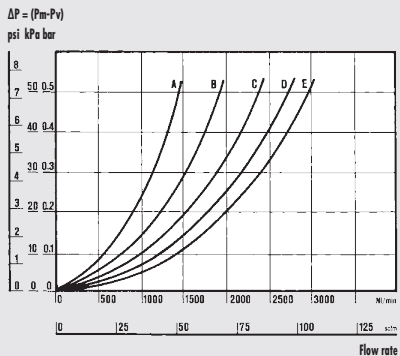


FLOW CHARTS

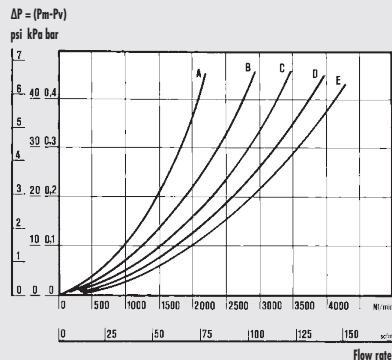
FIL 100 1/4 - 3/8



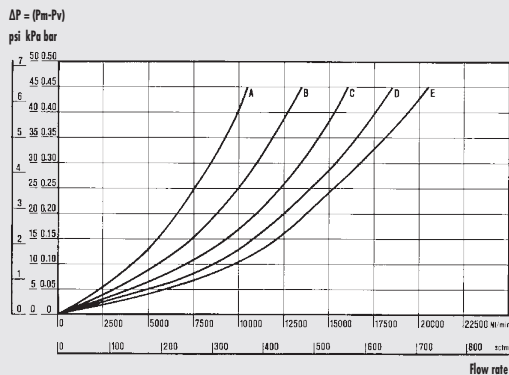
FIL 200 1/4 - 3/8 - 1/2



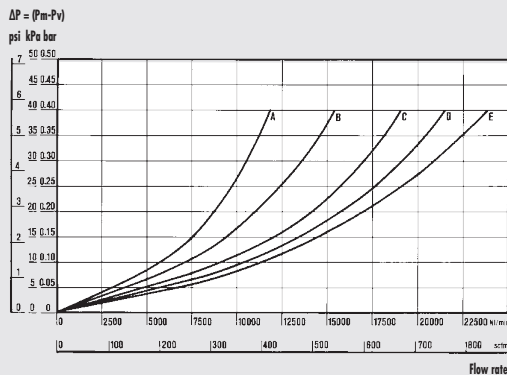
FIL 300 1/2 - 3/4 - 1



FIL 400 1"



FIL 400 2"

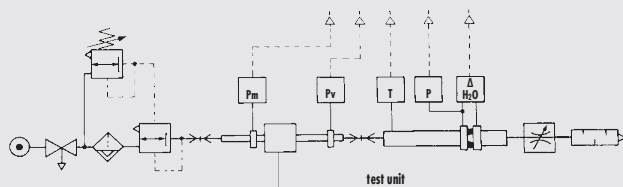


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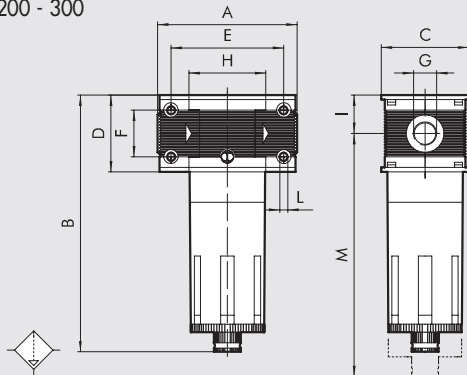
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
(B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
(C) = 6 bar - 0.6 MPa - 87 psi

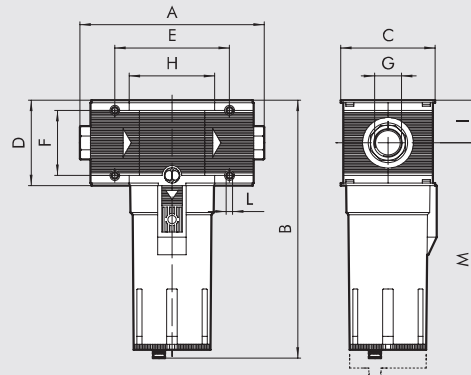


DIMENSIONS

100 - 200 - 300



400



		FIL 100		FIL 200			FIL 300			FIL 400			
		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Threaded port G													
A		78			93.5		110		112		225 to 255		283 to 313
B	RMSA	144			175			195			320		
	RA	-			179			199			324		
	SAC	148			179			-			-		
C		50			63			72			118		
D		43			55			65			105		
E		63			78.5			92			141.4		
F		26			36			42			80		
H		43			55.5			65			105.4		
I		21.5			27.5			32.5			52.5		
L		Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M	RMSA	137			196			215			378		
	RA	-			200			219			382		
	SAC	141			200			-			-		

NOTES

UNITS

Skillair® FILTER

SYNOPTIC, SIZES AND VERSIONS

FIL ELEMENT	100 SIZE	1/4 THREADED PORT	20 DEGREE OF FILTRATION	RMSA TYPE OF DRAIN
FIL.	100	1/4	5 = 5 µm	RMSA
	200	3/8	20 = 20 µm	SAC
		1/4	50 = 50 µm	RMSA
		3/8		SAC
		1/2		RA*
	300	1/2		RMSA
		3/4		RA
	400	1		
		1 1/4		
		1 1/2		
		2		

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400).

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

* For Skillair® 200 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 FILTER		Skillair® 300 FILTER		Skillair® 400 FILTER	
3280001A	FIL 100 5 RMSA without end plates	4480001A	FIL 300 5 RMSA without end plates	6180001A	FIL 400 5 RMSA without end plates
3280007A	FIL 100 5 SAC without end plates	4480002A	FIL 300 20 RMSA without end plates	6180002A	FIL 400 20 RMSA without end plates
3280002A	FIL 100 20 RMSA without end plates	4480003A	FIL 300 50 RMSA without end plates	6180003A	FIL 400 50 RMSA without end plates
3280008A	FIL 100 20 SAC without end plates	4480004A	FIL 300 5 RA without end plates	6180004A	FIL 400 5 RA without end plates
3280003A	FIL 100 50 RMSA without end plates	4480005A	FIL 300 20 RA without end plates	6180005A	FIL 400 20 RA without end plates
3280009A	FIL 100 50 SAC without end plates	4480006A	FIL 300 50 RA without end plates	6180006A	FIL 400 50 RA without end plates
3280001	FIL 100 1/4 5 RMSA	4480001	FIL 300 1/2 5 RMSA	6180001	FIL 400 1 5 RMSA
3280007	FIL 100 1/4 5 SAC	4480002	FIL 300 1/2 20 RMSA	6180002	FIL 400 1 20 RMSA
3280002	FIL 100 1/4 20 RMSA	4480003	FIL 300 1/2 50 RMSA	6180003	FIL 400 1 50 RMSA
3280008	FIL 100 1/4 20 SAC	4480004	FIL 300 1/2 5 RA	6180004	FIL 400 1 5 RA
3280003	FIL 100 1/4 50 RMSA	4480005	FIL 300 1/2 20 RA	6180005	FIL 400 1 20 RA
3280009	FIL 100 1/4 50 SAC	4480006	FIL 300 1/2 50 RA	6180006	FIL 400 1 50 RA
3380001	FIL 100 3/8 5 RMSA	4580001	FIL 300 3/4 5 RMSA	6280001	FIL 400 1 1/4 5 RMSA
3380007	FIL 100 3/8 5 SAC	4580002	FIL 300 3/4 20 RMSA	6280002	FIL 400 1 1/4 20 RMSA
3380002	FIL 100 3/8 20 RMSA	4580003	FIL 300 3/4 50 RMSA	6280003	FIL 400 1 1/4 50 RMSA
3380008	FIL 100 3/8 20 SAC	4580004	FIL 300 3/4 5 RA	6280004	FIL 400 1 1/4 5 RA
3380003	FIL 100 3/8 50 RMSA	4580005	FIL 300 3/4 20 RA	6280005	FIL 400 1 1/4 20 RA
3380009	FIL 100 3/8 50 SAC	4580006	FIL 300 3/4 50 RA	6280006	FIL 400 1 1/4 50 RA
Skillair® 200 FILTER		4680001	FIL 300 1 5 RMSA	6380001	FIL 400 1 1/2 5 RMSA
3480001A	FIL 200 5 RMSA without end plates	4680002	FIL 300 1 20 RMSA	6380002	FIL 400 1 1/2 20 RMSA
3480007A	FIL 200 5 SAC without end plates	4680003	FIL 300 1 50 RMSA	6380003	FIL 400 1 1/2 50 RMSA
3480002A	FIL 200 20 RMSA without end plates	4680004	FIL 300 1 5 RA	6380004	FIL 400 1 1/2 5 RA
3480008A	FIL 200 20 SAC without end plates	4680005	FIL 300 1 20 RA	6380005	FIL 400 1 1/2 20 RA
3480003A	FIL 200 50 RMSA without end plates	4680006	FIL 300 1 50 RA	6380006	FIL 400 1 1/2 50 RA
3480009A	FIL 200 50 SAC without end plates			6480001	FIL 400 2 5 RMSA
3480001	FIL 200 1/4 5 RMSA			6480002	FIL 400 2 20 RMSA
3480007	FIL 200 1/4 5 SAC			6480003	FIL 400 2 50 RMSA
3480002	FIL 200 1/4 20 RMSA			6480004	FIL 400 2 5 RA
3480008	FIL 200 1/4 20 SAC			6480005	FIL 400 2 20 RA
3480003	FIL 200 1/4 50 RMSA			6480006	FIL 400 2 50 RA
3480009	FIL 200 1/4 50 SAC				
3580001	FIL 200 3/8 5 RMSA				
3580007	FIL 200 3/8 5 SAC				
3580002	FIL 200 3/8 20 RMSA				
3580008	FIL 200 3/8 20 SAC				
3580003	FIL 200 3/8 50 RMSA				
3580009	FIL 200 3/8 50 SAC				
3680001	FIL 200 1/2 5 RMSA				
3680007	FIL 200 1/2 5 SAC				
3680002	FIL 200 1/2 20 RMSA				
3680008	FIL 200 1/2 20 SAC				
3680003	FIL 200 1/2 50 RMSA				
3680009	FIL 200 1/2 50 SAC				

UNITS

Skillair® FILTER

Skillair® DEPURATOR



The role of the depurator is to separate the liquid and solid particles contained in the compressed air with a high degree of efficiency. This separation is carried out using a special filtering element called a "coalescence cartridge".



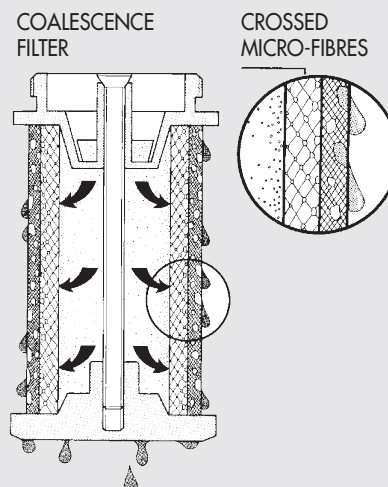
TECHNICAL DATA		DEP 100		DEP 200		DEP 300			DEP 400				
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of purification		99.97% at 0.01 µm		99.97% at 0.01 µm		99.97% at 0.01 µm			99.97% at 0.01 µm				
Max. inlet pressure		MPa	1.5	1.3		1.3			1.3			1.3	
		bar	15	13		13			13			13	
		psi	217	188		188			188			188	
Suggested flow at 6 bar		NI/min	230	360		500			2300			2250	
Maximum suggested flow rate		See next page											
Max temperature at: 1 MPa; 10 bar; 145 psi		°C	50	50		50			50			50	
		°F	122	122		122			122			122	
Weight		kg	0.4	0.9		1.4			4.2			5	
Wall fixing screws			M4 x 50	M5 x 60		M5 x 70			M6 x 110			M6 x 110	
Bowl capacity		cm³	22	45		75			270			270	
Mounting position			Vertical	Vertical		Vertical			Vertical			Vertical	
Drain			RMSA	RMSA		RMSA - RA			RMSA - RA			RMSA - RA	
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure											
		RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.											
Fluid		5 µm filtered air											
Notes on use		It is advisable to mount a 5 µm pre-filter in order to separate the solid particles first.											
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

UNITS

Skillair® DEPURATOR

HOW THE COALESCENCE CARTRIDGE WORKS

Air from the mains – full of impurities – flows into the coalescence cartridge and then passes through the crossed micro-fibres that make up the cartridge. During this movement the liquid particles come into contact with the crossed micro-fibres and adhere to them. Due to the air pressure and gravity they join up with other micro-drops at each cross-over point and gradually increase in volume, leading to the physical phenomenon called coalescence. When they stop moving, the drops deposit on the outside of the cartridge, from which they detach and drop to the bottom. Since the volume of liquid leaving the cartridge is exactly the same as the drops arriving, the coalescence cartridge ought to work indefinitely. Solid particles are caught with the same efficiency but, unlike drops, they are not drained out and clog the cartridge. To get round this problem, it is necessary to mount a 5 µm pre-filter before the fine oil filter to separate the solid particles first.

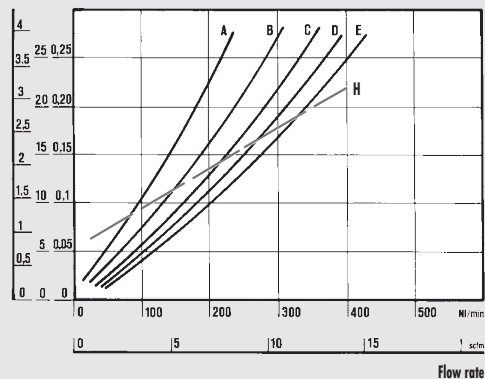


FLOW CHARTS

DEP 100 1/4 - 3/8

$\Delta P = (P_m - P_v)$

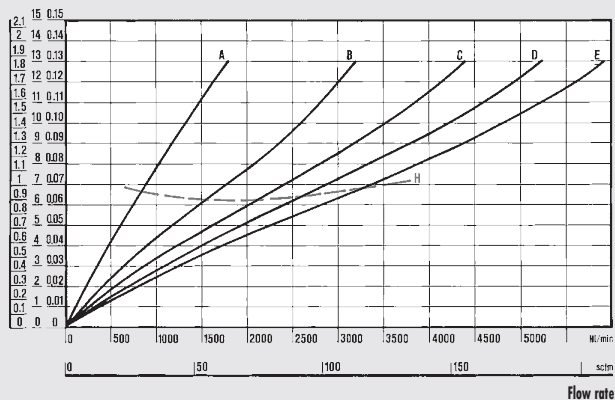
psi kPa bar



DEP 400 1"

$\Delta P = (P_m - P_v)$

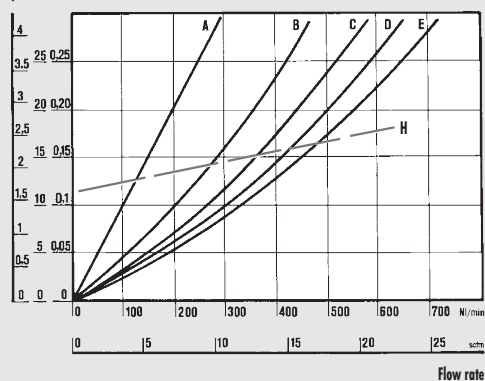
psi kPa bar



DEP 200 1/4 - 3/8 - 1/2

$\Delta P = (P_m - P_v)$

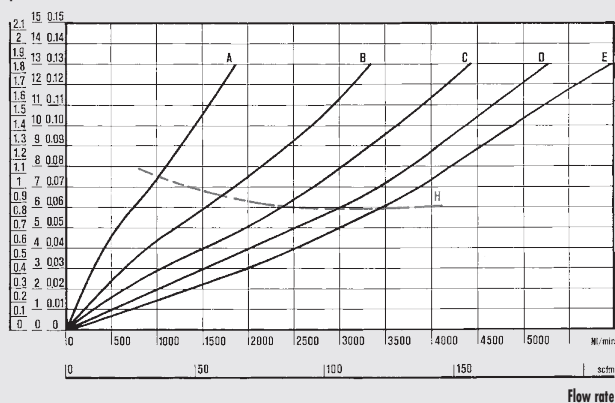
psi kPa bar



DEP 400 2"

$\Delta P = (P_m - P_v)$

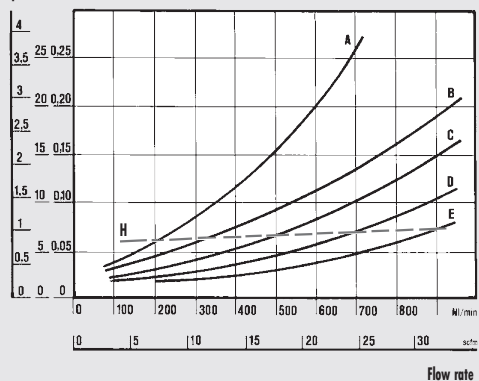
psi kPa bar



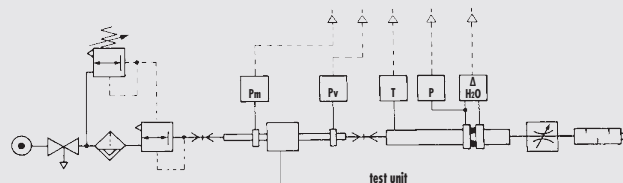
DEP 300 1/2 - 3/4 - 1

$\Delta P = (P_m - P_v)$

psi kPa bar



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Turin Polytechnic

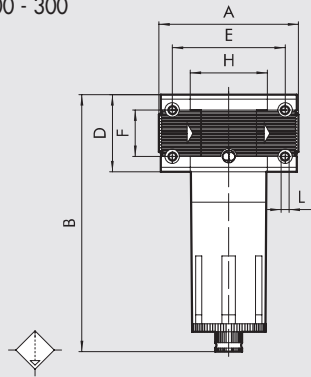


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

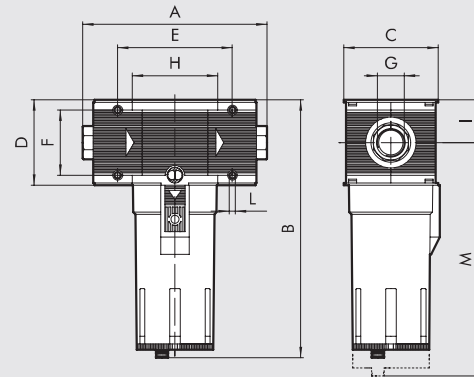
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi
- (H) = maximum flow rate recommended for optimal operation

DIMENSIONS

100 - 200 - 300



400



	DEP 100		DEP 200			DEP 300			DEP 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112		225 to 255		283 to 313
B	RMSA	144	175				195			320		
	RA	-	-				199			324		
C		50	63				72			118		
D		43	55				65			105		
E		63	78.5				92			141.4		
F		26	36				42			80		
H		43	55.5				65			105.4		
I		21.5	27.5				32.5			52.5		
L		Hole for M4 screws	Hole for M5 screws				Hole for M5 screws			Hole for M6 screws		
M	RMSA	137	196				215			378		
	RA	-	-				219			382		

SYNOPTIC, SIZES AND VERSIONS

DEP	100	1/4	RMSA
ELEMENT	SIZE	THREADED PORT	TYPE OF DRAIN
DEP	100	1/4	RMSA
	200	3/8	
		1/4	
	300	3/8	
		1/2	
		1/2	RMSA
	400	3/4	RA
		1	
		1	
		1 1/4	
		1 1/2	
		2	

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

(for size 300 and 400).

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 DEPURATOR		Skillair® 300 DEPURATOR		Skillair® 400 DEPURATOR	
3288001A	D 100 RMSA without end plates	4488001A	D 300 RMSA without end plates	6188001A	D 400 RMSA without end plates
3288001	D 100 1/4 RMSA	4488002A	D 300 RA without end plates	6188002A	D 400 RA without end plates
3388001	D 100 3/8 RMSA	4488001	D 300 1/2 RMSA	6188001	D 400 1 RMSA
		4488002	D 300 1/2 RA	6188002	D 400 1 RA
Skillair® 200 DEPURATOR		4588001	D 300 3/4 RMSA	6288001	D 400 1 1/4 RMSA
3488001A	D 200 RMSA without end plates	4588002	D 300 3/4 RA	6288002	D 400 1 1/4 RA
3488001	D 200 1/4 RMSA	4688001	D 300 1 RMSA	6388001	D 400 1 1/2 RMSA
3588001	D 200 3/8 RMSA	4688002	D 300 1 RA	6388002	D 400 1 1/2 RA
3688001	D 200 1/2 RMSA			6488001	D 400 2 RMSA
				6488002	D 400 2 RA

Skillair® ACTIVE CARBON FILTER

Active carbon filtering systems are the most efficient in the industry as they eliminate all traces of oils, solvents and hydrocarbons, and remove unpleasant odours from the air.

The operating principle is based on active carbon's ability to absorb the majority of the polluting particles in the air thanks to the presence of tiny passages inside the carbon granules.

The incoming air must be filtered (5 µm) and purified (0.01 µm) to increase the duration and efficiency of the cartridge.

The cartridge must be replaced at set intervals since there is no difference in load loss between an efficient cartridge and a saturated one.

N.B. To maintain the same performance and duration specified on the data sheet, the load loss (ΔP) must not exceed 75 mbar.



UNITS

Skillair® ACTIVE CARBON FILTER

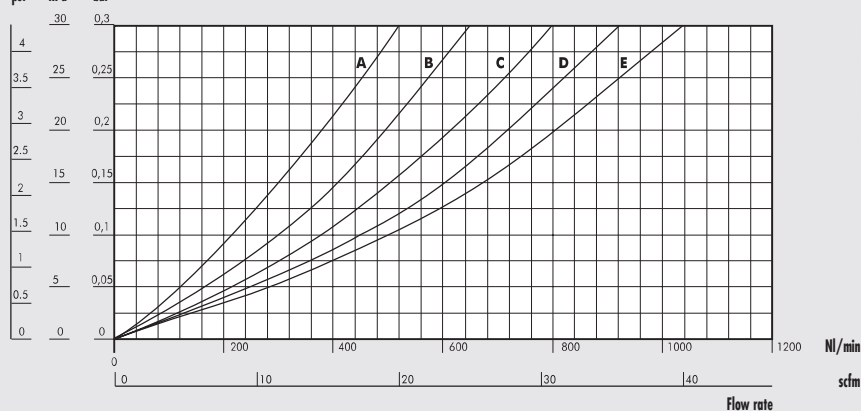
TECHNICAL DATA		AC 100		AC 200			AC 300			AC 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Residual oil at 20°C *	mg/m³	0.003		0.003			0.003			0.003			
Duration of cartridge *	hours	4000		4000			4000			1000			
Max. inlet pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188			188			188			
Max temperature at: 1 MPa; 10 bar; 145 psi	°C	50		50			50			50			
	°F	122		122			122			122			
Weight	kg	0.4		0.9			1.4			4.2		5	
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Mounting position		In any position.											
Fluid		0.01µm filtered and depurated air.											
Notes on use		Upstream it's necessary to mount a coalescence filter depurator of 0.01 µm.											
* if the load loss of 75 mbar is not exceeded													

FLOW CHARTS

AC 100 1/4 - 3/8

ΔP = (Pm - Pv)

psi kPa bar



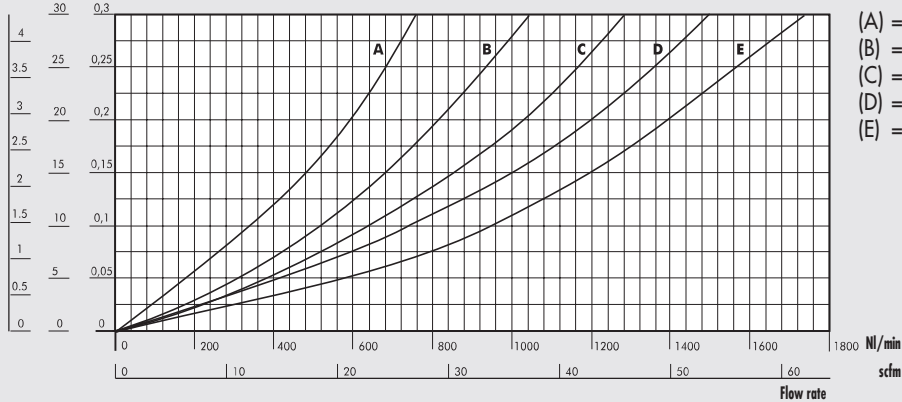
- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi

FLOW CHARTS

AC 200 1/4 - 3/8 - 1/2

 $\Delta P = (P_m - P_v)$

psi kPa bar

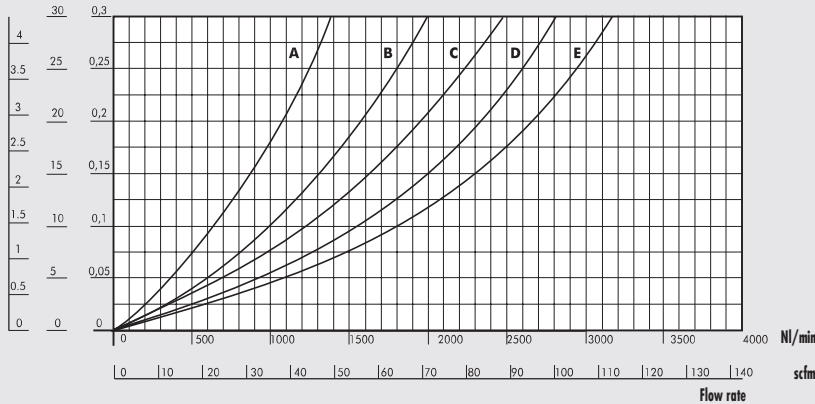


- (A) = 2 bar - 0.2 MPa - 29 psi
 (B) = 4 bar - 0.4 MPa - 58 psi
 (C) = 6 bar - 0.6 MPa - 87 psi
 (D) = 8 bar - 0.8 MPa - 116 psi
 (E) = 10 bar - 1 MPa - 145 psi

AC 300 1/2 - 3/4 - 1

 $\Delta P = (P_m - P_v)$

psi kPa bar

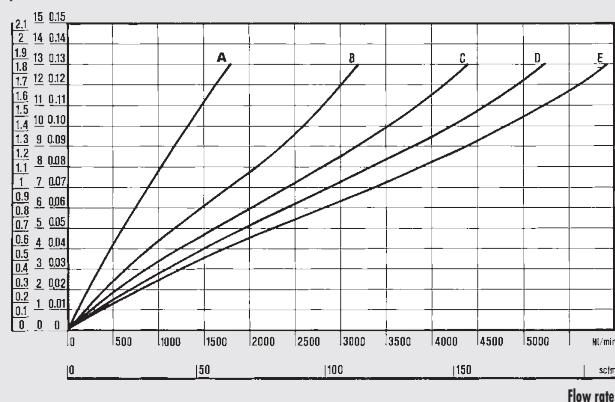


- (A) = 2 bar - 0.2 MPa - 29 psi
 (B) = 4 bar - 0.4 MPa - 58 psi
 (C) = 6 bar - 0.6 MPa - 87 psi
 (D) = 8 bar - 0.8 MPa - 116 psi
 (E) = 10 bar - 1 MPa - 145 psi

AC 400 1

 $\Delta P = (P_m - P_v)$

psi kPa bar

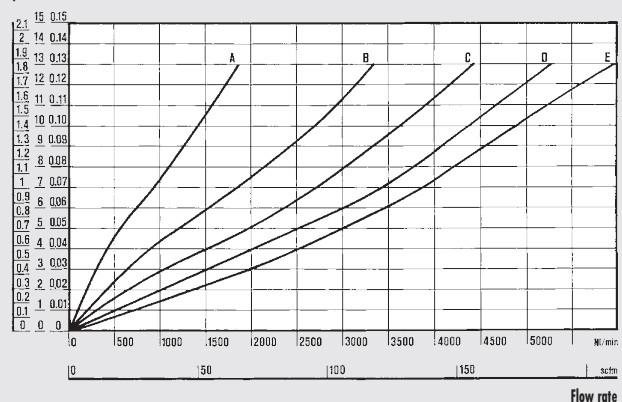


- (A) = 2 bar - 0.2 MPa - 29 psi
 (B) = 4 bar - 0.4 MPa - 58 psi
 (C) = 6 bar - 0.6 MPa - 87 psi
 (D) = 8 bar - 0.8 MPa - 116 psi
 (E) = 10 bar - 1 MPa - 145 psi

AC 400 2

 $\Delta P = (P_m - P_v)$

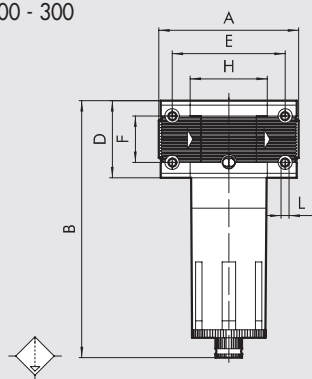
psi kPa bar



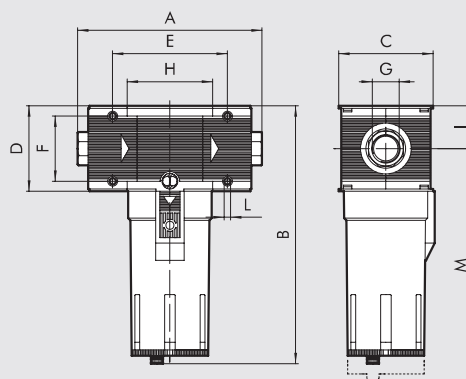
- (A) = 2 bar - 0.2 MPa - 29 psi
 (B) = 4 bar - 0.4 MPa - 58 psi
 (C) = 6 bar - 0.6 MPa - 87 psi
 (D) = 8 bar - 0.8 MPa - 116 psi
 (E) = 10 bar - 1 MPa - 145 psi

DIMENSIONS

100 - 200 - 300



400



	AC 100		AC 200			AC 300			AC 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112		225 to 255		283 to 313
B	144			175			195			320		
C	50			63			72			118		
D	43			55			65			105		
E	63			78.5			92			141.4		
F	26			36			42			80		
H	43			55.5			65			105.4		
I	21.5			27.5			32.5			52.5		
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M	137		196			215			378			

SYNOPTIC, SIZES AND VERSIONS

AC	100	1/4	RMSA
ELEMENT	SIZE	THREADED PORT	TYPE
AC = Active carbon	100	1/4	RMSA
	200	3/8	
		1/4	
		3/8	
	300	1/2	
		1/2	
		3/4	
	400	1	
		1	
		1 1/4	
		1 1/2	
		2	

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 ACTIVE CARBON FILTER					
3288003A	FIL AC 100 RMSA without end plates	4488003A	FIL AC 300 RMSA without end plates	6188003A	FIL AC 400 RMSA without end plates
3288003	FIL AC 100 1/4 RMSA	4488003	FIL AC 300 1/2 RMSA	6188003	FIL AC 400 1 RMSA
3388003	FIL AC 100 3/8 RMSA	4588003	FIL AC 300 3/4 RMSA	6288003	FIL AC 400 1 1/4 RMSA
Skillair® 200 ACTIVE CARBON FILTER					
3488003A	FIL AC 200 RMSA without end plates	4688003	FIL AC 300 1 RMSA	6388003	FIL AC 400 1 1/2 RMSA
3488003	FIL AC 200 1/4 RMSA			6488003	FIL AC 400 2 RMSA
3588003	FIL AC 200 3/8 RMSA				
3688003	FIL AC 200 1/2 RMSA				

DIAPHRAGM DRIER SERIES DRY 100 Skillair®



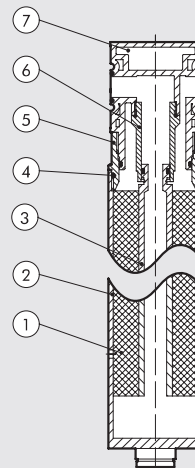
Skillair® diaphragm driers are used to reduce the air's moisture content by lowering the dew point, i.e. the temperature at which condensate starts to form. They use diaphragms with a new cross-fibre system that guarantees a lower consumption of regenerated air and hence power. This is an all-in-one unit complete with a filter, purifier, air intake and drier. The air intake uses air that has been filtered and purified, but not dried, and sends it to utilities not requiring dry air. This is a much more efficient system as only the required quantity of compressed air is dried. An alternative proposal is the drier by itself. As the Skillair® system is modular, it can be inserted in any type of assembly. It is important, however, to remember that only properly filtered and purified air must be supplied to the drier. It's advisable that the drier should be used at the highest pressure as possible.



TECHNICAL DATA		DRY 100	FIL + DEP + PA + DRY 100
Threaded port		1/4" - 3/8"	
Max. inlet pressure		1.3 MPa / 13 bar / 188 psi	
Suggested flow rate at 6.3 bar (0.63 MPa, 91 psi)	Nl/min	230	
	scfm	8	
Consumption of compressed air for regeneration at 6.3 bar	Nl/min	20	
	scfm	0.7	
Minimum temperature		2°C / 35°F	
Maximum temperature at 1MPa; 10 bar; 145 psi		50°C / 122°F	
Noise level	dB(A)	< 45	
Weight	kg	0.84	1.24
Wall fixing screws		M4 x 50	
Mounting position		In any position	Vertical
Drain		-	RMSA: drain with manual condensate discharge and automatic discharge at zero pressure SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.
Filter bowl and purification bowl capacity	cm³	-	22
Fluid		Compressed air without condensate max solid particle size: 1 µm max oil residue: 0.01 mg/m³	Compressed air
Important note		The drier must always be preceded by a 5 µm filter and a purifier	

COMPONENTS

- ① Body: painted anodized aluminium
- ② Diaphragm: poliester sulfone resin
- ③ Inner tube: salt-water resistant aluminium
- ④ O-Ring seals: NBR
- ⑤ Adapter: anodized aluminium
- ⑥ Flanges: brass
- ⑦ Skillair® body: technopolymer

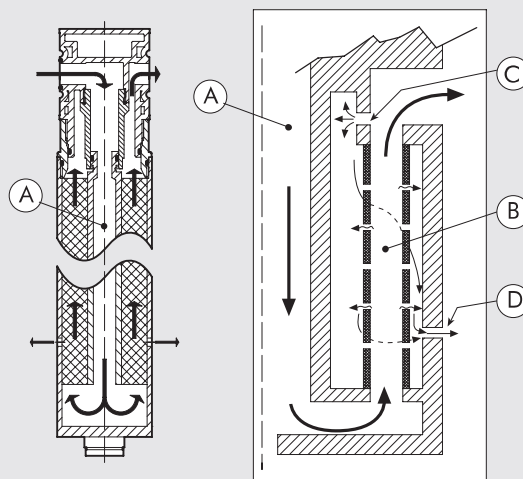


OPERATING PRINCIPLE

The drying element is comprised of cross-fibre diaphragms arranged around an inner tube. The compressed air passes through the tube (A) and flows back through the hollow diaphragms (B). At the same time, the regeneration air required for drying is tapped from the outlet port, expands as it passes through a nozzle (C), which reduces the relative humidity, and flows back along the outer side of the fibres. This allows moist compressed air to flow through the diaphragms and the dry regeneration air outside. The difference in moisture content causes the water to pass from the compressed air to the regeneration air, which is drained through holes (D) at the bottom of the drier.

ADVANTAGES

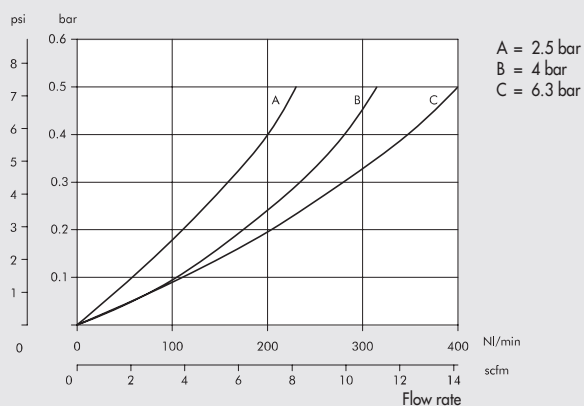
- Drying is guaranteed as all the moisture is removed
- Minimum consumption of regeneration air
- Reduce drier maintenance as none of the components are subject to wear
- Environmentally friendly drying process.



FLOW CHARTS

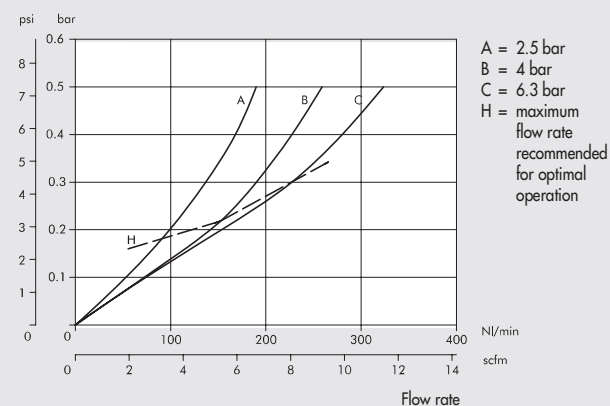
DRY 100

$$\Delta P = (P_m - P_v)$$



FIL (5 µm) + DEP + PA + DRY 100

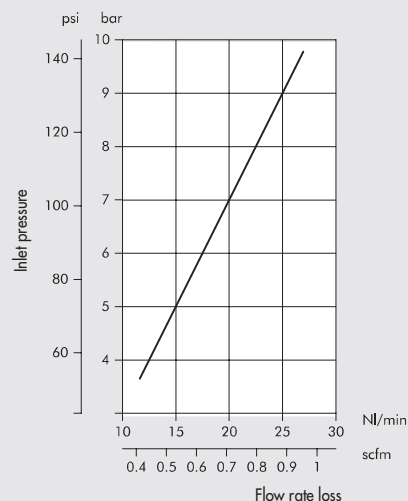
$$\Delta P = (P_m - P_v)$$



REGENERATION AIR

Thanks to the cross-fibre system, the flow rate loss is much lesser than in traditional linear-fibre systems. In the diagram on the right is indicated the drop-in air flow according to the operating pressure.

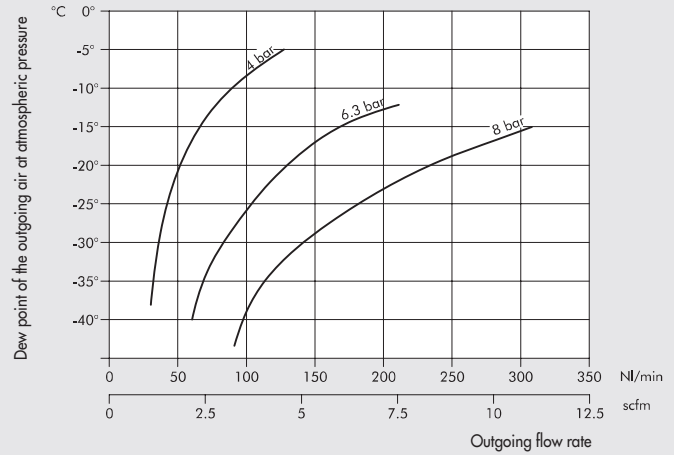
N.B.: for the best drying efficiency the highest pressure possible is required, though this implies an increase of the regeneration air.



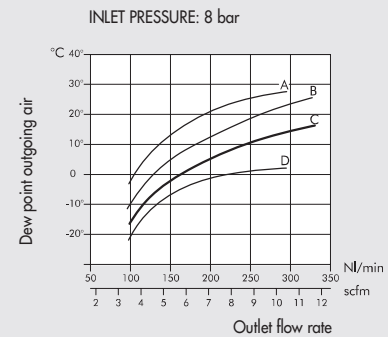
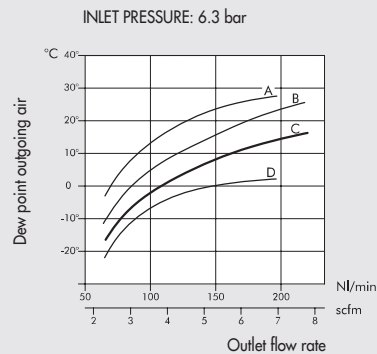
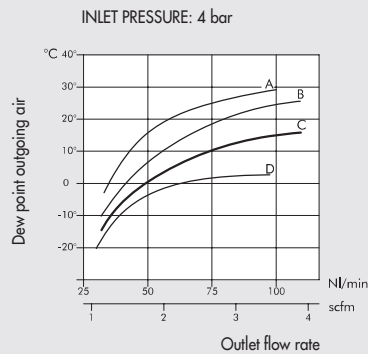
DRYING

Dew point of the outgoing air in nominal reference conditions:

- Dew point referred to atmospheric pressure
- Incoming air with dew point at 25°C (i.e. saturated at 25°C)



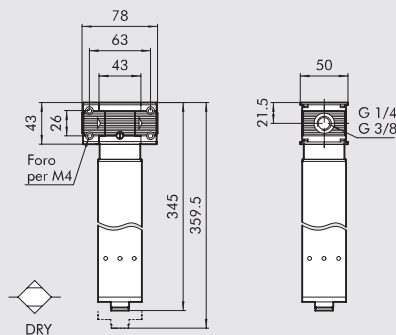
In the diagram below is indicated the dew point of the outgoing compressed air for various input air dew points, depending on the rate of flow of compressed air.



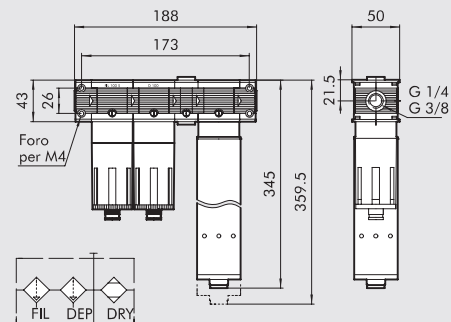
A: Incoming air with dew point at 45°C
B: Incoming air with dew point at 35°C

C: Incoming air with dew point at 25°C
D: Incoming air with dew point at 15°C

DRY 100 DIMENSIONS



FIL + DEP + PA + DRY 100 DIMENSIONS



Code	Description
3290001A	DRY 100 without end plates
3290001	DRY 100 1/4"
3390001	DRY 100 3/8"

Code	Description
3291001	F+D+PA+DRY 100 1/4" RMSA-RMSA
3291005	F+D+PA+DRY 100 1/4" SAC-RMSA
3291006	F+D+PA+DRY 100 1/4" SAC-SAC
3391001	F+D+PA+DRY 100 3/8" RMSA-RMSA
3391005	F+D+PA+DRY 100 3/8" SAC-RMSA
3391006	F+D+PA+DRY 100 3/8" SAC-SAC

Skillair® REGULATOR

Each system served by the air supply mains (e.g. actuators and general appliances) requires its own constant operating pressure. It is necessary to use a regulator to regulate the pressure within a set range by means of regulating springs, with the pressure never exceeding the mains pressure. The new Skillair® regulator uses a rolling diaphragm which gives a much better performance than the flat version.

Advantages of this system:

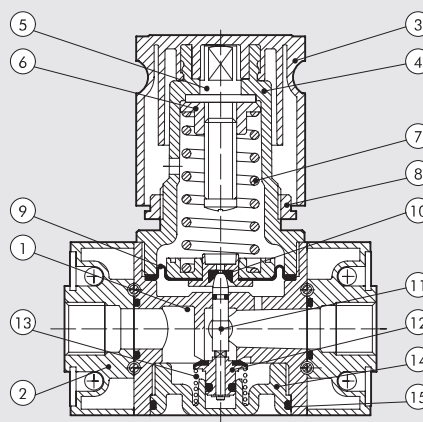
- Increased stroke, increased valve opening and hence higher flow rate.
- Decreased dynamic and inrush friction; prompter, more sensitive operation.
- Reduced working stress and hence longer life allowing the use of thinner diaphragms (0.45 mm versus 1.5 mm for a flat one) which increases regulator sensitivity and prompt action.
- Increased accuracy in maintaining the set pressure with both variable flow rates and different feed pressures.
- Downstream overpressures relieved quickly.



TECHNICAL DATA		REG 100		REG 200			REG 300			REG 400 PILOT OPERATED*			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12											
Max. input pressure	MPa	1.5		1.5			1.3			1.3			1.3
	bar	15		15			13			13			13
	psi	217		217			188			188			188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NI/min	1100		2500			3500			18000			20000
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	39		88			124			363			707
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	NI/min	1600		3500			7000			-			-
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	57		124			247			-			-
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50			50			50			50
	°F	122		122			122			122			122
Weight	kg	0.4		0.7			1.4			4.8			5.6
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			M6 x 110
Pressure gauge port		1/8"		1/8"			1/8"			1/4"			1/4"
Mounting position		In any position											
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.											
Notes on use		The regulator pressure must always be set upwards.											
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.											
		Do not take air from pressure gauge ports.											
		*Supplied without a pilot regulator.											

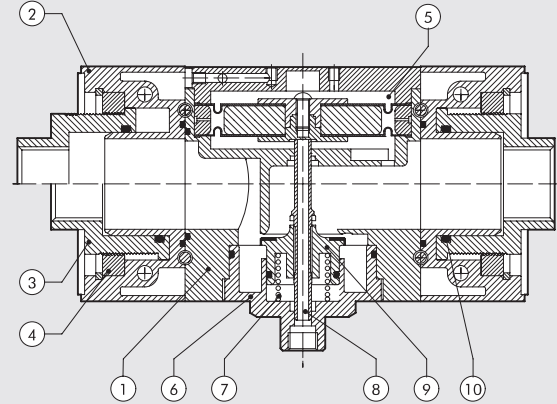
COMPONENTS REG 100 - 200 - 300

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ OT58 brass adjusting screw
- ⑥ OT58 brass scroll
- ⑦ Steel adjusting spring
- ⑧ Technopolymer ring nut
- ⑨ Rolling diaphragm
- ⑩ NBR relieving gaskets
- ⑪ OT58 brass stem
- ⑫ Valve with NBR vulcanized gasket
- ⑬ Stainless steel valve spring
- ⑭ Technopolymer plug
- ⑮ NBR gaskets



COMPONENTS REG 400 PILOT OPERATED

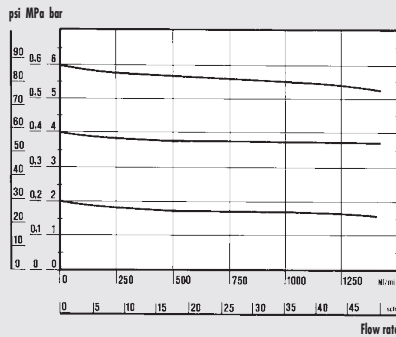
- ① Aluminium body
- ② Aluminium end plate
- ③ Anodized aluminium threaded bush, axial adjustment
- ④ OT58 brass retaining ring
- ⑤ Rolling diaphragm
- ⑥ Anodized aluminium plug
- ⑦ Stainless steel valve spring
- ⑧ OT58 brass stem with air relief hole
- ⑨ Valve with NBR vulcanized gasket
- ⑩ NBR gaskets



FLOW CHARTS

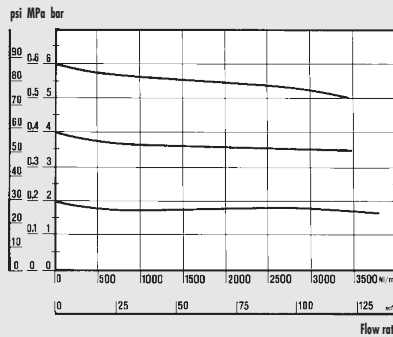
REG 100 1/4 - 3/8

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



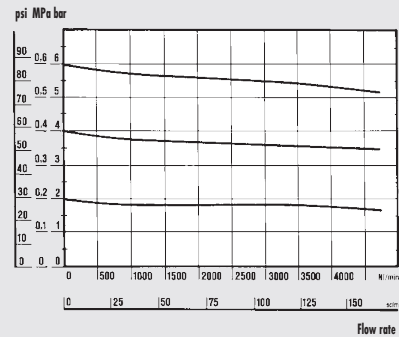
REG 200 1/4 - 3/8 - 1/2

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



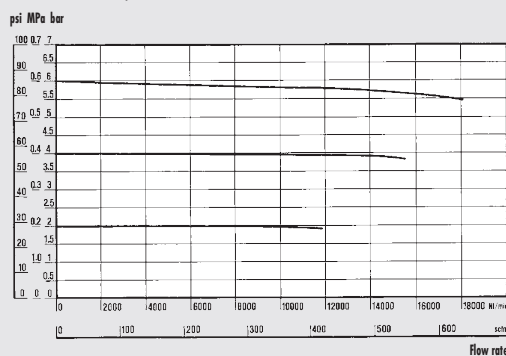
REG 300 1/2 - 3/4 - 1

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



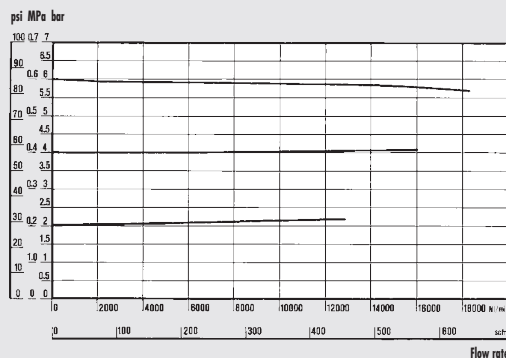
REG 400 1"

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi

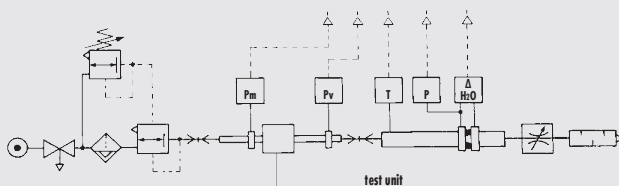


REG 400 2"

Preset pressure
Pm = 7 bar - 0.7 MPa - 100 psi



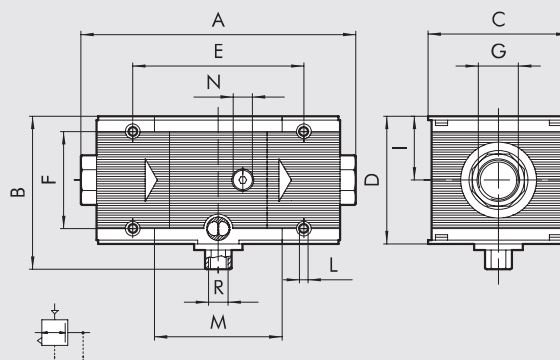
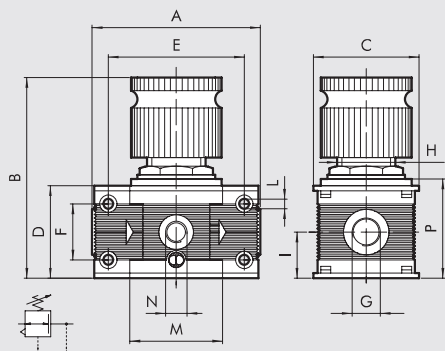
- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.



DIMENSIONS

100 - 200 - 300

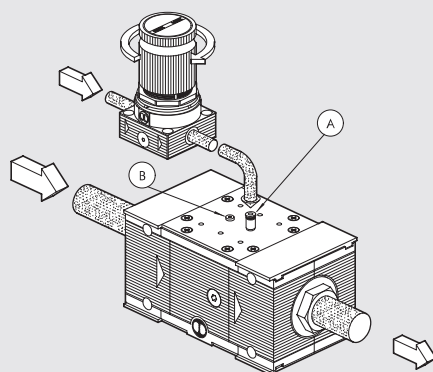
400



	REG 100		REG 200			REG 300			REG 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112		225 to 255		283 to 313
B	98			125			148			127		
C	50			63			72			118		
D	43			55			65			105		
E	63			78.5			92			141.4		
F	26			36			42			80		
H	30 x 1.5			40 x 1.5			48 x 1.5			-		
I	21.5			27.5			32.5			52.5		
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M	43			55.5			65			105.4		
N (pressure gauge port)	1/8"			1/8"			1/8"			1/4"		
P	46			58			69			-		
R (relief)	-			-			-			1/4"		

INSTRUCTIONS FOR USE REG 400

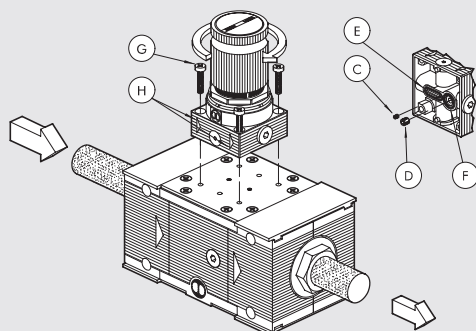
①



REMOTE PILOT

- Fit the A7 M5 plug into the threaded hole ② (close to the entrance).
- Fit the M5 fitting into the threaded hole ① as close to the entrance as possible.
- Connect the downstream circuit of the selected pilot operated regulator to the input ① (R1 fitting).
- Set the required pressure on the pilot operated regulator.

②

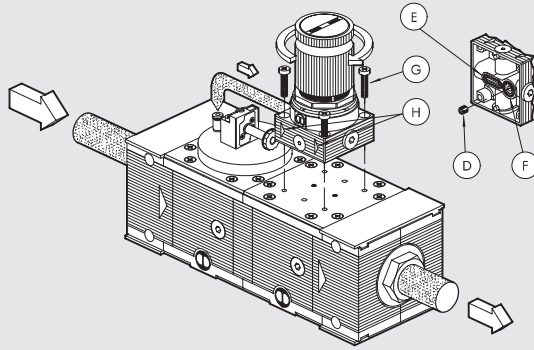


DIRECT PILOT WITH Skillair® PILOT OPERATED REGULATOR

- Remove the pins ③ and ④ under the pilot operated regulator.
- Check that the two gaskets ⑤ and ⑥ under the pilot are in place.
- Fix the pilot operated regulator to the base of the regulator using the self-threading screws ⑦. Make sure the arrows ⑧ point in the same direction as the arrows in relief under the base of the regulator.

INSTRUCTIONS FOR USE REG 400

③



PILOT REGULATOR FOLLOW-UP LINK

This is used when the regulator is mounted downstream of a V3V valve or an APR.

The air can be bled from the V3V or APR valves instead of from the regulator relieving system.

- Remove only the stud pin marked with a letter Ⓓ under the pilot regulator.
- Check the two gaskets under the pilot marked Ⓔ and Ⓕ.
- Secure the pilot regulator to the regulator base with the self-tapping screws marked with a letter Ⓖ. Making sure the arrows marked Ⓗ point in the same direction as the arrows in relief under the regulator base.
- Remove the A7 M5 plug from the V3V or APR plate and remount the fitting.
- Connect the pilot regulator supply to the fitting.

SYNOPTIC, SIZES AND VERSIONS

REG ELEMENT	100 SIZE	1/4 THREADED PORT	02 SETTING RANGE
REG	100	1/4	02 = 0 to 2 bar
	200	3/8	04 = 0 to 4 bar
		1/4	08 = 0 to 8 bar
		3/8	012 = 0 to 12 bar
		1/2	
	300	1/2	
		3/4	
		1	
	400	1	Depending on the pilot used
		1 1/4	
		1 1/2	
		2	

The pilot operated regulator is necessary for size 400. See page C3.27

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 REGULATOR			Skillair® 200 REGULATOR	Skillair® 300 REGULATOR	
3202001A	REG 100 02 without end plates	3402001A	REG 200 02 without end plates	4402000A	REG 300 02 without end plates
3202002A	REG 100 04 without end plates	3402002A	REG 200 04 without end plates	4402001A	REG 300 04 without end plates
3202003A	REG 100 08 without end plates	3402003A	REG 200 08 without end plates	4402002A	REG 300 08 without end plates
3202004A	REG 100 012 without end plates	3402004A	REG 200 012 without end plates	4402003A	REG 300 012 without end plates
3202001	REG 100 1/4 02	3402001	REG 200 1/4 02	4402000	REG 300 1/2 02
3202002	REG 100 1/4 04	3402002	REG 200 1/4 04	4402001	REG 300 1/2 04
3202003	REG 100 1/4 08	3402003	REG 200 1/4 08	4402002	REG 300 1/2 08
3202004	REG 100 1/4 012	3402004	REG 200 1/4 012	4402003	REG 300 1/2 012
3302001	REG 100 3/8 02	3502001	REG 200 3/8 02	4502000	REG 300 3/4 02
3302002	REG 100 3/8 04	3502002	REG 200 3/8 04	4502001	REG 300 3/4 04
3302003	REG 100 3/8 08	3502003	REG 200 3/8 08	4502002	REG 300 3/4 08
3302004	REG 100 3/8 012	3502004	REG 200 3/8 012	4502003	REG 300 3/4 012
		3602001	REG 200 1/2 02	4602000	REG 300 1 02
		3602002	REG 200 1/2 04	4602001	REG 300 1 04
		3602003	REG 200 1/2 08	4602002	REG 300 1 08
		3602004	REG 200 1/2 012	4602003	REG 300 1 012
				Skillair® 400 REGULATOR	
				6102001A	REG 400 without end plates
				6102001	REG 400 1
				6202001	REG 400 1 1/4
				6302001	REG 400 1 1/2
				6402001	REG 400 2

Skillair® 100 IN-SERIES REGULATOR

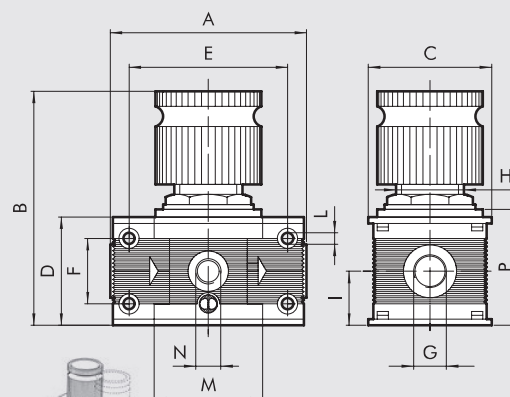
TECHNICAL DATA

Threaded inlet port		1/4" - 3/8"
Threaded user port		G 1/8"
Degree of purification	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12
Max. input pressure		1.5 MPa - 15 bar - 217 psi
Flow rate at 6.3 bar (0.63 MPa to 91 psi)		500 NL/min
ΔP 0.5 bar (0.05 MPa to 7 psi)		18 scfm
Flow rate at 6.3 bar (0.63 MPa to 91 psi)		950 NL/min
ΔP 1 bar (0.1 MPa to 14 psi)		34 scfm
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Max temperature	°C	50
at 1 MPa; 10 bar; 145 psi	°F	122
Weight	kg	0.4
Wall fixing screws		M4x50
Mounting position		In any position
Pressure gauge port		G 1/8"
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.



DIMENSIONS

	REG 100	REG 100
Threaded port	1/4"	3/8"
A		78
B		98
C		50
D		43
E		63
F		26
G	1/4"	3/8"
H		30 x 1.5
I		21.5
L		Hole for M4 screws
M		43
N (use)		1/8"
P		46

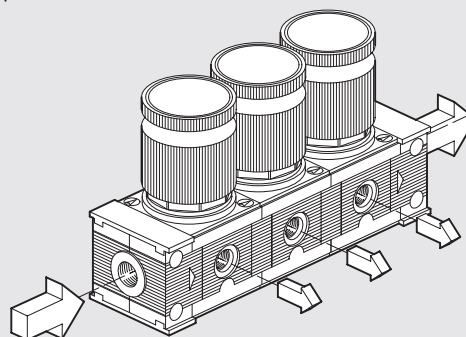


ORDERING CODES

Code	Description
100 IN-SERIES REGULATOR	
3202101A	100 IN-SERIES REG. 0-2 without end plates
3202102A	100 IN-SERIES REG. 0-4 without end plates
3202103A	100 IN-SERIES REG. 0-8 without end plates
3202104A	100 IN-SERIES REG. 0-12 without end plates
3202101	100 IN-SERIES REG. 1/4 0-2
3202102	100 IN-SERIES REG. 1/4 0-4
3202103	100 IN-SERIES REG. 1/4 0-8
3202104	100 IN-SERIES REG. 1/4 0-12
3302101	100 IN-SERIES REG. 3/8 0-2
3302102	100 IN-SERIES REG. 3/8 0-4
3302103	100 IN-SERIES REG. 3/8 0-8
3302104	100 IN-SERIES REG. 3/8 0-12

Several of these Skillair® regulators can be mounted in series, all fed by the same pressure. They can give different set pressures, each independent of the previous regulator.

Operating compressed air can be taken from the pressure gauge ports (G 1/8").



Skillair® PADLOCKABLE REGULATOR



The padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

The new Skillair® regulator uses a rolling diaphragm which gives a much better performance than the flat version.

Advantages of this system:

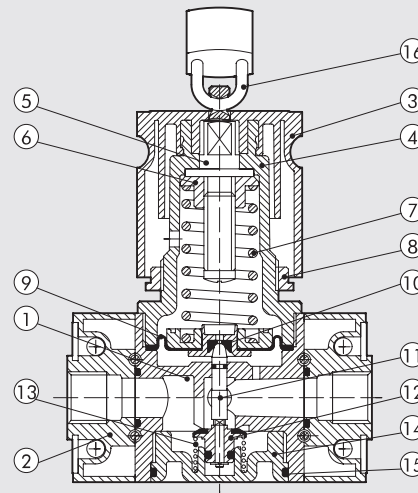
- Increased stroke, increased valve opening and hence higher flow rate.
- Decreased dynamic and inrush friction; prompter, more sensitive operation.
- Reduced working stress and hence longer life allowing the use of thinner diaphragms (0.45 mm versus 1.5 mm for a flat one) which increases regulator sensitivity and prompt action.
- Increased accuracy in maintaining the set pressure with both variable flow rates and different feed pressures.
- Downstream overpressures relieved quickly.

Refer to the regulator for technical data and flow curves.



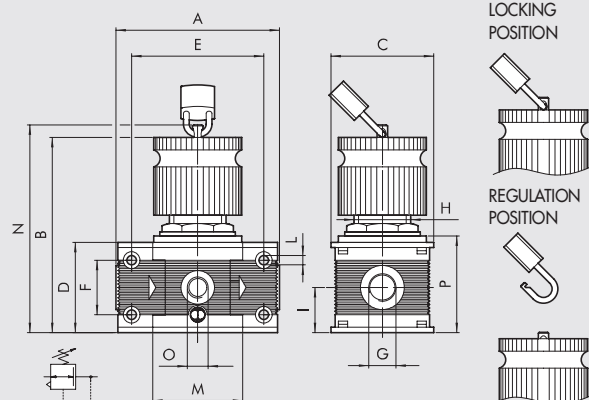
COMPONENTS

- ① Technopolymer body
- ② Zamak end plate
- ③ Technopolymer knob
- ④ Technopolymer bell
- ⑤ Nickel-plated OT58 brass adjusting screw
- ⑥ OT58 brass scroll
- ⑦ Steel adjusting spring
- ⑧ Technopolymer ring nut
- ⑨ Rolling diaphragm
- ⑩ NBR relieving gaskets
- ⑪ OT58 brass stem
- ⑫ Valve with NBR vulcanized gasket
- ⑬ Stainless steel valve spring
- ⑭ Technopolymer plug
- ⑮ NBR gaskets
- ⑯ Padlock



DIMENSIONS

	REG 100 KEY		REG 200 KEY		REG 300 KEY	
Threaded port G	1/4"	3/8"	1/4"	3/8" 1/2"	1/2"	3/4" 1"
A	78		93.5		110 112	
B	95 to 98		123 to 125		145 to 148	
C	50		63		72	
D	43		55		65	
E	63		78.5		92	
F	26		36		42	
H	30 x 1.5		40 x 1.5		48 x 1.5	
I	21.5		27.5		32.5	
L	Hole for M4 screws		Hole for M5 screws		Hole for M5 screws	
M	43		55.5		65	
N	101		127		151	
O (pressure gauge port)	1/8"		1/8"		1/8"	
P	46		58		69	



SYNOPTIC, SIZES AND VERSIONS

REG ELEMENT	100 SIZE	KEY TYPE	1/4 THREADED PORT	02 SETTING RANGE
REG = Regulator	100	KEY = Padlockable	1/4	02 = 0 to 2 bar
	200		3/8	04 = 0 to 4 bar
			1/4	08 = 0 to 8 bar
			3/8	012 = 0 to 12 bar
	300		1/2	
			1/2	
			3/4	
			1	

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 PADLOCKABLE REGULATOR		Skillair® 200 PADLOCKABLE REGULATOR		Skillair® 300 PADLOCKABLE REGULATOR	
3210001A	REG 100 KEY 02 without end plates	3410001A	REG 200 KEY 02 without end plates	4410000A	REG 300 KEY 02 without end plates
3210002A	REG 100 KEY 04 without end plates	3410002A	REG 200 KEY 04 without end plates	4410001A	REG 300 KEY 04 without end plates
3210003A	REG 100 KEY 08 without end plates	3410003A	REG 200 KEY 08 without end plates	4410002A	REG 300 KEY 08 without end plates
3210004A	REG 100 KEY 012 without end plates	3410004A	REG 200 KEY 012 without end plates	4410003A	REG 300 KEY 012 without end plates
3210001	REG 100 KEY 1/4 02	3410001	REG 200 KEY 1/4 02	4410000	REG 300 KEY 1/2 02
3210002	REG 100 KEY 1/4 04	3410002	REG 200 KEY 1/4 04	4410001	REG 300 KEY 1/2 04
3210003	REG 100 KEY 1/4 08	3410003	REG 200 KEY 1/4 08	4410002	REG 300 KEY 1/2 08
3210004	REG 100 KEY 1/4 012	3410004	REG 200 KEY 1/4 012	4410003	REG 300 KEY 1/2 012
3310001	REG 100 KEY 3/8 02	3510001	REG 200 KEY 3/8 02	4510000	REG 300 KEY 3/4 02
3310002	REG 100 KEY 3/8 04	3510002	REG 200 KEY 3/8 04	4510001	REG 300 KEY 3/4 04
3310003	REG 100 KEY 3/8 08	3510003	REG 200 KEY 3/8 08	4510002	REG 300 KEY 3/4 08
3310004	REG 100 KEY 3/8 012	3510004	REG 200 KEY 3/8 012	4510003	REG 300 KEY 3/4 012
		3610001	REG 200 KEY 1/2 02	4610000	REG 300 KEY 1 02
		3610002	REG 200 KEY 1/2 04	4610001	REG 300 KEY 1 04
		3610003	REG 200 KEY 1/2 08	4610002	REG 300 KEY 1 08
		3610004	REG 200 KEY 1/2 012	4610003	REG 300 KEY 1 012

UNITS

Skillair® PADLOCKABLE REGULATOR

Skillair® PILOT REGULATOR



The pilot regulator is used when great accuracy is required in maintaining the set pressure under changing operating conditions.

It is ideal for use as:

- a precision regulator for flow rates < 100 NL/min.
- a pilot in general - typically for large size regulators (see REG 400).

The system's high operating accuracy and low hysteresis are determined by the virtually total lack of friction.

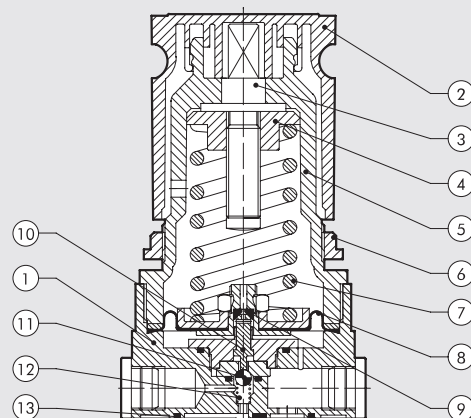
The presence of a slight air leak is necessary for the regulator to operate properly - it is not a malfunction. It is advisable to use filtered air.



TECHNICAL DATA		PILOT REGULATOR	
Threaded port			1/4"
Setting range	bar		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12
Max. input pressure	MPa		1.3
	bar		13
	psi		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)			120 NL/min - 4.3 scfm
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)			140 NL/min - 5 scfm
Fluid			Filtered, lubricated or unlubricated compressed air.
			Lubrication, if used, must be continuous.
Max temperature at 1 MPa; 10 bar; 145 psi	°C		50
	°F		122
Weight	kg		0.6
Mounting position			In any position
Pressure gauge port			G 1/8"
Notes on use			The regulator pressure must always be set upwards.
			For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.
			Do not take air from the pressure gauge ports. Mount directly on REG 400.

COMPONENTS

- ① Aluminium body
- ② Technopolymer knob
- ③ OT58 brass adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Technopolymer ring nut
- ⑦ Steel adjusting spring
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Stainless steel ball valve
- ⑫ Stainless steel valve spring
- ⑬ NBR gaskets



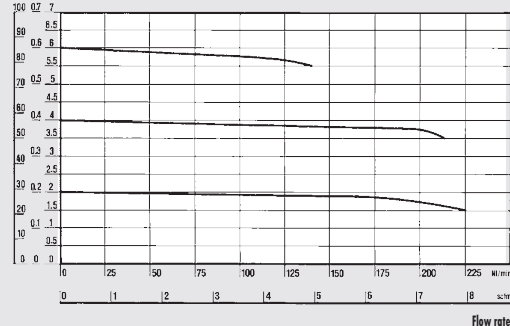
FLOW CHARTS

FLOW FEATURES REG. P 1/4" *

Preset pressure

Pm = 7 bar - 0.7 MPa - 100 psi

psi MPa bar

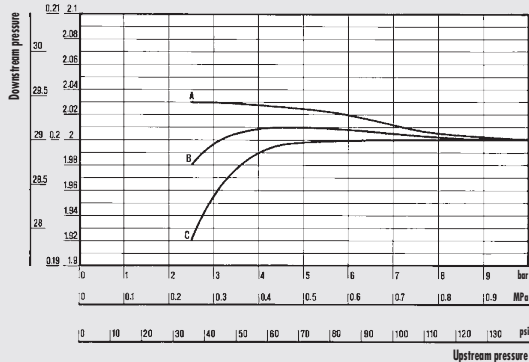


REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm

B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm

psi MPa bar

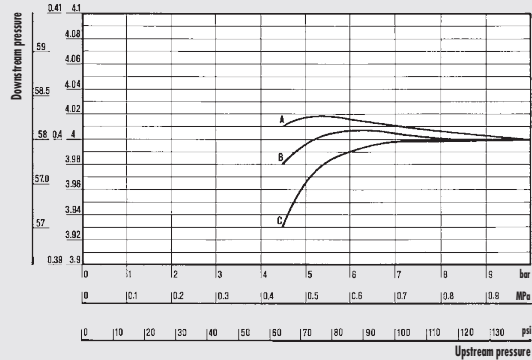


REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm

B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm

psi MPa bar

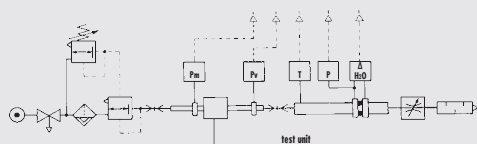
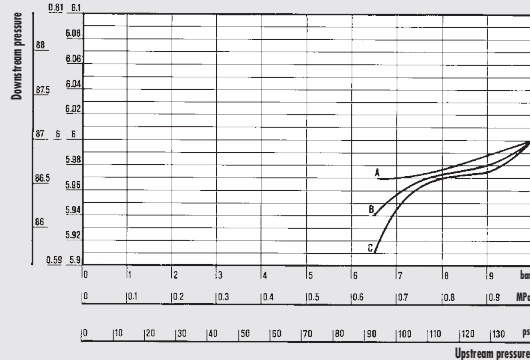


REGULATION FEATURES REG. P 1/4" *

Flow rate: A = 0 NI/min = 0 scfm

B = 25 NI/min = 0.88 scfm - C = 50 NI/min = 1.76 scfm

psi MPa bar

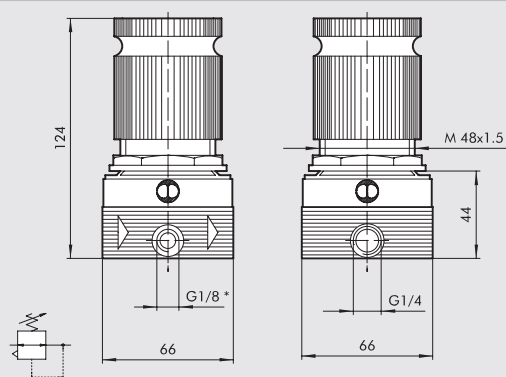


- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

* Pressure stability adjusted according to changes in upstream pressure.

DIMENSIONS

Code	Description
3206001	REG. P 1/4" 02
3206002	REG. P 1/4" 04
3206003	REG. P 1/4" 08
3206004	REG. P 1/4" 012



*Pressure gauge port

Skillair®

PILOT PADLOCKABLE REGULATOR



The pilot regulator is used when great accuracy is required in maintaining the set pressure under changing operating conditions.

It is ideal for use as:

- a precision regulator for flow rates < 100 NL/min.
- a pilot in general - typically for large size regulators (see REG 400).

The system's high operating accuracy and low hysteresis are determined by the virtually total lack of friction. The presence of a slight air leak is necessary for the regulator to operate properly - it is not a malfunction.

It is advisable to use filtered air.

The pilot padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated.

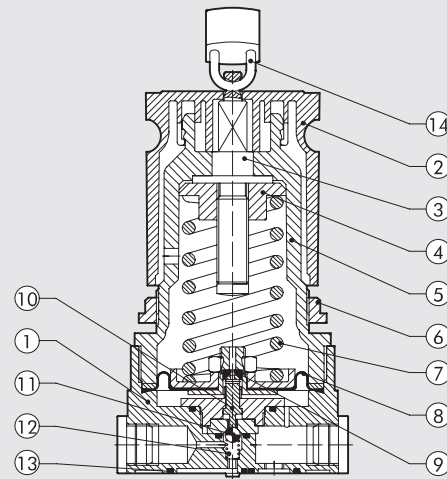
A padlock and two keys are supplied with the regulator.

Refer to the pilot regulator for technical data and flow curves.



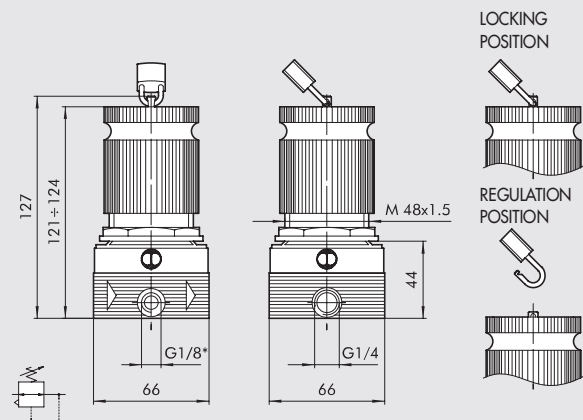
COMPONENTS

- ① Aluminium body
- ② Technopolymer knob
- ③ Nickel-plated brass OT58 adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Technopolymer ring nut
- ⑦ Steel adjusting spring
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Stainless steel ball valve
- ⑫ Stainless steel valve spring
- ⑬ NBR gaskets
- ⑭ Padlock



DIMENSIONS

Code	Description
3208001	REG. P KEY 1/4" 02
3208002	REG. P KEY 1/4" 04
3208003	REG. P KEY 1/4" 08
3208004	REG. P KEY 1/4" 012



*Pressure gauge port

UNITS

Skillair® PILOT PADLOCKABLE REGULATOR

Skillair® 300 PILOT OPERATED REGULATOR

- Pilot-operated or servo-piloted regulator.
- Twin rolling diaphragm to ensure improved opening and hence greater flow rate.
- Low load losses
- Excellent precision in pressure setting.
- Excellent sensitivity during relieving.



TECHNICAL DATA

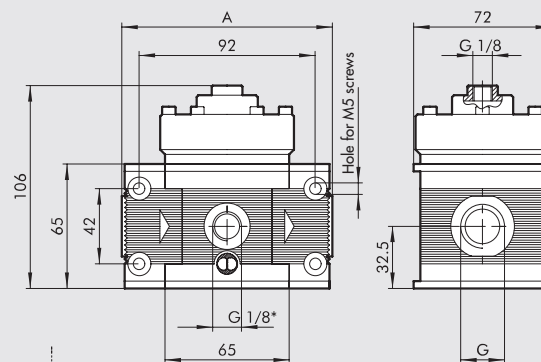
		300 PILOT OPERATED REG		
		1/2"	3/4"	1"
Threaded port		Depending on the pilot regulator		
Setting range		1.3		
Max. input pressure	MPa	13		
	bar	188		
	psi	4500		
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	160		
	scfm	7000		
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	247		
	scfm	Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
Fluid		50		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	122		
	°F	1.3		
Weight	kg	M5 x 70		
Wall fixing screws		In any position		
Mounting position		1/8"		
Pressure gauge port		The regulator pressure must always be set upwards.		
Notes on use		Do not take air from the pressure gauge ports.		

DIMENSIONS

REG 300			
Threaded port G	1/2"	3/4"	1"
A	110	110	112

ORDERING CODES

Code	Description
4403003A	300 pilot operated reg without end plates
4403003	300 1/2" pilot operated reg
4503003	300 3/4" pilot operated reg
4603003	300 1" pilot operated reg



*Pressure gauge port

Skillair® FILTER REGULATOR



This device combines a filter and a pressure regulator in a single unit. It has the dual function of filtering and regulating air from the compressor. As the filter regulator is made up of the same elements as the regulator and the filter, the performance is the same.

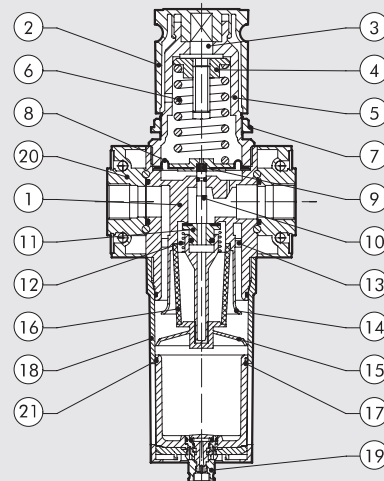
- High flow rates with low load loss.
- Special rolling diaphragm - higher flow rate, greater stability, improved sensitivity.
- Rapid relief of downstream overpressures.
- Stability of the regulated pressure as the mains pressure fluctuates.
- Maximum degree of condensate separation.
- 360° condensate level display.
- Condensate drain with manual/semi-automatic or automatic function.



TECHNICAL DATA		FR 100		FR 200		FR 300		
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	3/4"	1"
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		
Degree of filtration	µm	5 - 20 - 50		5 - 20 - 50		5 - 20 - 50		
Max. input pressure		1.5 MPa - 15 bar - 217 psi		1.3 MPa - 13 bar - 188 psi		1.3 MPa - 13 bar - 188 psi		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1100		1600		3500		
ΔP 0.5 bar (0.05 MPa to 7psi)	scfm	39		57		125		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1600		3000		5600		
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	57		71		200		
Max temperature	°C	50		50		50		
at: 1 MPa; 10 bar; 145 psi	°F	122		122		122		
Weight	kg	0.5		1		1.8		
Wall fixing screws		M4 x 50		M5 x 60		M5 x 70		
Mounting position		Vertical		Vertical		Vertical		
Pressure gauge port		1/8"		1/8"		1/8"		
Bowl capacity	cm³	22		45		75		
Drain		RMSA - SAC		RMSA - SAC - RA		RMSA - RA		
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure						
		RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.						
		SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs.						
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.						
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from pressure gauge ports.						
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.						

COMPONENTS

- ① Technopolymer body
- ② Technopolymer knob
- ③ OT58 brass adjusting screw
- ④ OT58 brass scroll
- ⑤ Technopolymer bell
- ⑥ Steel adjusting spring
- ⑦ Technopolymer ring nut
- ⑧ Rolling diaphragm
- ⑨ NBR relieving gaskets
- ⑩ OT58 brass stem
- ⑪ Valve with NBR vulcanized gasket
- ⑫ Stainless steel valve spring
- ⑬ Technopolymer centrifuge
- ⑭ Technopolymer baffle plug
- ⑮ Technopolymer screen
- ⑯ Sintered HDPE filter cartridge
- ⑰ Clear technopolymer glass
- ⑱ Bowl: technopolymer for FR100 and FR200, metal for FR 300
- ⑲ Drain (RMSA)
- ⑳ Zamak end plate
- ㉑ NBR gaskets

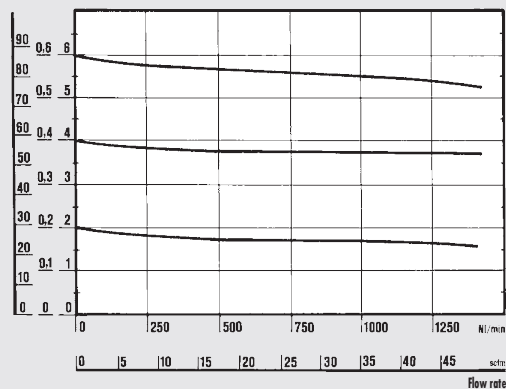


FLOW CHARTS

FR 100 1/4 - 3/8

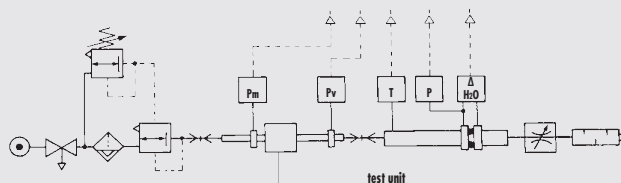
Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$

psi MPa bar



**Department
of Mechanics**

Turin Polytechnic

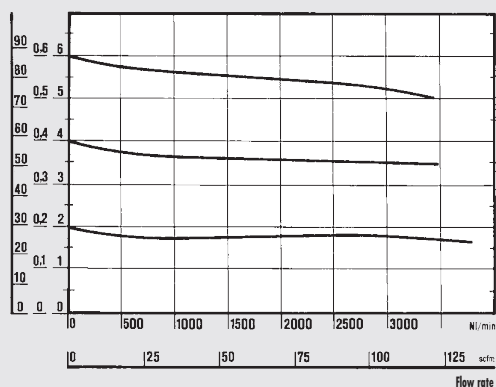


- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

FR 200 1/4 - 3/8 - 1/2

Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$

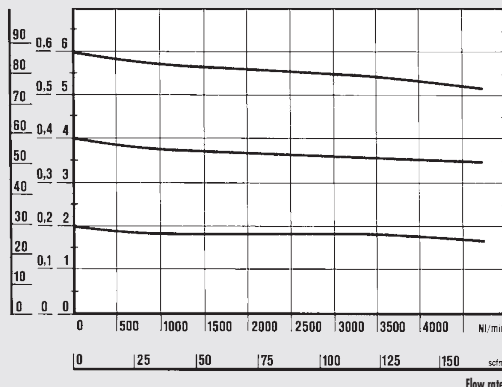
psi MPa bar



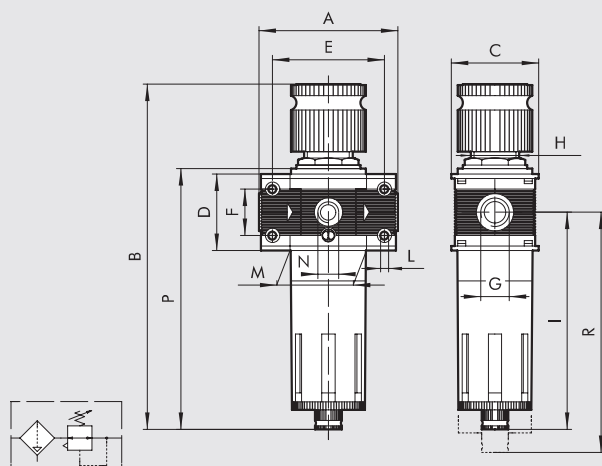
FR 300 1/2 - 3/4 - 1

Preset pressure
 $P_m = 7 \text{ bar} - 0.7 \text{ MPa} - 100 \text{ psi}$

psi MPa bar



DIMENSIONS



	FR 100		FR 200			FR 300		
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
A	78		93.5			110		112
B	RMSA	199	245			278		
			249			282		
	SAC	203	249			282		
C		50	63			72		
D		43	55			65		
E		63	78.5			92		
F		26	36			42		
H		30 x 1.5	40x1.5			48 x 1.5		
I		122.5	147.5			162.5		
L		Hole for M4	Hole for M5			Hole for M5		
		screws	screws			screws		
M		43	55.5			65		
N (pressure gauge port)		1/8"	1/8"			1/8"		
P	RMSA	147	178			200		
			182			204		
	SAC	151	182			204		
R	RMSA	137	196			215		
			200			219		
	SAC	141	200			219		

SYNOPTIC, SIZES AND VERSIONS

FR	100	1/4	5	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF DRAIN
FR	100	1/4	5 = 5 µm 20 = 20 µm 50 = 50 µm	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA
		3/8			SAC
	200	1/4			RMSA
		3/8			SAC
		1/2			RA*
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
 RA: automatic drain with condensate discharge, independent of pressure and flow rate.
 (for size 300 and 400).
 Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.
 SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.
 (for size 100 and 200)
 * For Skillair® 200 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 FILTER REGULATOR			Skillair® 200 FILTER REGULATOR	Skillair® 300 FILTER REGULATOR	
3283007A	FR 100 5 08 RMSA without end plates	3483007A	FR 200 5 08 RMSA without end plates	4483004A	FR 300 5 08 RMSA without end plates
3283008A	FR 100 20 08 RMSA without end plates	3483008A	FR 200 20 08 RMSA without end plates	4483005A	FR 300 20 08 RMSA without end plates
3283009A	FR 100 50 08 RMSA without end plates	3483009A	FR 200 50 08 RMSA without end plates	4483006A	FR 300 50 08 RMSA without end plates
3283010A	FR 100 5 012 RMSA without end plates	3483010A	FR 200 5 012 RMSA without end plates	4483007A	FR 300 5 012 RMSA without end plates
3283011A	FR 100 20 012 RMSA without end plates	3483011A	FR 200 20 012 RMSA without end plates	4483008A	FR 300 20 012 RMSA without end plates
3283012A	FR 100 50 012 RMSA without end plates	3483012A	FR 200 50 012 RMSA without end plates	4483009A	FR 300 50 012 RMSA without end plates
3283031A	FR 100 5 08 SAC without end plates	3483031A	FR 200 5 08 SAC without end plates	4483013A	FR 300 5 08 RA without end plates
3283032A	FR 100 20 08 SAC without end plates	3483032A	FR 200 20 08 SAC without end plates	4483014A	FR 300 20 08 RA without end plates
3283033A	FR 100 50 08 SAC without end plates	3483033A	FR 200 50 08 SAC without end plates	4483015A	FR 300 50 08 RA without end plates
3283034A	FR 100 5 012 SAC without end plates	3483034A	FR 200 5 012 SAC without end plates	4483016A	FR 300 5 012 RA without end plates
3283035A	FR 100 20 012 SAC without end plates	3483035A	FR 200 20 012 SAC without end plates	4483017A	FR 300 20 012 RA without end plates
3283036A	FR 100 50 012 SAC without end plates	3483036A	FR 200 50 012 SAC without end plates	4483018A	FR 300 50 012 RA without end plates
3283007	FR 100 1/4 5 08 RMSA	3483007	FR 200 1/4 5 08 RMSA	4483004	FR 300 1/2 5 08 RMSA
3283008	FR 100 1/4 20 08 RMSA	3483008	FR 200 1/4 20 08 RMSA	4483005	FR 300 1/2 20 08 RMSA
3283009	FR 100 1/4 50 08 RMSA	3483009	FR 200 1/4 50 08 RMSA	4483006	FR 300 1/2 50 08 RMSA
3283010	FR 100 1/4 5 012 RMSA	3483010	FR 200 1/4 5 012 RMSA	4483007	FR 300 1/2 5 012 RMSA
3283011	FR 100 1/4 20 012 RMSA	3483011	FR 200 1/4 20 012 RMSA	4483008	FR 300 1/2 20 012 RMSA
3283012	FR 100 1/4 50 012 RMSA	3483012	FR 200 1/4 50 012 RMSA	4483009	FR 300 1/2 50 012 RMSA
3283031	FR 100 1/4 5 08 SAC	3483031	FR 200 1/4 5 08 SAC	4483013	FR 300 1/2 5 08 RA
3283032	FR 100 1/4 20 08 SAC	3483032	FR 200 1/4 20 08 SAC	4483014	FR 300 1/2 20 08 RA
3283033	FR 100 1/4 50 08 SAC	3483033	FR 200 1/4 50 08 SAC	4483015	FR 300 1/2 50 08 RA
3283034	FR 100 1/4 5 012 SAC	3483034	FR 200 1/4 5 012 SAC	4483016	FR 300 1/2 5 012 RA
3283035	FR 100 1/4 20 012 SAC	3483035	FR 200 1/4 20 012 SAC	4483017	FR 300 1/2 20 012 RA
3283036	FR 100 1/4 50 012 SAC	3483036	FR 200 1/4 50 012 SAC	4483018	FR 300 1/2 50 012 RA
3383007	FR 100 3/8 5 08 RMSA	3583007	FR 200 3/8 5 08 RMSA	4583004	FR 300 3/4 5 08 RMSA
3383008	FR 100 3/8 20 08 RMSA	3583008	FR 200 3/8 20 08 RMSA	4583005	FR 300 3/4 20 08 RMSA
3383009	FR 100 3/8 50 08 RMSA	3583009	FR 200 3/8 50 08 RMSA	4583006	FR 300 3/4 50 08 RMSA
3383010	FR 100 3/8 5 012 RMSA	3583010	FR 200 3/8 5 012 RMSA	4583007	FR 300 3/4 5 012 RMSA
3383011	FR 100 3/8 20 012 RMSA	3583011	FR 200 3/8 20 012 RMSA	4583008	FR 300 3/4 20 012 RMSA
3383012	FR 100 3/8 50 012 RMSA	3583012	FR 200 3/8 50 012 RMSA	4583009	FR 300 3/4 50 012 RMSA
3383031	FR 100 3/8 5 08 SAC	3583031	FR 200 3/8 5 08 SAC	4583013	FR 300 3/4 5 08 RA
3383032	FR 100 3/8 20 08 SAC	3583032	FR 200 3/8 20 08 SAC	4583014	FR 300 3/4 20 08 RA
3383033	FR 100 3/8 50 08 SAC	3583033	FR 200 3/8 50 08 SAC	4583015	FR 300 3/4 50 08 RA
3383034	FR 100 3/8 5 012 SAC	3583034	FR 200 3/8 5 012 SAC	4583016	FR 300 3/4 5 012 RA
3383035	FR 100 3/8 20 012 SAC	3583035	FR 200 3/8 20 012 SAC	4583017	FR 300 3/4 20 012 RA
3383036	FR 100 3/8 50 012 SAC	3583036	FR 200 3/8 50 012 SAC	4583018	FR 300 3/4 50 012 RA
		3683007	FR 200 1/2 5 08 RMSA	4683004	FR 300 1 5 08 RMSA
		3683008	FR 200 1/2 20 08 RMSA	4683005	FR 300 1 20 08 RMSA
		3683009	FR 200 1/2 50 08 RMSA	4683006	FR 300 1 50 08 RMSA
		3683010	FR 200 1/2 5 012 RMSA	4683007	FR 300 1 5 012 RMSA
		3683011	FR 200 1/2 20 012 RMSA	4683008	FR 300 1 20 012 RMSA
		3683012	FR 200 1/2 50 012 RMSA	4683009	FR 300 1 50 012 RMSA
		3683031	FR 200 1/2 5 08 SAC	4683013	FR 300 1 5 08 RA
		3683032	FR 200 1/2 20 08 SAC	4683014	FR 300 1 20 08 RA
		3683033	FR 200 1/2 50 08 SAC	4683015	FR 300 1 50 08 RA
		3683034	FR 200 1/2 5 012 SAC	4683016	FR 300 1 5 012 RA
		3683035	FR 200 1/2 20 012 SAC	4683017	FR 300 1 20 012 RA
		3683036	FR 200 1/2 50 012 SAC	4683018	FR 300 1 50 012 RA

UNITS

Skillair® FILTER REGULATOR

Skillair® LUBRICATOR

The pneumatic lubricator is the simplest way of properly lubricating actuators connected to a circuit.

As air flows from the mains through the lubricator, it encounters the diaphragm which obstructs the flow and the air is forced through the Venturi tube.

The inside of the Venturi tube is connected to the inspection dome, which connects with the bowl via a tube with a regulating needle in between.

The drop in pressure caused by the Venturi tube sucks up air through the dome, the tube and lastly into the bowl containing oil.

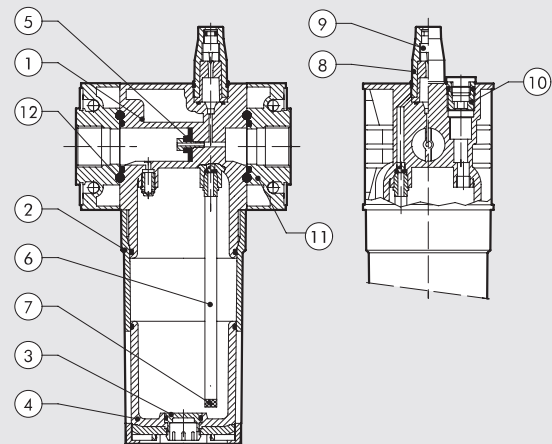
The quantity of oil controlled by the regulating needle then flows back from the bowl to the circuit.



TECHNICAL DATA		LUB 100		LUB 200		LUB 300			LUB 400				
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Type of lubrication		Mist		Mist		Mist			Mist				
Bowl capacity	cm³	50		95		160			800				
Versions		Standard - CD		Standard - CD		Standard - CD - ML CD			Standard - CD - ML CD				
Max. inlet pressure	Mpa	1.5		1.3		1.3			1.3		1.3		1.3
	bar	15		13		13			13		13		13
	psi	217		188		188			188		188		188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1100		2200		3500			18000		21000		
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	39		71		125			640		750		
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1500		3700		5500			-		-		
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	53		131		196			-		-		
Max temperature at: 1 MPa; 10 bar; 145 psi	°C	50		50		50			50		50		
	°F	122		122		122			122		122		
Weight	Kg	0.4		0.7		1.4			4.9		5.7		
Wall fixing screws		M4 x 50		M5 x 60		M5 x 70			M6 x 110		M6 x 110		
Mounting position		Vertical											
Fluid		Filtered compressed air											
Recommended oils		ISO and UNI FD22 (Energal HPL to Spinesso to Mobil DTE to Tellus Oil).											
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system.											
		Do not use cleaning oils, brake fluid oils or solvents in general.											
		For the best lubrication results, set the drip rate to one drop per 300-600 Nl.											

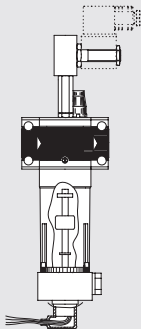
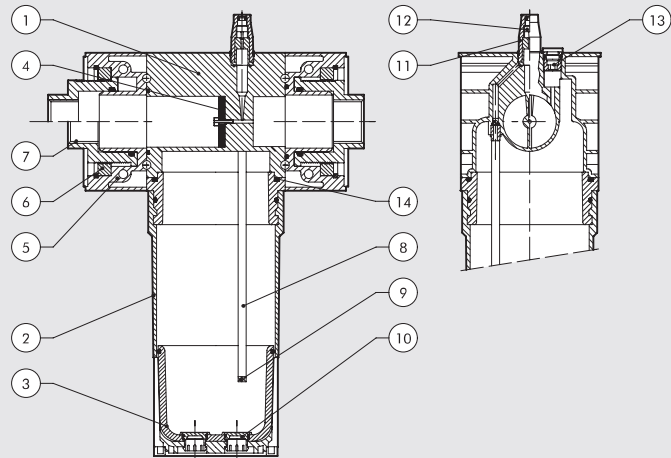
COMPONENTS LUB 100 - LUB 200 - LUB 300

- ① Technopolymer body
- ② Bowl: technopolymer for LUB 100 and 200, metal for LUB 300
- ③ Technopolymer plug
- ④ Clear technopolymer glass
- ⑤ NBR Venturi tube diaphragm
- ⑥ Rilsan® oil suction tube
- ⑦ Filter
- ⑧ Clear technopolymer inspection dome
- ⑨ OT58 brass oil flow regulating needle
- ⑩ OT58 brass oil filling plug
- ⑪ Zamak end plate
- ⑫ NBR gaskets



COMPONENTS LUB 400

- ① Aluminium body
- ② Aluminium bowl
- ③ Clear technopolymer glass
- ④ NBR Venturi tube diaphragm
- ⑤ Aluminium end plate
- ⑥ OT58 brass retaining ring
- ⑦ Anodized aluminium threaded bush, axial adjustment
- ⑧ Rilsan® oil suction pipe
- ⑨ Filter
- ⑩ Technopolymer plug
- ⑪ Clear technopolymer inspection dome
- ⑫ OT58 brass oil flow regulating needle
- ⑬ OT58 brass oil filling plug
- ⑭ NBR gaskets



PRESSURE DROP FILLING WITH MINIMUM LEVEL (ML CD AUTOMATIC)

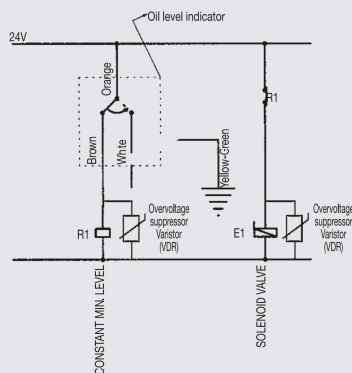
Available in sizes 300 and 400, this lubricator is controlled by a solenoid valve (2/2 NC minimum bore 3) situated on the lubricator body.

It reduces pressure inside the bowl allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m).

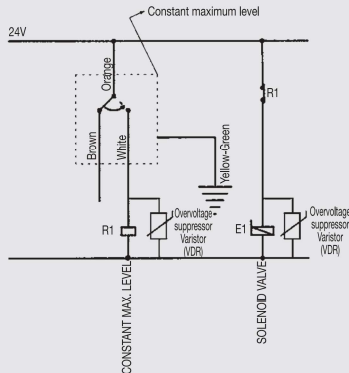
The electric indicator inside the bowl sends an electric signal used to activate the valve. When the oil reaches the maximum level, another signal disactivates the valve. In this case, the lubricator system operates with the oil level between minimum and maximum. If it is necessary to keep the oil level in the bowl constant, only one of the two signals can be used. Pressure range 3-10 bar. Connect the oil tank to the G1/4 fitting on the bowl.

N.B.: for coils and connectors see Skillair accessories.

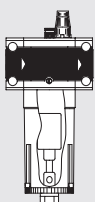
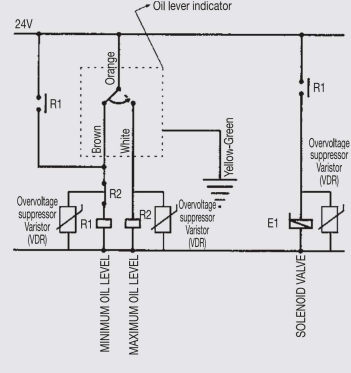
Constant minimum level



Constant maximum level



Oil level between maximum and minimum



FILLING BY PRESSURE DROP (CD MANUAL)

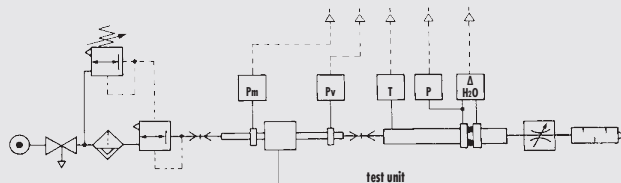
Available in all sizes. It is operated by means of a button on the lubricator body. The pressure inside the bowl drops to allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). Oil filling stops when the level of oil raises the float and shuts off a specific valve.

Important – The SK4 lubricator is filled with oil by hand. Filling must stop when the oil level is visible through the spy-hole in the bowl release lever. Pressure range 3-10 bar. Lubrication is discontinued during filling. Connect the oil tank to the G1/4 fitting below the bowl.

FLOW CHARTS



**Department
of Mechanics**
Turin Polytechnic



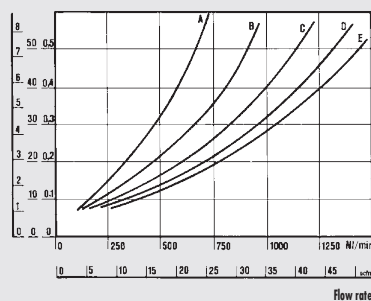
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
(B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
(C) = 6 bar - 0.6 MPa - 87 psi

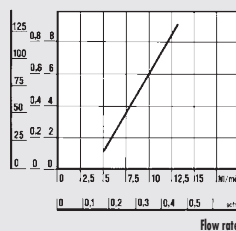
LUB 100 1/4 - 3/8

$\Delta P = (P_m - P_v)$

psi kPa bar

MINIMUM OPERATING
FLOW CHART

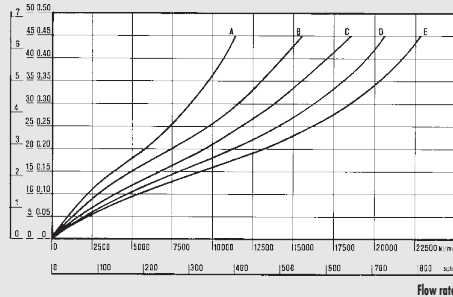
P_m
psi kPa bar



LUB 400 1"

$\Delta P = (P_m - P_v)$

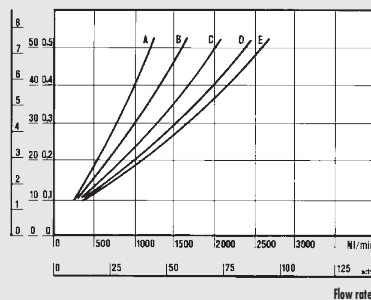
psi kPa bar



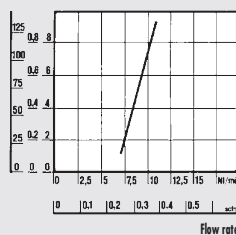
LUB 200 1/4 - 3/8 - 1/2

$\Delta P = (P_m - P_v)$

psi kPa bar

MINIMUM OPERATING
FLOW CHART

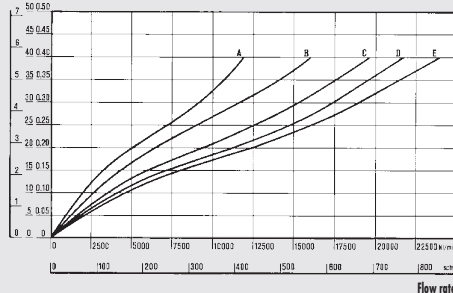
P_m
psi kPa bar



LUB 400 2"

$\Delta P = (P_m - P_v)$

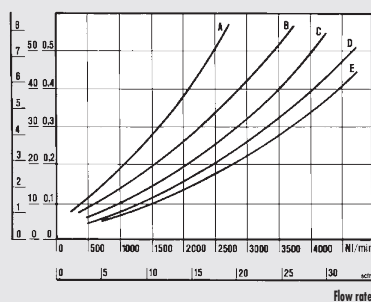
psi kPa bar



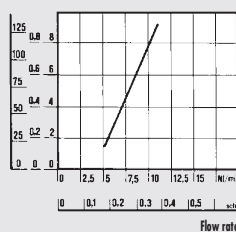
LUB 300 1/2 - 3/4 - 1

$\Delta P = (P_m - P_v)$

psi kPa bar

MINIMUM OPERATING
FLOW CHART

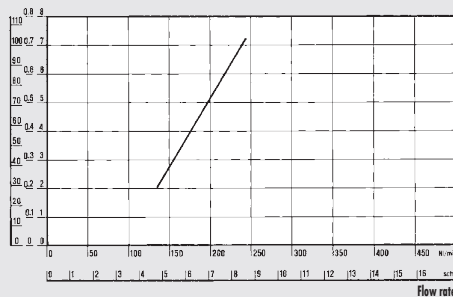
P_m
psi kPa bar



MINIMUM OPERATING FLOW CHART LUB 400 1" AND 2"

PRESSURE

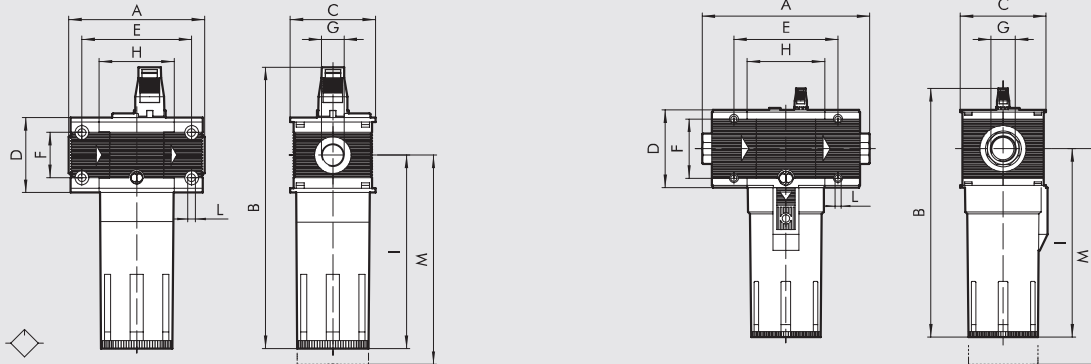
psi kPa bar



DIMENSIONS

100 - 200 - 300

400



	LUB 100		LUB 200			LUB 300			LUB 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112		225 to 255		283 to 313
B	162		193			214			338			
C	50		63			72			118			
D	43		55			65			105			
E	63		78.5			92			141.4			
F	26		36			42			80			
H	43		55.5			65			105.4			
I	112		137.5			153			256			
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M	130		150			160			285			

SYNOPTIC, SIZES AND VERSIONS

LUB ELEMENT	100 SIZE	1/4 THREADED PORT	- TYPE OF OIL FILLING
LUB	100	1/4	- = STD
	200	3/8	ML-CD = AUTOMATIC
		1/4	CD = MANUAL
		3/8	
		1/2	
	300	1/2	
		3/4	
	400	1	
		1	
		1 1/4	
		1 1/2	
		2	

STD: Standard version filled with oil by removing the bowl or through the top cap. Requires circuit relieving.
 ML CD: Pressure drop filling with minimum level and valve
 CD MANUAL: Filling by pressure drop.

ORDERING CODES

Code	Description	Code	Description	Code	Description
Skillair® 100 LUBRICATOR		Skillair® 300 LUBRICATOR		Skillair® 400 LUBRICATOR	
3281001A	LUB 100 without end plates	4481001A	LUB 300 without end plates	6181001A	LUB 400 without end plates
3281005A	LUB 100 CD manual without end plates	4481005A	LUB 300 CD manual without end plates	6181004A	LUB 400 CD manual without end plates
3281001	LUB 100 1/4	4481006A	LUB 300 ML-CD automatic without end plates	6181006A	LUB 400 ML-CD automatic without end plates
3281005	LUB 100 1/4 CD manual	4481001	LUB 300 1/2	6181001	LUB 400 1
3381001	LUB 100 3/8	4481005	LUB 300 1/2 CD manual	6181004	LUB 400 1 CD manual
3381005	LUB 100 3/8 CD manual	4481006	LUB 300 1/2 ML-CD automatic	6181006	LUB 400 1 ML-CD automatic
Skillair® 200 LUBRICATOR		4581001	LUB 300 3/4	6281001	LUB 400 1 1/4
3481001A	LUB 200 without end plates	4581005	LUB 300 3/4 CD manual	6281004	LUB 400 1 1/4 CD manual
3481005A	LUB 200 CD manual without end plates	4581006	LUB 300 3/4 ML-CD automatic	6281006	LUB 400 1 1/4 ML-CD automatic
3481001	LUB 200 1/4	4681001	LUB 300 1	6381001	LUB 400 1 1/2
3481005	LUB 200 1/4 CD manual	4681005	LUB 300 1 CD manual	6381004	LUB 400 1 1/2 CD manual
3581001	LUB 200 3/8	4681006	LUB 300 1 ML-CD automatic	6381006	LUB 400 1 1/2 ML-CD automatic
3581005	LUB 200 3/8 CD manual			6481001	LUB 400 2
3681001	LUB 200 1/2			6481004	LUB 400 2 CD manual
3681005	LUB 200 1/2 CD manual			6481006	LUB 400 2 ML-CD automatic

Skillair® SHUT-OFF VALVE

The job of this valve is to make the circuit independent from the air supply. It is basically a three-way valve. In the closed position, it cuts off the air supply and discharges the downstream circuit at the same time, which means it is particularly useful during servicing operations. The hand-operated version can be padlocked to lock the knob in a closed position so that it can only be opened by someone with the right key. An interlocked version is available for low pressure operation.

N.B.: With size 400, when the V3V is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the V3V, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the V3V relief port. For connecting instruction see page C3.23



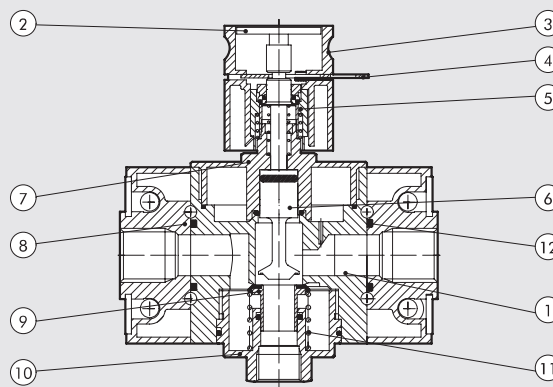
UNITS

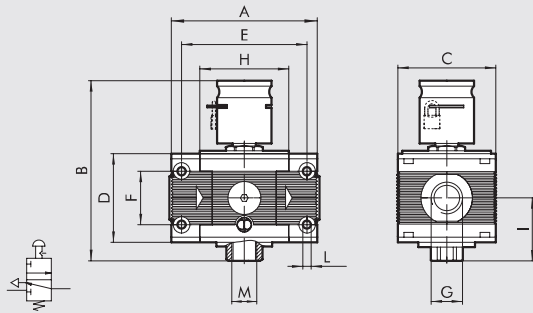
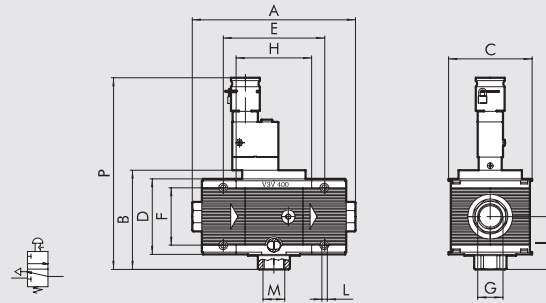
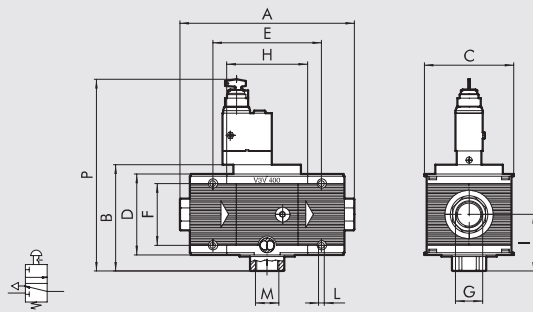
Skillair® SHUT-OFF VALVE

TECHNICAL DATA		V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1"1/4	1"1/2	2"
Min. inlet pressure for solenoid version **	MPa	0.3		0.3			0.2			0.3			0.3
	bar	3		3			2			3			3
	psi	43.5		43.5			29			43.5			43.5
Max. input pressure*	MPa	1.5		1.3			1.3			1.3			1.3
	bar	15		13			13			13			13
	psi	217		188			188			188			188
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1300		2400			3200			13000			14000
ΔP 0.5 bar (0.05 MPa to 7 psi)	scfm	46		85			113			460			494
Flow rate at 6.3 bar (0.63 MPa to 91 psi)	Nl/min	1650		3000			4700			-			-
ΔP 1 bar (0.1 MPa to 14 psi)	scfm	58		106			166			-			-
Max temperature	°C	50		50			50			50			50
	°F	122		122			122			122			122
Weight	kg	~ 0.5		~ 0.8			~ 1.2			4.8			5.6
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			M6 x 110
Type of control		Manual - Pneumatic - Solenoid Solenoid pilot-assisted							Manual - Pneumatic - Solenoid Solenoid pilot-assisted - Key-operated				
Mounting position		In any position.											
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.											
Note		* 1 MPa - 10 bar - 145 psi for solenoid version ** 0.01 MPa – 0.1 bar – 1.45 psi for manual, pneumatic and pilot-assisted versions with controls min. 0.3 MPa 3 bar 43.5 psi.											

COMPONENTS

- ① Technopolymer body
- ② Operating button
- ③ Technopolymer knob
- ④ Stainless steel safety lamination
- ⑤ Locking unit
- ⑥ OT58 brass piston rod
- ⑦ Anodized aluminium top plug
- ⑧ Zamak end plate
- ⑨ Valve with vulcanized NBR gasket
- ⑩ Anodized aluminium bottom plug
- ⑪ Stainless steel valve spring
- ⑫ NBR gaskets



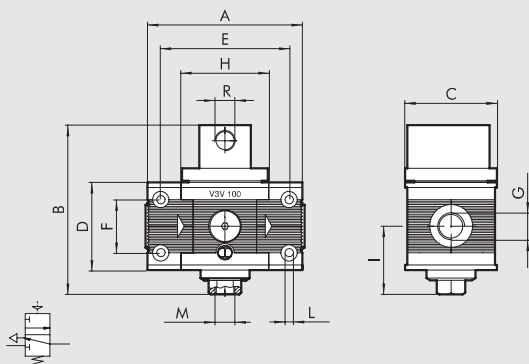
DIMENSIONS OF V3V MANUAL VERSION
100 - 200 - 300 LOCKABLE

400 LOCKABLE

400 KEY-OPERATED

UNITS

Skillair® SHUT-OFF VALVE

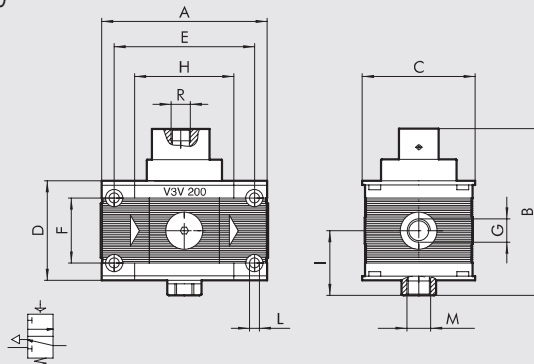
	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255			283 to 313
B	106		119			132			137			
C	50		63			72			118			
D	43		55			65			105			
E	63		78.5			92			141.4			
F	26		36			42			80			
H	43		55.5			65			105.4			
I	33.5		40			46.5			72.5			
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M (relief)	1/8"		1/4"			3/8"			1"			
P manual	-		-			-			266			
key-operated	-		-			-			249			

DIMENSIONS OF V3V PNEUMATIC VERSION

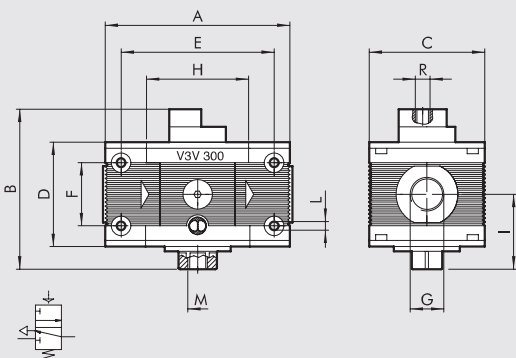
100



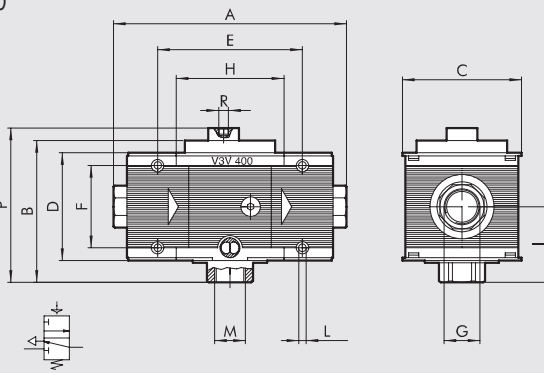
200



300



400



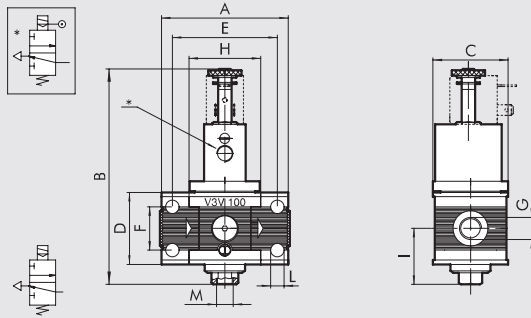
UNITS

Skillair® SHUT-OFF VALVE

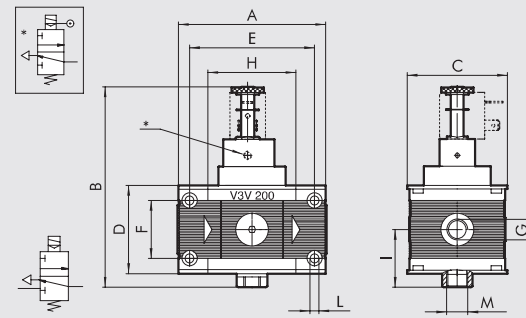
	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78			93.5		110		112	225 to 255			283 to 313
B	83			96			106				137	
C	50			63			72				118	
D	43			55			65				105	
E	63			78.5			92				141.4	
F	26			36			42				80	
H	43			55.5			65				105.4	
I	33.5			40			46.5				72.5	
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M (relief)	1/8"			1/4"			3/8"				1"	
R (pilot)	1/8"			1/8"			1/8"				1/8"	
P	-			-			-				150	

DIMENSIONS OF V3V SOLENOID/SOLENOID PILOT-ASSISTED VALVE

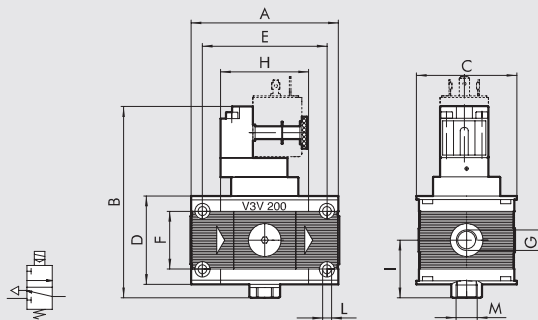
100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



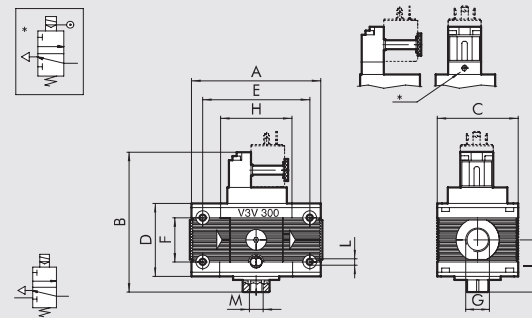
200 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



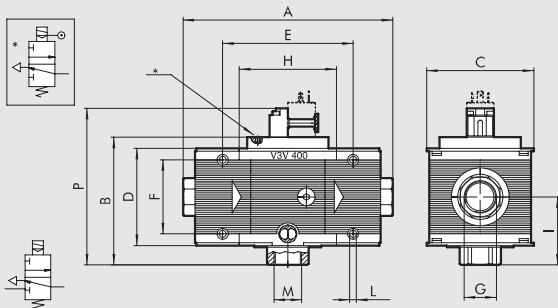
200 CNOMO



300 CNOMO SOLENOID/CNOMO SOLENOID PILOT-ASSISTED VALVE



400 CNOMO SOLENOID/CNOMO SOLENOID PILOT-ASSISTED VALVE



	V3V 100		V3V 200			V3V 300			V3V 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	78		93.5			110		112	225 to 255		283 to 313	
B Solenoid	128		129			152			-			
Solenoid pilot-ass.	129		129			-			-			
CNOMO control	-		123			125			137			
CNOMO pilot-ass.	-		-			138			137			
C	50		63			72			118			
D	43		55			65			105			
E	63		78.5			92			141.4			
F	26		36			42			80			
H	43		55.5			65			105.4			
I	33.5		40			46.5			72.5			
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M (relief)	1/8"		1/4"			3/8"			1"			
* (pilot)	1/8"		M5			M5			M5			
P	-		-			-			169			

C3.42

The 2/2 progressive valve comes in two versions, with solenoid or pneumatic actuation.

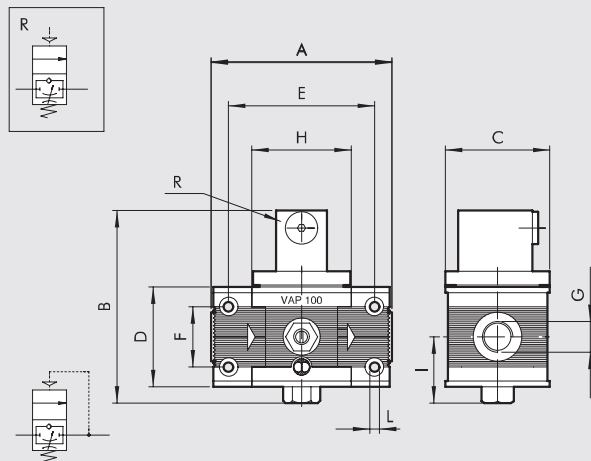
STD progressive start valve: a differential balanced valve automatically opens the air port fully when the downstream pressure is about 50% of the upstream pressure.

Progressive start valve with pneumatic or solenoid actuation: without a pilot, the upstream air flows downstream through the regulation needle.

When an external or pneumatic solenoid signal is generated, the valve opens the main port to create full flow. It does not relieve the downstream circuit.

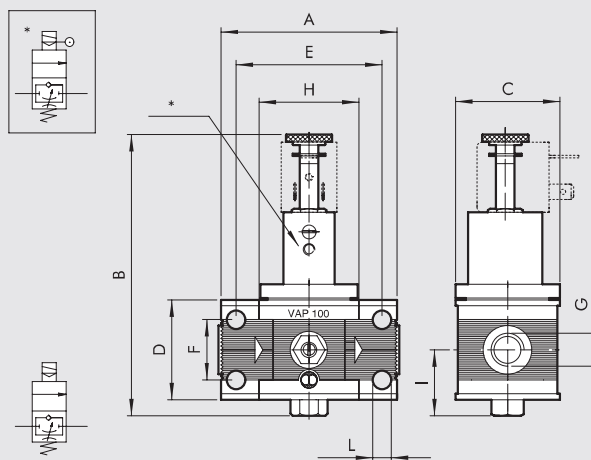
[illegible]

DIMENSIONS OF VAP 100 STD/PNEUMATIC VALVE



Threaded port G	VAP 100	
	1/4"	3/8"
A	78	
B	83.5	
C	50	
D	43	
E	63	
F	26	
H	43	
I	29	
L	Hole for M4 screws	
R (pilot - pneumatic version)	1/8"	

DIMENSIONS OF VAP 100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



Threaded port G	VAP 100	
	1/4"	3/8"
A	78	
B	122.5	
C	50	
D	43	
E	63	
F	26	
H	43	
I	29	
L	Hole for M4 screws	
O	89	
* (pilot assisted)	M5	

ORDERING CODES

Code	Description
3271000A	VAP 100 without end plates
3271500A	VAP 100 pneumatic without end plates
3271600A	VAP 100 solenoid without end plates
3271700A	VAP 100 solenoid pilot-assisted without end plates
3271000	VAP 100 1/4
3271500	VAP 100 1/4 pneumatic
3271600	VAP 100 1/4 solenoid
3271700	VAP 100 1/4 solenoid pilot-assisted
3371000	VAP 100 3/8
3371500	VAP 100 3/8 pneumatic
3371600	VAP 100 3/8 solenoid
3371700	VAP 100 3/8 solenoid pilot-assisted

NOTES

The job of the progressive starter is to feed air into the circuit gradually with controlled flow. It comes in two versions with solenoid or pneumatic actuation. Both control signals cause the valve to open, which allows the air controlled by the flow regulator to flow slowly towards the downstream circuit. In the APR, when the pressure in the downstream circuit reaches 50%-60% of the upstream pressure, the valve opens the main inlet duct connecting. The time elapsing between starting and opening the valve can be adjusted via the built-in flow regulator. If it is necessary to relieve the downstream circuit quickly, merely operate the control valve which cuts off air flow in the pipe. This closes the valve and starts relieving the downstream circuit. The progressive starter acts both as an actuator positioner, which eliminates the risk of sudden kickback, and as a valve.

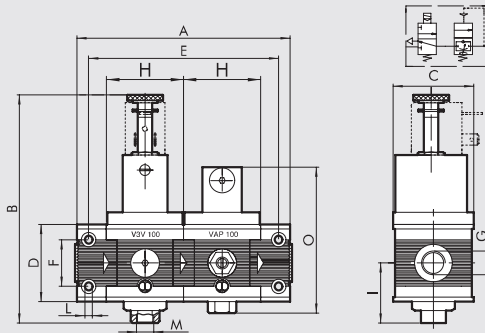


N.B. With size 400, when the APR is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the APR, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the APR relief port.
For connecting instruction see page **C3.23**

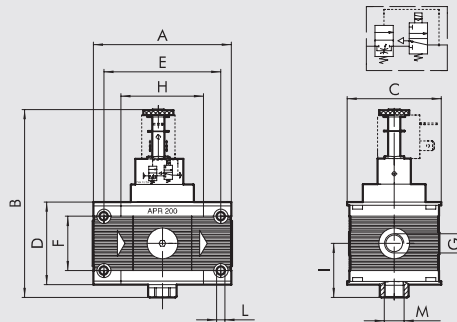
[illegible]

DIMENSIONS APR SOLENOID

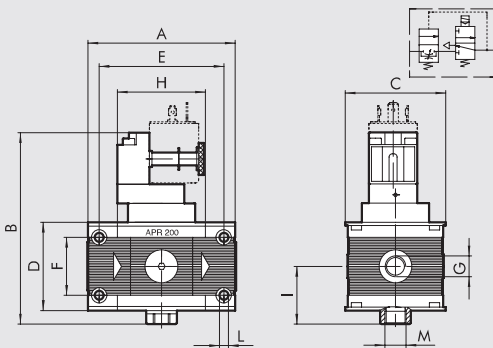
APR 100 SOLENOID



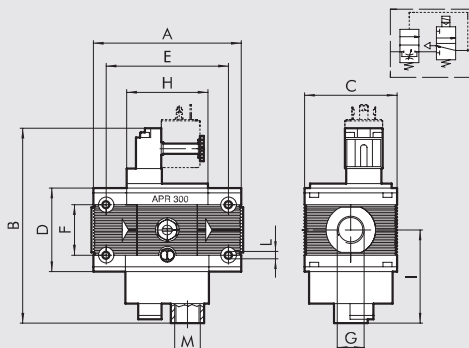
APR 200 SOLENOID



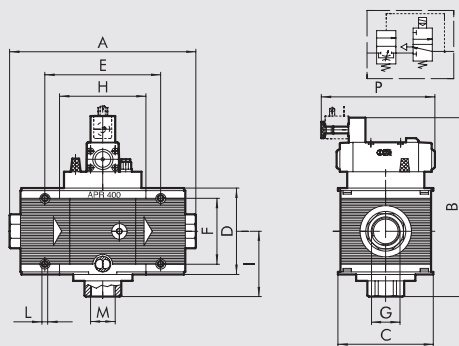
APR 200 CNOMO SOLENOID



APR 300 CNOMO SOLENOID



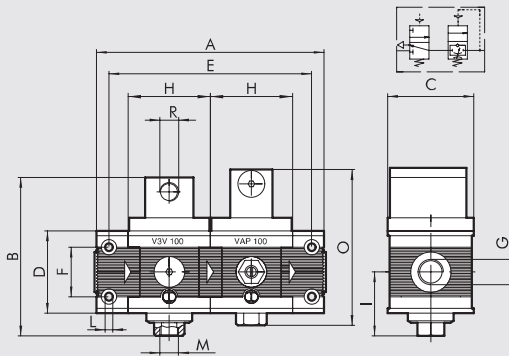
APR 400 SOLENOID



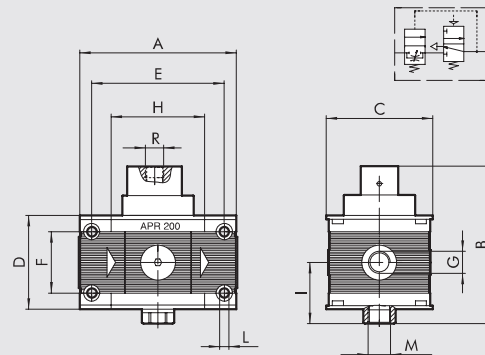
	APR 100 ELPN		APR 200 ELPN			APR 200 ELPN CNOMO		APR 300 ELPN CNOMO		APR 400 ELPN			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	2"
A	121		93.5			93.5		110	112	225 to 255	1 1/4"	1 1/2"	283 to 313
B	128		125			120		152		218			
C	50		63			63		72		118			
D	43		55			55		65		105			
E	106		78.5			78.5		92		141.4			
F	26		36			36		42		80			
H	43		55.5			55.5		65		105.4			
I	34.5		36			36		74		80			
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws		Hole for M5 screws		Hole for M6 screws			
M (relief)	1/8"		1/4"			1/4"		1/2"		1"			
O	83.5		-			-		-		-			
P	-		-			-		-		138			

DIMENSIONS APR PNEUMATIC

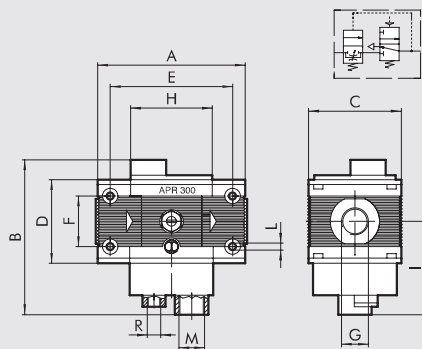
APR 100 PNEUMATIC



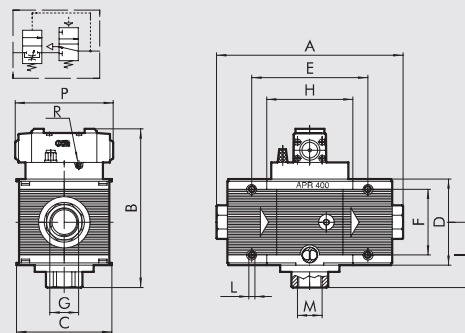
APR 200 PNEUMATIC



APR 300 PNEUMATIC



APR 400 PNEUMATIC



UNITS

Skillat® PROGRESSIVE STARTER

	APR 100 PN		APR 200 PN			APR 300 PN			APR 400 PN			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A	121			93.5		110		112		225 to 255		283 to 313
B	83			92			122			193		
C	50			63			72			118		
D	43			55			65			105		
E	106			78.5			92			141.4		
F	26			36			42			80		
H	43			55.5			65			105.4		
I	34.5			36			74			80		
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			
M (relief)	1/8"		1/4"			1/2"			1"			
R (pilot)	1/8"		1/8"			1/4"			M5			
P	-		-			-			119			

SYNOPTIC, SIZES AND VERSIONS

APR ELEMENT	100 SIZE	1/4 THREADED PORT	PNEUMATIC TYPE OF CONTROL
APR	100	1/4	Pneumatic
	200	3/8	Solenoid
	300	1/4	
	400	3/8	
		1/2	
		1/2	
		3/4	
		1	
		1	
		1 1/4	
		1 1/2	
		2	

ORDERING CODES

Code	Description	Code	Description
Skillair® 100 PROGRESSIVE STARTER		Skillair® 300 PROGRESSIVE STARTER	
3267001A	APR 100 pneumatic without end plates	4471900A	APR 300 pneumatic without end plates
3267051A	APR 100 solenoid without end plates	4471901A	APR 300 solenoid cnomo without end plates
3267001	APR 100 1/4 pneumatic	4471900	APR 300 1/2 pneumatic
3267051	APR 100 1/4 solenoid	4471901	APR 300 1/2 solenoid cnomo control
3367001	APR 100 3/8 pneumatic	4571900	APR 300 3/4 pneumatic
3367051	APR 100 3/8 solenoid	4571901	APR 300 3/4 solenoid cnomo control
Skillair® 200 PROGRESSIVE STARTER		4671900	APR 300 1 pneumatic
3471000A	APR 200 pneumatic without end plates	4671901	APR 300 1 solenoid cnomo control
3471001A	APR 200 solenoid without end plates	Skillair® 400 PROGRESSIVE STARTER	
3471004A	APR 200 solenoid cnomo without end plates	6171002A	APR 400 pneumatic without end plates
3471000	APR 200 1/4 pneumatic	6171003A	APR 400 solenoid without end plates
3471001	APR 200 1/4 solenoid	6171002	APR 400 1 pneumatic
3471004	APR 200 1/4 solenoid cnomo control	6171003	APR 400 1 solenoid
3571000	APR 200 3/8 pneumatic	6271002	APR 400 1 1/4 pneumatic
3571001	APR 200 3/8 solenoid	6271003	APR 400 1 1/4 solenoid
3571004	APR 200 3/8 solenoid cnomo control	6371002	APR 400 1 1/2 pneumatic
3671000	APR 200 1/2 pneumatic	6371003	APR 400 1 1/2 solenoid
3671001	APR 200 1/2 solenoid	6471002	APR 400 2 pneumatic
3671004	APR 200 1/2 solenoid cnomo control	6471003	APR 400 2 solenoid

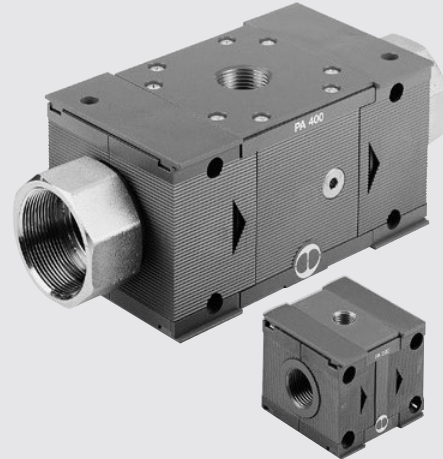
UNITS

AVVIATORE PROGRESSIVO Skillair®

Skillair® AIR TAKE-OFF



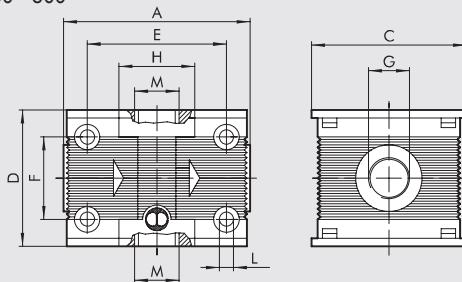
The air take-off takes air from the Skillair® FRL unit irrespective of the assembly position. It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered and regulated, lubricated, etc.). If used separately from the FRL unit, which is infinitely modular, it acts as a distributor allowing air take-off through the threaded ports.



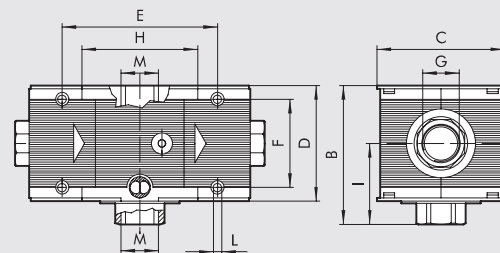
TECHNICAL DATA		PA 100			PA 200			PA 300			PA 400			
Threaded port		1/4"	3/8"		1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Max. working temperature	°C	50			50			50			50			
at: 1 MPa; 10 bar; 145 psi	°F	122			122			122			122			
Max. operating pressure	MPa	1.5			1.3			1.3			1.3			
	bar	15			13			13			13			
	psi	217			188			188			188			
Wall fixing screws		M4 x 50			M5 x 60			M5 x 70			M6 x 110			
Threaded port		G 1/4			G 1/4			G 3/8			G 1			
Weight	kg	0.3			0.5			0.8			4.3		5.1	

DIMENSIONS AND ORDERING CODES

100 - 200 - 300



400



	PA 100		PA 200			PA 300			PA 400				Code	Description
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"	9200402A	PA 100 without end plates
A	59		63			117		119	225 to 255			283 to 313	9200402	PA 100 1/4
B	-		-			-		-	120				9300401	PA 100 3/8
C	50		63			72			118				9300402A	PA 200 without end plates
D	43		55			65			105				9300404	PA 200 1/2
E	44		48			59			141.4				9300402	PA 200 1/4
F	26		36			42			80				9300403	PA 200 3/8
H	24		25			32			105.4				9400402A	PA 300 without end plates
I	-		-			-			67.5				9500402	PA 300 1
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws				9400402	PA 300 1/2
M	1/4"		1/4"			3/8"			1"				9500401	PA 300 3/4
													9700401A	PA 400 without end plates
													9700401	PA 400 1
													9700403	PA 400 1 1/2
													9700402	PA 400 1 1/4
													9700404	PA 400 2

Skilair® PRESSURE SWITCHES

Skilair® pressure switches feature a high degree of miniaturisation and a modern attractive design. As they are extremely modular, the Skilair® series can be installed facing up or down.

They come ready assembled with a 2-metre cable or an M8 connector with a 300-mm cable.

The contact is the switching type, which means it can be normally open or normally closed. It can be regulated via a knurled push-lock handle. On the side opposite the regulation handle is a threaded air inlet port that can be used by removing the threaded plug.

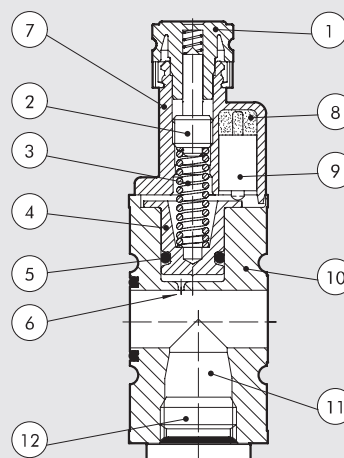


TECHNICAL DATA

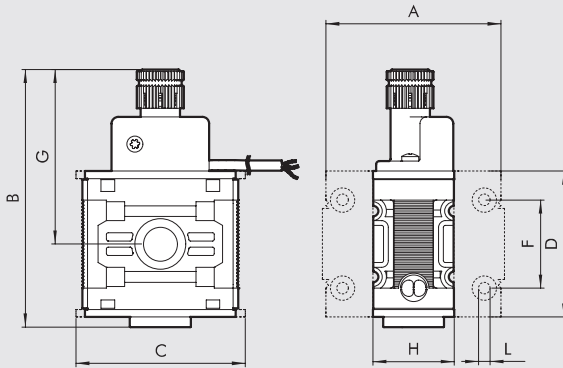
		PS 100	PS 200	PS 300
Adjustable pressure interval	bar		0.5 to 10	
Hysteresis (not adjustable)	bar		from 0.4 to 0.8 (See diagram)	
Maximum pressure	bar	15	13	13
	MPa	1.5	1.3	1.3
	psi	217	188	188
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C		-10 to 50	
	°F		14 to 122	
Lower threaded port		1/4"	1/4"	3/8"
Maximum current	A		2	
Maximum voltage	V		250	
Outside diameter of cable	mm		4.9	
Number of wires and cross section			3 x 0.5 mm ²	
Contacts			Normally-Open (NO) and Normally-Closed (NC)	
Protection			IP65	
Number of switchings			5 x 10 ⁶	
Fluid			Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Mounting position			In any position.	
Weight	kg	0.160	0.185	0.250

COMPONENTS

- ① Technopolymer adjusting push-lock handle
- ② Brass adjusting screw
- ③ Steel piston spring
- ④ Brass piston
- ⑤ NBR gasket
- ⑥ Choke to reduce peaks in pressure
- ⑦ Technopolymer pressure switch body
- ⑧ Resin finish for IP65
- ⑨ Electrical contact
- ⑩ Technopolymer body
- ⑪ Supplementary air inlet port
- ⑫ A7 plug



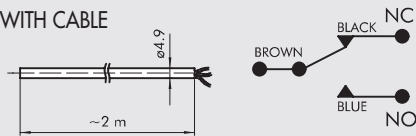
DIMENSIONS



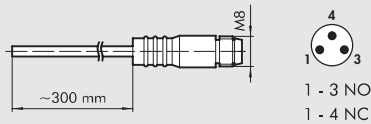
	PS 100	PS 200	PS 300
A	59	63	177
B	76	85	99
C	50	63	72
D	43	55	65
F	26	36	42
G	52	58	63
H	24	25	32
L	Hole for M4 screws	Hole for M5 screws	Hole for M5 screws

WIRING DIAGRAM

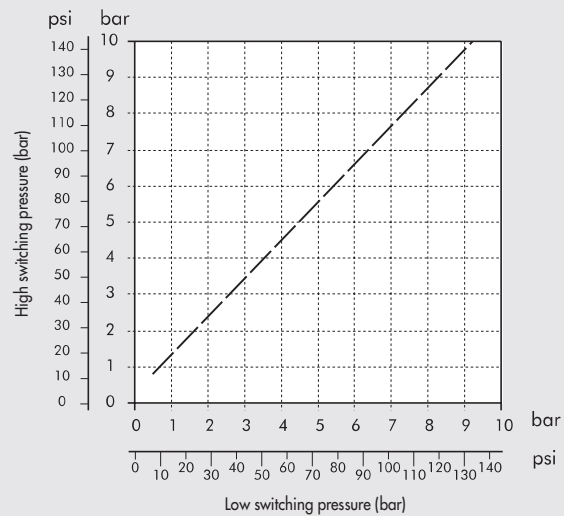
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH



ORDERING CODES

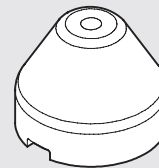
Code	Description
Skillair® 100 PRESSURE SWITCHES	
3240000A	PS 100 2A NO/NC 2 m cable without end plates
3240001A	PS 100 2A NO/NC M8 connector without end plates

Skillair® 200 PRESSURE SWITCHES	
3440000A	PS 200 2A NO/NC 2 m cable without end plates
3440001A	PS 200 2A NO/NC M8 connector without end plates

Skillair® 300 PRESSURE SWITCHES	
4440000A	PS 300 2A NO/NC 2 m cable without end plates
4440001A	PS 300 2A NO/NC M8 connector without end plates

ACCESSORIES

SECURITY KNOB



Code	Description
9200703	Security knob APR / pressure switch

NOTE: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

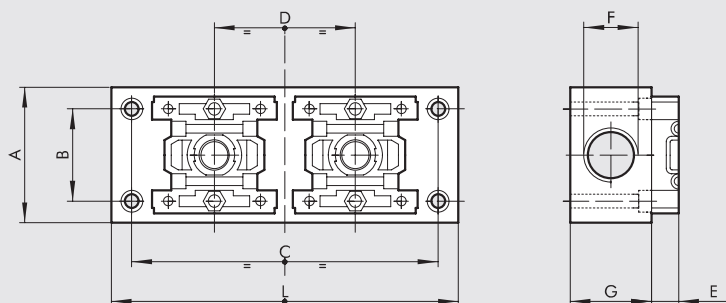
Skillair® SUB-BASE AND ADAPTER BASE

The adapter base is used to adapt the Skillair® FRL system to various assemblies without affecting modularity or servicing.
If you use the universal adapter base plus the intermediate plate, you can assemble several elements of different sizes.

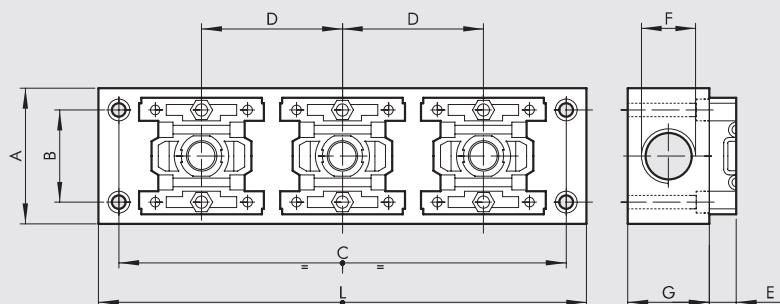


DIMENSIONS

2-POSITION SUB-BASE

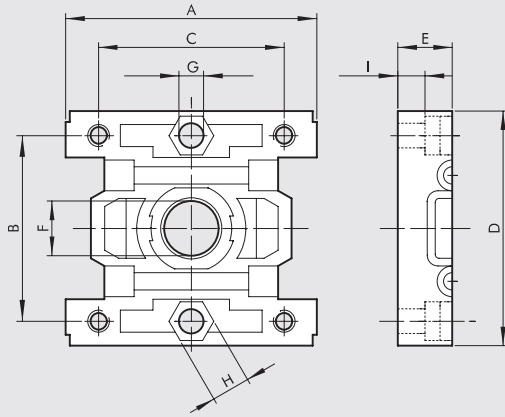


3-POSITION SUB-BASE



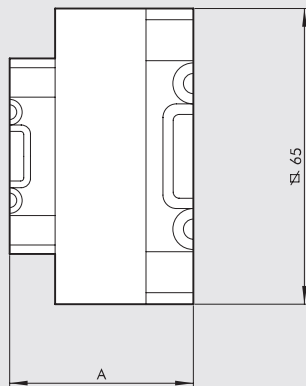
	100 - 2 POS.	100 - 3 POS.	200 - 2 POS.	200 - 3 POS.	300 - 2 POS.	300 - 3 POS.
A	50	50	55	55	60	60
B	34	34	44	44	49	49
C	113	165	135	200	155	230
D	52	52	65	65	75	75
E	10	10	8.5	8.5	10.5	10.5
F	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"
G	30	30	40	40	40	40
L	128	180	150	215	170	245

DIMENSIONS OF ADAPTER BASE



	BA 100	BA 200	BA 300
A	46	59	69
B	34	44	49
C	34	44	49
D	43	55	65
E	10	8.5	10.5
F	10	15	18
G	Hole for M4 screws	Hole for M4 screws	Hole for M5 screws
H	Es. 7	Es. 7	Es. 7
I	5	2	5

DIMENSIONS OF SIZE ADAPTERS



	BA 100 - 200	BA 100 - 300	BA 200 - 300
A	38.5	40.5	39

ORDERING CODES

Code	Description
MULTIPLE SUB-BASES FOR REGULATORS	
9200202	SB 2 100
9300202	SB 2 200
9400202	SB 2 300
9200302	SB 3 100
9300302	SB 3 200
9400302	SB 3 300
ADAPTER BASE	
9201801	BA 100
9321801	BA 200
9401801	BA 300
SIZE ADAPTER	
9301801	BA 100 - 200
9301802	BA 100 - 300
9301803	BA 200 - 300

NOTES

UNITS

Skillair® SUB-BASE AND ADAPTER BASE

FIL + REG + LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

FIL + REG + LUB Skillair®

TECHNICAL DATA		FRL 100		FRL 200			FRL 300			FRL 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1"1/4	1"1/2	2"
Setting range		0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12			Depending on pilot regulator			
Degree of filtration	µm	5 - 20		5 - 20			5 - 20			5 - 20 - 50		5 - 20 - 50	
Max. inlet pressure	MPa	1.5		1.3			1.3			1.3		1.3	
	bar	15		13			13			13		13	
	psi	217		188			188			188		188	
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	300		1300			2500			9000		14000	
	scfm	11		46			89			320		500	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	800		3000			4500			-		-	
	scfm	28		106			160			-		-	
Max temperature at 10 bar	°C	50		50			50			50		50	
	°F	122		122			122			122		122	
Weight	kg	0.75		1.5			2.9			~ 10		~ 10	
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110		M6 x 110	
Fluid		Compressed air											
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar. Do not take air from pressure gauge ports.											

SYNOPTIC, SIZES AND VERSIONS

FRL	100	1/4	20	08	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDENSATION DRAIN
FRL	100	1/4	5 = 5 µm	08 = 0 to 8 bar	RMSA
		3/8	20 = 20 µm	012 = 0 to 12 bar	SAC
	200	1/4	50 = 50 µm		RMSA
		3/8			SAC
		1/2			RA
	300	1/2			RMSA
		3/4			RA
		1			
	400	1			
		1 1/4			
		1 1/2			
		2			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

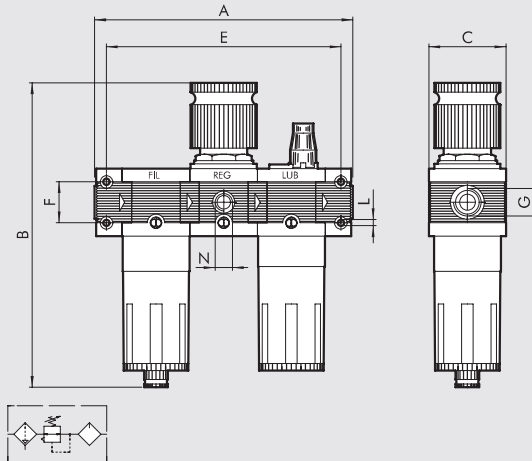
RA: automatic drain with condensate discharge, independent of pressure and flow rate.
(for size 200, 300 and 400).
Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

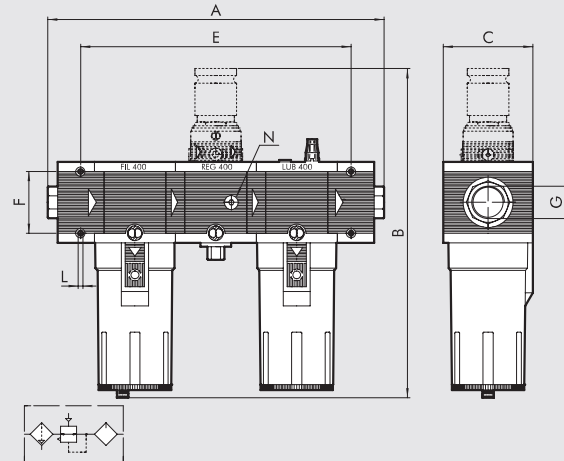
Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

DIMENSIONS FIL + REG + LUB

100 - 200 - 300



400



		FIL + REG + LUB 100		FIL + REG + LUB 200		FIL + REG + LUB 300			FIL + REG + LUB 400				
Threaded port G		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A		164			204.5		240	240	242	436 to 466			494 to 524
B	RMSA	199			245			278		444			
	RA	-			249			282		448			
	SAC	203			249			282		448			
C		50			63			72		118			
E		149			189.5			222		352			
F		26			36			42		80			
L		Hole for M4 screws		Hole for M5 screws		Hole for M5 screws			Hole for M6 screws				
N (pressure gauge port)		1/8"		1/8"		1/8"			1/4"				

ORDERING CODES
Code Description
FIL+REG+LUB Skillair® 100

3282008 FRL 100 1/4 20 08 RMSA
 3282011 FRL 100 1/4 20 012 RMSA
 3382008 FRL 100 3/8 20 08 RMSA
 3382011 FRL 100 3/8 20 012 RMSA

FIL+REG+LUB Skillair® 200

3482008 FRL 200 1/4 20 08 RMSA
 3482011 FRL 200 1/4 20 012 RMSA
 3582008 FRL 200 3/8 20 08 RMSA
 3582011 FRL 200 3/8 20 012 RMSA
 3682008 FRL 200 1/2 20 08 RMSA
 3682011 FRL 200 1/2 20 012 RMSA

FIL+REG+LUB Skillair® 300

4482005 FRL 300 1/2 20 08 RMSA
 4482008 FRL 300 1/2 20 012 RMSA
 4582005 FRL 300 3/4 20 08 RMSA
 4582008 FRL 300 3/4 20 012 RMSA
 4682005 FRL 300 1 20 08 RMSA
 4682008 FRL 300 1 20 012 RMSA

FIL+REG+LUB Skillair® 400

6182002 FRL 400 1 20 RMSA
 6182005 FRL 400 1 20 RA
 6282002 FRL 400 1 1/4 20 RMSA
 6382002 FRL 400 1 1/2 20 RMSA
 6482002 FRL 400 2 20 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

UNITS

FIL + REG + LUB Skillair®

FR + LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

FR + LUB Skillair®

TECHNICAL DATA		FR + LUB 100		FR + LUB 200			FR + LUB 300		
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range		0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12		
Degree of filtration	µm	5 - 20 - 50		5 - 20 - 50			5 - 20 - 50		
Max. inlet pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar ΔP 0.5 bar	NI/min	300		1200			2300		
	scfm	11		43			82		
Flow rate at 6.3 bar ΔP 1 bar	NI/min	800		2400			4000		
	scfm	28		85			142		
Max temperature at 10 bar	°C	50		50			50		
	°F	122		122			122		
Weight	kg	0.7		1.35			2.7		
Wall fixing screws		M4 x 50		M4 x 60			M5 x 70		
Fluid		Compressed air							
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar. Do not take air from pressure gauge ports.							

SYNOPTIC, SIZES AND VERSIONS

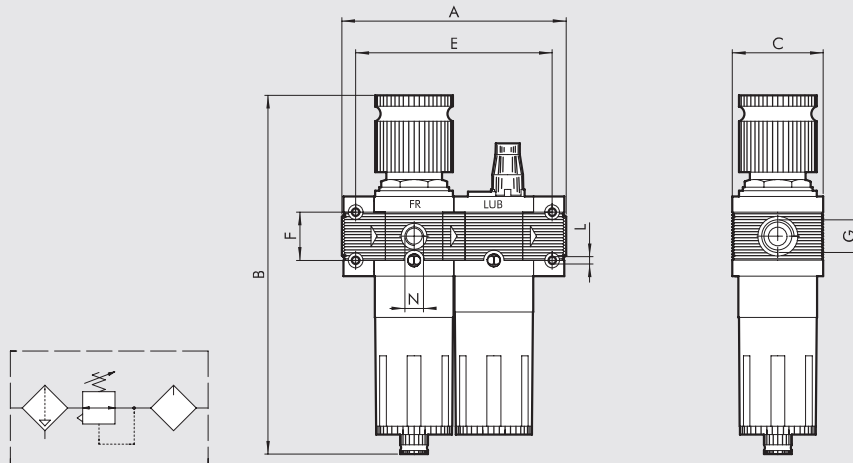
FR+L	100	1/4	20	08	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDENSATION RANGE
FR+L	100	1/4	5 = 5 µm	08 = 0 to 8 bar	RMSA
		3/8	20 = 20 µm	012 = 0 to 12 bar	SAC
	200	1/4	50 = 50 µm		RMSA
		3/8			SAC
		1/2			RA
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate.
(for size 200, 300).
Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

DIMENSIONS FR + L



Threaded port G	FR + LUB 100		FR + LUB 200			FR + LUB 300		
	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
A	121		149			175		177
B	RMSA 199		245				278	
	RA -		249				282	
	SAC 203		249				282	
C	50		63				72	
E	106		134				157	
F	26		36				42	
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws		
N (pressure gauge port)	1/8"		1/8"			1/8"		

ORDERING CODES

Codice Description

FR+L Skillair® 100

3284008	FR+L 100 1/4 20 08 RMSA
3284011	FR+L 100 1/4 20 012 RMSA
3384008	FR+L 100 3/8 20 08 RMSA
3384011	FR+L 100 3/8 20 012 RMSA

FR+L Skillair® 200

3484008	FR+L 200 1/4 20 08 RMSA
3484011	FR+L 200 1/4 20 012 RMSA
3584008	FR+L 200 3/8 20 08 RMSA
3584011	FR+L 200 3/8 20 012 RMSA
3684008	FR+L 200 1/2 20 08 RMSA
3684011	FR+L 200 1/2 20 012 RMSA

FR+L Skillair® 300

4484005	FR+L 300 1/2 20 08 RMSA
4484008	FR+L 300 1/2 20 012 RMSA
4584005	FR+L 300 3/4 20 08 RMSA
4584008	FR+L 300 3/4 20 012 RMSA
4684005	FR+L 300 1 20 08 RMSA
4684008	FR+L 300 1 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

V3V + FR + LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

V3V + FR + LUB Skillair®

TECHNICAL DATA		V + FR + L 100		V + FR + L 200			V + FR + L 300		
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range		0 to 8 - 0 to 12		0 to 8 - 0 to 12			0 to 8 - 0 to 12		
Degree of filtration	µm	5 - 20 - 50		5 - 20 - 50			5 - 20 - 50		
Max. inlet pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar ΔP 0.5 bar	l/min	300		1200			2300		
	scfm	11		43			82		
Flow rate at 6.3 bar ΔP 1 bar	l/min	800		2400			4000		
	scfm	28		85			142		
Max temperature at 10 bar	°C	50		50			50		
	°F	122		122			122		
Weight	kg	1		1.8			3.2		
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70		
Fluid		Compressed air.							
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar. Do not take air from pressure gauge ports.							

SYNOPTIC, SIZES AND VERSIONS

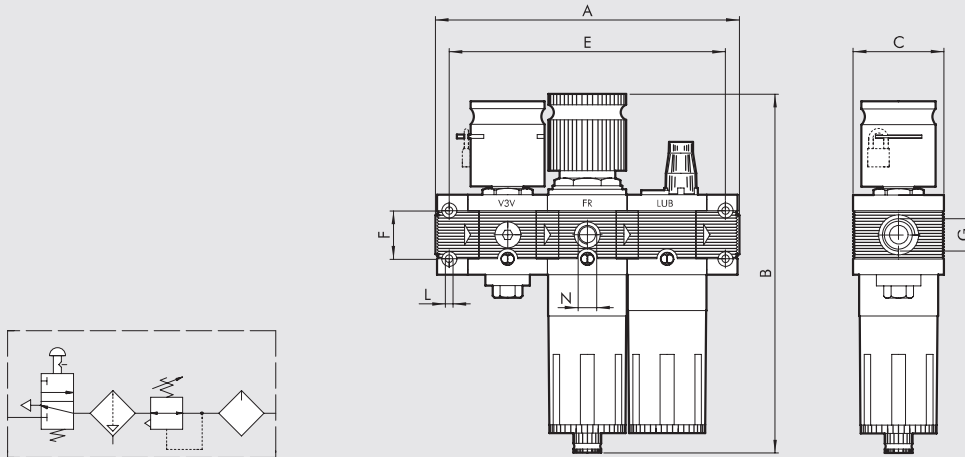
VFR+L	100	1/4	20	08	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDENSATE DRAIN
VFRL+L	100	1/4	5 = 5 µm	08 = 0 to 8 bar	RMSA
		3/8	20 = 20 µm	012 = 0 to 12 bar	SAC
	200	1/4	50 = 50 µm		RMSA
		3/8			SAC
		1/2			RA
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate.
(for size 200, 300).
Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.
Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

DIMENSIONS V3V + FR + L



	V3V + FR + LUB 100		V3V + FR + LUB 200			V3V + FR + LUB 300		
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
A	164			204.5		240		242
B	RMSA	199		245			278	
	RA	-		249			282	
	SAC	203		249			282	
C	50			63			72	
E	149			189.5			222	
F	26			36			42	
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws		
N (pressure gauge port)	1/8"		1/8"			1/8"		

ORDERING CODES

Code Description

VFR+L Skillair® 100

3272008 VFR+L 100 1/4 20 08 RMSA

3272011 VFR+L 100 1/4 20 012 RMSA

3372008 VFR+L 100 3/8 20 08 RMSA

3372011 VFR+L 100 3/8 20 012 RMSA

VFR+L Skillair® 200

3472008 VFR+L 200 1/4 20 08 RMSA

3472011 VFR+L 200 1/4 20 012 RMSA

3572008 VFR+L 200 3/8 20 08 RMSA

3572011 VFR+L 200 3/8 20 012 RMSA

3672008 VFR+L 200 1/2 20 08 RMSA

3672011 VFR+L 200 1/2 20 012 RMSA

VFR+L Skillair® 300

4472005 VFR+L 300 1/2 20 08 RMSA

4472008 VFR+L 300 1/2 20 012 RMSA

4572005 VFR+L 300 3/4 20 08 RMSA

4572008 VFR+L 300 3/4 20 012 RMSA

4672005 VFR+L 300 1 20 08 RMSA

4672008 VFR+L 300 1 20 012 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

FIL + LUB Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

FIL + LUB Skillair®

TECHNICAL DATA		F + L 100		F + L 200			F + L 300			F + L 400			
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	µm	5 - 20 - 50		5 - 20 - 50			5 - 20 - 50			5 - 20 - 50			
Max. inlet pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188			188			188			
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	600		1800			3200			9000		14000	
	scfm	21		64			113			320		500	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	1200		3200			4500			-		-	
	scfm	42		113			160			-		-	
Max temperature at 10 bar	°C	50		50			50			50			
	°F	122		122			122			122			
Weight	kg	0.5		1.1			2.2			~ 8			
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
Fluid		Compressed air.											
Notes on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

SYNOPTIC, SIZES AND VERSIONS

F+L	100	1/4	20	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDENSATE DRAIN
F+L	100	1/4	5 = 5 µm	RMSA
		3/8	20 = 20 µm	SAC
	200	1/4	50 = 50 µm	RMSA
		3/8		RA
		1/2		
	300	1/2		
		3/4		
		1		
	400	1		
		1 1/4		
		1 1/2		
		2		

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

RA: automatic drain with condensate discharge, independent of pressure and flow rate.
(for size 200, 300 and 400).
Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

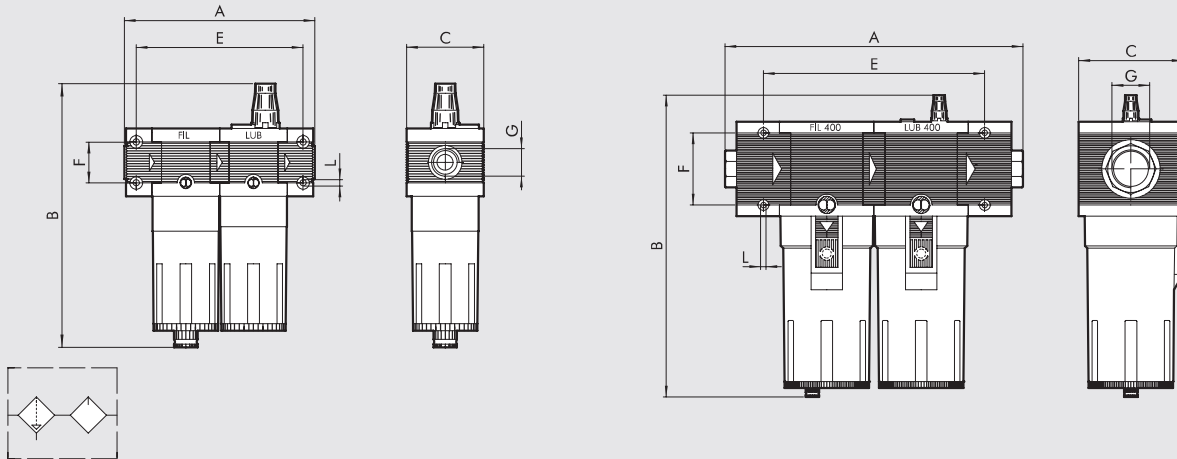
SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

DIMENSIONS FIL + LUB

100 - 200 - 300

400



		FIL + LUB 100		FIL + LUB 200			FIL + LUB 300			FIL + LUB 400			
Threaded port G		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
A		121		149			175		177		330 to 360		388 to 418
B	RMSA	172.5		203.5			223.5				349.5		
	RA	-		207.5			227.5				353.5		
	SAC	176.5		207.5			227.5				353.5		
C		50		63			72				118		
E		106		134			157				247		
F		26		36			42				80		
L		Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			

ORDERING CODES

Code Description

F+L Skillair® 100

3285002 F+L 100 1/4 20 RMSA

3385002 F+L 100 3/8 20 RMSA

F+L Skillair® 200

3485002 F+L 200 1/4 20 RMSA

3585002 F+L 200 3/8 20 RMSA

3685002 F+L 200 1/2 20 RMSA

F+L Skillair® 300

4485002 F+L 300 1/2 20 RMSA

4585002 F+L 300 3/4 20 RMSA

4585005 F+L 300 3/4 20 RA

4685002 F+L 300 1 20 RMSA

F+L Skillair® 400

6185002 F+L 400 1 20 RMSA

6185005 F+L 400 1 20 RA

6285002 F+L 400 1 1/4 20 RMSA

6385002 F+L 400 1 1/2 20 RMSA

6485002 F+L 400 2 20 RMSA

The following versions are available on request:

- with 5 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

UNITS

FIL + LUB Skillair®

FIL + DEP Skillair®

Refer to the sections on the single modules for a further description, components and other technical data.



UNITS

FIL + DEP Skillair®

TECHNICAL DATA			F + D 100		F + D 200		F + D 300			F + D 400				
Threaded port			1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Degree of filtration	Filter	µm	5		5		5			5				
	Depurator	µm	0.01		0.01		0.01			0.01				
Max. inlet pressure		MPa	1.5		1.3		1.3			1.3				
		bar	15		13		13			13				
		psi	217		188		188			188				
Max temperature at 10 bar		°C	50		50		50			50				
		°F	122		122		122			122				
Weight		kg	0.6		1.3		2.2			~ 7				
Wall fixing screws			M4 x 50		M5 x 60		M5 x 70			M6 x 110				
Maximum suggested flow rate			Please look at the flow rate curves at page C3.12											
Fluid			Compressed air.											
Notes on use			The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.											

SYNOPTIC, SIZES AND VERSIONS

F+D ELEMENT	100 SIZE	1/4 THREADED PORT	5 DEGREE OF FILTRATION	RMSA TYPE OF CONDENSATE DRAIN
F+D	100	1/4	5 = 5 µm	RMSA SAC RMSA RA
		3/8		
	200	1/4		
		3/8		
		1/2		
	300	1/2		
		3/4		
		1		
	400	1		
		1 1/4		
		1 1/2		
		2		

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure

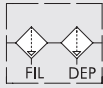
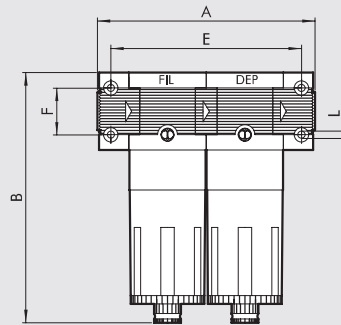
RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400). Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

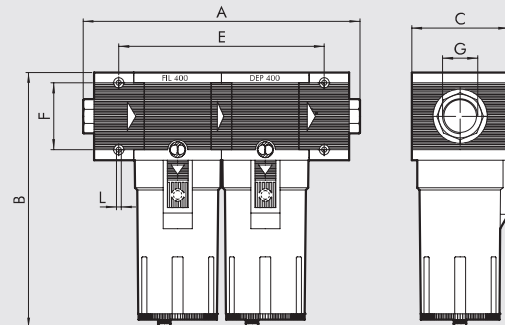
Operates by pressure drop – requires variable air take-offs.
(for size 100 and 200)

DIMENSIONS FIL + DEP

100 - 200 - 300



400



	FIL + DEP 100		FIL + DEP 200			FIL + DEP 300			FIL + DEP 400			
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1" 1/4"	1" 1/2"	2"
A	121		149			175			330 to 360			
B	RMSA	144	175			195			320			
		-	179			199			324			
		SAC	179			199			324			
C	50		63			72			118			
E	106		134			157			247			
F	26		36			42			80			
L	Hole for M4 screws		Hole for M5 screws			Hole for M5 screws			Hole for M6 screws			

ORDERING CODES

Code Description

F+D Skillair® 100

3289001	F+D 100 1/4 5 RMSA-RMSA
3289005	F+D 100 1/4 5 SAC-RMSA
3289006	F+D 100 1/4 5 SAC-SAC
3389001	F+D 100 3/8 5 RMSA-RMSA
3389005	F+D 100 3/8 5 SAC-RMSA
3389006	F+D 100 3/8 5 SAC-SAC

F+D Skillair® 200

3489001	F+D 200 1/4 5 RMSA-RMSA
3489005	F+D 200 1/4 5 SAC-RMSA
3489006	F+D 200 1/4 5 SAC-SAC
3589001	F+D 200 3/8 5 RMSA-RMSA
3589005	F+D 200 3/8 5 SAC-RMSA
3589006	F+D 200 3/8 5 SAC-SAC
3689001	F+D 200 1/2 5 RMSA-RMSA
3689005	F+D 200 1/2 5 SAC-RMSA
3689006	F+D 200 1/2 5 SAC-SAC

Code Description

F+D Skillair® 300

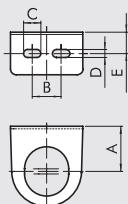
4489001	F+D 300 1/2 5 RMSA-RMSA
4489002	F+D 300 1/2 5 RA-RA
4589001	F+D 300 3/4 5 RMSA-RMSA
4589002	F+D 300 3/4 5 RA-RA
4689001	F+D 300 1 5 RMSA-RMSA
4689002	F+D 300 1 5 RA-RA

F+D Skillair® 400

6189001	F+D 400 1 5 RMSA-RMSA
6189002	F+D 400 1 5 RA-RA
6289001	F+D 400 1 1/4 5 RMSA-RMSA
6289002	F+D 400 1 1/4 5 RA-RA
6389001	F+D 400 1 1/2 5 RMSA-RMSA
6389002	F+D 400 1 1/2 5 RA-RA
6489001	F+D 400 2 5 RMSA-RMSA
6489002	F+D 400 2 5 RA-RA

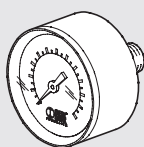
Skillair® ACCESSORIES

MOUNTING BRACKET FOR REG.

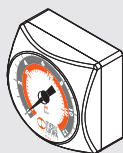


Code	Description				
9200701	SF100- BIT-ND1/4				
9400701	SF200-ND-3/8 1/2				
9400702	SF300				
Code	A	B	C	D	E
9200701	32	20	12	5.5	14.2
9400701	42	40	12	5.5	15
9400702	48	49	12	5.5	17

PRESSURE GAUGES

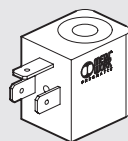


Code	Description
9700101	M 40 1/8 012
9700102	M 40 1/8 04
9800101	M 50 1/8 012
9800102	M 50 1/8 04
9900101	M 63 1/4 012



9700109	M 40x40 1/8 04
9700110	M 40x40 1/8 012

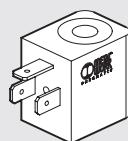
COIL 22 mm FOR APR AND V3V ELPN



Code	Description
W0215000151	Coil 22 Ø 8 BA 2W-12VDC
W0215000101	Coil 22 Ø 8 BA 2W-24VDC
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC

Electrical connection DIN 43650 B-IND

"UL" AND "CSA" COIL 22 mm FOR APR AND V3V ELPN

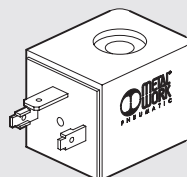


Code	Description
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR

Electrical connection DIN 43650 B-IND



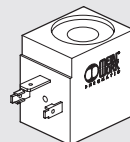
COIL 30 mm FOR APR AND V3V ELPN



Code	Description
W0210010100	Coil 30 Ø 8 2W-24VDC
W0210011100	Coil 30 Ø 8 3.5VA-24VAC 50/60 HZ
W0210012100	Coil 30 Ø 8 3.5VA-110VAC 50/60 HZ
W0210013100	Coil 30 Ø 8 3.5VA-220VAC 50/60 HZ

Electrical connection DIN 43650 - A

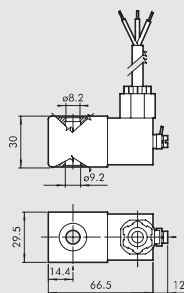
COIL 30 mm FOR CDV CDML LUBRICATOR



Code	Description
W0216001001	Coil 30 Ø13 10W-24VDC
W0216001011	Coil 30 Ø13 13VA-24VAC 50/60HZ
W0216001021	Coil 30 Ø13 13VA-110VAC 50/60HZ
W0216001031	Coil 30 Ø13 13VA-220VAC 50/60HZ

Electrical connection DIN 43650 - A

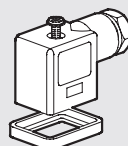
KIT FOR COIL EEXM (FOR V3V-APR-LUB)



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

According to Atex 2014/34/EU rule,
 Ex II 2G Ex mb IIC T4/T5 Gb
 Ex II 2D Ex mb IIC T130/T95 °C IP66 Db
 N.B.: Supplied complete with adapter for Ø8 mm sleeve

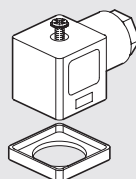
ELECTRIC CONNECTOR 22 mm FOR COILS DIN 43650 B-IND



Code	Description
W0970510011	Connector standard
W0970510012	Connector 22 LED 24V
W0970510013	Connector 22 LED 110V
W0970510014	Connector 22 LED 220V
W0970510015	Connector 22 LED VDR 24V
W0970510016	Connector 22 LED VDR 110V
W0970510017	Connector 22 LED VDR 220V
W0970510070	Connector 22 ATEX II 2 GD

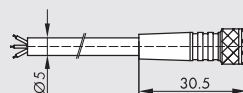
Code W0970510051 Description Connector 22 LED 24VDC Energy Saving
 For technical data see page B1.61

ELECTRIC CONNECTOR 30 mm FOR COILS DIN 43650-A



Code	Description
W0970520033	Connector 30 STD
W0970520034	Connector 30 LED 24V
W0970520035	Connector 30 LED 110V
W0970520036	Connector 30 LED 220V
W0970520037	Connector 30 LED VDR 24V
W0970520038	Connector 30 LED VDR 110V
W0970520039	Connector 30 LED VDR 220V
W0970520070	Connector 30 ATEX II 2GD

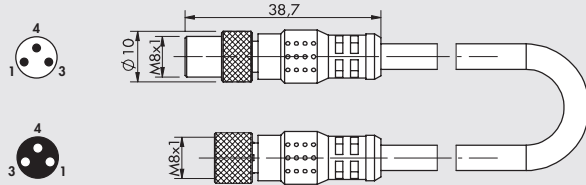
M8 STRAIGHT CONNECTOR WITH CABLE FOR PRESSURE SWITCHES



Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 ADAPTER CABLE FOR CONNECTING THE PRESSURE SWITCH TO THE EB 80 E CM DIGITAL INPUTS MODULE

Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

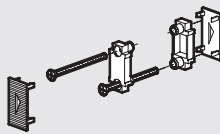
Note: Can be used to connect the pressure switch to the module of digital INPUT 501 of the EB 80 valves, to the additional M8 INPUT module of the CM valves and to the Profibus-DP IP67 M8 input. Contact type NO (Normally open)

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

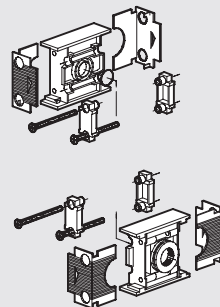
KIT COIL SIDE 22 IP65 (FOR V3V-APR-LUB)

Code	Description
0222100100	Kit for coils 22 - IP65

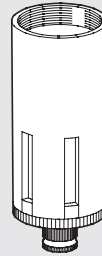
Improved IP65 protection, even after prolonged exposure to atmospheric agents. Applicable to valves with a technopolymer control.

CONNECTOR KIT FOR SKILLAIR CODE A

Code	Description
9230301	Connector kit 100
9330301	Connector kit 200
9430301	Connector kit 300
9630301	Connector kit 400

INPUT/OUTPUT END PLATE KIT

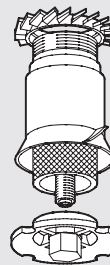
Code	Description
9230401	IN/OUT end plate kit 100 1/4
9330501	IN/OUT end plate kit 100 3/8
9330601	IN/OUT end plate kit 200 1/4
9330701	IN/OUT end plate kit 200 3/8
9330801	IN/OUT end plate kit 200 1/2
9430701	IN/OUT end plate kit 300 1/2
9530901	IN/OUT end plate kit 300 3/4
9531001	IN/OUT end plate kit 300 1
9631001	IN/OUT end plate kit 400 1
9631101	IN/OUT end plate kit 400 1 1/4
9631201	IN/OUT end plate kit 400 1 1/2
9631301	IN/OUT end plate kit 400 2

FILTER BOWL

Code	Description
9253301	Spares TF 100 RMSA
9255301	Spares TF 100 SAC
9353301	Spares TF 200 RMSA
9355301	Spares TF 200 SAC
9453401	Spares TF 300 RA
9453301	Spares TF 300 RMSA
9653401	Spares TF 400 RA
9653301	Spares TF 400 RMSA

LUBRICATOR BOWL

Code	Description
9253501	Spares TL 100
9202503	Spares TL 100 CA
9202502	Spares TL 100 CD
9202501	Spares TL 100 ML
9353501	Spares TL 200
9302501	Spares TL 200 CA
9302503	Spares TL 200 CD
9302502	Spares TL 200 ML
9453501	Spares TL 300
9202401	Spares TL 300 CA
9202403	Spares TL 300 CD
9202402	Spares TL 300 ML
9653501	Spares TL 400
9653502	Spares TL 400 CA
9653504	Spares TL 400 CD
9653503	Spares TL 400 ML

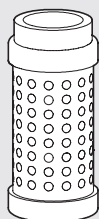
FILTERING ELEMENTS

Code	Description
9251705	Spares FP 100 5
9251706	Spares FP 100 20
9251707	Spares FP 100 50
9351705	Spares FP 200 5
9351706	Spares FP 200 20
9351707	Spares FP 200 50
9451705	Spares FP 300 5
9451706	Spares FP 300 20
9451707	Spares FP 300 50
9651705	Spares FP 400 5
9651706	Spares FP 400 20
9651707	Spares FP 400 50

FILTERING/PURIFICATION ELEMENTS

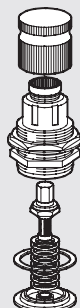
Code	Description
9251711	Spares FP DEP. 100
9351711	Spares FP DEP. 200
9451711	Spares FP DEP. 300
9651711	Spares FP DEP. 400

CARTRIDGE AC



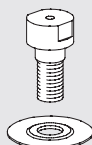
Code	Description
9251713	Spares cartridge 100 AC
9351713	Spares cartridge 200 AC
9451713	Spares cartridge 300 AC
9651712	Spares cartridge 400 AC

UPPER COVER FOR REGULATOR AND FR



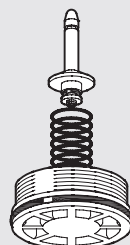
Code	Description
9250800	Spares CS 100 02
9250810	Spares CS 100 04
9250811	Spares CS 100 08
9250812	Spares CS 100 012
9350800	Spares CS 200 02
9350810	Spares CS 200 04
9350811	Spares CS 200 08
9350812	Spares CS 200 012
9450805	Spares CS 300 04
9450806	Spares CS 300 08
9450807	Spares CS 300 012
9450808	Spares CS 300 02

VENTURI LUBRICATOR DIAPHRAGM



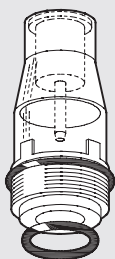
Code	Description
9252001	Spares MB 100 ND 1/4
9352001	Spares MB 200 ND 3/8-1/2
9452001	Spares MB 300
9652601	Spares MB 400

COMPLETE POPPET FOR REGULATORS



Code	Description
9250704	Spares OTR 100
9350704	Spares OTR 200
9450704	Spares OTR 300
9650704	Spares OTR 400

TRANSPARENT LUBRICATOR COVER



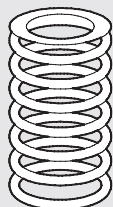
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

COMPLETE POPPET FOR FR



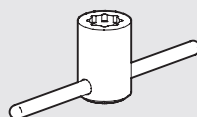
Code	Description
9250902	Spares OTFR 100 5
9250903	Spares OTFR 100 20
9250904	Spares OTFR 100 50
9350902	Spares OTFR 200 5
9350903	Spares OTFR 200 20
9350904	Spares OTFR 200 50
9450902	Spares OTFR 300 5
9450903	Spares OTFR 300 20
9450904	Spares OTFR 300 50

SPRINGS FOR REDUCERS AND FRs



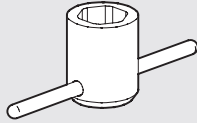
Code	Description
9250605	Spares MO 100 02
9250606	Spares MO 100 04
9250607	Spares MO 100 08
9250608	Spares MO 100 012
9350605	Spares MO 200 02
9350606	Spares MO 200 04
9350607	Spares MO 200 08
9350608	Spares MO 200 012
9450605	Spares MO 300 04
9450606	Spares MO 300 08
9450607	Spares MO 300 012
9450608	Spares MO 300 02

UPPER COVER DISASSEMBLY SPANNER



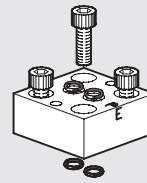
Code	Description
9220701	Spares cover spanner

REG AND FR VISUAL DOME DISASSEMBLY SPANNER



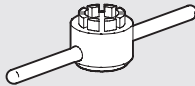
Code	Description
9220401	Spares dome dis. spanner 100
9323401	Spares dome dis. spanner 200
9420401	Spares dome dis. spanner 300

PROVISION FOR SOLENOID CONTROL TO CNOMO FOR APR-300



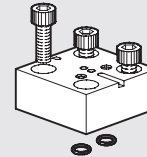
Code	Description
9454001	Spares PCE to Cnomo

POPPET DISASSEMBLY SPANNER (FOR REG.)



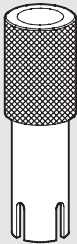
Code	Description
9220501	Spares R cap disass. WR. 100
9323501	Spares R cap disass. WR. 200
9420501	Spares R cap disass. WR. 300

PROVISION FOR MICRO SOLENOID CONTROL FOR APR-300



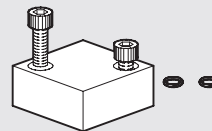
Code	Description
9453601	Spares PCE micro

POPPET DISASSEMBLY SPANNER (FOR FR)



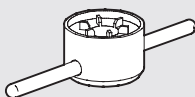
Code	Description
9220801	Spares FR cap disass. WR. 100
9320801	Spares FR cap disass. WR. 200
9420801	Spares FR cap disass. WR. 300

PROVISION FOR PNEUMATIC CONTROL FOR APR-300



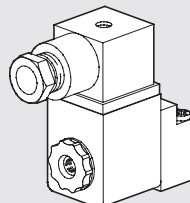
Code	Description
9453701	Spares PCP pneumatic

CAP DISASSEMBLY SPANNER

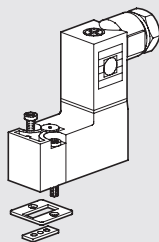


Code	Description
9220601	Spares cap disass. 100
9323601	Spares cap disass. 200
9420601	Spares cap disass. 300

CNOMO SOLENOID CONTROL FOR APR and V3V 300-400



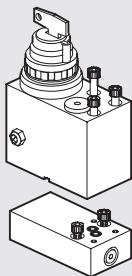
Code	Description
9453901	Spares CEC Cnomo 24CC
9453902	Spares CEC Cnomo 24V
9453903	Spares CEC Cnomo 110V
9453904	Spares CEC Cnomo 220V

**MICRO SOLENOID CONTROL FOR APR-300 and V3V 300
(NO MORE IN THE CATALOGUE)**

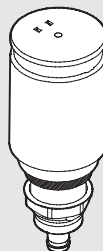
Code	Description
9453801	Spares CEM micro 24CC
9453802	Spares CEM micro 24V
9453803	Spares CEM micro 110V
9453804	Spares CEM micro 220V

INTERMEDIATE COVER PLATE

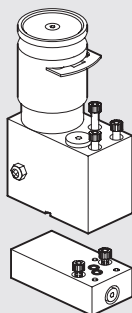
Code	Description
9152107	Spares intermediate cover plate 100
9152114	Spares intermediate cover plate 200
9152108	Spares intermediate cover plate 300
9152117	Spares intermediate cover plate 400

KEY-OPERATED V3V 400

Code	Description
9455401	Spares kit C.C. 400

AUTOMATIC DRAIN (RA)

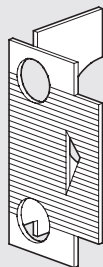
Code	Description
9000802	Spares RA automatic drain

MANUAL LOCKABLE V3V 400

Code	Description
9455601	Spares kit lockable 400

AUTOMATIC DRAIN (SAC)

Code	Description
9000803	Spares SAC automatic drain

INPUT/OUTPUT COVER PLATE

Code	Description
9152103	Spares OUTPUT cover plate 100
9152105	Spares INPUT cover plate 100
9152115	Spares OUTPUT cover plate 200
9152116	Spares INPUT cover plate 200
9152104	Spares OUTPUT cover plate 300
9152106	Spares INPUT cover plate 300
9152118	Spares OUTPUT cover plate 400
9152119	Spares INPUT cover plate 400

NOTES



NOTES

UNITS

NOTES

UNITS



NOTES

UNITS

SUMMARY New deal

● GENERAL TECHNICAL DATA New deal

C4.4



● New deal FILTER

C4.6



● New deal DEPURATOR

C4.9



● New deal REGULATOR

C4.11



● New deal PADLOCKABLE REGULATOR

C4.14



● New deal PILOT-OPERATED REGULATOR

C4.16



● New deal REGULATOR AND REGULATOR WITH V3V 3/4"-1"

C4.17



● New deal FILTER REGULATOR

C4.20



● New deal LUBRICATOR

C4.23



● New deal SHUT-OFF VALVE

C4.26



● New deal 3/4"-1" SHUT-OFF VALVE

C4.28



● New deal AIR TAKE-OFF

 C4.30



● New deal SUB-BASE

 C4.31



● New deal AUTOMATIC CONDENSATE DRAIN

 C4.32



● FIL + REG + LUB New deal

 C4.33



● FRPL 3/4"-1" New deal

 C4.35



● FR + LUB New deal

 C4.37



● V3V + FR + LUB New deal

 C4.39



● FIL + DEP New deal

 C4.41



● FIL + LUB New deal

 C4.43

● New deal ACCESSORIES

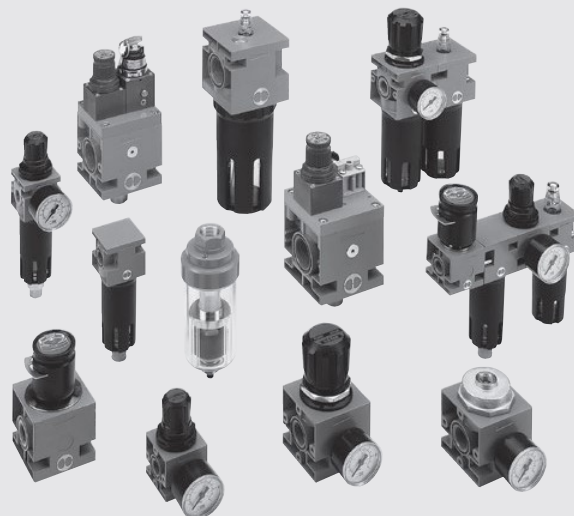
 C4.45

● New deal SPARE PARTS

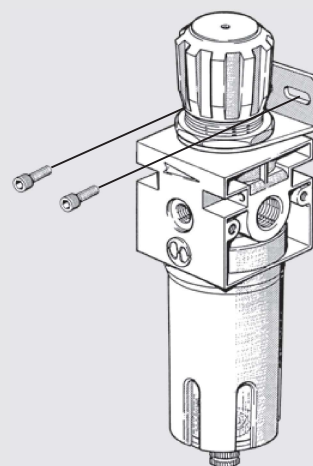
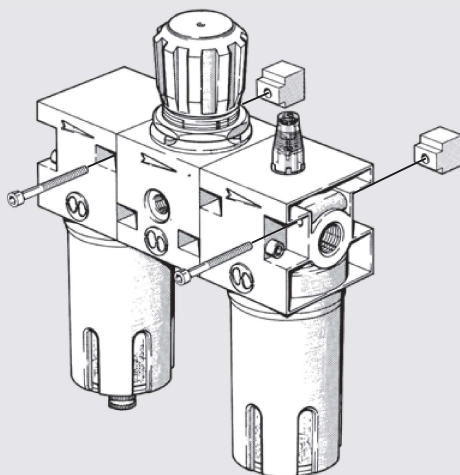
 C4.47

Newdeal is the forerunner of all air treatment units by Metal Work. The entire range is top quality, heavy-duty and reliable. These units are designed for use at high pressures* and in applications where the temperature and quality of the ambient area are critical.

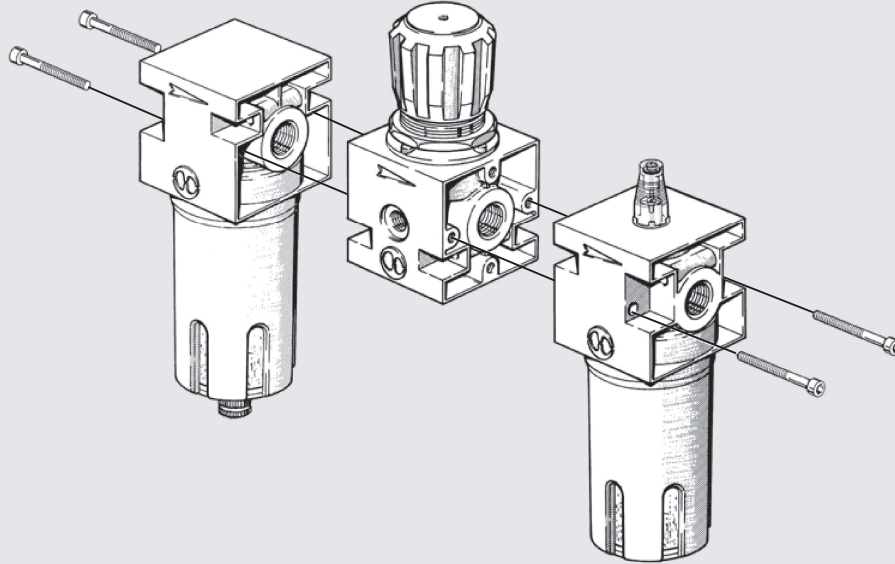
*For further details, refer to the Specification for the item in question.

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WALL MOUNTING



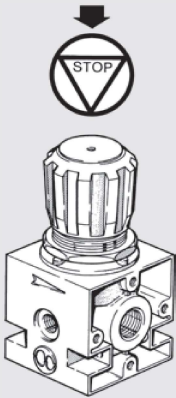
ASSEMBLY DIAGRAM



ASSEMBLY TIE RODS

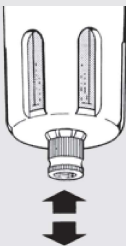
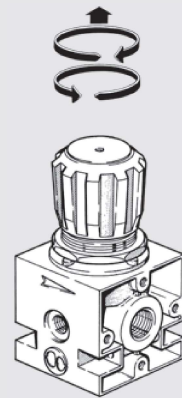
		Elements that can be assembled	1/4			3/8 - 1/2			3/4 - 1		
			Type	Code	Ref.	Type	Code	Ref.	Type	Code	Ref.
A											
B		F/L + R/FR	A	9250001	CVA 1/4 4x40	A	9450001	CVA 1/2 5x55	A	9650001	CVA 1 6x70
		V3V + R/FR	A	9250001	CVA 1/4 4x40	A	9450002	CVA 1/2 5x60	-	-	-
C		V3V + F/L + R/FR	A	9250002	CVA 1/4 4x82	A	9450003	CVA 1/2 5x120	C	9604402	V3V + F + RT 3/4-1
		F/L/D + F/L/D	B	9200901	F + LT 1/4	B	9400901	F + LT 3/8-1/2	B	9600901	F + LT 3/4-1

GENERAL RULES - USE AND MAINTENANCE

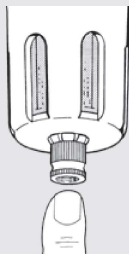


The knob can be locked so that the set pressure cannot be altered.

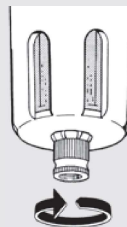
The air pressure must always be set upwards.



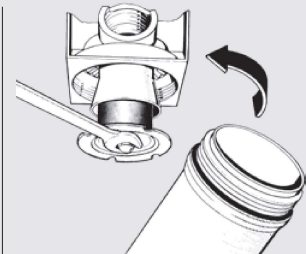
With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.



Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

Newdeal FILTER

Filter with different impurity filtration degrees.

- Metal bowl with external viewing
- Semi-automatic and condensate drainage

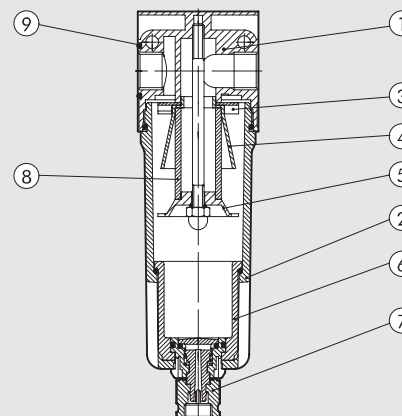


TECHNICAL DATA

		FIL ND 1/4"	FIL ND 3/8"	FIL ND 1/2"	FIL ND 3/4"	FIL ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Degree of filtration	µm	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50
Max. inlet pressure	MPa	1.8	1.8	1.8	1.8	1.8
	bar	18	18	18	18	18
	psi	261	261	261	261	261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	1300	3100	9100		
	scfm	46	110	324		
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1720	4100	11000		
	scfm	61	146	391		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°	50°	50°		
	°F	122°	122°	122°		
Weight	kg	0.4	0.9	1.2		
Wall fixing screws		M4 x 40	M4 x 55	M6 x 75		
Bowl capacity	cm ³	10	45	170		
Mounting position		Vertical	Vertical	Vertical		
Drain		RMSA - SAC	RMSA - SAC - RA	RMSA - RA		
RMSA: drain with manual condensate discharge and automatic discharge at zero pressure. RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port. SAC: automatic drain with condensate discharge. Operates by pressure drop – requires variable air take-offs. Compressed air The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.						
Fluid						
Note on use						

COMPONENTS

- ① Zamak body
- ② Aluminium bowl
- ③ Technopolymer centrifuge
- ④ Technopolymer baffle plug
- ⑤ Technopolymer screen
- ⑥ Clear technopolymer bowl
- ⑦ Drain (RMSA)
- ⑧ HDPE bronze filter cartridge (1/4 - 3/8 - 1/2), sintered bronze (1")
- ⑨ NBR gaskets

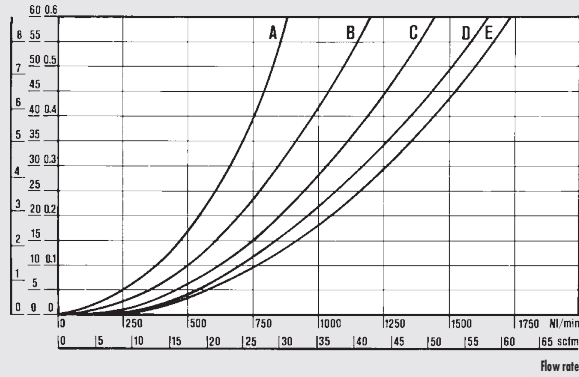


FLOW CHARTS

FIL 1/4

$$\Delta P = (P_m - P_v)$$

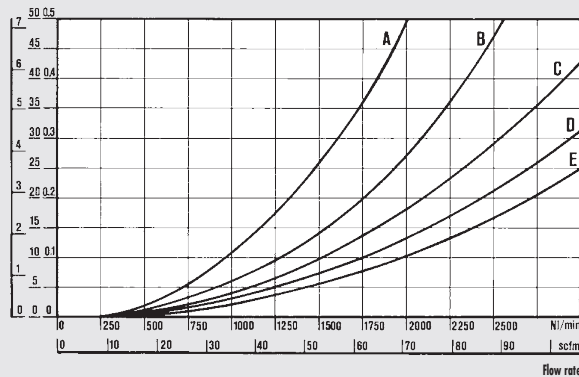
psi kPa bar



FIL 3/8 - 1/2

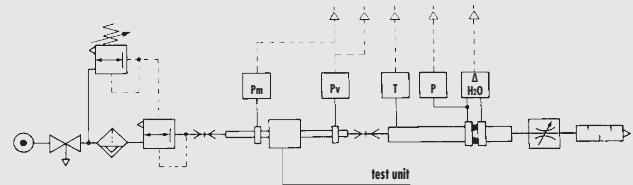
$$\Delta P = (P_m - P_v)$$

psi kPa bar



**Department
of Mechanics**

Turin Polytechnic



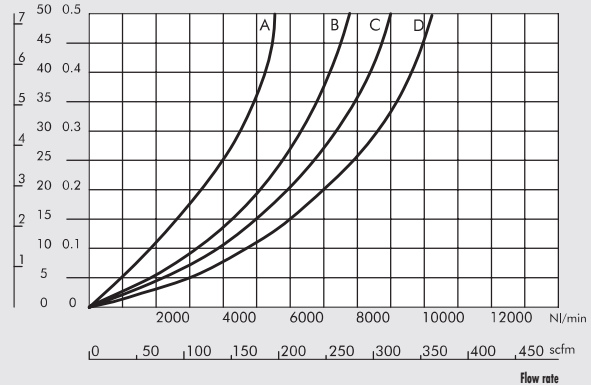
- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
 (B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
 (C) = 6 bar - 0.6 MPa - 87 psi

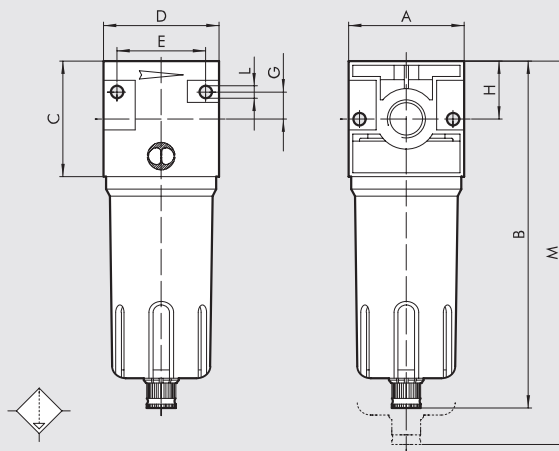
FIL 3/4 - 1"

$$\Delta P = (P_m - P_v)$$

psi kPa bar



DIMENSIONS



		FIL ND 1/4"	FIL ND 3/8"	FIL ND 1/2"	FIL ND 3/4"	FIL ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
A		42	60		80	
B	RMSA	142	180		235	
	RA	-	184		239	
	SAC	146	184		239	
C		42	60		80	
D		42	60		80	
E		32	46		66	
G		10	14		22	
H		21	30		40	
L		Hole for M4 screws	Hole for M4 screws		Hole for M6 screws	
M	RMSA	185	230		325	
	RA	-	234		329	
	SAC	189	234		329	

UNITS

New deal FILTER

SYNOPTIC, SIZES AND VERSIONS

FIL	1/4	4	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDENSATE DRAIN
FIL.	1/4	4 µm 20 µm 50 µm	RMSA
	3/8		SAC
	1/2		RMSA
	3/4		SAC
	1		RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code Description

New deal FILTER 1/4"

1221005 FIL 1/4 4 RMSA
1221013 FIL 1/4 4 SAC
1221006 FIL 1/4 20 RMSA
1221014 FIL 1/4 20 SAC
1221008 FIL 1/4 50 RMSA
1221016 FIL 1/4 50 SAC

New deal FILTER 3/8"

1321005 FIL 3/8 4 RMSA
1321009 FIL 3/8 4 RA
1321013 FIL 3/8 4 SAC
1321006 FIL 3/8 20 RMSA
1321010 FIL 3/8 20 RA
1321014 FIL 3/8 20 SAC
1321008 FIL 3/8 50 RMSA
1321012 FIL 3/8 50 RA
1321016 FIL 3/8 50 SAC

New deal FILTER 1/2"

1421005 FIL 1/2 4 RMSA
1421009 FIL 1/2 4 RA
1421013 FIL 1/2 4 SAC
1421006 FIL 1/2 20 RMSA
1421010 FIL 1/2 20 RA
1421014 FIL 1/2 20 SAC
1421008 FIL 1/2 50 RMSA
1421012 FIL 1/2 50 RA
1421016 FIL 1/2 50 SAC

New deal FILTER 3/4"

1521005 FIL 3/4 4 RMSA
1521009 FIL 3/4 4 RA
1521006 FIL 3/4 20 RMSA
1521010 FIL 3/4 20 RA
1521008 FIL 3/4 50 RMSA
1521012 FIL 3/4 50 RA

New deal FILTER 1"

1621005 FIL 1 4 RMSA
1621009 FIL 1 4 RA
1621006 FIL 1 20 RMSA
1621010 FIL 1 20 RA
1621008 FIL 1 50 RMSA
1621012 FIL 1 50 RA

NOTES

UNITS

New deal FILTER

Newdeal DEPURATOR



- Oil-proof depurator with coalescing cartridge
- Metal bowl with external viewing
- Manual/semi-auto or automatic condensate drain



TECHNICAL DATA		DEP ND 3/8"	DEP ND 1/2"
Threaded port		3/8"	1/2"
Degree of depuration	µm	99.97% a 0.01	
Max. inlet pressure	MPa	1.8	
	bar	18	
	psi	261	
Maximum suggested flow rate		please look at the flow rate curves	
Suggested flow rate at 6 bar	Nl/min	230	
	scfm	8	
Fluid		Filtered air 4 µm	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	kg	0.9	
Wall fixing screws		M4 x 55	
Bowl capacity	cm ³	45	
Mounting position		Vertical	
Drain		RMSA - SAC - RA	
		RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.	
		RA: automatic drain with condensate discharge, independent of pressure and flow rate.	
		Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.	
		SAC: automatic drain with condensate discharge.	
		Operates by pressure drop – requires variable air take-offs.	
		It is advisable to mount a 4 µm filter upstream the depurator acting as a rough filter.	
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	
Note on use			

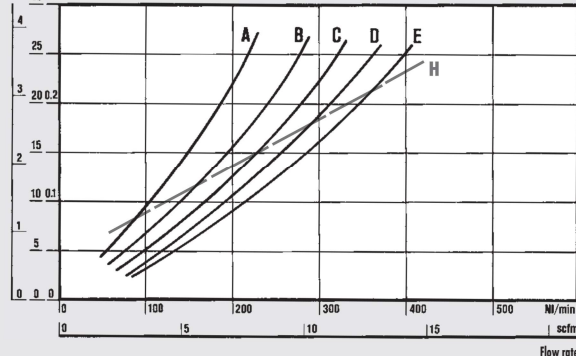
FLOW CHARTS

D 3/8 - 1/2

$\Delta P = (P_m - P_v)$

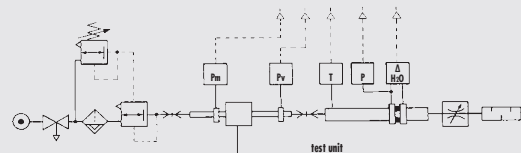
psi kPa bar

30 0.3



Department of Mechanics

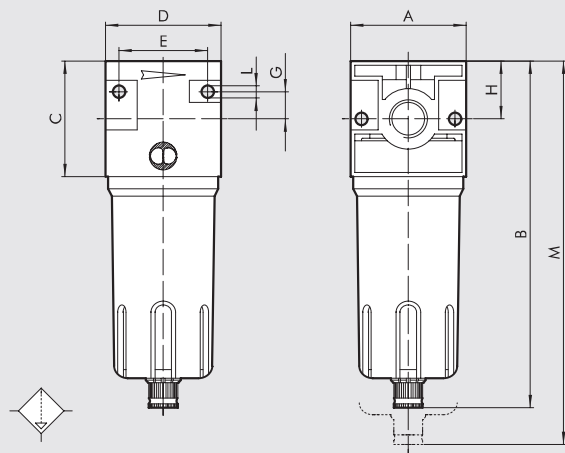
Turin Polytechnic



- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi
- (B) = 4 bar - 0.4 MPa - 58 psi
- (C) = 6 bar - 0.6 MPa - 87 psi
- (D) = 8 bar - 0.8 MPa - 116 psi
- (E) = 10 bar - 1 MPa - 145 psi
- (H) = maximum flow rate recommended for optimal operation

DIMENSIONS



		DEP ND 3/8"	DEP ND 1/2"
Threaded port		3/8"	1/2"
A			60
B	RMSA		180
	RA		184
	SAC		184
C			60
D			60
E			46
G			14
H			30
L		Hole for M4 screws	
M	RMSA		230
	RA		234
	SAC		234

SYNOPTIC, SIZES AND VERSIONS

DEP ELEMENT	3/8 THREADED PORT	RMSA CONDENSATE DRAIN
DEP	3/8 1/2	RMSA RA SAC

RMSA: Manual/semi-auto drain

RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate. Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: Automatic drain. **Operates by pressure drop - requires variable air take-offs.**

ORDERING CODES

Code	Description
DEPURATOR 3/8"	
1322002	DEP 3/8 RMSA
1322003	DEP 3/8 RA
1322004	DEP 3/8 SAC
DEPURATOR 1/2"	
1422002	DEP 1/2 RMSA
1422003	DEP 1/2 RA
1422004	DEP 1/2 SAC

NOTES

Newdeal REGULATOR



Highly reliable, heavy-duty piston-operated regulator.

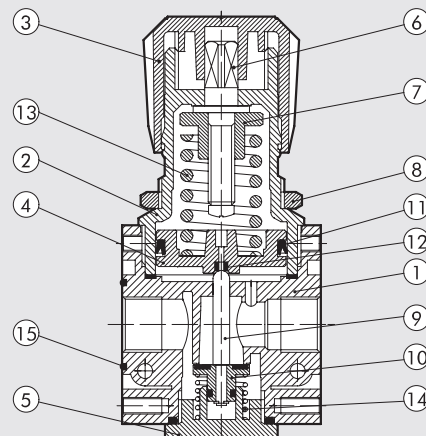
- Stability of the set pressure as the upstream pressure varies
- Standard overpressure blowoff valve
- Can be fixed to the wall using the holes in the sides of the body.



TECHNICAL DATA		REG ND 1/4"	REG ND 3/8"	REG ND 1/2"	REG ND 3/4"	REG ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Setting range	bar	0 to 4 - 0 to 8 - 0 to 12	0 to 4 - 0 to 8 - 0 to 12		0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa	1.8	1.8		1.8	
	bar	18	18		18	
	psi	261	261		261	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	200	1100		2500	
	scfm	7	39		89	
	Nl/min	650	2500		4500	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	scfm	23	89		160	
	°C	50	50		50	
	°F	122	122		122	
Max temperature at 1 MPa; 10 bar; 145 psi	kg	0.3	0.8		1.5	
Weight		M4 x 40	M4 x 55		M6 x 75	
Wall fixing screws		1/8"	1/8"		1/4"	
Gauge port		In any position				
Mounting position		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.				
Fluid		The regulator pressure must always be set upwards.				
Note on use		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.				
		Do not take off air from gauge ports.				

COMPONENTS

- ① Zamak body
- ② Technopolymer bell
- ③ Technopolymer knob
- ④ Technopolymer piston rod
- ⑤ Technopolymer plug
- ⑥ OT58 brass adjusting screw
- ⑦ OT58 brass nut
- ⑧ Ring nut : technopolymer (ND 1/4-3/8-1/2) brass (ND 3/4-1)
- ⑨ OT brass rod
- ⑩ Valve with NBR vulcanized gasket
- ⑪ NBR lip seal
- ⑫ NBR relieving seal
- ⑬ Steel adjusting spring
- ⑭ Steel valve compression spring
- ⑮ NBR gaskets



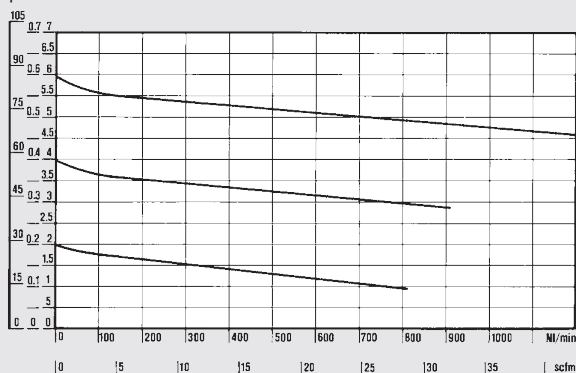
FLOW CHARTS

REG 1/4

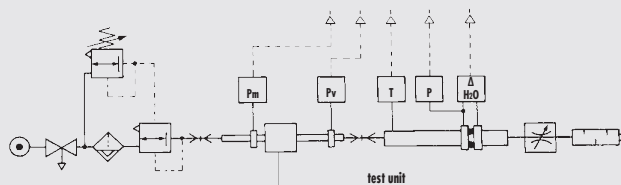
$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$

Inlet pressure

psi MPa bar



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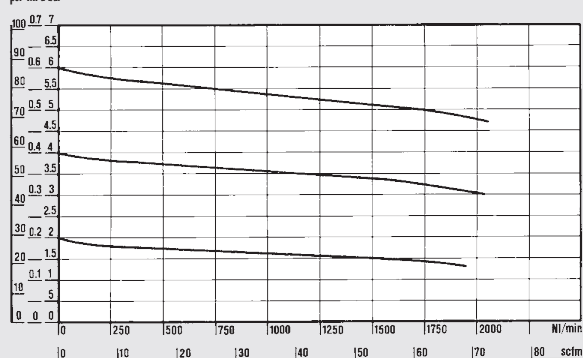
- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

REG 3/8 - 1/2

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$

Inlet pressure

psi MPa bar

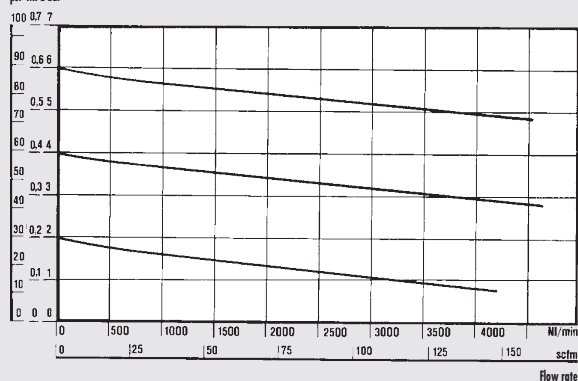


REG 3/4 - 1"

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$

Inlet pressure

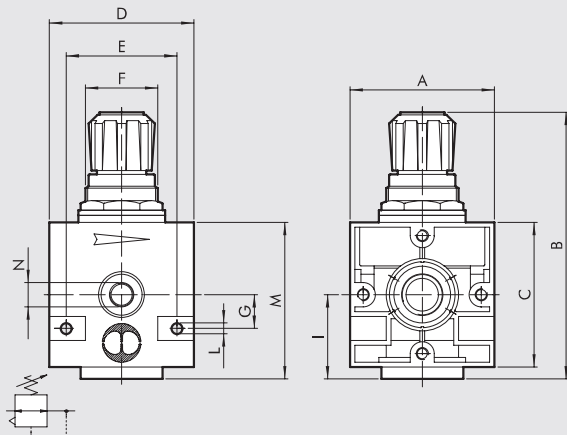
psi MPa bar



UNITS

New deal REGULATOR

DIMENSIONS



	REG ND 1/4"	REG ND 3/8"	REG ND 1/2"	REG ND 3/4"	REG ND 1"
Threaded port	1/4"	3/8"	1/2"	3/4"	1"
A	42	60		80	
B	94	130		184	
C	42	60		80	
D	42	60		80	
E	32	46		66	
F	30 x 1.5	38 x 2		55 x 2	
G	10	14		22	
I	25	35		47	
L	Hole for M4 screws	Hole for M4 screws		Hole for M6 screws	
M	49	70		94	
N (pressure gauge port)	1/8"	1/8"		1/4"	

SYNOPTIC, SIZES AND VERSIONS

REG ELEMENT	1/4 THREADED PORT	04 SETTING RANGE
REG	1/4 3/8 1/2 3/4 1	04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar

ORDERING CODES

Code	Description
New deal REGULATOR 1/4"	
1202001	REG 1/4 04
1202002	REG 1/4 08
1202003	REG 1/4 012
1202004	REG 1/4 02
New deal REGULATOR 3/8"	
1302001	REG 3/8 04
1302002	REG 3/8 08
1302003	REG 3/8 012
New deal REGULATOR 1/2"	
1402001	REG 1/2 04
1402002	REG 1/2 08
1402003	REG 1/2 012
New deal REGULATOR 3/4"	
1502001	REG 3/4 04
1502002	REG 3/4 08
1502003	REG 3/4 012
New deal REGULATOR 1"	
1602001	REG 1 04
1602002	REG 1 08
1602003	REG 1 012

NOTES

UNITS

New deal REGULATOR

New deal PADLOCKABLE REGULATOR

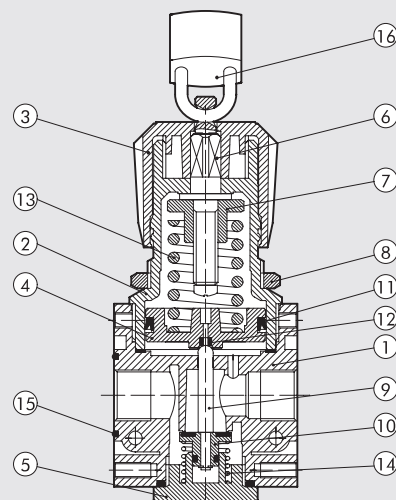
The New deal padlockable regulator has a pin with a hole in it that projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing the knob from being operated. A padlock and two keys are supplied with the regulator.

Refer to the regulator for technical data and flow curves.

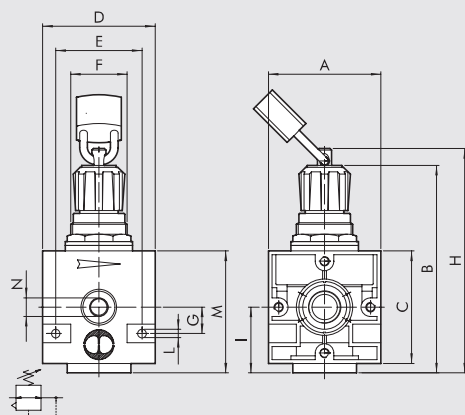


COMPONENTS

- ① Zamak body
- ② Technopolymer bell
- ③ Technopolymer knob
- ④ Technopolymer piston rod
- ⑤ Technopolymer plug
- ⑥ Nickel-plated brass OT58 adjusting screw
- ⑦ OT58 brass nut
- ⑧ Technopolymer ring nut
- ⑨ OT brass rod
- ⑩ Valve with NBR vulcanized gasket
- ⑪ NBR lip seal
- ⑫ NBR relieving seal
- ⑬ Steel adjusting spring
- ⑭ Steel valve compression spring
- ⑮ NBR gaskets
- ⑯ Padlock



DIMENSIONS



	REG KEY ND 1/4"	REG KEY ND 3/8"	REG KEY ND 1/2"
Threaded port	1/4"	3/8"	1/2"
A	42	60	
B	90 to 94	126 to 130	
C	42	60	
D	42	60	
E	32	46	
F	30 x 1.5	38 x 2	
G	10	14	
H	96	131	
I	25	35	
L	Hole for M4 screws	Hole for M4 screws	
M	49	70	
N (pressure gauge port)	1/8"	1/8"	

SYNOPTIC, SIZES AND VERSIONS

REG KEY	1/4 THREADED PORT	02 SETTING RANGE
REG KEY = padlockable regulator	1/4	02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar
	3/8	04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar
	1/2	

ORDERING CODES

Code	Description
New deal PADLOCKABLE REGULATOR 1/4"	
1210011	REG KEY 1/4 02
1210012	REG KEY 1/4 04
1210013	REG KEY 1/4 08
1210014	REG KEY 1/4 012
New deal PADLOCKABLE REGULATOR 3/8"	
1310012	REG KEY 3/8 04
1310013	REG KEY 3/8 08
1310014	REG KEY 3/8 012
New deal PADLOCKABLE REGULATOR 1/2"	
1410012	REG KEY 1/2 04
1410013	REG KEY 1/2 08
1410014	REG KEY 1/2 012

NOTES

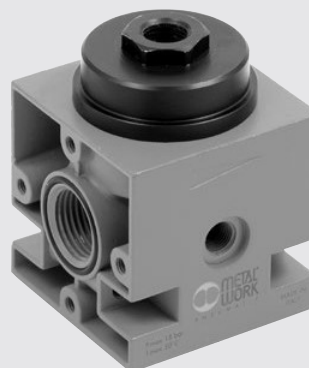
UNITS

New deal PADLOCKABLE REGULATOR

New deal PILOT-OPERATED REGULATOR

Remote pilot-operated regulator for heavy-duty use.

- Stability of the set pressure as the upstream pressure varies;
- Can be fixed to the wall using the holes in the sides of the body.



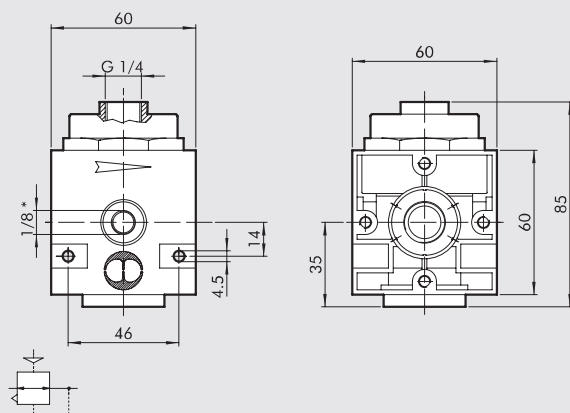
UNITS

New deal PILOT-OPERATED REGULATOR

TECHNICAL DATA

		3/8"	1/2"
Threaded port		Depending on pilot	
Setting range	bar		
Max. inlet pressure	MPa	1.8	
	bar	18	
	psi	261	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	NI/min	3500	
	scfm	124	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	NI/min	4500	
	scfm	160	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	kg	0.8	
Wall fixing screws		M4 x 55	
Gauge port		1/8"	
Mounting position		In any position	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
Note on use		The regulator pressure must always be set upwards. Overpressure relieving from the pilot.	

DIMENSIONS



*Pressure gauge port

ORDERING CODES

Code	Description
1302004	RP 3/8 pilot-operated regulator
1402004	RP 1/2 pilot-operated regulator

New deal REGULATOR AND REGULATOR WITH V3V 3/4"-1"



Piloted regulator with integrated function, manual, electropneumatic or pneumatic stop valve as required.

It performs two functions in the space usually occupied by a single module, which ensures a high flow rate at all ΔP values including low ones.

Extremely quick responses in both discharge and feed.

The integrated pilot regulator is available with controlled leak.

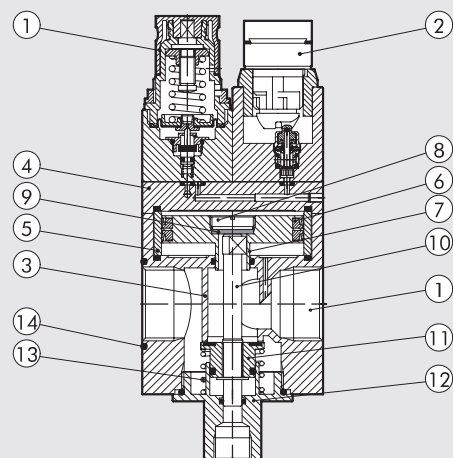


TECHNICAL DATA

		3/4"	1"
Threaded port		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Setting range	bar		
*Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	12000	
	scfm	423	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	13000	
	scfm	460	
Fluid		Lubricated or unlubricated filtered air. If lubrication is used, it must be continuous.	
Drain flow rate at 6 bar (0.6 MPa to 87 psi)	Nl/min	1800	
	scfm	64	
Max temperature at 10 bar (1 Mpa to 145 psi)	°C	50	
	°F	122	
Weight	kg	1.7	
Wall fixing screws		M6 x 75	
Mounting position		In any position	
Note on use		Do not take air from pressure gauge ports.	
* Version Reg + V3V Cnomo (1 Mpa - 10 bar - 145 psi)			

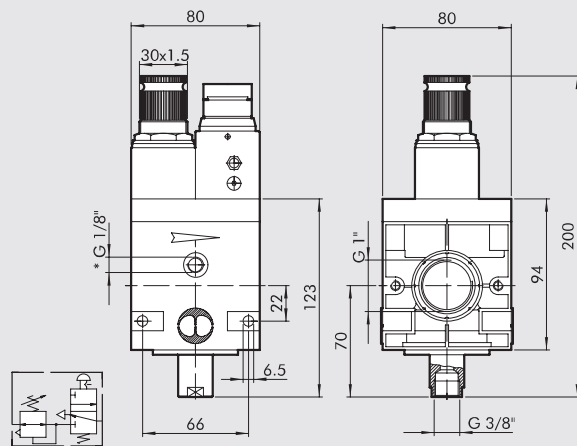
COMPONENTS

- ① Pilot Reg. sub-assembly
- ② Manual V3V control sub-assembly
- ③ Aluminium regulator body
- ④ Aluminium upper plate
- ⑤ Aluminium spacer
- ⑥ NBR lip seal
- ⑦ Aluminium Ø 63 piston rod
- ⑧ Cap for OT 58 brass plain gasket
- ⑨ NBR plain gasket
- ⑩ OT 58 brass rod
- ⑪ OT 58 brass valve
- ⑫ Aluminium lower cap
- ⑬ Steel valve compression spring
- ⑭ NBR gaskets



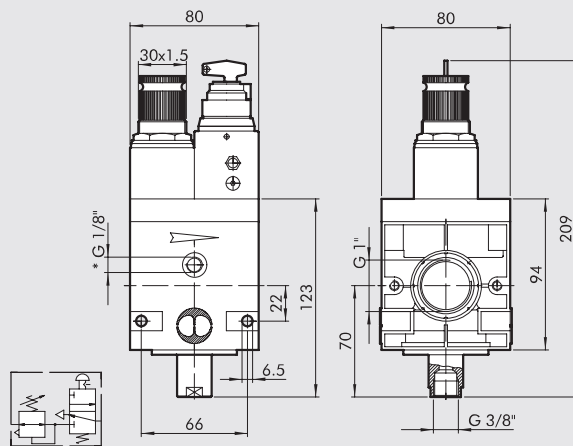
DIMENSIONS

REG P + V3V MANUAL



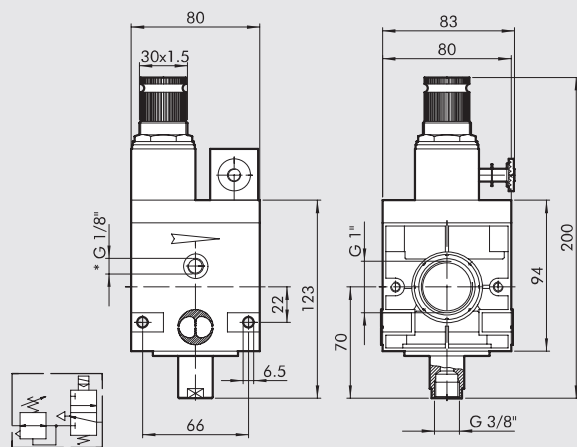
*Pressure gauge port

REG P + V3V KEY



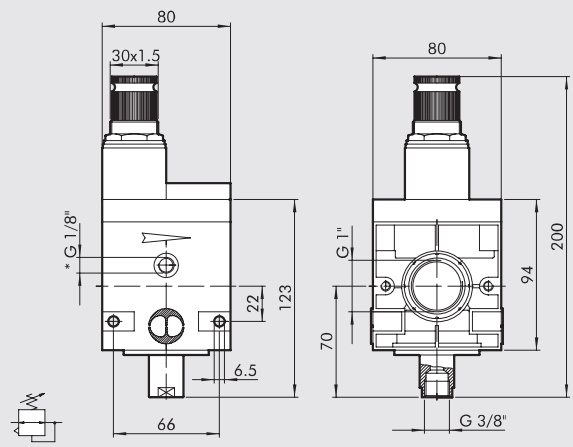
*Pressure gauge port

REG P + V3V ELPN CNOMO



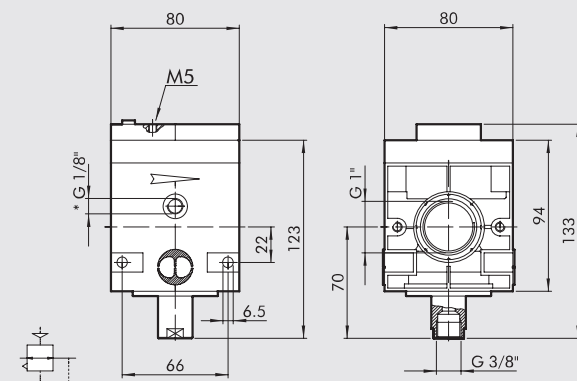
*Pressure gauge port

REG P



*Pressure gauge port

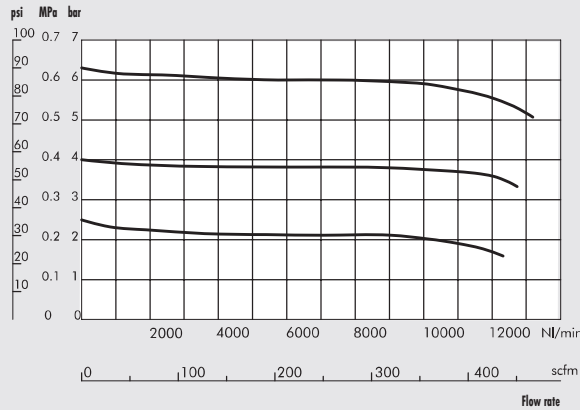
REG P 00



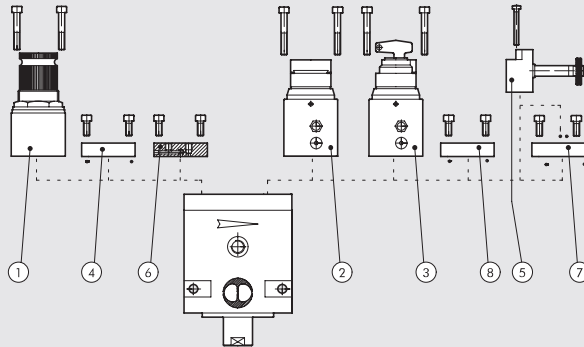
*Pressure gauge port

FLOW CHARTS

$P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$
Inlet pressure



ASSEMBLY OPTIONS



This modular system makes it possible to make the following combinations:

- Regulator with pilot regulator ① or remote control ③, the end plate is mounted on the right-hand side ⑧.
- V3V with manual lever-operated control ② or key control ③ or solenoid CNOMO ⑤, the end plate is mounted on the left-hand side ④.
- Regulator + V3V is the result of the free combination of the versions specified above.

	Code	Description
①	9640501-02-03-04	Pilot regulator kit
②	9640401	V3V manual lever-operated control kit
③	9640301	V3V manual key-operated control kit
④	9640101	End plate kit for V3V
⑤	9453922	V3V ELPN CNOMO bistable control kit
⑤	9453920	V3V ELPN CNOMO monostable control kit
⑥	9640001	Remote control plate kit
⑦	9640201	Plate kit to mount Cnomo rotated by 180°
⑧	9640101	End plate kit for piloted regulator

SYNOPTIC, SIZES AND VERSIONS

RV3V ELEMENT	1 THREADED PORT	02 SETTING RANGE	ELPN ELPN V3V CONTROL
RV3V REGP	1" 3/4"	00 = without pilot 02 = 0 to 2 bar 04 = 0 to 4 bar 08 = 0 to 8 bar 012 = 0 to 12 bar	ELPN KEY MANUAL

RV3V: Regulator with built-in shut-off valve.

ELPN: CNOMO solenoid

REGP: Pilot-operated regulator

ORDERING CODES

Code Description

New deal PILOT-OPERATED REGULATOR 3/4"

1519001 REGP 3/4 00

1518001 REGP 3/4 02

1518002 REGP 3/4 04

1518003 REGP 3/4 08

1518004 REGP 3/4 012

New deal REGULATOR WITH BUILT-IN SHUT-OFF VALVE 3/4"

1517001 RV3V 3/4 02 ELPN

1517002 RV3V 3/4 04 ELPN

1517003 RV3V 3/4 08 ELPN

1516101 RV3V 3/4 02 key

1516102 RV3V 3/4 04 key

1516103 RV3V 3/4 08 key

1516104 RV3V 3/4 012 key

1516001 RV3V 3/4 02 manual

1516002 RV3V 3/4 04 manual

1516003 RV3V 3/4 08 manual

1516004 RV3V 3/4 012 manual

New deal PILOT-OPERATED REGULATOR 1"

1619001 REGP 1 00

1618001 REGP 1 02

1618002 REGP 1 04

1618003 REGP 1 08

1618004 REGP 1 012

New deal REGULATOR WITH BUILT-IN SHUT-OFF VALVE 1"

1617001 RV3V 1 02 ELPN

1617002 RV3V 1 04 ELPN

1617003 RV3V 1 08 ELPN

1616101 RV3V 1 02 key

1616102 RV3V 1 04 key

1616103 RV3V 1 08 key

1616104 RV3V 1 012 key

1616001 RV3V 1 02 manual

1616002 RV3V 1 04 manual

1616003 RV3V 1 08 manual

1616004 RV3V 1 012 manual

New deal FILTER REGULATOR

Highly reliable piston-operated filter regulator.

- Stability of the set pressure as the upstream pressure varies
- Standard overpressure blow-off valve
- Can be fixed to the wall using the holes in the sides of the body
- Metal bowl with external viewing
- Manual/semi-auto or automatic condensate drainage

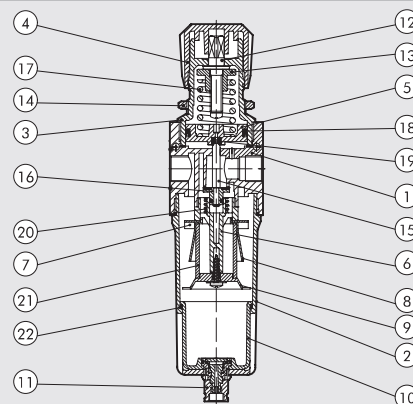


TECHNICAL DATA

		FR ND 1/4"	FR ND 3/8"	FR ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	260		1000
	scfm	9.2		35.5
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	700		2500
	scfm	25		88.5
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	kg	0.5		1
Wall fixing screws		M4 x 40		M4 x 55
Gauge port		1/8"		1/8"
Bowl capacity	cm ³	10		45
Mounting position		Vertical		Vertical
Drain		RMSA - SAC		RMSA - SAC - RA
RMSA: drain with manual condensate discharge and automatic discharge at zero pressure				
RA: automatic drain with condensate discharge, independent of pressure and flow rate.				
Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.				
SAC: automatic drain with condensate discharge.				
Operates by pressure drop – requires variable air take-offs.				
Compressed air				
The regulator pressure must always be set upwards.				
The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar. Do not take air from pressure gauge ports.				
Fluid				
Note on use				

COMPONENTS

- | | |
|------------------------------|------------------------------------|
| ① Zamak body | ⑫ Valve with NBR vulcanized gasket |
| ② Aluminium bowl | ⑬ Steel adjusting spring |
| ③ Technopolymer bell | ⑭ NBR lip seal |
| ④ Technopolymer knob | ⑮ NBR relieving seal |
| ⑤ Technopolymer piston rod | ⑯ Steel valve compression spring |
| ⑥ Technopolymer plug | ⑰ Sintered HDPE filter cartridge |
| ⑦ Technopolymer centrifuge | ⑱ NBR gaskets |
| ⑧ Technopolymer baffle plug | |
| ⑨ Technopolymer screen | |
| ⑩ Technopolymer bowl | |
| ⑪ Drain (RMSA) | |
| ⑫ OT58 brass adjusting screw | |
| ⑬ OT58 brass nut | |
| ⑭ Technopolymer ring nut | |
| ⑮ OT58 brass rod | |



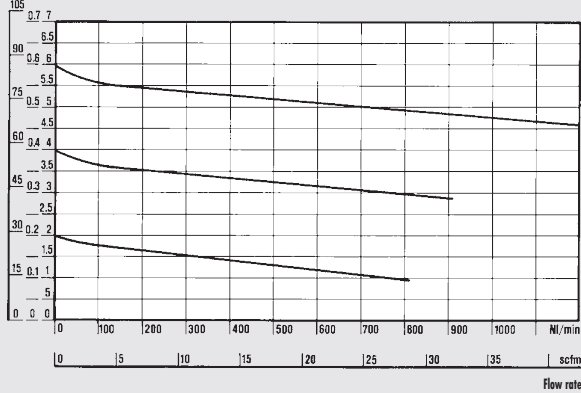
FLOW CHARTS

FR 1/4

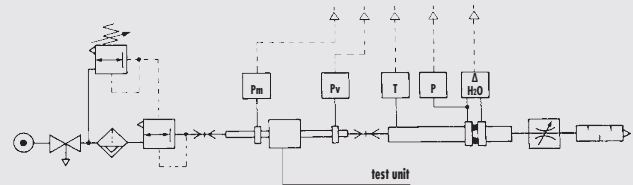
 $P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$

Inlet pressure

psi MPa bar


**Department
of Mechanics**

Turin Polytechnic



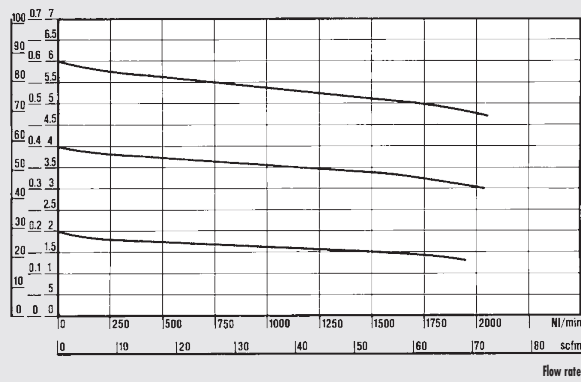
- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

FR 3/8 - 1/2

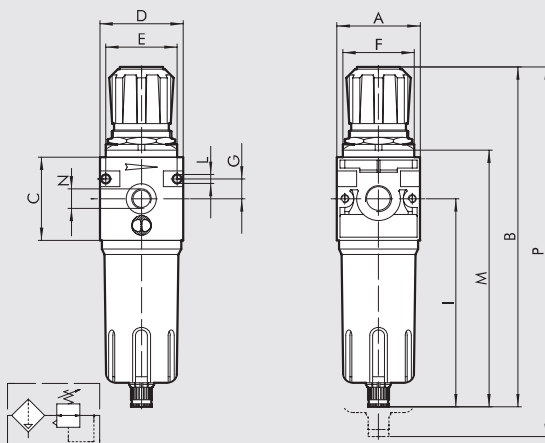
 $P_m = 0.7 \text{ MPa} - 7 \text{ bar} - 100 \text{ psi}$

Inlet pressure

psi MPa bar



DIMENSIONS



		FR ND 1/4"	FR ND 3/8"	FR ND 1/2"
Threaded port		1/4"	3/8"	1/2"
A		42		60
B	RMSA	190		245
	RA	-		249
	SAC	194		249
C		42		60
D		42		60
E		36		52
F		30 x 1.5		38 x 2
G		10		14
I		121		150
L		Hole for M4 screws		Hole for M4 screws
M	RMSA	145		185
	RA	-		189
	SAC	149		189
N (Pressure gauge port)		1/8"		1/8"
P	RMSA	233		295
	RA	-		299
	SAC	237		299

SYNOPTIC, SIZES AND VERSIONS

FR ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTRATION	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FR	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RA*

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

* For ND 3/8 and 1/2 with RA, please contact our sales assistance department

ORDERING CODES

Code Description

New deal **FILTER REGULATOR 1/4"**

1225029 FR 1/4 4 08 RMSA

1225053 FR 1/4 4 012 RMSA

1225509 FR 1/4 4 08 SAC

1225513 FR 1/4 4 012 SAC

1225030 FR 1/4 20 08 RMSA

1225510 FR 1/4 20 08 SAC

1225054 FR 1/4 20 012 RMSA

1225514 FR 1/4 20 012 SAC

1225032 FR 1/4 50 08 RMSA

1225511 FR 1/4 50 08 SAC

1225056 FR 1/4 50 012 RMSA

1225516 FR 1/4 50 012 SAC

New deal **FILTER REGULATOR 3/8"**

1325029 FR 3/8 4 08 RMSA

1325509 FR 3/8 4 08 SAC

1325053 FR 3/8 4 012 RMSA

1325513 FR 3/8 4 012 SAC

1325030 FR 3/8 20 08 RMSA

1325510 FR 3/8 20 08 SAC

1325054 FR 3/8 20 012 RMSA

1325514 FR 3/8 20 012 SAC

1325032 FR 3/8 50 08 RMSA

1325512 FR 3/8 50 08 SAC

1325056 FR 3/8 50 012 RMSA

1325516 FR 3/8 50 012 SAC

New deal **FILTER REGULATOR 1/2"**

1425029 FR 1/2 4 08 RMSA

1425509 FR 1/2 4 08 SAC

1425053 FR 1/2 4 012 RMSA

1425513 FR 1/2 4 012 SAC

1425030 FR 1/2 20 08 RMSA

1425510 FR 1/2 20 08 SAC

1425054 FR 1/2 20 012 RMSA

1425514 FR 1/2 20 012 SAC

1425032 FR 1/2 50 08 RMSA

1425512 FR 1/2 50 08 SAC

1425056 FR 1/2 50 012 RMSA

1425516 FR 1/2 50 012 SAC

NOTES

UNITS

New deal FILTER REGULATOR

Newdeal LUBRICATOR



Lubricator with high lubrication stability.

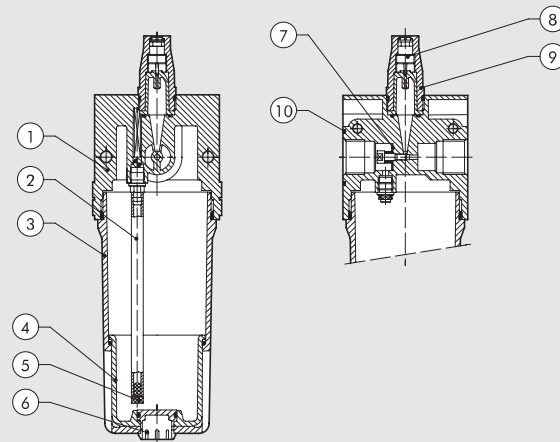
- Quantity of lubricant proportioned to air flow
- Micrometric regulation of lubricant flow
- Activates at low flow rates
- All-round oil level viewing



TECHNICAL DATA		LUB ND 1/4"	LUB ND 3/8"	LUB ND 1/2"	LUB ND 3/4"	LUB ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Type of lubrication		Mist		Mist		Mist
Bowl capacity	cm ³	50	150		380	
Max. inlet pressure	MPa	1.8	1.8		1.8	
	bar	18	18		18	
	psi	261	261		261	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	700	3000		12800	
	scfm	25	107		452	
Flow rate at 6 bar (0.6 MPa to 87 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1100	4300		16000	
	scfm	39	153		565	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50		50	
	°F	122	122		122	
Weight	kg	0.4	0.9		1.3	
Wall fixing screws		M4 x 40	M4 x 55		M6 x 75	
Mounting position		Vertical				
Fluid		Filtered compressed air				
Note on use:		• Use the screw provided to set the drip rate to drop every 300-600 Nl. • Fit the lubricator as close as possible to the point of use • Fill the bowl with oil before pressurizing the system • Do not use cleaning oil, brake fluid or solvents in general				
		• Recommended lubricants: ISO and UNI FD22 - E.g. Energal HLP 22 (BP) - Spinesso 22 (Esso) - Mobil DTE 22 (Mobil) - Tellus Oil 22 (Shell)				

COMPONENTS

- ① Zamak body
- ② Rilsan® oil suction pipe
- ③ Aluminium bowl
- ④ Clear technopolymer bowl
- ⑤ Filter
- ⑥ Technopolymer plug
- ⑦ Venturi NBR diaphragm
- ⑧ OT 58 brass oil flow regulation needle
- ⑨ Clear technopolymer cover
- ⑩ NBR gaskets



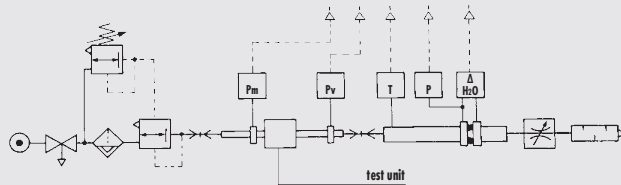
UNITS

New deal LUBRICATOR

FLOW CHARTS



**Department
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Turin Polytechnic



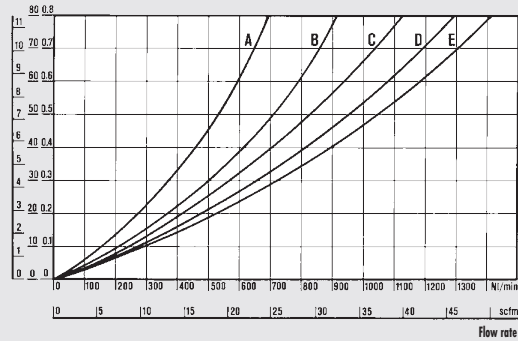
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

- (A) = 2 bar - 0.2 MPa - 29 psi (D) = 8 bar - 0.8 MPa - 116 psi
(B) = 4 bar - 0.4 MPa - 58 psi (E) = 10 bar - 1 MPa - 145 psi
(C) = 6 bar - 0.6 MPa - 87 psi

LUB 1/4

$$\Delta P = (P_m - P_v)$$

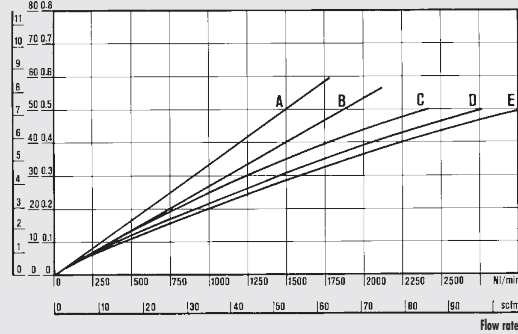
psi kPa bar



LUB 3/8 - 1/2

$$\Delta P = (P_m - P_v)$$

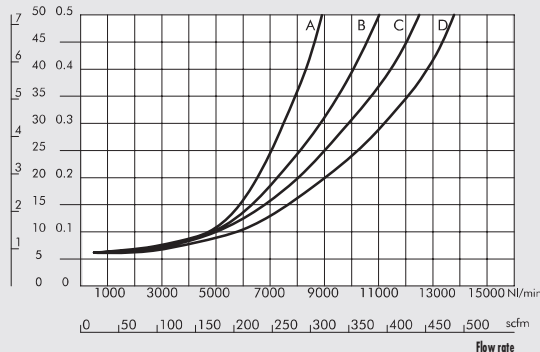
psi kPa bar



LUB 3/4 - 1"

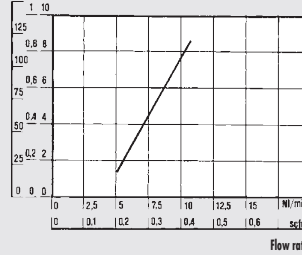
$$\Delta P = (P_m - P_v)$$

psi kPa bar



Pm

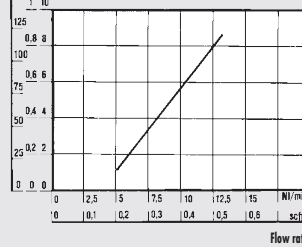
psi kPa bar

MINIMUM ACTIVATION
FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

Pm

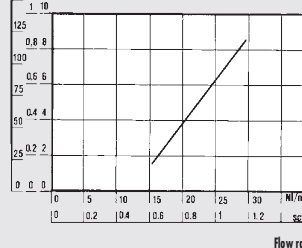
psi kPa bar

MINIMUM ACTIVATION
FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

Pm

psi kPa bar

MINIMUM ACTIVATION
FLOW CHARTS

The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

UNITS

New deal LUBRICATOR

Technical drawings of the 1000 Series Solenoid Valve. The left drawing is a front view showing dimensions: D (total width), E (width of the top flange), C (height of the main body), L (height of the solenoid coil), and G (height of the base). The right drawing is a side view showing dimensions: A (width of the top flange), B (height of the main body), and M (total height including the base). Both views show a solenoid coil on top of a main body with a port and a base with mounting feet.

[illegible]

Code	Description
1223001	LUB 1/4
1323001	LUB 3/8
1423001	LUB 1/2
1523001	LUB 3/4
1623001	LUB 1

New deal LUBRICATOR

Newdeal SHUT-OFF VALVE

Manually-operated circuit shut-off valve.

- Poppet seat system to ensure high flow rate
- Quick-actuation knob
- Possible triple locking
- The valve is actuated by pressing the actuation disk until it clicks. Press the knob downwards to relieve pressure. In this position you can extract the shim and fit a lock to avoid accidental operation.

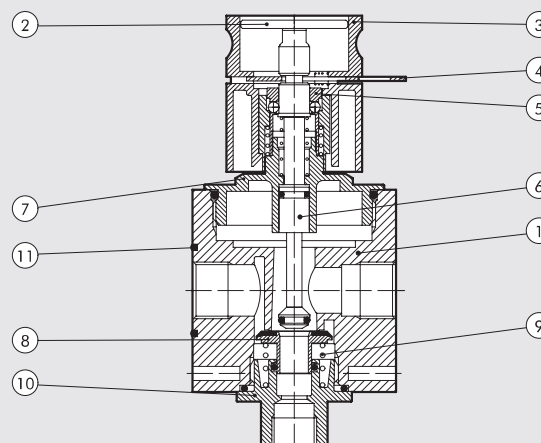


TECHNICAL DATA

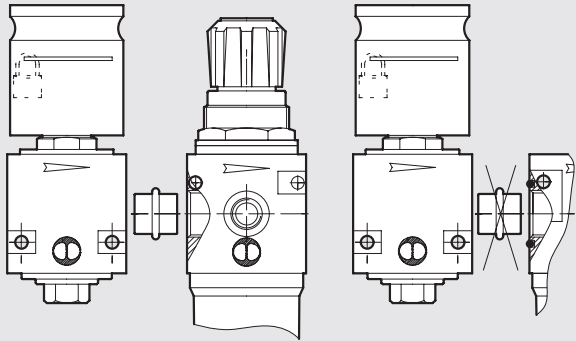
		V3V ND 1/4"	V3V ND 3/8"	V3V ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	1100		2200
	scfm	38.8		78
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1500		2900
	scfm	53		103
Flow rate on relieving at 6 bar (0.6 MPa to 87 psi) with direct relieving into the atmosphere	Nl/min	1600		2900
	scfm	56.5		103
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	kg	0.35		0.8
Wall fixing screws		M4 x 40		M4 x 55
Mounting position		In any position		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
Type of control		Manual		

COMPONENTS

- ① Zamak body
- ② Actuation disk
- ③ Technopolymer knob
- ④ Stainless steel safety shim
- ⑤ Clutching unit
- ⑥ OT 58 brass rod
- ⑦ Upper anodized aluminium plug
- ⑧ V3V valve with NBR vulcanized gasket
- ⑨ Stainless steel valve compression spring
- ⑩ Lower anodized aluminium plug
- ⑪ NBR gaskets



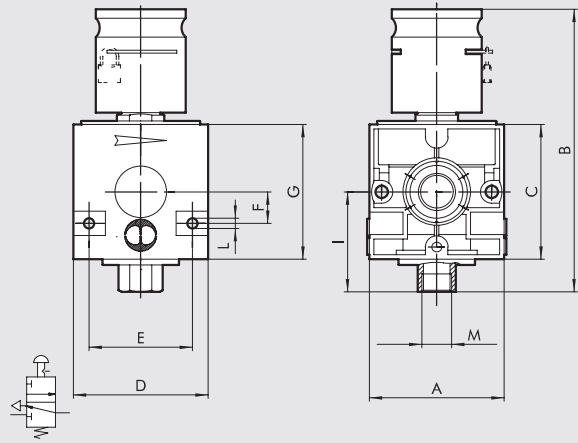
ASSEMBLY DIAGRAM



To assemble the V3V to the regulator filter 1/4", or depurator 3/8-1/2, use the adaptor provided (see the assembly diagram at the left).

Adaptor V3V + FR 1/4" - code 9201001
 Adaptor V3V + D 3/8" - code 9401001
 Adaptor V3V + D 1/2" - code 9401002

DIMENSIONS



	V3V ND 1/4"	V3V ND 3/8"	V3V ND 1/2"
Threaded port	1/4"	3/8"	1/2"
A	42		60
B	105		126
C	42		60
D	42		60
E	32		46
F	10		14
G	42		60
I	32		43
L	Hole for M4 screws	Hole for M4 screws	
M	1/8"	1/4"	

ORDERING CODES

Code	Description
1270001	V3V ND 1/4
1370001	V3V ND 3/8
1470001	V3V ND 1/2

NOTES

UNITS

New deal SHUT-OFF VALVE

Newdeal 3/4"-1" SHUT-OFF VALVE

Circuit cut-off valve with three different controls:

- CNOMO electropneumatic
- Manual key-operated
- Manual lever-operated

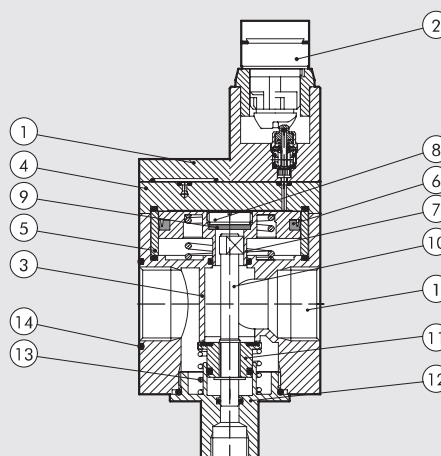


TECHNICAL DATA

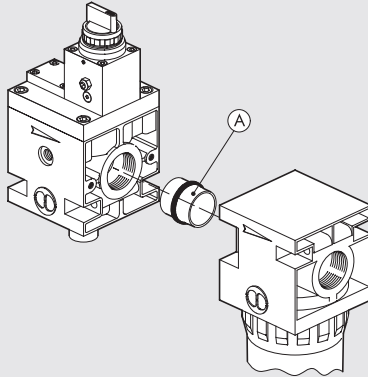
		V3V ND 3/4"	V3V ND 1"
Threaded port		3/4"	1"
Max. inlet pressure*	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	7600	
	scfm	268	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	10200	
	scfm	360	
Flow rate on relief at 6 bar (0.6 MPa; 87 psi)	Nl/min	1800	
	scfm	64	
Weight	kg	2.2	
Wall fixing screws		M6 x 75	
Mounting position		In any position	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.	
*V3V CNOMO -10 bar - 1 MPa - 145 Psi			

COMPONENTS

- ① V3V plate
- ② V3V manual sub-assembly control
- ③ V3V aluminium body
- ④ Aluminium top plate
- ⑤ Aluminium spacer
- ⑥ NBR lip seal
- ⑦ Aluminium piston rod
- ⑧ Cap for OT 58 brass plain gasket
- ⑨ NBR plain gasket
- ⑩ OT 58 brass rod
- ⑪ OT 58 brass valve
- ⑫ Aluminium bottom cap
- ⑬ Steel valve spring
- ⑭ NBR gaskets



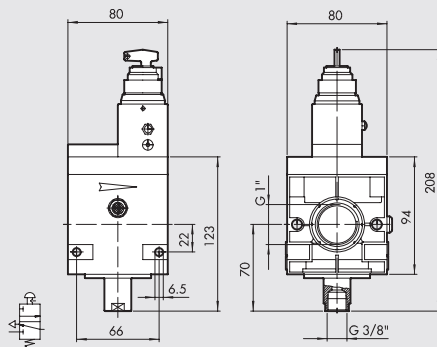
ASSEMBLY DIAGRAM V3V + F



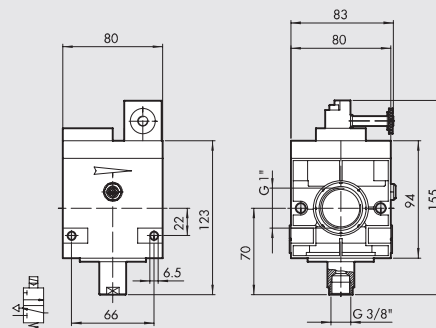
A= V3V ADAPTER + FIL 1" – code 9601001
to be used with filters not having o-ring seat

DIMENSIONS

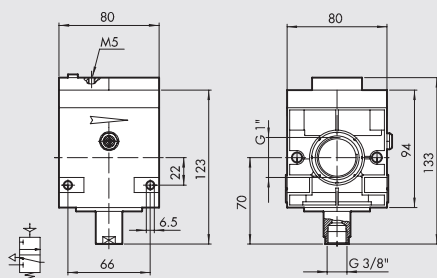
V3V 3/4"-1" KEY-OPERATED CONTROL



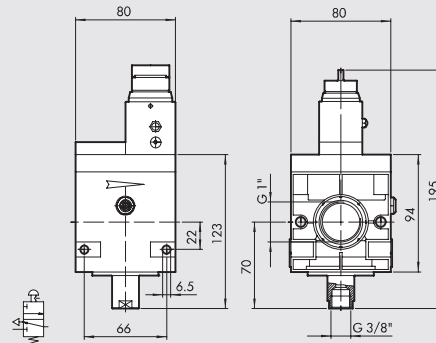
V3V 3/4"-1" ELPN CNOMO



V3V 3/4"-1" PNEUMATIC



V3V 3/4"-1" MANUAL CONTROL



SYNOPTIC, SIZES AND VERSIONS

RV3V ELEMENT	3/4 THREADED PORT	ELPN CONTROL V3V
V3V	3/4" 1"	ELPN Key Manual Pneumatic

ORDERING CODES

Code	Description
SHUT-OFF VALVE New deal 3/4"	
1575001	V3V 3/4 ELPN Cnomo
1574101	V3V 3/4 key
1574001	V3V 3/4 manual
1576001	V3V 3/4 pneumatic
SHUT-OFF VALVE New deal 1"	
1675001	V3V 1 ELPN Cnomo
1674101	V3V 1 key
1674001	V3V 1 manual
1676001	V3V 1 pneumatic

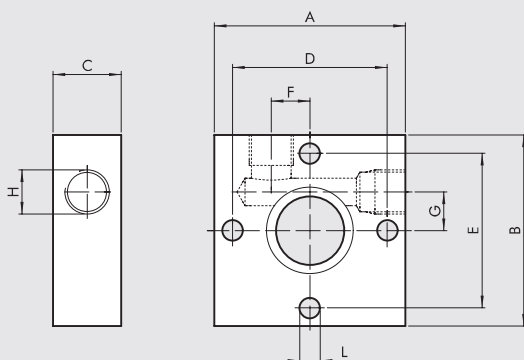
Newdeal AIR TAKE-OFF

The air take-off has the job to take off the air from the Newdeal FRL unit irrespective of the position where it is assembled. It is required whenever you need to take off air from the FRL unit at different stages of the treatment (normal, filtered, filtered regulated, lubricated, etc.)



TECHNICAL DATA		PA ND 1/4"	PA ND 3/8"	PA ND 1/2"	PA ND 3/4"	PA ND 1"
Threaded port		1/8"	1/4"		1/2"	
Maximum working temperature at: 1 MPa; 10 bar; 145 psi	°C	50	50		50	
	°F	122	122		122	
Maximum admissible pressure	MPa	1.8	1.8		1.8	
	bar	18	18		18	
	psi	261	261		261	
Weight	kg	0.06	0.18		0.41	

DIMENSIONS



	PA ND 1/4"	PA ND 3/8"	PA ND 1/2"	PA ND 3/4"	PA ND 1"
Threaded port	1/8"	1/4"		1/2"	
A	42	60		80	
B	42	60		80	
C	15	20		30	
D	34	49		64	
E	34	49		64	
F	8.5	14		16	
G	8.5	14		16	
H (n° 2 pos.)	1/8"	1/4"		1/2"	
L	Hole for M4 screws	Hole for M5 screws		Hole for M6 screws	

ORDERING CODES

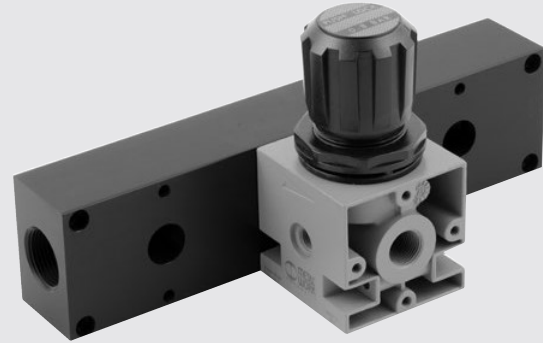
Code	Description
9200401	PA 1/4 take-off
9400401	PA 1/2 take-off
9600401	PA 3/4 take-off

Comes with 2 screws for F/L and R/FR fixing.

New deal SUB-BASE

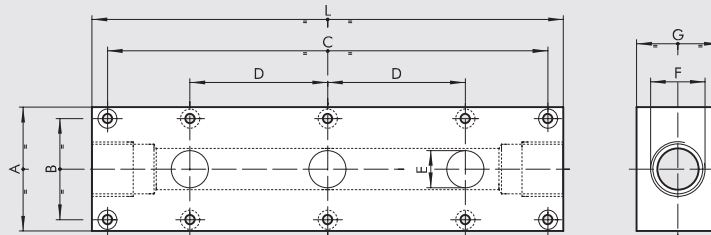


With the New deal sub-base, more than one regulators can be mounted in parallel using a single pressure supply source.

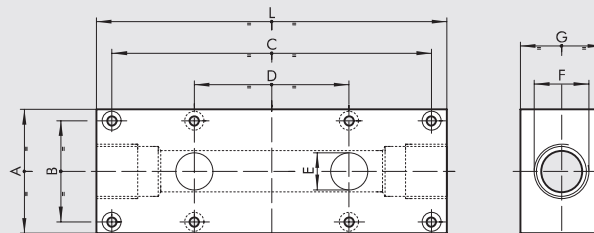


DIMENSIONS

3 POSITION



2 POSITION



	ND 1/4"		ND 3/8" - 1/2"		ND 3/4" - 1"	
	2 positions	3 positions	2 positions	3 positions	2 positions	3 positions
A	50	50	60	60	80	80
B	34	34	49	49	64	64
C	113	165	155	230	190	280
D	52	52	75	75	90	90
E	1/4"	1/4"	18	18	31	31
F	1/2"	1/2"	3/4"	3/4"	1 1/4"	1 1/4"
G	30	30	40	40	50	50
L	128	180	170	245	210	300
Weight [kg]	0.45	0.62	0.94	1.4	1.5	1.7

ORDERING CODES

Code	Description
9200201	SB 1/4 sub-base 2 pos.
9400201	SB 1/2 sub-base 2 pos.
9600201	SB 3/4 sub-base 2 pos.
9200301	SB 1/4 sub-base 3 pos.
9400301	SB 1/2 sub-base 3 pos.
9600301	SB 3/4 sub-base 3 pos.

New deal AUTOMATIC CONDENSATE DRAIN

System supply condensate drain:

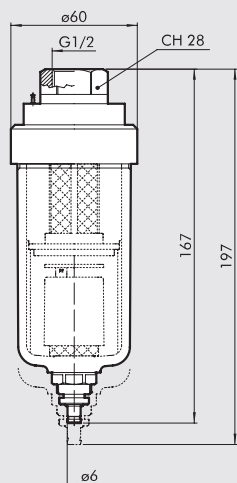
- All-round condensate level viewing
- Automatic drain from inside the bowl
- Axial coupling



TECHNICAL DATA

Threaded port		1/2"
Maximum working temperature at: 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Maximum admissible pressure	MPa	1
	bar	10
	psi	145
Weight	kg	0.5

DIMENSIONS



ORDERING CODES

Code	Description
4589003	Autom. cond. drain 1/2 in line

FIL + REG + LUB Newdeal



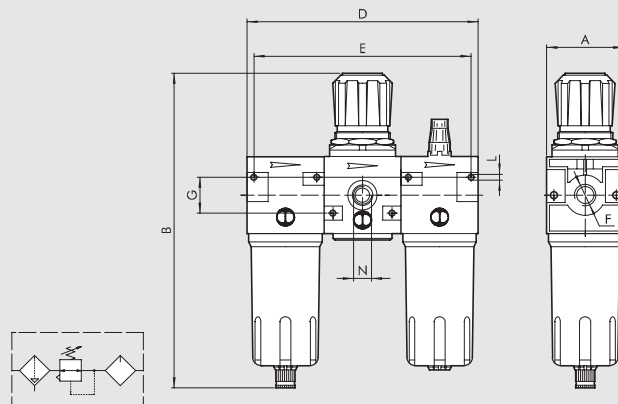
Highly reliable heavy-duty piston-operated FRL unit.

- Stability of the set pressure as the upstream pressure varies
 - Metal bowl with external sight glass
 - Semi-automatic and automatic condensate drain
 - Lubrication proportional to flow rate
 - Micrometric lubrication regulation
 - Activation guaranteed with low flow rates
- Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		FRL ND 1/4"	FRL ND 3/8"	FRL ND 1/2"	FRL ND 3/4"	FRL ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Setting range	bar	0 to 8 - 0 to 12	0 to 8 - 0 to 12	0 to 8 - 0 to 12	0 to 8 - 0 to 12	0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50	4 - 20 - 50
Max. inlet pressure	MPa	1.8	1.8	1.8	1.8	1.8
	bar	18	18	18	18	18
	psi	261	261	261	261	261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	140	1300	1900	2000	2000
	scfm	5	46	68	71	71
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	400	2000	3600	3700	3700
	scfm	14.2	71	128	132	132
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50	50	50	50
	°F	122	122	122	122	122
Weight	kg	1	2.5	4	4	4
Wall fixing screws		M4 x 40	M4 x 55	M6 x 75	M6 x 75	M6 x 75
Fluid		Compressed air				
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				
		Do not take air from pressure gauge ports.				

DIMENSIONS



	FRL ND 1/4"	FRL ND 3/8"	FRL ND 1/2"	FRL ND 3/4"	FRL ND 1"
Threaded port F	1/4"	3/8"	1/2"	3/4"	1"
A	42	60	80	80	80
B	190	245	332	332	332
RMSA	-	249	336	336	336
RA	-	249	336	336	336
SAC	194	249	336	336	336
D	126	180	240	240	240
E	116	166	226	226	226
G	20	28	44	44	44
L	Hole for M4 screws	Hole for M4 screws	Hole for M4 screws	Hole for M6 screws	Hole for M6 screws
N (pressure gauge port)	1/8"	1/8"	1/4"	1/4"	1/4"

SYNOPTIC, SIZES AND VERSIONS

FRL ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTRATION	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FRL	1/4	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA RMSA RA
	3/8			
	1/2			
	3/4			
	1			

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description	Code	Description	Code	Description
FRL 1/4"		FRL 3/8"		FRL 3/4"	
1224029	FRL 1/4 4 08 RMSA	1324029	FRL 3/8 4 08 RMSA	1524017	FRL 3/4 4 08 RMSA
1224409	FRL 1/4 4 08 SAC	1324033	FRL 3/8 4 08 RA	1524021	FRL 3/4 4 08 RA
1224030	FRL 1/4 20 08 RMSA	1324409	FRL 3/8 4 08 SAC	1524018	FRL 3/4 20 08 RMSA
1224410	FRL 1/4 20 08 SAC	1324030	FRL 3/8 20 08 RMSA	1524022	FRL 3/4 20 08 RA
1224032	FRL 1/4 50 08 RMSA	1324034	FRL 3/8 20 08 RA	1524020	FRL 3/4 50 08 RMSA
1224412	FRL 1/4 50 08 SAC	1324410	FRL 3/8 20 08 SAC	1524024	FRL 3/4 50 08 RA
1224053	FRL 1/4 4 012 RMSA	1324032	FRL 3/8 50 08 RMSA	1524029	FRL 3/4 4 012 RMSA
1224413	FRL 1/4 4 012 SAC	1324036	FRL 3/8 50 08 RA	1524033	FRL 3/4 4 012 RA
1224054	FRL 1/4 20 012 RMSA	1324412	FRL 3/8 50 08 SAC	1524030	FRL 3/4 20 012 RMSA
1224414	FRL 1/4 20 012 SAC	1324053	FRL 3/8 4 012 RMSA	1524034	FRL 3/4 20 012 RA
1224056	FRL 1/4 50 012 RMSA	1324057	FRL 3/8 4 012 RA	1524032	FRL 3/4 50 012 RMSA
1224416	FRL 1/4 50 012 SAC	1324413	FRL 3/8 4 012 SAC	1524036	FRL 3/4 50 012 RA
		1324054	FRL 3/8 20 012 RMSA	FRL 1"	
		1324058	FRL 3/8 20 012 RA	1624017	FRL 1 4 08 RMSA
		1324414	FRL 3/8 20 012 SAC	1624021	FRL 1 4 08 RA
		1324056	FRL 3/8 50 012 RMSA	1624018	FRL 1 20 08 RMSA
		1324060	FRL 3/8 50 012 RA	1624022	FRL 1 20 08 RA
		1324416	FRL 3/8 50 012 SAC	1624020	FRL 1 50 08 RMSA
		FRL 1/2"		1624024	FRL 1 50 08 RA
		1424029	FRL 1/2 4 08 RMSA	1624029	FRL 1 4 012 RMSA
		1424033	FRL 1/2 4 08 RA	1624033	FRL 1 4 012 RA
		1424409	FRL 1/2 4 08 SAC	1624030	FRL 1 20 012 RMSA
		1424030	FRL 1/2 20 08 RMSA	1624034	FRL 1 20 012 RA
		1424034	FRL 1/2 20 08 RA	1624032	FRL 1 50 012 RMSA
		1424410	FRL 1/2 20 08 SAC	1624036	FRL 1 50 012 RA
		1424032	FRL 1/2 50 08 RMSA		
		1424036	FRL 1/2 50 08 RA		
		1424412	FRL 1/2 50 08 SAC		
		1424053	FRL 1/2 4 012 RMSA		
		1424057	FRL 1/2 4 012 RA		
		1424413	FRL 1/2 4 012 SAC		
		1424054	FRL 1/2 20 012 RMSA		
		1424058	FRL 1/2 20 012 RA		
		1424414	FRL 1/2 20 012 SAC		
		1424056	FRL 1/2 50 012 RMSA		
		1424060	FRL 1/2 50 012 RA		
		1424416	FRL 1/2 50 012 SAC		

UNITS

FIL + REG + LUB New deal

FRPL 3/4"-1" New deal

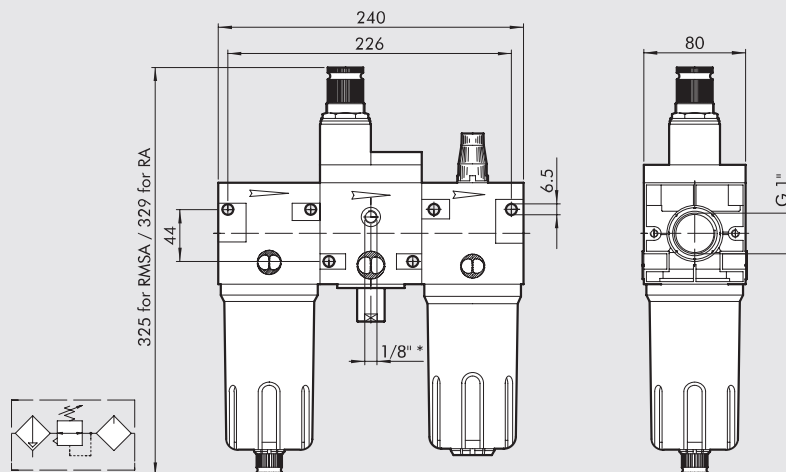


Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		FRPL ND 3/4"	FRPL ND 1"
Threaded port		3/4"	1"
Setting range		0 to 8 - 0 to 12	
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Degree of filtration	µm	4 - 20 - 50	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	7500	
	scfm	235	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	8500	
	scfm	266	
Weight	kg	3.6	
Wall fixing screws		M6 x 75	
Drain		RMSA - RA	
		RMSA: manual - semi-auto; RA: automatic.	
Fluid		Compressed air	
Bowl capacity	cm ³	170	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar. Do not take air from pressure gauge ports.	

DIMENSIONS



*Pressure gauge port

UNITS

FRPL 3/4"-1" New deal

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate. (for size 300 and 400). Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

FRPL: Filter + pilotable regulator + lubricator.

C4.36

FR + LUB Newdeal



Heavy duty and reliable piston-operated FR + L unit.

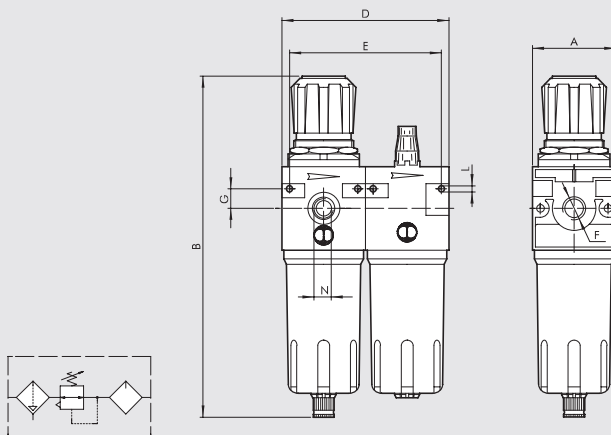
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportioned to air flow
- Micrometric lubrication regulation
- Activation guaranteed with low flow rates

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		FR + L ND 1/4"	FR + L ND 3/8"	FR + L ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12		0 to 8 - 0 to 12
Degree of filtration	µm	4 - 20 - 50		4 - 20 - 50
Max. inlet pressure	MPa	1.8		1.8
	bar	18		18
	psi	261		261
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	150		1300
	scfm	5.3		46
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	500		2200
	scfm	18		78
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50
	°F	122		122
Weight	kg	0.9		2
Wall fixing screws		M4 x 40		M4 x 55
Fluid		Compressed air		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		
		Do not take air from pressure gauge ports.		

DIMENSIONS



	FR + L ND 1/4"	FR + L ND 3/8"	FR + L ND 1/2"
Threaded port F	1/4"	3/8"	1/2"
A	42		60
B	190		245
RA	-		249
SAC	194		249
D	84		120
E	76		109
G	10		14
L	Hole for M4 screws		Hole for M4 screws
N (pressure gauge port)	1/8"		1/8"

SYNOPTIC, SIZES AND VERSIONS

FR + L ELEMENT	1/4 THREADED PORT	4 DEGREE OF FILTERING	08 SETTING RANGE	RMSA CONDENSATE DRAIN
FR + L	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA*

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

* For ND 3/8 and 1/2 with RA, please contact our sales assistance department.

ORDERING CODES

Code	Description	Code	Description
FR + L 1/4"		FR + L 3/8"	
1226029	FR+L 1/4 4 08 RMSA	1326029	FR+L 3/8 4 08 RMSA
1226409	FR+L 1/4 4 08 SAC	1326409	FR+L 3/8 4 08 SAC
1226053	FR+L 1/4 4 012 RMSA	1326053	FR+L 3/8 4 012 RMSA
1226413	FR+L 1/4 4 012 SAC	1326413	FR+L 3/8 4 012 SAC
1226030	FR+L 1/4 20 08 RMSA	1326030	FR+L 3/8 20 08 RMSA
1226410	FR+L 1/4 20 08 SAC	1326034	FR+L 3/8 20 08 RA
1226054	FR+L 1/4 20 012 RMSA	1326410	FR+L 3/8 20 08 SAC
1226414	FR+L 1/4 20 012 SAC	1326054	FR+L 3/8 20 012 RMSA
1226032	FR+L 1/4 50 08 RMSA	1326058	FR+L 3/8 20 012 RA
1226412	FR+L 1/4 50 08 SAC	1326414	FR+L 3/8 20 012 SAC
1226056	FR+L 1/4 50 012 RMSA	1326032	FR+L 3/8 50 08 RMSA
1226416	FR+L 1/4 50 012 SAC	1326412	FR+L 3/8 50 08 SAC
		1326056	FR+L 3/8 50 012 RMSA
		1326416	FR+L 3/8 50 012 SAC
		FR + L 1/2"	
		1426029	FR+L 1/2 4 08 RMSA
		1426409	FR+L 1/2 4 08 SAC
		1426053	FR+L 1/2 4 012 RMSA
		1426413	FR+L 1/2 4 012 SAC
		1426030	FR+L 1/2 20 08 RMSA
		1426034	FR+L 1/2 20 08 RA
		1426410	FR+L 1/2 20 08 SAC
		1426054	FR+L 1/2 20 012 RMSA
		1426058	FR+L 1/2 20 012 RA
		1426414	FR+L 1/2 20 012 SAC
		1426032	FR+L 1/2 50 08 RMSA
		1426412	FR+L 1/2 50 08 SAC
		1426056	FR+L 1/2 50 012 RMSA
		1426416	FR+L 1/2 50 012 SAC

UNITS

FR + LUB New deal

V3V + FR + LUB Newdeal



Highly reliable heavy-duty piston-operated FRFL unit.

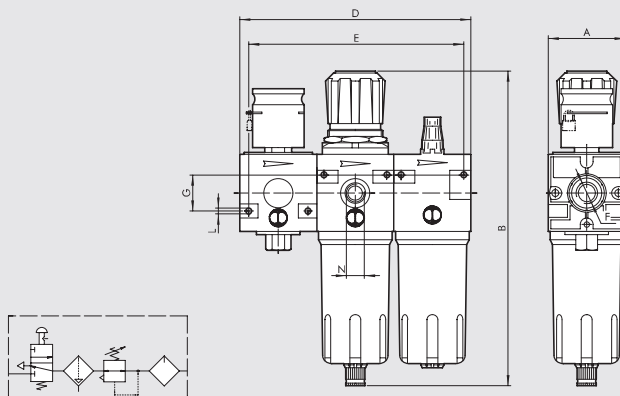
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportionate to the air flow
- Micrometric lubrication regulation
- Activation guaranteed at low air flows
- Quick filling and drainage of the downstream circuit with the V3V element

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		VFR + L ND 1/4"	VFR + L ND 3/8"	VFR + L ND 1/2"
Threaded port		1/4"	3/8"	1/2"
Setting range	bar	0 to 8 - 0 to 12	0 to 8 - 0 to 12	
Degree of filtration	µm	4 - 20 - 50	4 - 20 - 50	
Max. inlet pressure	MPa	1.8	1.8	
	bar	18	18	
	psi	261	261	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	140	1000	
	scfm	5	35.5	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	480	1900	
	scfm	17	67.5	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50	
	°F	122	122	
Weight	kg	1.1	1.8	
Wall fixing screws		M4 x 40	M4 x 55	
Fluid		Compressed air		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		
		Do not take air from pressure gauge ports.		

DIMENSIONS



	VFR + L ND 1/4"	VFR + L ND 3/8"	VFR + L ND 1/2"
Threaded port F	1/4"	3/8"	1/2"
A	42		60
B	190		245
RA	-		249
SAC	194		249
D	126		180
E	116		166
G	20		28
L	Hole for M4 screws		Hole for M4 screws
N (pressure gauge port)	1/8"		1/8"

UNITS

V3V + FR + LUB Newdeal

SYNOPTIC, SIZES AND VERSIONS

VFR + L ELEMENT	1/4 THREADED PORT	20 DEGREE OF FILTERING	08 SETTING RANGE	RMSA CONDENSATE DRAIN
VFR + L	1/4 3/8 1/2	4 = 4 µm 20 = 20 µm 50 = 50 µm	08 = 0 to 8 bar 012 = 0 to 12 bar	RMSA SAC RMSA SAC RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.
RA: automatic drain with condensate discharge, independent of pressure and flow rate.

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
1272030	VFR+L 1/4 20 RMSA 08
1272054	VFR+L 1/4 20 RMSA 012
1372030	VFR+L 3/8 20 RMSA 08
1372054	VFR+L 3/8 20 RMSA 012
1472030	VFR+L 1/2 20 RMSA 08
1472054	VFR+L 1/2 20 RMSA 012
1472032	VFR+L 1/2 50 RMSA 08
1472056	VFR+L 1/2 50 RMSA 012

The following versions are available on request:

- with 4 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

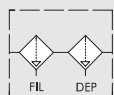
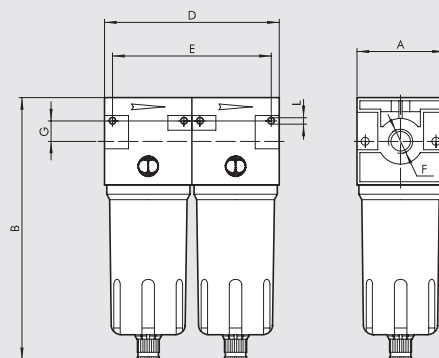
Filter + depurator unit for fine filtering followed by purification by coalescence

- Metal bowl with external sight glass
- Semi-automatic condensate drain

Refer to the sections on the single modules for a further description, components and other technical data.

[illegible]

DIMENSIONS

[illegible]

SYNOPTIC, SIZES AND VERSIONS

F + D	3/8	4	RMSA	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	CONDENSATE DRAIN	CONDENSATE DRAIN
F + D	3/8 1/2	4 = 4 µm	RMSA SAC RA	RMSA RA

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

FIL + LUB New deal



Filter + lubricator unit offering various degrees of filtration and high lubrication stability.

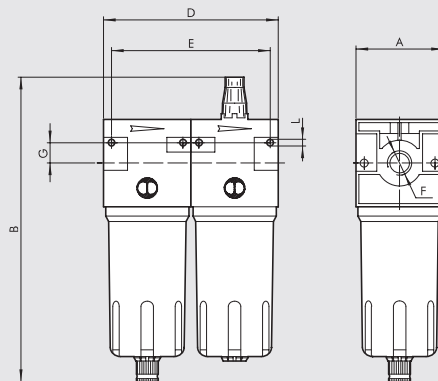
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Micrometric lubrication regulation
- Activation guaranteed at low air flows

Refer to the sections on the single modules for a further description, components and other technical data.



TECHNICAL DATA		F + L ND 1/4"	F + L ND 3/8"	F + L ND 1/2"	F + L ND 3/4"	F + L ND 1"
Threaded port		1/4"	3/8"	1/2"	3/4"	1"
Lubrication		mist	mist			mist
Degree of filtration	µm	4 - 20 - 50	4 - 20 - 50		4 - 20 - 50	
Max. inlet pressure	MPa	1.8	1.8		1.8	
	bar	18	18		18	
	psi	261	261		261	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	Nl/min	600	2500		8000	
	scfm	21	89		282	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	Nl/min	1000	3500		9500	
	scfm	35.5	124		335	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50		50	
	°F	122	122		122	
Weight	kg	0.8	1.8		2.5	
Wall fixing screws		M4 x 40	M4 x 55		M6 x 75	
Fluid		Compressed air				
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

DIMENSIONS



	F + L ND 1/4"	F + L ND 3/8"	F + L ND 1/2"	F + L ND 3/4"	F + L ND 1"
Threaded port F	1/4"	3/8"	1/2"	3/4"	1"
A	42	60		80	
B	170	209		273	
RMSA					
RA	-	213		277	
SAC	174	213		277	
D	84	120		160	
E	74	106		146	
G	10	14		22	
L	Hole for M4 screws	Hole for M4 screws		Hole for M6 screws	

SYNOPTIC, SIZES AND VERSIONS

F + L	1/4	4	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	CONDENSATE DRAIN
F + L	1/4	4 = 4 µm 20 = 20 µm 50 = 50 µm	RMSA
	3/8		SAC
	1/2		RMSA
	3/4		SAC
	1		RA

RMSA: drain with manual condensate discharge and automatic discharge at zero pressure.

RA: automatic drain with condensate discharge, independent of pressure and flow rate.

Version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SAC: automatic drain with condensate discharge.

Operates by pressure drop – requires variable air take-offs.

ORDERING CODES

Code	Description
1233006	F+L 1/4 20 RMSA
1333006	F+L 3/8 20 RMSA
1433006	F+L 1/2 20 RMSA
1533006	F+L 3/4 20 RMSA
1633006	F+L 1 20 RMSA

The following versions are available on request:

- with 4 µm or 50 µm degree of filtration
- with SAC or RA condensate discharge

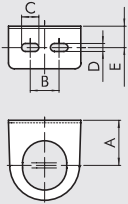
UNITS

FIL + LUB New deal

New deal ACCESSORIES



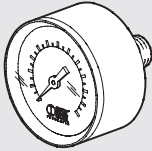
MOUNTING BRACKET FOR REG.



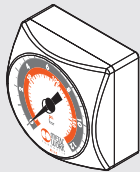
Code	Description
9200701	SF 1/4
9400701	SF 1/2

Code	A	B	C	D	E
9200701	32	20	12	5.5	14.2
9400701	42	40	12	5.5	15

PRESSURE GAUGE

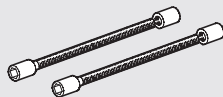


Code	Description
9700102	M 40 1/8 04
9700101	M 40 1/8 012
9800102	M 50 1/8 04
9800101	M 50 1/8 012
9900101	M 63 1/4 012

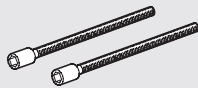


9700109	M 40x40 1/8 04
9700110	M 40x40 1/8 012

TIE RODS

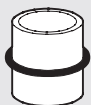


Code	Description
9200901	T 1/4 F+L tie rods
9400901	T 1/2 F+L tie rods
9600901	T 3/4 F+L tie rods



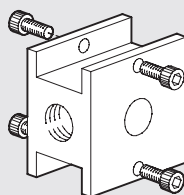
9604402	V3V+F+R 3/4-1 tie rods
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ADAPTER FOR V3V



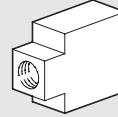
Code	Description
9201001	Adapt. X V3V+FR/D 1/4
9401001	Adapt. X V3V+D 3/8
9401002	Adapt. X V3V+D 1/2
9601001	Adapt. X V3V+F 1

REGULATOR CONNECTION BLOCK



Code	Description	Weight [g]
9200501	BC 1/4 block	90
9400501	BC 1/2 block	244
9600501	BC 3/4 block	428

SPACERS FOR FRL WALL MOUNTING



Code	Description
9200601	DF 1/4 spacer
9400601	DF 1/2 spacer
9600601	DF 3/4 spacer

DISASSEMBLY TOOL FOR BOWL



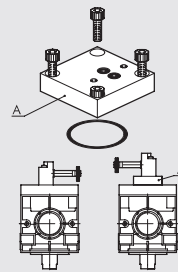
Code	Description
9601501	Disassembly key

ASSEMBLY SCREWS (2 PIECES)



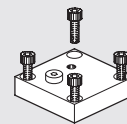
Code	Description
9250001	CVA 1/4 screw M4x40
9250002	CVA 1/4 screw M4x82 V3V+F+R
9450001	CVA 1/2 screw M5x55
9450002	CVA 3/8 1/2 screw M5x60 V3V+R
9450003	CVA 3/8 1/2 screw M5x120 V3V+F+R
9650001	CVA 3/4 screw M6X70

REVERSE PLATE CNOMO CONTROL FOR V3V 3/4"-1"



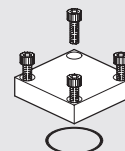
Code	Description	Weight [g]
9640201	Reverse plate kit V3V cnomo control	86

PLATE FOR REMOTE CONTROL FOR V3V 3/4"-1"



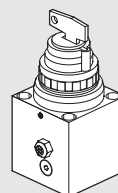
Code	Description	Weight [g]
9640001	Remote control plate kit	84

REG OR V3V END PLATE



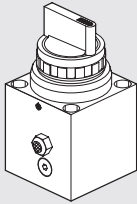
Code	Description	Weight [g]
9640101	End plate kit for regulator or V3V	82

KEY CONTROL FOR V3V 3/4"-1"



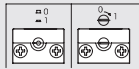
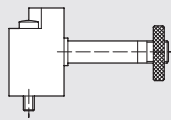
Code	Description	Weight [g]
9640301	Key control kit for V3V	364

MANUAL CONTROL FOR V3V 3/4"-1"



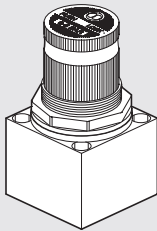
Code	Description	Weight [g]
9640401	Manual control kit for V3V	340

CNOMO CONTROL FOR V3V 3/4"-1"



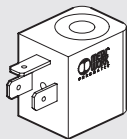
Code	Description
9453920	Elpn cnomo control kit, manual monostable
9453922	Elpn cnomo control kit, manual bistable

PILOT REGULATOR FOR ND 3/4"-1"



Code	Description	Weight [g]
9640501	02 pilot regulator kit	220
9640502	04 pilot regulator kit	220
9640503	08 pilot regulator kit	220
9640504	012 pilot regulator kit	220

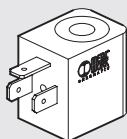
COIL 22 mm FOR V3V ELPN



Code	Description
W0215000151	Coil 22 Ø 8 BA 2W-12VDC
W0215000101	Coil 22 Ø 8 BA 2W-24VDC
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC

Electrical connection DIN 43650 B-IND

"UL" AND "CSA" COIL 22 mm FOR V3V ELPN

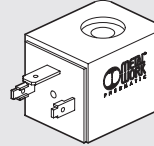


Code	Description
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR

Electrical connection DIN 43650 B-IND



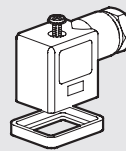
COIL 30 mm FOR V3V ELPN



Code	Description
W0210010100	Coil 30 Ø 8 2W 24VDC
W0210011100	Coil 30 Ø 8 3.5VA 24VAC 50/60HZ
W0210012100	Coil 30 Ø 8 3.5VA 110VAC 50/60HZ
W0210013100	Coil 30 Ø 8 3.5VA 220VAC 50/60HZ

Electrical connection DIN 43650 - A

ELECTRIC CONNECTOR 22 mm FOR COILS DIN 43650 B-IND

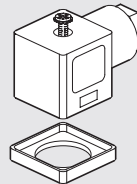


Code	Description
W0970510011	Connector standard
W0970510012	Connector 22 LED 24V
W0970510013	Connector 22 LED 110V
W0970510014	Connector 22 LED 220V
W0970510015	Connector 22 LED VDR 24V
W0970510016	Connector 22 LED VDR 110V
W0970510017	Connector 22 LED VDR 220V
W0970510070	Connector 22 ATEX II 2 GD

Code	Description
W0970510051	Connector 22 LED 24VDC Energy Saving

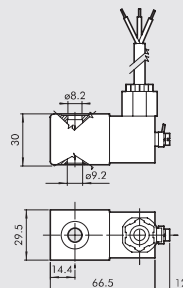
For technical data see page B1.61

ELECTRIC CONNECTOR 30 mm FOR COILS DIN 43650-A



Code	Description
W0970520033	Connector standard
W0970520034	Connector 30 LED 24V
W0970520035	Connector 30 LED 110V
W0970520036	Connector 30 LED 220V
W0970520037	Connector 30 VDR 24V
W0970520038	Connector 30 VDR 110V
W0970520039	Connector 30 VDR 220V
W0970520070	Connector 30 ATEX II 2GD

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24 VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24 VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24 VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24 VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110 VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110 VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230 VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230 VAC EEXMT5 cable 5 m

According to ATEX 2014/34/EU rule,
 Ex II 2G Ex mb IIC T4/T5 Gb
 Ex II 2D Ex tb IIC T130/T95 °C IP66 Db
 N.B.: Supplied complete with adapter for Ø8 mm sleeve

KIT FOR COIL SIDE 22 IP65



Code	Description
0222100100	Kit for coil 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents.
 Applicable to valves with a technopolymer control.

New deal SPARE PARTS

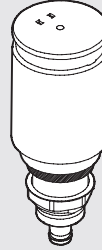


FILTER AND FILTER REGULATOR FILTERING ELEMENT



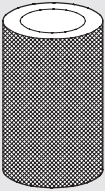
Code	Description
9450102	Spares FP 1/2 20
9450103	Spares FP 1/2 4
9450101	Spares FP 1/2 50
9250102	Spares FP 1/4 20
9250103	Spares FP 1/4 4
9250101	Spares FP 1/4 50
9650103	Spares FP 3/4 4
9650102	Spares FP 3/4 20
9650101	Spares FP 3/4 50

AUTOMATIC DRAIN (RA)



Code	Description
9000802	Spares RA automatic drain

FILTERING ELEMENT FOR DEPURATOR



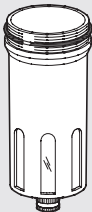
Code	Description
9450105	Spares kit FP DEP. 3/8 1/2

AUTOMATIC DRAIN (SAC)



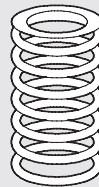
Code	Description
9000803	Spares SAC automatic drain

METAL FILTER BOWL



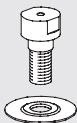
Code	Description
9450301	Spares TMVF 1/2 RMSA
9455201	Spares TMVF 1/2 SAC
9250301	Spares TMVF 1/4 RMSA
9255201	Spares TMVF 1/4 SAC
9650301	Spares TMVF 3/4 1 RMSA

SPRINGS FOR REGULATORS AND FILTER REGULATOR



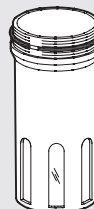
Code	Description
9250601	Spares MO 02 1/4
9250602	Spares MO 04 1/4
9250603	Spares MO 08 1/4
9250604	Spares MO 12 1/4
9450601	Spares MO 04 1/2
9450602	Spares MO 08 1/2
9450603	Spares MO 12 1/2
9650601	Spares MO 04 3/4
9650602	Spares MO 08 3/4
9650603	Spares MO 12 3/4

VENTURI LUBRICATOR DIAPHRAGM



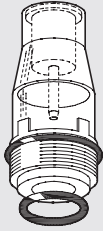
Code	Description
9252001	Spares MB 100 1/4
9352001	Spares MB 200 1/4 3/8 1/2
9652002	Spares MB 3/4-1

METAL LUBRICATOR BOWL



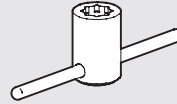
Code	Description
9251201	Spares TMVL 1/4
9451201	Spares TMVL 1/2
9651201	Spares TMVL 3/4

TRANSPARENT LUBRICATOR COVER



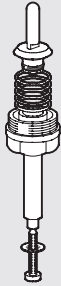
Code	Description
9251302	Spares CVL 100-200-300-400 BIT

DOME DISASSEMBLY SPANNER



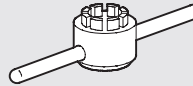
Code	Description
9220701	Acc cover LUB spanner

COMPLETE POPPET FOR FILTER REGULATOR



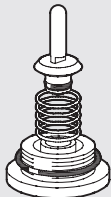
Code	Description
9250901	Spares OTR 1/4
9450901	Spares OTR 1/2

POPPET DISASSEMBLY SPANNER (FOR REG)



Code	Description
9220501	R cap disass. wr. 100

COMPLETE POPPER FOR REGULATOR



Code	Description
9250701	Spares OTR 1/4
9450701	Spares OTR 1/2
9650701	Spares OTR 3/4

NOTES

UPPER COVER FOR REGULATOR AND FILTER REGULATOR



Code	Description
9250801	Spares CS 1/4 02
9250802	Spares CS 1/4 04
9250803	Spares CS 1/4 08
9250804	Spares CS 1/4 012
9450801	Spares CS 1/2 04
9450802	Spares CS 1/2 08
9450803	Spares CS 1/2 12
9650801	Spares CS 3/4 04
9650802	Spares CS 3/4 08
9650803	Spares CS 3/4 12

● LEARNING ABOUT C5.2

● SPECIFICATIONS C5.6

● HOW TO ORDER  C5.10

● ACCESSORIES  C5.12

● SPARE PARTS  C5.13

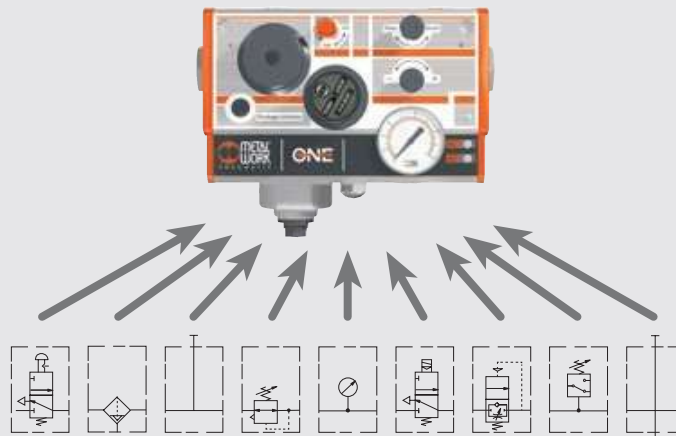
LEARNING ABOUT

In the world of pneumatics, which is considered mature, it is rare to encounter completely new and different products. ONE a compressed air treatment unit with a high degree of integration, that encompassed numerous pneumatic functions. In fact, it contains so many innovations that a single patent is not enough to safeguard it against imitation – three separate patent applications have been registered with a total of 39 claims. This unit is so innovative that it won the international novelty award at Fluidtrans Compomac. ONE has a single high-performance valve on the main flow that handles all the functions from regulation to relief. It is controlled by a high-precision pilot regulator with controlled relief, in series with the manual on-off valve, the electric valve and the progressive actuator. Unification of the valve has led to a significant reduction in overall dimensions, enhanced capacity, precision and response speed.



INTEGRATION

One single unit houses the threaded ports, filter, condensate drain, pressure regulator, shut-off valve, soft start valve, pressure switch and three supplementary air intakes.



MINIATURISATION



Extremely reduced dimensions, considering the extra-high performance and flow rate reachable.



No clearance is required above and below it to make adjustments or change the filter or other components. The actual space occupied is thus further reduced.



It weighs slightly more than one kilo instead of the 4 to 8 kilos of conventional units.

EASY ADJUSTMENTS AND LITTLE MAINTENANCE

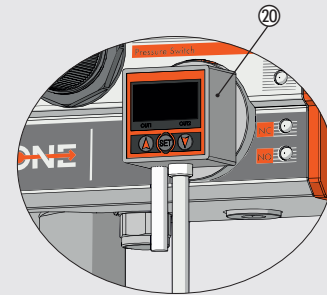
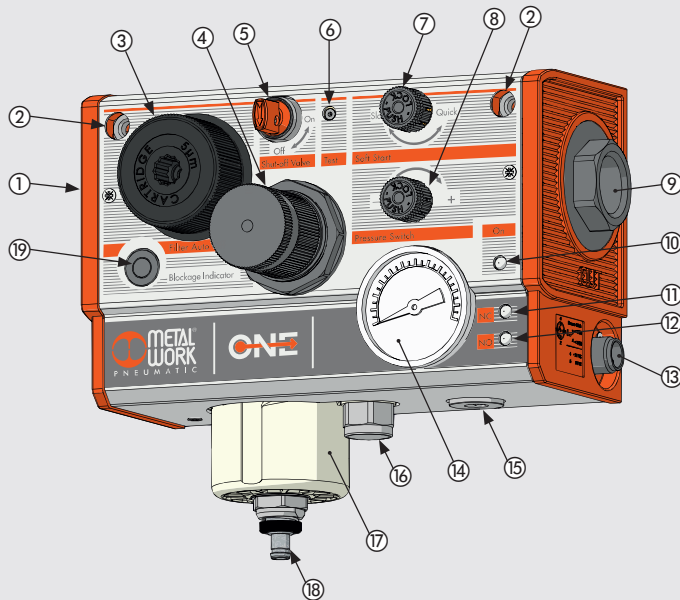
The entire user interface is at the front, which means that everything is visible and easy to reach. All the adjustments are made using the push-lock knobs (no need for wrenches or screwdrivers), thus preventing accidental operations or manoeuvres.



CONFIGURABILITY

Considering that ONE is reduced in size but highly performing, and it can integrate tenths of functions, a single unit can cover the entire range of applications, with cut-clear advantages in terms of standardisation and reduction of the number of codes handled and goods in stock. With a single size there are thousands of different configurations. For example, there is choice between 1/4", 3/8", 1/2", 3/4" or 1" threaded ports, manual and/or electric on-off or progressive valves, etc. The customer decides the configuration he wants and creates the code, using the key-to-coding table shown below in this catalogue. He will receive the unit he wants marked with its code and the correct pneumatic diagram.

WHAT YOU CAN SEE FROM THE OUTSIDE

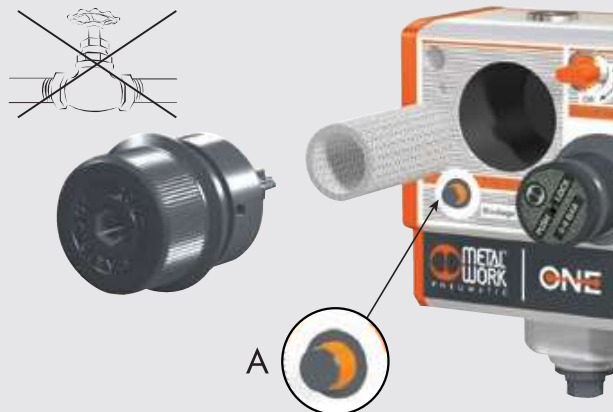


- | | |
|---|---|
| ① Air intake, with swivel threaded port | ⑫ LED signalling pressure over the value set on analog pressure switch |
| ② Fixing hole | ⑬ 5-pin M12x1 electrical connector |
| ③ Access to filter cartridge | ⑭ Pressure gauge |
| ④ Pressure regulation | ⑮ 1/4" air intake. Another regulated air intake and a filtered non-regulated air intake are situated on the top |
| ⑤ Shut-off valve (manual) | ⑯ Air exhaust with a 1/4" silencer |
| ⑥ Manual override (shut-off valve electrical) | ⑰ Condensate tank |
| ⑦ Soft start valve regulation | ⑱ Condensate drain |
| ⑧ Switching pressure regulation of the analog pressure switch | ⑲ Clogged filter signal |
| ⑨ Air outlet, with swivel threaded port | ⑳ Digital pressure switch |
| ⑩ LED signalling unit ON | |
| ⑪ LED signalling pressure below the value set on analog pressure switch | |

THREADED PORTS

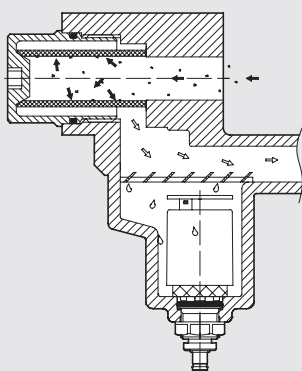


- The threaded ports at the air intake and outlet are the swivel type to facilitate coupling with the supply and delivery pipes. In this way, the unit can be mounted or removed without dismantling the pipes.
- A range of 5 different threads, 1/4", 3/8", 1/2", 3/4" and 1" is also available.
- The thread for the supply pipe may differ from that of the delivery one.



- If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the optical filter blockage indicator will project (see detail A) to indicate that the filter cartridge must be replaced.
- The cartridge can be replaced by unscrewing a plug at the front. This system is functional and, unlike conventional filters, does not require manoeuvring space below the unit.
- An automatic stop on-off valve is incorporated in the unit: when the filter plug is unscrewed, the valve closes automatically. This means there is not need to a tap upstream and there is no risk of the plug being ejected violently.

CONDENSATE DRAIN



- The condensate drain is located downstream of the filter and thus uses cleaner air. This prevents the known problem of air leaks due to the deposit of dirt on the condensate discharge valve.
- You can request ONE with two types of condensate drain:
 - semi-automatic, type RMSA
 - automatic, of the floating type RA

SINGLE AIR EXHAUST



The air in the circuit is relieved via one outlet situated below the unit and fitted with silencer. If you want to convey air relief to prevent the emission of polluted air into the atmosphere, you can replace the silencer and install a fitting. (a pipe with a diameter of at least 6 mm is recommended)

Next to the air outlet there is the condensate drain, which in the RA version conveys the draining by inserting the pipe having internal diameter 6 mm in the lower port.

SUPPLEMENTARY PORTS



In addition to the main outlet, there are three supplementary air ports with a 1/4" thread.

- one for filtered non-regulated air (A) for use, for example, with a compressed air gun.
- two for filtered regulated air (B).

The unit comes complete with supplementary plugged ports for use with A7 fittings.

PANEL MOUNTING



ONE can be mounted inside the guard of the machine leaving only the front visible. This is a considerable advantage in terms of functionality and aesthetics as the user interface is entirely at the front. Among the accessories to be ordered separately, there is the kit of brackets for panel mounting.

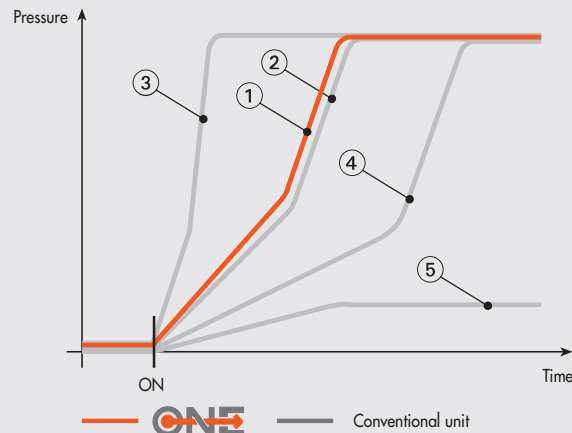
ELECTRICAL CONNECTION



A standard five-pin M12x1 connector, with IP65 protection is used for the opening solenoid valve and the pressure switch.

One cable only is required, thus improving reliability and reducing wiring times.

SOFT START VALVE



- ① Regulation for: **ONE** does not change with flow rate!
- ② Initial regulation of conventional unit
- ③ Low flow rate: activation too abrupt
- ④ High flow rate: activation too slow
- ⑤ Even higher flow rate: never cuts in!

The soft start valve is an absolutely innovative feature among the functions provided by ONE. Soft start valve available from the trade are generally based on the principle of leaving the passage of a small amount of air until the downstream pressure reaches a set value, and then opening the passage fully. In this way, the rate at which the pressure increases depends on the flow rate of the utilities, which often feature a continuous flow rate, for example a blow, and thus the starter can hardly activate. The solution offered by One is such that the pressure increases gradually and it is independent of the flow rate of the utilities. Pressure increase can be regulated precisely via the knob at the front.

Another piece of news, among the several possible configurations you can have the soft start valve operated by the manual V3V

SPECIFICATIONS

UNITS

ONE: SPECIFICATIONS

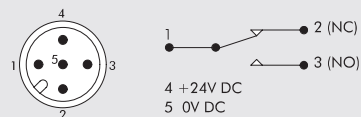
TECHNICAL DATA

		1/4"	3/8"	1/2"	3/4"	1"
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	2200	2900		3600	
	scfm	78	102		127	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	2400	3300		4000	
	scfm	85	116		141	
Flow rate on discharge at 6 bar (0.6 MPa; 87 psi)	Nl/min			1600		
	scfm			56		
1/4" port flow rate of non-regulated filtered air at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar	Nl/min			1800		
	scfm			64		
Flow rate of each supplementary 1/4" filtered and regulated air port at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar *	Nl/min			2400		
	scfm			85		
Fluid		Compressed air				
Setting range	bar	0.5 to 2; 0.5 to 4; 0.5 to 8				
Degree of filtration	μm	5 (yellow) or 20 (white)				
Operating pressure range	bar	10				
	MPa	1				
	psi	145				
Operating temperature range	$^{\circ}C$	-10 to 50				
	$^{\circ}F$	-14 to 122				
Class of protection		IP 65 with connector				
Weight	kg	From 1.15 to 1.25 according to configurations				
Wall fixing (max. panel thickness 10 mm)		Front, with M5x75 screws or back, with M6x70 screws The screws are included in the supply				
Mounting position		Vertical				
Direction of flow		From left to right				
Compatibility with oils		See chapter Z1				
Solenoid valve						
Insulation class		F155				
Switching time		100% ED				
Electrical connector		M12x1, 5-PIN 90 $^{\circ}$, according to CEI IEC 60947-5-2				
Power	W	3/0.3				
Voltage	V	24 VDC $\pm$ 10%				
Analog pressure switch						
Pressure interval settable on the pressure switch	bar	0.5 to 10				
Pressure switch hysteresis (not adjustable)	bar	bar 0.4 to 0.8 (see diagram)				
Maximum pressure switch current	A	0.5				
Maximum pressure switch voltage	V	3 to 30 AC/DC				
Pressure switch contacts		Normally open (NO) and normally closed (NC)				
Number of switching		5x10 6				
Digital pressure switch series 600		See page C7.4				

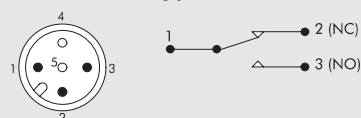
* Total flow rate from two supplementary outlets and the main one cannot exceed 4000 Nl/min at 6.3 bar with $\Delta P=1$

WIRING DIAGRAM M12 CONNECTOR

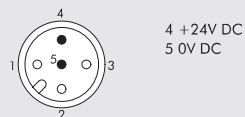
Version with solenoid valve and analog pressure switch



Version with analog pressure switch

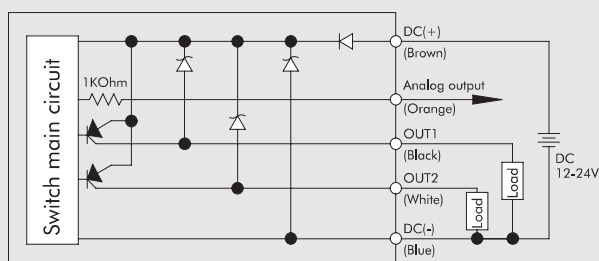


Version with solenoid valve

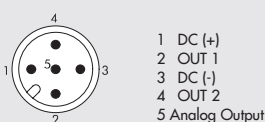


DIGITAL PRESSURE SWITCH WIRING DIAGRAM

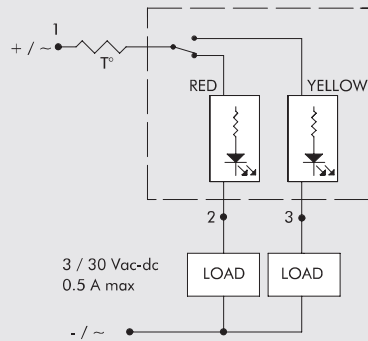
PNP output with cable 2 m



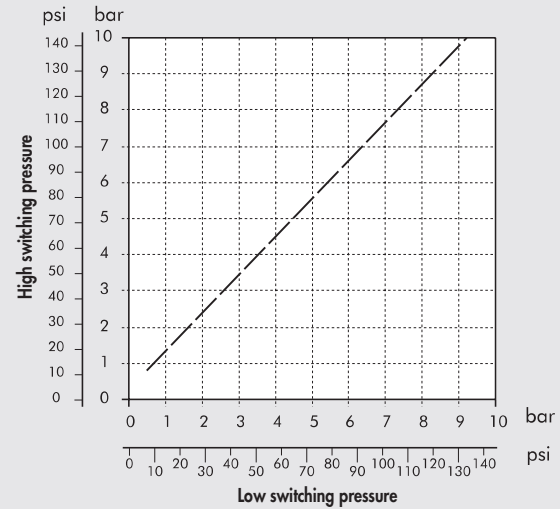
PNP output with cable 300 mm and M12 connector



ANALOG PRESSURE SWITCH WIRING DIAGRAM



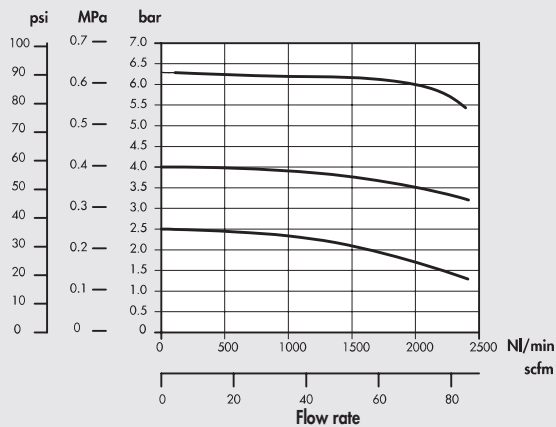
ANALOG PRESSURE SWITCH HYSTERESIS GRAPH



FLOW CHARTS

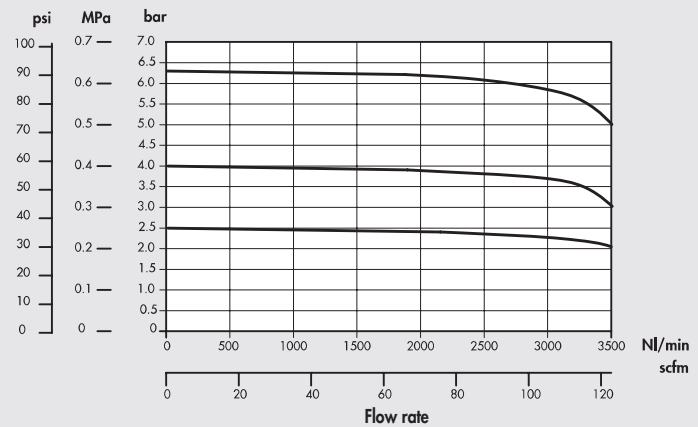
1/4"

Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure



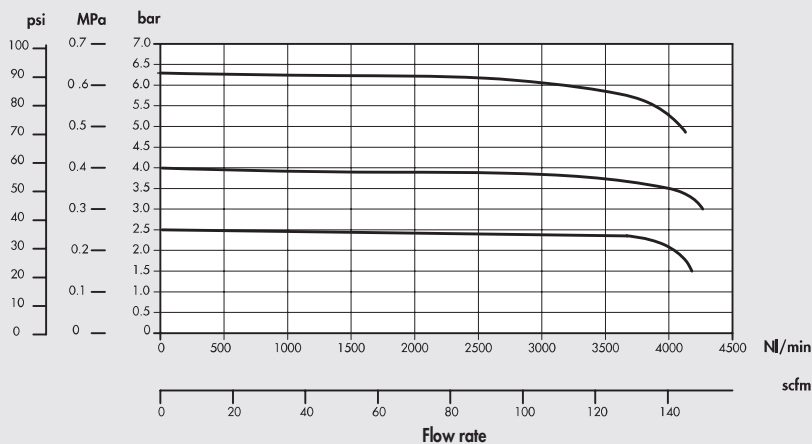
3/8"

Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure



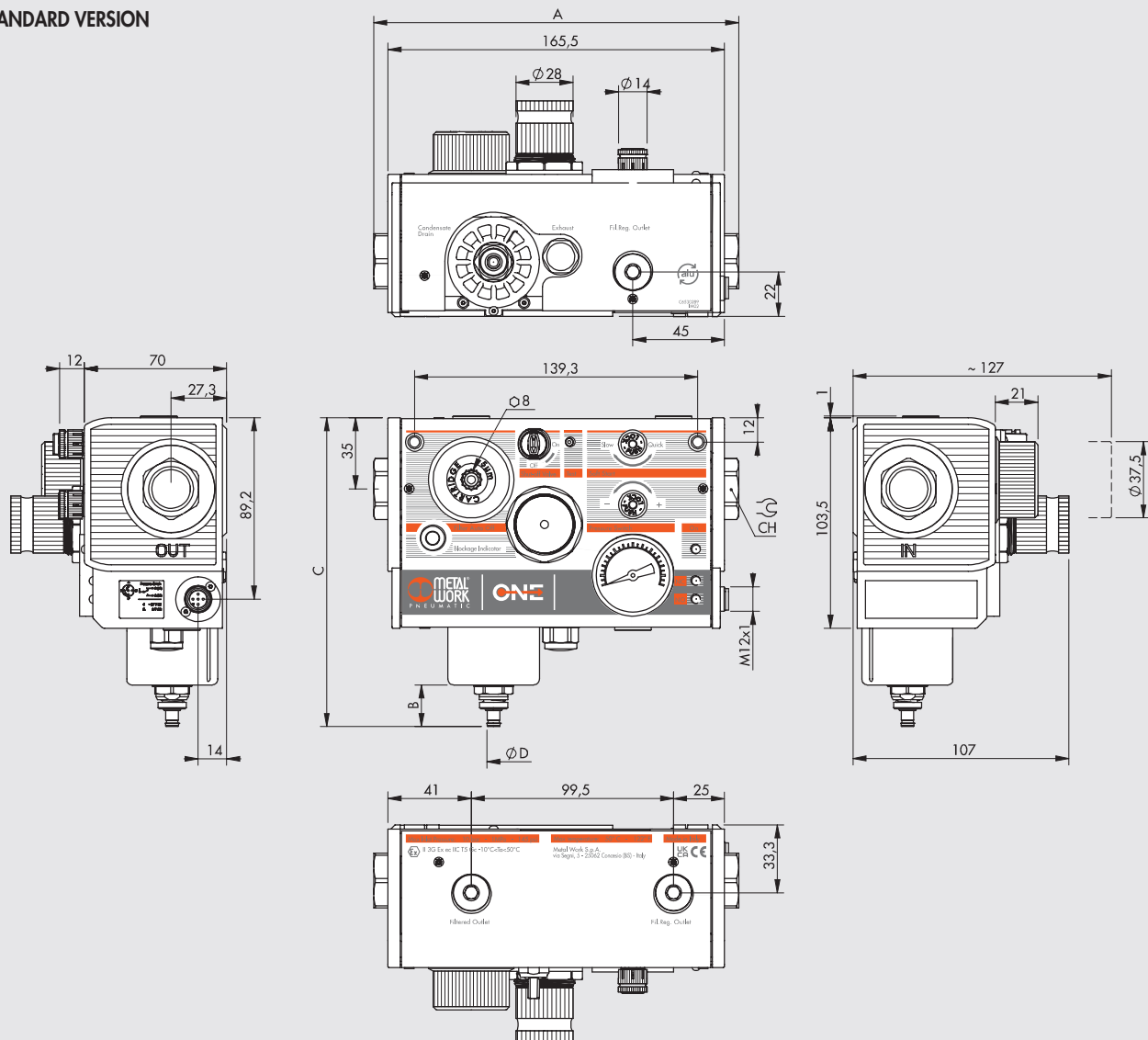
1/2" - 3/4" - 1"

Pm = 8 bar - 0.8 MPa - 116 psi
Preset pressure

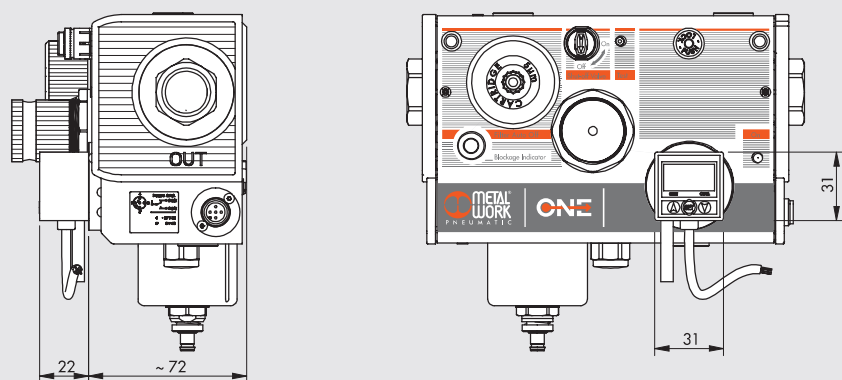


DIMENSIONS

STANDARD VERSION



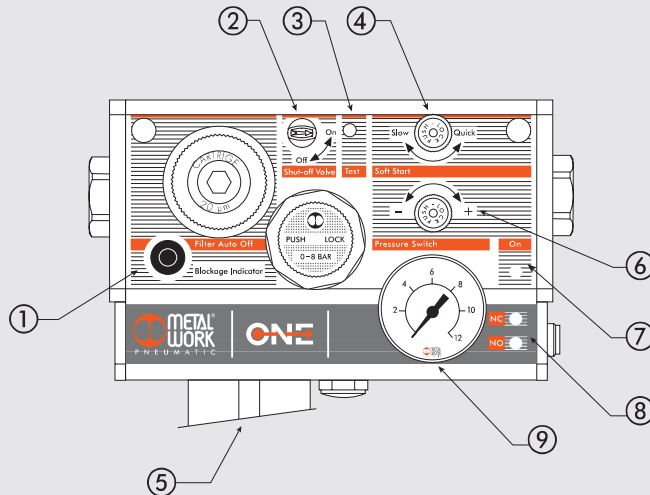
WITH DIGITAL PRESSURE SWITCH VERSION



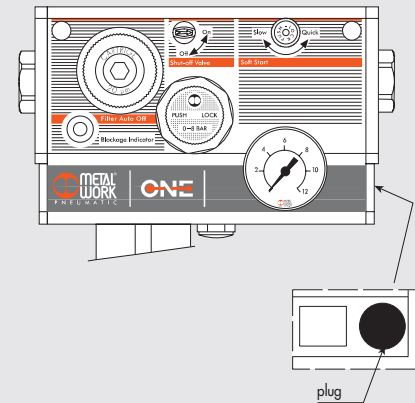
	1/4"	3/8"	1/2"	3/4"	1"		RA	RMSA	
A		180			195	B	20.4	16.4	
CH	19	22	27	32	36	C	152	148	
						Ø D	For pipe internal diameter 6 mm		15

EXTERNAL DESIGN

You can get thousands of different configurations. The external design differs according on the versions chosen.

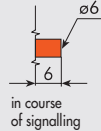


ONE NON-ELECTRICAL



CLOGGED FILTER SIGNAL

PRESENT

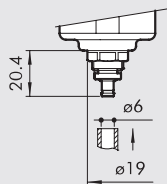


NOT PRESENT

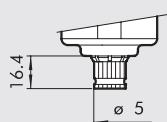


CONDENSATE DRAIN

AUTOMATIC (RA)

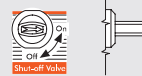


RMSA

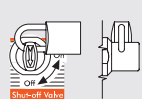


V3V MANUAL

STANDARD



LOCKABLE

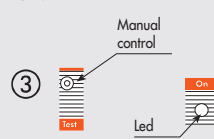


NOT PRESENT



V3V ELECTRICAL

PRESENT

NOT PRESENT
in some versions holes are present

in other configurations the cover has no holes



SOFT START VALVE

PRESENT

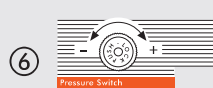
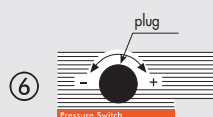


NOT PRESENT



ANALOG PRESSURE SWITCH

PRESENT

NOT PRESENT
in some versions holes are present

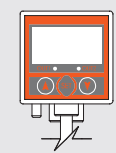
in other configurations the cover has no holes



READING OF PRESSURE GAUGE



DIGITAL PRESSURE SWITCH



HOW TO ORDER

ORDERING CODES

You can choose among numerous variants and options. The product code so personalised is made up by compiling the diagram below. The code so compiled must be specified on the order. A label showing the code and its pneumatic diagram is affixed onto the product.

	A	B	C	D	E	F	G	H	I	L
	ONE electric or ONE non-electric	Air intake	Degree of filtration	Clogged filter signal	Condensate drain	Pressure regulation	Valves	Pressure switch	Air outlet	Miscellaneous, special version
EXAMPLE	54	3	2	1	1	2	7	1	3	0 0
	53 ONE non-electric	1 1/4"	2 20 µm	0 NO	0 RMSA	2 0.5-2 bar	0 None	0 NO	1 1/4"	00 Standard
	54 ONE electric *	2 3/8"	5 5 µm	1 YES	1 Automatic (RA)	4 0.5-4 bar	1 V3V manual	1 YES Analog	2 3/8"	
		3 1/2"				8 0.5-8 bar	2 V3V manual with padlock	2 YES Digital with cable 2 m	3 1/2"	
		4 3/4"					3 V3V manual and soft start valve	3 YES With cable 300 mm and M12 connector	4 3/4"	
		5 1"					4 V3V manual with padlock and soft start valve		5 1"	
							5 V3V manual and V3V electric			
							6 V3V manual with padlock and V3V electric			
							7 V3V manual and APR electric			
							8 V3V manual with padlock and APR electric			
							9 only V3V electric			
							A only APR electric			

* a pressure switch version and/or electric V3V and/or electric progressive actuator.

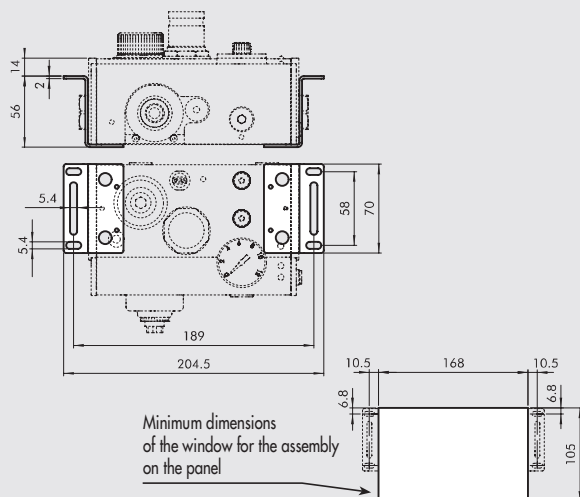
● **NB: versions valid only for the electric ONE (code 54...)**

UNITS

ONE: HOW TO ORDER

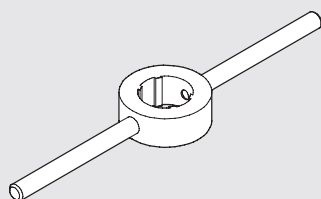
- A ONE electric or non-electric**
ONE non-electric: there is no component actuated electrically: select code 53. In this case, the unit comes without any M12x1 connector, LED, pressure switch, or electric V3V.
ONE electric: there is at least one component actuated electrically, and thus the pressure switch and/or electric V3V (and/or the electrical soft start valve) select code 54. In this case, the unit comes with the M12x1 connector and 3 LEDs. Only the LEDs associated with the functions installed will be active.
- B Air intake**
 There are 5 different gas cylindrical threads: 1/4", 3/8", 1/2", 3/4" and 1".
- C Degree of filtration**
 A cartridge with a degree of filtering of 5 µm (yellow) or 20 µm (white) is available. This value is marked on the plug.
- D Clogged filter signal**
 If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the orange indicator will project from the body by a few millimetres.
- E Condensate drain**
RMSA: the condensate is drained out automatically only by relieving the air pull the knurled knob for having the same result.
Automatic (RA): a floating system that automatically drains the condensate out whenever the level of water in the bowl reaches the set value.
- F Pressure regulation**
 There are three possible regulation fields.
 The value is marked on the regulation knob.
- G Valves**
 There are 11 different combinations. The electric valves are clearly selectable only if the initial code is 54, i.e. ONE electric.
- **0 - No valves present**
 - **1 - V3V manual:** is a 3/2 valve that in a set position allows the air to flow and in the other it closes the passage and discharges the pressure downstream.
 - **2 - V3V manual with padlock:** like the previous one, with the possibility of inserting a padlock (included in the supply with 2 keys) in the valve closed position.
 - **3 - V3V manual and soft start valve:** when the manual V3V valve is operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
 - **4 - V3V manual with padlock and soft start valve:** like the previous, with the padlock device on the manual V3V in "OFF" position.
 - **5 - V3V manual and V3V electric:** two V3V in series are present, one is manual the other electrical. By operating both the valve the air flow is allowed. If one or two are switched OFF, the air downstream is relieved. The electrical one can also be operated manually by reefing pushed the "TEST" button
 - **6 - V3V manual with padlock and V3V electric:** like the previous, with the padlock device in "OFF" position.
 - **7 - V3V manual and APR electric:** One manual V3V and one soft start valve are present. When both are operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
 - **8 - V3V manual with padlock and APR electric:** like the previous, with the padlock device on the manual V3V in "OFF" position.
 - **9 - V3V electric:** It's present only the electrical V3V. The valve will open if it is powered on. When the power supply is switched off, the valve closes and air downstream is relieved. The valve can also be operated manually by keeping pushed the test button.
 - **A - APR electric:** It's present only the electric soft start valve. When it is powered ON, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
- H Analog pressure switch**
 The pressure switch has a switching contact, which means you can have a normally-open signal or a normally-close signal. It is also connected to the NC and NO LEDs which come on if the actual pressure is less or greater than the set pressure, respectively. The LEDs only come on if an electric charge is connected to them.
Digital pressure switch
 The digital pressure switch allows both the transmission of electrical pressure signals and the instant display of pressure. Two digital outputs, which can be set according to the two pressure values reached, are available. An analogue output of a voltage proportional to the pressure reading is also available. The values are clearly displayed on a LED video and different parameters can be entered from the keypad. Hysteresis can be adjusted and the unit of measurement for pressure can be modified.
- I Air outlet**
 Five different gas cylindrical threads are available: 1/4", 3/8", 1/2", 3/4" and 1". It is possible to choose a thread other than the one on the inlet port.
- L Free positions for special executions.**

PANEL MOUNTING BRACKETS



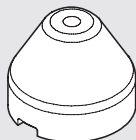
Code	Description
9200702	Kit – panel mounting brackets N.B.: fixing screws included

COVER DISASSEMBLY WRENCH



Code	Description
9170401	Cover disassembly wrench

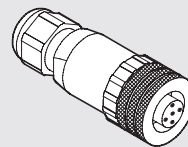
SECURITY KNOB



Code	Description
9200703	Security knob apr/pressure switch

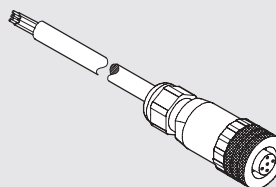
NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

STRAIGHT CONNECTOR



Code	Description
W0970513001	5-PIN M12X1 straight connector

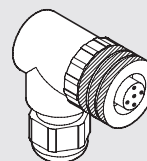
STRAIGHT CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

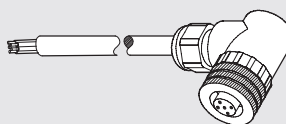
Code	Description
W0970513002	5-PIN M12X1 straight connector with wire L = 5 m

90° CONNECTOR



Code	Description
W0970513003	M12X1 5-PIN 90° connector

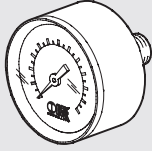
90° CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

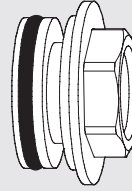
Code	Description
W0970513004	M12X1 5-PIN 90° connector with wire L = 5 m

PRESSURE GAUGE



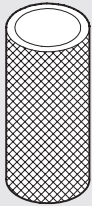
Code	Description
9700106	M 39 1/8 0-4
9700107	M 39 1/8 0-12

THREADED PORT



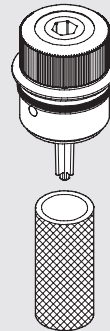
Code	Description
9232001	1/4" spare thr. port for ONE
9232002	3/8" spare thr. port for ONE
9232003	1/2" spare thr. port for ONE
9232004	3/4" spare thr. port for ONE
9232005	1" spare thr. port for ONE

FILTER ELEMENT



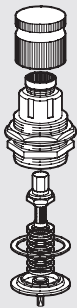
Code	Description
9251720	Spare filter element 5 µm for ONE
9251721	Spare filter element 20 µm for ONE

FILTER PLUG WITH FILTER ELEMENT



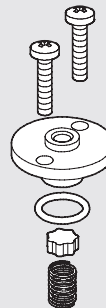
Code	Description
9251723	Spare plug + filter element 5 µm ONE
9251724	Spare plug + filter element 20 µm ONE

PILOT REGULATOR



Code	Description
9250820	Spare pilot reg. 0.5 to 2 bar for ONE
9250821	Spare pilot reg. 0.5 to 4 bar for ONE
9250822	Spare pilot reg. 0.5 to 8 bar for ONE

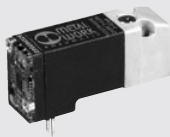
POPPET



Code	Description
9250707	Spare poppet for ONE

SOLENOID VALVE

NEW



Code	Description
722123840101	PLT-10 722123840101

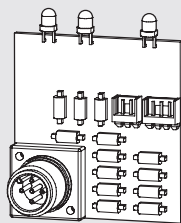
OLD



Note: Spare part no longer available. If the solenoid valve to be replaced is the same as the one shown here on the left, please contact our sales department.

NOTES

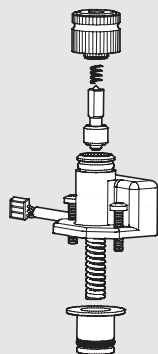
ELECTRIC BOARD



Code	Description
9232010	Spare electric board for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

PRESSURE SWITCH



Code	Description
9000500	Spare press. switch for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

SUMMARY PRECISION REGULATORS AND PRESSURE CONTROL



	PRECISION PRESSURE REGULATOR WITH HIGH EXHAUST FLOW, SERIE GS		C6.2	
	PROPORTIONAL PRECISION PRESSURE REGULATOR REGTRONIC SERIES		C6.6	
	REGTRONIC M5	Analog 	Io-Link 	C6.10
	REGTRONIC 1/8"- 1/4"	Analog 	Io-Link 	C6.12
	REGTRONIC Newdeal	Analog 	Io-Link 	C6.14
	REGTRONIC 300	Analog 	Io-Link 	C6.15
	REGTRONIC 400	Analog 	Io-Link 	C6.16
	ACCESSORIES REGTRONIC	Analog 	Io-Link 	C6.18
	PROPORTIONAL PRECISION PRESSURE REGULATOR SYNTRONIC SERIES		C6.19	

PRECISION PRESSURE REGULATOR WITH HIGH EXHAUST FLOW, SERIE GS

GS is a series of precision regulators, designed for rapid relief of overpressure and a high flow rate. They feature identical and opposing regulation valves on the inlet and outlet sides. This enables the regulator to behave symmetrically – precise regulation with a high rate of flow both in and out.

The pressure setting is virtually insensitive to changes in the upstream pressure (see diagram below), which guarantees accuracy even when the mains pressure fluctuates considerably.

A slight escape of air is required for correct operation of the regulator – it must not be considered a defect.

The regulator can be fixed using the through holes in the body or a bracket accessory.

The body has a 1/8" pressure gauge fitting.

GS regulators are suitable for applications requiring good accuracy in maintaining the pressure and a certain sensitivity in relieving pressure peaks, e.g. to supply low-friction cylinders, reel tensioners and coil winders.

Two sizes of compressed air fitting are available: 1/8" and 1/4".

Three different setting ranges are available: 0 to 2 bar, 0 to 4 bar and 0 to 8 bar.

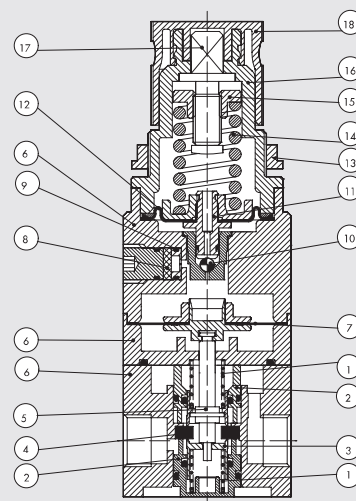


TECHNICAL DATA

		1/8"	1/4"
Threaded port		1/8"	1/4"
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8	
Max. input pressure	bar	10	
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	900	1170
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	1200	1380
Fluid		Unlubricated filtered air	
		The air must be at least 10 μm pre-filtered	
Temperature range	°C	From -10 to +50	
Mounting position		In any position	
Pressure gauge port		G 1/8"	
Weight	g	600	
Exhaust flow rate at 4 bar (regulated pressure)			
ΔP 0.1 bar	Nl/min	450	810
ΔP 0.5 bar	Nl/min	900	1190
Variation in regulated pressure (2 bar) with changes in upstream pressure (4-10 bar)	mbar	± 20	
Relieving sensitivity	mbar	30	
Air consumption – continuous escape (PIN 4 bar)	Nl/min	< 1	
Notes		The regulator pressure must always be set upwards.	
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	
		Do not take air from pressure gauge ports.	

COMPONENTS

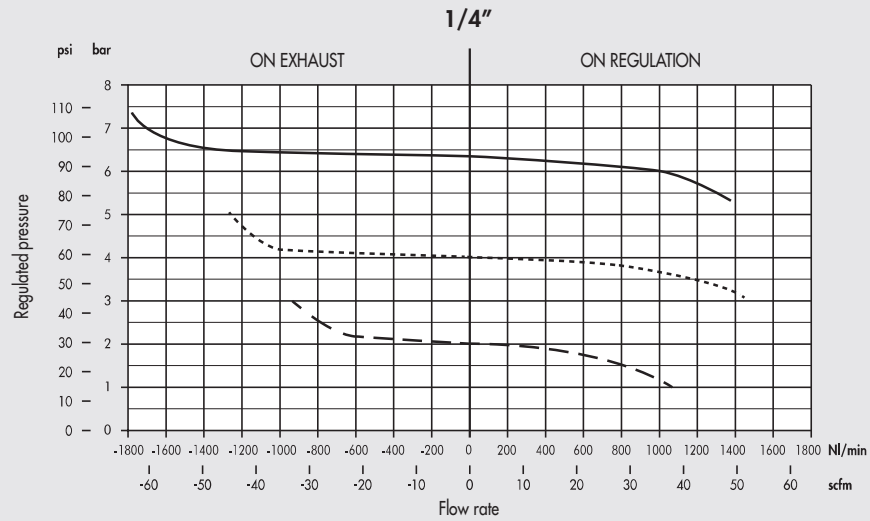
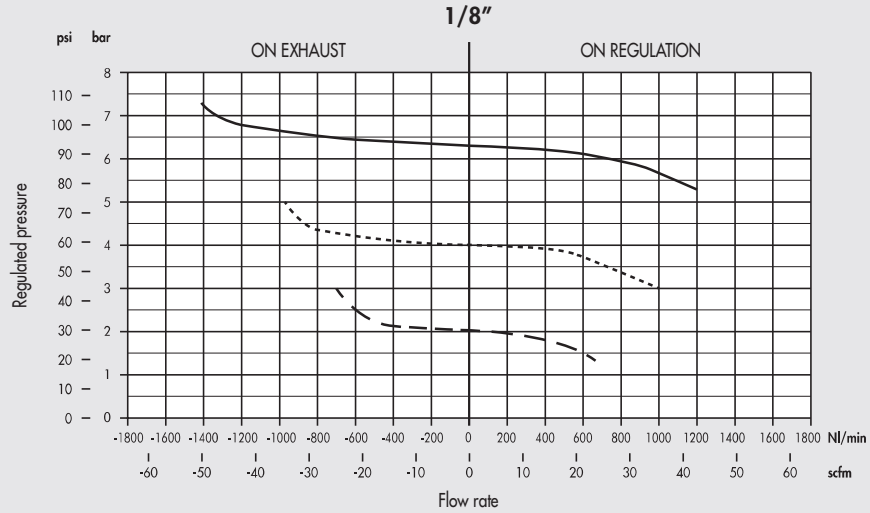
- ① Spring: stainless steel
- ② Cartridges: nickel-plated brass
- ③ Poppet: nickel-plated brass
- ④ Ring: vulcanized NBR
- ⑤ Control lever: brass
- ⑥ Bodies: painted aluminium
- ⑦ Control diaphragm: oil-proof rubber
- ⑧ Filter: sintered bronze
- ⑨ Throttle cartridge: brass
- ⑩ Ball: stainless steel
- ⑪ Ball valve: brass
- ⑫ Regulation diaphragm: NBR
- ⑬ Ring nut: technopolymer
- ⑭ Adjusting spring: steel
- ⑮ Scroll: brass
- ⑯ Bell: technopolymer
- ⑰ Adjusting screw: brass
- ⑱ Knob: technopolymer



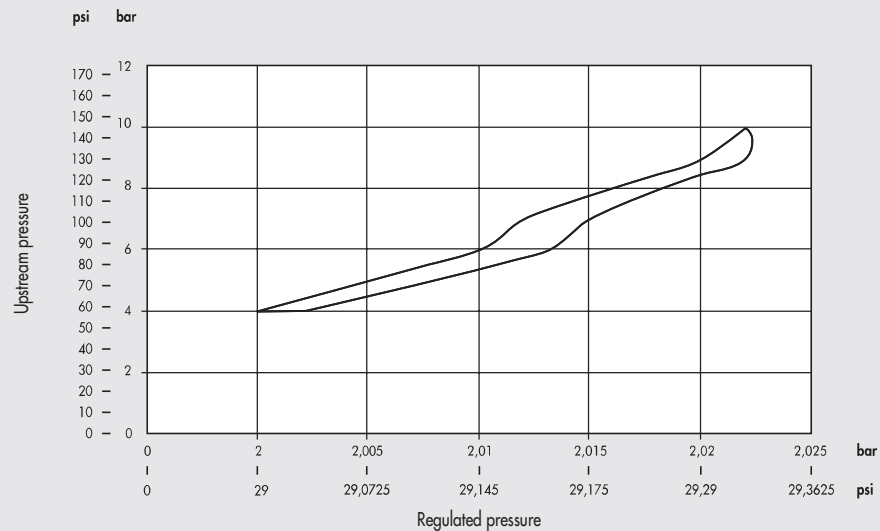
FLOW RATE

Upstream pressure = 10 bar

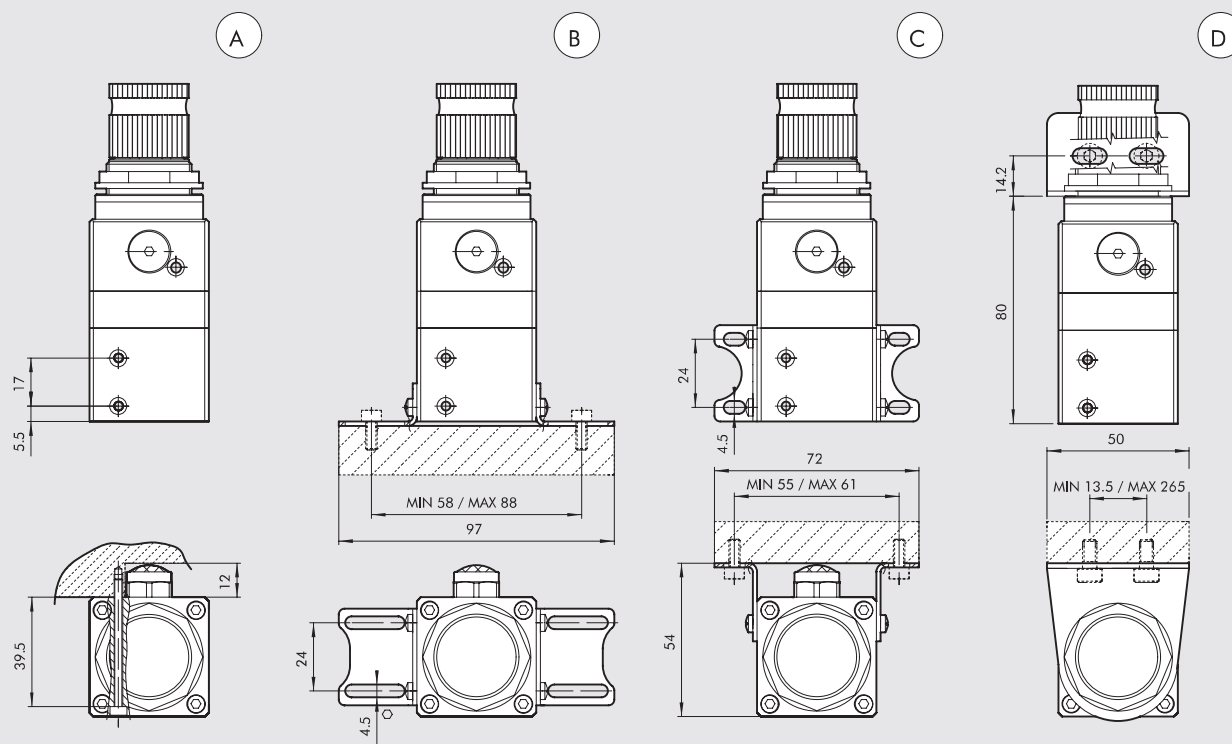
- P reg = 2 bar
- P reg = 4 bar
- P reg = 6.3 bar



UPSTREAM PRESSURE SENSITIVITY

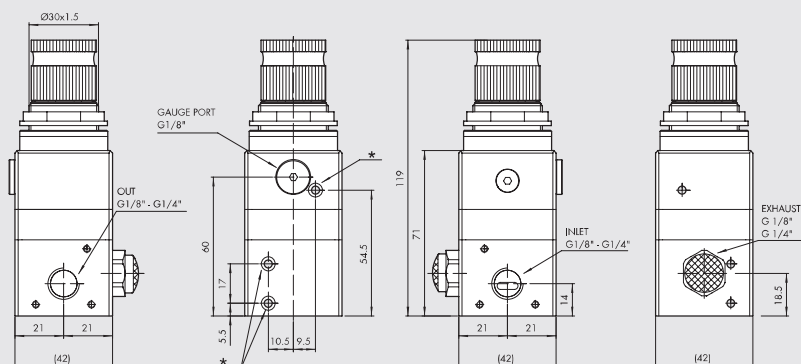


INSTALLATION



- (A) On the wall with 2 M3 hex screws
 (B) On the base with legs code 9200710
 (C) On the wall with legs code 9200710
 (D) On the wall with bracket code 9200701

DIMENSIONS



* M3 hole



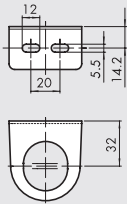
Code	Description
5511200	REG. GS 1/8 02
5511300	REG. GS 1/8 04
5511400	REG. GS 1/8 08
5512200	REG. GS 1/4 02
5512300	REG. GS 1/4 04
5512400	REG. GS 1/4 08

ACCESSORIES

SPARES PARTS

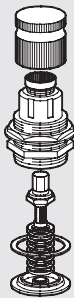
P N E U M A T I C

R/FR FIXING BRACKET



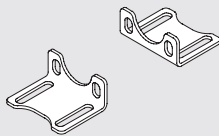
Code	Description
9200701	SF100 - BIT - ND 1/4 - SY1

UPPER COVER FOR REG GS



Code	Description
9250835	SPARES CS REG GS 02
9250836	SPARES CS REG GS 04
9250837	SPARES CS REG GS 08

FIXING BRACKET KIT

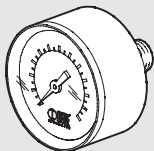


Code	Description
9200710	Fixing bracket kit

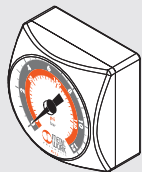
N.B. supplied complete with four M4X6 screws

NOTES

PRESSURE GAUGE



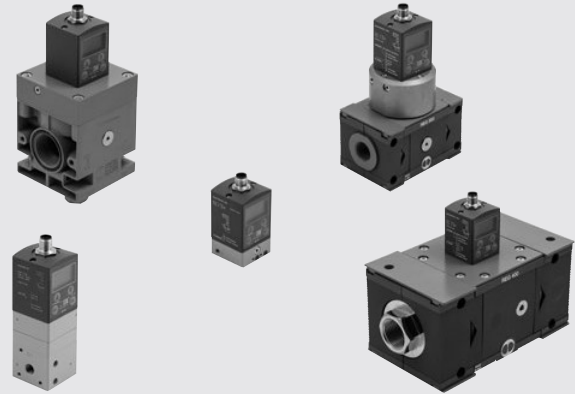
Code	Description
9700102	M 40 1/8 04
9700101	M 40 1/8 012



9700109	M 40x40 1/8 04
9700110	M 40x40 1/8 012

PROPORTIONAL PRECISION PRESSURE REGULATOR REGTRONIC SERIES

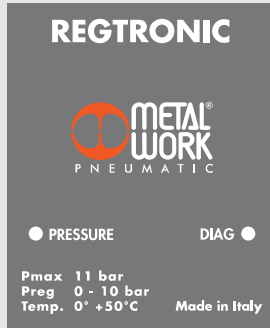
Proportional pressure regulators series REGTRONIC have the job of precisely regulating the pressure in a system, the variables depending on the input command. Remote control regulators are controlled by means of an M12x1 cable and connector and can have Volt, mA, RS232 control or via IO-Link. Regulators with a display can be controlled via a cable or directly using the keys below the display. The pressure value and a series of information and diagnostics are visible at all times on the graphic display. The user-display interface, LEDs and buttons are all on one side. The programming and reading software is comprehensive, simple and intuitive. Pressure control takes place in a "closed-loop" with an electronic precision pressure sensor that measures the downstream pressure, a control system that compares it with the desired pressure, and two mini solenoid valves that adjust the pressure to reach the target value. Through the dedicated "Metal Work RegUp" App, the wireless versions can communicate with Ethernet networks (via MQTT protocol) and mobile devices (smartphones and tablets) via Bluetooth®. Through this App it is possible to view and modify the regulated pressure in real time, set all the operating parameters and view the pressure trend graphs.



TECHNICAL DATA		REGTRONIC				REGTRONIC NEW DEAL		REGTRONIC 300		REGTRONIC 400			
Threaded port		M5	1/8"	1/4"	3/4"	1"	1/2"	3/4"	1"	1"	1 1/4"	1 1/2"	2"
Fluid		Filtered, unlubricated air.											
		The air must be filtered at least 10 µm and without condensation.											
MIN inlet pressure	bar	Regulation pressure + 1 bar											
MAX inlet pressure	bar	11											
Temperature range	°C	from 0 to 50											
Pressure regulation range	bar	from 0.05 to 10 (settable full scale and minimum pressure)											
Flow rate at 6.3 bar ΔP 0.5	Nl/min	10	1300	1500	10000		4500		18000		20000		
Flow rate at 6.3 bar ΔP 1	Nl/min	10	1450	1700	13000		7000		-		-		
Exhaust flow rate at 6.3 bar with 0.1 bar overpressure	Nl/min	2	600	1300	1800		250		400		400		
Exhaust flow rate at 6.3 bar with 0.5 bar overpressure	Nl/min	9	1000	1500	2000		500		850		850		
Response time with ΔP =1 bar	Volume [cc]	100	100	1000	100	1000	1000	1000	1000	1000	1000	1000	
from 6 to 7 bar	s	0.5	0.1	0.15	0.1	0.15	0.27	0.25	0.2	0.2			
from 7 to 6 bar	s	0.55	0.1	0.15	0.1	0.15	0.27	0.33	0.35	0.35			
Weight	kg	0.2	0.38	0.38	1.3		1.5		5		5.8		
Class of protection		IP 65											
Supply voltage range IO-Link version	VDC	from 18 to 30											
Current absorption		Max 150 mA at 18VDC											
Supply voltage range analog version	VDC	12 -10% 24 +30%											
Minimum operating voltage	VDC	10.8											
Maximum operating voltage	VDC	31.2											
Maximum admissible voltage	VDC	32 *											
Current absorption		max 220 mA at 12VDC											
Input signal (input impedance)	Voltage	0 to 5 VDC, 0 to 10 VDC (approx. 6.3 KΩ)											
	Current	4 to 20 mA (approx. 100 Ω)											
	Serial ports	RS 232											
	Manual	Keypad											
Output signal	Analog version voltage	0 to 10 VDC (1 VDC = 1 bar) - 1 mA max											
	Analog version current	4 to 20 mA (4 mA = 0 bar, 20 mA = 10 bar)											
	Digital	PNP open collector output: max 24VDC 60 mA NPN open collector output: max 24VDC 60 mA											
Hysteresis		± 0.2% (Full scale)											
Repeatability		± 0.2% (Full scale)											
Sensitivity/Dead-band		setting range 10 to 300 mbar											
Output pressure (display and keyboard version)	Accuracy	± 0.3% (Full scale)											
	Unit of measurement	bar, MPa, psi											
	Minimum resolution	0.01 bar - 0.001 MPa - 0.01 psi											
Analog output accuracy		± 0.1% of the reading											
Temperature characteristics		max 2 mbar / °C											
Installation position		In any position											
Notes		The features shown refer to the static condition only. With air consumption on the output side, the pressure may vary. On all analog versions you can set the parameters using the software "MWRRegtronic" downloadable from the website www.metalwork.eu ; to connect the PC to Reatronicon you can use the cable code W0970513019.											

* IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

REMOTE-CONTROL VERSION



DISPLAY AND KEYBOARD VERSION



PROGRAMMABLE AND FLEXIBLE

Setting options:

- LANGUAGE
- UNIT OF MEASUREMENT
- TYPE OF INPUT
- TYPE OF DIGITAL OUTPUT
- DEAD-BAND
- FULL SCALE
- MINIMUM PRESSURE

The remote-control version of the Regtronic has two diagnostic LEDs.

The display version also has buttons for entering the various parameters.

PRECISION

Linearity

$\pm 0.5\%$ (full scale)

Hysteresis

$\pm 0.2\%$ (full scale)

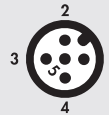
Repeatability

$\pm 0.2\%$ (full scale)

Sensitivity

range **10 to 300** mbar

IO-Link CONNECTOR 5-PIN M12x1



Pin	Signal	Description of Class A Port	Lead colour
1	L+	+24 VDC power supply	Brown
2	NC	/	White
3	L-	0 VDC power supply	Blue
4	C/Q	IO-Link communication	Black
5	NC	/	Gray

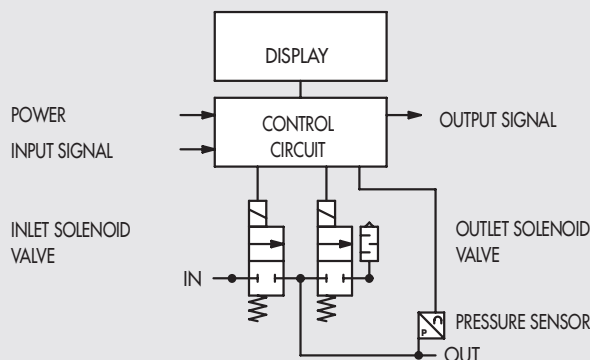
ANALOG CONNECTOR 8-PIN M12x1



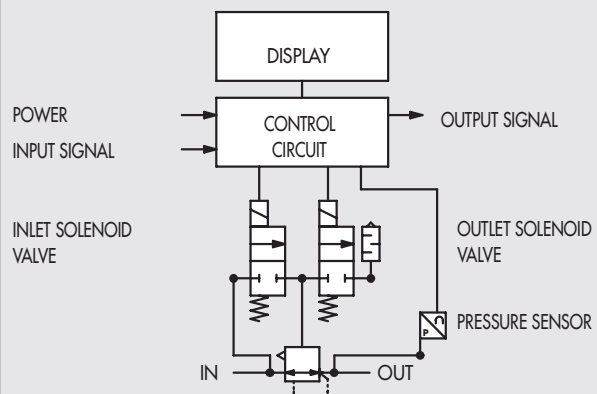
Pin	Signal	Description	Lead colour
1	TX	RS232	White
2	RX	RS232	Brown
3	Pressure set	0 to 10 VDC / 0 to 5 VDC / 4 to 20 mA	Green
4	Digital out	NPN	Yellow
5	Analog out	Voltage version 0 to 10 VDC Current version 4 to 20 mA	Gray
6	Digital out	PNP	Pink
7	0 VDC	Power supply	Blue
8	+ VDC	Power supply	Red

FUNCTION DIAGRAM

REGTRONIC M5



REGTRONIC 1/8" - 1/4" - SK300 - SK400 - NEW DEAL

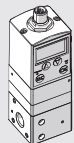


WIRELESS CONNECTION

With the Wireless version of Regtronic, you can establish a connection to a Wi-Fi network via an access point or gateway to monitor and collect all the measured gas values.

Connection to a MQTT Broker via an Access point

MQTT



Broker MQTT



Gathering data from the field makes it possible to:

- carry out a predictive diagnosis of the system;
- monitor the operating parameters at all times and optimize the operation of the machines and the pneumatic system.

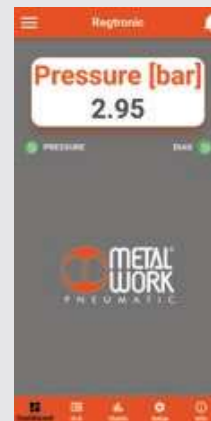
The software can be implemented with analysis functions that provide:

- machine efficiency monitoring;
- to check the pressure trends and long-term forecasting (plant improvement evaluation).

The “Metal Work RegUp” App allows you to connect, via Bluetooth, from Android® and iOS® smartphones, to the Metal Work proportional pressure regulators of the REGTRONIC series with a wireless interface.

Through “Metal Work RegUp” it is possible:

- view and modify the regulated pressure in real time
- set all operating parameters
- view the pressure trend graphs





NOTES

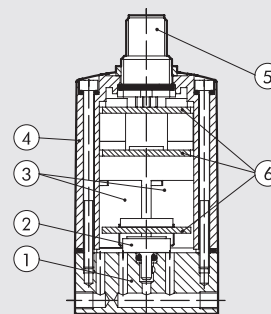
UNITS

REGTRONIC M5

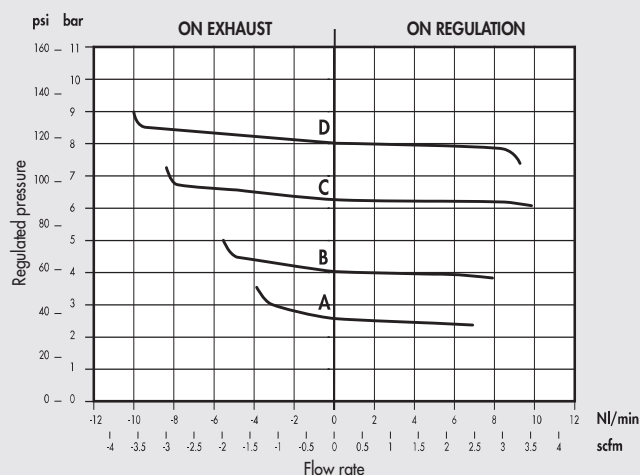
COMPONENTS



- ① BODY: painted aluminium
- ② PRESSURE SENSOR
- ③ SOLENOID VALVE: 10 mm series PLT-10
- ④ SHELL: technopolymer
- ⑤ CONNECTOR M12
- ⑥ ELECTRONIC BOARDS

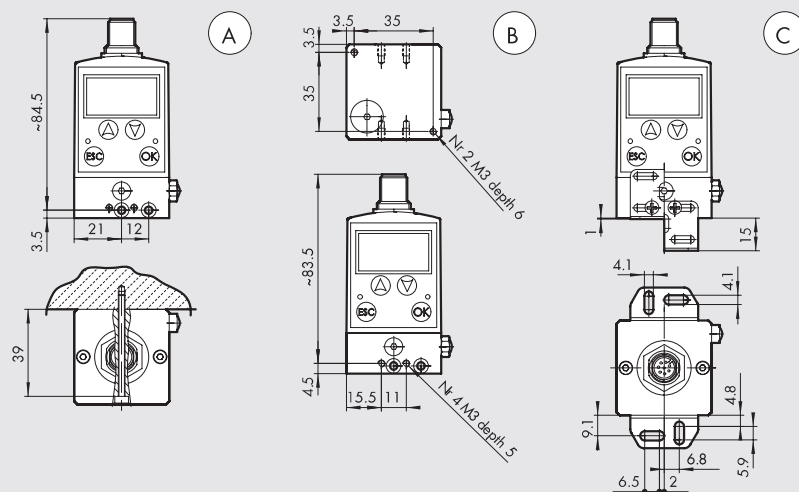


FLOW CHARTS



A = 2.5 bar
B = 4 bar
C = 6.3 bar
D = 8 bar
Pm = 10 bar

FIXING OPTIONS

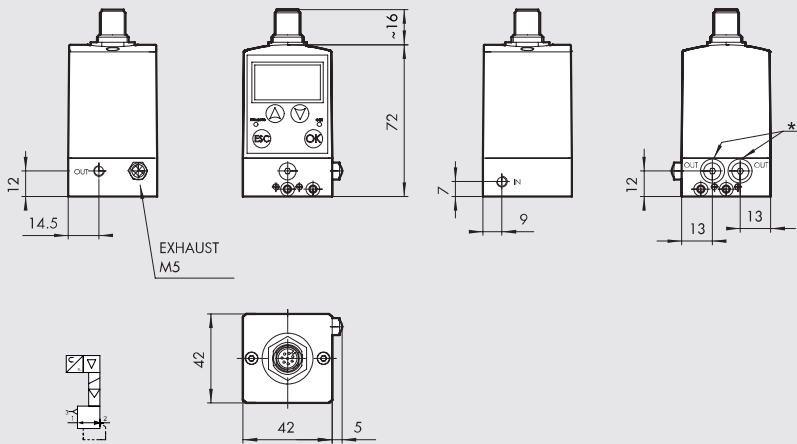


- Ⓐ On the wall with 2 M3 screws, with through holes
- Ⓑ On the wall using the M3 threaded holes on the front, rear and underside
- Ⓒ On the wall with legs code 9200711

UNITS

REGTRONIC M5

DIMENSIONS AND ORDERING CODES

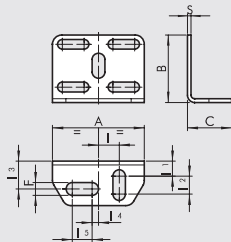


Code	Description
5520500	REGTRONIC M5 with display and keyboard OUT 0-10 V
5520502	REGTRONIC M5 remote control OUT 0-10 V
5540500	REGTRONIC M5 with display and keyboard OUT 4-20 mA
5540502	REGTRONIC M5 remote control OUT 4-20 mA

5530500	REGTRONIC IO-Link M5 with display and keyboard
5530502	REGTRONIC IO-Link M5 remote control

ACCESSORIES

FIXING BRACKET KIT



Code	Description
9200711	Regtronic M5 Fixing bracket kit

A	B	C	F	I	I1	I2	I3	I4	I5	S
30	22	14.5	4.2	6.8	4.8	5.9	9.1	2	6.5	1.2

Note: supplied complete with four M3x6 screws

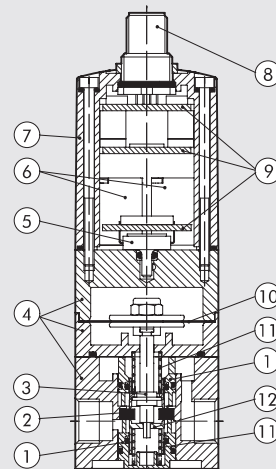
NOTES

REGTRONIC 1/8"; 1/4"

COMPONENTS

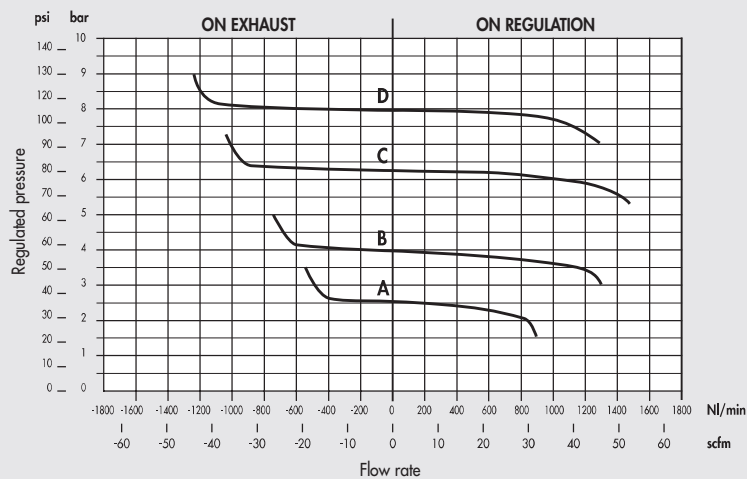


- ① CARTRIDGES: nickel-plated brass
- ② RING: vulcanized NBR
- ③ ROD: steel
- ④ BODIES: painted aluminium
- ⑤ PRESSURE SENSOR
- ⑥ SOLENOID VALVE: 10 mm series PLT-10
- ⑦ SHELL: technopolymer
- ⑧ CONNECTOR M12
- ⑨ ELECTRONIC BOARDS
- ⑩ CONTROL DIAPHRAGM: anti-oil rubber
- ⑪ SPRING: stainless steel
- ⑫ POPPET: nickel-plated brass



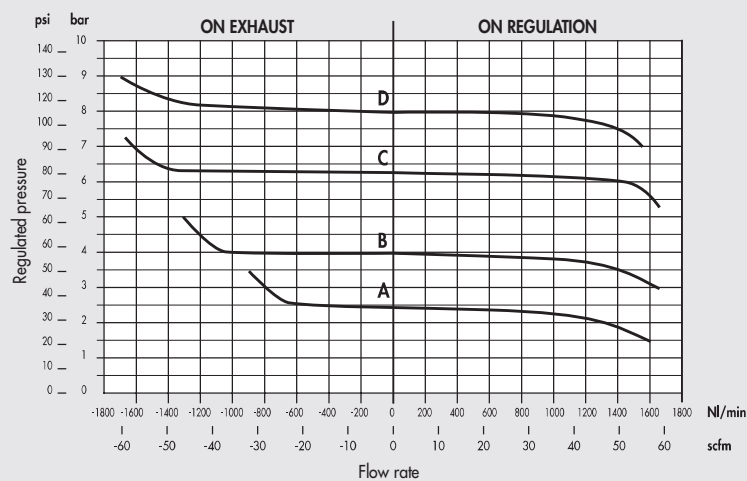
FLOW CHARTS

REGTRONIC 1/8"



A = 2.5 bar
B = 4 bar
C = 6.3 bar
D = 8 bar
Pm = 10 bar

REGTRONIC 1/4"

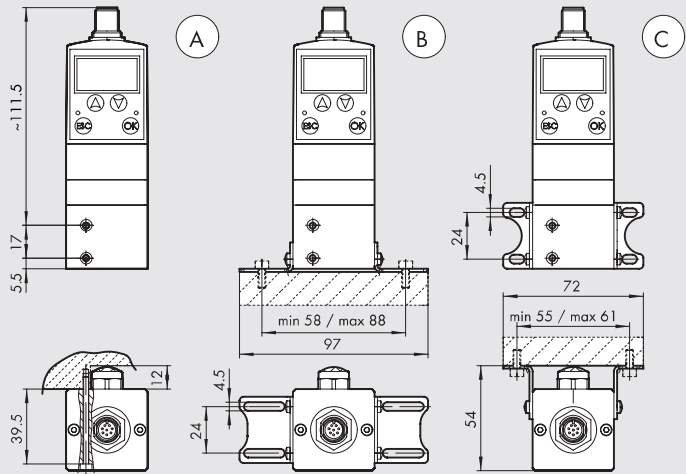


A = 2.5 bar
B = 4 bar
C = 6.3 bar
D = 8 bar
Pm = 10 bar

UNITS

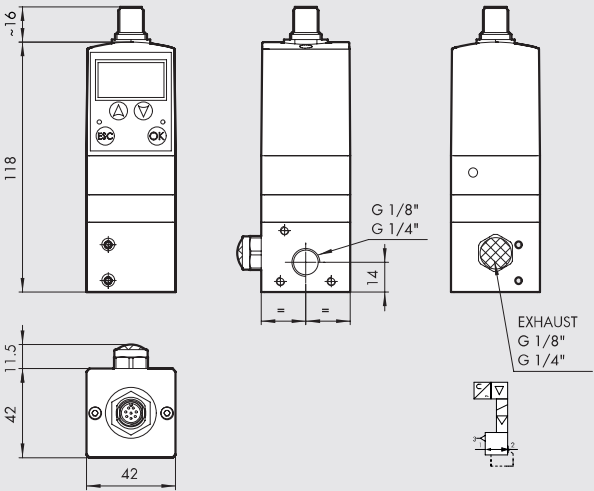
REGTRONIC 1/8"; 1/4"

FIXING OPTIONS



- Ⓐ On the wall with 2 M3 screws
- Ⓑ On the base with legs code 9200710
- Ⓒ On the wall with legs code 9200710

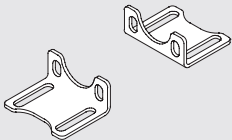
DIMENSIONS AND ORDERING CODES



Code	Description
5521500	REGTRONIC 1/8 with display and keyboard OUT 0-10 V
5521502	REGTRONIC 1/8 remote control OUT 0-10 V
5522500	REGTRONIC 1/4 with display and keyboard OUT 0-10 V
5522502	REGTRONIC 1/4 remote control OUT 0-10 V
5541500	REGTRONIC 1/8 with display and keyboard OUT 4-20 mA
5541502	REGTRONIC 1/8 remote control OUT 4-20 mA
5542500	REGTRONIC 1/4 with display and keyboard OUT 4-20 mA
5542502	REGTRONIC 1/4 remote control OUT 4-20 mA
5531500	REGTRONIC IO-Link 1/8 with display and keyboard
5531502	REGTRONIC IO-Link 1/8 remote control
5531510	REGTRONIC IO-Link 1/8 with display, keyboard and Wi-Fi
5532500	REGTRONIC IO-Link 1/4 with display and keyboard
5532502	REGTRONIC IO-Link 1/4 remote control
5532510	REGTRONIC IO-Link 1/4 with display, keyboard and Wi-Fi

ACCESSORIES

FIXING BRACKET KIT



Code	Description
9200710	Fixing bracket kit

Note: supplied complete with four M4x6 screws

NOTES

UNITS

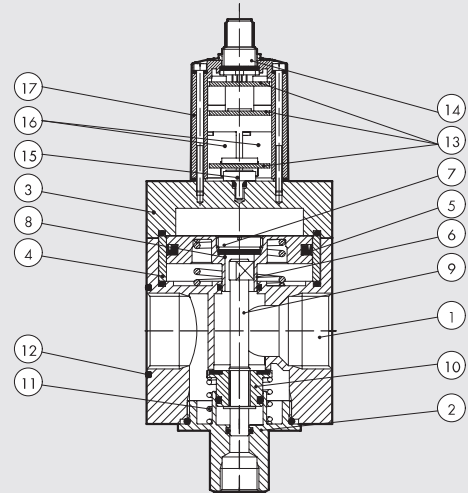
REGTRONIC 1/8"; 1/4"

REGTRONIC Newdeal

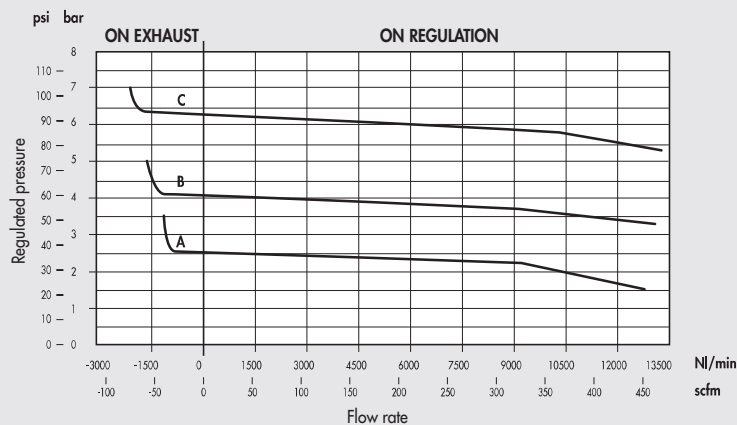
COMPONENTS



- ① REGULATOR BODY: aluminium
- ② LOWER CAP: aluminium
- ③ UPPER PLATE: aluminium
- ④ SPACER: aluminium
- ⑤ GASKET: NBR
- ⑥ PISTON ROD: aluminium
- ⑦ CAP FOR PLAIN GASKET: OT58 brass
- ⑧ PLAIN GASKET: NBR
- ⑨ ROD: OT58 brass
- ⑩ VALVE: OT58 brass
- ⑪ VALVE SPRING: steel
- ⑫ GASKETS: NBR
- ⑬ ELECTRONIC BOARDS
- ⑭ CONNECTOR M12
- ⑮ PRESSURE SENSOR
- ⑯ SOLENOID VALVE: 10 mm series PLT-10
- ⑰ SHELL: tecnopolymer

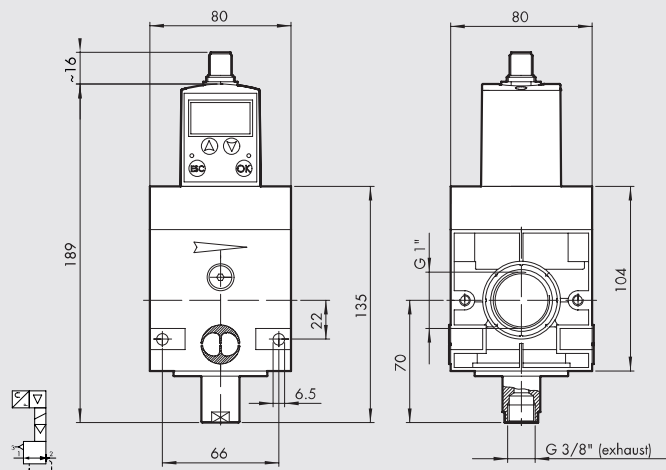


FLOW CHARTS



A = 2.5 bar
B = 4 bar
C = 6.3 bar
Pm = 10 bar

DIMENSIONS AND ORDERING CODES



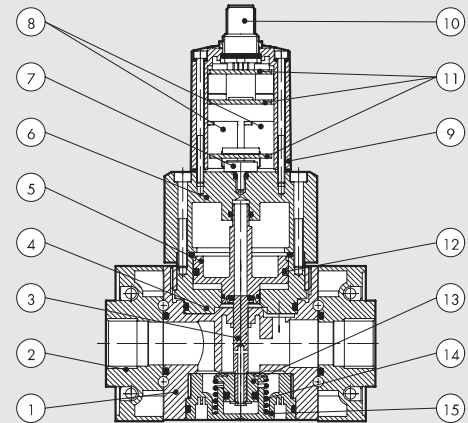
Code	Description
1520003	REGTRONIC New Deal 3/4 with display and keyboard OUT 0-10 V
1520004	REGTRONIC New Deal 3/4 remote control OUT 0-10 V
1620003	REGTRONIC New Deal 1 with display and keyboard OUT 0-10 V
1620004	REGTRONIC New Deal 1 remote control OUT 0-10 V
1520043	REGTRONIC New Deal 3/4 with display and keyboard OUT 4-20 mA
1520044	REGTRONIC New Deal 3/4 remote control OUT 4-20 mA
1620043	REGTRONIC New Deal 1 with display and keyboard OUT 4-20 mA
1620044	REGTRONIC New Deal 1 remote control OUT 4-20 mA
1520033	REGTRONIC IO-Link New Deal 3/4 display and keyboard display
1520034	REGTRONIC IO-Link New Deal 3/4 remote control
1620033	REGTRONIC IO-Link New Deal 1 display and keyboard display
1620034	REGTRONIC IO-Link New Deal 1 remote control

REGTRONIC 300

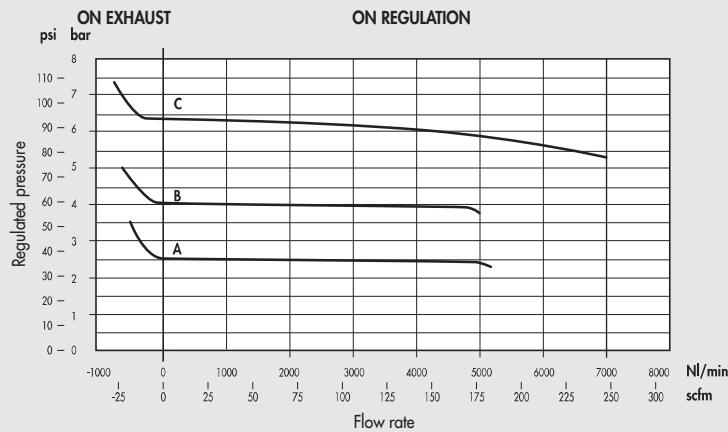
COMPONENTS



- ① BODY: tecnopolymer
- ② END PLATE: zamak
- ③ STEM: OT58 brass
- ④ UPPER CUP: aluminium
- ⑤ PISTON: OT58 brass
- ⑥ CUP: aluminium
- ⑦ PRESSURE SENSOR
- ⑧ SOLENOID VALVE: 10 mm series PLT-10
- ⑨ SHELL: tecnopolymer
- ⑩ CONNECTOR M12
- ⑪ ELECTRONIC BOARDS
- ⑫ GASKET: NBR
- ⑬ VALVE WITH NBR VULCANIZED GASKET
- ⑭ VALVE SPRING: stainless steel
- ⑮ LOWER CUP: tecnopolymer

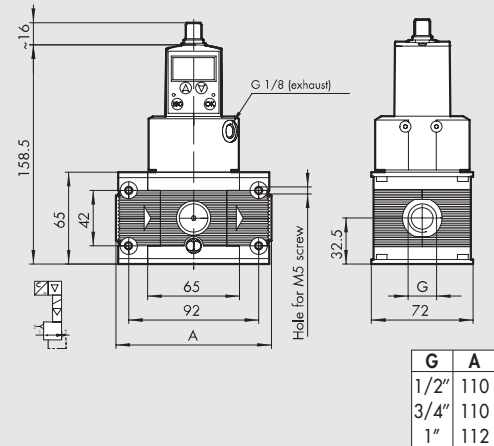


FLOW CHARTS



A = 2.5 bar B = 4 bar C = 6.3 bar Pm = 10 bar

DIMENSIONS



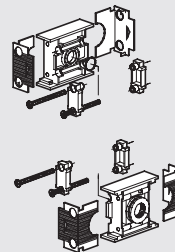
ORDERING CODES

Code	Description
4402012A	REGTRONIC 300 with display and keyboard without end plates OUT 0-10 V
4402013A	REGTRONIC 300 remote control without end plates OUT 0-10 V
4402012	REGTRONIC 300 1/2 with display and keyboard OUT 0-10 V
4402013	REGTRONIC 300 1/2 remote control OUT 0-10 V
4502012	REGTRONIC 300 3/4 with display and keyboard OUT 0-10 V
4502013	REGTRONIC 300 3/4 remote control OUT 0-10 V
4602012	REGTRONIC 300 1 with display and keyboard OUT 0-10 V
4602013	REGTRONIC 300 1 remote control OUT 0-10 V
4402412A	REGTRONIC 300 with display and keyboard without end plates OUT 4-20 mA
4402413A	REGTRONIC 300 remote control without end plates OUT 4-20 mA
4402412	REGTRONIC 300 1/2 with display and keyboard OUT 4-20 mA
4402413	REGTRONIC 300 1/2 remote control OUT 4-20 mA
4502412	REGTRONIC 300 3/4 with display and keyboard OUT 4-20 mA
4502413	REGTRONIC 300 3/4 remote control OUT 4-20 mA
4602412	REGTRONIC 300 1 with display and keyboard OUT 4-20 mA
4602413	REGTRONIC 300 1 remote control OUT 4-20 mA

4402312A	REGTRONIC IO-Link 300 with display and keyboard without end plates
4402313A	REGTRONIC IO-Link 300 remote control without end plates
4402312	REGTRONIC IO-Link 300 1/2 with display and keyboard
4402313	REGTRONIC IO-Link 300 1/2 remote control
4502312	REGTRONIC IO-Link 300 3/4 with display and keyboard
4502313	REGTRONIC IO-Link 300 3/4 remote control
4602312	REGTRONIC IO-Link 300 1 with display and keyboard
4602313	REGTRONIC IO-Link 300 1 remote control

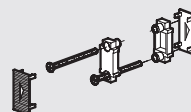
ACCESSORIES

INPUT/OUTPUT END PLATE KIT FOR SKILLAIR



Code	Description
9430701	IN/OUT end plates kit 300 1/2
9530901	IN/OUT end plates kit 300 3/4
9531001	IN/OUT end plates kit 300 1

CONNECTOR KIT FOR SKILLAIR CODE A



Code	Description
9430301	Connector kit 300

UNITS

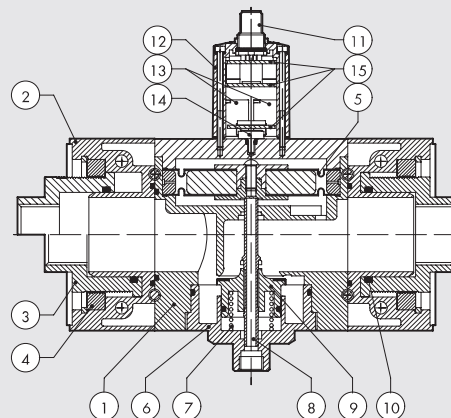
REGTRONIC 300

REGTRONIC 400



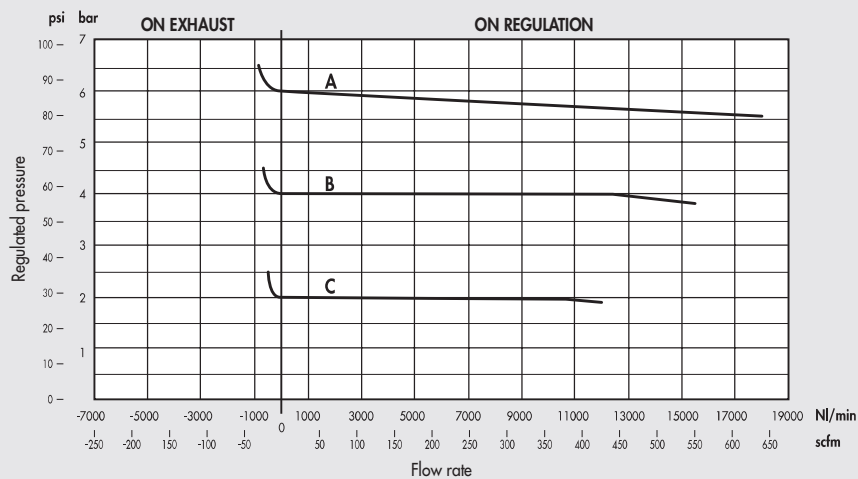
COMPONENTS

- ① BODY: Aluminium
- ② END PLATE: Aluminium
- ③ THREADED BUSH, AXIAL
ADJUSTMENT: anodized aluminium
- ④ RETAINING RING: OT58 brass
- ⑤ ROLLING DIAPHRAGM
- ⑥ BRASS PLUG: anodized aluminium
- ⑦ VALVE SPRING: Stainless steel
- ⑧ STEM: OT58 brass with air relief hole
- ⑨ VALVE WITH NBR VULCANIZED GASKET
- ⑩ GASKETS: NBR
- ⑪ CONNECTOR M12
- ⑫ SHELL: technopolymer
- ⑬ SOLENOID VALVE: 10 mm series PLT-10
- ⑭ PRESSURE SENSOR
- ⑮ ELECTRONIC BOARDS



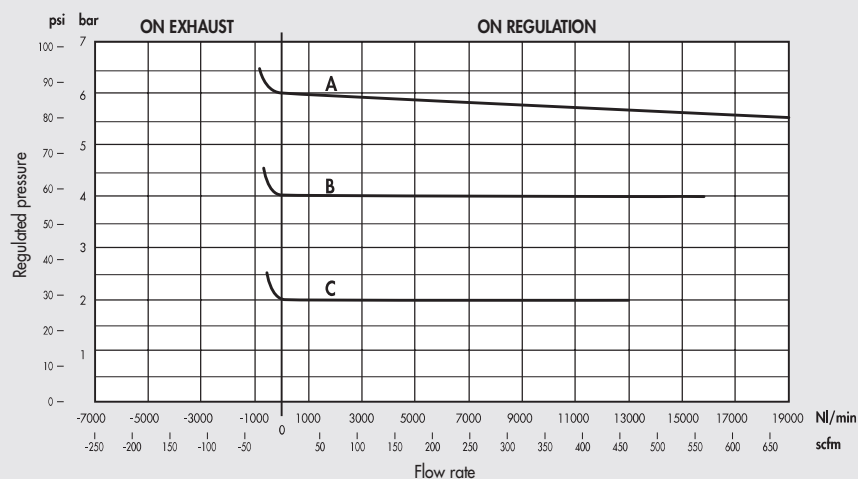
FLOW CHARTS

REGTRONIC 400 1" to 1 1/2"



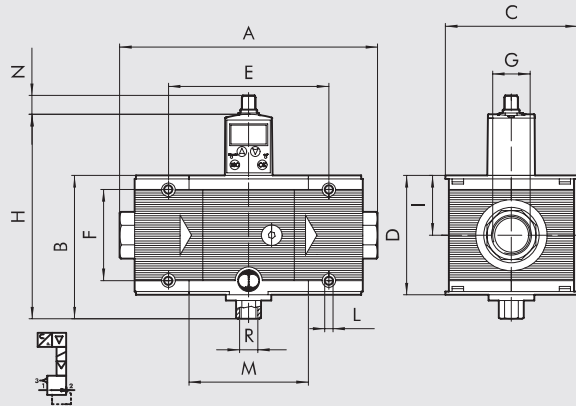
A = 6 bar
B = 4 bar
C = 2 bar
Pm = 7 bar

REGTRONIC 400 2"



A = 6 bar
B = 4 bar
C = 2 bar
Pm = 7 bar

DIMENSIONS



Threaded port G	REGTRONIC 400			
	1"	1 1/4"	1 1/2"	2"
A		225 to 255		283 to 313
B			127	
C			116	
D			105	
E			141.4	
F			80	
G	1"	1 1/4"	1 1/2"	2"
H			182	
I			52.5	
L			Hole for M6 screws	
M			105.4	
N			~16	
R (exhaust)			1/4"	

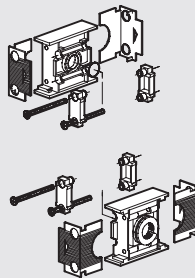
ORDERING CODES

Code	Description
6102012A	REGTRONIC 400 with display and keyboard without end plates OUT 0-10 V
6102013A	REGTRONIC 400 control remote without end plates OUT 0-10 V
6102012	REGTRONIC 400 1 with display and keyboard OUT 0-10 V
6102013	REGTRONIC 400 1 control remote OUT 0-10 V
6202012	REGTRONIC 400 1 1/4 with display and keyboard OUT 0-10 V
6202013	REGTRONIC 400 1 1/4 control remote OUT 0-10 V
6302012	REGTRONIC 400 1 1/2 with display and keyboard OUT 0-10 V
6302013	REGTRONIC 400 1 1/2 control remote OUT 0-10 V
6402012	REGTRONIC 400 2 with display and keyboard OUT 0-10 V
6402013	REGTRONIC 400 2 control remote OUT 0-10 V
6102412A	REGTRONIC 400 with display and keyboard without end plates OUT 4-20 mA
6102413A	REGTRONIC 400 control remote without end plates OUT 4-20 mA
6102412	REGTRONIC 400 1 with display and keyboard OUT 4-20 mA
6102413	REGTRONIC 400 1 control remote OUT 4-20 mA
6202412	REGTRONIC 400 1 1/4 with display and keyboard OUT 4-20 mA
6202413	REGTRONIC 400 1 1/4 control remote OUT 4-20 mA
6302412	REGTRONIC 400 1 1/2 with display and keyboard OUT 4-20 mA
6302413	REGTRONIC 400 1 1/2 control remote OUT 4-20 mA
6402412	REGTRONIC 400 2 with display and keyboard OUT 4-20 mA
6402413	REGTRONIC 400 2 control remote OUT 4-20 mA

Code	Description
6102312A	REGTRONIC IO-Link 400 with display and keyboard without end plates
6102313A	REGTRONIC IO-Link 400 remote control without end plates
6102312	REGTRONIC IO-Link 400 1 with display and keyboard
6102313	REGTRONIC IO-Link 400 1 remote control
6202312	REGTRONIC IO-Link 400 1 1/4 with display and keyboard
6202313	REGTRONIC IO-Link 400 1 1/4 remote control
6302312	REGTRONIC IO-Link 400 1 1/2 with display and keyboard
6302313	REGTRONIC IO-Link 400 1 1/2 remote control
6402312	REGTRONIC IO-Link 400 2 with display and keyboard
6402313	REGTRONIC IO-Link 400 2 remote control

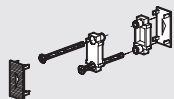
ACCESSORIES

INPUT/OUTPUT END PLATE KIT FOR SKILLAIR



Code	Description
9631001	IN/OUT end plates kit 400 1
9631101	IN/OUT end plates kit 400 1 1/4
9631201	IN/OUT end plates kit 400 1 1/2
9631301	IN/OUT end plates kit 400 2

CONNECTOR KIT FOR SKILLAIR CODE A

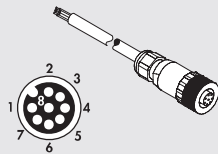


Code	Description
9630301	Connector kit 400

ACCESSORIES REGTRONIC

ANALOG VERSION

CONNECTOR M12x1, 8-PIN, A-CODED, FEMALE, STRAIGHT

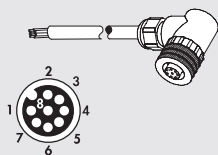


Code	Description
W0970513010	Connector M12x1, 8-pin, A-coded, female, straight, with cable L = 5 m

Note: can only be used for analog version

Pin	Cable color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red

CONNECTOR M12x1, 8-PIN, A-CODED, FEMALE, 90°, WITH CABLE

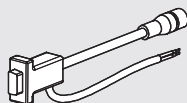


Code	Description
W0970513011	Connector M12x1, 8-pin, A-coded, female, 90°, with cable L = 5 m

Note: can only be used for analog version

Pin	Cable color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red

CONFIGURATION CABLE



Code	Description
W0970513019	Configuration cable Regtronic

The cable consists of:

- M12 8-PIN female connector to be connected to Regtronic
- RS232 serial connector to be connected to PC
- 2 wires to supply 24VDC power

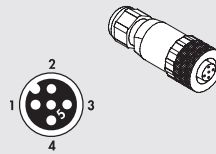
The package also includes a RS232-USB adapter

Note: can only be used for analog version

NOTES

IO-Link VERSION

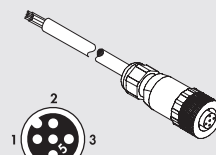
CONNECTOR M12x1, 5-PIN, A-CODED, FEMALE, STRAIGHT



Code	Description
W0970513001	Connector M12x1, 5-pin, A-coded, female, straight

Note: can only be used for version IO-Link

CONNECTOR M12x1, 5-PIN, A-CODED, FEMALE, STRAIGHT

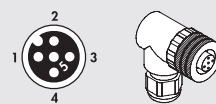


Code	Description
W0970513002	Connector M12x1, 5-pin, A-coded, female, straight, with cable L = 5 m

Note: can only be used for version IO-Link

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray

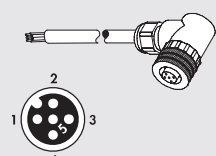
CONNECTOR M12x1, 5-PIN, A-CODED, FEMALE, 90°



Code	Description
W0970513003	Connector M12x1, 5-pin, A-coded, female, 90°

Note: can only be used for version IO-Link

CONNECTOR M12x1, 5-PIN, A-CODED, FEMALE, 90°, WITH CABLE



Code	Description
W0970513004	Connector M12x1, 5-pin, A-coded, female, 90°, with cable L = 5 m

Note: can only be used for version IO-Link

Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Gray

PROPORTIONAL PRECISION PRESSURE REGULATOR SYNTRONIC SERIES



The proportional regulators in the SYNTRONIC series are used to precisely control the pressure in a system, with varying values depending on the input command. The regulators can be controlled remotely via a cable connection and an M12x1 connector accepting commands in Volts or mA. The main casing is made of techno-polymer, the display (when present) is the 3-digit type and the pneumatic connections are obtained with inset and easily replaceable metal bushings, as with other products in the Syntesi series.

The presence of two rolling diaphragms offers several advantages, including increased stroke, which provides greater valve opening and consequently increased flow rate, thereby reducing dynamic and inrush friction.

Syntronic is designed in such a way as to cause the downstream pressure to be relieved when the upstream pressure is set to zero. This makes it possible, for example, to arrange the regulator between a valve and a cylinder because air can flow in both directions, towards the cylinder with regulated pressure and back to the relieving valve.

The pressure value and a range of information and diagnostics are displayed at all times on the 7 segments display.

The user interface with the display and LEDs is entirely on one side.

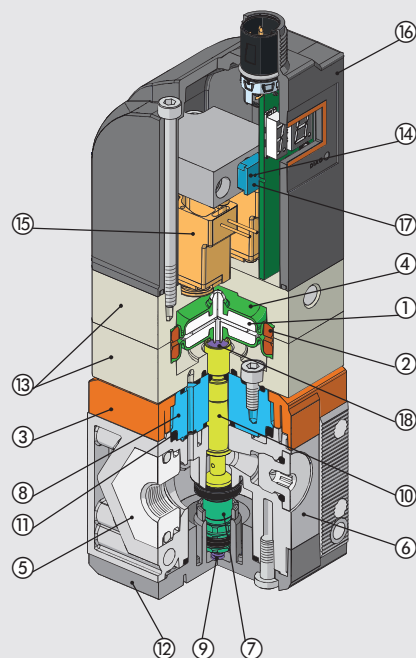
Pressure is controlled in a 'closed loop' via a precision electronic sensor that detects the downstream pressure value, a control system that matches it to the desired pressure and two miniature solenoid valves that adjust the pressure to the target value.



TECHNICAL DATA				
Threaded port		1/8"	1/4"	3/8"
Fluid		Filtered, unlubricated air.		
		The air must be filtered at least 10 µm and without condensation.		
MIN inlet pressure	bar	Regulation pressure + 1 bar		
MAX inlet pressure	bar	11		
Temperature range	°C	0 ÷ 50		
Pressure regulation range	bar	0.2 ÷ 10		
Flow rate at 6.3 bar ΔP 0.5 inlet pressure 10 bar	Nl/min	1100	1800	2200
	scfm	39	64	78
Flow rate at 6.3 bar ΔP 1 inlet pressure 10 bar	Nl/min	1500	2200	2800
	scfm	53	78	99
Weight	g	378	373	364
Class of protection		IP65		
Full outflow with zero inlet pressure		Included		
Supply voltage range	VDC	12 -10% 24 +30%		
Minimum operating voltage	VDC	10.8		
Maximum operating voltage	VDC	31.2		
Maximum admissible voltage	VDC	32*		
Current absorption		max 220 mA a 12VDC		
Hysteresis		< ± 0.4% (Full scale)		
Repeatability		< ± 0.2% (Full scale)		
Sensitivity/Dead-band	bar	0.1		
Output pressure (display version)	Accuracy	< ± 0.1% (Full scale)		
	Unit of measurement	bar		
	Minimum resolution	0.01 bar		
Analogue output accuracy		< ± 0.1% (Full scale)		
Temperature characteristics		max 2 mbar/°C		
Installation position		In any position		
Wall fixing screws		No. 2 M4 screws		
Notes		The features shown refer to the static condition only. With air consumption on the output side, the pressure may vary.		

COMPONENTS

- ① Anodized aluminium plate
- ② Anodized aluminium diaphragm washer
- ③ Technopolymer flange
- ④ NBR rolling diaphragm
- ⑤ IN/OUT bushing made of OT58 nickel-plated brass
- ⑥ Technopolymer regulator body
- ⑦ OT58 brass valve, with NBR vulcanized gasket
- ⑧ Passivated aluminium upper cap
- ⑨ Stainless steel valve spring
- ⑩ OT58 brass rod
- ⑪ O-rings in NBR
- ⑫ Technopolymer cap
- ⑬ Painted aluminum bodies
- ⑭ Pressure sensor
- ⑮ 10 mm solenoid valves PLT-10 series
- ⑯ Technopolymer cover
- ⑰ Electronic board
- ⑱ Exhaust gasket in NBR



WIRING DIAGRAM

Analogue version 0-10 V



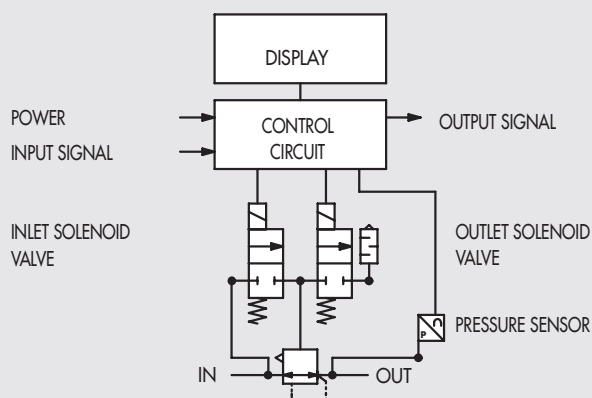
Pin	Function description	Lead colour
1	+12÷24 VDC power supply	Brown
2	IN + analogue input 0-10V	White
3	0VDC (GND) power supply	Blue
4	IN - analogue input 0-10V	Black
5	Analogue output 0-10V	Gray

Analogue version 4-20 mA



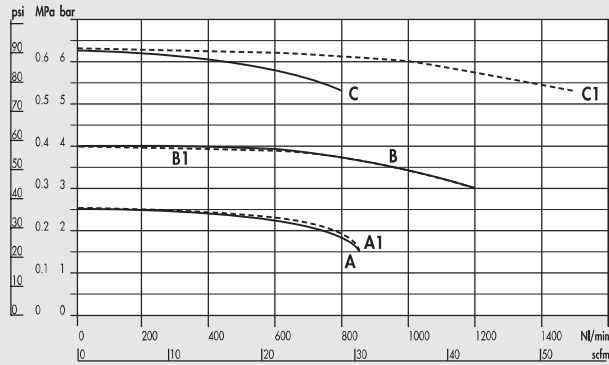
Pin	Function description	Lead colour
1	+12÷24 VDC power supply	Brown
2	IN + analogue input 4-20 mA	White
3	0VDC (GND) power supply	Blue
4	IN - analogue input 4-20 mA	Black
5	Analogue output 4-20 mA	Gray

FUNCTION DIAGRAM

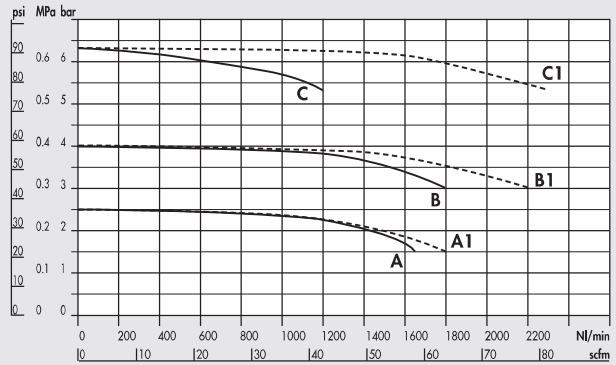


FLOW CHARTS

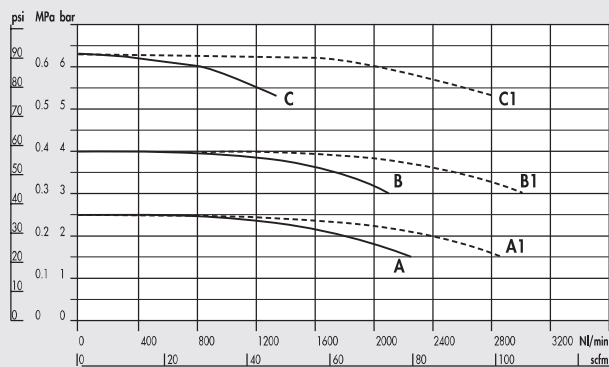
Syntronic SY1 1/8"



Syntronic SY1 1/4"



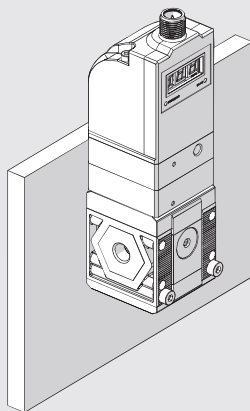
Syntronic SY1 3/8"



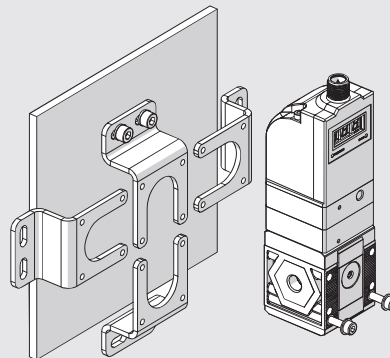
- A = P In 7 bar - P Out 2.5 bar
 B = P In 7 bar - P Out 4 bar
 C = P In 7 bar - P Out 6.3 bar
 A1 = P In 10 bar - P Out 2.5 bar
 B1 = P In 10 bar - P Out 4 bar
 C1 = P In 10 bar - P Out 6.3 bar

MOUNTING OPTIONS

On the wall, using two screws

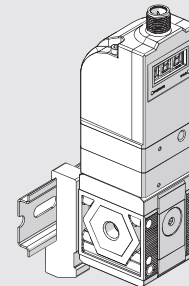


Using a bracket



The bracket can be secured in any position

On a DIN EN50022 bar with the apposite adaptor



Technical drawing of the M12x1 sensor, showing front and side views with dimensions:

- Front View (Left):**
 - A:** Total width.
 - A1:** Width of the top section.
 - B:** Total height.
 - D:** Height of the lower section.
 - E:** Width of the bottom section.
 - G:** Thickness of the bottom flange.
- Side View (Right):**
 - M12x1:** Thread specification for the top connection.
 - L:** Height of the bottom flange.
 - H:** Width of the bottom flange.
 - C:** Total width of the side view.

[illegible]

56	1	1	G	00	1
SYNTESI	SIZE	THREADED INPUT CONNECTION	ELEMENT	TYPE	THREADED OUTPUT CONNECTION
56 Syntesi	1 Size 1	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port	G Syntronic	00 Remote control 0-10V 01 Remote control 4-20 mA 10 With display 0-10V 11 With display 4-20 mA	0 Without bushing 1 1/8" port 2 1/4" port 3 3/8" port

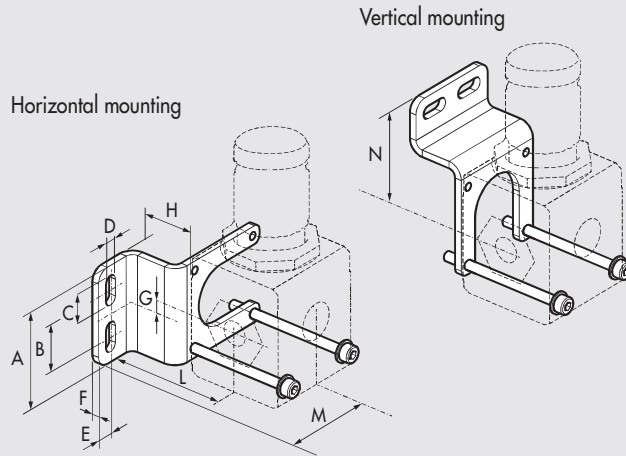
N.B. Besides the below mentioned codes, you can order elements composed at your will according to the key to codes.

Code	Description	Code	Description
5610G000	SYNTRONIC SY1 remote control 0-10V without bushings	5612G002	SYNTRONIC SY1 1/4 remote control 0-10V
5610G010	SYNTRONIC SY1 remote control 4-20 mA without bushings	5612G012	SYNTRONIC SY1 1/4 remote control 4-20 mA
5610G100	SYNTRONIC SY1 with display 0-10V without bushings	5612G102	SYNTRONIC SY1 1/4 with display 0-10V
5610G110	SYNTRONIC SY1 with display 4-20 mA without bushings	5612G112	SYNTRONIC SY1 1/4 with display 4-20 mA
5611G001	SYNTRONIC SY1 1/8 remote control 0-10V	5613G003	SYNTRONIC SY1 3/8 remote control 0-10V
5611G011	SYNTRONIC SY1 1/8 remote control 4-20 mA	5613G013	SYNTRONIC SY1 3/8 remote control 4-20 mA
5611G101	SYNTRONIC SY1 1/8 with display 0-10V	5613G103	SYNTRONIC SY1 3/8 with display 0-10V
5611G111	SYNTRONIC SY1 1/8 with display 4-20 mA	5613G113	SYNTRONIC SY1 3/8 with display 4-20 mA

NOTES

ACCESSORIES

MOUNTING BRACKET

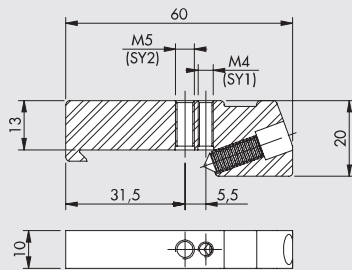


Code	Description
9200716X	Mounting bracket SY1

Note: Supplie complete with screws and washers.
Max torque 0.8 Nm for SY1

Code	A	B	C	D	E	F	G	H	L	M	N
9200716X	41.5	20	12.7	5.5	7	3	0.8	25	43.8	46.5	47

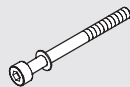
CONNECTION BRACKETS ON THE BAR (DIN EN50022)



Code	Description
9200718X	Connection brackets on DIN bar, SY1 - SY2

Note: 2 pieces per pack complete with screws and washers.
Max torque 0.8 Nm for SY1

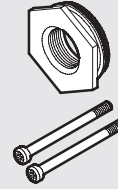
WALL-FIXING SCREW



Code	Description
9210030	M4 x 55 fixing screw SY1

Max torque 0.8 Nm for SY1

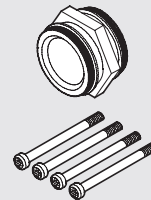
THREADED PORT



Code	Description
9210001	Kit IN OUT 1/8 SY1
9210002	Kit IN OUT 1/4 SY1
9210003	Kit IN OUT 3/8 SY1

Max torque 0.4 Nm for SY1

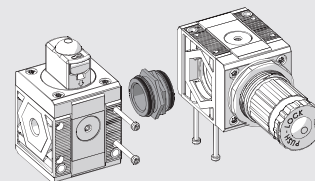
CONNECTING NIPPLE KIT



Code	Description
9210000	Connecting nipple kit SY1

Max torque 0.4 Nm for SY1

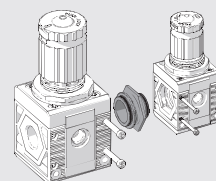
90° CONNECTING ELEMENT KIT



Code	Description
9210009	90° SY1 connection element kit

Max torque 0.4 Nm for SY1

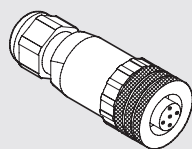
SY1 - SY2 SIZE ADAPTER



Code	Description
9210006	SY1 - SY2 size adapter

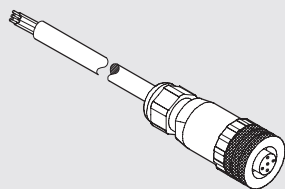
Max torque 0.4 Nm for SY1

STRAIGHT CONNECTOR



Code	Description
W0970513001	5-PIN M12x1 straight connector

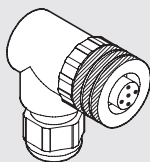
STRAIGHT CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

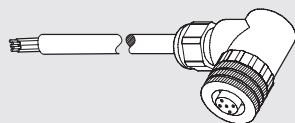
Code	Description
W0970513002	5-PIN M12x1 straight connector with wire L = 5 m

90° CONNECTOR



Code	Description
W0970513003	M12x1 5-PIN 90° connector

90° CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

Code	Description
W0970513004	M12x1 5-PIN 90° connector with wire L = 5 m

NOTES

UNITS

PRESSURE SWITCHES

This type of pressure switch features a high degree of miniaturisation and a modern attractive design.
It can be installed in any position and also mounted onto a wall by means of two transversal holes.

In order to reduce wiring times, it is supplied ready assembled with a 2-metre electric cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.

A knurled push-lock handle is provided for regulation

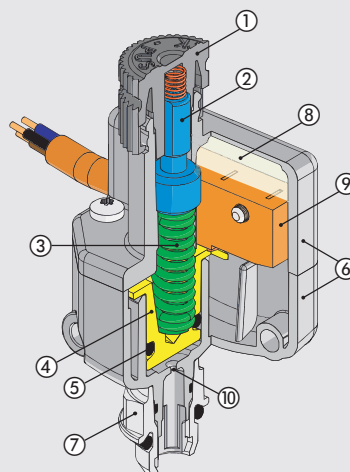


TECHNICAL DATA

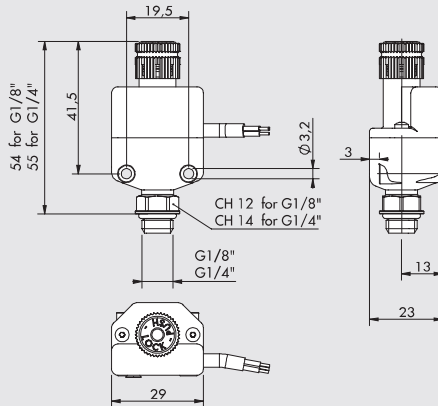
Adjustable pressure interval	bar	0.5 to 10
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)
Maximum pressure	bar	15
	MPa	1.5
	psi	217
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Lower threaded port		G 1/8" - G 1/4"
Maximum current	A	2
Maximum voltage	V	250
Outside diameter of cable	mm	4.9
Number of wires and cross section		3 x 0.5 mm ²
Contacts		Normally-Open (NO) and Normally-Closed (NC)
Protection		IP65
Number of switchings		5 x 10 ⁶
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Mounting position		In any position.
Weight	g	With cable 2 m: 12 With M8 connector: 35

COMPONENTS

- ① Technopolymer adjusting push-lock handle
- ② Brass adjusting screw
- ③ Steel piston spring
- ④ Brass piston
- ⑤ NBR gaskets
- ⑥ Technopolymer bodies
- ⑦ Rotary connection in nickel-plated brass
- ⑧ Resin finish for IP65
- ⑨ Electrical contact
- ⑩ Choke to reduce peaks in pressure



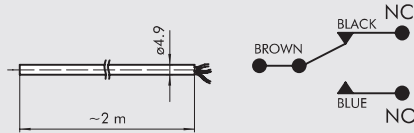
DIMENSIONS AND ORDERING CODES



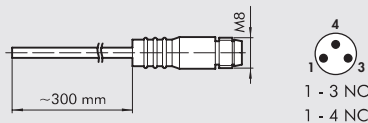
Code	Description
9000401	1/8 2A NO/NC pressure switch, 2-metre cable
9000402	1/8 2A NO/NC pressure switch, M8 connector
9000405	1/4 2A NO/NC pressure switch, 2-metre cable
9000406	1/4 2A NO/NC pressure switch, M8 connector

WIRING DIAGRAM

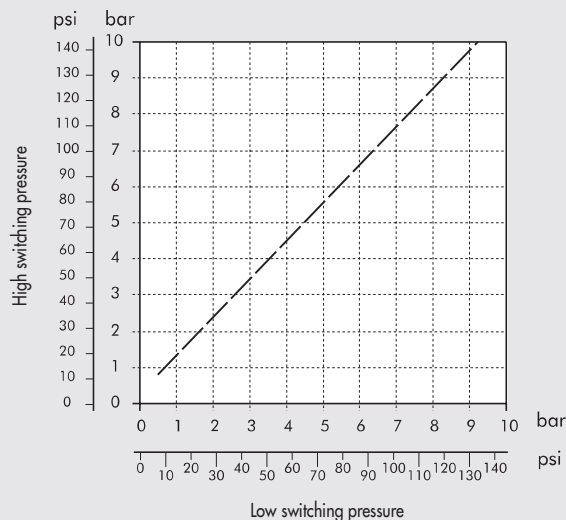
VERSION WITH CABLE



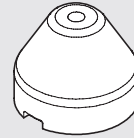
VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH



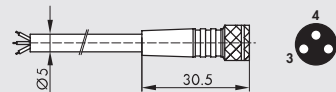
SECURITY KNOB



Code	Description
9200703	Security knob APR / pressure switch

Note: Pull outwards to remove the knob from the pressure switch on the unit.
Insert the security knob and regulate the pressure switch.
Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

M8 STRAIGHT CONNECTOR WITH CABLE

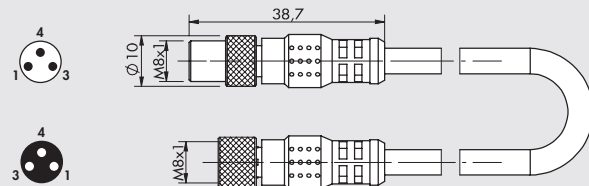


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 ADAPTER CABLE FOR CONNECTION TO THE EB 80 E CM DIGITAL INPUTS MODULE



Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

Note: Can be used to connect the pressure switch to the module of digital INPUT S01 of the EB 80 valves, to the additional M8 INPUT module of the CM valves and to the Profibus-DP IP67 M8 input. Contact type NO (Normally open)

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

DIGITAL PRESSURE SWITCH

The digital pressure switch allows both the transmission of electrical pressure signals and the instant display of pressure. Two digital outputs, which can be set according to the two pressure values reached, are available. An analogue output of a voltage proportional to the pressure reading is also available. The values are clearly displayed on a LED video and different parameters can be entered from the keypad. Hysteresis can be adjusted and the unit of measurement for pressure can be modified. Two models are available:

Series **600**, characterised by G1/8" female pneumatic ports, one at the bottom and one at the back (pressure switch supplied with bottom port covered with a removable plug); one-colour LED; pre-wired cable.

Series **640**, characterised by R1/8" male pneumatic ports (taper thread) and M5 female thread inside on the rear side; two-colour LED displays that can be programmed depending on the pressure signal; cable with connector. It is available in analog and IO-Link versions.

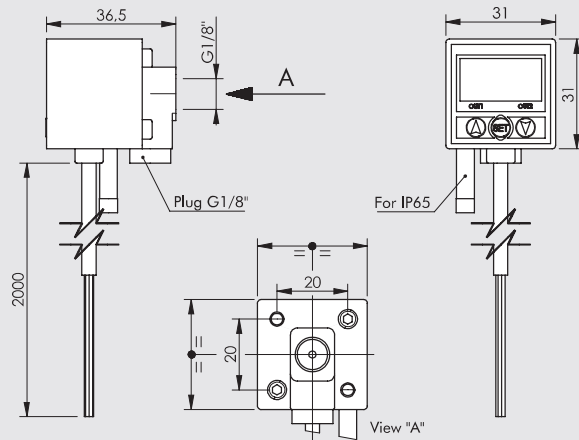
A kit of accessories is provided for fixing to the top or wall, or to a panel.



TECHNICAL DATA	SERIES 600	SERIES 640	SERIES 640 IO-Link
Fieldbus			IO-Link version 1.1
Working pressure range	-1 to 10 bar / -0.1 to 1 MPa		
Maximum admissible pressure	15 bar / 1.5 MPa		
Readable resolution	0.01 bar / 0.001 MPa / 0.01 kg/cm ² / 0.1 psi		
Power supply	VDC	12 to 24 ± 10%, max ripple 10%	24, Ripple (P-P) ≤ 10%
Current consumption	mA	≤ 55	≤ 35 (no load)
Outputs			OUT 1: IO-Link (C/Q Line) or PNP or NPN configurable OUT 2: Analogue or PNP or NPN configurable
Digital outputs	PNP: Number of outputs: 2 Max current: 80 mA Max voltage: 24 VDC Residual voltage: ≤ 1V (at 80 mA)	PNP: Number of outputs: 2 Max current: 125 mA Max voltage: 24 VDC Residual voltage: ≤ 1.5V (at 125 mA)	PNP: Open collector output Max current: 150 mA Max voltage: 24 VDC Residual voltage: ≤ 1V NPN: Open collector output Max current: 150 mA Max voltage: 30 VDC Residual voltage: ≤ 1V
Analogue output	1/5V ± 2.5% (0 bar - 1V; 10 bar - 5V; it doesn't read the vacuum) Linearity ≤ 1% full scale Output impedance: about 1 kΩ		1/5V, 0/10V, 4/20 mA configurable Linearity ± 1.5% full scale 1/5V - 0/10V (impedance 1 kΩ), 4/20 mA (impedance 500 Ω) it doesn't read the vacuum
Digital output repeatability	≤ ± 0.2% full scale ± 1 digits		
Hysteresis	Adjustable or fixed at 3 digits for operation within a pressure range		
Actuation response time	ms	≤ 2.5	
Interference suppression selectable at	ms	24, 192, 768	25, 100, 250, 500, 1000, 1500
Short-circuit protection at the outputs	Yes		
LED 7 segment display	3 ½ digit display		
Display colours	red		red/green
Display accuracy	±2% full scale ± 1 digit, ambient temperature 25° ± 3°C		
Indicators	green LED (output 1), red LED (output 2)	orange LED (output 1 and output 2)	Green or Red LED configurable
Thermal characteristic	≤ ± 2% full scale of the calibration pressure (at 25°C), in the temperature range 0 - 50°C		
Compressed air ports	2 G1/8" female thread	1 R1/8" male taper thread (M5 female inside)	
Power cable	pre-wired cable, not removable	2 m, with five 0.15 mm ² wires, oil-resistant	removable connector
Communication speed	Kbps	-	38.4 (COM2)
Vendor ID / Device ID	-	-	1046 (hex 0x0416) / 72 (hex 0x000048)
Minimum cycle time	ms	-	3
Process data length	-	-	2 byte di Input (2 bit BCD; 14 bit PDV)
Weight	g	105, including 2 m cable	86, including 2 m cable
AMBIENT CONDITIONS			
Fluid	Filtered and unlubricated air, inert non-corrosive and non-explosive gas		
Degree of protection	IP 40 - IP65 (with accessory protection assembled)		IP 40
Temperature range	0 to 50		
Storage temperature	-20 to +60, but without condensate or ice		-10 to +60, but without condensate or ice
Ambient humidity	35 to 85% relative humidity; no condensate		
Insulation voltage	1000 VAC for one minute between casing and cable		
Resistance of Insulation	Min. 50 MΩ minimo (at 500 VDC between casing and cable)		
Vibration admitted	1.5 mm amplitude or 10G with scanning every minute from 10 to 55 Hz at 10 Hz, for 2 hours in each direction x, y and z		
Impact	980 m/s ² (100 g), 3 times in each direction x, y and z		100 m/s ² (10 g), 3 times in each direction x, y and z

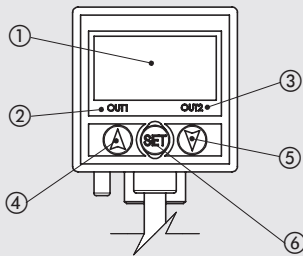
SERIES 600

DIMENSIONS AND ORDERING CODES



Code	Description
9000600	Digital pressure switch series 600

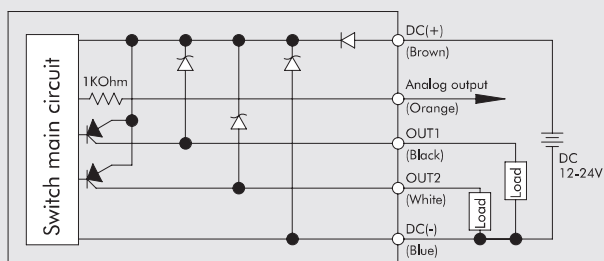
USER INTERFACE



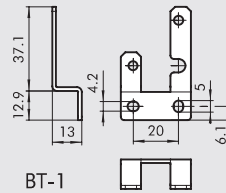
- ① 3 1/2 digit display, red: showing the pressure reading, all setting information, and the error code
- ② Digital output 1: green LED
- ③ Digital output 2: red LED
- ④ Button: modifies the value of the selected parameter
- ⑤ Button: modifies the value of the selected parameter
- ⑥ Setting button: selects the parameter to modify

WIRING DIAGRAM

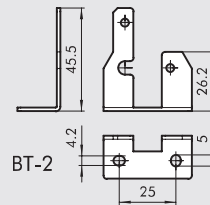
PNP output



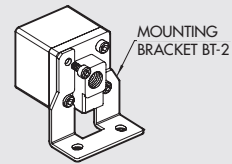
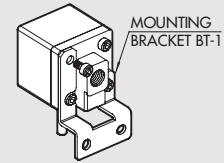
FIXING BRACKET KIT



BT-1



BT-2

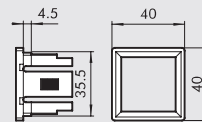


Code	Description
9000601	Kit of fixing brackets for digital pressure switches series 600

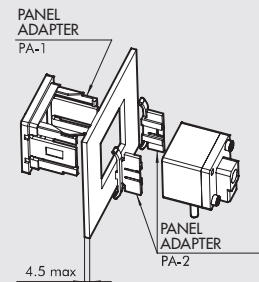
N.B.: Each kit contains a bracket for fixing on the back and one for fixing at the bottom.

PANEL FIXING KIT

PA-1

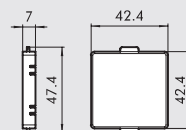


PA-2



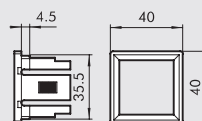
Code	Description
9000602	Kit for panel fixing for the digital pressure switch series 600

PANEL FIXING KIT WITH PROTECTION

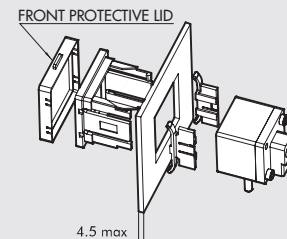


FPC-1

PA-1



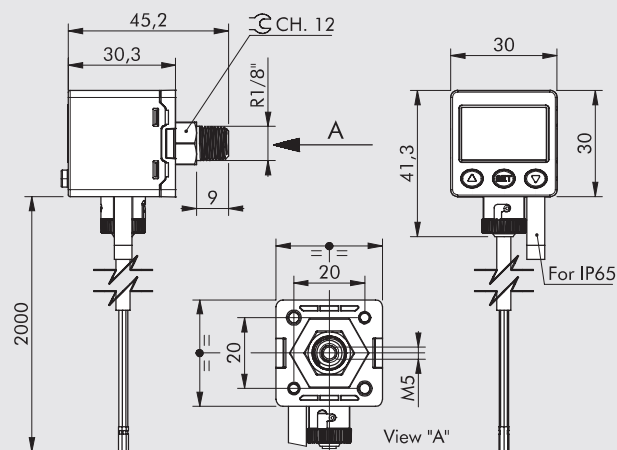
PA-2



Code	Description
9000603	Kit for panel fixing with protection for the digital pressure switch series 600

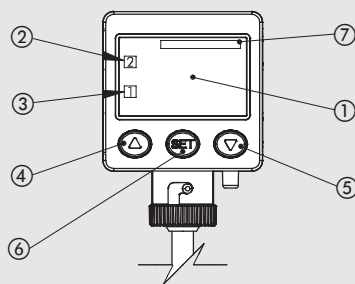
SERIES 640

DIMENSIONS AND ORDERING CODES



Code	Description
9000640	Digital pressure switch series 640

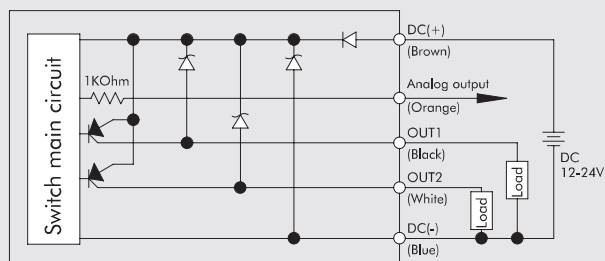
USER INTERFACE



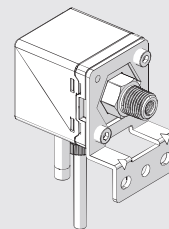
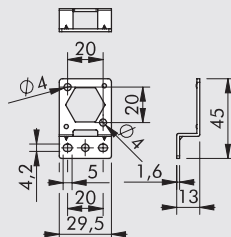
- ① 3 1/2 digit display, green and red: it displays the unit of measurement, the pressure value read, all setting information, the error code.
- ② Digital output 1: orange LED
- ③ Digital output 2: orange LED
- ④ Button: modifies the value of the selected parameter
- ⑤ Button: modifies the value of the selected parameter
- ⑥ Setting button: selects the parameter to modify
- ⑦ Unit of measurement selected

WIRING DIAGRAM

PNP output

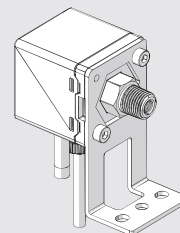
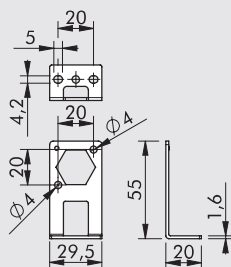


PARALLEL FIXING BRACKET KIT



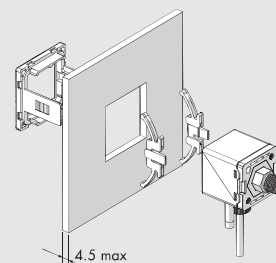
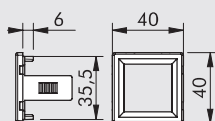
Code	Description
9000641	Parallel fixing bracket kit for digital pressure switch series 640

90° FIXING BRACKET KIT



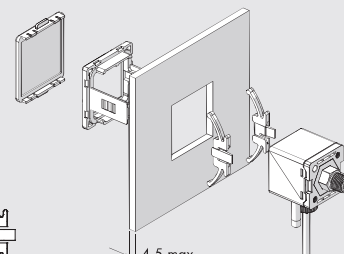
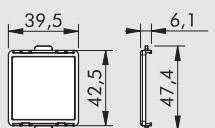
Code	Description
9000644	90° fixing bracket kit for digital pressure switch series 640

PANEL FIXING KIT



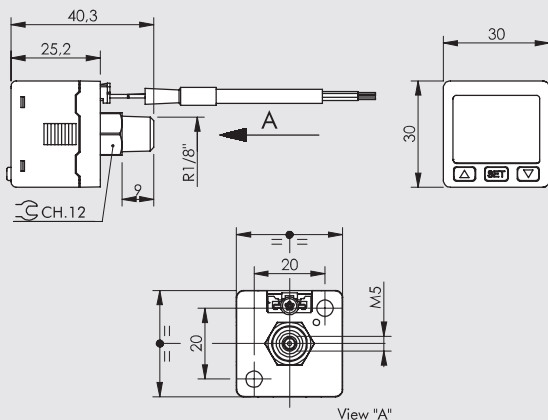
Code	Description
9000642	Kit for panel fixing for the digital pressure switch series 640

PANEL FIXING KIT WITH PROTECTION



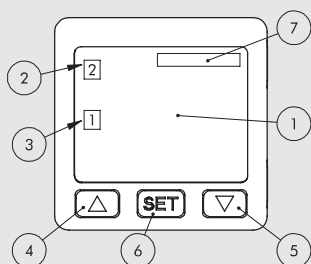
Code	Description
9000643	Kit for panel fixing with protection for the digital pressure switch series 640

DIMENSIONS AND ORDERING CODES



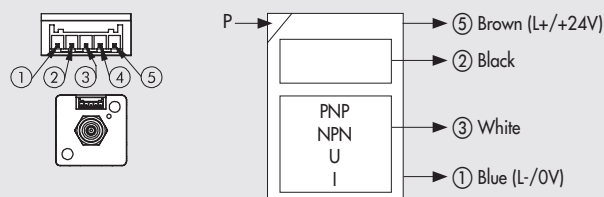
Code	Description
9000640L	Digital pressure switch series 640 IO-Link

USER INTERFACE



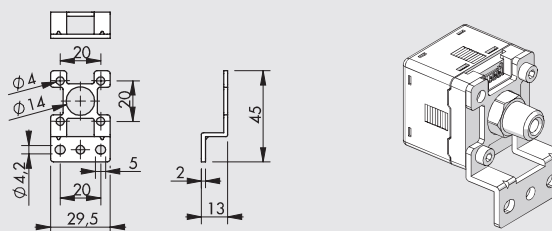
- ① 3 ½ digit display, green and red: it displays the unit of measurement, the pressure value read, all setting information, the error code.
- ② Digital output 1: orange LED
- ③ Digital output 2: orange LED
- ④ Button: modifies the value of the selected parameter
- ⑤ Button: modifies the value of the selected parameter
- ⑥ Setting button: selects the parameter to modify
- ⑦ Unit of measurement selected

WIRING DIAGRAM



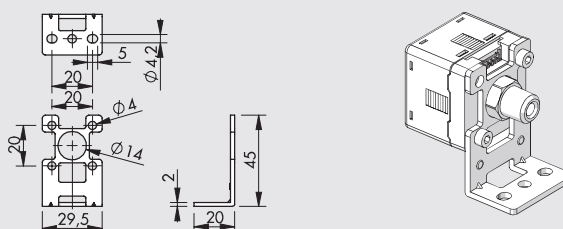
PIN	Color	Function
1	Blue	0V power supply
2	Black	Digital output OUT 1 or IO-Link (C/Q Line)
3	White	Digital output OUT 2 or analog output (1 to 5V, 0 to 10V, 4 to 20 mA)
4	Orange	Disconnect
5	Brown	+24VDC power supply

PARALLEL FIXING BRACKET KIT



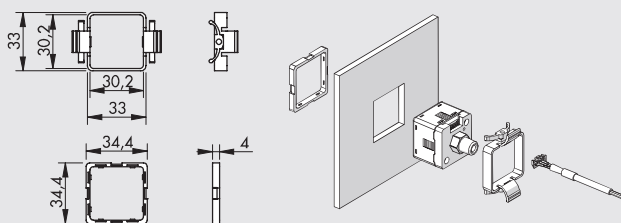
Code	Description
9000641L	Parallel fixing bracket kit for digital pressure switch series 640 IO-Link

90° FIXING BRACKET KIT



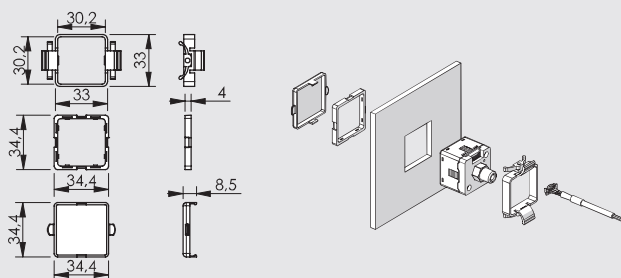
Code	Description
9000644L	90° fixing bracket kit for digital pressure switch series 640 IO-Link

PANEL FIXING KIT



Code	Description
9000642L	Kit for panel fixing for the digital pressure switch series 640 IO-Link

PANEL FIXING KIT WITH PROTECTION



Code	Description
9000643L	Kit for panel fixing with protection for the digital pressure switch series 640 IO-Link

FLOWMETER SERIES FLUX 0

The flowmeters FLUX 0 series are miniaturized devices used to measure air flow rate. They come complete with push-in pipe fittings. Numerous functions can be viewed and set on a three-colour display. They have 2 digital and one analogue outputs, each of which can be freely set to measure the instantaneous flow rate, the accumulated flow rate or the pressure, therefore they can perform the function of flowmeter, flow switch, pressure gauge or pressure switch. They feature reduced dimensions, with a width of only 17 mm. The FLUX 0 flowmeters comes in two models: one for flow rates up to 50 NL/min, the other up to 200 NL/min, and are can be powered at 12 and 24 VDC.



TECHNICAL DATA		FLUX 0 50 L	FLUX 0 200 L
Measured flow range	Nl/min	0 - 50	0 - 200
Direction of flow		Unidirectional	
Working pressure range	bar	-0.9 to 8	
	MPa	-0.09 to 0.8	
	psi	-13 to 116	
Maximum admissible pressure	bar	10	
Pipe diameter for push-in fitting	mm	8	
Connecting cable	VDC	12 to 24 ± 10%, ripple max 10%	
Current consumption	mA	≤ 50	
Power cable		Cable Ø 4 length 2 m, oil resistant, 26 AGW (6 x 0.15 mm²)	
Weight	g	100 (including cable)	
DISPLAY			
Instant flow rate			
Display range	Nl/min	0 - 50	0 - 200
Minimum setting scale	Nl/min	0.1	1
	ft³/min	1	1
Cumulative flow rate			
Display range		9999999.9	99999999
Minimum setting scale	Nl	0.1	1
	ft³	1	1
Pressure			
Display range	kPa	-100 to 1000	
Minimum setting scale	kPa	1	
	bar	0.01	
	psi	0.1	
PRECISION			
Flow rate			
Guaranteed measuring range		2 to 100 % FS	
Display accuracy		± 3 % FS ± 1 digit ▲	
Analogue output accuracy		± 5 % FS ▲	
Repeatability		± 1 % FS ± 1 digit ■	
Linearity		± 3 % FS ■	
Temperature characteristic		± 2 % FS for a temperature range of 15-35°C; ± 5 % FS for a temperature range of 0-15°C or 35-50°C ■	
Pressure characteristic		± 5 % FS ± 1 digit *	
Pressure			
Guaranteed measuring range		0 to 100 % FS	
Display accuracy		± 2 % FS ± 1 digit ●	
Analogue output accuracy		± 2.5 % FS ●	
Repeatability		± 0.2 % FS ± 1 digit ●	
Linearity		± 1 % FS ●	
Temperature characteristic		± 2 % FS ●	

▲ Data valid under these conditions: input pressure 3 bar, output pressure 1 bar, temperature 25°C

■ Data valid under these conditions: output pressure 1 bar, temperature 25°C

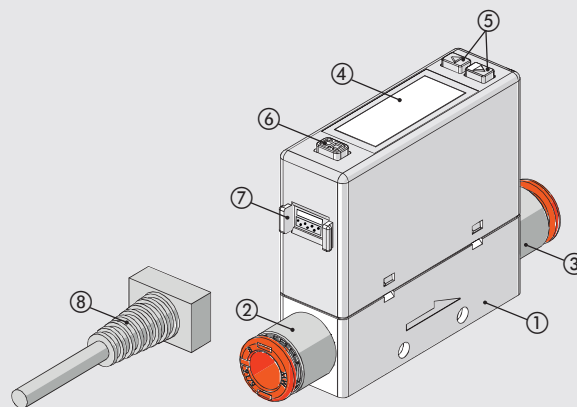
* Data valid under these conditions: -90 to 800 kPa, output pressure 1 bar, temperature 25°C

● Data valid under these conditions: flow rate 0 Nl/min, temperature 25°C

TECHNICAL DATA		FLUX 0 50 L	FLUX 0 200 L
DIGITAL OUTPUTS			
N ° outputs			2 PNP
Max current	mA		125
Max voltage	VDC		24
Residual voltage	V		≤ 1.5 V
Response time, with flow rate setting	ms	50, 80, 120, 200, 400, 800, 1500 (default 800)	
Response time, with pressure setting	ms	2.5, 25, 100, 250, 500, 1000, 1500 (default 2.5)	
Response mode, with flow rate setting		Hysteresis mode, window comparison mode, cumulative mode, cumulative pulse mode ♦	
		Normally open or normally closed	
Response mode, with pressure mode setting		One-point setting mode, hysteresis mode, window comparison mode. Normally open or normally closed ♦	
Hysteresis		Adjustable	
Short-circuit protection at output		Yes	
Cumulative pulse output	Nl/impulse	0.5	2
	ft ³ /impulse	2	7
ANALOGUE OUTPUT			
Version with voltage	V	1 to 5, 1 kΩ impedance	
Version with current	mA	4 to 20, with ≤ 300 Ω impedance	
Response time, with flow rate setting	ms	≤ 100	
Response time, with pressure setting	ms	≤ 50	
AMBIENT CONDITIONS			
Fluid		Filtered, dried and unlubricated air, inert non-corrosive and non-explosive gas. A 5 µm filter and a 0.01 µm oil purifier are recommended	
Degree of protection		IP 40	
Temperature range	°C	0 to 50	
Storage temperature	°C	0 to 60 , but without condensate or ice	
Ambient humidity		35 to 85% relative humidity; no condensate	
Insulation voltage		1000 VAC for one minute between casing and cable	
Resistance of Insulation		Min. 50 MΩ (at 500VDC between casing and cable)	
Vibration admitted		1.5 mm amplitude or 10 g with scanning every minute from 10 to 55 Hz at 10 Hz, for 2 hours in each direction x, y and z	
Impact		100 m/s ² (10 g), 3 times in each direction x, y and z	
Electromagnetic compatibility (EMC)		IEC 61000-6-2, IEC 61000-6-4	

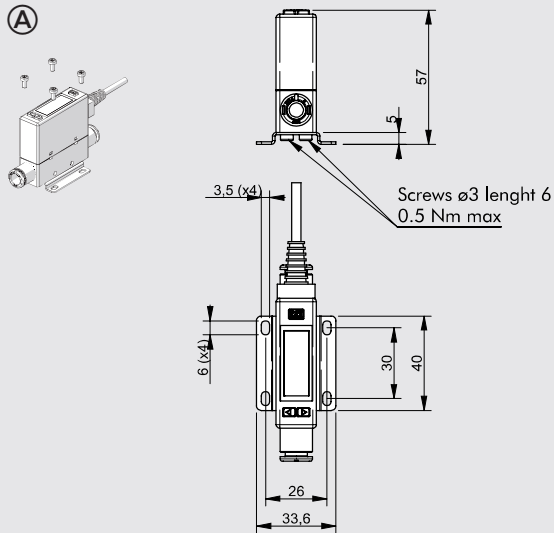
♦ Refer to the user manual for further details

COMPONENTS

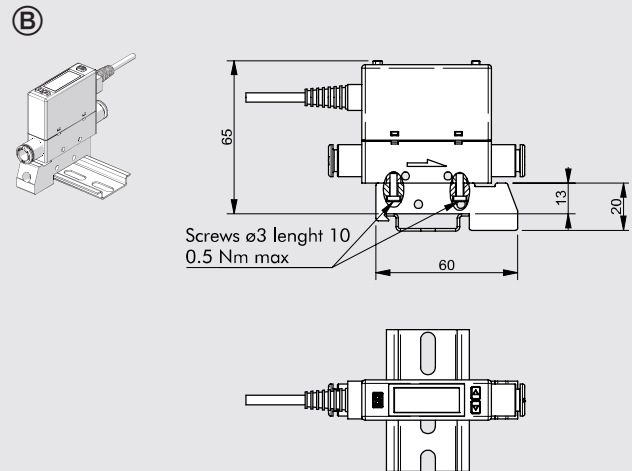


- ① BODY: technopolymer
- ② INPUT AUTOMATIC FITTING: nickel-plated brass and technopolymer
- ③ OUTPUT AUTOMATIC FITTING: nickel-plated brass and technopolymer
- ④ DISPLAY LCD
- ⑤ BUTTON: silicone.
Used to select the operating mode, ON/FF switching and value setting
- ⑥ BUTTON: silicone.
Used to select the operating mode and confirm the set values
- ⑦ CONNECTOR
- ⑧ CONNECTOR WITH CABLE: length 2 meters

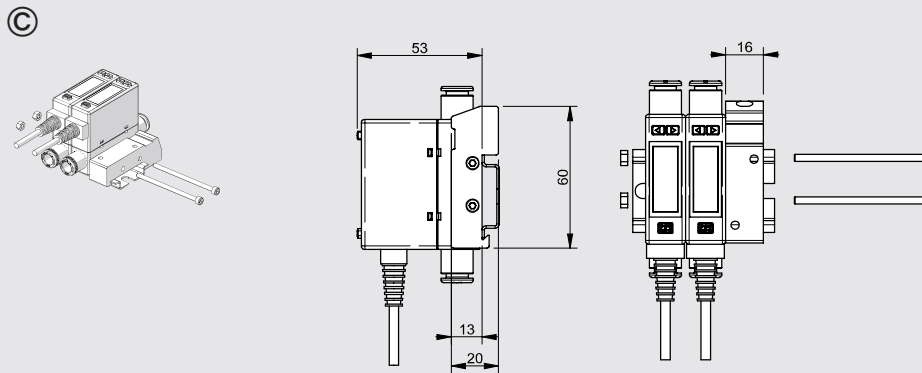
FIXING OPTIONS



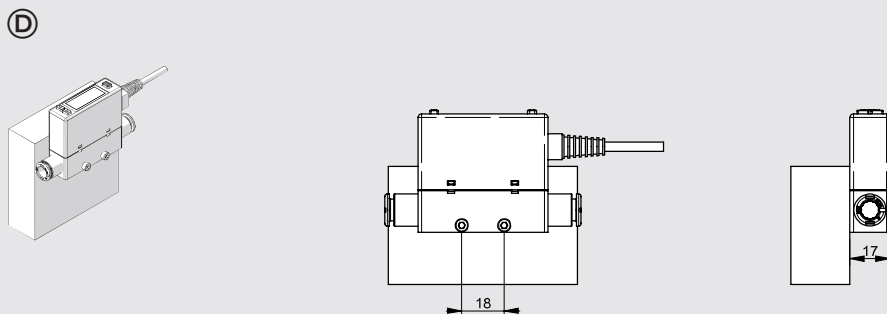
Fixing with bracket code 90009A001 using the included $\varnothing 3$ self-tapping screws and M3 screws



Single fixing on DIN bar with code bracket 90009A002 using the included $\varnothing 3$ self-tapping screws

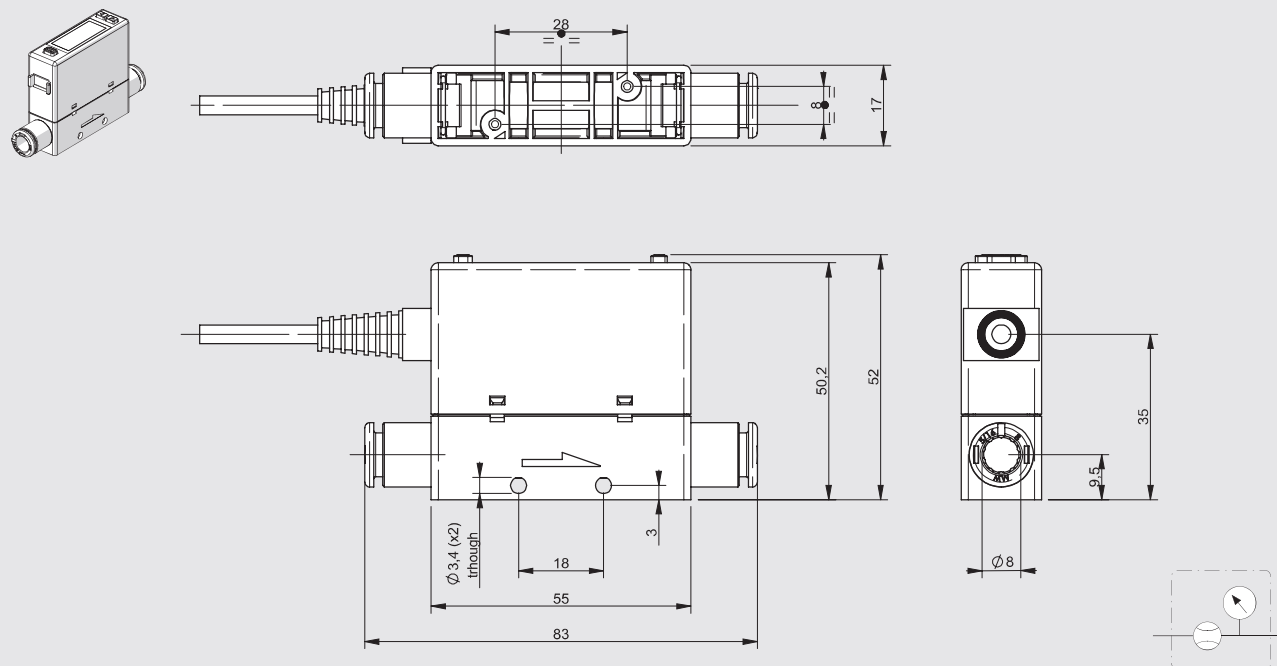


Multiple fixing on DIN bar with code bracket 90009A002 using the lateral holes $\varnothing 3.4$ with M3 screws and nuts



Side fixing using M3 screws, minimum length 23 mm

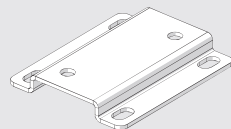
DIMENSIONS AND ORDERING CODES



Code	Description
9000958A2	Flowmeter FLUX 0 50L Ø8 PNP 4-20 mA 2 m
9000958V2	Flowmeter FLUX 0 50L Ø8 PNP 1-5V 2 m
9000978A2	Flowmeter FLUX 0 200L Ø8 PNP 4-20 mA 2 m
9000978V2	Flowmeter FLUX 0 200L Ø8 PNP 1-5V 2 m

ACCESSORIES

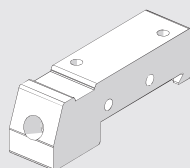
FIXING BRACKET



Code	Description
90009A001	Fixing bracket FLUX 0

Note: Comes complete with two 3x6 screws for plastic (max. torque 0.5 Nm)

CONNECTION BRACKETS ON BAR OMEGA (DIN EN 50022)



Code	Description
90009A002	Connection brackets on DIN bar FLUX 0

Note: Comes complete with two 3x10 screws for plastic (max. torque 0.5 Nm)

NOTES

UNITS

FLOWMETER SERIES FLUX

The flowmeters in the FLUX series are the ideal solution for measuring the flow rate of compressed air in pneumatic systems.

Made of an anodised aluminium body from 1/2" to 2" threaded ports, they can measure flow rates of up to 15,000 NL/min.

Available in two main versions: with or without built-in display.

The version with display provides an intuitive user interface for real-time several information, including:

- flow rate, pressure and temperature;
- graphs showing instant and cumulative quantities;
- power consumption to generate the measured flow.

This version also integrates a pressure/temperature transducer that uses an advanced software algorithm to minimise measurement error within the operating range.

All flowmeters come have an M12 connector for power supply and signal management plus an analogue output that can be set to either voltage or current; the models with display also feature a configurable digital output (on the flow rate, pressure or total consumption).

They can be powered with variable voltage ranging from 12VDC to 24VDC and act as either a flowmeter and flow switch; additionally,

the display versions can be used as either a pressure gauge or pressure switch. Internal air channels are designed to ensure an accurate flow rate reading at all times without creating any pressure drop between the instrument inlet and outlet.

The wireless versions can communicate with Ethernet networks (via MQTT protocol) and mobile devices (smartphones and tablets) via Bluetooth®, through the dedicated App "Metal Work FluxUP". In addition to displaying measured values in real time, through this App, you can change all flowmeter settings and view the relevant data.



UNITS

FLOWMETER SERIES FLUX

TECHNICAL DATA		FLUX 1	FLUX 2	FLUX 3	FLUX 4
Measured flow range	NL/min	0 to 2000	0 to 4000	0 to 8000	0 to 15000
Fluid		Compressed air free of any lubricants and inert gases			
Fluid temperature	°C	0 to 50			
Direction of flow		Unidirectional			
Measuring method		Thermal			
Working pressure range	bar	0 to 10			
	MPa	0 to 1			
	psi	0 to 145			
Pressure drop		None			
Temperature range	°C	0 to 50			
Threaded ports		1/2"	1"	1 1/2"	2"
Degree of protection		IP65			
Weight	g	585	705	1975	4000
IO-Link supply voltage range	VDC	15 - 27 (with IO-Link Master)			
Current consumption	mA	80 mA (at 24VDC)			
Power supply voltage range in the analogue version	VDC	12 - 10% 24 +30%			
Maximum admissible voltage	VDC	32 ▲			
Current absorption	mA	min 50 - max 120			
DISPLAY					
Instant flow rate	NL/min	0 to 2300	0 to 4600	0 to 8800	0 to 16500
Cumulative flow rate	NL	999.999.999			
	Nm³	999.999			
	Nft³	35.320.000			
Pressure ■	bar	0 to 10			
Resolution	bar	0.01			

▲ IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

■ In versions with pressure transducer.

TECHNICAL DATA	FLUX 1	FLUX 2	FLUX 3	FLUX 4
PRECISION ●				
Flow rate				
Measuring range	0 to 100% of the full scale			
Single unit display accuracy	from 0 to 20% of the FS - better than $\pm 1\%$ of the FS			
	from 20% to 100% of the FS - better than $\pm 3\%$ of the FS			
Display accuracy of unit installed in an SY unit *	from 0 to 20% of the FS - better than $\pm 2\%$ of the FS			
	from 20% to 100% of the FS - better than $\pm 6\%$ of the FS			
Repeatability	$\pm 1\%$ of the FS			
Temperature characteristic				
Version with pressure transducer	Automatic compensation of fluid temperature from 0 to 50°			
	Between 0 and 15°C and between 35 and 50°C $\pm 0.6\%$ of the FS every °C			
Version without pressure transducer	Without compensation, between 0 and 15°C and between 35 and 50°C $\pm 1.2\%$ of the FS every °C			
Pressure				
Measuring range	bar	0 to 10		
Display accuracy		$\pm 2\%$ of the FS		
ANALOGUE OUTPUT				
Output signal				
Analogue output powered	0 to 10 VDC or 0 to 5 VDC (I max 20 mA)			
	Output impedance about 1 k Ω			
Analogue output current	4 to 20 mA			
	Max. load impedance 500 Ω			
Analogue output accuracy	$\pm 0.1\%$ of the value read			
DIGITAL OUTPUT †				
Maximum current	mA	n° 1 open collector output NC / NO - PNP / NPN		
Residual voltage	VDC	100 mA		
Operating mode, if set on flow rate		20 mV (with load)		
Min. accumulated volume by pulse (pulse width 100 msec)	Nl	Level switch, Band switch, Value switch, Cyclic pulse		
		10	20	30
	Nm ³	1	1	1
	Nft ³	1	1	2
Response mode, with pressure mode setting		Level switch, Band switch		
Hysteresis		Adjustable		
Short-circuit protection at output		Yes		
DIGITAL INPUT ♦				
Type of input		n° 1 input for the reset of the consumption counters NO - PNP/NPN		
Activation time		Voltage 12 - 10% 24 +30%		
		min 1 sec		

● Accuracy referred to compressed air gas, at a pressure of 5 bar and a fluid temperature of 25°C $\pm 10^\circ\text{C}$.

* In order to guarantee the stated measurement accuracy and to prevent lubricant residues from damaging the measurement sensor, **a filter has to be mounted at the FLUX inlet.**

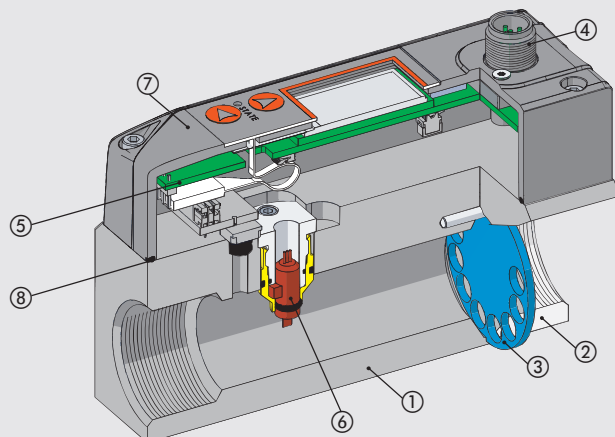
If the device is fitted with a Syntesi_® filter, the SYN filter parameter must be enabled in the system menu to guarantee the stated accuracy (function available only for the version with display).

♦ Version without display: the digital input selects the type of analogue output from 0 to 10 V and 4 to 20 mA.

† Available only for version with display.

COMPONENTS

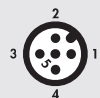
- ① BODY: anodized aluminium
- ② INLET BUSHING: anodized aluminium
- ③ FLOW RECTIFIER DISC: passivated aluminium
- ④ CONNECTOR M12: technopolymer
- ⑤ ELECTRONIC BOARD
- ⑥ FLOW SENSOR
- ⑦ COVER: technopolymer
- ⑧ GASKETS: NBR



WIRING DIAGRAMS

Wiring diagram, analogue version

M12 male connector, A encoding



Pin	Function description	Lead colour
1	+24VDC power supply	Brown
2	Digital output	White
3	0VDC power supply	Blue
4	Digital input	Black
5	Analogue output	Gray

Wiring diagram, IO-Link version

M12 male connector, A encoding



Port Class A
1 = L+
2 = NC
3 = L-
4 = C/Q
5 = NC

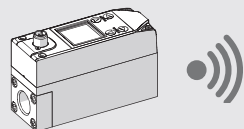
Pin	Signal	Description of Port Class A	Lead colour
1	L+	+24VDC power supply	Brown
2	NC	/	White
3	L-	0VDC power supply	Blue
4	C/Q	IO-Link communication	Black
5	NC	/	Gray

WIRELESS CONNECTION

With the Wireless versions, you can establish a connection to a Wi-Fi® network via an access point or gateway to monitor and collect all the measured gas values.

Connection to a MQTT broker via an access point

MQTT

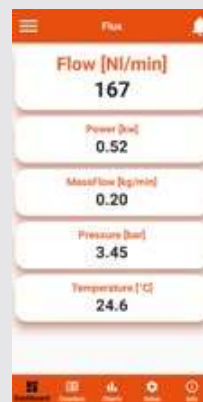


Broker MQTT



The “Metal Work FluxUp” App allows you to connect, via Bluetooth®, from Android® and iOS® smartphones, to the Metal Work flowmeters of the FLUX series, equipped with a wireless interface.

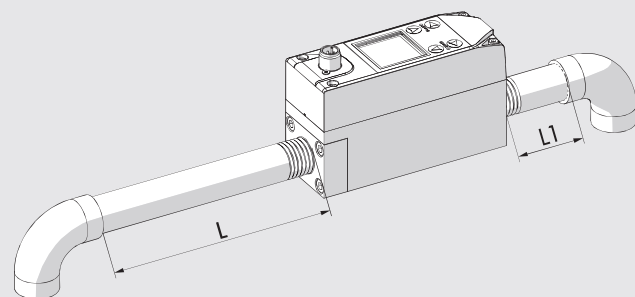
Through “Metal Work FluxUp” it is possible to view in real time all the data recorded by FLUX and set all the operating parameters.



PNEUMATIC CONNECTION

To connect the inlet side, use a straight pipe* with a minimum length as per the table. If straight piping is not installed, the accuracy may vary from what is stated.

* **Straight pipe:** the pipe must be straight with a constant cross-section.

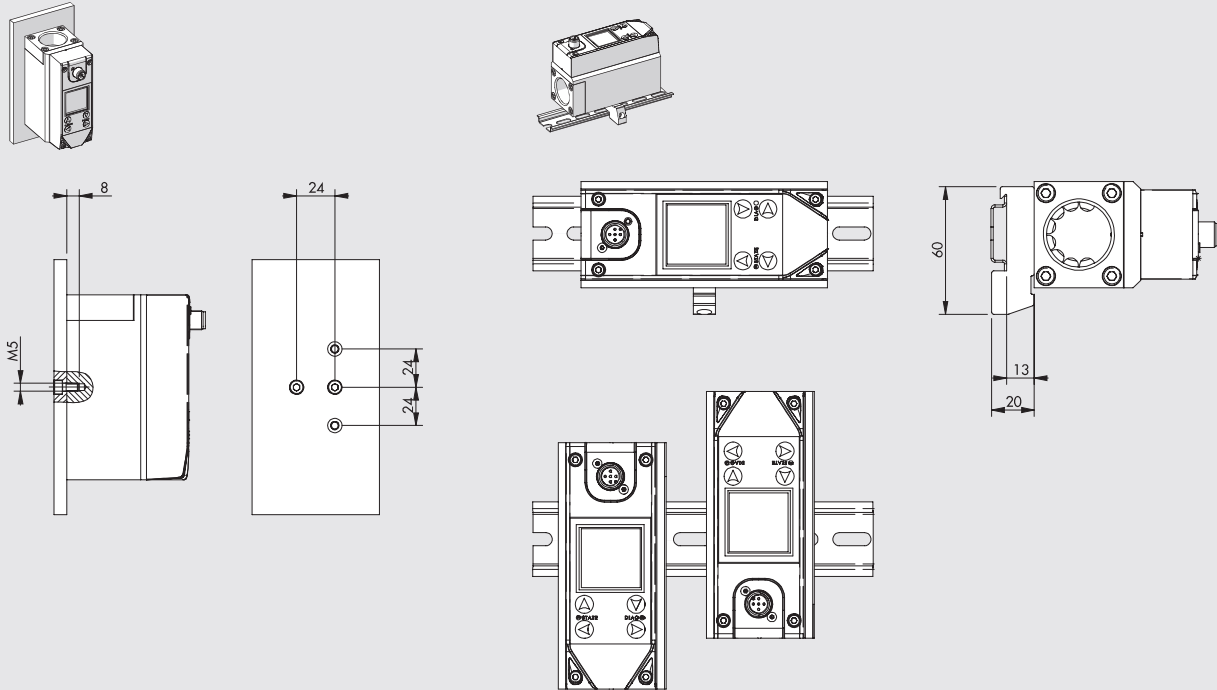


Pipe length

	L Inlet	L1 Outlet
FLUX 1	≥150 mm	≥50 mm
FLUX 2	≥200 mm	≥50 mm
FLUX 3	≥300 mm	≥100 mm
FLUX 4	≥300 mm	≥100 mm

FIXING OPTIONS

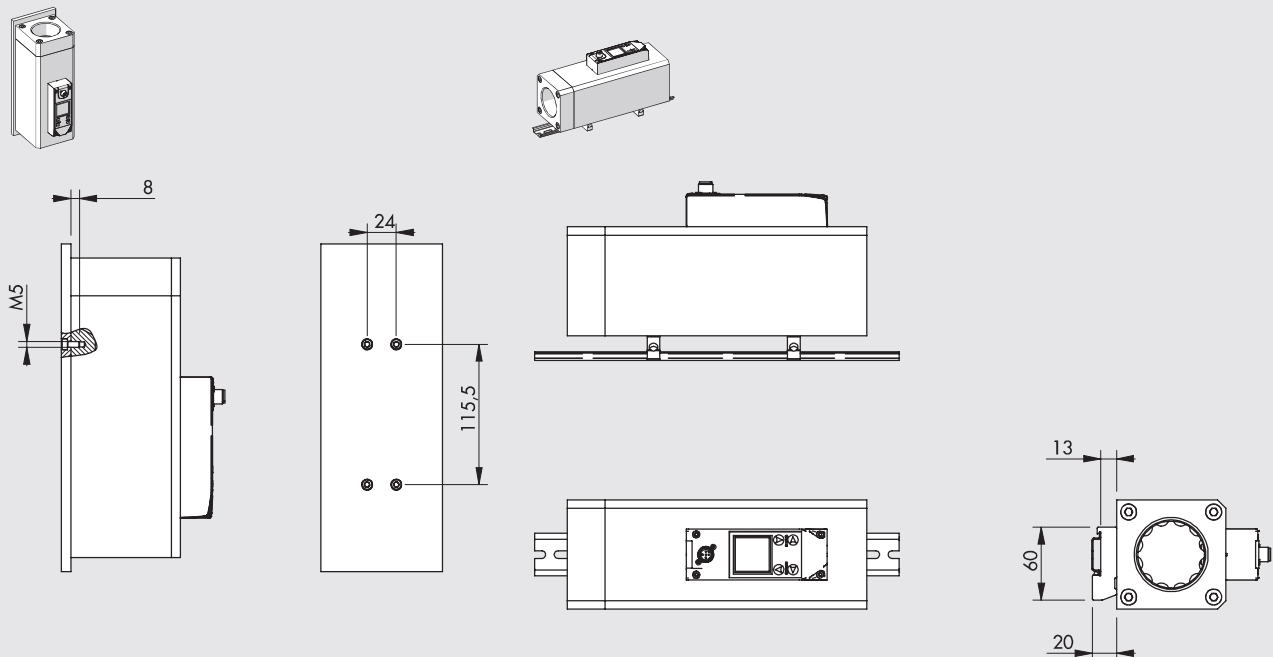
FLUX 1 - 2 - 3



Wall mounting by means M5 screws.

DIN rail mounting with bracket code 900099A001, using the M5x14 screws provided.

FLUX 4

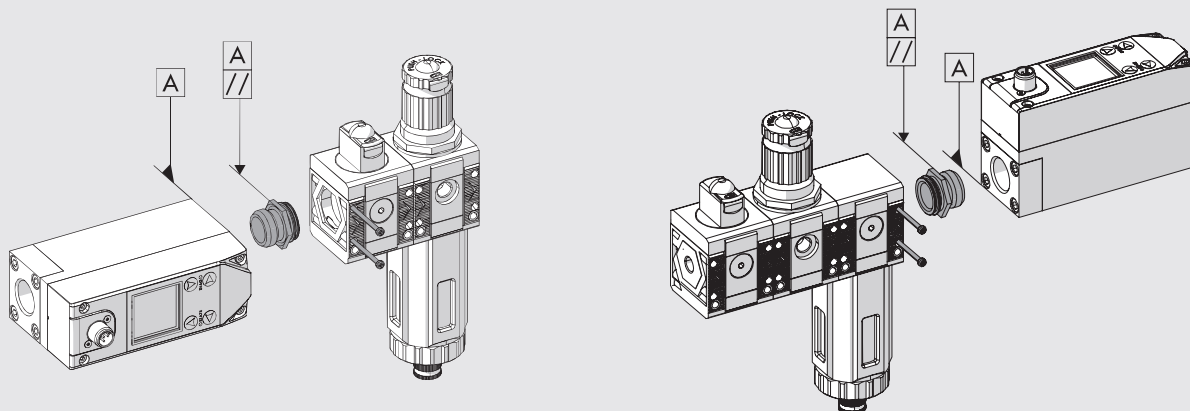


Wall mounting by means M5 screws.

DIN rail mounting with bracket code 900099A001, using the M5x14 screws provided.

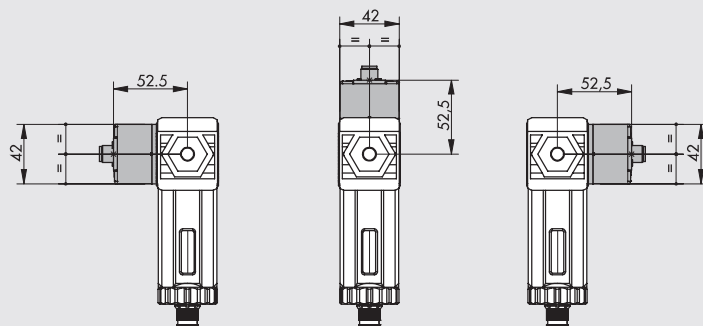
N.B.: For this type of fixing use n. 2 connection brackets.

ASSEMBLY DIAGRAM OF FLUX 1 - 2 WITH SYNTESI®

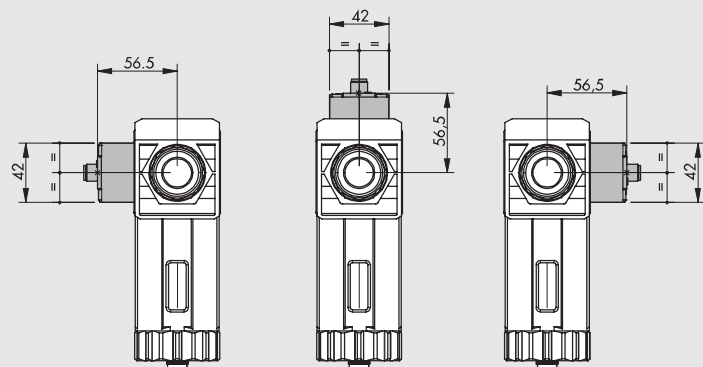


- 1) Tighten the connection bushing on the flowmeter until it is flush (it is advisable to use sealant on the male thread of the bushing to ensure a perfect seal).
- 2) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of FLUX.
- 3) Insert the bushing into the Syntesi® unit.
- 4) Tighten the two self-tapping screws in the Syntesi® unit to a torque of 0.4 Nm for size 1 and torque 2.5 Nm for size 2.

FLUX 1 + SYNTESI® 1



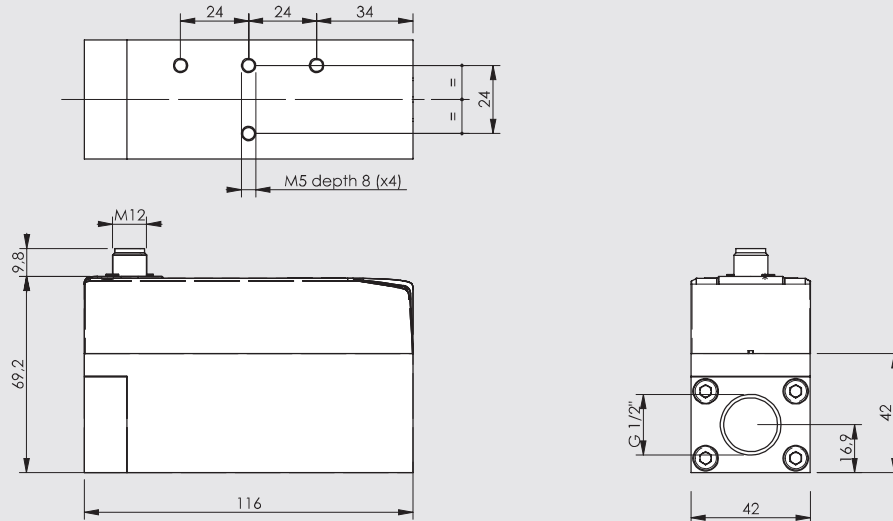
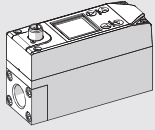
FLUX 2 + SYNTESI® 2



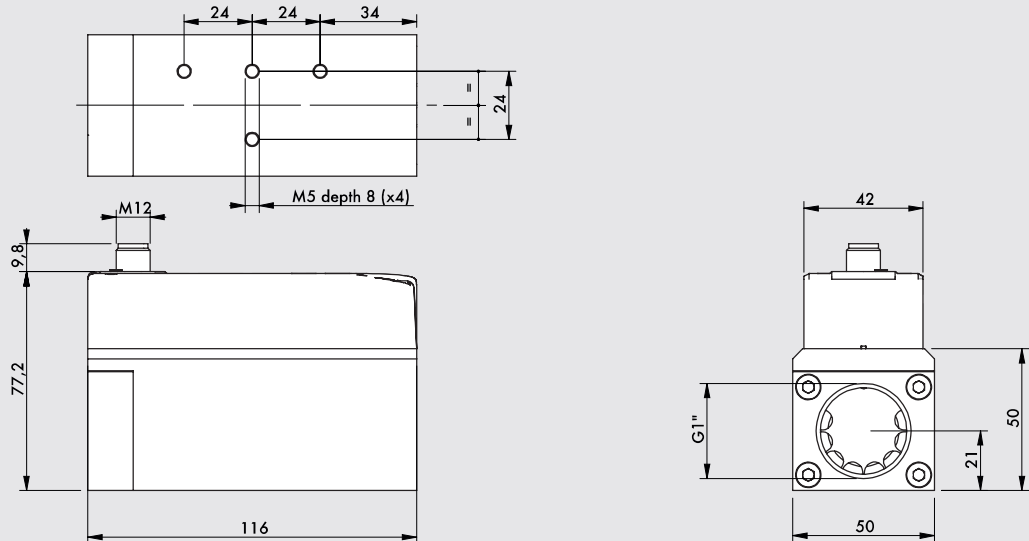
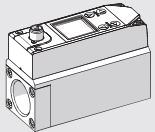
N.B.: If the FLUX is used downstream a Syntesi® filter, fit it in one of the three positions shown in the figure.

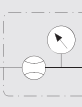
DIMENSIONS AND ORDERING CODES FLUX 1 - 2

FLUX 1



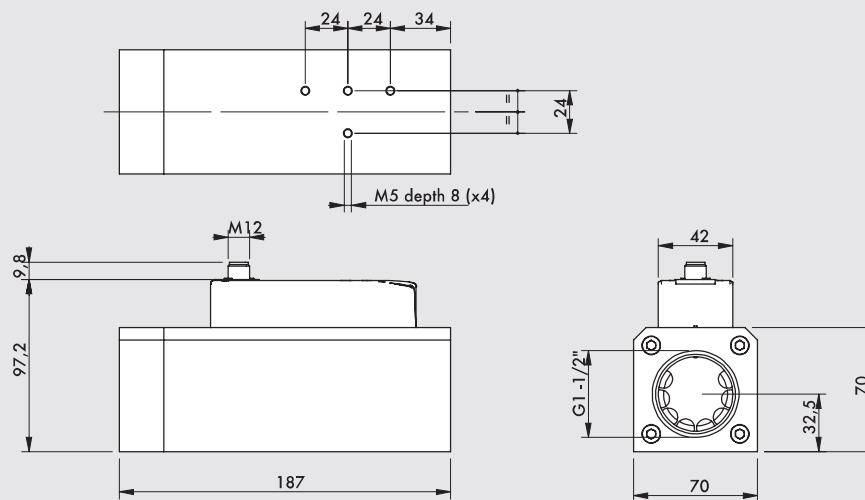
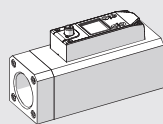
FLUX 2



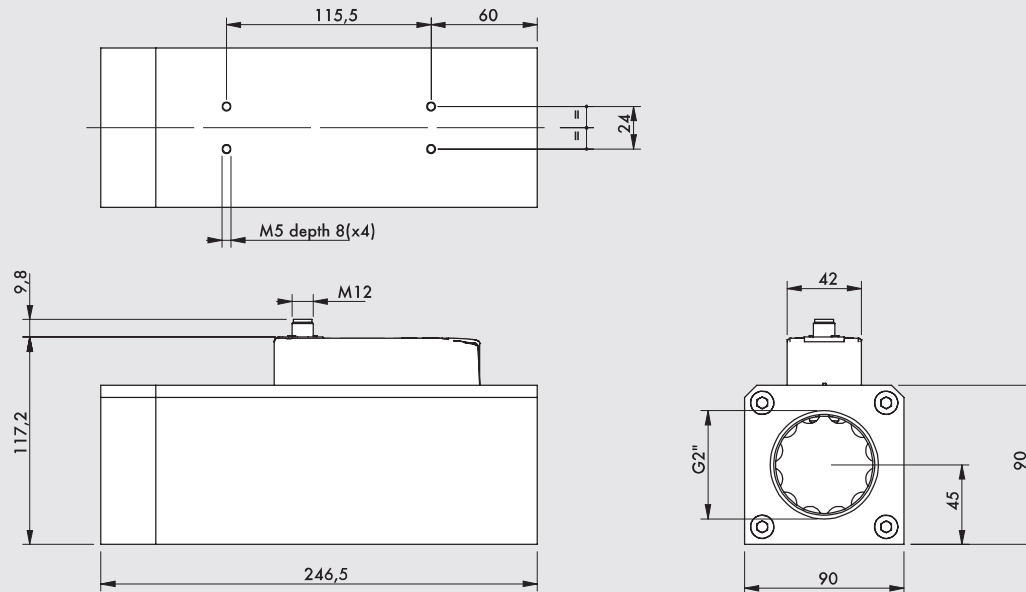
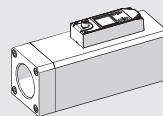
Symbol	Code	Description
	9000991000	Flowmeter FLUX 1, coupling 1/2", analog output 0-10V 4-20 mA
	9000991200	Flowmeter FLUX 1, coupling 1/2", IO-Link
	9000992000	Flowmeter FLUX 2, coupling 1", analog output 0-10V 4-20 mA
	9000992200	Flowmeter FLUX 2, coupling 1", IO-Link
	9000991510	Flowmeter FLUX 1, coupling 1/2", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000991511	Flowmeter FLUX 1, coupling 1/2", digital output PNP 0-10V 4-20 mA, with display, pressure sensor and Wi-Fi®
	9000991610	Flowmeter FLUX 1, coupling 1/2", IO-Link with display and pressure sensor
	9000991611	Flowmeter FLUX 1, coupling 1/2", IO-Link with display, pressure sensor and Wi-Fi®
	9000992510	Flowmeter FLUX 2, coupling 1", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000992511	Flowmeter FLUX 2, coupling 1", digital output PNP 0-10V 4-20 mA, with display, pressure sensor and Wi-Fi®
	9000992610	Flowmeter FLUX 2, coupling 1", IO-Link with display and pressure sensor
	9000992611	Flowmeter FLUX 2, coupling 1", IO-Link with display, pressure sensor and Wi-Fi®

DIMENSIONS AND ORDERING CODES FLUX 3 - 4

FLUX 3



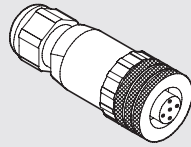
FLUX 4



Symbol	Code	Description
	9000993000	Flowmeter FLUX 3, coupling 1 1/2", analog output 0-10V 4-20 mA
	9000993200	Flowmeter FLUX 3, coupling 1 1/2", IO-Link
	9000994000	Flowmeter FLUX 4, coupling 2", analog output 0-10V 4-20 mA
	9000994200	Flowmeter FLUX 4, coupling 2", IO-Link
	9000993510	Flowmeter FLUX 3, coupling 1 1/2", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000993511	Flowmeter FLUX 3, coupling 1 1/2", digital output PNP 0-10V 4-20 mA, with display, pressure sensor and Wi-Fi®
	9000993610	Flowmeter FLUX 3, coupling 1 1/2", IO-Link with display and pressure sensor
	9000993611	Flowmeter FLUX 3, coupling 1 1/2", IO-Link with display, pressure sensor and Wi-Fi®
	9000994510	Flowmeter FLUX 4, coupling 2", digital output PNP 0-10V 4-20 mA, with display and pressure sensor
	9000994511	Flowmeter FLUX 4, coupling 2", digital output PNP 0-10V 4-20 mA, with display, pressure sensor and Wi-Fi®
	9000994610	Flowmeter FLUX 4, coupling 2", IO-Link with display and pressure sensor
	9000994611	Flowmeter FLUX 4, coupling 2", IO-Link with display, pressure sensor and Wi-Fi®

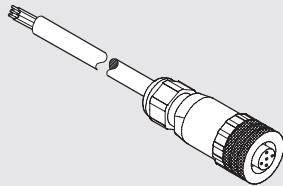
ACCESSORIES

STRAIGHT CONNECTOR



Code	Description
W0970513001	5-PIN M12x1 straight connector

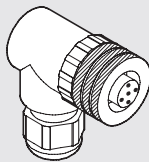
STRAIGHT CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

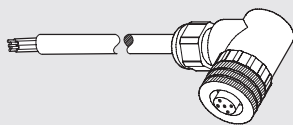
Code	Description
W0970513002	5-PIN M12x1 straight connector with wire L = 5 m

90° CONNECTOR



Code	Description
W0970513003	M12x1 5-PIN 90° connector

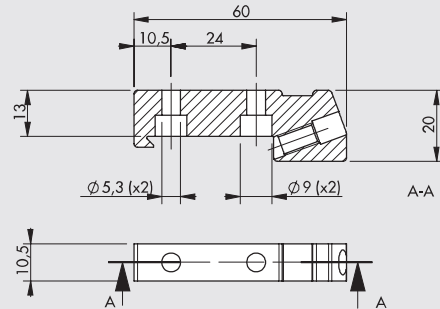
90° CONNECTOR WITH WIRE



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black
5	Grey

Code	Description
W0970513004	M12x1 5-PIN 90° connector with wire L = 5 m

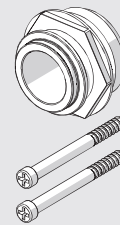
CONNECTION BRACKETS ON THE BAR (DIN EN50022)



Code	Description
900099A001	Connection brackets on DIN bar, FLUX 1 - 4

Note: complete with 2 M5x14 screws and 1 M6 grub screw

SY1 - SY2 KIT FOR CONNECTION



Code	Description
900099A002	Adapter FLUX 1 - SY1
900099A003	Adapter FLUX 2 - SY2

Max torque for screw, 0.4 Nm for SY1
Max torque for screw, 2.5 Nm for SY2

NOTES

SQUARE DIAL PRESSURE GAUGE

A compact pressure gauge with a square dial to go with air treatment units.

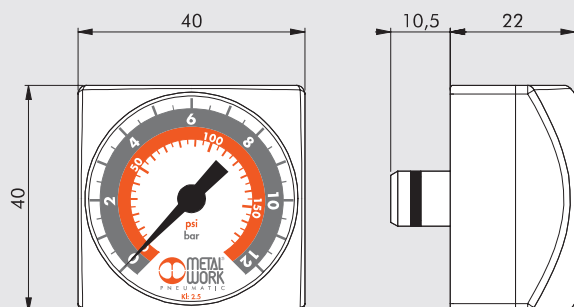
A PTFE ring seal mounted on the 1/8" thread of the fitting ensures a perfect pneumatic seal. To mount it, screw the gauge in as far as it will go, then loosen enough to align the dial. A sealant is not required. The pressure gauge has a neck to dampen pressure vibration and absorb water hammer. This improves overall reliability and guarantees longer life.



TECHNICAL DATA

Fitting thread		G 1/8"
Pressure range	bar	0-4 / 0-12
	psi	0-60 / 0-175
Precision class	EN 837	2.5
Pneumatic seal		PTFE ring seal
Vibration damping		Yes

DIMENSIONS



ORDERING CODES

Code	Description
9700109	M 40x40 1/8 04
9700110	M 40x40 1/8 012



NOTES

UNITS



●	PUSH-IN FITTINGS	D1
●	FITTING SERIES A, B, C, D	D2
●	STAINLESS STEEL FITTINGS	D3
●	PUSH-IN FITTINGS UNF or NPT THREAD AND INCH PIPES	D4

SUMMARY PUSH-IN FITTINGS



PUSH-IN FITTINGS

• GENERAL INTRODUCTION

D1.4



• BRASS PUSH-IN FITTINGS FOR mm TUBES AND G (BSP) or METRIC THREAD

D1.9



• BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

D1.19



• ADAPTORS AND PLUGS FOR G (BSPP) AND NPT THREAD

D1.24



• TECHNOPOLYMER PUSH-IN FITTINGS FOR mm TUBES AND G (BSP) or METRIC THREAD

D1.27



• CARTRIDGES AND ACCESSORIES

D1.33

PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY



• SERIES F-E PLUS FITTINGS

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D1.41



• SERIES F-E / SERIE F-NSF FITTINGS



D1.44

PUSH-IN FITTINGS

GENERAL INTRODUCTION

Push-in fittings by Metal Work are the best elements for connecting pipes and actuators.

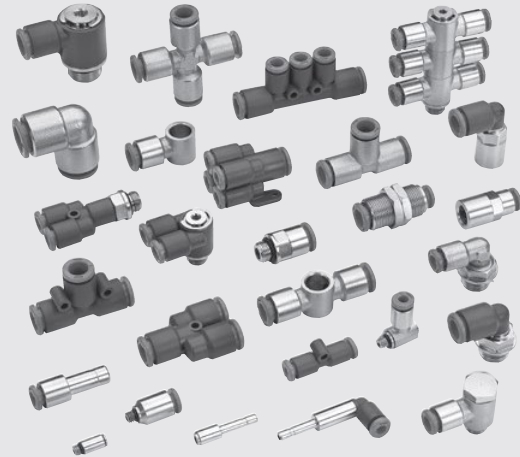
Quick and easy to use, the Metal Work push-in fitting can be re-used thousands of times without affecting the pneumatic and mechanical seal in any way. It comes in various configurations and guarantees a virtually unlimited, highly flexible use. The clamping spring with its special shape grips the pipe without scratching or deforming it.

These fittings are designed to facilitate pipe release. You only need to press the release bushing to open up the clamping spring and free the pipe. When you press your finger onto the release bushing, you can clearly hear the characteristic "click-clock" sound.

In the fittings, the release bushing has patented screwdriver slots to facilitate release in applications not accessible to the fingers.

Configurations RL19, RL21, RL22, RL23, RL23M, RL24, RL44, and RL49 (except for Ø5), have a ring for fixing to the wall asymmetrically in order to contain the head of a screw within the overall dimensions of the fitting. There are push-in fittings for metric pipes in the diameter range of 3 to 14, and push-in fittings for inch pipes in the diameter range of 1/8 to 1/2.

Threaded connections have ISO 228-1G cylindrical thread in the 1/8-1/2 range, ISO 7-1 conical thread in the 1/8-1/2 range, metric thread in the M3 to M12x1.5 range, and conical thread compatible with NPT female threading.



TECHNICAL DATA	METRIC or G (BSP) *	UNF or NPT **
Threaded coupling	Metric: M3 - M5 - M7 - M12x1.5 G (BSP): 1/8 - 1/4 - 3/8 - 1/2	UNF: 10-32 NPT: 1/8 - 1/4 - 3/8 - 1/2
Diameter of the pipe	3 - 3.17 - 4 - 5 - 6 - 8 - 10 - 12 - 14	1/8 - 5/32 - 1/4 - 5/16 - 3/8 - 1/2
Temperature range for brass fittings	°C - 20 to + 80	°F - 4 to 176
Temperature range for technopolymer fittings	°C - 20 to + 60	°F - 4 to 140
Pressure range for brass fittings	- 0.99 bar to 16 bar / - 0.099 MPa to 1.6 MPa	
Pressure range for technopolymer fittings	- 0.99 bar to 12 bar / - 0.099 MPa to 1.2 MPa	
Recommended pipe	Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid	Vacuum - Compressed air	

* Metric cylindrical threads according to ISO 262

Cylindrical threads according to ISO 228-1, identified with a letter G. They also correspond to BSP or more precisely to BSPP designation (P stands for Parallel).

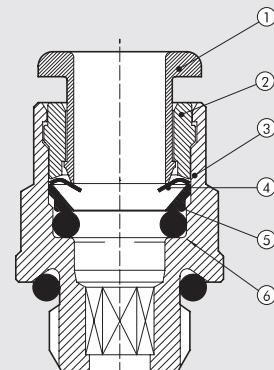
Conical threads according to ISO 7-1, identified by a letter R. They also correspond to BSP or more precisely to BSPT designation (T stands for Tapered).

** UNF cylindrical threads, according to ANSI B 1.1

NPT conical threads. Female threads are in accordance with ANSI B 1-20, male threads are a Metal Work specifically designed solution that is compatible with ANSI B 1-20 threads (see page D1.8)

COMPONENTS

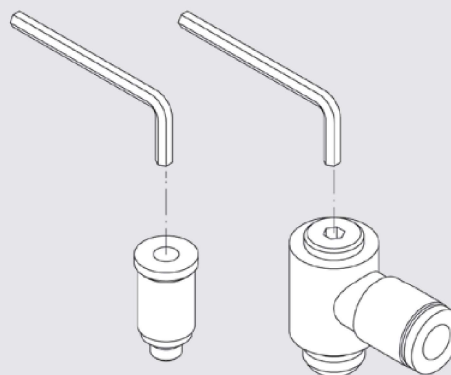
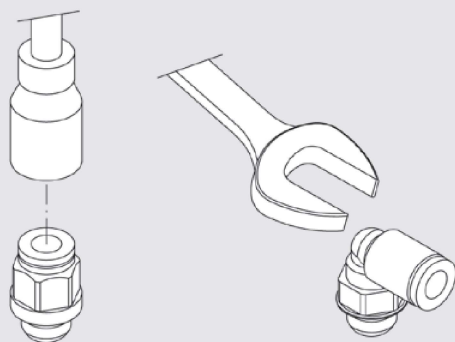
- ① Ring or release bushing: technopolymer
- ② Locking bushing: brass or technopolymer
- ③ Body: brass or technopolymer
- ④ Clamping spring: stainless steel (for pipes Ø 3 and Ø 3.17: brass gripper)
- ⑤ Spring supporting ring: technopolymer
- ⑥ Seal: NBR



O-RING BELOW R FITTINGS

Thread	Initials	Dimensions of O-ring
M3	-	2.6 x 1
M5 (for $\varnothing 3 - \varnothing 3.17$)	-	3 x 1.2
M5 - 10-32 UNF	-	3.5 x 1.2
M7	-	5 x 1.5
M12x1.5	-	9.75 x 1.78
G 1/8 - 1/8 NPT	2031	7.66 x 1.78
G 1/4 - 1/4 NPT	2043	10.82 x 1.78
G 3/8 - 3/8 NPT	2056	14 x 1.78
G 1/2 - 1/2 NPT	3068	17.13 x 2.62

SCREWING TORQUE



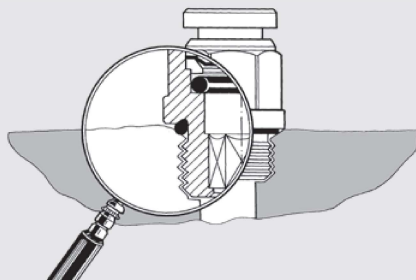
Thread	Max. Torque [Nm]
M3	0.4
M5 - 10-32 UNF	1.8
M7	2.5
M12x1.5	8
G 1/8 - 1/8 NPT	6
G 1/4 - 1/4 NPT	8
G 3/8 - 3/8 NPT	10
G 1/2 - 1/2 NPT	15

CH [mm]	CH [inc]	Max. Torque [Nm]
1.5	-	0.4
2	5/64	0.7
2.5	-	1.2
3	0.118	2.5
4	0.157	5
5	0.197	8
Over 5	Over 0.197	See the values concerning threads

N.B.: When using a socket spanner, the torque must not exceed that of the thread (e.g. fitting RL1 6 M7, with a 4 mm thread, has a maximum torque of 2.5 Nm, highest value of the thread)

GENERAL FEATURES

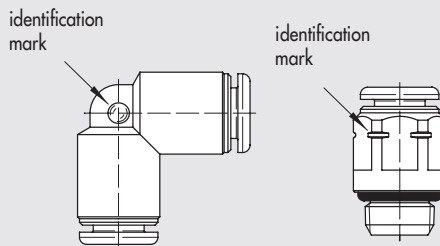
All fittings have cylindrical threading and incorporate a O-ring. The use of an O-ring considerably improves the seal of angled, rough, and slightly convex surfaces. (PTFE) is no longer used.



IDENTIFICATION OF FITTINGS FOR INCH PIPES AND UNF or NPT THREAD

The push-in fittings for inch pipes or with NPT thread have an identification mark (see below).

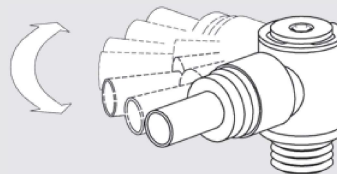
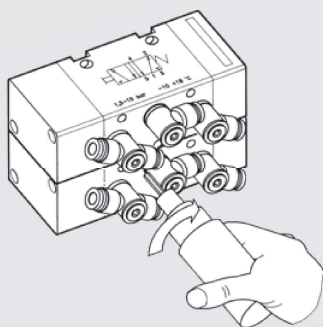
N.B.: threadless fittings for 1/8, 5/32 and 5/16 pipes do not bear an identification mark as they are used in Europe.



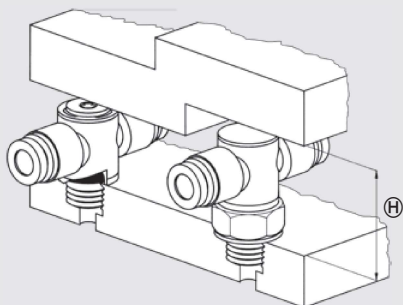
FITTINGS WITH ALLEN WRENCH - ADVANTAGES

An Allen wrench is used to assemble rotary fittings even with very close centre distances.

The special configuration with two O-rings allows maximum orientation so as to follow pipe movement in the specific application.

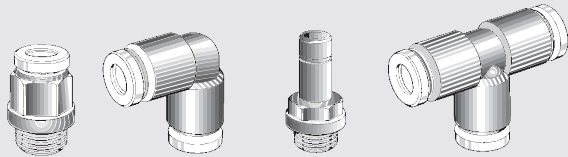


Fittings with a built-in gasket and reduced height (H) with the same threaded coupling and pipe diameter.

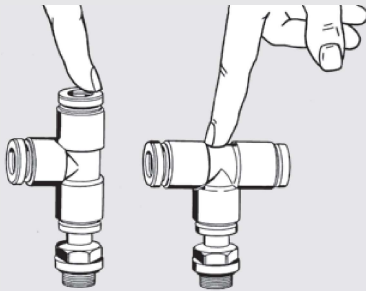


IDEA: TO USE 4 PUSH-IN FITTINGS ONLY

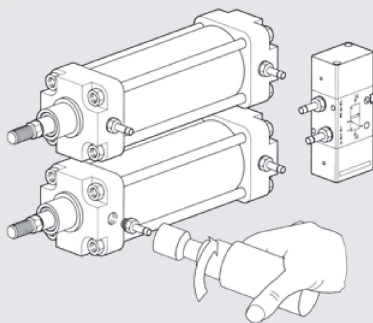
- With four type of push-in fittings that are R1, R4, R5, R6 it is possible to do every type of connection for a pneumatic circuit.
- Sharp drop in the number of fittings to be stocked and hence reduced operating costs.



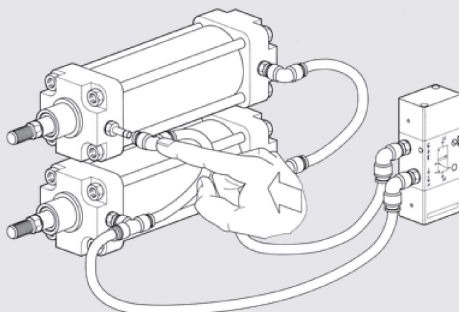
A single tee can give central tees and lateral tees.



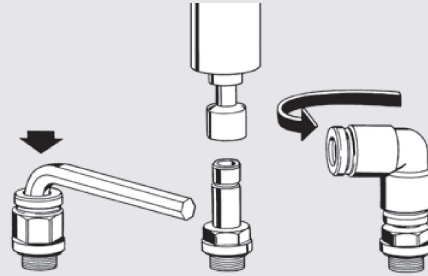
Pre-assembling fittings on the workbench with pneumatic tool even with very close centre distances.



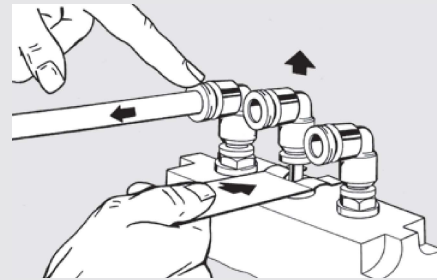
Quick connection and completion of the pneumatic circuit.



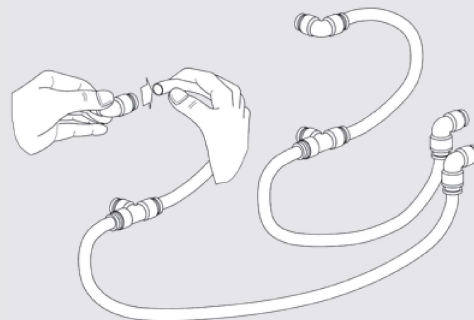
Mounting fittings with an Allen wrench or pneumatic tool. All the elbows and tees are rotary. Drastic reduction in assembly times.



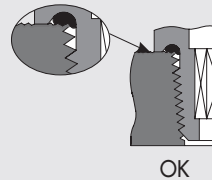
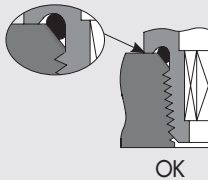
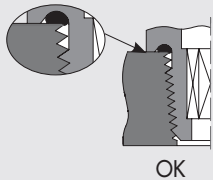
The pipe is easy to assemble by pressing lightly on the pusher ring. To remove the fitting, merely push radially on the key.



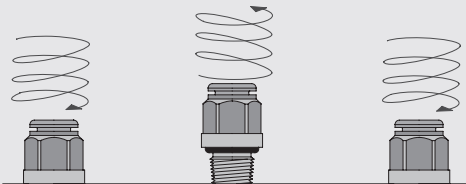
Pre-assembling fittings and pipe sections on the workbench. Pre-assembled configurations can be stocked for assembly in series.



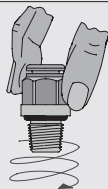
THE METAL WORK SOLUTION WITH CAPTIVATED O-RING FOR THREAD NPT



- Perfect seal even on flat, conical and raw surfaces.



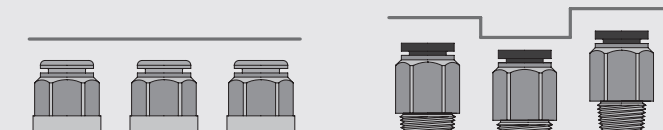
- Can be re-used thousands of times.



- The pneumatic seal is obtained by simply screwing the fitting in by hand. Tighten firmly without forcing to prevent unscrewing.

METAL WORK

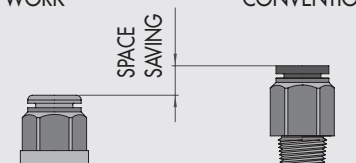
CONVENTIONAL FITTINGS



- Constant height of the mounted fitting regardless of the tolerance of the thread, or to the torque.

METAL WORK

CONVENTIONAL FITTINGS

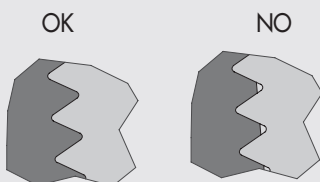


- Reduced fitting height.

THE SOLUTION OFFERS NUMEROUS ADVANTAGES OVER CONVENTIONAL SOLUTIONS

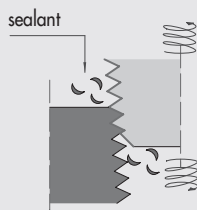
Solution with NPTF Dry seal thread

- It operates correctly if the male and female thread are made exactly to standard, otherwise there will be air leaks.



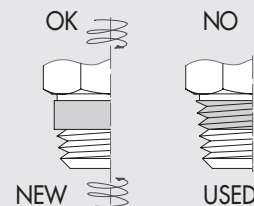
Solution with thread coated with teflon® or other sealant

- A limited number of assemblies is possible after which there will be no seal.
- Particles of sealant detach from the fitting or enter the compressed air system, which affects cleanness of the compressed air.



Solution with teflon® or rubber ring on the thread

- Guaranteed seal with just a few turns.

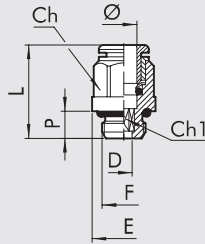




BRASS PUSH-IN FITTINGS FOR mm TUBES AND G (BSP) or METRIC THREAD

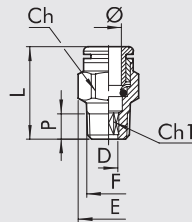


STRAIGHT, CYLINDRICAL, MALE (R1)



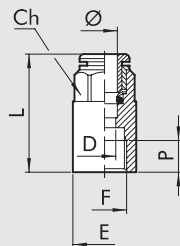
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2001B01	R1	3	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001B02	R1	3	M5	Ø 5.8	2	3.5	13	2	5.8
2001A01	R1	3.17	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001A02	R1	3.17	M5	Ø 5.8	2	3.5	13	2	5.8
2101001	RL1	4	M5	Ø 9	2.5	4	20.3	2.6	9
2101020	RL1	4	M7	Ø 9	3	5	18.9	3.1	9.8
2101002	RL1	4	1/8	10	3	6	18	3.1	14
2101003	RL1	4	1/4	10	3	8	19.8	3.1	18
2001004	R1	5	M5	Ø 12	2.5	4	22.5	2.6	12
2001005	R1	5	1/8	13	3	6	22	3.1	15
2001006	R1	5	1/4	12	3	8	24	3.1	18
2101000	RL1	6	M5	Ø 11	2.5	4	21.9	2.6	11
2101021	RL1	6	M7	Ø 11	4	5	23	4.1	11
2101101	RL1	6	M12x1.5	12	4	8	23.2	4.1	17
2101007	RL1	6	1/8	12	4	6	21.6	4.1	14
2101008	RL1	6	1/4	12	4	8	20.3	4.1	18
2101102	RL1	8	M12x1.5	14	6	8	24.5	6.2	17
2101009	RL1	8	1/8	13	5	6	25.4	5.2	14
2101010	RL1	8	1/4	14	6	8	24.4	6.2	18
2101011	RL1	8	3/8	14	6	9	22.8	6.2	22
2101012	RL1	10	1/4	16	7	8	29.2	7.2	18
2101013	RL1	10	3/8	16	8	9	26.5	8.2	22
2101018	RL1	10	1/2	16	8	11	29.8	8.2	26
2001019	RL1	12	1/4	19	7	8	30.5	7.2	21
2001014	RL1	12	3/8	19	10	9	28.1	10.2	22
2001015	RL1	12	1/2	19	10	11	29.3	10.2	26
2001016	RL1	14	3/8	22	10	9	33.8	10.2	24.6
2001017	RL1	14	1/2	22	12	11	31.5	12.2	26

STRAIGHT, CONICAL, MALE (R1C)



Code	Ref.	Ø	F	Ch	Ch1	D	E	L	P
2101C02	RL1C	4	1/8	10	3	3.1	11.3	18.5	6.2
2101C07	RL1C	6	1/8	12	4	4.1	13.5	22.5	6.2
2101C08	RL1C	6	1/4	12	4	4.1	13.2	22.3	8.5
2001Z07	RL1Z	6	12x1 conical	12	4	4.1	13.2	23.5	9
2001Z08	RL1Z	6	12x1.25 conical	12	4	4.1	13.2	23.5	9
2101C09	RL1C	8	1/8	13	6	6.2	14.3	26	6.2
2101C10	RL1C	8	1/4	14	6	6.2	15.8	25.5	8.5
2101C11	RL1C	8	3/8	14	6	6.2	16.6	24.9	9
2101C13	RL1C	10	1/4	16	7	7.2	17.7	28.9	8.5
2101C14	RL1C	10	3/8	16	8	8.2	17.7	26	9
2001C15	RL1C	12	3/8	19	10	10.2	21	28.5	9
2001C16	RL1C	12	1/2	19	10	10.2	21.3	26.6	11

STRAIGHT, FEMALE (R2)

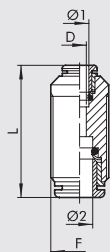


Code	Ref.	Ø	F	Ch	P	L	D	E
2002B02	R2	3	M5	7	4.5	15.7	2.5	7.8
2002A02	R2	3.17	M5	7	4.5	15.7	2.5	7.8
2102001	RL2	4	1/8	10	7	26.2	3	14
2102002	RL2	4	1/4	10	8	28.6	3	17
2002003	R2	5	1/8	12	7	27	4	14
2002004	R2	5	1/4	12	8	29.5	4	17
2102005	RL2	6	1/8	12	7	27.1	5	14
2102006	RL2	6	1/4	12	8	29.3	5	17
2102007	RL2	8	1/8	13	7	28.1	7	14
2102008	RL2	8	1/4	14	8	30	7	17
2102009	RL2	10	1/4	16	8	31.8	8	17.7
2102010	RL2	10	3/8	16	10	36.8	8	20.8
2102011	RL2	12	3/8	19	10	37	10	20.8
2102012	RL2	12	1/2	19	11	40.5	10	23.8

BRASS PUSH-IN FITTINGS FOR mm TUBES AND G (BSP) or METRIC THREAD

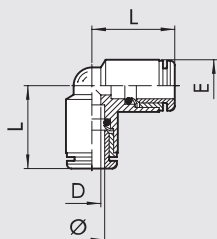
FITTINGS

STRAIGHT, INTERMEDIATE (R3)



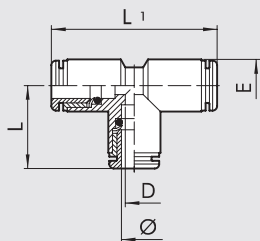
Code	Ref.	Ø 1	Ø 2	F	L	D
2003A02	R3	3	3	M8x0.75	18.4	2
2003A01	R3	3.17	3.17	M8x0.75	18.4	2
2103001	RL3	4	4	M11x1	30.6	2.5
2003002	R3	5	5	M14x1	33.5	4
2103003	RL3	6	6	M13x1	33	4.5
2103004	RL3	8	8	M15x1	35.7	6.5
2103005	RL3	10	10	M17x1	39.2	8
2003006	RL3	12	12	M20x1	40.7	10
2003007	RL3	14	14	M24x1	45.9	12
2103301	RL3	4	6	M13x1	32.7	2.5
2103302	RL3	4	8	M15x1	34.4	2.5
2103303	RL3	6	8	M15x1	35	4.5
2103304	RL3	6	10	M17x1	37.5	4.5
2103306	RL3	6	12	M20x1	39	4.5
2103305	RL3	8	10	M17x1	37.8	6.5
2103307	RL3	8	12	M20x1	40.1	6
2103308	RL3	10	12	M20x1	40.8	8

ELBOW, INTERMEDIATE (R4)



Code	Ref.	Ø	L	D	E
2004A02	R4	3	10.4	2	6.3
2004A01	R4	3.17	10.4	2	6.3
2104001	RL4	4	16.7	2.5	9.5
2004002	R4	5	19.2	3	13.5
2104003	RL4	6	19	4.5	11.5
2104004	RL4	8	21.3	6.5	13.5
2104005	RL4	10	23.3	8	16
2004006	RL4	12	26	10	20.5
2004007	RL4	14	29.3	12	22

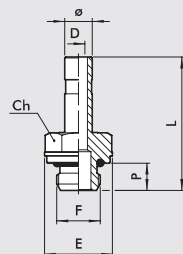
TEE, INTERMEDIATE (R5)



Code	Ref.	Ø	L	L1	D	E
2005A02	R5	3	10.4	20.8	2	6.3
2005A01	R5	3.17	10.4	20.8	2	6.3
2105001	RL5	4	16.7	33.4	2.5	9.5
2005002	R5	5	19.2	38.4	3	13.5
2105003	RL5	6	19	38	4.5	11.5
2105004	RL5	8	21.3	42.6	6.5	13.5
2105005	RL5	10	23.3	46.6	8	16
2005006	RL5	12	26	52	10	20.5
2005007	RL5	14	29.3	58.6	12	22

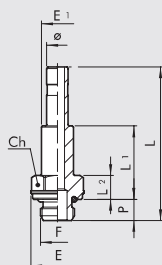


THREADED ADAPTER (R6)



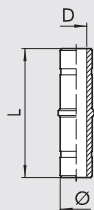
Code	Ref.	Ø	F	Ch	P	L	D	E
2006A02	R6	3	M5	5	3.5	17.1	2	5.8
2006A01	R6	3.17	M5	5	3.5	17.1	2	5.8
2006001	R6	4	M5	8	4	25.2	2.5	9
2006020	R6	4	M7	8	5	26.5	2.5	9.8
2006002	R6	4	1/8	13	6	28.9	2.5	15
2006003	R6	4	1/4	14	8	32.4	2.2	18
2006004	R6	5	M5	8	4	25.2	2.7	9
2006005	R6	5	1/8	13	6	28.9	3	15
2006006	R6	5	1/4	14	8	32.4	3	18
2006000	R6	6	M5	9	4	25.7	2.7	10
2006021	R6	6	M7	8	5	27	4	9.8
2006007	R6	6	1/8	13	6	29.4	4	15
2006008	R6	6	1/4	14	8	32.9	4	18
2006009	R6	8	1/8	13	6	30.6	5.5	15
2006010	R6	8	1/4	14	8	34	6	18
2006011	R6	8	3/8	17	9	35.4	6	22
2006012	R6	10	1/4	14	8	38.2	7.8	18
2006013	R6	10	3/8	17	9	38.7	8	22
2006022	R6	10	1/2	19	11	41	8	26
2006019	R6	12	1/4	14	8	40.7	7.8	18
2006014	R6	12	3/8	17	9	42.2	10	22
2006015	R6	12	1/2	22	11	44.2	10	26
2006016	R6	14	3/8	17	9	46.2	10	22
2006017	R6	14	1/2	22	11	48.2	12	26
2006101	R6	6	M12x1.5	13	8	33	4	17
2006102	R6	8	M12x1.5	13	8	33.7	6	17

EXTENDED THREADED ADAPTER (R18)

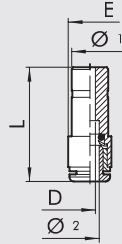


Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
2018002	R18	4	1/8	13	6	40.4	18.2	6.7	15	7
2018007	R18	6	1/8	13	6	43.4	20.7	6.7	15	9
2018008	R18	6	1/4	14	8	46.9	22.2	8.2	18	9
2018009	R18	8	1/8	13	6	46.5	22.7	6.7	15	11
2018010	R18	8	1/4	14	8	50	24.2	8.2	18	11
2018011	R18	8	3/8	17	9	51.4	24.7	8.7	22	13
2018012	R18	10	1/4	14	8	57.2	27.2	8.2	18	12
2018013	R18	10	3/8	17	9	58.7	27.7	8.7	22	12

EXTENSION (R7)



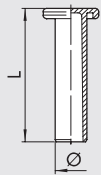
Code	Ref.	Ø	L	D
2007001	R7	4	34	2
2007002	R7	5	34	3
2007003	R7	6	37.5	4
2107004	RL7	8	37.5	6
2007005	R7	10	45	8
2007006	R7	12	48	10
2007007	R7	14	58	12


REDUCER (R8)


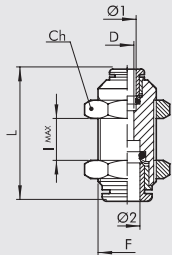
Code	Ref.	Ø 1	Ø 2	L	D	E
2008A01	R8	4	3	26	2	6.3
2008A02	R8	4	3.17	26	2	6.3
2008001	RL8	5	4	32.2	3	9.5
2L08002	RL8	6	4	29.9	2.8	9.5
2008003	R8	6	5	36	4	12
2L08004	RL8	8	4	28.7	2.8	9.5
2008005	R8	8	5	34.5	4	12
2L08006	RL8	8	6	31.9	4.5	11.5
2L08007	RL8	10	6	36.2	5	11.5
2L08008	RL8	10	8	40.8	7	14
2008009	RL8	12	4	36.7	3	13
2008010	RL8	12	6	38.5	5	13
2008011	RL8	12	8	40.1	7	14
2008015	RL8	12	10	44.3	8.2	16
2008014	RL8	14	8	44.1	7	15.5
2008017	RL8	14	10	44.3	8.2	16
2008018	RL8	14	12	50	10	19.5

ADDITION

2009001	RL8/M	4	6	34.5	2.5	11.5
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PLUG (R9)


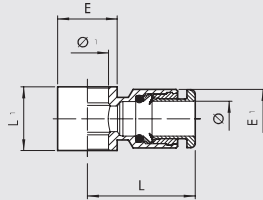
Code	Ref.	Ø	L	MATERIAL
2010A02	R9	3	20	Brass
2L10A01	RL9T	3.17	19.6	Technopolymer
2L10001	RL9T	4	27	Technopolymer
2010002	R9	5	27	Brass
2L10003	RL9T	6	29.8	Technopolymer
2L10004	RL9T	8	33.6	Technopolymer
2L10005	RL9T	10	36.8	Technopolymer
2L10006	RL9T	12	39	Technopolymer
2010007	R9	14	39.5	Brass

STRAIGHT, INTERMEDIATE, BULKMTAD (R10)


Code	Ref.	Ø 1	Ø 2	F	Ch	L	D	l max
2011A02	R10	3	3	M8x0.75	10	18.4	2	5
2011A01	R10	3.17	3.17	M8x0.75	10	18.4	2	5
2L11001	RL10	4	4	M11x1	13	30.6	2.5	11
2011002	R10	5	5	M14x1	17	33.5	4	8
2L11003	RL10	6	6	M13x1	16	33	4.5	12
2L11004	RL10	8	8	M15x1	17	35.7	6.5	13.5
2L11005	RL10	10	10	M17x1	20	39.2	8	17
2011006	RL10	12	12	M20x1	24	40.7	10	20.3
2011007	RL10	14	14	M24x1	27	45.9	12	21.9
2L11301	RL10	4	6	M13x1	16	32.7	2.5	11
2L11302	RL10	4	8	M15x1	17	34.4	2.5	12
2L11303	RL10	6	8	M15x1	17	35	4.5	13
2L11304	RL10	6	10	M17x1	20	37.5	4.5	14.5
2L11306	RL10	6	12	M20x1	24	39	4.5	16
2L11305	RL10	8	10	M17x1	20	37.8	6.5	15
2L11307	RL10	8	12	M20x1	24	40.1	6	17.5
2L11308	RL10	10	12	M20x1	24	40.8	8	19



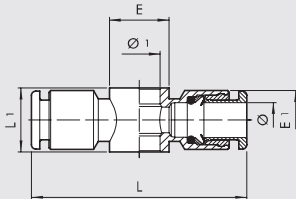
SINGLE RING (R13)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2012A02	R13	3	M5	12.9	9	9	7
2012A01	R13	3.17	M5	12.9	9	9	7
2012001	RL13	4	M5	20.2	9	9.5	9.5
2012002	RL13	4	1/8	21.3	15	14	9.5
2012003	R13	5	M5	23.8	9	9.5	12
2012004	R13	5	1/8	24.8	15	14	12
2012005	RL13	6	1/8	23	15	14	11.5
2012006	RL13	6	1/4	24.5	17	18	11.5
2012007	RL13	8	1/8	24.8	15	14	13.8
2012008	RL13	8	1/4	26.5	17	18	13.8
2012009	RL13	8	3/8	28.5	20	21	13.8
2012010	RL13	10	1/4	31.4	17	18	16.5
2012011	RL13	10	3/8	32.8	20	21	16
2012013	RL13	12	1/4	33	17	18	19.5
2012012	RL13	12	3/8	35.3	20	21	19.5
2012014	RL13	12	1/2	37	24	26	19.5
2012017	RL13	14	1/2	35	24	26	22

For the rods series D, see page D2.15

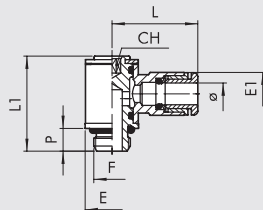
DUAL RING (R14)



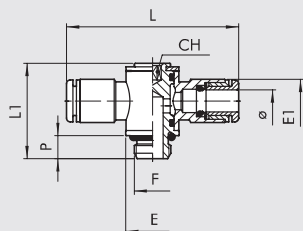
Code	Ref.	Ø	Ø 1	L	L1	E	E1
2013001	RL14	4	M5	40.4	9	9.5	9.5
2013002	RL14	4	1/8	42.6	15	14	9.5
2013003	R14	5	M5	48	9	9.5	12
2013004	R14	5	1/8	49.5	15	14	13.5
2013005	RL14	6	1/8	46	15	14	11.5
2013006	RL14	6	1/4	49	17	18	11.5
2013007	RL14	8	1/8	49.6	15	14	13.8
2013008	RL14	8	1/4	53	17	18	13.8
2013009	RL14	8	3/8	57	20	21	13.8
2013010	RL14	10	1/4	62.8	17	18	16.5
2013011	RL14	10	3/8	65.6	20	21	16

For the rods series D, see page D2.15

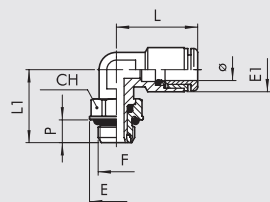
ROD, MALE SINGLE ROTARY RING (R15)



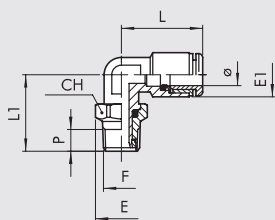
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2014101	R15	3	M3	1.5	3	12.2	13.2	5.8	5.8
2014102	R15	3.17	M3	1.5	3	12.2	13.2	5.8	5.8
2014103	R15	3	M5	2	3.5	12.7	13.7	5.8	7
2014104	R15	3.17	M5	2	3.5	12.7	13.7	5.8	7
2L14001	RL15	4	M5	2	4	20.2	18.4	9.5	9.5
2L14020	RL15	4	M7	3	5	20.2	18.5	9.8	9.5
2L14002	RL15	4	1/8	3	6	21.3	24.9	14	9.5
2014003	R15	5	M5	2	4	24	19	9.9	12
2014004	R15	5	1/8	3	6	25	27	14	12
2L14106	RL15	6	M5	2	4	23.5	18.4	9.5	11.3
2L14021	RL15	6	M7	3	5	23.5	18.5	9.8	11.3
2L14005	RL15	6	1/8	3	6	23	24.9	14	11.5
2L14007	RL15	6	1/4	4	8	24.5	29.4	18	11.5
2L14006	RL15	8	1/8	3	6	24.8	24.9	14	13.8
2L14008	RL15	8	1/4	4	8	26.5	29.4	18	13.8
2L14013	RL15	8	3/8	5	9	28.5	35.6	22	13.8
2L14009	RL15	10	1/4	4	8	31.4	29.4	18	16.5
2L14014	RL15	10	3/8	5	9	32.8	35.6	22	16
2014010	RL15	12	1/4	4	8	33	29.4	18	19.5
2014011	RL15	12	3/8	5	9	35.3	35.6	22	19.5
2014012	RL15	12	1/2	8	11	37	40.8	26	19.5
2014015	RL15	14	1/2	8	11	35	40.8	26	22

**ROD, MALE DUAL ROTARY RING (R16)**

Code	Ref.	Ø	F	CH	P	L	L1	E	E1
2L15001	RL16	4	M5	2	4	40.4	18.4	9.5	9.5
2L15020	RL16	4	M7	3	5	40.4	18.5	9.8	9.5
2L15002	RL16	4	1/8	3	6	42.6	24.9	14	9.5
2015003	R16	5	M5	2	4	47.6	18.8	9.9	12
2015004	R16	5	1/8	3	6	49.5	27	14	13.5
2L15106	RL16	6	M5	2	4	47	18.4	9.5	11.3
2L15021	RL16	6	M7	3	5	47	18.5	9.8	11.3
2L15005	RL16	6	1/8	3	6	46	24.9	14	11.5
2L15007	RL16	6	1/4	4	8	49	29.4	18	11.5
2L15006	RL16	8	1/8	3	6	49.6	24.9	14	13.8
2L15008	RL16	8	1/4	4	8	53	29.4	18	13.8
2L15013	RL16	8	3/8	5	9	57	35.6	18	13.8
2L15009	RL16	10	1/4	4	8	62.8	29.4	22	16.5
2L15014	RL16	10	3/8	5	9	65.6	35.6	22	16
2015010	RL16	12	1/4	4	8	66	29.4	18	19.5
2015011	RL16	12	3/8	5	9	70.6	35.6	22	19.5
2015012	RL16	12	1/2	8	11	74	40.8	26	19.5

ROTARY ELBOW, MALE, CYLINDRICAL (R31)

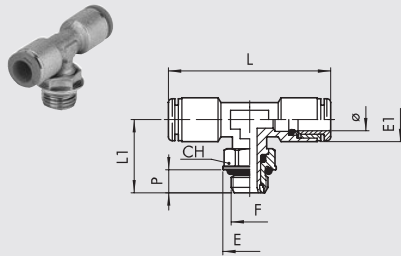
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L31001	RL31	4	M5	9	9.9	9.5	18.6	15.3	4
2L31002	RL31	4	1/8	12	14	9.5	18.6	19.1	6
2L31003	RL31	4	1/4	14	18	9.5	18.6	21.1	8
2031004	R31	5	M5	9	9.9	13.5	22.8	17.5	4
2031005	R31	5	1/8	12	14	13.5	22.8	21	6
2031006	R31	5	1/4	14	18	13.5	22.8	24.5	8
2L31007	RL31	6	M5	9	9.9	11.8	21.9	15.3	4
2L31008	RL31	6	1/8	12	14	11.8	21.9	19.1	6
2L31009	RL31	6	1/4	14	18	11.8	21.9	21.1	8
2L31010	RL31	8	1/8	12	14	13.5	25.4	19.1	6
2L31011	RL31	8	1/4	14	18	13.5	25.4	21.1	8
2L31012	RL31	8	3/8	17	22	13.8	23.6	27.1	9
2L31013	RL31	10	1/4	14	18	16	27.2	24.8	8
2L31014	RL31	10	3/8	17	22	16	27.2	27.1	9
2031015	RL31	10	1/2	22	26	16	27.2	30.7	11
2031016	RL31	12	1/4	14	18	20	30	25.6	8
2031017	RL31	12	3/8	17	22	20	30	27.1	9
2031018	RL31	12	1/2	22	26	20	30	30.7	11
2031019	RL31	14	1/2	22	26	21.3	33	32.3	11

ROTARY ELBOW, MALE, CONICAL (R31C)

Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L31C02	RL31/C	4	1/8	12	13.3	9.5	18.6	19.8	6.2
2L31C03	RL31/C	4	1/4	14	15.4	9.5	18.6	22.6	8.5
2L31C08	RL31/C	6	1/8	12	13.3	11.8	21.9	19.8	6.2
2L31C09	RL31/C	6	1/4	14	15.4	11.8	21.9	22.6	8.5
2L31C10	RL31/C	8	1/8	12	13.3	13.5	25.4	19.8	6.2
2L31C11	RL31/C	8	1/4	14	15.4	13.5	25.4	23.6	8.5
2L31C12	RL31/C	8	3/8	17	19.2	13.8	23.6	27.1	9
2L31C13	RL31/C	10	1/4	14	15.4	16	27.2	26.3	8.5
2L31C14	RL31/C	10	3/8	17	19.2	16	27.2	27.1	9
2031C15	RL31/C	12	3/8	17	19.2	20	30	27.1	9
2031C16	RL31/C	12	1/2	22	24.6	20	30	31.9	11

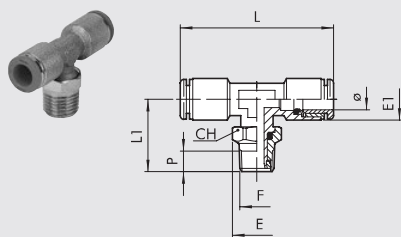


CENTRAL TEE, MALE, CYLINDRICAL, ROTARY (R32)



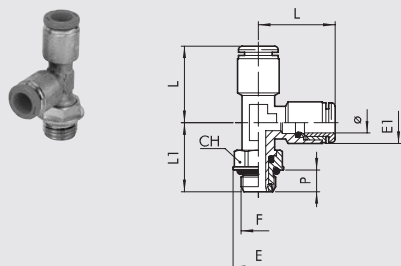
Code	Ref.	Ø	F	CH	E	EI	L	L1	P
2L32001	RL32	4	M5	9	9.9	9.5	37.2	15.3	4
2L32002	RL32	4	1/8	12	14	9.5	37.2	19.1	6
2L32003	RL32	4	1/4	14	18	9.5	37.2	21.1	8
2032005	R32	5	1/8	12	14	13.5	45.6	19.1	6
2L32004	RL32	6	M5	9	9.9	11.8	43.8	15.3	4
2L32008	RL32	6	1/8	12	14	11.8	43.8	19.1	6
2L32009	RL32	6	1/4	14	18	11.8	43.8	21.1	8
2L32010	RL32	8	1/8	12	14	13.5	50.8	19.1	6
2L32011	RL32	8	1/4	14	18	13.5	50.8	21.1	8
2L32012	RL32	8	3/8	17	22	13.8	47.2	27.1	9
2L32013	RL32	10	1/4	14	18	16	44.4	21.8	8
2L32014	RL32	10	3/8	17	22	16	44.4	27.1	9
2032017	RL32	12	3/8	17	22	20	60	27.1	9
2032018	RL32	12	1/2	22	26	20	60	30.7	11
2032019	RL32	14	1/2	22	26	21.3	66	32.3	11

CENTRAL TEE, MALE, CONICAL, ROTARY (R32C)



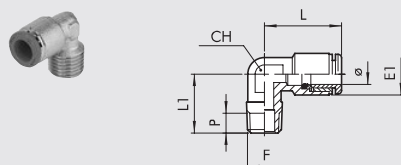
Code	Ref.	Ø	F	CH	E	EI	L	L1	P
2L32C02	RL32/C	4	1/8	12	13.3	9.5	37.2	19.8	6.2
2L32C03	RL32/C	4	1/4	14	15.4	9.5	37.2	22.6	8.5
2L32C08	RL32/C	6	1/8	12	13.3	11.8	43.8	19.8	6.2
2L32C09	RL32/C	6	1/4	14	15.4	11.8	43.8	22.6	8.5
2L32C10	RL32/C	8	1/8	12	13.3	13.5	50.8	19.8	6.2
2L32C11	RL32/C	8	1/4	14	15.4	13.5	50.8	23.6	8.5
2L32C12	RL32/C	8	3/8	17	19.2	13.8	47.2	27.1	9
2L32C13	RL32/C	10	1/4	14	15.4	16	44.4	26.3	8.5
2L32C14	RL32/C	10	3/8	17	19.2	16	44.4	27.1	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY (R38)



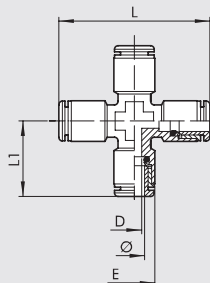
Code	Ref.	Ø	F	CH	E	EI	L	L1	P
2L38002	RL38	4	1/8	12	14	9.5	18.6	19.1	6
2038005	R38	5	1/8	12	14	13.5	22.8	19.1	6
2L38008	RL38	6	1/8	12	14	11.5	21.9	19.1	6
2L38009	RL38	6	1/4	14	18	11.5	21.9	21.1	8
2L38010	RL38	8	1/8	12	14	13.5	25.4	19.1	6
2L38011	RL38	8	1/4	14	18	13.5	25.4	22.1	8
2L38013	RL38	10	1/4	14	18	16	27.2	21.8	8
2L38014	RL38	10	3/8	17	22	16	27.2	27.1	9
2038015	RL38	12	3/8	17	22	20	30	27.1	9
2038016	RL38	12	1/2	22	26	20	30	30.7	11

ELBOW, MALE, CONICAL (R39C)



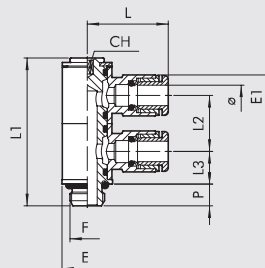
Code	Ref.	Ø	F	CH	EI	L	L1	P
2L39C02	RL39/C	4	1/8	10	9.5	18.6	16	6.2
2L39C08	RL39/C	6	1/8	10	11.8	21.9	16	6.2
2L39C09	RL39/C	6	1/4	10	11.8	21.9	18.5	8.5
2039Z07	RL39/Z	6	12x1 conical	10	11.8	21.9	17.5	7
2039Z08	RL39/Z	6	12x1.25 conical	10	11.8	21.9	17.5	7
2L39C10	RL39/C	8	1/8	10	13.5	25.4	16	6.2
2L39C11	RL39/C	8	1/4	10	13.5	25.4	18.5	8.5
2L39C13	RL39/C	10	1/4	14	16	27.2	22	8.5

CROSS FITTING (R40)



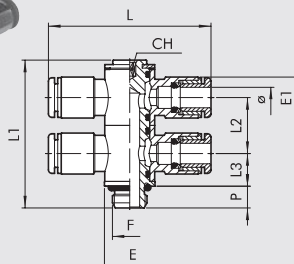
Code	Ref.	Ø	D	E	L	L1
2L40001	RL40	4	3	9.5	37.2	18.6
2L40003	RL40	6	4.5	11.3	43.8	21.9
2L40004	RL40	8	6.5	14	50.8	25.4

DUAL ROD SINGLE ROTARY RINGS (R50)



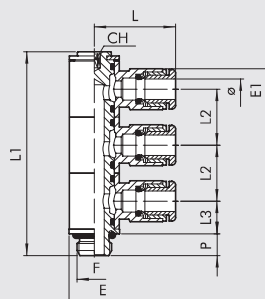
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L50001	RL50	4	M5	2	9.5	9.5	20.2	30.3	11.5	6.8	4
2L50002	RL50	4	1/8	3	14	9.5	20.2	40.9	15.5	9.1	6
2033002	R33	5	1/8	5	14	12	25	42	15	10.5	6
2L50007	RL50	6	M5	2	9.5	11.3	23.5	30.3	11.5	6.8	4
2L50008	RL50	6	1/8	3	14	11.3	23.5	40.9	15.5	9.1	6
2L50009	RL50	6	1/4	4	18	11.5	23	47	17.2	10.2	8
2L50010	RL50	8	1/8	3	14	13.8	24.8	40.9	15.5	9.1	6
2L50011	RL50	8	1/4	4	18	13.8	26.5	47	17.2	10.2	8
2L50013	RL50	10	1/4	4	18	16.5	31.4	47	17.2	10.2	8

DUAL ROD DUAL ROTARY RINGS (R51)



Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L51001	RL51	4	M5	2	9.5	9.5	40.4	30.3	11.5	6.8	4
2L51002	RL51	4	1/8	3	14	9.5	40.4	40.9	15.5	9.1	6
2L51007	RL51	6	M5	2	9.5	11.3	47	30.3	11.5	6.8	4
2L51008	RL51	6	1/8	3	14	11.3	47	40.9	15.5	9.1	6
2L51009	RL51	6	1/4	4	18	11.5	46	47	17.2	10.2	8
2L51010	RL51	8	1/8	3	14	13.8	49.6	40.9	15.5	9.1	6
2L51011	RL51	8	1/4	4	18	13.8	53	47	17.2	10.2	8
2L51013	RL51	10	1/4	4	18	16.5	62.8	47	17.2	10.2	8

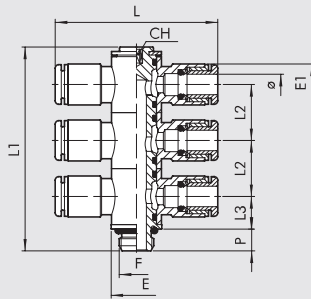
TRIPLE ROD SINGLE ROTARY RINGS (R52)



Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L52002	RL52	4	1/8	3	14	9.5	20.2	56.7	15.5	9.1	6
2L52008	RL52	6	1/8	3	14	11.3	23.5	56.7	15.5	9.1	6
2L52009	RL52	6	1/4	4	18	11.5	23	64.3	17.2	10.2	8
2L52010	RL52	8	1/8	3	14	13.8	24.8	56.7	15.5	9.1	6
2L52011	RL52	8	1/4	4	18	13.8	26.5	64.3	17.2	10.2	8
2L52013	RL52	10	1/4	4	18	16.5	31.4	64.3	17.2	10.2	8

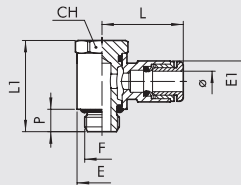


TRIPLE ROD DUAL ROTARY RINGS (R53)



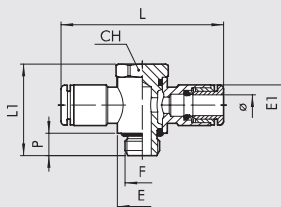
Code	Ref.	Ø	F	CH	E	EI	L	L1	L2	L3	P
2L53002	RL53	4	1/8	3	14	9.5	40.2	56.7	15.5	9.1	6
2L53008	RL53	6	1/8	3	14	11.3	47	56.7	15.5	9.1	6
2L53009	RL53	6	1/4	4	18	11.5	46	64.3	17.2	10.2	8
2L53010	RL53	8	1/8	3	14	13.8	49.6	56.7	15.5	9.1	6
2L53011	RL53	8	1/4	4	18	13.8	53	64.3	17.2	10.2	8
2L53013	RL53	10	1/4	4	18	16.5	62.8	64.3	17.2	10.2	8

MALE ROD, SINGLE SWIVEL RING (R54)

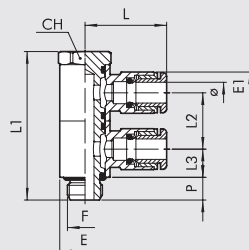


Code	Ref.	Ø	F	CH	E	EI	L	L1	P
2L54001	RL54	4	M5	9	9.5	9.5	20.2	18.7	4.5
2L54002	RL54	4	1/8	13	14	9.5	21.3	25.3	6.2
2L54007	RL54	6	M5	9	9.5	11.3	23.5	18.7	4.5
2L54008	RL54	6	1/8	13	14	11.5	23	25.3	6.2
2L54009	RL54	6	1/4	16	18	11.5	24.5	29.2	8
2L54010	RL54	8	1/8	13	14	13.8	24.8	25.3	6.2
2L54011	RL54	8	1/4	16	18	13.8	26.5	29.2	8
2L54012	RL54	8	3/8	20	21	13.8	28.5	35.4	9
2L54013	RL54	10	1/4	16	18	16.5	31.4	29.2	8
2L54014	RL54	10	3/8	20	21	16	32.8	35.4	9
2L54018	RL54	12	1/4	16	18	19.5	33	29.2	8
2L54016	RL54	12	3/8	20	21	19.5	35.3	35.4	9
2L54017	RL54	12	1/2	25	26	19.5	37	40	11
2L54020	RL54	14	1/2	25	26	22	35	40	11

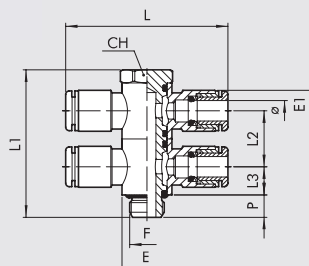
MALE ROD, DUAL SWIVEL RING (R55)



Code	Ref.	Ø	F	CH	E	EI	L	L1	P
2L55001	RL55	4	M5	9	9.5	9.5	40.4	18.7	4.5
2L55002	RL55	4	1/8	13	14	9.5	42.6	25.3	6
2L55007	RL55	6	M5	9	9.5	11.3	47	18.7	4.5
2L55008	RL55	6	1/8	13	14	11.5	46	25.3	6
2L55009	RL55	6	1/4	16	18	11.5	49	29.2	8
2L55010	RL55	8	1/8	13	14	13.8	49.6	25.3	6
2L55011	RL55	8	1/4	16	18	13.8	53	29.2	8
2L55012	RL55	8	3/8	20	21	13.8	57	35.4	9
2L55013	RL55	10	1/4	16	18	16.5	62.8	29.2	8
2L55014	RL55	10	3/8	20	21	16	65.6	35.4	9
2L55018	RL55	12	1/4	16	18	19.5	66	29.2	8
2L55016	RL55	12	3/8	20	21	19.5	70.6	35.4	9
2L55017	RL55	12	1/2	25	26	19.5	74	40	11

**DUAL ROD, MALE SINGLE SWIVEL RINGS (R56)**

Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L56001	RL56	4	M5	9	9.5	9.5	20.2	30.2	11.5	5.8	4.5
2L56002	RL56	4	1/8	13	14	9.5	21.3	41	15.5	7.8	6
2L56007	RL56	6	M5	9	9.5	11.3	23.5	30.2	11.5	5.8	4.5
2L56008	RL56	6	1/8	13	14	11.5	23	41	15.5	7.8	6
2L56009	RL56	6	1/4	16	18	11.5	24.5	46.4	17.2	8.6	8
2L56010	RL56	8	1/8	13	14	13.8	24.8	41	15.5	7.8	6
2L56011	RL56	8	1/4	16	18	13.8	26.5	46.4	17.2	8.6	8
2L56012	RL56	8	3/8	20	21	13.8	28.5	56.8	21.4	10.7	9
2L56013	RL56	10	1/4	16	18	16.5	31.4	46.4	17.2	8.6	8
2L56014	RL56	10	3/8	20	21	16	32.8	56.8	21.4	10.7	9
2L56016	RL56	12	3/8	20	21	19.5	35.3	56.8	21.4	10.7	9
2L56017	RL56	12	1/2	25	26	19.5	37	64	24	12	11
2L56020	RL56	14	1/2	25	26	22	35	64	24	12	11

DUAL ROD, MALE DUAL SWIVEL RINGS (R57)

Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
2L57001	RL57	4	M5	9	9.5	9.5	40.4	30.2	11.5	5.8	4.5
2L57002	RL57	4	1/8	13	14	9.5	42.6	41	15.5	7.8	6
2L57007	RL57	6	M5	9	9.5	11.3	47	30.2	11.5	5.8	4.5
2L57008	RL57	6	1/8	13	14	11.5	46	41	15.5	7.8	6
2L57009	RL57	6	1/4	16	18	11.5	49	46.4	17.2	8.6	8
2L57010	RL57	8	1/8	13	14	13.8	49.6	41	15.5	7.8	6
2L57011	RL57	8	1/4	16	18	13.8	53	46.4	17.2	8.6	8
2L57012	RL57	8	3/8	20	21	13.8	57	56.8	21.4	10.7	9
2L57013	RL57	10	1/4	16	18	16.5	62.8	46.4	17.2	8.6	8
2L57014	RL57	10	3/8	20	21	16	65.6	56.8	21.4	10.7	9
2L57016	RL57	12	3/8	20	21	19.5	70.6	56.8	21.4	10.7	9
2L57017	RL57	12	1/2	25	26	19.5	74	64	24	12	11

TAPERED THREAD BRASS FITTINGS WITH PTFE

Metal Work can supply fittings with a tapered thread coated in polytetrafluorethylene. This system provides the pneumatic seal between the fitting and the female thread. It is therefore not necessary to add other sealing systems during assembly, such as adhesives or Teflon tape. This significantly reduces assembly times. The physical and technical features of the material used ensure that the properties are maintained through time and in a wide range of operating temperatures. This coating can be used with push-in fittings type R1C, R31C, R32C and R39C that have a G1/8 to G1/2 taper thread.

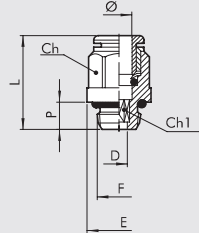
KEY TO CODES

Fittings with a PTFE thread have the same code as the standard fitting, with the addition of the suffix **T**. For example RL1C 8 3/8 fitting has code **2L01C11**, so the PTFE version has code **2L01C11T**.

UNF
NPTBRASS PUSH-IN FITTINGS FOR
INCH TUBES AND UNF or NPT THREAD

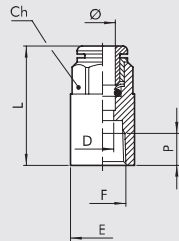
**METAL
WORK**
P N E U M A T I C

STRAIGHT, MALE (RU1)



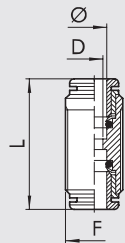
Code	Ref.	Ø	F	Ch		Ch1		P	L	D	E
				Inc	mm	Inc	mm				
2U01A02	RU1	1/8	10-32 UNF	—	—	5/64	2	3.5	13	2	5.9
2U01A03	RU1	1/8	1/8 NPT	5/16	8	5/64	2	6	13.7	2	13
2U01001	RU1	5/32	10-32 UNF	—	—	5/64	2	3.5	20.3	2	9
2U01002	RU1	5/32	1/8 NPT	0.394	10	0.118	3	6	18	3	13
2U01003	RU1	5/32	1/4 NPT	0.394	10	0.118	3	8	19.8	3	16.4
2U01000	RU1	1/4	10-32 UNF	—	—	5/64	2	3.5	21.9	2	11
2U01007	RU1	1/4	1/8 NPT	0.472	12	0.157	4	6	21.6	4	13
2U01008	RU1	1/4	1/4 NPT	0.472	12	0.157	4	8	20.3	4	16.4
2U01020	RU1	1/4	3/8 NPT	0.472	12	0.157	4	9	21.3	4	20
2U01009	RU1	5/16	1/8 NPT	0.512	13	0.197	5	6	25.4	5	14
2U01010	RU1	5/16	1/4 NPT	0.551	14	0.236	6	8	24.4	6	16.4
2U01011	RU1	5/16	3/8 NPT	0.551	14	0.236	6	9	22.8	6	20
2U01012	RU1	3/8	1/4 NPT	5/8	16	0.276	7	8	29.2	7	17.7
2U01013	RU1	3/8	3/8 NPT	5/8	16	5/16	8	9	26.5	8	20
2U01021	RU1	3/8	1/2 NPT	5/8	16	5/16	8	11	30	8	24.5
2U01014	RU1	1/2	3/8 NPT	0.866	22	0.394	10	9	32.5	10	20
2U01015	RU1	1/2	1/2 NPT	0.866	22	0.394	10	11	30	10	24.5

STRAIGHT, FEMALE (RU2)



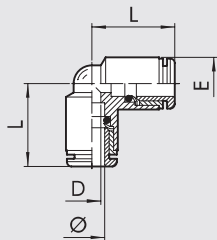
Code	Ref.	Ø	F	Ch		P	L	D	E
				Inc	mm				
2U02A03	RU2	1/8	1/8 NPT	5/16	8	7	20.8	2.3	14
2U02001	RU2	5/32	1/8 NPT	0.394	10	7	26.2	3	14
2U02002	RU2	5/32	1/4 NPT	0.394	10	7	28.6	3	17
2U02005	RU2	1/4	1/8 NPT	0.472	12	7	27.1	5	14
2U02006	RU2	1/4	1/4 NPT	0.472	12	7	29.3	5	17
2U02007	RU2	5/16	1/8 NPT	0.512	13	7	28.1	7	14
2U02008	RU2	5/16	1/4 NPT	0.551	14	7	30	7	17

STRAIGHT, INTERMEDIATE (RU3)



Code	Ref.	Ø	F	L	D
2003A01	R3	1/8	M8x0.75	18.4	2
2L03001	RL3	5/32	M11x1	30.6	2.5
2U03003	RU3	1/4	M13x1	33	4.5
2L03004	RL3	5/16	M15x1	35.7	6.5
2U03005	RU3	3/8	M17x1	39.8	8
2U03006	RU3	1/2	M22x1	43.2	10

ELBOW, INTERMEDIATE (RU4)



Code	Ref.	Ø	L	D	E
2004A01	R4	1/8	10.4	2	6.3
2L04001	RL4	5/32	16.7	2.5	9.5
2U04003	RU4	1/4	19	4.5	11.5
2L04004	RL4	5/16	21.3	6.5	13.5
2U04005	RU4	3/8	23.6	8	15.5
2U04006	RU4	1/2	27.2	11	20.5

BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

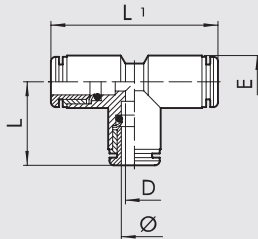
FITTINGS

UNF
NPT

BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

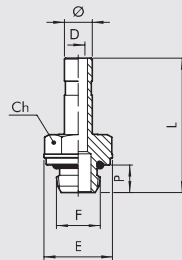
FITTINGS

TEE, INTERMEDIATE (RU5)



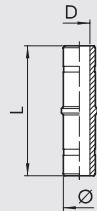
Code	Ref.	Ø	L	L1	D	E
2005A01	R5	1/8	10.4	20.8	2	6.3
2105001	RL5	5/32	16.7	33.4	2.5	9.5
2U05003	RU5	1/4	19	38	4.5	11.5
2105004	RL5	5/16	21.3	42.6	6.5	13.5
2U05005	RU5	3/8	23.6	47.2	8	15.5
2U05006	RU5	1/2	27.2	54.4	11	20.5

THREADED ADAPTER (RU6)



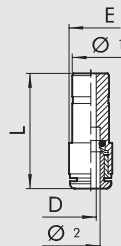
Code	Ref.	Ø	F	Ch		P	L	D	E
				Inc	mm				
2U06A01	RU6	1/8	10-32 UNF	0.197	5	3.5	18.6	2	5.8
2U06A02	RU6	1/8	1/8 NPT	0.472	12	6	22.6	2	13
2U06001	RU6	5/32	10-32 UNF	5/16	8	4	25.2	2	9
2U06002	RU6	5/32	1/8 NPT	0.472	12	6	27.7	2.5	13
2U06003	RU6	5/32	1/4 NPT	0.551	14	8	30.2	2.5	16.4
2U06000	RU6	1/4	10-32 UNF	5/16	8	4	25.7	2	9
2U06007	RU6	1/4	1/8 NPT	0.472	12	6	28.2	4	13
2U06008	RU6	1/4	1/4 NPT	0.551	14	8	30.5	4	16.4
2U06020	RU6	1/4	3/8 NPT	0.669	17	9	33.3	4	20
2U06009	RU6	5/16	1/8 NPT	0.472	12	6	29.2	5.5	13
2U06010	RU6	5/16	1/4 NPT	0.551	14	8	31.5	6	16.4
2U06011	RU6	5/16	3/8 NPT	0.669	17	9	34.3	6	20
2U06012	RU6	3/8	1/4 NPT	0.551	14	8	34.8	7.3	16.4
2U06013	RU6	3/8	3/8 NPT	0.669	17	9	37.6	7.3	20
2U06022	RU6	3/8	1/2 NPT	0.748	19	11	41.2	7.3	24.5
2U06014	RU6	1/2	3/8 NPT	0.669	17	9	39.4	10.5	20
2U06015	RU6	1/2	1/2 NPT	0.748	19	11	43.7	10.5	24.5

EXTENSION (RU7)



Code	Ref.	Ø	L	D
2007001	R7	5/32	34	2
2U07003	RU7	1/4	35.5	4
2107004	RL7	5/16	37.5	6
2U07005	RU7	3/8	44	7.3
2U07006	RU7	1/2	50.8	10.5

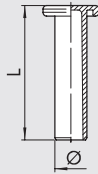
REDUCER (RU8)



Code	Ref.	Ø 1	Ø 2	L	D	E
2008A02	R8	5/32	1/8	18.4	2	5
2U08002	RU8	1/4	5/32	30.6	2.5	11
2108004	RL8	5/16	5/32	33	4.5	12
2U08006	RU8	5/16	1/4	35.7	6.5	13.5
2U08007	RU8	3/8	1/4	39.8	8	17
2U08010	RU8	1/2	1/4	43.2	10	19
2U08011	RU8	1/2	5/16	35.9	7	14.5
2U08015	RU8	1/2	3/8	41.3	8	16

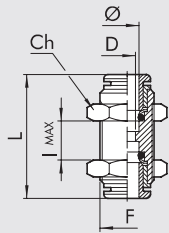
UNF
NPT

PLUG (RU9)



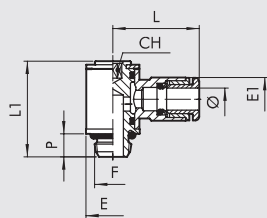
Code	Ref.	Ø	L
2L10A01	RL9T	1/8	19.6
2L10001	RL9T	5/32	27
2U10003	RU9	1/4	29.8
2L10004	RL9T	5/16	33.6
2U10005	RU9	3/8	36.8
2U10006	RU9	1/2	39.1

STRAIGHT, INTERMEDIATE, BULKMTAD (RU10)



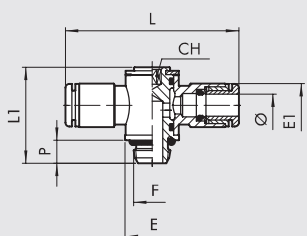
Code	Ref.	Ø	F	Ch		L	D	lmax
				Inc	mm			
2011A01	R10	1/8	M8x0.75	0.394	10	18.4	2	5
2L11001	RL10	5/32	M11x1	0.512	13	30.6	2.5	11
2U11003	RU10	1/4	M13x1	5/8	16	33	4.5	12
2L11004	RL10	5/16	M15x1	0.669	17	35.7	6.5	13.5
2U11005	RU10	3/8	M17x1	0.787	20	39.8	8	17
2U11006	RU10	1/2	M22x1	0.984	25	43.2	10	19

ROD, MALE SINGLE ROTARY RING (RU15)



Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U14104	RU15	1/8	10-32 UNF	5/64	2	3.5	12.7	13.7	5.8	7
2U14001	RU15	5/32	10-32 UNF	5/64	2	3.5	20.2	18.8	9.5	9.5
2U14002	RU15	5/32	1/8 NPT	0.118	3	6	21.3	25.6	14	9.5
2U14106	RU15	1/4	10-32 UNF	5/64	2	3.5	23.5	18.8	9.5	12
2U14005	RU15	1/4	1/8 NPT	0.118	3	6	23	25.6	14	12
2U14007	RU15	1/4	1/4 NPT	5/32	4	8	24.5	29.8	18	12
2U14006	RU15	5/16	1/8 NPT	0.118	3	6	24.8	25.6	14	13.8
2U14008	RU15	5/16	1/4 NPT	5/32	4	8	26.5	29.8	18	13.8
2U14013	RU15	5/16	3/8 NPT	0.197	5	9	28.5	35.6	22	13.8
2U14009	RU15	3/8	1/4 NPT	5/32	4	8	31.7	29.8	18	16.5
2U14014	RU15	3/8	3/8 NPT	0.197	5	9	33.1	35.6	22	16
2U14011	RU15	1/2	3/8 NPT	0.197	5	9	36.6	35.6	22	20
2U14012	RU15	1/2	1/2 NPT	0.315	8	11	38.1	40.8	26	20

ROD, MALE DUAL ROTARY RING (RU16)



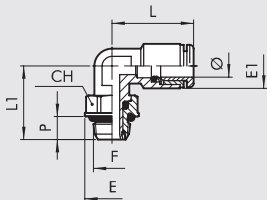
Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U15001	RU16	5/32	10-32 UNF	5/64	2	3.5	40.4	18.8	9.5	9.5
2U15002	RU16	5/32	1/8 NPT	5/64	2	6	42.6	25.6	14	9.5
2U15106	RU16	1/4	10-32 UNF	0.118	3	3.5	47	18.8	9.5	12
2U15005	RU16	1/4	1/8 NPT	5/64	2	6	46	25.6	14	12
2U15007	RU16	1/4	1/4 NPT	0.118	3	8	49	29.8	18	12
2U15006	RU16	5/16	1/8 NPT	5/32	4	6	49.6	25.6	14	13.8
2U15008	RU16	5/16	1/4 NPT	0.118	3	8	53	29.8	18	13.8
2U15013	RU16	5/16	3/8 NPT	5/32	4	9	57	35.6	22	13.8
2U15009	RU16	3/8	1/4 NPT	0.197	5	8	63.4	29.8	18	16.5
2U15014	RU16	3/8	3/8 NPT	5/32	4	9	66.2	35.6	22	16
2U15011	RU16	1/2	3/8 NPT	0.197	5	9	73.2	35.6	22	20
2U15012	RU16	1/2	1/2 NPT	0.315	8	11	78.2	40.8	26	20

BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

FITTINGS

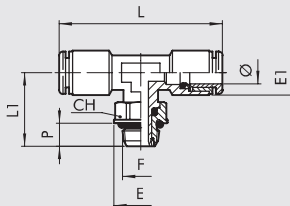
UNF
NPT

ROTARY ELBOW, MALE (RU31)



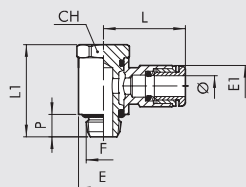
Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U31001	RU31	5/32	10-32 UNF	0.354	9	4	18.6	15.3	9.9	9.5
2U31002	RU31	5/32	1/8 NPT	0.472	12	6	18.6	19.1	13	9.5
2U31003	RU31	5/32	1/4 NPT	0.551	14	8	18.6	21.1	16.4	9.5
2U31007	RU31	1/4	10-32 UNF	0.354	9	4	21.9	15.3	9.9	11.8
2U31008	RU31	1/4	1/8 NPT	0.472	12	6	21.9	19.1	13	11.8
2U31009	RU31	1/4	1/4 NPT	0.551	14	8	21.9	21.1	16.4	11.8
2U31010	RU31	5/16	1/8 NPT	0.472	12	6	25.4	19.1	13	13.5
2U31011	RU31	5/16	1/4 NPT	0.551	14	8	25.4	21.1	16.4	13.5
2U31012	RU31	5/16	3/8 NPT	0.669	17	9	23.6	27.1	20	13.5
2U31013	RU31	3/8	1/4 NPT	0.551	14	8	27.5	24.5	16.4	16
2U31014	RU31	3/8	3/8 NPT	0.669	17	9	27.5	27.1	20	16
2U31015	RU31	3/8	1/2 NPT	0.866	22	11	27.5	30	24.5	16
2U31017	RU31	1/2	3/8 NPT	0.67	17	9	30.2	28.2	20	20
2U31018	RU31	1/2	1/2 NPT	0.866	22	11	30.2	30.5	24.5	20

CENTRAL TEE, MALE, ROTARY (RU32)



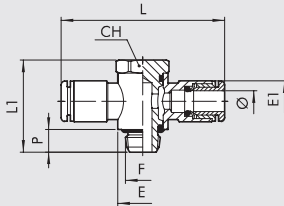
Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U32002	RU32	5/32	1/8 NPT	0.472	12	6	37.2	19.1	13	9.5
2U32003	RU32	5/32	1/4 NPT	0.551	14	8	37.2	21.1	16.4	9.5
2U32007	RU32	1/4	10-32 UNF	0.354	9	4	45	15.3	9.9	11.8
2U32008	RU32	1/4	1/8 NPT	0.472	12	6	45	19.1	13	11.8
2U32009	RU32	1/4	1/4 NPT	0.551	14	8	45	21.1	16.4	11.8
2U32010	RU32	5/16	1/8 NPT	0.472	12	6	50.8	19.1	13	13.5
2U32011	RU32	5/16	1/4 NPT	0.551	14	8	50.8	21.1	16.4	13.5
2U32012	RU32	5/16	3/8 NPT	0.669	17	9	47.2	27.1	20	13.5
2U32013	RU32	3/8	1/4 NPT	0.551	14	8	55	24.5	16.4	16
2U32014	RU32	3/8	3/8 NPT	0.669	17	9	55	27.1	20	16
2U32015	RU32	3/8	1/2 NPT	0.866	22	11	55	30	24.5	16
2U32017	RU32	1/2	3/8 NPT	0.67	17	9	60.4	28.2	20	20
2U32018	RU32	1/2	1/2 NPT	0.866	22	11	60.4	30.5	24.5	20

MALE ROD, SINGLE SWIVEL RING (RU54)

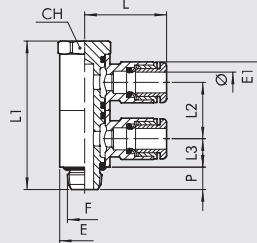


Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U54001	RU54	5/32	10-32 UNF	0.354	9	4.5	20.2	18.7	9.5	9.5
2U54002	RU54	5/32	1/8 NPT	0.512	13	6.2	21.3	25.3	14	9.5
2U54007	RU54	1/4	10-32 UNF	0.354	9	4.5	23.5	18.7	9.5	11.8
2U54008	RU54	1/4	1/8 NPT	0.512	13	6.2	23	25.3	14	11.8
2U54009	RU54	1/4	1/4 NPT	5/8	16	8	24.5	29.2	18	11.8
2U54010	RU54	5/16	1/8 NPT	0.512	13	6.2	24.8	25.3	14	13.8
2U54011	RU54	5/16	1/4 NPT	5/8	16	8	26.5	29.2	18	13.8
2U54012	RU54	5/16	3/8 NPT	0.787	20	9	28.5	35.4	21	13.8
2U54013	RU54	3/8	1/4 NPT	5/8	16	8	31.7	29.2	18	16
2U54014	RU54	3/8	3/8 NPT	0.787	20	9	33.1	35.4	21	16
2U54016	RU54	1/2	3/8 NPT	0.787	20	10	36.6	35.4	21	20.2
2U54017	RU54	1/2	1/2 NPT	0.984	25	12.5	38.1	40	26	20.2

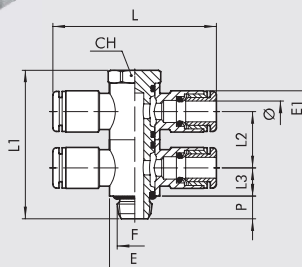
UNF
NPT

**METAL
WORK**
P N E U M A T I C
MALE ROD, DUAL SWIVEL RING (RU55)

Code	Ref.	Ø	F	Ch		P	L	L1	E	E1
				Inc	mm					
2U55001	RU55	5/32	10-32 UNF	0.354	9	4.5	40.4	18.7	9.5	9.5
2U55002	RU55	5/32	1/8 NPT	0.512	13	6.2	42.6	25.3	14	9.5
2U55007	RU55	1/4	10-32 UNF	0.354	9	4.5	47	18.7	9.5	11.8
2U55008	RU55	1/4	1/8 NPT	0.512	13	6.2	46	25.3	14	11.8
2U55009	RU55	1/4	1/4 NPT	5/64	16	8	49	29.2	18	11.8
2U55010	RU55	5/16	1/8 NPT	0.512	13	6.2	49.6	25.3	14	13.8
2U55011	RU55	5/16	1/4 NPT	5/64	16	8	53	29.2	18	13.8
2U55012	RU55	5/16	3/8 NPT	0.787	20	9	57	35.4	21	13.8
2U55013	RU55	3/8	1/4 NPT	5/64	16	8	63.4	29.2	18	16
2U55014	RU55	3/8	3/8 NPT	0.787	20	9	66.2	35.4	21	16
2U55016	RU55	1/2	3/8 NPT	0.787	20	10	73.2	35.4	21	20.2
2U55017	RU55	1/2	1/2 NPT	0.984	25	12.5	76.2	40	26	20.2

DUAL ROD, MALE SINGLE SWIVEL RINGS (RU56)

Code	Ref.	Ø	F	Ch		P	L	L1	L2	L3	E	E1
				Inc	mm							
2U56001	RU56	5/32	10-32 UNF	0.354	9	4.5	20.2	30.2	11.5	5.8	9.5	9.5
2U56002	RU56	5/32	1/8 NPT	0.512	13	6.2	21.3	40.6	15.5	7.75	14	9.5
2U56007	RU56	1/4	10-32 UNF	0.354	9	4.5	23.5	30.2	11.5	5.8	9.5	11.8
2U56008	RU56	1/4	1/8 NPT	0.512	13	6.2	23	40.6	15.5	7.75	14	11.8
2U56009	RU56	1/4	1/4 NP	5/8	16	8	24.5	46.4	17.2	8.6	18	11.8
2U56010	RU56	5/16	1/8 NPT	0.512	13	6.2	24.8	40.6	15.5	7.75	14	13.8
2U56011	RU56	5/16	1/4 NPT	5/8	16	8	26.5	46.4	17.2	8.6	18	13.8
2U56012	RU56	5/16	3/8 NPT	0.787	20	9	28.5	56.8	21.4	10.7	21	13.8
2U56013	RU56	3/8	1/4 NPT	5/8	16	8	31.7	46.4	17.2	8.6	18	16
2U56014	RU56	3/8	3/8 NPT	0.787	20	9	33.1	56.8	21.4	10.7	21	16
2U56016	RU56	1/2	3/8 NPT	0.787	20	10	36.6	56.8	21.4	10.7	21	20.2
2U56017	RU56	1/2	1/2 NPT	0.984	25	12.5	38.1	64	24	12	26	20.2

DUAL ROD, MALE DUAL SWIVEL RINGS (RU57)

Code	Ref.	Ø	F	Ch		P	L	L1	L2	L3	E	E1
				Inc	mm							
2U57001	RU57	5/32	10-32 UNF	0.354	9	4.5	40.4	30.2	11.5	5.8	9.5	9.5
2U57002	RU57	5/32	1/8 NPT	0.512	13	6.2	42.6	40.6	15.5	7.75	14	9.5
2U57007	RU57	1/4	10-32 UNF	0.354	9	4.5	47	30.2	11.5	5.8	9.5	11.8
2U57008	RU57	1/4	1/8 NPT	0.512	13	6.2	46	40.6	15.5	7.75	14	11.8
2U57009	RU57	1/4	1/4 NPT	5/8	16	8	49	46.4	17.2	8.6	18	11.8
2U57010	RU57	5/16	1/8 NPT	0.512	13	6.2	49.6	40.6	15.5	7.75	14	13.8
2U57011	RU57	5/16	1/4 NPT	5/8	16	8	53	46.4	17.2	8.6	18	13.8
2U57012	RU57	5/16	3/8 NPT	0.787	20	9	57	56.8	21.4	10.7	21	13.8
2U57013	RU57	3/8	1/4 NPT	5/8	16	8	63.4	46.4	17.2	8.6	18	16
2U57014	RU57	3/8	3/8 NPT	0.787	20	9	66.2	56.8	21.4	10.7	21	16
2U57016	RU57	1/2	3/8 NPT	0.787	20	10	73.2	56.8	21.4	10.7	21	20.2
2U57017	RU57	1/2	1/2 NPT	0.984	25	12.5	76.2	64	24	12	26	20.2

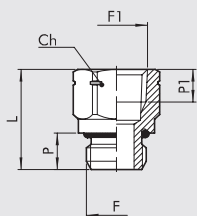
BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

FITTINGS



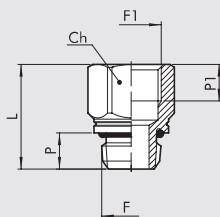
ADAPTORS AND PLUGS FOR G (BSPP) AND NPT THREAD

AU5/G - NPT FEMALE G (BSPP) MALE ADAPTORS



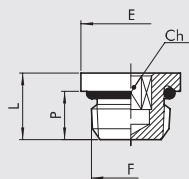
Code	Ref.	F	F1	Ch		P	P1	L
				Inc	mm			
2105100U	AU5/G	M5	10-32 UNF	5/16	8	4	4.5	11.8
2105101U	AU5/G	G 1/8	1/8 NPT	0.551	14	6	7	18.5
2105103U	AU5/G	G 1/4	1/4 NPT	0.669	17	8	7	22
2105105U	AU5/G	G 3/8	3/8 NPT	0.866	22	9	9.5	26.2
2105107U	AU5/G	G 1/2	1/2 NPT	0.984	25	11	9.5	29.2

AU5/N - NPT MALE G (BSPP) FEMALE ADAPTORS



Code	Ref.	F	F1	Ch		P	P1	L
				Inc	mm			
2105200U	AU5/N	10-32 UNF	M5	5/16	8	4	4.5	11.8
2105201U	AU5/N	1/8 NPT	G 1/8	0.551	14	6	6.7	18.5
2105203U	AU5/N	1/4 NPT	G 1/4	0.669	17	8	8	23
2105205U	AU5/N	3/8 NPT	G 3/8	0.866	22	9	10	26.7
2105207U	AU5/N	1/2 NPT	G 1/2	0.984	25	11	11	31.2

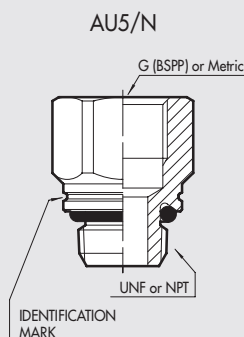
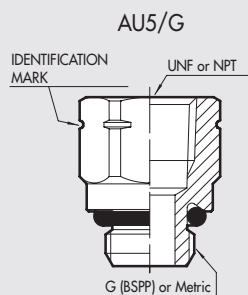
AU7 - PLUG MALE NPT



Code	Ref.	F	Ch		P	L	E
			Inc	mm			
2107000U	AU7	10-32 UNF	0.079	2	4	6.5	8
2107001U	AU7	1/8 NPT	0.118	3	6	8.5	13
2107002U	AU7	1/4 NPT	0.236	6	8	11	16.4
2107003U	AU7	3/8 NPT	5/16	8	9	12.5	20
2107004U	AU7	1/2 NPT	0.394	10	11	14.5	24.5

IDENTIFICATION MARK FOR AU5

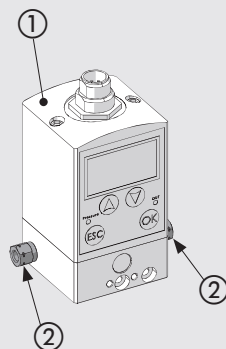
An identification mark near the NPT thread is used to distinguish it from the G (BSPP) thread.



EXAMPLE

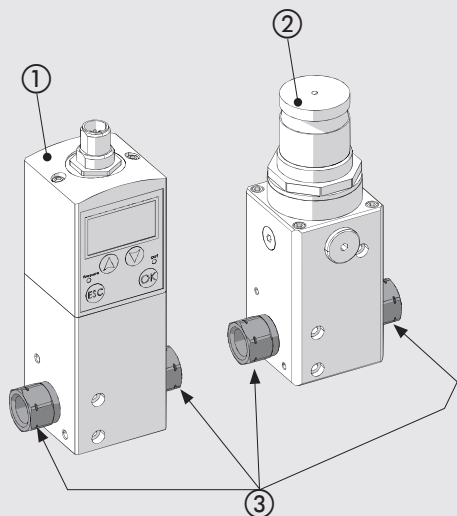
TRANSFORMATION FROM M5 TO 10-32 UNF

- ①
REGTRONIC M5 with display code **5520500**
REGTRONIC M5 remote control code **5520502**
- ②
AU5/G M5 10/32 UNF code **2105100U**



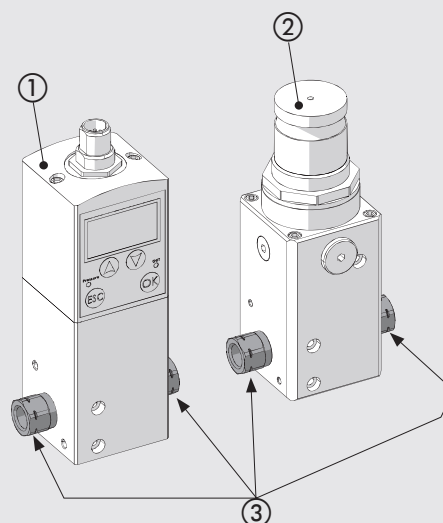
TRANSFORMATION FROM 1/4 G (BSPP) TO 1/4 NPT

- ①
REGTRONIC G1/4 with display code **5522500**
REGTRONIC G1/4 remote control code **5522502**
- ②
REG. GS G1/4 02 code **5512200**
REG. GS G1/4 04 code **5512300**
REG. GS G1/4 08 code **5512400**
- ③
AU5/G G1/4 - 1/4 NPT code **2105103U**

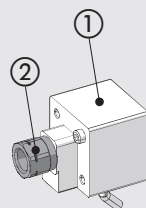


TRANSFORMATION FROM 1/8 G (BSPP) TO 1/8 NPT

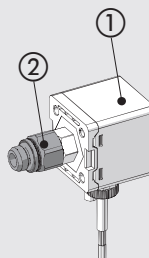
- ①
REGTRONIC G1/8 with display code **5521500**
REGTRONIC G1/8 remote control code **5521502**
- ②
REG. GS G1/8 02 code **5511200**
REG. GS G1/8 04 code **5511300**
REG. GS G1/8 08 code **5511400**
- ③
AU5/G G1/8 - 1/8 NPT code **2105101U**



- ①
Digital pressure switch series 600 code **9000600**
- ②
AU5/G G1/8 - 1/8 NPT code **2105101U**



- ①
Digital pressure switch series 640 code **9000640**
- ②
AU5/N 1/8 NPT - G1/8 code **2105201U**



NOTES

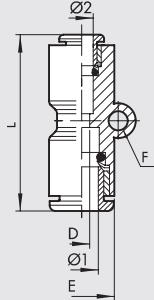
FITTINGS



TECHNOPOLYMER PUSH-IN FITTINGS FOR mm TUBES AND G (BSP) or METRIC THREAD

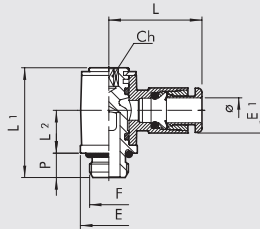


STRAIGHT, INTERMEDIATE, TECHNOPOLYMER (R19)



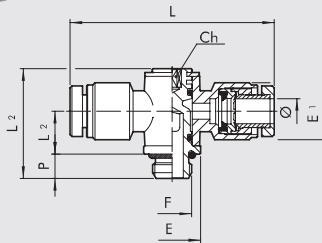
Code	Ref.	Ø1	Ø2	E	L	D	F
2019001	RL19	4	4	9.2	30.4	3	3.3
2019002	R19	5	5	14	33.5	4	–
2019003	RL19	6	6	11.3	33	5	3.3
2019004	RL19	8	8	13.8	36.2	6.5	3.3
2019005	RL19	10	10	16	38	8.5	3.3
2019006	RL19	12	12	19.5	40	10.5	3.3
2019303	RL19	6	4	11.3	32.7	3	3.3
2019304	RL19	8	6	13.8	36.1	5	3.3
2019305	RL19	10	8	16	37.8	6.5	3.3
2019306	RL19	12	10	19.5	40	8.5	3.3

MALE ROD, SINGLE ROTARY RING, TECHNOPOLYMER (R20)



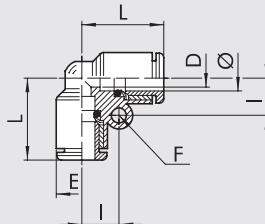
Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
2020001	RL20	4	M5	2	4	18.7	18.4	9.1	8	9.2
2020002	RL20	4	1/8	3	6	21	24.9	12.3	14	9.2
2020003	R20	5	M5	2	4	21.5	18.8	8.5	9.9	13.5
2020004	R20	5	1/8	3	6	23	27	10.5	14	13.5
2020016	RL20	6	M5	2	4	20.8	18.4	9.1	8	11.3
2020005	RL20	6	1/8	3	6	22.3	24.9	12.3	14	11.3
2020007	RL20	6	1/4	4	8	24.3	29.4	14.3	18	11.3
2020006	RL20	8	1/8	3	6	25.6	24.9	12.3	14	13.8
2020008	RL20	8	1/4	4	8	27.2	29.4	14.3	18	13.8
2020009	RL20	10	1/4	4	8	28.6	29.4	14.3	18	16
2120017	RL20	10	3/8	5	9	30.5	35.6	15.3	22	16
2020010	RL20	12	1/4	4	8	31	29.4	14.3	18	19.5
2020011	RL20	12	3/8	5	9	32.4	35.6	17.5	22	19.5
2020012	RL20	12	1/2	8	11	34	40.8	19.2	26	19.5

MALE ROD, DUAL ROTARY RING, TECHNOPOLYMER (R20/A)

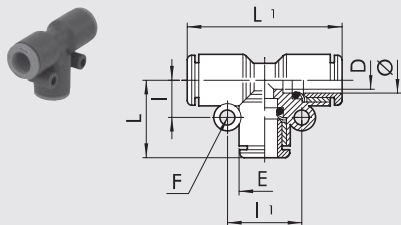


Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
2020A01	R20/A	4	M5	2	4	40	16.8	6.5	9.9	10.9
2020A02	R20/A	4	1/8	3	6	45	27	10.5	14	12.5
2020A03	R20/A	5	M5	2	4	43	18.8	8.5	9.9	13.5
2020A04	R20/A	5	1/8	3	6	46	27	10.5	14	13.5
2020A05	R20/A	6	1/8	3	6	45	27	10.5	14	15
2020A07	R20/A	6	1/4	4	8	48	31.5	11.5	18	15
2020A06	R20/A	8	1/8	3	6	51	27	10.5	14	16.3
2020A08	R20/A	8	1/4	4	8	54	31.5	11.5	18	16.3
2020A09	R20/A	10	1/4	4	8	64	31.5	11.5	18	18.5
2020A10	R20/A	12	1/4	4	8	64	31.5	11.5	18	21
2020A11	R20/A	12	3/8	5	9	68	36	13.5	22	21
2020A12	R20/A	12	1/2	8	11	72	42	16.2	26	21

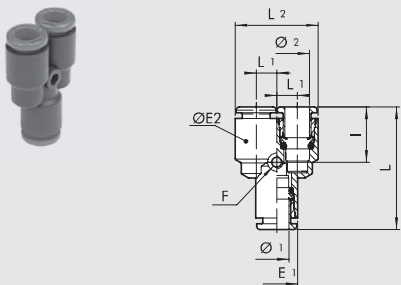
ELBOW, INTERMEDIATE, TECHNOPOLYMER (R21)



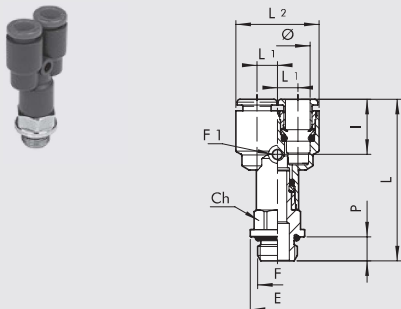
Code	Ref.	Ø	L	D	E	I	F
2121001	RL21	4	16.7	2.5	9.2	7.2	3.3
2021002	R21	5	20	3.5	13.5	–	–
2121003	RL21	6	19	4.2	11.3	8.2	3.3
2121004	RL21	8	21.4	6.2	13.8	9.6	3.3
2021005	RL21	10	24	8.5	16	10.9	3.3
2021006	RL21	12	25.8	10.5	19.5	12.5	3.3


INTERMEDIATE TEE, TECHNOPOLYMER (R22)


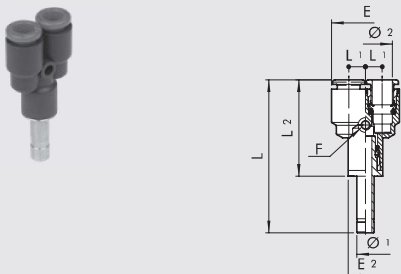
Code	Ref.	Ø	L	L1	D	E	I	II	F
2122001	RL22	4	16.7	33.4	2.5	9.2	7.2	14.4	3.3
2022002	R22	5	20	40	3.5	13.5	–	–	–
2122003	RL22	6	19	38	4.2	11.3	8.2	16.4	3.3
2122004	RL22	8	21.4	42.8	6.2	13.8	9.6	19.2	3.3
2022005	RL22	10	24	48	8.5	16	10.9	21.8	3.3
2022006	RL22	12	25.8	51.6	10.5	19.5	12.5	25	3.3

WYE (R23)


Code	Ref.	Ø1	Ø2	L	L1	E1	ØE2	I	F	L2
2023001	RL23	4	4	32.9	5	9.2	9.2	14.8	3.3	19.2
2023002	R23	5	5	35.5	6.5	13.5	13.5	–	–	26.5
2023003	RL23	6	6	35.5	5.8	11.3	11.3	15	3.3	22.8
2023004	RL23	8	8	39.5	7.2	13.8	13.8	15.8	3.3	28.2
2123005	RL23	10	10	43.1	8.3	16	16	17.4	3.3	32.6
2123006	RL23	12	12	48	10	19.5	19.5	18	3.3	39.5
2123301	RL23	6	4	34.2	5	11.3	9.2	14.8	3.3	19.2
2123303	RL23	8	6	37.8	5.8	13.8	11.3	15	3.3	22.8
2123306	RL23	10	8	40.4	7.2	16	13.8	15.8	3.3	28.2
2123309	RL23	12	10	44.2	8.3	19.5	16	17.4	3.3	32.6

Y TECHNOPOLYMER, THREADED INPUT (R23/M)


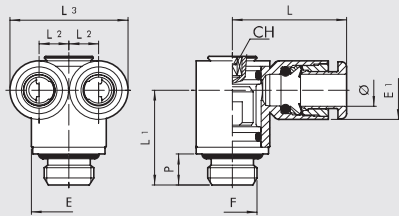
Code	Ref.	Ø	F	L	L1	L2	I	Ch	P	E	F1
2123401	RL23/M	4	M5	38.7	5	19.2	14.8	9	4	9.9	3.3
2123402	RL23/M	4	1/8	42.6	5	19.2	14.8	12	6	14	3.3
2123403	RL23/M	4	1/4	46.6	5	19.2	14.8	14	8	18	3.3
2123406	RL23/M	6	1/8	44.9	5.75	22.8	15	12	6	14	3.3
2123407	RL23/M	6	1/4	47.9	5.75	22.8	15	14	8	18	3.3
2123409	RL23/M	8	1/8	48.4	7.2	28.2	15.8	14	6	15	3.3
2123410	RL23/M	8	1/4	52.8	7.2	28.2	15.8	14	8	18	3.3
2123412	RL23/M	8	3/8	54.4	7.2	28.2	15.8	17	9	22	3.3
2123413	RL23/M	10	1/4	53.8	8.3	32.6	17.4	16	8	18	3.3
2123415	RL23/M	10	3/8	56	8.3	32.6	17.4	17	9	20	3.3
2123419	RL23/M	12	3/8	62	10	39.5	18	19	9	22	3.3
2123420	RL23/M	12	1/2	62.3	10	39.5	18	22	11	26	3.3

Y BRANCH WITH ADAPTER, TECHNOPOLYMER (R24)


Code	Ref.	Ø1	Ø2	L	L1	L2	E1	E2	I	F
2024001	RL24	4	4	46.9	5	29.7	9.2	9.2	14.8	3.3
2024003	RL24	6	6	49.7	5.75	32	11.3	11.3	15	3.3
2124004	RL24	8	8	55.1	7.2	35.9	13.8	13.8	15.8	3.3
2124005	RL24	10	10	63.1	8.3	39.2	16	16	17.4	3.3
2124006	RL24	12	12	70.5	10	44	19.5	19.5	18	3.3
2124301	RL24	6	4	48.4	5	30.7	9.2	11.3	14.8	3.3
2124303	RL24	8	6	53.4	5.75	34.2	11.3	13.8	15	3.3
2124306	RL24	10	8	60.4	7.2	36.6	13.8	16	15.8	3.3
2124309	RL24	12	10	66.7	8.3	40.2	16	19.5	17.4	3.3

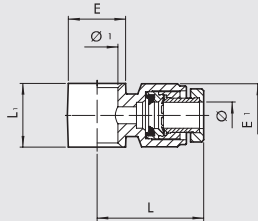


TECHNOPOLYMER PARALLEL Y, THREADED INPUT (R25)



Code	Ref.	Ø	F	L	L1	L2	L3	E	E1	CH	P
2L25001	RL25	4	M5	17.7	13.1	5	19.2	8	9.2	2	4
2L25002	RL25	4	M7	17.7	14.6	5	19.2	9.8	9.2	3	5
2L25003	RL25	4	1/8	17.7	16.5	5	19.2	13	9.2	3	6
2L25004	RL25	6	1/8	23	18.3	5.75	22.8	14	11.3	3	6
2L25005	RL25	6	1/4	23	21.2	5.75	22.8	16.4	11.3	4	8
2L25008	RL25	8	1/4	25.8	22.2	7.2	28.2	18	13.8	4	8
2L25009	RL25	8	3/8	25.8	23.8	7.2	28.2	20	13.8	5	9

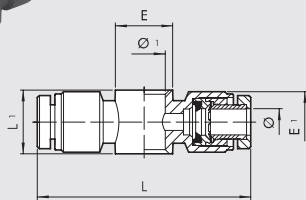
SINGLE RING, TECHNOPOLYMER (R28)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
2012102	R28	4	1/8	22.5	17	15	12.5
2012104	R28	5	1/8	23	17	15	13.5
2012106	R28	6	1/8	22.5	17	15	15
2012107	R28	6	1/4	24	19	18	15
2012108	R28	8	1/8	25.5	17	15	16.5
2012109	R28	8	1/4	27	19	18	16.5
2012110	R28	8	3/8	29	22	21.5	16.5
2012111	R28	10	1/4	32	19	18	18.5
2012112	R28	10	3/8	32	22	21.5	18.5
2012113	R28	12	1/4	32	19	18	21
2012114	R28	12	3/8	34	22	21.5	21
2012115	R28	12	1/2	36	24	26	21

For the rods series D, see page D2.15

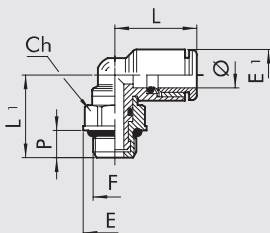
DUAL RING, TECHNOPOLYMER (R29)



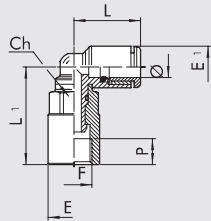
Code	Ref.	Ø	Ø 1	L	L1	E	E1
2013102	R29	4	1/8	45	17	15	12.5
2013104	R29	5	1/8	46	17	15	13.5
2013106	R29	6	1/8	45	17	15	15
2013107	R29	6	1/4	48	19	18	15
2013108	R29	8	1/8	51	17	15	16.5
2013109	R29	8	1/4	54	19	18	16.5
2013110	R29	8	3/8	58	22	21.5	16.5
2013111	R29	10	1/4	64	19	18	18.5
2013112	R29	10	3/8	64	22	21.5	18.5
2013113	R29	12	1/4	64	19	18	21
2013114	R29	12	3/8	68	22	21.5	21
2013115	R29	12	1/2	72	24	26	21

For the rods series D, see page D2.15

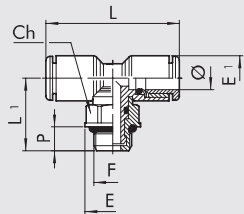
ROTARY ELBOW, MALE, TECHNOPOLYMER (R34)



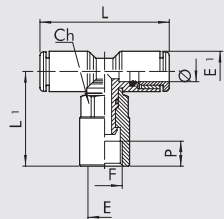
Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
2L34001	RL34	4	M5	8	4	16.4	15.2	9	9.2
2L34020	RL34	4	M7	8	5	16.4	16.2	9.8	9.2
2L34002	RL34	4	1/8	12	6	16.4	17.2	14	9.2
2L34003	RL34	4	1/4	14	8	16.4	20.1	18	9.2
2L34006	RL34	6	M5	8	4	18	16.3	9	11.3
2L34021	RL34	6	M7	9	5	19	17.5	9.9	11.3
2L34007	RL34	6	1/8	12	6	19	18.3	14	11.3
2L34008	RL34	6	1/4	14	8	19	21.2	18	11.3
2L34009	RL34	8	1/8	12	6	20.2	19.5	14	13.8
2L34010	RL34	8	1/4	14	8	20.2	22.4	18	13.8
2L34011	RL34	8	3/8	17	9	20.2	24.4	22	13.8
2L34013	RL34	10	1/4	14	8	23.3	23.5	18	16
2L34014	RL34	10	3/8	17	9	23.3	25.6	22	16
2L34016	RL34	12	3/8	17	9	25.2	27.3	22	19.5
2L34017	RL34	12	1/2	19	11	25.2	30.3	26	19.5


ELBOW, FEMALE, ROTARY, TECHNOPOLYMER (R34/F)


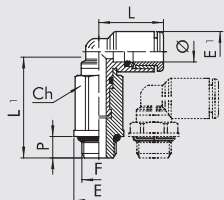
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2L34F01	RL34/F 4	M5	8	9	9.2	16.4	15.3	4	
2L34F05	RL34/F 4	1/8	12	14	9.2	16.4	20.9	7	
2L34F06	RL34/F 6	M5	8	9	11.3	18	16.4	4	
2L34F07	RL34/F 6	1/8	12	14	11.3	19	26.5	7	
2L34F08	RL34/F 6	1/4	14	17	11.3	19	28.2	8	
2L34F09	RL34/F 8	1/8	12	14	13.8	20.2	27.7	7	
2L34F10	RL34/F 8	1/4	14	17	13.8	20.2	29.4	8	
2L34F13	RL34/F 10	1/4	14	17	16	23.3	33	8	
2L34F14	RL34/F 10	3/8	17	21	16	23.3	38	10	
2L34F16	RL34/F 12	3/8	17	21	19.5	25.2	40.3	10	
2L34F17	RL34/F 12	1/2	19	23.8	19.5	25.2	42.8	11	

CENTRAL TEE, MALE, TECHNOPOLYMER (R35)


Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
2L35001	RL35 4	M5	8	4	32.8	15.2	9	9.2	
2L35020	RL35 4	M7	8	5	32.8	16.2	9.8	9.2	
2L35002	RL35 4	1/8	12	6	32.8	17.2	14	9.2	
2L35003	RL35 4	1/4	14	8	32.8	20.1	18	9.2	
2L35006	RL35 6	M5	8	4	36	16.3	9	11.3	
2L35007	RL35 6	1/8	12	6	38	18.3	14	11.3	
2L35008	RL35 6	1/4	14	8	38	21.2	18	11.3	
2L35009	RL35 8	1/8	12	6	40.4	19.5	14	13.8	
2L35010	RL35 8	1/4	14	8	40.4	22.4	18	13.8	
2L35011	RL35 8	3/8	17	9	40.4	24.4	22	13.8	
2L35013	RL35 10	1/4	14	8	46.6	23.5	18	16	
2L35014	RL35 10	3/8	17	9	46.6	25.6	22	16	
2L35016	RL35 12	3/8	17	9	50.4	27.3	22	19.5	
2L35017	RL35 12	1/2	19	11	50.4	30.3	26	19.5	

CENTRAL TEE, FEMALE, ROTARY, TECHNOPOLYMER (R35/F)


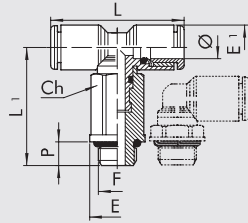
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2L35F01	RL35/F 4	M5	8	9	9.2	32.8	15.3	4	
2L35F06	RL35/F 6	M5	8	9	11.3	36	16.4	4	
2L35F07	RL35/F 6	1/8	12	14	11.3	38	26.5	7	
2L35F08	RL35/F 6	1/4	14	17	11.3	38	28.2	8	
2L35F09	RL35/F 8	1/8	12	14	13.8	40.4	27.7	7	
2L35F10	RL35/F 8	1/4	14	17	13.8	40.4	29.4	8	
2L35F13	RL35/F 10	1/4	14	17	16	46.6	33	8	
2L35F14	RL35/F 10	3/8	17	21	16	46.6	38	10	
2L35F16	RL35/F 12	3/8	17	21	19.5	50.4	40.3	10	
2L35F17	RL35/F 12	1/2	19	23.8	19.5	50.4	42.8	11	

ROTARY ELBOW, MALE, EXTENDED, TECHNOPOLYMER (R36)


Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
2L36001	RL36 4	M5	8	4	16.4	26.7	9	9.2	
2L36020	RL36 4	M7	8	5	16.4	27.7	9.8	9.2	
2L36002	RL36 4	1/8	12	6	16.4	25.3	14	9.2	
2L36006	RL36 6	M5	8	4	18	27.8	9	11.3	
2L36021	RL36 6	M7	9	5	18	29.3	9.9	11.3	
2L36007	RL36 6	1/8	12	6	19	30.9	14	11.3	
2L36008	RL36 6	1/4	14	8	19	33.2	18	11.3	
2L36009	RL36 8	1/8	12	6	20.2	32.1	14	13.8	
2L36010	RL36 8	1/4	14	8	20.2	34.4	18	13.8	
2L36012	RL36 10	1/4	14	8	23.3	38	18	16	

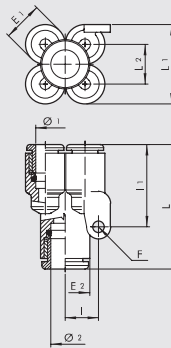


CENTRAL TEE, MALE, ROTARY, EXTENDED, TECHNOPOLYMER (R37)



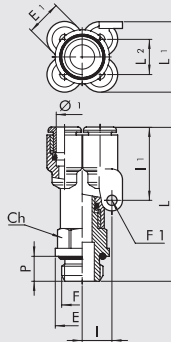
Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
2L37001	RL37	4	M5	8	4	32.8	26.7	9	9.2
2L37020	RL37	4	M7	8	5	32.8	27.5	9.8	9.2
2L37002	RL37	4	1/8	12	6	32.8	25.3	14	9.2
2L37006	RL37	6	M5	8	4	36	27.8	9	11.3
2L37007	RL37	6	1/8	12	6	38	30.9	14	11.3
2L37008	RL37	6	1/4	14	8	38	33.2	18	11.3
2L37009	RL37	8	1/8	12	6	40.4	32.1	14	13.8
2L37010	RL37	8	1/4	14	8	40.4	34.4	18	13.8
2L37012	RL37	10	1/4	14	8	46.6	38	18	16

DUAL Y BRANCH TECHNOPOLYMER (R42)



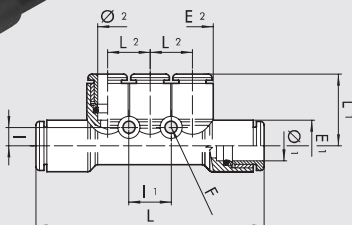
Code	Ref.	Ø1	Ø2	E1	E2	L	L1	L2	I	II	F
2L42001	RL42	4	4	9.2	9.2	28.8	17.9	8.7	8	21.3	3.3
2L42002	RL42	4	6	9.2	11.3	31.3	17.9	8.7	8	21.3	3.3
2L42004	RL42	6	6	11.3	11.3	33.4	22.6	11.3	9.5	25.6	3.3
2L42005	RL42	6	8	11.3	14	34.8	22.6	11.3	9.5	25.6	3.3

DUAL Y BRANCH TECHNOPOLYMER, THREADED INPUT (R43)

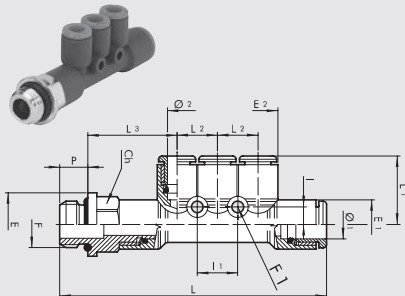


Code	Ref.	Ø1	F	E1	E	Ch	P	L	L1	L2	I	II	F1
2L43001	RL43	4	M5	9.2	8	9	4	35.5	17.9	8.7	8	21.3	3.3
2L43002	RL43	4	1/8	9.2	14	12	6	41.6	17.9	8.7	8	21.3	3.3
2L43003	RL43	4	1/4	9.2	18	14	8	44.6	17.9	8.7	8	21.3	3.3
2L43008	RL43	6	1/8	11.3	14	12	6	43.7	22.6	11.3	9.5	25.6	3.3
2L43009	RL43	6	1/4	11.3	18	14	8	46.7	22.6	11.3	9.5	25.6	3.3

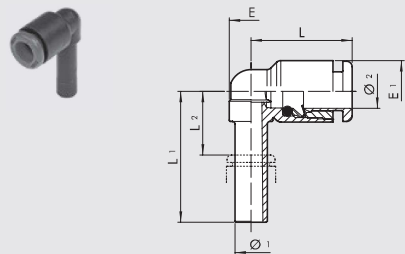
MULTIPLE MANIFOLD, TECHNOPOLYMER (R44)



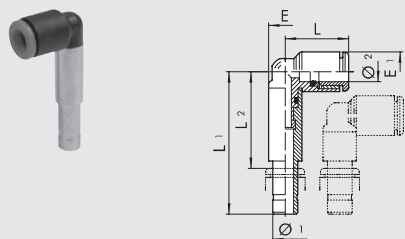
Code	Ref.	Ø1	Ø2	E1	E2	L	L1	L2	I	II	F
2L44001	RL44	6	4	11.3	9.2	53.2	17.2	9.4	4.3	9.4	3.3
2L44003	RL44	8	6	14	11.3	61.4	19.6	11.5	5	11.5	3.3


MULTIPLE MANIFOLD, INPUT, THREADED, TECHNOPOLYMER (R45)


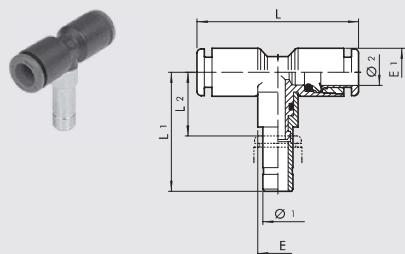
Code	Ref.	F	Ø1	Ø2	E1	E2	E	Ch	P	L	L1	L2	L3	I	II	F1
2145001	RL45	1/8	6	4	11.3	9.2	14	12	6	63.5	17.2	9.4	21.5	4.3	9.4	3.3
2145002	RL45	1/4	6	4	11.3	9.2	18	14	8	66.5	17.2	9.4	22.5	4.3	9.4	3.3
2145007	RL45	1/8	8	6	14	11.3	15	14	6	71.2	19.6	11.5	23	5	11.5	3.3
2145008	RL45	1/4	8	6	14	11.3	18	14	8	75.6	19.6	11.5	25.4	5	11.5	3.3
2145009	RL45	3/8	8	6	14	11.3	22	17	9	77.2	19.6	11.5	26	5	11.5	3.3

PLUG-IN ELBOWS (R46)


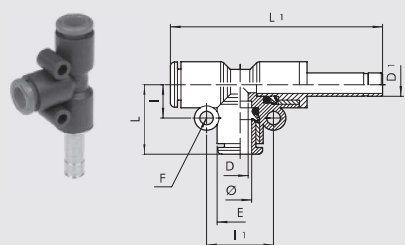
Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2146001	RL46	4	4	16	22.5	8.1	6.8	9.2
2146002	RL46	6	6	18.5	24	8.4	8	11.3
2146003	RL46	8	8	21.2	28.5	11.3	10	13.8
2146004	RL46	10	10	23.3	32	13.3	12.5	16

EXTENDED PLUG-IN ELBOWS (R47)


Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2147001	RL47	4	4	15.5	36.9	23.4	7.7	9.2
2147002	RL47	6	6	18.1	40.6	25.9	9.3	11.3
2147003	RL47	8	8	19.3	44.9	28.8	9.7	13.8

DOUBLE ELBOW (R48)


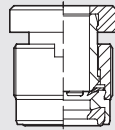
Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
2148001	RL48	4	4	32	22.5	8.1	6.8	9.2
2148002	RL48	6	6	37	37.5	16.4	9.7	11.3
2148003	RL48	8	8	42.4	28.5	11.3	10	13.8
2148004	RL48	10	10	46.6	46	27.7	14	16

DOUBLE LATERAL ELBOW (R49)


Code	Ref.	Ø	L	L1	I	II	E	D	D1	F
2149001	RL49	4	16.7	47.4	7.2	14.4	9.2	2.5	4	3.3
2149003	RL49	6	19	52.5	8.2	16.4	11.3	4.2	6	3.3
2149004	RL49	8	21.4	58.4	9.6	19.2	13.8	6.2	8	3.3
2149005	RL49	10	24.1	68.2	10.9	21.8	16	8.5	10	3.3
2149006	RL49	12	25.8	74.1	12.5	25	19.5	10.5	12	3.3

CARTRIDGES AND ACCESSORIES

BRASS CARTRIDGE WITH THREAD (R26)

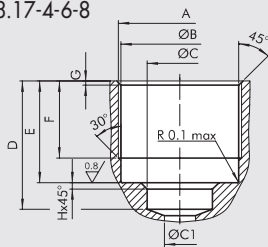


Code	Ref.	Ø	Brace of serration on centers in plastic material [Nm]	Brace of serration on metallic centers [Nm]
SERIES R				
2026A02	R26	3	0.6	0.8
2026A01	R26	3.17 ▲	0.6	0.8
2026001	R26	4 ▲	0.8	1
2026002	R26	5	0.8	1.5
2026003	R26	6	0.8	1.2
2026004	R26	8 ▲	1	1.8
2026005	R26	10	0.8	2
2026006	R26	12	0.8	2

▲ Ø3.17 = Ø1/8"; Ø4 = Ø5/32"; Ø8 = Ø5/16"

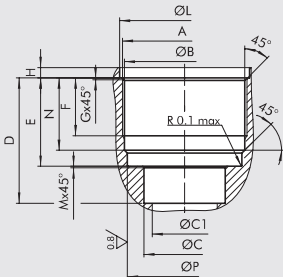
CARTRIDGE SLOT R26

Ø 3-3.17-4-6-8



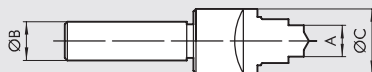
Ø	A	Ø B	Ø C	Ø C1	D	E	F
3-3.17	M7x0.75	6.5 ^{+0.1} ₋₀	4.5 ^{+0.12} ₋₀	4 max	10.5 ^{+0.3} ₋₀	9.5 ^{+0.1} _{-0.3}	7 ± 0.20
4	M9.5x0.75	9 ^{+0.10} ₋₀	4.1 ^{+0.10} ₋₀	3 max	12 ⁺⁰ _{-0.20}	9.5 ^{+0.15} _{-0.05}	7.5 ± 0.20
6	M11.5x0.75	11 ^{+0.10} ₋₀	6.1 ^{+0.10} ₋₀	5 max	12 ± 0.1	9.5 ± 0.1	7.5 ± 0.20
8	M13.5x0.75	13 ^{+0.10} ₋₀	8.1 ^{+0.10} ₋₀	7 max	15 ⁺⁰ _{-0.20}	10.5 ^{+0.15} _{-0.05}	8.5 ± 0.20
Ø	G	H					
3-3.17	0.5	-					
4	0.4	0.6					
6	0.4	0.6					
8	0.4	0.6					

Ø 5-10-12



Ø	A	Ø B	Ø C	Ø C1	D	E	F
5	M10.5x0.75	10 ^{+0.1} ₋₀	5 ^{+0.15} ₋₀	4 max	11.8 ± 0.1	8.9 ^{+0.1} ₋₀	5.8 ^{+0.3} ₋₀
10	M15.5x0.75	15 ^{+0.1} ₋₀	10 ^{+0.15} ₋₀	9 max	15.6 ± 0.1	11 ± 0.05	7.5 ^{+0.3} ₋₀
12	M18x1	17.5 ^{+0.05} _{-0.1}	12 ^{+0.05} _{-0.15}	11 max	18 ± 0.1	12 ± 0.05	6.8 ^{+0.3} ₋₀
Ø	G	H	Ø L	M	N	Ø P	
5	0.3	0.9 ⁺⁰ _{-0.3}	11.2 ^{+0.12} _{-0.02}	0.1	7.8 ± 0.05	9.7 ± 0.05	
10	0.3	1.3 ⁺⁰ _{-0.3}	16.2 ^{+0.1} _{-0.05}	0.2	9 ± 0.05	14.9 ^{+0.10} ₋₀	
12	0.6	1.3 ⁺⁰ _{-0.3}	18.8 ^{+0.1} ₋₀	0.2	9.75 ^{+0.1} _{-0.15}	17 ^{+0.1} ₋₀	

TOOL FOR SLOT R26



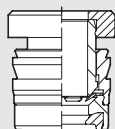
Code	Ref.	A	Ø B	Ø C
2025010	UT.SE. R26 3-3.17	4.5	10	10
2025011	UT.SE. R26 4	4.1	12	18
2025012	UT.SE. R26 5	5.1	15	20
2025013	UT.SE. R26 6	6.1	16	19
2025014	UT.SE. R26 8	8.1	16	21
2025015	UT.SE. R26 10	10.1	16	25
2025016	UT.SE. R26 12	12.1	15	28

MALE FOR CARTRIDGE SLOT R26



Code	Ref.	Ø	A
2025020	MA R26 3-3.17	3-3.17	M7x0.75
2025021	MA R26 4	4	M9.5x0.75
2025022	MA R26 5	5	M10.5x0.75
2025023	MA R26 6	6	M11.5x0.75
2025024	MA R26 8	8	M13.5x0.75
2025025	MA R26 10	10	M15.5x0.75
2025026	MA R26 12	12	M18x1

BRASS COMPRESSION CARTRIDGE (R27)



Code Ref. Ø

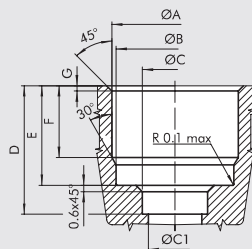
SERIES R

2027001	R27	4 ▲
2027002	R27	5
2027003	R27	6
2027004	R27	8 ▲
2027005	R27	10
2027006	R27	12

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

CARTRIDGE SLOT R27

Ø 4-6-8



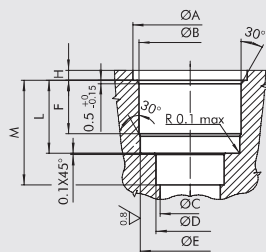
Ø	Ø A	Ø B	Ø C	Ø C1	D	E	F	G
FOR ALUMINIUM								
4	9.2 $^{+0}_{-0.10}$	9 $^{+0.10}_{-0}$	4.1 $^{+0.10}_{-0}$	3 MAX	12 $^{+0}_{-0.20}$	9.3 $^{+0}_{-0.10}$	6.7 $^{+0.10}_{-0}$	0.5
6	11.3 $^{+0}_{-0.08}$	11 $^{+0.10}_{-0}$	6.1 $^{+0.10}_{-0}$	5 MAX	12 $^{+0}_{-0.20}$	9.3 $^{+0}_{-0.10}$	6.7 $^{+0.10}_{-0}$	0.5
8	13.3 $^{+0}_{-0.08}$	13 $^{+0.10}_{-0}$	8.1 $^{+0.10}_{-0}$	7 MAX	15 $^{+0}_{-0.20}$	10.3 $^{+0}_{-0.10}$	7.7 $^{+0.10}_{-0}$	0.5

FOR TECHNOPOLYMER

4	*9.2 $^{+0}_{-0.10}$	9 $^{+0.10}_{-0}$	4.1 $^{+0.10}_{-0}$	3 MAX	12 $^{+0}_{-0.20}$	9.3 $^{+0}_{-0.10}$	6.7 $^{+0.10}_{-0}$	0.5
6	*11.2 $^{+0}_{-0.10}$	11 $^{+0.10}_{-0}$	6.1 $^{+0.10}_{-0}$	5 MAX	12 $^{+0}_{-0.20}$	9.3 $^{+0}_{-0.10}$	6.7 $^{+0.10}_{-0}$	0.5
8	*13.2 $^{+0}_{-0.10}$	13 $^{+0.10}_{-0}$	8.1 $^{+0.10}_{-0}$	7 MAX	15 $^{+0}_{-0.20}$	10.3 $^{+0}_{-0.10}$	7.7 $^{+0.10}_{-0}$	0.5

* N.B.: the diameter in interference is purely an indication and depends on the type of plastic material used and on its thickness. We suggest you should effect practical assembling tests.

Ø 5-10-12



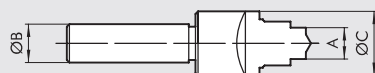
Ø	Ø A	Ø B	Ø C	Ø D	Ø E	F	H	L	M
FOR TECHNOPOLYMER									
5	12.1 $^{+0.15}_{-0}$	*10.2 $^{+0}_{-0.10}$	4 MAX	5.1 $^{+0.15}_{-0}$	9.7 $±0.05$	6 $^{+0.2}_{-0}$	1.2 $^{+0}_{-0.2}$	8.75 $^{+0}_{-0.1}$	11.8 $±0.10$
10	17.1 $^{+0.15}_{-0}$	*15.15 $^{+0}_{-0.08}$	9 MAX	10.15 $^{+0.1}_{-0}$	14.9 $±0.05$	8 $^{+0.2}_{-0}$	1.5 $^{+0}_{-0.2}$	10.9 $^{+0}_{-0.1}$	15.6 $±0.10$
12	19.7 $^{+0.15}_{-0}$	*17.55 $^{+0}_{-0.08}$	11 MAX	12.15 $^{+0.1}_{-0}$	17.1 $±0.05$	9 $^{+0.2}_{-0}$	1.5 $^{+0}_{-0.2}$	11.85 $^{+0}_{-0.1}$	18 $±0.10$

FOR ALUMINIUM

5	12.1 $^{+0.15}_{-0}$	10.3 $^{+0}_{-0.08}$	4 MAX	5.1 $^{+0.15}_{-0}$	9.7 $±0.05$	6 $^{+0.2}_{-0}$	1.2 $^{+0}_{-0.2}$	8.75 $^{+0}_{-0.1}$	11.8 $±0.10$
10	17.1 $^{+0.15}_{-0}$	15.4 $^{+0}_{-0.08}$	9 MAX	10.15 $^{+0.1}_{-0}$	14.9 $±0.05$	8 $^{+0.2}_{-0}$	1.5 $^{+0}_{-0.2}$	10.9 $^{+0}_{-0.1}$	15.6 $±0.10$
12	19.7 $^{+0.15}_{-0}$	17.8 $^{+0}_{-0.08}$	11 MAX	12.15 $^{+0.1}_{-0}$	17.1 $±0.05$	9 $^{+0.2}_{-0}$	1.5 $^{+0}_{-0.2}$	11.85 $^{+0}_{-0.1}$	18 $±0.10$

* N.B.: the diameter in interference is purely an indication and depends on the type of plastic material used and on its thickness. We suggest you should effect practical assembling tests.

TOOL FOR SLOT R27

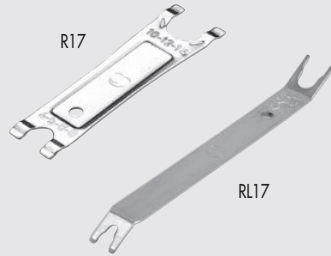


Code	Ref.	A	Ø B	Ø C
FOR ALUMINIUM				
2027021	UT.SE. R27 AL. 4	4.1	10	11.5
2027022	UT.SE. R27 AL. 5	5.1	12	16
2027023	UT.SE. R27 AL. 6	6.1	12	13.5
2027024	UT.SE. R27 AL. 8	8.1	12	15.5
2027025	UT.SE. R27 AL. 10	10.1	16	20
2027026	UT.SE. R27 AL. 12	12.1	16	22

FOR TECHNOPOLYMER

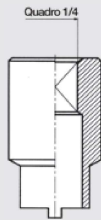
2027011	UT.SE. R27 P. 4	4.1	10	11.5
2027012	UT.SE. R27 P. 5	5.1	12	16
2027013	UT.SE. R27 P. 6	6.1	12	13.5
2027014	UT.SE. R27 P. 8	8.1	12	15.5
2027015	UT.SE. R27 P. 10	10.1	16	20
2027016	UT.SE. R27 P. 12	12.1	16	22

R17 – DISASSEMBLY KEY



Code	Ref.	Length (mm)	Ø Tube
2L17001	RL17	140	from 3 to 10
2017001	R17	95.0	from 4 to 14

R41 – CARTRIDGE KEY R26



Code	Ref.	Ø
2041001	R41	4
2041002	R41	5
2041003	R41	6
2041004	R41	8
2041005	R41	10
2041006	R41	12

NOTES

PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY

SERIES F-E PLUS FITTINGS

With the fittings in the F-E Plus series, you can extend all the advantages of the Metal Work push-in fittings to the food industry as well.

As is known, a Metal Work push-in fitting can be reused thousands of times without affecting the pneumatic and mechanical tightness. The refined profile of the clamping spring retains the pipe without cutting or deforming it. The characteristic element of the F-E Plus fittings is the use of materials and lubricants that are chosen for the specific field of application.

All brass component parts undergo a clean-lead process, which consists of removing lead from the surface layer of the fitting; the gaskets are made of special FDA-approved Viton®.

Engineering plastic materials are suitable for use at high temperatures and in contact with water.

The fitting can be used up to 150°C depending on the choice of materials, which makes it ideal for use in applications at high temperatures.

The threads are cylindrical and under-head O-rings provide a pneumatic seal. This avoids the need for sealants (e.g. Teflon®), which could release solid fragments during screwing and unscrewing that would contaminate the environment or the fluid. Our fittings can be screwed and unscrewed any number of times and still remain clean and pneumatically sealed.

In addition to the standard range available, many other configurations can be created on specific request.



TECHNICAL DATA

Threaded port		Metric: M5
		G (BSP)*: 1/8 - 1/4 - 3/8 - 1/2
Diameter		Ø 4 - Ø 6 - Ø 8 - Ø 10
Temperature range	°C	- 20 to + 150
	°F	- 4 to 302
Pressure range	bar	- 0.99 to +16
	MPa	- 0.099 to +1.6
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene
		PTFE for temperatures over 60°C
Fluid		Vacuum - Compressed air

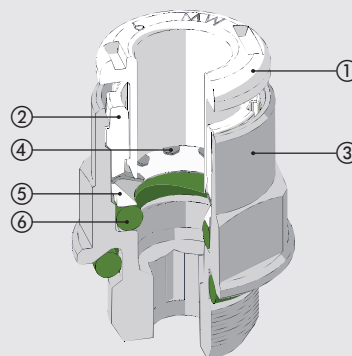
* Metric cylindrical threads according to ISO 262

Cylindrical threads according to ISO 228-1, identified with a letter G. They also correspond to BSP or more precisely to BSPP designation (P stands for Parallel).

Conical threads according to ISO 7-1, identified by a letter R. They also correspond to BSP or more precisely to BSPT designation (T stands for Tapered).

COMPONENTS

- ① Release bushing: PPSU
- ② Locking bushing: PPSU
- ③ Body: unleaded brass treated with environmentally-friendly intermetallic alloy
- ④ Clamping spring: stainless steel
- ⑤ Spring supporting ring: PPSU
- ⑥ Seal: FDA-approved Viton®



ADVANTAGES / CERTIFICATIONS

ADVANTAGES

Under-head O-ring

Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

Corrosion resistance

The intermetallic alloy deposited on the surface and Viton® are compatible with numerous substances.

CONFORMITY DECLARATIONS

- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



* Release tests performed at 50°C for 30 minutes.

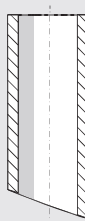
INSTALLING THE PIPE

Compressed air pipes must be used in compliance with some basic criteria in order to ensure long life and proper operation of the fitting:

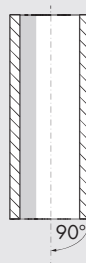
- check that the conditions for the installation and use (e.g. temperature and fluid used) comply with the characteristics stated by the pipe manufacturer;
- check the pipe size; oversized pipes could not fit properly, undersized ones could not ensure pipe retention and air tightness.

The cut should be as accurate as possible at a right angle with the pipe axis.

Wrong

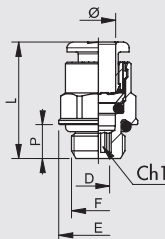


Correct



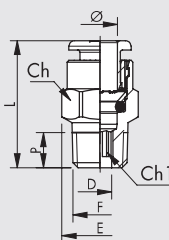
- the bending radius of the pipe installed must be as wide as possible. The fittings have been designed to ensure axial seal of the pipe; excessive curvature could considerably shorten the life of the pipe.
- the pipe must not be subjected to excessive axial stress and it must be of the right length for snugly fitting (not too long or too short).
- correct insertion of the pipe into the fitting is essential for air tightness and pipe retention. Make sure that the pipe is pushed right into the seat.
- check that the pipe does not encounter any obstacles or blockages along its way, which could cause tensile stress of the pipe in the fitting.

STRAIGHT, CYLINDRICAL, MALE R1 F-E PLUS



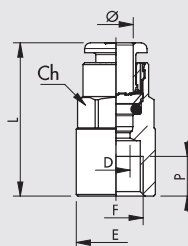
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2FP0101	R1 F-E P	4	M5	Ø9	2.5	4	20.3	2.6	9
2FP0102	R1 F-E P	4	1/8	10	3	6	18	3.1	14
2FP0103	R1 F-E P	4	1/4	10	3	8	19.8	3.1	18
2FP0100	R1 F-E P	6	M5	Ø11	2.5	4	21.9	2.6	11
2FP0107	R1 F-E P	6	1/8	12	4	6	21.6	4.1	14
2FP0108	R1 F-E P	6	1/4	12	4	8	20.3	4.1	18
2FP0109	R1 F-E P	8	1/8	13	5	6	25.4	5.2	14
2FP0110	R1 F-E P	8	1/4	14	6	8	24.4	6.2	18
2FP0111	R1 F-E P	8	3/8	14	6	9	22.8	6.2	22
2FP0112	R1 F-E P	10	1/4	16	7	8	29.2	7.2	18
2FP0113	R1 F-E P	10	3/8	16	8	9	26.5	8.2	22
2FP0122	R1 F-E P	10	1/2	16	8	11	29.8	8.2	26

STRAIGHT, CONICAL, MALE R1C F-E PLUS



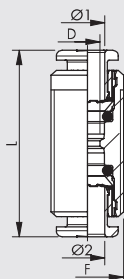
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2FP1C02	R1/C F-E P	4	1/8	10	3	6.2	18.5	3.1	11.3
2FP1C07	R1/C F-E P	6	1/8	12	4	6.2	22.5	4.1	13.5
2FP1C08	R1/C F-E P	6	1/4	12	4	8.5	22.3	4.1	13.2
2FP1C09	R1/C F-E P	8	1/8	13	6	6.2	26	6.2	14.3
2FP1C10	R1/C F-E P	8	1/4	14	6	8.5	25.5	6.2	15.8
2FP1C11	R1/C F-E P	8	3/8	14	6	9	24.9	6.2	16.6
2FP1C13	R1/C F-E P	10	1/4	16	7	8.5	28.9	7.2	17.7
2FP1C14	R1/C F-E P	10	3/8	16	8	9	26	8.2	17.7

STRAIGHT, FEMALE R2 F-E PLUS



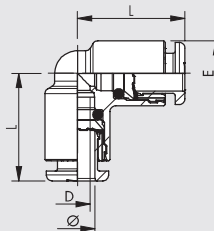
Code	Ref.	Ø	F	Ch	P	L	D	E
2FP0201	R2 F-E P	4	1/8	10	7	26.2	3	14
2FP0205	R2 F-E P	6	1/8	12	7	27.1	5	14
2FP0206	R2 F-E P	6	1/4	12	8	29.3	5	17
2FP0207	R2 F-E P	8	1/8	13	7	28.1	7	14
2FP0208	R2 F-E P	8	1/4	14	8	30	7	17
2FP0211	R2 F-E P	10	1/4	16	8	31.8	8	17.7

STRAIGHT, INTERMEDIATE R3 F-E PLUS



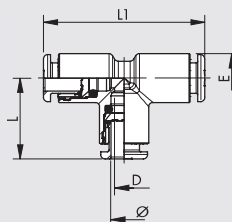
Code	Ref.	Ø1	Ø2	F	L	D
2FP0301	R3 F-E P	4	4	M11x1	30.6	2.5
2FP0303	R3 F-E P	6	6	M13x1	33	4.5
2FP0304	R3 F-E P	8	8	M15x1	35.7	6.5
2FP0305	R3 F-E P	10	10	M17x1	39.2	8

ELBOW, INTERMEDIATE R4 F-E PLUS



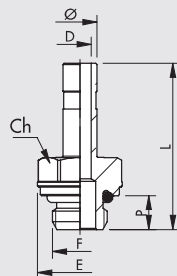
Code	Ref.	Ø	L	D	E
2FP0401	R4 F-E P	4	16.7	2.5	9.5
2FP0403	R4 F-E P	6	19	4.5	11.5
2FP0404	R4 F-E P	8	21.3	6.5	13.5
2FP0405	R4 F-E P	10	23.3	8	16

TEE, INTERMEDIATE R5 F-E PLUS



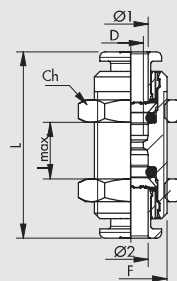
Code	Ref.	Ø	L	L1	D	E
2FP0501	R5 F-E P	4	16.7	33.4	2.5	9.5
2FP0503	R5 F-E P	6	19	38	4.5	11.5
2FP0504	R5 F-E P	8	21.3	42.6	6.5	13.5
2FP0505	R5 F-E P	10	23.3	46.6	8	16

THREADED ADAPTER R6 F-E



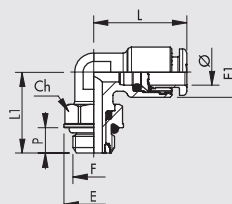
Code	Ref.	Ø	F	Ch	P	L	D	E
2F06001	R6 F-E	4	M5	8	4	25.2	2.5	9
2F06002	R6 F-E	4	1/8	13	6	28.9	2.5	15
2F06003	R6 F-E	4	1/4	14	8	32.4	2.2	18
2F06000	R6 F-E	6	M5	9	4	25.7	2.7	10
2F06007	R6 F-E	6	1/8	13	6	29.4	4	15
2F06008	R6 F-E	6	1/4	14	8	32.9	4	18
2F06009	R6 F-E	8	1/8	13	6	30.6	5.5	15
2F06010	R6 F-E	8	1/4	14	8	34	6	18
2F06011	R6 F-E	8	3/8	17	9	35.4	6	22
2F06012	R6 F-E	10	1/4	14	8	38.2	7.8	18
2F06013	R6 F-E	10	3/8	17	9	38.7	8	22

STRAIGHT, INTERMEDIATE, BULKHEAD UNIONS R10 F-E PLUS



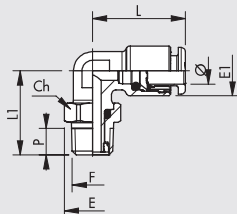
Code	Ref.	Ø1	Ø2	F	Ch	L	D	I max
2FP1101	R10 F-E P	4	4	M11x1	13	30.6	2.5	11
2FP1103	R10 F-E P	6	6	M13x1	16	33	4.5	12
2FP1104	R10 F-E P	8	8	M15x1	17	35.7	6.5	13.5
2FP1105	R10 F-E P	10	10	M17x1	20	39.2	8	17

ROTARY ELBOW, MALE, CYLINDRICAL R31 F-E PLUS



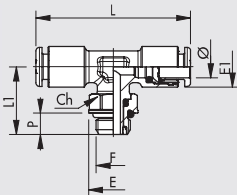
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3101	R31 F-E P	4	M5	9	9.9	9.5	18.6	15.3	4
2FP3102	R31 F-E P	4	1/8	12	14	9.5	18.6	19.1	6
2FP3103	R31 F-E P	4	1/4	14	18	9.5	18.6	21.1	8
2FP3107	R31 F-E P	6	M5	9	9.9	11.8	21.9	15.3	4
2FP3108	R31 F-E P	6	1/8	12	14	11.8	21.9	19.1	6
2FP3109	R31 F-E P	6	1/4	14	18	11.8	21.9	21.1	8
2FP3110	R31 F-E P	8	1/8	12	14	13.5	25.4	19.1	6
2FP3111	R31 F-E P	8	1/4	14	18	13.5	25.4	21.1	8
2FP3112	R31 F-E P	8	3/8	17	22	13.8	25.4	27.1	9
2FP3113	R31 F-E P	10	1/4	14	18	16	27.2	24.8	8
2FP3114	R31 F-E P	10	3/8	17	22	16	27.2	27.1	9
2FP3115	R31 F-E P	10	1/2	22	26	16	27.2	30.7	11

ROTARY ELBOW, MALE, CONICAL R31C F-E PLUS



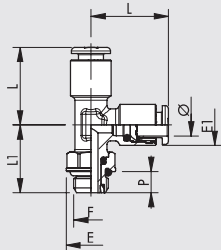
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP2C02	R31/C F-E P	4	1/8	12	13.3	9.5	18.6	19.8	6.2
2FP2C03	R31/C F-E P	4	1/4	14	15.4	9.5	18.6	22.6	8.5
2FP2C08	R31/C F-E P	6	1/8	12	13.3	11.8	21.9	19.8	6.2
2FP2C09	R31/C F-E P	6	1/4	14	15.4	11.8	21.9	22.6	8.5
2FP2C10	R31/C F-E P	8	1/8	12	13.3	13.5	25.4	19.8	6.2
2FP2C11	R31/C F-E P	8	1/4	14	15.4	13.5	25.4	23.6	8.5
2FP2C12	R31/C F-E P	8	3/8	17	19.2	13.8	23.6	27.1	9
2FP2C13	R31/C F-E P	10	1/4	14	15.4	16	27.2	26.3	8.5
2FP2C14	R31/C F-E P	10	3/8	17	19.2	16	27.2	27.1	9

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY R32 F-E PLUS



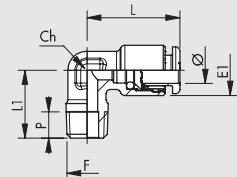
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3202	R32 F-E P	4	1/8	12	14	9.5	37.2	19.1	6
2FP3208	R32 F-E P	6	1/8	12	14	11.8	43.8	19.1	6
2FP3209	R32 F-E P	6	1/4	14	18	11.8	43.8	21.1	8
2FP3210	R32 F-E P	8	1/8	12	14	13.5	50.8	19.1	6
2FP3211	R32 F-E P	8	1/4	14	18	13.5	50.8	21.1	8
2FP3212	R32 F-E P	8	3/8	17	22	13.8	47.2	27.1	9
2FP3213	R32 F-E P	10	1/4	14	18	16	44.4	21.8	8
2FP3214	R32 F-E P	10	3/8	17	22	16	44.4	27.1	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY R38 F-E PLUS



Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3802	R38 F-E P	4	1/8	12	14	9.5	18.6	19.1	6
2FP3808	R38 F-E P	6	1/8	12	14	11.5	21.9	19.1	6
2FP3809	R38 F-E P	6	1/4	14	18	11.5	21.9	21.1	8
2FP3810	R38 F-E P	8	1/8	12	14	13.5	25.4	19.1	6
2FP3811	R38 F-E P	8	1/4	14	18	13.5	25.4	22.4	8
2FP3813	R38 F-E P	10	1/4	14	18	16	27.2	21.8	8
2FP3814	R38 F-E P	10	3/8	17	22	16	27.2	27.1	9

ELBOW, MALE, CONICAL R39C F-E PLUS



Code	Ref.	Ø	F	Ch	E1	L	L1	P
2FP4C02	R39/C F-E P	4	1/8	10	9.5	18.6	16	6.2
2FP4C08	R39/C F-E P	6	1/8	10	11.8	21.9	16	6.2
2FP4C09	R39/C F-E P	6	1/4	10	11.8	21.9	18.5	8.5
2FP4C10	R39/C F-E P	8	1/8	10	13.5	24.5	16	6.2
2FP4C11	R39/C F-E P	8	1/4	10	13.5	25.4	18.5	8.5
2FP4C12	R39/C F-E P	8	3/8	14	13.8	25.4	22.5	9
2FP4C13	R39/C F-E P	10	1/4	14	16	27.2	22	8.5

SERIES F-NSF PLUS FITTINGS

The fittings in the F-NSF Plus series encompass all the advantages of Metal Work push-in fittings in one NSF-certified product. As is known, a Metal Work push-in fitting can be reused thousands of times without affecting the perfect pneumatic and mechanical tightness. The refined profile of the clamping spring retains the pipe without cutting or deforming it.

The fittings in this series also feature a double internal O-ring seal for enhanced safe tightness, especially when using water or other fluids.

The materials and lubricants used in these fittings are suitable for use in the food industry and for operation in contact with cold and hot drinking water. The fittings in the F-NSF Plus series are made of brass with a low lead content ($\leq 0.1\%$) that is subject to a further process that extracts the lead from the surface layer of the product; the gaskets are made of special FDA-approved Viton®.

Engineering plastics are ideal for use at a high temperature and in contact with water.

The fitting can be used up to 150°C depending on the choice of materials, which makes it ideal for use in applications at high temperatures.

The threads are cylindrical and under-head O-rings provide a pneumatic seal. This avoids the need for sealants (e.g. Teflon®), which could release solid fragments during screwing and unscrewing that would contaminate the environment or the fluid. Our fittings can be screwed and unscrewed any number of times and still remain clean and pneumatically sealed.

In addition to the standard range available, many other configurations can be created on specific request.

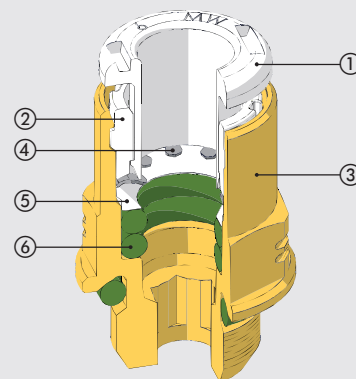


TECHNICAL DATA		
Threaded port		G (BSP)*: 1/8 - 1/4
Diameter		Ø 4 - Ø 6
Temperature range	°C	- 20 to + 150
	°F	- 4 to 302
Pressure range	bar	- 0.99 to +16
	MPa	- 0.099 to +1.6
Recommended pipe		PTFE
Fluid		Vacuum - Compressed air

* Cylindrical threads according to ISO 228-1, identified with a letter G. They also correspond to BSP or more precisely to BSPP designation (P stands for Parallel).

COMPONENTS

- ① Release bushing: PPSU
- ② Locking bushing: PPSU
- ③ Body: low-lead brass ($\leq 0.1\%$)
- ④ Clamping spring: stainless steel
- ⑤ Spring supporting ring: PPSU
- ⑥ Seal: FDA-approved Viton®



ADVANTAGES / CERTIFICATIONS

ADVANTAGES

Under-head O-ring

Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

CONFORMITY DECLARATIONS

- NSF/ANSI 372 standard: drinking water system components - Lead Content.
- DM 174
- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



* Release tests performed at 50°C for 30 minutes.

CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.



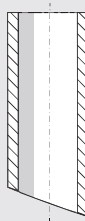
INSTALLING THE PIPE

Compressed air pipes must be used in compliance with some basic criteria in order to ensure long life and proper operation of the fitting:

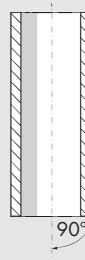
- check that the conditions for the installation and use (e.g. temperature and fluid used) comply with the characteristics stated by the pipe manufacturer;
- check the pipe size; oversized pipes could not fit properly, undersized ones could not ensure pipe retention and air tightness.

The cut should be as accurate as possible at a right angle with the pipe axis.

Wrong

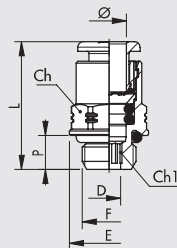


Correct



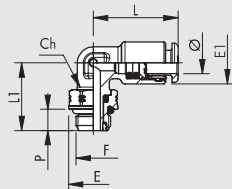
- the bending radius of the pipe installed must be as wide as possible. The fittings have been designed to ensure axial seal of the pipe; excessive curvature could considerably shorten the life of the pipe.
- the pipe must not be subjected to excessive axial stress and it must be of the right length for snugly fitting (not too long or too short).
- correct insertion of the pipe into the fitting is essential for air tightness and pipe retention. Make sure that the pipe is pushed right into the seat.
- check that the pipe does not encounter any obstacles or blockages along its way, which could cause tensile stress of the pipe in the fitting.

STRAIGHT, CYLINDRICAL, MALE R1 F-NSF PLUS



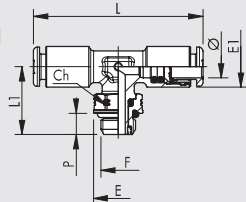
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2FP0152	R1 F-NSF P	4	1/8	10	3	6	20	3.1	14
2FP0153	R1 F-NSF P	4	1/4	10	3	8	21.8	3.1	18
2FP0157	R1 F-NSF P	6	1/8	12	4	6	23.6	4.1	14
2FP0158	R1 F-NSF P	6	1/4	12	4	8	22.6	4.1	18

ROTARY ELBOW, MALE, CYLINDRICAL R31 F-NSF PLUS



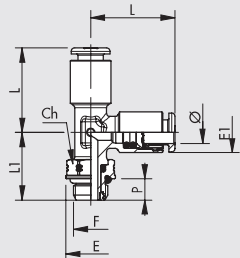
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3152	R31 F-NSF P	4	1/8	12	14	9.5	20.6	19.1	6
2FP3153	R31 F-NSF P	4	1/4	14	18	9.5	20.6	21.1	8
2FP3158	R31 F-NSF P	6	1/8	12	14	11.8	23.9	19.1	6
2FP3159	R31 F-NSF P	6	1/4	14	18	11.8	23.9	21.1	8

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY R32 F-NSF PLUS



Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3252	R32 F-NSF P	4	1/8	12	14	9.5	41.2	19.1	6
2FP3253	R32 F-NSF P	4	1/4	14	18	9.5	41.2	21.1	8
2FP3260	R32 F-NSF P	6	1/8	12	14	11.5	47.8	19.1	6
2FP3261	R32 F-NSF P	6	1/4	14	18	11.5	47.8	21.1	8

LATERAL TEE, MALE, CYLINDRICAL, ROTARY R38 F-NSF PLUS



Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2FP3852	R38 F-NSF P	4	1/8	12	14	9.5	20.6	19.1	6
2FP3853	R38 F-NSF P	4	1/4	14	18	9.5	20.6	21.1	8
2FP3858	R38 F-NSF P	6	1/8	12	14	11.5	23.9	19.1	6
2FP3859	R38 F-NSF P	6	1/4	14	18	11.5	23.9	21.1	8

SERIES F-E / SERIE F-NSF FITTINGS

These fittings are made of materials suitable for use in the food industry. They can also be used with hot and cold tap water. All brass component parts undergo a clean-lead process, which consists of removing lead from the surface layer of the fitting; the gaskets are made of special FDA-approved Viton®. These fittings do not contain technopolymers, thereby avoiding problems of compatibility with detergents and other chemical agents. This choice of materials allows the fittings to be used up to 150°C, which makes them suitable for other high-temperature applications, in addition to the food industry. The threads are cylindrical and under-head O-rings provide a pneumatic seal. This avoids the need for sealants (e.g. Teflon®), which could release solid fragments during screwing and unscrewing that would contaminate the environment or the fluid. Our fittings can be screwed and unscrewed any number of times and still remain clean and pneumatically sealed. This choice of materials and treatments make these fittings suitable for use in the chemical, pharmaceutical, medical and electronics industry. The fittings are available in two series:

- Series **F-E** fittings are made of brass that undergoes a surface clean-lead process, followed by a surface coating with inter-metal alloy compound; they comply with regulatory standards applicable in Europe and other world countries for use in contact with foodstuffs or drinking water.
- Series **F-NSF** fittings are made of brass with a low-lead content ($\leq 0.1\%$) that undergoes a further surface clean-lead process in compliance with US standards, and are certified to NSF169 standards.

A standard range of fittings is available, but other designs can be developed on specific request.

SERIES F-NSF



SERIES F-E



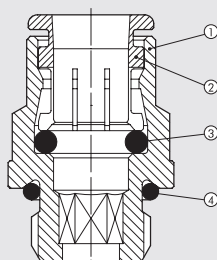
TECHNICAL DATA		SERIES F-E	SERIES F-NSF
Threaded port		Metric: M5	
		G (BSP)*: 1/8 - 1/4 - 3/8 - 1/2	
Pipe diameter	mm	Ø 4 - Ø 6 - Ø 8 - Ø 10	
Temperature range	°C	- 20 to + 150	
	°F	- 4 to 302	
Pressure range	bar	- 0.99 to 16	
	MPa	- 0.099 to 1.6	
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene - PTFE	PTFE

* **Metric cylindrical threads according to ISO 262**

Cylindrical threads according to ISO 228-1, identified with a letter G. They also correspond to BSP or more precisely to BSPP designation (P stands for Parallel).

Conical threads according to ISO 7-1, identified by a letter R. They also correspond to BSP or more precisely to BSPT designation (T stands for Tapered).

COMPONENTS



SERIES F-E

- ① Body: unleaded brass treated with environmentally-friendly intermetallic alloy
- ② Gripper: unleaded brass treated with environmentally-friendly intermetallic alloy
- ③ Seal: FDA-approved Viton®
- ④ Port seal: FDA-approved Viton®

SERIES F-NSF

- ① Body: low-lead brass ($\leq 0.1\%$)
- ② Gripper: brass (not in contact with the fluid)
- ③ Seal: FDA-approved Viton®
- ④ Port seal: FDA-approved Viton®

ADVANTAGES / CERTIFICATIONS

SERIES F-E

ADVANTAGES

Under-head O-ring

Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

Corrosion resistance

The intermetallic alloy deposited on the surface and Viton® are compatible with numerous substances.

No plastic parts

CONFORMITY DECLARATIONS

- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



* Release tests performed at 50°C for 30 minutes.

SERIES F-NSF

ADVANTAGES

Under-head O-ring

Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

No plastic parts

CONFORMITY DECLARATIONS

- NSF/ANSI 372 standard: drinking water system components - Lead Content.
- DM 174
- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



* Release tests performed at 50°C for 30 minutes.

CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.



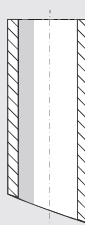
INSTALLING THE PIPE

Compressed air pipes must be used in compliance with some basic criteria in order to ensure long life and proper operation of the fitting:

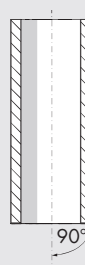
- check that the conditions for the installation and use (e.g. temperature and fluid used) comply with the characteristics stated by the pipe manufacturer;
- check the pipe size; oversized pipes could not fit properly, undersized ones could not ensure pipe retention and air tightness.

The cut should be as accurate as possible at a right angle with the pipe axis.

Wrong

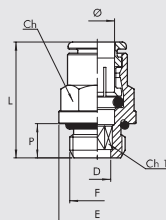


Correct



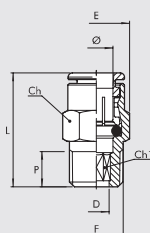
- the bending radius of the pipe installed must be as wide as possible. The fittings have been designed to ensure axial seal of the pipe; excessive curvature could considerably shorten the life of the pipe.
- the pipe must not be subjected to excessive axial stress and it must be of the right length for snugly fitting (not too long or too short).
- correct insertion of the pipe into the fitting is essential for air tightness and pipe retention. Make sure that the pipe is pushed right into the seat.
- check that the pipe does not encounter any obstacles or blockages along its way, which could cause tensile stress of the pipe in the fitting.

STRAIGHT, CYLINDRICAL, MALE R1 F



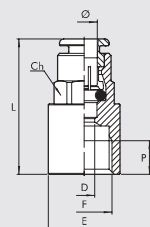
Series F-E		Series F-NSF		Ø	F	Ch	Ch.I	P	L	D	E
Code	Ref.	Code	Ref.								
2F01001	R1 F-E	2F01051	R1 F-NSF	4	M5	Ø 9.9	2.5	4	21.5	2.6	9.9
2F01002	R1 F-E	2F01052	R1 F-NSF	4	1/8	11	3	6	20.5	3.1	15
2F01003	R1 F-E	2F01053	R1 F-NSF	4	1/4	12	3	8	22.5	3.1	18
2F01000	R1 F-E	2F01050	R1 F-NSF	6	M5	Ø 12.9	2.5	4	25	2.6	12.9
2F01007	R1 F-E	2F01057	R1 F-NSF	6	1/8	13	4	6	27.5	4.2	15
2F01008	R1 F-E	2F01058	R1 F-NSF	6	1/4	13	4	8	26.5	4.2	18
2F01009	R1 F-E	2F01059	R1 F-NSF	8	1/8	14	5	6	28.5	5.2	15.6
2F01010	R1 F-E	2F01060	R1 F-NSF	8	1/4	15	6	8	27	6.2	18
2F01011	R1 F-E	2F01061	R1 F-NSF	8	3/8	15	6	9	28	6.2	21
2F01012	R1 F-E	2F01062	R1 F-NSF	10	1/4	17	7	8	33.5	7.2	20
2F01013	R1 F-E	2F01063	R1 F-NSF	10	3/8	17	8	9	30.5	8.2	21
2F01022	R1 F-E	2F01072	R1 F-NSF	10	1/2	17	8	11	31.5	8.2	26

STRAIGHT, CONICAL, MALE R1C F



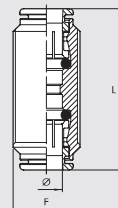
Series F-E		Series F-NSF		Ø	F	Ch	Ch.I	P	L	D	E
Code	Ref.	Code	Ref.								
2F01C02	R1/C F-E	2F01C52	R1/C F-NSF	4	1/8	10	2.5	6.2	20.5	3.1	11.5
2F01C07	R1/C F-E	2F01C57	R1/C F-NSF	6	1/8	12	4	6.2	24	4.2	13.8
2F01C08	R1/C F-E	2F01C58	R1/C F-NSF	6	1/4	14	4	8.5	25.5	4.2	16
2F01C09	R1/C F-E	2F01C59	R1/C F-NSF	8	1/8	14	5	6.2	27.5	5.2	16
2F01C10	R1/C F-E	2F01C60	R1/C F-NSF	8	1/4	14	6	8.5	27.5	6.2	16
2F01C11	R1/C F-E	2F01C61	R1/C F-NSF	8	3/8	17	6	9	27	6.2	19.6
2F01C13	R1/C F-E	2F01C63	R1/C F-NSF	10	1/4	17	7	8.5	34.5	7.2	19.6
2F01C14	R1/C F-E	2F01C64	R1/C F-NSF	10	3/8	17	7	9	30.5	7.2	19.6

STRAIGHT, FEMALE R2 F



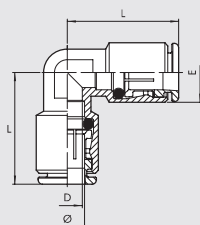
Series F-E		Series F-NSF		Ø	F	Ch	P	L	D	E
Code	Ref.	Code	Ref.							
2F02001	R2 F-E	2F02051	R2 F-NSF	4	1/8	10	7	27	3	14
2F02005	R2 F-E	2F02055	R2 F-NSF	6	1/8	13	7	30	5	15
2F02006	R2 F-E	2F02056	R2 F-NSF	6	1/4	13	8	32	5	17
2F02007	R2 F-E	2F02057	R2 F-NSF	8	1/8	14	7	30	7	17
2F02008	R2 F-E	2F02058	R2 F-NSF	8	1/4	14	8	32	7	17
2F02011	R2 F-E	2F02061	R2 F-NSF	10	1/4	17	8	35	9	20

STRAIGHT, INTERMEDIATE R3 F



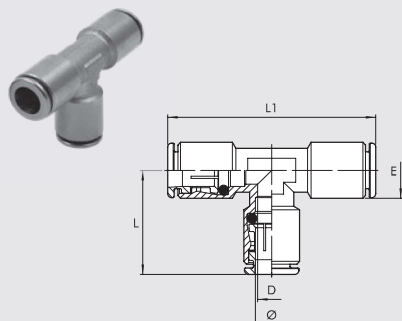
Series F-E		Series F-NSF		Ø	F	L
Code	Ref.	Code	Ref.			
2F03001	R3 F-E	2F03051	R3 F-NSF	4	M13X1	33
2F03003	R3 F-E	2F03053	R3 F-NSF	6	M15X1	40
2F03004	R3 F-E	2F03054	R3 F-NSF	8	M17X1	41
2F03005	R3 F-E	2F03055	R3 F-NSF	10	M20X1	47

ELBOW, INTERMEDIATE R4 F



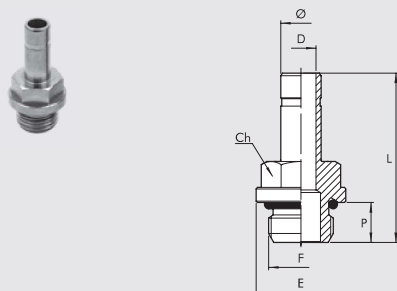
Series F-E		Series F-NSF		Ø	D	E	L
Code	Ref.	Code	Ref.				
2F04001	R4 F-E	2F04051	R4 F-NSF	4	2.5	9.5	18
2F04003	R4 F-E	2F04053	R4 F-NSF	6	4.5	13.5	22
2F04004	R4 F-E	2F04054	R4 F-NSF	8	7	14	26
2F04005	R4 F-E	2F04055	R4 F-NSF	10	9	17	30

TEE, INTERMEDIATE R5 F



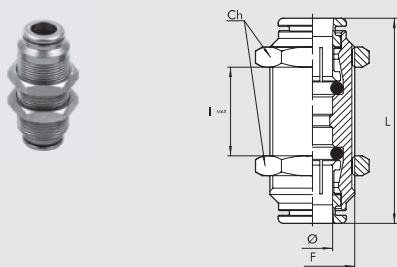
Series F-E		Series F-NSF		Ø	L	L1	D	E
Code	Ref.	Code	Ref.					
2F05001	R5 F-E	2F05051	R5 F-NSF	4	21	42	3.5	9.5
2F05003	R5 F-E	2F05053	R5 F-NSF	6	24	48	5	12.5
2F05004	R5 F-E	2F05054	R5 F-NSF	8	26	52	7	14
2F05005	R5 F-E	2F05055	R5 F-NSF	10	30	60	9	17

THREADED ADAPTER R6 F



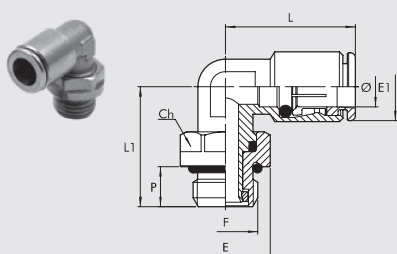
Series F-E		Series F-NSF		Ø	F	Ch	P	L	D	E
Code	Ref.	Code	Ref.							
2F06001	R6 F-E	2F06051	R6 F-NSF	4	M5	8	4	25.2	2.5	9
2F06002	R6 F-E	2F06052	R6 F-NSF	4	1/8	13	6	28.9	2.5	15
2F06003	R6 F-E	2F06053	R6 F-NSF	4	1/4	14	8	32.4	2.2	18
2F06000	R6 F-E	2F06050	R6 F-NSF	6	M5	9	4	25.7	2.7	10
2F06007	R6 F-E	2F06057	R6 F-NSF	6	1/8	13	6	29.4	4	15
2F06008	R6 F-E	2F06058	R6 F-NSF	6	1/4	14	8	32.9	4	18
2F06009	R6 F-E	2F06059	R6 F-NSF	8	1/8	13	6	30.6	5.5	15
2F06010	R6 F-E	2F06060	R6 F-NSF	8	1/4	14	8	34	6	18
2F06011	R6 F-E	2F06061	R6 F-NSF	8	3/8	17	9	35.4	6	22
2F06012	R6 F-E	2F06062	R6 F-NSF	10	1/4	14	8	35.6	7.8	18
2F06013	R6 F-E	2F06063	R6 F-NSF	10	3/8	17	9	37.1	8	22

STRAIGHT, INTERMEDIATE, BULKHEAD UNIONS R10 F



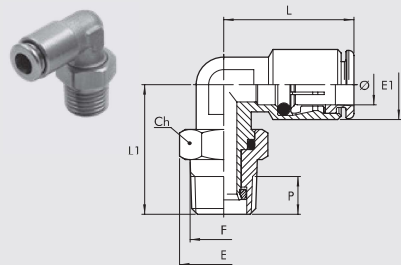
Series F-E		Series F-NSF		Ø	F	Ch	L	I max
Code	Ref.	Code	Ref.					
2F11001	R10 F-E	2F11051	R10 F-NSF	4	M13x1	16	33	11
2F11003	R10 F-E	2F11053	R10 F-NSF	6	M15x1	17	40	16
2F11004	R10 F-E	2F11054	R10 F-NSF	8	M17x1	20	41	19
2F11005	R10 F-E	2F11055	R10 F-NSF	10	M20x1	24	47	21

ROTARY ELBOW, MALE, CYLINDRICAL R31 F



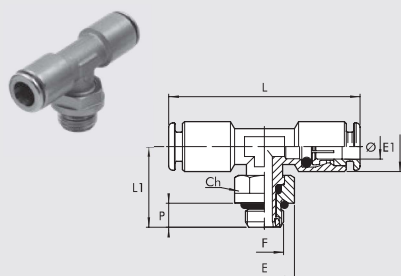
Series F-E		Series F-NSF		Ø	F	Ch	E	E1	L	L1	P
Code	Ref.	Code	Ref.								
2F31001	R31 F-E	2F31051	R31 F-NSF	4	M5	9	9	10	21	16	4
2F31002	R31 F-E	2F31052	R31 F-NSF	4	1/8	13	15	10	21	21	6
2F31003	R31 F-E	2F31053	R31 F-NSF	4	1/4	16	18	10	21	25	8
2F31007	R31 F-E	2F31057	R31 F-NSF	6	M5	9	8	11.8	24	17.5	4
2F31008	R31 F-E	2F31058	R31 F-NSF	6	1/8	13	15	12.5	24	21	6
2F31009	R31 F-E	2F31059	R31 F-NSF	6	1/4	16	18	12.5	25.5	25	8
2F31010	R31 F-E	2F31060	R31 F-NSF	8	1/8	13	15	14	26	22.5	6
2F31011	R31 F-E	2F31061	R31 F-NSF	8	1/4	16	18	14	26	25	8
2F31012	R31 F-E	2F31062	R31 F-NSF	8	3/8	19	22	14	27.5	30.5	9
2F31013	R31 F-E	2F31063	R31 F-NSF	10	1/4	16	18	16.5	30	27	8
2F31014	R31 F-E	2F31064	R31 F-NSF	10	3/8	19	22	16.5	30	30.5	9
2F31015	R31 F-E	2F31065	R31 F-NSF	10	1/2	22	26	16.5	31	32	11

ROTARY ELBOW, MALE, CONICAL R31C F



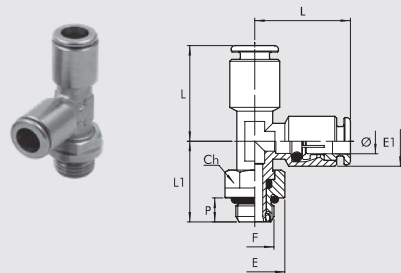
Series F-E		Series F-NSF		Ø	F	Ch	E	E1	L	L1	P
Code	Ref.	Code	Ref.								
2F31C02	R31/C F-E	2F31C52	R31/C F-NSF	4	1/8	12	13.3	10	21	22	6.2
2F31C03	R31/C F-E	2F31C53	R31/C F-NSF	4	1/4	16	17.7	10	21	27	8.5
2F31C08	R31/C F-E	2F31C58	R31/C F-NSF	6	1/8	12	13.3	11.8	24	22	6.2
2F31C09	R31/C F-E	2F31C59	R31/C F-NSF	6	1/4	16	17.7	12.5	25.5	27	8.5
2F31C10	R31/C F-E	2F31C60	R31/C F-NSF	8	1/8	12	13.3	14	26	23.5	6.2
2F31C11	R31/C F-E	2F31C61	R31/C F-NSF	8	1/4	16	17.7	14	26	27	8.5
2F31C12	R31/C F-E	2F31C62	R31/C F-NSF	8	3/8	19	22	14	27.5	31	9
2F31C13	R31/C F-E	2F31C63	R31/C F-NSF	10	1/4	16	17.7	16.5	30	29	8.5
2F31C14	R31/C F-E	2F31C64	R31/C F-NSF	10	3/8	19	22	16.5	30	31	9

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY R32 F



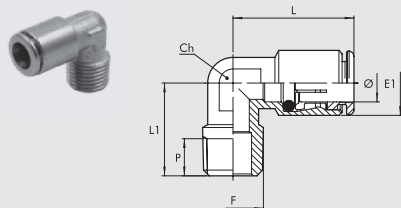
Series F-E		Series F-NSF		Ø	F	Ch	E	E1	L	L1	P
Code	Ref.	Code	Ref.								
2F32002	R32 F-E	2F32052	R32 F-NSF	4	1/8	13	15	10	41.5	21	6
2F32008	R32 F-E	2F32058	R32 F-NSF	6	1/8	13	15	12.5	47.5	21	6
2F32009	R32 F-E	2F32059	R32 F-NSF	6	1/4	16	18	12.5	50.5	25	8
2F32010	R32 F-E	2F32060	R32 F-NSF	8	1/8	13	15	14	52	22.5	6
2F32011	R32 F-E	2F32061	R32 F-NSF	8	1/4	16	18	14	52	25	8
2F32012	R32 F-E	2F32062	R32 F-NSF	8	3/8	19	22	14	56	30.5	9
2F32013	R32 F-E	2F32063	R32 F-NSF	10	1/4	16	18	16.5	60.5	27	8
2F32014	R32 F-E	2F32064	R32 F-NSF	10	3/8	19	22	16.5	60.5	30.5	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY R38 F



Series F-E		Series F-NSF		Ø	F	Ch	E	E1	L	L1	P
Code	Ref.	Code	Ref.								
2F38002	R38 F-E	2F38052	R38 F-NSF	4	1/8	13	15	9.5	22.5	21	6
2F38008	R38 F-E	2F38058	R38 F-NSF	6	1/8	13	15	12.5	24.5	21	6
2F38009	R38 F-E	2F38059	R38 F-NSF	6	1/4	16	18	12.5	26	25	8
2F38010	R38 F-E	2F38060	R38 F-NSF	8	1/8	13	15	14.5	27.5	22.5	6
2F38011	R38 F-E	2F38061	R38 F-NSF	8	1/4	16	18	14.5	27.5	25	8
2F38013	R38 F-E	2F38063	R38 F-NSF	10	1/4	16	18	17	31.5	27	8
2F38014	R38 F-E	2F38064	R38 F-NSF	10	3/8	19	22	17	31.5	30.5	9

ELBOW, MALE, CONICAL R39C F



Series F-E		Series F-NSF		Ø	F	Ch	E1	L	L1	P
Code	Ref.	Code	Ref.							
2F39C02	R39/C F-E	2F39C52	R39/C F-NSF	4	1/8	10	9.5	21	16	6.2
2F39C08	R39/C F-E	2F39C58	R39/C F-NSF	6	1/8	10	11.8	23.5	16	6.2
2F39C09	R39/C F-E	2F39C59	R39/C F-NSF	6	1/4	10	11.8	24	18.5	8.5
2F39C10	R39/C F-E	2F39C60	R39/C F-NSF	8	1/8	12	14	26	17	6.2
2F39C11	R39/C F-E	2F39C61	R39/C F-NSF	8	1/4	12	14	26	20	8.5
2F39C12	R39/C F-E	2F39C62	R39/C F-NSF	8	3/8	14	14	27.5	22.5	9
2F39C13	R39/C F-E	2F39C63	R39/C F-NSF	10	1/4	14	17	30.5	22	8.5

SUMMARY FITTING SERIES A, B, C, D



● STANDARD FITTINGS SERIES A

D2.2



● COMPRESSION FITTINGS SERIES B

D2.8



● QUICK FITTINGS SERIES C

D2.11



● BANJO FITTINGS SERIES D

D2.15

SUMMARY FITTING SERIES A, B, C, D

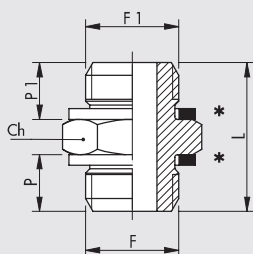
FITTINGS

STANDARD FITTINGS SERIES A

- Body: OT58 brass
- Maximum pressure 870 psi, 6000 KPa 60 bar



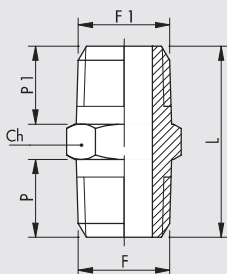
NIPPLE, PARALLEL (A1)



* Washer D11 can be used

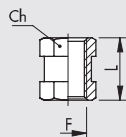
Code	Ref.	F	F1	Ch	P	P1	L
2101A00	A1	M5	M5	8	4.0	4.0	11.5
2101000	A1	M5	1/8	14	4.0	6.0	14.5
2101001	A1	1/8	1/8	14	6.0	6.0	17.0
2101002	A1	1/8	1/4	17	6.0	8.0	19.0
2101003	A1	1/8	3/8	20	6.0	9.0	20.0
2101004	A1	1/4	1/4	17	8.0	8.0	21.0
2101005	A1	1/4	3/8	20	8.0	9.0	22.0
2101006	A1	1/4	1/2	25	8.0	10.0	24.0
2101007	A1	3/8	3/8	20	9.0	9.0	24.0
2101008	A1	3/8	1/2	25	9.0	10.0	25.5
2101009	A1	1/2	1/2	25	10.0	10.0	26.5
2101010	A1	1/2	3/4	30	10.0	11.0	27.0
2101011	A1	3/4	3/4	30	11.0	11.0	28.0

NIPPLE, CONICAL (A2)



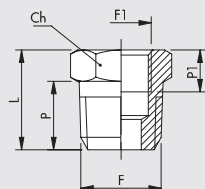
Code	Ref.	F	F1	Ch	P	P1	L
2102001	A2	1/8	1/8	12	8.0	8.0	21.0
2102002	A2	1/8	1/4	14	8.0	11.0	24.0
2102003	A2	1/8	3/8	17	8.0	11.5	25.0
2102004	A2	1/4	1/4	14	11.0	11.0	27.0
2102005	A2	1/4	3/8	17	11.0	11.5	28.0
2102006	A2	1/4	1/2	22	11.0	14.0	32.0
2102007	A2	3/8	3/8	17	11.5	11.5	29.0
2102008	A2	3/8	1/2	22	11.5	14.0	32.5
2102009	A2	1/2	1/2	22	14.0	14.0	35.0
2102010	A2	1/2	3/4	27	14.0	16.5	37.5
2102011	A2	3/4	3/4	27	16.5	16.5	40.0

SLEEVE (A3)



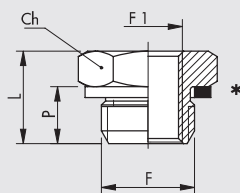
Code	Ref.	F	Ch	L
2103000	A3	M5	8	11.0
2103001	A3	1/8	14	15.0
2103002	A3	1/4	17	22.0
2103003	A3	3/8	22	24.0
2103004	A3	1/2	27	30.0

REDUCER, CONICAL (A4)



Code	Ref.	F	F1	Ch	P	P1	L
2104001	A4	1/4	1/8	14	11.0	7.0	16.0
2104002	A4	3/8	1/8	17	11.5	7.0	17.0
2104003	A4	3/8	1/4	17	11.5	8.0	17.0
2104004	A4	1/2	1/4	22	14.0	8.0	20.0
2104005	A4	1/2	3/8	22	14.0	10.0	20.0
2104006	A4	3/4	1/2	27	16.5	11.0	23.5

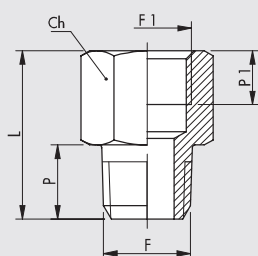
REDUCER, PARALLEL (A4/Z)



Code	Ref.	F	F1	Ch	P	L
2151000	A4/Z	1/8	M5	14	6.0	10.0
2151001	A4/Z	1/4	1/8	17	8.0	13.0
2151002	A4/Z	3/8	1/8	20	9.0	14.0
2151003	A4/Z	3/8	1/4	20	9.0	14.0
2151004	A4/Z	1/2	1/4	25	10.0	15.5
2151005	A4/Z	1/2	3/8	25	10.0	15.5

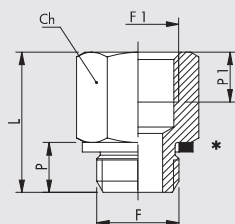
* Washer D11 can be used

REDUCER, CONICAL (A5)



Code	Ref.	F	F1	Ch	P	P1	L
2105001	A5	1/8	1/8	14	8.0	7.0	20.0
2105002	A5	1/8	1/4	17	8.0	8.0	22.5
2105003	A5	1/4	1/4	17	11.0	8.0	25.0
2105004	A5	1/4	3/8	22	11.0	10.0	28.5
2105005	A5	3/8	3/8	22	11.5	10.0	28.5
2105006	A5	3/8	1/2	24	11.5	11.0	32.0
2105007	A5	1/2	1/2	24	14.0	11.0	34.0

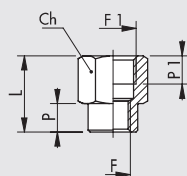
REDUCER, PARALLEL (A5/Z)



Code	Ref.	F	F1	Ch	P	P1	L
2152001	A5/Z	M5	1/8	12	4.0	7.0	17.0
2152002	A5/Z	1/8	1/8	14	6.0	7.0	18.5
2152003	A5/Z	1/8	1/4	17	6.0	8.0	21.5
2152004	A5/Z	1/4	1/4	17	8.0	8.0	22.5
2152005	A5/Z	1/4	3/8	22	8.0	10.0	26.0
2152006	A5/Z	3/8	3/8	22	9.0	10.0	26.5
2152007	A5/Z	3/8	1/2	24	9.0	11.0	29.5
2152008	A5/Z	1/2	1/2	25	10.0	11.0	29.5

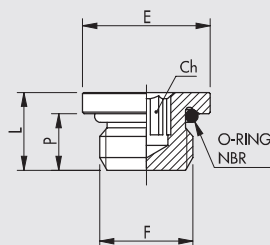
* Washer D11 can be used

REDUCER (A6)



Code	Ref.	F	F1	Ch	P	P1	L
2106001	A6	1/8	1/4	17	8.0	8.0	21.5
2106002	A6	1/8	3/8	22	7.0	10.0	23.5
2106003	A6	1/4	3/8	22	9.0	10.0	25.5
2106004	A6	1/4	1/2	24	9.0	11.0	28.5
2106005	A6	3/8	1/2	24	11.0	11.0	29.5

PLUG WITH HEXAGON EMBEDDED (A7)

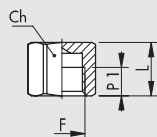


Code	Ref.	F	Ch	P	L	E	O ring
2107000	A7	M5	2.5	4.0	6.5	8	3.5x1.2
2107005	A7	M7	3	5.0	7.4	10	5x1.5
2107001	A7	1/8	3	7.0	9.5	15	2031
2107002	A7	1/4	6	8.0	11.0	18	2043
2107003	A7	3/8	8	9.0	12.5	21	2056
2107004	A7	1/2	10	11.0	14.5	26	3068

MINIATURIZED VERSION

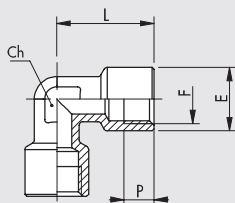
Code	Ref.	F	Ch	P	L	E	O ring
2107M00	A7	M5	2.5	3.5	5.3	7.5	3.5x1.2
2107M01	A7	1/8	4	5.2	7.2	13	2031
2107M02	A7	1/4	6	6.5	8.8	16	2043
2107M03	A7	3/8	8	7.2	9.7	19.5	2056
2107M04	A7	1/2	10	9.2	12.0	24.5	3068

NUB (A8)



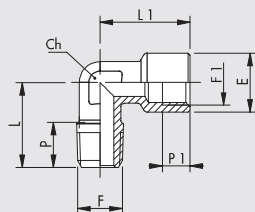
Code	Ref.	F	Ch	P1	L
2108001	A8	1/8	14	7.0	13.0
2108002	A8	1/4	17	8.0	15.0
2108003	A8	3/8	20	10.0	17.5
2108004	A8	1/2	24	11.0	20.0

ELBOW, FEMALE (A9)



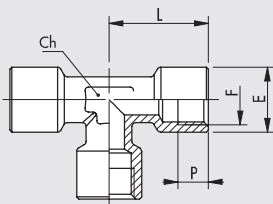
Code	Ref.	F	Ch	P	L	E
2109001	A9	1/8	10	7.0	20.5	13.5
2109002	A9	1/4	13	8.0	26.0	17.0
2109003	A9	3/8	15	10.0	30.0	20.5
2109004	A9	1/2	20	11.0	36.0	25.5

ELBOW, MALE-FEMALE (A10)



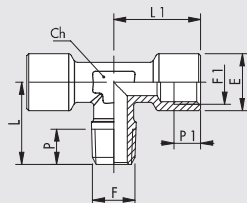
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2110001	A10	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2110002	A10	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2110003	A10	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2110004	A10	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, FEMALE (A11)



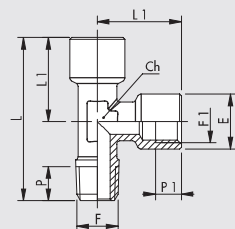
Code	Ref.	F	Ch	P	L	E
2111001	A11	1/8	10	7.0	20.5	13.5
2111002	A11	1/4	13	8.0	26.0	17.0
2111003	A11	3/8	15	10.0	30.0	20.5
2111004	A11	1/2	20	11.0	36.0	25.5

TEE, CENTRAL MALE (A12)



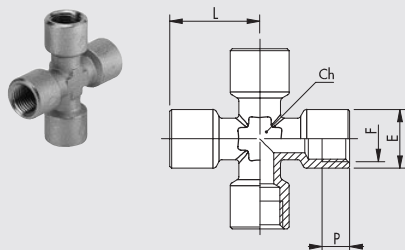
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2112001	A12	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2112002	A12	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2112003	A12	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2112004	A12	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, LATERAL MALE (A13)



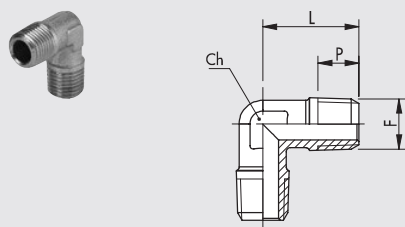
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2113001	A13	1/8	1/8	10	8.0	7.0	37.0	20.5	13.5
2113002	A13	1/4	1/4	13	10.5	8.0	50.5	26.0	17.0
2113003	A13	3/8	3/8	15	11.0	10.0	56.0	30.0	20.5
2113004	A13	1/2	1/2	20	13.0	11.0	66.0	36.0	25.5

EQUAL FEMALE CROSS (A14)



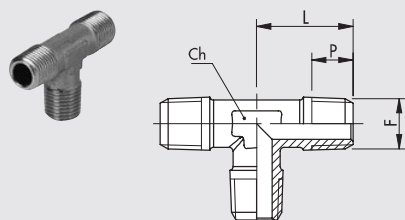
Code	Ref.	F	Ch	P	L	E
2114001	A14	1/8	10	7.0	20.5	13.5
2114002	A14	1/4	13	8.0	26.0	17.0
2114003	A14	3/8	15	10.0	28.0	20.5

ELBOW, MALE (A15)



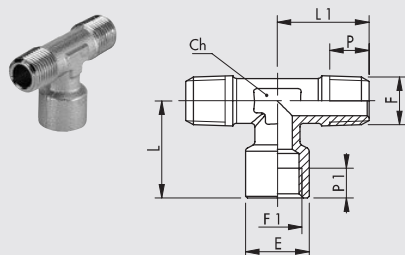
Code	Ref.	F	Ch	P	L
2115001	A15	1/8	10	8.0	16.5
2115002	A15	1/4	13	10.5	24.5
2115003	A15	3/8	15	11.0	26.0
2115004	A15	1/2	20	13.0	30.0

TEE, MALE (A16)



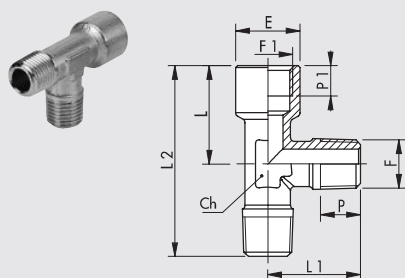
Code	Ref.	F	Ch	P	L
2116001	A16	1/8	10	8.0	16.5
2116002	A16	1/4	13	10.5	24.5
2116003	A16	3/8	15	11.0	26.0
2116004	A16	1/2	20	13.0	30.0

TEE, CENTRAL FEMALE (A17)



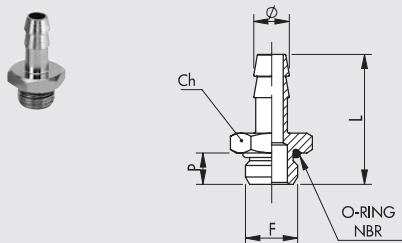
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2117001	A17	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0
2117002	A17	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5
2117003	A17	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5
2117004	A17	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5

TEE, LATERAL FEMALE (A18)



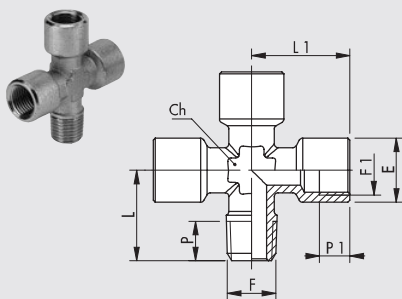
Code	Ref.	F	F1	Ch	P	P1	L	L1	E	L2
2118000	A18	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5	37.0
2118001	A18	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0	50.5
2118002	A18	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5	56.0
2118003	A18	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5	66.0

HOSE ADAPTER, PARALLEL (A19)



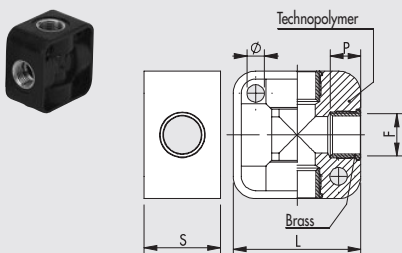
Code	Ref.	Ø	F	Ch	P	L	O ring
2119001	A19	7	1/8	15	6.0	31.0	2031
2119002	A19	7	1/4	18	8.0	33.0	2043
2119003	A19	8	1/8	15	6.0	31.0	2031
2119004	A19	9	1/8	15	6.0	31.0	2031
2119005	A19	9	1/4	18	8.0	33.0	2043
2119006	A19	9	3/8	21	9.0	34.0	2056
2119007	A19	12	1/4	18	8.0	33.0	2043
2119008	A19	12	3/8	21	9.0	34.0	2056
2119009	A19	12	1/2	26	11.0	36.0	3068
2119010	A19	17	3/8	21	9.0	34.0	2056
2119011	A19	17	1/2	26	11.0	36.0	3068

MALE-FEMALE EQUAL CROSS (A20)



Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2120001	A20	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2120002	A20	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0

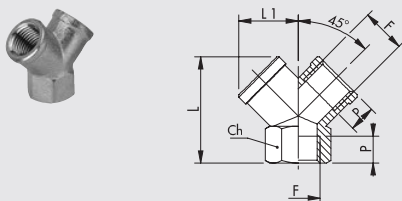
TEE CROSS (A21)



Code	Ref.	F	Ø	P	L	THICKNESS
2121001	A21	1/8	4.5	8.0	31.0	17.5
2121002	A21	1/4	5.5	9.0	40.0	24.0
2121003	A21	3/8	5.5	12.0	50.0	28.0
2121004	A21	1/2	5.5	12.0	50.0	34.0

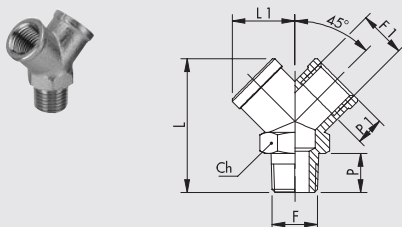
Maximum operating conditions for the A21s are different from other A-series fittings, namely max P13 bar, max T 50°C

Y, FEMALE 90° (A23)



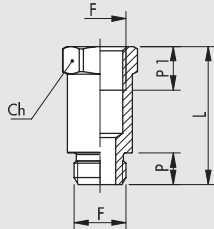
Code	Ref.	F	Ch	P	L	L1
2123001	A23	1/8	13	8	26.5	14.5
2123002	A23	1/4	17	11	32.0	18.0
2123003	A23	3/8	20	11.5	36.5	20.5
2123004	A23	1/2	25	14	44.5	26.5

Y, MALE 90° (A24)



Code	Ref.	F	F1	Ch	P	P1	L	L1
2124001	A24	1/8	1/8	13	8.0	8.0	32.0	14.5
2124002	A24	1/4	1/4	17	11.0	11.0	38.0	18.0
2124003	A24	3/8	3/8	20	11.5	11.5	42.0	20.5
2124004	A24	1/2	1/2	25	14.0	14.0	53.0	26.5

EXTENSION (A25)



Code	Rif.	F	Ch	P	L	P1
2150003	A25	1/8	14	6.0	22.0	8.0
2150004	A25	1/8	14	6.0	42.0	8.0
2150005	A25	1/8	14	6.0	51.0	8.0
2150006	A25	1/4	17	8.0	35.0	11.0
2150007	A25	1/4	17	8.0	51.0	11.0

TAPERED THREAD FITTINGS SERIES A WITH PTFE

Metal Work can supply fittings with a tapered thread coated in polytetrafluorethylene. This system provides the pneumatic seal between the fitting and the female thread. It is therefore not necessary to add other sealing systems during assembly, such as adhesives or Teflon tape. This significantly reduces assembly times. The physical and technical features of the material used ensure that the properties are maintained through time and in a wide range of operating temperatures. This coating can be used with series A fittings types A2, A4, A5, A10, A12, A13, A15, A16, A17, A18 and A25 that have a 1/8" to 1/2" gas taper thread.

TECHNICAL DATA

Temperature range for PTFE	°C	- 45 to + 80
	°F	- 49 to + 176

KEY TO CODES

Fittings with a PTFE thread have the same code as the standard fitting, with the addition of the suffix **T**. For example A2 1/8 1/8 fitting has code **2102001**, so the PTFE version has code **2102001T**.

NOTES

COMPRESSION FITTINGS SERIES B

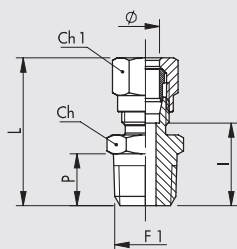
- Body: OT58 brass
- Maximum pressure 870 psi, 6000 kPa 60 bar
- For use with copper tubes



COMPRESSION FITTINGS SERIES B

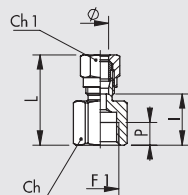
FITTINGS

STRAIGHT, MALE CONICAL (B1)



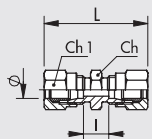
Code	Ref.	Ø	F1	Ch	Ch1	P	L	I
2201001	B1	4/2	1/8	10	10	8.0	27.5	16.0
2201002	B1	6/4	1/8	12	12	8.0	28.0	14.5
2201003	B1	6/4	1/4	14	12	11.0	31.0	17.5
2201004	B1	8/6	1/8	12	14	8.0	30.0	16.5
2201005	B1	8/6	1/4	14	14	11.0	33.0	19.5
2201006	B1	8/6	3/8	17	14	11.5	33.5	20.0
2201007	B1	10/8	1/4	17	19	11.0	38.5	20.0
2201008	B1	10/8	3/8	17	19	11.5	39.0	20.5
2201009	B1	10/8	1/2	22	19	14.0	42.5	24.0
2201010	B1	12/10	3/8	19	22	11.5	38.5	20.5
2201011	B1	12/10	1/2	22	22	14.0	42.0	24.0
2201012	B1	15/12	1/2	22	27	14.0	43.5	25.0

STRAIGHT, FEMALE (B2)



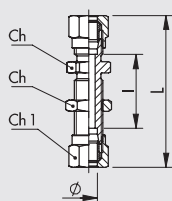
Code	Ref.	Ø	F1	Ch	Ch1	P	L	I
2202001	B2	6/4	1/8	14	12	7	28.5	15.0
2202002	B2	6/4	1/4	17	12	8	31.5	18.0
2202003	B2	8/6	1/8	14	14	7	29.5	16.0
2202004	B2	8/6	1/4	17	14	8	32.0	18.5
2202005	B2	8/6	3/8	22	14	10	36.0	22.5
2202006	B2	10/8	1/4	17	19	8	37.5	19.0
2202007	B2	10/8	3/8	22	19	10	41.0	22.5

STRAIGHT, CONNECTOR (B3)



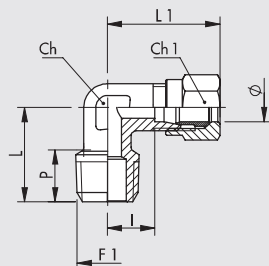
Code	Ref.	Ø	Ch	Ch1	L	I
2203001	B3	4/2	10	10	35	12.0
2203002	B3	6/4	12	12	36	9.0
2203003	B3	8/6	14	14	39	12.0
2203004	B3	10/8	17	19	50	13.0
2203005	B3	12/10	19	22	50	14.0
2203006	B3	15/12	24	27	53	16.0

BULKHEAD CONNECTOR (B4)



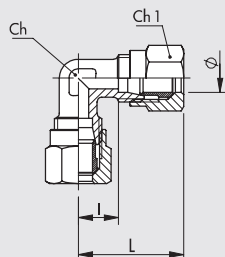
Code	Ref.	Ø	Ch	Ch1	L	I
2204001	B4	6/4	14	12	53.0	26
2204002	B4	8/6	16	14	56.0	29
2204003	B4	10/8	19	19	66.5	29.5
2204004	B4	12/10	22	22	67.0	31
2204005	B4	15/12	25	27	73.5	36.5

ELBOW, MALE (B5)



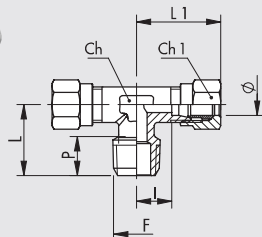
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	I
2205001	B5	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2205002	B5	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2205003	B5	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2205004	B5	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2205005	B5	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2205006	B5	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2205007	B5	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2205008	B5	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2205009	B5	10/8	1/2	20	19	13.0	30.0	39.0	20.5
2205010	B5	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2205011	B5	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2205012	B5	15/12	1/2	20	27	13.0	30.0	38.5	20.0

ELBOW, FEMALE (B6)



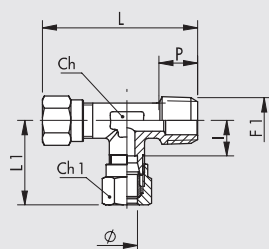
Code	Ref.	Ø	Ch	Ch1	L	I
2206001	B6	4/2	9	10	21.5	10.0
2206002	B6	6/4	9	12	22.0	8.5
2206003	B6	8/6	11	14	24.0	10.5
2206004	B6	10/8	13	19	32.0	13.5
2206005	B6	12/10	15	22	33.5	15.5
2206006	B6	15/12	20	27	38.5	20.0

TEE, CENTRAL MALE (B7)



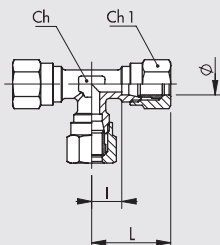
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	I
2207001	B7	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2207002	B7	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2207003	B7	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2207004	B7	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2207005	B7	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2207006	B7	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2207007	B7	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2207008	B7	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2207010	B7	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2207011	B7	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2207012	B7	15/12	1/2	20	27	13.0	30.0	38.5	20.0

TEE, LATERAL MALE (B8)



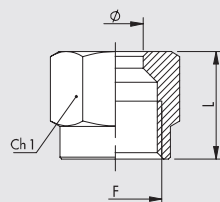
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	I
2208000	B8	4/2	1/8	9	10	8.0	37.5	21.5	10.0
2208001	B8	6/4	1/8	9	12	8.0	38.5	22.0	8.5
2208002	B8	6/4	1/4	11	12	11.0	43.5	23.5	10.0
2208003	B8	8/6	1/8	11	14	8.0	41.0	24.0	10.5
2208004	B8	8/6	1/4	11	14	11.0	44.0	24.0	10.5
2208005	B8	8/6	3/8	13	14	12.0	50.5	27.0	13.5
2208006	B8	10/8	1/4	13	19	11.0	54.5	32.0	13.5
2208007	B8	10/8	3/8	13	19	12.0	55.5	32.0	13.5
2208009	B8	12/10	3/8	15	22	11.5	57.5	33.5	15.5
2208010	B8	12/10	1/2	20	22	13.0	68.0	38.0	20.0
2208011	B8	15/12	1/2	20	27	13.0	68.5	38.5	20.0

TEE, MALE (B9)



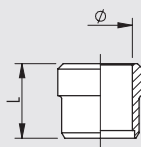
Code	Ref.	Ø	Ch	Ch1	L	I
2209001	B9	4/2	9	10	21.5	10.0
2209002	B9	6/4	9	12	22.0	8.5
2209003	B9	8/6	11	14	24.0	10.5
2209004	B9	10/8	13	19	32.0	13.5
2209005	B9	12/10	15	22	33.5	15.5
2209006	B9	15/12	20	27	38.5	20.0

NUT (B10)



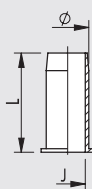
Code	Ref.	Ø	Ch1	L	F
2210001	B10	4/2	10	11.0	M8x1
2210002	B10	6/4	12	11.5	M10x1
2210003	B10	8/6	14	13.0	M12x1
2210004	B10	10/8	19	15.5	M16x1.5
2210005	B10	12/10	22	15.5	M18x1.5
2210006	B10	15/12	27	17.0	M22x1.5

OLIVE (B11)



Code	Ref.	Ø	L
2211001	B11	4/2	6
2211002	B11	6/4	7
2211003	B11	8/6	7
2211004	B11	10/8	10
2211005	B11	12/10	10
2211006	B11	15/12	10

INTERNAL BUSH (B12)



Code	Ref.	Ø	J	L
2212001	B12	6/4	3	12.0
2212002	B12	8/6	5	14.0
2212003	B12	10/8	7	15.0
2212004	B12	12/10	9	16.0
2212005	B12	15/12	11	17.0

TAPERED THREAD FITTINGS SERIES B WITH PTFE

Metal Work can supply fittings with a tapered thread coated in polytetrafluorethylene. This system provides the pneumatic seal between the fitting and the female thread. It is therefore not necessary to add other sealing systems during assembly, such as adhesives or Teflon tape. This significantly reduces assembly times. The physical and technical features of the material used ensure that the properties are maintained through time and in a wide range of operating temperatures. This coating can be used with series B bicone fittings, types B1, B5, B7 and B8 that have a 1/8" to 1/2" gas taper thread.

TECHNICAL DATA

Temperature range for PTFE	°C	- 45 to + 80
	°F	- 49 to + 176

KEY TO CODES

Fittings with a PTFE thread have the same code as the standard fitting, with the addition of the suffix T. For example B1 6/4 1/8 fitting has code **2201002**, so the PTFE version has code **2201002T**.

QUICK FITTINGS SERIES C

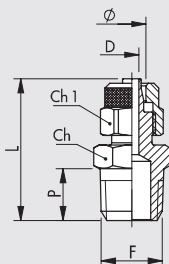


- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar
- Recommended tubes*: PA11, PA12, PTFE



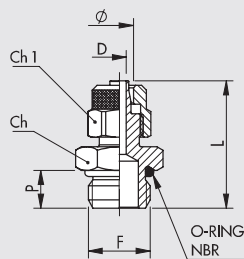
* For other materials please contact our sales offices.

STRAIGHT, MALE CONICAL (C1)



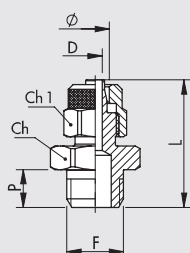
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2301017	C1	5/3	1/8	12	9	8.0	26.0	2.0
2301001	C1	6/4	1/8	12	12	8.0	26.5	3.0
2301002	C1	6/4	1/4	14	12	11.0	30.0	3.0
2301003	C1	8/6	1/8	12	14	8.0	26.5	5.0
2301004	C1	8/6	1/4	14	14	11.0	30.0	5.0
2301005	C1	8/6	3/8	17	14	11.5	31.0	5.0
2301020	C1	10/8	1/8	14	16	8.0	29.0	5.0
2301006	C1	10/8	1/4	14	16	11.0	32.0	6.8
2301007	C1	10/8	3/8	17	16	11.5	33.0	6.8
2301008	C1	10/8	1/2	22	16	14.0	36.0	6.8
2301009	C1	12/10	3/8	17	19	11.5	35.0	8.5
2301010	C1	12/10	1/2	22	19	14.0	38.0	8.5
2301015	C1	15/12.5	1/2	22	22	14.0	39.5	11.0

STRAIGHT, MALE PARALLEL WITH O-RING (C1/Z)



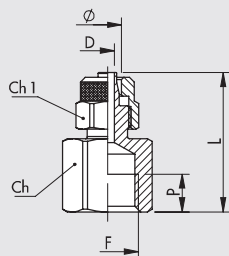
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	O ring
2351001	C1/Z	4/2	M5	9	9	4.0	23.0	1.5	4x1.5
2351002	C1/Z	6/4	M5	9	9	4.0	23.0	2.3	4x1.5
2351003	C1/Z	6/4	1/8	13	12	6.0	25.0	3.0	2031
2351004	C1/Z	6/4	1/4	16	12	8.0	27.0	3.0	2043
2351005	C1/Z	8/6	1/8	14	14	6.0	25.0	5.0	2031
2351006	C1/Z	8/6	1/4	16	14	8.0	27.0	5.0	2043
2351007	C1/Z	8/6	3/8	19	14	9.0	29.0	5.0	2056
2351008	C1/Z	10/8	1/4	16	16	8.0	29.0	6.8	2043
2351009	C1/Z	10/8	3/8	19	16	9.0	31.0	6.8	2056
2351010	C1/Z	10/8	1/2	24	16	11.0	33.0	6.8	3068
2351011	C1/Z	12/10	3/8	19	19	9.0	33.0	8.5	2056
2351012	C1/Z	12/10	1/2	24	19	11.0	35.0	8.5	3068

STRAIGHT, MALE METRIC THREAD (C1/C)



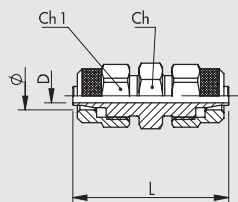
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2356001	C1/C	5/3	M5	9	9	4	23	2
2356002	C1/C	6/4	M6	9	9	5	24	3
2356003	C1/C	6/4	M12x1.5	17	12	8	27	3
2356004	C1/C	6/4	3/8	19	12	9	27	3
2356005	C1/C	8/6	M12x1.5	17	14	8	27	5

STRAIGHT, FEMALE (C2)



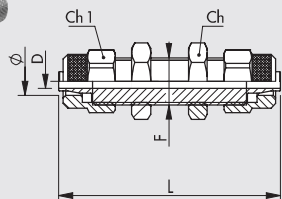
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2302001	C2	6/4	1/8	14	12	7.0	26.5	3.0
2302002	C2	6/4	1/4	17	12	8.0	29.5	3.0
2302012	C2	6/4	3/8	20	12	10.0	33.0	3.0
2302003	C2	8/6	1/8	14	14	7.0	26.5	5.0
2302004	C2	8/6	1/4	17	14	8.0	29.0	5.0
2302005	C2	8/6	3/8	20	14	10.0	33.0	5.0
2302006	C2	10/8	1/4	17	16	8.0	31.0	6.8
2302007	C2	10/8	3/8	20	16	10.0	35.0	6.8
2302008	C2	10/8	1/2	24	16	11.0	38.0	6.8

STRAIGHT, CONNECTOR (C3)



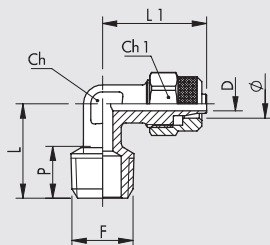
Code	Ref.	Ø	Ch	Ch1	L	D
2303001	C3	6/4	12	12	33.0	3.0
2303002	C3	8/6	12	14	33.0	5.0
2303003	C3	10/8	14	16	37.0	6.8
2303004	C3	12/10	17	19	42.0	8.5

BULKHEAD CONNECTOR (C4)



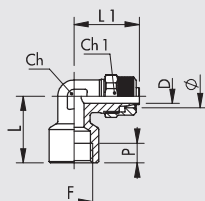
Code	Ref.	Ø	Ch	Ch1	L	D	F
2304001	C4	6/4	14	12	47.0	3.0	M10x1
2304002	C4	8/6	16	14	48.0	5.0	M12x1
2304003	C4	10/8	17	16	49.0	6.8	M14x1
2304004	C4	12/10	19	19	53.0	8.5	M16x1

ELBOW, MALE CONICAL (C5)



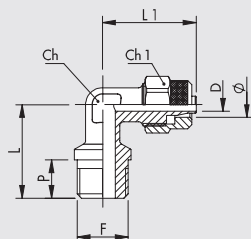
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2305016	C5	5/3	1/8	8	9	8.0	17.0	22.0	2.0
2305001	C5	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2305002	C5	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2305003	C5	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2305004	C5	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2305005	C5	8/6	3/8	12	14	12.0	22.0	21.5	5.0
2305006	C5	10/8	1/4	12	16	11.0	20.5	25.0	6.8
2305007	C5	10/8	3/8	12	16	12.0	21.5	25.0	6.8
2305008	C5	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2305009	C5	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2305010	C5	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2305017	C5	15/12.5	1/2	17	22	14.0	28.0	32.8	10.7

ELBOW FEMALE (C5/F)



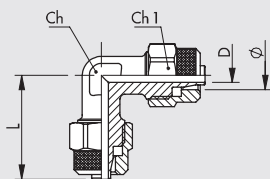
Code	Ref.	Ø	F	Ch	Ch1	L	L1	D	P
2352001	C5/F	6/4	1/8	9	12	21.0	22.0	3.0	7.0
2352002	C5/F	8/6	1/4	12	14	24.0	23.5	5.0	7.0

ELBOW, MALE METRIC THREAD (C5/C)



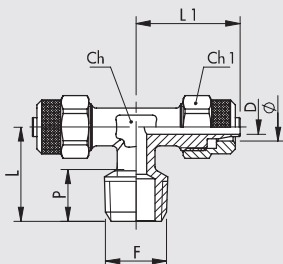
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2357001	C5/C	6/4	M12x1.5	10	12	9	22	22.5	3
2357002	C5/C	8/6	M12x1.5	10	14	9	22	22.5	5

ELBOW CONNECTOR (C6)



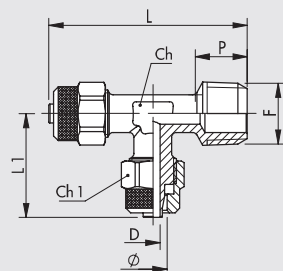
Code	Ref.	Ø	Ch	Ch1	L	D
2306001	C6	6/4	9	12	22.0	3.0
2306002	C6	8/6	12	14	22.0	5.0
2306003	C6	10/8	12	16	25.0	6.8
2306004	C6	12/10	17	19	31.0	8.5
2306006	C6	15/12.5	18	22	32.8	10.7

TEE, CENTRAL MALE (C7)



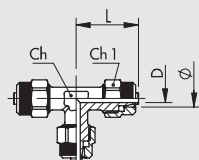
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2307015	C7	5/3	1/8	9	9	8.0	17.0	22.0	2.0
2307001	C7	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2307002	C7	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2307003	C7	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2307004	C7	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2307005	C7	8/6	3/8	12	14	12.0	22.0	23.0	5.0
2307006	C7	10/8	1/4	12	16	11.0	21.0	25.0	6.8
2307007	C7	10/8	3/8	12	16	12.0	22.0	25.0	6.8
2307008	C7	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2307009	C7	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2307010	C7	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2307016	C7	15/12.5	1/2	18	22	14.0	28.0	32.8	10.7

TEE, LATERAL MALE (C8)



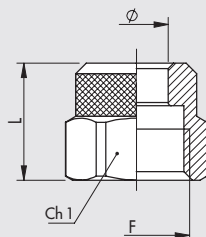
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2308012	C8	5/3	1/8	9	9	8.0	39.0	22.0	2.0
2308001	C8	6/4	1/8	9	12	8.0	39.0	22.0	3.0
2308002	C8	6/4	1/4	9	12	11.0	42.0	22.0	3.0
2308003	C8	8/6	1/8	12	14	8.0	39.0	22.0	5.0
2308004	C8	8/6	1/4	12	14	11.0	42.0	22.0	5.0
2308005	C8	8/6	3/8	12	14	12.5	45.0	23.0	5.0
2308006	C8	10/8	1/4	12	16	11.5	46.0	25.0	6.8
2308007	C8	10/8	3/8	12	16	12.5	47.0	25.0	6.8
2308008	C8	10/8	1/2	17	16	13.5	54.5	28.5	6.8
2308009	C8	12/10	3/8	17	19	11.5	55.0	31.0	8.5
2308010	C8	12/10	1/2	17	19	13.5	57.0	31.0	8.5

TEE CONNECTOR (C9)



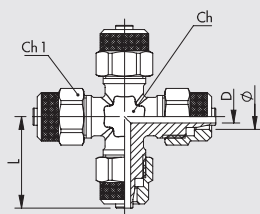
Code	Ref.	Ø	Ch	Ch1	L	D
2309001	C9	6/4	9	12	22.0	3.0
2309002	C9	8/6	12	14	22.0	5.0
2309003	C9	10/8	12	16	25.0	6.8
2309004	C9	12/10	17	19	31.0	8.5
2309007	C9	15/12.5	18	22	32.8	10.7

NUT (C10)



Code	Ref.	Ø	F	Ch1	L
2310001	C10	4/2	M7x0.5	9	9.0
2310009	C10	5/3	M7x0.5	9	9.0
2310002	C10	6/4- M5	M8x0.5	9	9.0
2310003	C10	6/4	M10x1	12	11.0
2310004	C10	8/6	M12x1	14	11.0
2310005	C10	10/8	M14x1	16	12.0
2310006	C10	12/10	M16x1	19	12.0
2310011	C10	15/12.5	M20x1	22	16.0

EQUAL CROSS CONNECTOR (C11)



Code	Ref.	Ø	Ch	Ch1	L	D
2311001	C11	6/4	10	12	21.5	3.0
2311002	C11	8/6	10	14	22.0	5.0
2311003	C11	10/8	12	16	24.5	6.8

TAPERED THREAD FITTINGS SERIES C WITH PTFE

Metal Work can supply fittings with a tapered thread coated in polytetrafluorethylene. This system provides the pneumatic seal between the fitting and the female thread. It is therefore not necessary to add other sealing systems during assembly, such as adhesives or Teflon tape. This significantly reduces assembly times. The physical and technical features of the material used ensure that the properties are maintained through time and in a wide range of operating temperatures. This coating can be used with series C push-in fittings, types C1, C5, C7 and C8 that have a 1/8" to 1/2" gas taper thread.

TECHNICAL DATA

Temperature range for PTFE	°C	- 45 to + 80
	°F	- 49 to + 176

KEY TO CODES

Fittings with a PTFE thread have the same code as the standard fitting, with the addition of the suffix **T**. For example C1 6/4 1/8 fitting has code **2301001**, so the PTFE version has code **2301001T**.

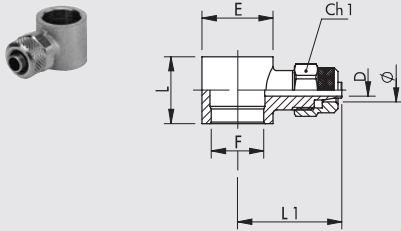
BANJO FITTINGS SERIES D



- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar

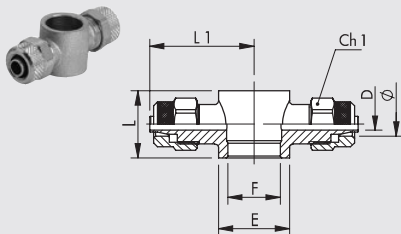


SINGLE BANJO BODY (D5)



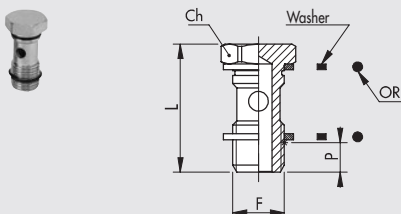
Code	Ref.	Ø	F	Ch1	L	L1	D	E
2405000	D5	4/2	M5	9	9.0	20.5	1.5	9.5
2405013	D5	5/3	1/8	9	15.0	24.3	2.0	14.0
2405018	D5	5/3	M5	9	9.0	20.7	2.0	9.5
2405001	D5	6/4	M5	9	9.0	20.5	3.0	9.5
2405002	D5	6/4	1/8	12	15.0	24.5	3.0	14.0
2405003	D5	6/4	1/4	12	17.0	26.5	3.0	18.0
2405005	D5	8/6	1/8	14	15.0	24.0	5.0	14.0
2405006	D5	8/6	1/4	14	17.0	26.0	5.0	18.0
2405007	D5	8/6	3/8	14	20.0	28.5	5.0	21.0
2405009	D5	10/8	1/4	16	17.0	28.0	6.8	18.0
2405010	D5	10/8	3/8	16	20.0	29.0	6.8	21.0
2405011	D5	10/8	1/2	16	24.0	30.5	6.8	26.0
2405012	D5	12/10	1/2	19	24.0	33.5	8.5	26.0
2405017	D5	12/10	3/8	19	20.0	31.0	8.5	21.0

DOUBLE BANJO BODY (D6)



Code	Ref.	Ø	F	Ch1	L	L1	D	E
2406001	D6	6/4	1/8	12	15.0	24.5	3.0	14.0
2406002	D6	6/4	1/4	12	17.0	26.5	3.0	18.0
2406004	D6	8/6	1/8	14	15.0	24.0	5.0	14.0
2406005	D6	8/6	1/4	14	17.0	26.0	5.0	18.0
2406006	D6	8/6	3/8	14	20.0	28.5	5.0	21.0
2406008	D6	10/8	1/4	16	17.0	28.0	6.8	18.0
2406009	D6	10/8	3/8	16	20.0	29.0	6.8	21.0
2406010	D6	10/8	1/2	16	24.0	30.5	6.8	26.0
2406011	D6	12/10	1/2	19	24.0	33.5	8.5	26.0

BANJO STEM SINGLE (D7)



Code	Ref.	F	Ch	L	P
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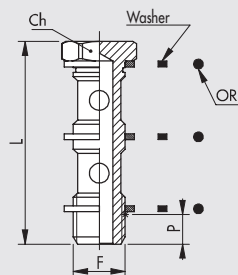
Version with washer D11 for models R13-R14-D12-D17-D5-D6

2407001	D7 (steel)	M5	8	18.0	3
2407002	D7	1/8	14	28.0	6
2407003	D7	1/4	17	33.0	8
2407004	D7	3/8	20	37.0	9
2407005	D7	1/2	27	42.0	10
2407006	D7	M12x1.5	17	33.0	8

Version with O-ring for models R28-R29

2407102	D7 with OR	1/8	14	28.0	6
2407103	D7 with OR	1/4	17	33.0	8
2407104	D7 with OR	3/8	20	37.0	9

BANJO STEM DOUBLE (D8)



Code	Ref.	F	Ch	L	P
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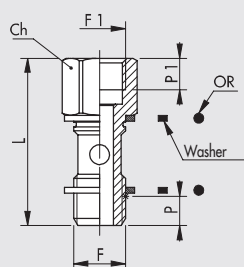
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2408001	D8	1/8	14	44.5	6
2408002	D8	1/4	17	51.5	8
2408003	D8	3/8	20	58.5	9
2408004	D8	1/2	27	67.5	10

Version with O-ring for models R28-R29

2408102	D8 with OR	1/8	14	44.5	6
2408103	D8 with OR	1/4	17	51.5	8
2408104	D8 with OR	3/8	20	58.5	9

BANJO PASSING TROUGHT SINGLE (D9)



Code	Ref.	F	F1	Ch	L	P	P1
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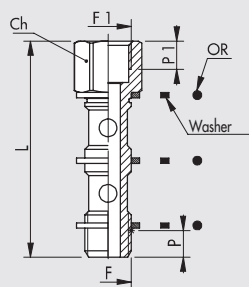
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2409001	D9	1/8	1/8	14	36.5	6	7
2409002	D9	1/4	1/4	17	42.5	8	8
2409003	D9	3/8	3/8	20	49.5	9	10
2409004	D9	1/2	1/2	27	56.5	10	11

Version with O-ring for models R28-R29

2409102	D9	1/8	1/8	14	36.5	6	7
2409103	D9	1/4	1/4	17	42.5	8	8
2409104	D9	3/8	3/8	20	49.5	9	10

BANJO PASSING TROUGHT STEM DOUBLE (D10)



Code	Ref.	F	F1	Ch	L	P	P1
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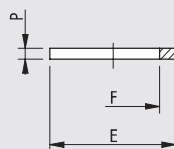
Version with washer D11 for models R13-R14-D5-D6-D12-D17

2410001	D10	1/8	1/8	14	53.0	6	7
2410002	D10	1/4	1/4	17	61.0	8	8
2410003	D10	3/8	3/8	20	71.0	9	10
2410004	D10	1/2	1/2	27	82.0	10	11

Version with O-ring for models R28-R29

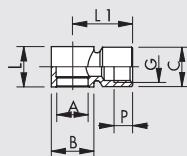
2410102	D10 with OR	1/8	1/8	14	53.0	6	7
2410103	D10 with OR	1/4	1/4	17	61.0	8	8
2410104	D10 with OR	3/8	3/8	20	71.0	9	10

WASHER (D11)

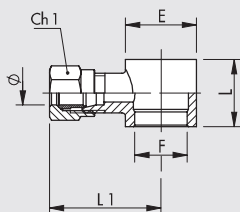


Code	Ref.	F	E	P
2411001	D11	M5	9	1.5 (nylon)
2411002	D11	1/8	13.8	1.5
2411003	D11	1/4	17.8	1.5
2411004	D11	3/8	21.0	1.5
2411005	D11	1/2	26.0	1.5

SINGLE BANJO PASSING TROUGHT BODY (D12)



Code	Ref.	A	G	B	C	L	L1	P
2412001	D12	1/8	1/8	14	13.5	15	21.5	7
2412002	D12	1/4	1/4	18	17.0	17	25.5	8
2412003	D12	3/8	3/8	21	20.5	20	31.0	10



Code	Ref.	Ø	F	Ch1	L	L1	E
24170006	D17	4/2	1/8	10	15	24.5	14
24170002	D17	6/4	1/8	12	15	26.0	14
24170003	D17	6/4	1/4	12	17	28.0	18
24170004	D17	8/6	1/8	14	15	26.0	14
24170005	D17	8/6	1/4	14	17	28.0	18

NOTES

NOTES

FITTINGS

SUMMARY STAINLESS STEEL FITTINGS



● PUSH-IN FITTINGS, STAINLESS STEEL

D3.2



● STANDARD FITTINGS SERIES XA

D3.8



● QUICK FITTINGS SERIES XC

D3.11

PUSH-IN FITTINGS, STAINLESS STEEL

The push-in fittings in the XR can be reused thousands of times without affecting the pneumatic seal in any way.
They come in various configurations.
The XR fittings are made entirely of 316L stainless steel (EN 1.4404) and can be used to make connections in environments and conditions where the use of standard brass fittings would be incompatible.
The gasket are in FKM/FPM.

CONFORMITY DECLARATIONS

- DM 174
- DM 21/03/73
- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



* Release tests performed at 100°C for 3 successive 30-minute attacks with 4% acetic acid solution and distilled water.

CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.

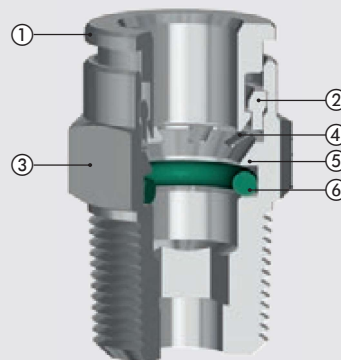


TECHNICAL DATA

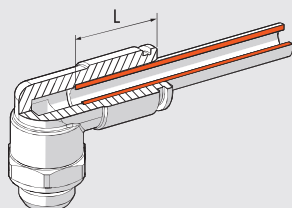
Threaded coupling		M5 - 1/8" - 1/4" - 3/8" - 1/2"
Diameter	mm	Ø4 - Ø6 - Ø8 - Ø10 - Ø12
Temperature range	°C	- 20 to +150
	°F	- 4 to +302
Pressure range		- 0.99 bar to 18 bar / - 0.099 MPa to 1.8 MPa
Recommended pipe		PTFE
Fluid		Vacuum - Compressed air

COMPONENTS

- 1 RELEASE BUSHING: AISI 316L stainless steel
- 2 LOCKING BUSHING: AISI 316L stainless steel
- 3 BODY: AISI 316L stainless steel
- 4 CLAMPING SPRING: AISI 301 stainless steel
- 5 SPRING SUPPORTING RING: AISI 316L stainless steel
- 6 SEAL: FKM/FPM

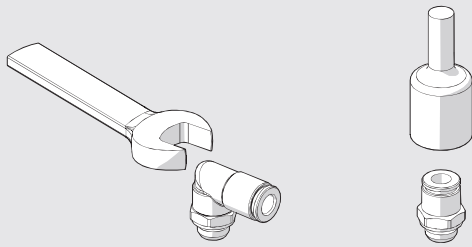


PIPE INSERTION DEPTH

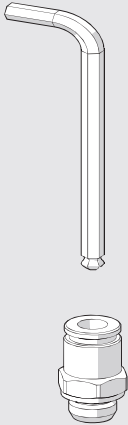


Ø Pipe	L
4	13.2
6	16.1
8	16.2
10	18.3
12	19.5

SCREWING METHOD



Thread	Max. Torque [Nm]
M5	1.8
G 1/8"	6
G 1/4"	8
G 3/8"	10
G 1/2"	15



CH [mm]	Max. Torque [Nm]
3	2.5
4	5
6	8
8	18
10	15

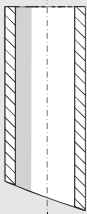
N.B.: When using a socket spanner, the torque must not exceed that of the thread (e.g. fitting XR1 Ø 4 1/8", with a 3 mm thread, has a maximum torque of 6 Nm, highest value of the thread)

INSTALLING THE PIPE

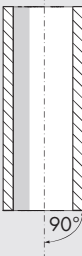
- Compressed air pipes must be used in compliance with some basic criteria in order to ensure long life and proper operation of the fitting:
- check that the conditions for the installation and use (e.g. temperature and fluid used) comply with the characteristics stated by the pipe manufacturer;
 - check the pipe size; oversized pipes could not fit properly, undersized ones could not ensure pipe retention and air tightness.

The cut should be as accurate as possible at a right angle with the pipe axis.

Wrong

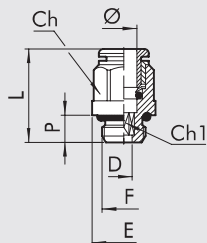


Correct



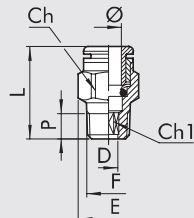
- the bending radius of the pipe installed must be as wide as possible. The fittings have been designed to ensure axial seal of the pipe; excessive curvature could considerably shorten the life of the pipe.
- the pipe must not be subjected to excessive axial stress and it must be of the right length for snugly fitting (not too long or too short).
- correct insertion of the pipe into the fitting is essential for air tightness and pipe retention. Make sure that the pipe is pushed right into the seat.
- check that the pipe does not encounter any obstacles or blockages along its way, which could cause tensile stress of the pipe in the fitting.

STRAIGHT, CYLINDRICAL, MALE (XR1)



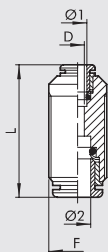
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2L01001X	XR1	4	M5	9	-	4	19	2.5	10.5
2L01002X	XR1	4	1/8	13	3	5	16	3.1	14.5
2L01000X	XR1	6	M5	12	-	4	22.5	2.5	13.5
2L01007X	XR1	6	1/8	13	4	5	19	4.2	14.5
2L01008X	XR1	6	1/4	16	4	6.5	18.5	4.2	18
2L01009X	XR1	8	1/8	14	6	5	22.5	6.2	15.5
2L01010X	XR1	8	1/4	16	6	6.5	21	6.2	18
2L01012X	XR1	10	1/4	16	8	6.5	27.5	8.4	18
2L01013X	XR1	10	3/8	17	8	7	25	8.4	20
2001014X	XR1	12	3/8	21	10	7	28.5	10.4	23.5
2001015X	XR1	12	1/2	22	10	8.5	26.5	10.4	25

STRAIGHT, CONICAL, MALE (XR1C)



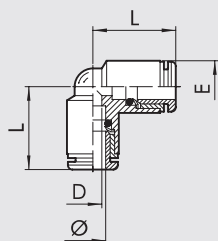
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2L01C02X	XR1C	4	1/8	10	3	7.5	15.5	3	11.5
2L01C03X	XR1C	4	1/4	14	3	11	20	3	16
2L01C07X	XR1C	6	1/8	12	4	7.4	20.5	4.2	14
2L01C08X	XR1C	6	1/4	14	4	11	20	4.2	16
2L01C09X	XR1C	8	1/8	14	6	7.1	24.5	6.2	16
2L01C10X	XR1C	8	1/4	14	6	11	23	6.2	16
2L01C13X	XR1C	10	1/4	16	8	11	30	8	18.5
2L01C14X	XR1C	10	3/8	17	8	11.5	23.5	8.4	20
2001C15X	XR1C	12	3/8	18	10	11.5	27	10.4	22
2001C16X	XR1C	12	1/2	22	10	14	27	10.4	25.5

STRAIGHT, INTERMEDIATE (XR3)



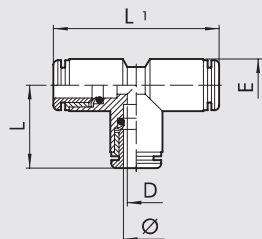
Code	Ref.	Ø1	Ø2	F	L	D
2L03001X	XR3	4	4	9	27	3
2L03011X	XR3	4	6	12	32.5	3
2L03003X	XR3	6	6	12	31	5
2L03033X	XR3	6	8	14	33	5
2L03004X	XR3	8	8	14	34	7
2L03005X	XR3	10	10	16	37.5	9
2003006X	XR3	12	12	19	39.5	11

ELBOW, INTERMEDIATE (XR4)



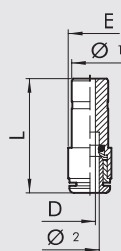
Code	Ref.	Ø	L	D	E
2L04001X	XR4	4	17	3.5	9
2L04003X	XR4	6	20	5.5	12
2L04004X	XR4	8	21	7	14
2L04005X	XR4	10	25	8	16
2L04006X	XR4	12	27	10	19

TEE, INTERMEDIATE (XR5)



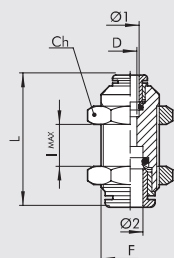
Code	Ref.	Ø	L	L1	D	E
2I05001X	XR5	4	17	34	3.5	9
2I05003X	XR5	6	20	40	5	12
2I05004X	XR5	8	21	42	6	14
2I05005X	XR5	10	25	50	8.5	16
2I05006X	XR5	12	27	54	10	19

REDUCER (XR8)



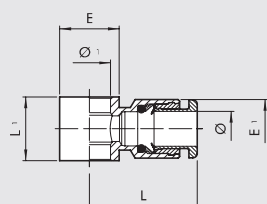
Code	Ref.	Ø 1	Ø 2	L	D	E
2I08002X	XR8	6	4	31	3	9
2I08006X	XR8	8	6	33	5	12
2I08008X	XR8	10	8	34.5	7	14

STRAIGHT, INTERMEDIATE, BULKMTAD (XR10)



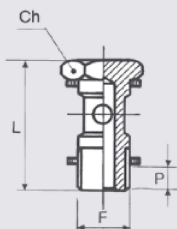
Code	Ref.	Ø 1	Ø 2	F	Ch	L	D	I max
2L11001X	XR10	4	4	M12x1	15	27	3	11
2L11003X	XR10	6	6	M14x1	17	32.5	5	16
2L11004X	XR10	8	8	M16x1	19	33	7	17
2L11005X	XR10	10	10	M18x1	21	37.5	9	19
2L11006X	XR10	12	12	M20x1	24	39.5	11	20

SINGLE RING (XR13)



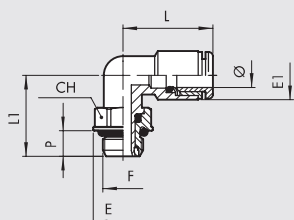
Code	Ref.	Ø	Ø 1	L	L1	E	E1
2012002X	XR13	4	1/8	19.5	15	14	9
2012005X	XR13	6	1/8	22	15	14	12
2012006X	XR13	6	1/4	23.5	17	18	12
2012007X	XR13	8	1/8	22.5	15	14	14
2012008X	XR13	8	1/4	24	17	18	14
2012010X	XR13	10	1/4	27	17	18	14
2012011X	XR13	10	3/8	29	20	22	16
2012012X	XR13	12	3/8	31	20	22	16
2012014X	XR13	12	1/2	33	24	26	19

BANJO STEM SINGLE (XD7)



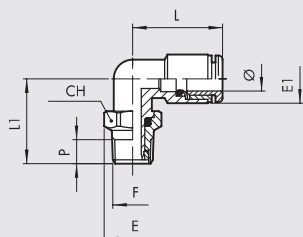
Code	Ref.	F	Ch	L	P
2407002X	XD7	1/8	14	29	6
2407003X	XD7	1/4	17	32.5	6.5
2407004X	XD7	3/8	21	36	7
2407005X	XD7	1/2	26	41.5	8.5

ROTARY ELBOW, MALE, CYLINDRICAL (XR31)



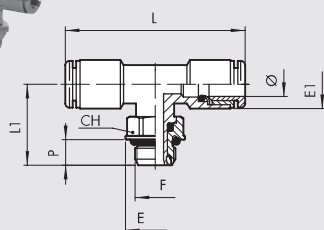
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L31001X	XR31	4	M5	9	10	9	17	14	4
2L31002X	XR31	4	1/8	13	14.5	9	17	16	5
2L31007X	XR31	6	M5	9	10	12	20.5	15.5	4
2L31008X	XR31	6	1/8	13	14.5	12	21.5	18	5
2L31009X	XR31	6	1/4	16	18	12	21.5	20	6.5
2L31010X	XR31	8	1/8	13	14.5	14	22	18	5
2L31011X	XR31	8	1/4	16	18	14	22	20	6.5
2L31013X	XR31	10	1/4	16	18	16	25.5	22.5	6.5
2L31014X	XR31	10	3/8	21	23.5	16	25.5	24	7
2031017X	XR31	12	3/8	21	23.5	19	28	26.5	7
2031018X	XR31	12	1/2	22	25	19	28	31	8.5

ROTARY ELBOW, MALE, CONICAL (XR31C)



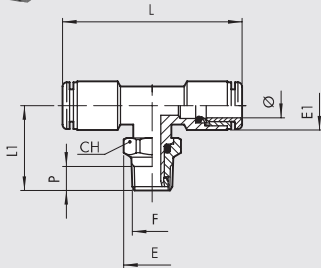
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L31C02X	XR31C	4	1/8	10	11.2	9	17	17.5	7.5
2L31C08X	XR31C	6	1/8	13	14.5	12	21.5	20	7.5
2L31C09X	XR31C	6	1/4	14	14.5	12	21.5	24	11
2L31C10X	XR31C	8	1/8	13	14.5	14	22	20	7.5
2L31C11X	XR31C	8	1/4	14	15.5	14	22	24	11
2L31C13X	XR31C	10	1/4	16	18	16	25.5	26.5	11
2L31C14X	XR31C	10	3/8	17	19	16	25.5	27	11.5
2031C15X	XR31C	12	3/8	21	24.5	19	28	30.5	11.5
2031C16X	XR31C	12	1/2	22	24.5	19	28	33.5	14

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY (XR32)



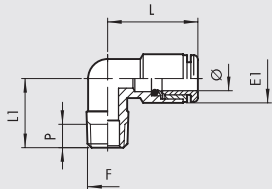
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L32001X	XR32	4	M5	9	10	9	34	18	4
2L32002X	XR32	4	1/8	13	14.5	9	34	20	5
2L32008X	XR32	6	1/8	13	14.5	12	42	22.5	5
2L32009X	XR32	6	1/4	16	18	12	42	24.5	6.5
2L32010X	XR32	8	1/8	13	14.5	14	43	22.5	5
2L32011X	XR32	8	1/4	16	18	14	43	24.5	6.5
2L32013X	XR32	10	1/4	16	18	16	50	25.5	6.5
2L32014X	XR32	10	3/8	21	23.5	16	50	27	7

CENTRAL TEE, MALE, CONICAL, ROTARY (XR32C)



Code	Ref.	Ø	F	CH	E	E1	L	L1	P
2L32C02X	XR32C	4	1/8	10	11.2	9	34	21.5	7.5
2L32C08X	XR32C	6	1/8	13	14.5	12	42	24.5	7.5
2L32C09X	XR32C	6	1/4	14	15.5	12	42	28.5	11
2L32C10X	XR32C	8	1/8	13	14.5	14	43	24.5	7.5
2L32C11X	XR32C	8	1/4	14	15.5	14	43	28.5	11
2L32C13X	XR32C	10	1/4	16	18	16	50	32	11
2L32C14X	XR32C	10	3/8	17	19	16	50	32.5	1.5

ELBOW, MALE, CONICAL (XR39C)



Code	Ref.	Ø	F	E1	L	L1	P
2L39C02X	XR39C	4	1/8	9	17	16	7.5
2L39C08X	XR39C	6	1/8	12	20	16	7.5
2L39C09X	XR39C	6	1/4	12	20	20	11
2L39C10X	XR39C	8	1/8	14	21	17	7.5
2L39C11X	XR39C	8	1/4	14	21	20	11
2L39C13X	XR39C	10	1/4	16	25.5	22.5	11

NOTES

PUSH-IN FITTINGS, STAINLESS STEEL

FITTINGS

STANDARD FITTINGS SERIES XA

- Body made of AISI 316L (EN 1.4404) stainless steel
- Operating temperature for fittings with O-ring seals:
-20 to 200 °C / -4 to 392 °F
- Maximum pressure 200 bar - 20000 KPa - 2900 psi

CONFORMITY DECLARATIONS

- DM 174
- DM 21/03/73
- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



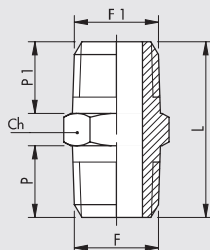
* Release tests performed at 100°C for 3 successive 30-minute attacks with 4% acetic acid solution and distilled water.

CERTIFIED

- NSF/ANSI 169 standard:
products in contact with food.

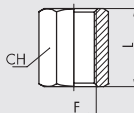


NIPPLE, CONICAL (XA2)



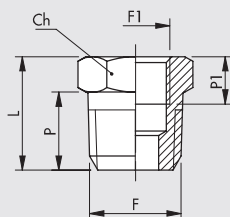
Code	Ref.	F	F1	Ch	P	P1	L
2102001X	XA2	1/8	1/8	12	7.5	7.5	20
2102002X	XA2	1/8	1/4	14	7.5	11	23.5
2102004X	XA2	1/4	1/4	14	11	11	27
2102005X	XA2	1/4	3/8	17	11	11.5	27.5
2102007X	XA2	3/8	3/8	17	11.5	11.5	28
2102008X	XA2	3/8	1/2	22	11.5	14	31.5
2102009X	XA2	1/2	1/2	22	14	14	34

SLEEVE (XA3)



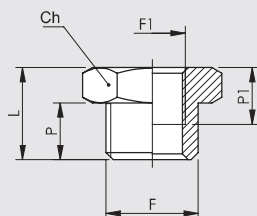
Code	Ref.	F	Ch	L
2103001X	XA3	1/8	14	15
2103002X	XA3	1/4	17	22
2103003X	XA3	3/8	22	24
2103004X	XA3	1/2	27	30

REDUCER, CONICAL (XA4)



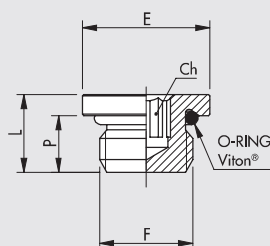
Code	Ref.	F	F1	Ch	P	P1	L
2104001X	XA4	1/4	1/8	14	11	8	16
2104002X	XA4	3/8	1/8	17	11.5	8	16.5
2104009X	XA4	1/2	1/8	22	14	8	19.5
2104003X	XA4	3/8	1/4	17	11.5	10	16.5
2104004X	XA4	1/2	1/4	22	14	10	19.5
2104005X	XA4	1/2	3/8	22	14	10	19.5

REDUCER, PARALLEL (XA4Z)



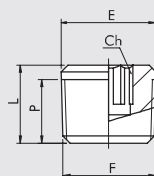
Code	Ref.	F	F1	Ch	P	P1	L
2151000X	XA4Z	1/8	M5	14	6	8	10.5
2151001X	XA4Z	1/4	1/8	17	8	8	13
2151003X	XA4Z	3/8	1/4	19	9	10	14

PLUG WITH HEXAGON EMBEDDED (XA7)



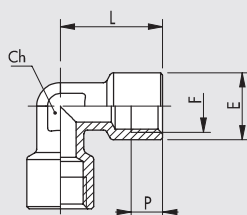
Code	Ref.	F	Ch	P	L	E
2107001X	XA7	1/8	5	5	7.5	13
2107002X	XA7	1/4	6	6.5	9.5	16
2107003X	XA7	3/8	8	7	10	20
2107004X	XA7	1/2	10	8.5	12	25

TAPER MALE PLUG (XA7C)



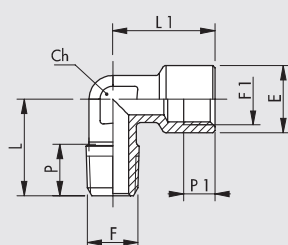
Code	Ref.	F	Ch	P	L	E
2107C01X	XA7C	1/8	5	5	7.5	13
2107C02X	XA7C	1/4	6	6.5	9.5	16
2107C03X	XA7C	3/8	8	7	10	20
2107C04X	XA7C	1/2	10	8.5	12	25

ELBOW, FEMALE (XA9)



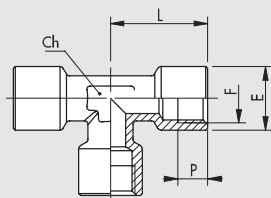
Code	Ref.	F	Ch	P	L	E
2109001X	XA9	1/8	10	8	22	13
2109002X	XA9	1/4	12	10	26	16.5
2109003X	XA9	3/8	17	10	28	20
2109004X	XA9	1/2	19	13	34	25

ELBOW, MALE-FEMALE (XA10)



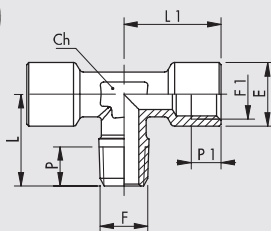
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2110001X	XA10	1/8	1/8	10	6	8	17	22	13
2110002X	XA10	1/4	1/4	12	9	10	21.5	26	16.5
2110003X	XA10	3/8	3/8	17	11	10	24.5	28	20
2110004X	XA10	1/2	1/2	19	13	13	30.5	34	25

TEE, FEMALE (XA11)



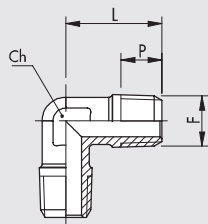
Code	Ref.	F	Ch	P	L	E
2111001X	XA11	1/8	10	8	22	13
2111002X	XA11	1/4	12	10	26	16.5
2111003X	XA11	3/8	17	10	28	20
2111004X	XA11	1/2	19	13	34	25

TEE, CENTRAL MALE (XA12)



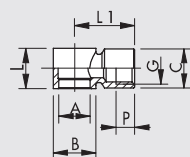
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2112001X	XA12	1/8	1/8	10	6	8	17	22	13
2112002X	XA12	1/4	1/4	12	9	10	21.5	26	16.5
2112003X	XA12	3/8	3/8	17	11	10	24.5	28	20
2112004X	XA12	1/2	1/2	19	13	13	30.5	34	25

ELBOW, MALE (XA15)



Code	Ref.	F	Ch	P	L
2115001X	XA15	1/8	10	6	17
2115002X	XA15	1/4	12	9	21.5
2115003X	XA15	3/8	17	11	24.5
2115004X	XA15	1/2	19	13	30.5

SINGLE BANJO PASSING TROUGH BODY (XD12)



Code	Ref.	A	G	B	C	L	L1	P
2412001X	XD12	1/8	1/8	14	14	15	18.5	8
2412002X	XD12	1/4	1/4	17	17	17	24	10
2412003X	XD12	3/8	3/8	22	20	20	29	10
2412004X	XD12	1/2	1/2	25	26	24	34.5	14

NOTES

QUICK FITTINGS SERIES XC



- Body made of AISI 316L (EN 1.4404) stainless steel
- Operating temperature according to the type of pipe used
- Maximum pressure 25 bar - 2500 KPa - 363 psi

CONFORMITY DECLARATIONS

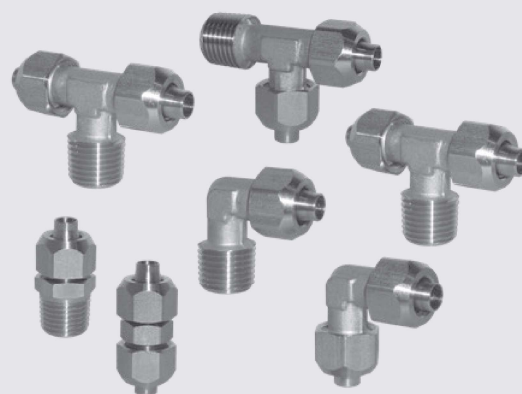
- DM 174
- DM 21/03/73
- Regulation 1935/04 EU.*
- Regulation 2023/06 EU.



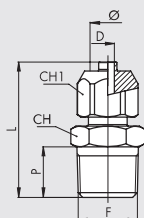
* Release tests performed at 100°C for 3 successive 30-minute attacks with 4% acetic acid solution and distilled water.

CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.

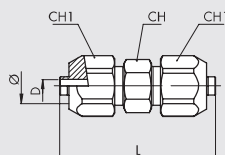


STRAIGHT, MALE CONICAL (XC1)



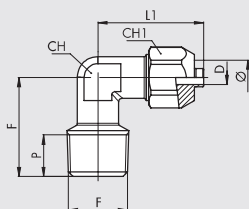
Code	Ref.	Ø	F	Ch	Ch1	P	L	D
2301001X	XC1	6/4	1/8	12	10	7.5	26	3
2301002X	XC1	6/4	1/4	12	14	11	29.5	3
2301003X	XC1	8/6	1/8	14	13	7.5	26.5	5
2301004X	XC1	8/6	1/4	14	14	11	30	5
2301006X	XC1	10/8	1/4	16	14	11	32.5	6.5
2301007X	XC1	10/8	3/8	16	17	11.5	33	6.5

STRAIGHT, CONNECTOR (XC3)



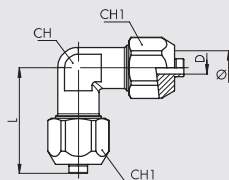
Code	Ref.	Ø	Ch	Ch1	L	D
2303001X	XC3	6/4	10	12	34	3
2303002X	XC3	8/6	12	14	35	5
2303003X	XC3	10/8	14	16	39	6.5

ELBOW, MALE CONICAL (XC5)



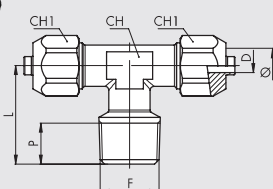
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2305001X	XC5	6/4	1/8	10	12	7.5	17	23	3
2305002X	XC5	6/4	1/4	10	12	11	21.5	23	3
2305003X	XC5	8/6	1/8	10	14	7.5	17	23	5
2305004X	XC5	8/6	1/4	10	14	11	21.5	23	5
2305006X	XC5	10/8	1/4	10	16	11	21.5	25.5	6.5

ELBOW CONNECTOR (XC6)



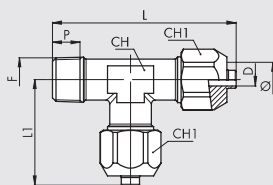
Code	Ref.	Ø	Ch	Ch1	L	D
2306001X	XC6	6/4	10	12	22.5	3
2306002X	XC6	8/6	10	14	23	5
2306003X	XC6	10/8	10	16	25.5	6.5

TEE, CENTRAL MALE (XC7)



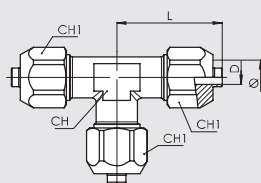
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2307001X	XC7	6/4	1/8	10	12	8	17	23	3
2307002X	XC7	6/4	1/4	10	12	11	21.5	23	3
2307003X	XC7	8/6	1/8	10	14	8	17	23	5
2307004X	XC7	8/6	1/4	10	14	11	21.5	23	5
2307006X	XC7	10/8	1/4	10	16	11	21.5	25.5	6.5

TEE, LATERAL MALE (XC8)



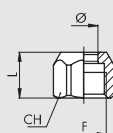
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2308001X	XC8	6/4	1/8	10	12	8	40	23	3
2308002X	XC8	6/4	1/4	10	12	11	44.5	23	3
2308003X	XC8	8/6	1/8	10	14	8	40	23	5
2308004X	XC8	8/6	1/4	10	14	11	44.5	23	5
2308006X	XC8	10/8	1/4	10	16	11	47	25.5	6.5

TEE CONNECTOR (XC9)



Code	Ref.	Ø	Ch	Ch1	L	D
2309001X	XC9	6/4	10	12	22.5	3
2309002X	XC9	8/6	10	14	23	5
2309003X	XC9	10/8	10	16	25.5	6.5

NUT (XC10)



Code	Ref.	Ø	F	Ch1	L
2310002X	XC10	6/4	M10x1	12	10
2310004X	XC10	8/6	M12x1	14	10
2310005X	XC10	10/8	M14x1	16	11



NOTES

FITTINGS

NOTES

FITTINGS

SUMMARY PUSH-IN FITTINGS UNF or NPT THREAD AND INCH PIPES



● BRASS PUSH-IN FITTINGS FOR INCH TUBES AND UNF or NPT THREAD

🛒 D1.19



UNF
NPT

● ADAPTORS AND PLUGS FOR G (BSPP) AND NPT THREAD

🛒 D1.24



G
BSP

UNF
NPT

SUMMARY PUSH-IN FITTINGS UNF or NPT THREAD AND INCH PIPES

FITTINGS



ACCESSORIES

● LINE ON LINE	E1
● COUPLINGS	E2
● FLOW REGULATOR	E3
● AUXILIARY VALVES	E4
● VARIOUS ACCESSORIES	E5
● STAINLESS STEEL ACCESSORIES	E6
● ACCESSORIES UNF or NPT THREAD AND INCH PIPES	E7

	● INTRODUCTION LINE ON LINE [®]	E1.4
	● IN-LINE PNEUMATIC VALVE SERIES PNV L	 E1.7
	● IN-LINE SOLENOID VALVE SERIES SOV L	 E1.10
	● MINIATURE REDUCER/ECONOMIZER, SERIES RML, RMC AND RMS	 E1.14
	● IN-LINE PRESSURE GAUGE SERIES MAN L	 E1.18
	● IN LINE PRESSURE SWITCH SERIES PRS L	 E1.20
	● IN-LINE PRESSURE INDICATOR SERIES LAM L	 E1.24
	● IN-LINE SHUTOFF VALVE SERIES V2V L AND V3V L	 E1.26
	● IN-LINE FLOW MICRO-REGULATOR SERIES RFL L	 E1.29
	● IN-LINE FIXED-REGULATION FLOW REGULATOR SERIE RFF L	 E1.34
	● IN-LINE QUICK-EXHAUST VALVES SERIES VSR L	 E1.37
	● IN-LINE QUICK-EXHAUST VALVE WITH REGULATED EXHAUST SERIES VSRR L	 E1.39
	● IN-LINE STOP VALVE SERIES STP L	 E1.42
	● IN-LINE CHECK VALVE SERIES VNR L	 E1.45
	● IN-LINE FILTER SERIES FIL L	 E1.47
	● LINE ON LINE [®] ACCESSORIES	 E1.50

LINE OF PRODUCTS ON LINE

LINE ON LINE® is an exclusive range of products for mounting on pneumatic circuits. With these small, highly efficient components it is possible

to perform all pneumatic functions at any point of the circuit.

LINE ON LINE® is ultra-modular - the components can be connected in parallel, in series or combined parallel/series.

All LINE ON LINE® products are available for pipe-pipe connection with two push-in fittings, or for thread-pipe connection with a brass nickel-plated male ISO 228 G (BSP) thread and a push-in fitting.

The body is made of technopolymer, giving a product that is extremely lightweight and compact.

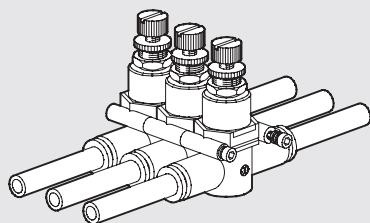
One side of the body is marked with an indelible pneumatic symbol to facilitate identification and indicate the direction of flow.

For almost every function it is available Ø1/4 and Ø3/8" tube version. It is also possible to use RU6 fitting to mount LINE ON LINE® on thread UNF or NPT.

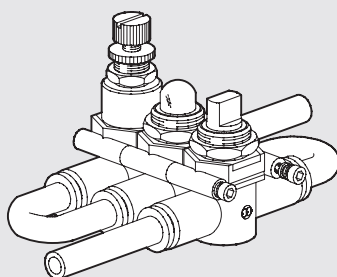


CONNECTION FREE

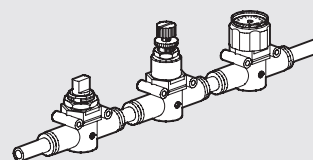
Parallel lines



Serial line parallel fitting



Serial line in-line fitting



FIXING FREE

Wall fixing

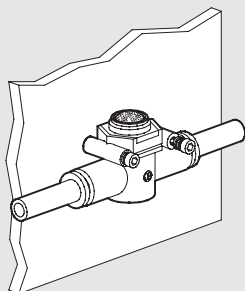
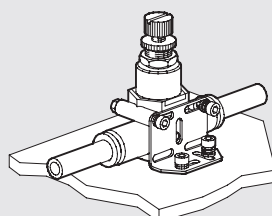
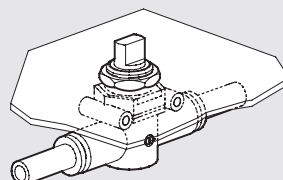


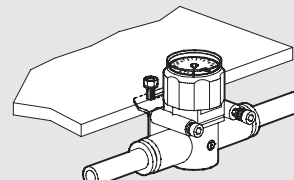
Plate fixing

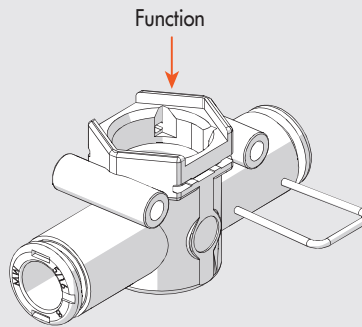


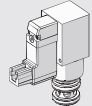
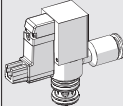
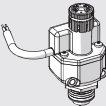
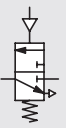
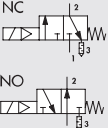
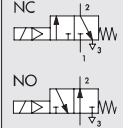
Panel fixing

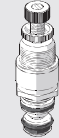
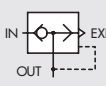
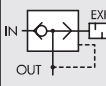
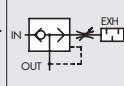
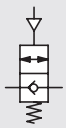


Under wall fixing



ALL THE PNEUMATIC FUNCTIONS WITH THE SAME EXTERNAL DIMENSIONS


PNV	SOV		RML ●▲	MAN ●▲	PRS ●▲	LAM ●	V2V ●▲	V3V ●▲
								
3-way pneumatic valve	Solenoid valve 3-way with silenced exhaust	Solenoid valve 3-way with conveyed exhaust	Pressure regulator	Pressure gauge	Pressure switch	Pressure indicator	Shut-off valve 2-way	Shut-off valve 3-way
								
See page E1.7	See page E1.10		See page E1.14	See page E1.18	See page E1.20	See page E1.24	See page E1.26	See page E1.26

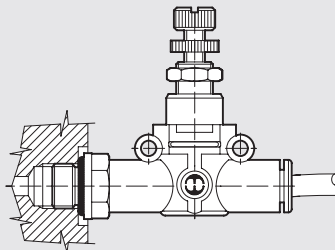
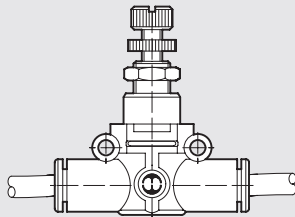
RFL ●▲		RFF		VSR ●▲		VSRR	STP	VNR ●▲	FIL ▲
									
Flow regulator unidirectional	Flow regulator bidirectional	Calibrated choke unidirectional	Calibrated choke bidirectional	Quick-exhaust valve conveyed	Quick-exhaust valve silenced	Quick-exhaust valve regulated	Stop valve	Check valve	Filter
									
See page E1.29		See page E1.34		See page E1.37		See page E1.39	See page E1.42	See page E1.45	See page E1.47

- Available also in tube Ø 1/4" version
- ▲ Available also in tube Ø 3/8" version

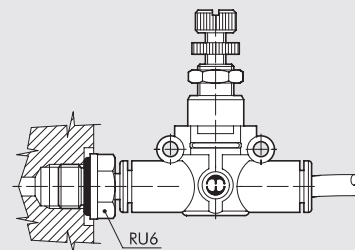
PIPE - PIPE

THREAD - PIPE

ISO 228 G (BSP) THREAD

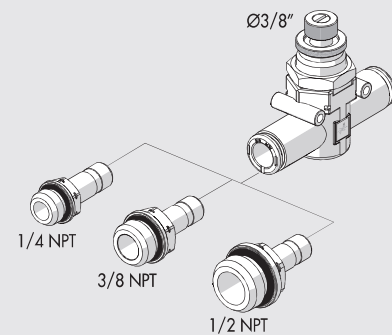
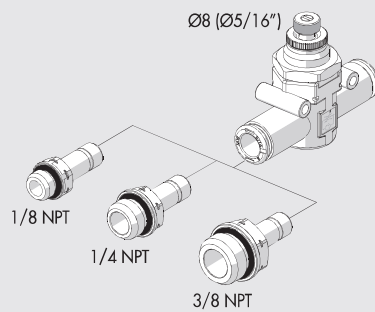
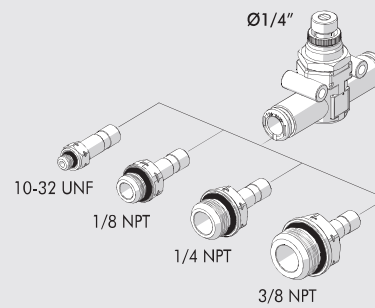
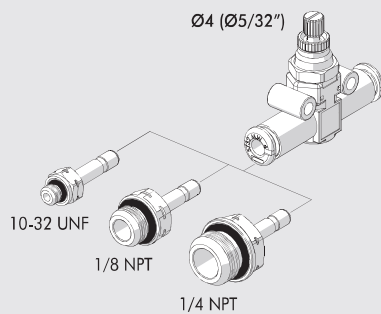


UNF or NPT THREAD

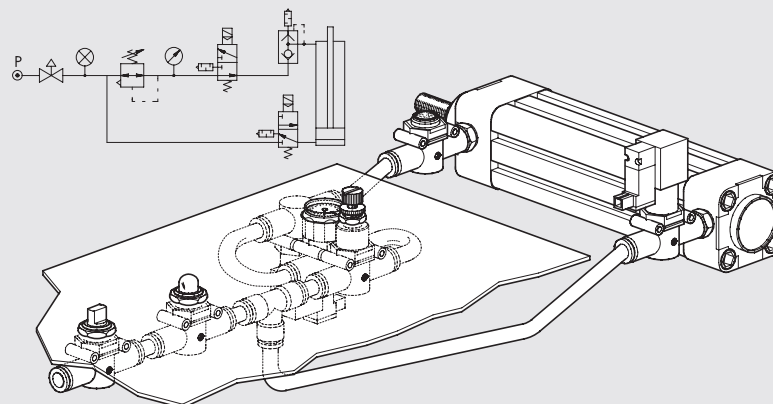


FROM TUBE - TUBE TO UNF or NPT THREAD - TUBE TRANSFORMATION

Using the RU6 fitting, it is possible to mount every Line on Line products on to the actuator or the control valve.



APPLICATION EXAMPLE



IN-LINE PNEUMATIC VALVE SERIES PNV L



The PNV L in-line pneumatic valve belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family.

It is available in a version for pipe-pipe connection, which includes two push-in fittings, and a version for thread-pipe connection, which includes a nickel-plated brass male thread and a push-in fitting.

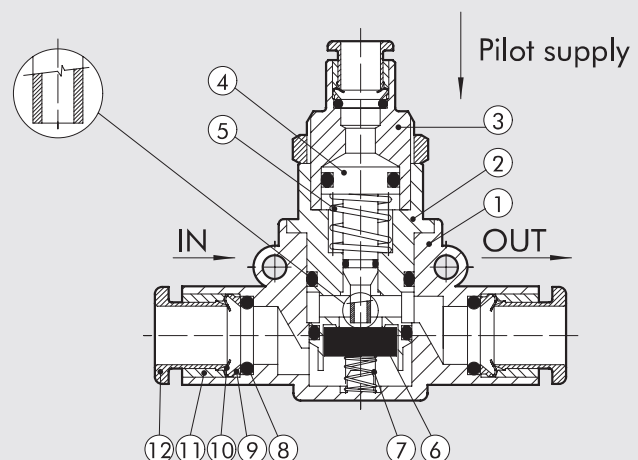
The compressed air port is a push-in fitting for Ø 4 (Ø5/32") pipe.

The valve is the normally-closed 3/2 pipe. It is a unidirectional valve, meaning it only works properly if supplied from port 1.

[illegible]

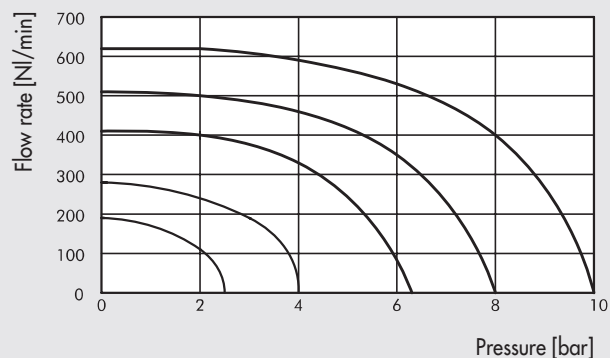
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Nickel-plated brass pilot insert
- ④ AISI 303 steel rod
- ⑤ Stainless steel clamping spring
- ⑥ NBR seal
- ⑦ Stainless steel poppet spring
- ⑧ NBR seal
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel clamping spring
- ⑪ Technopolymer stop bushing
- ⑫ Technopolymer release bushing

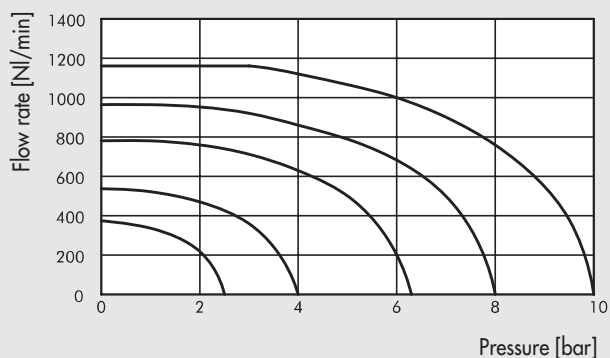


FLOW CHARTS

PNV L Ø 6

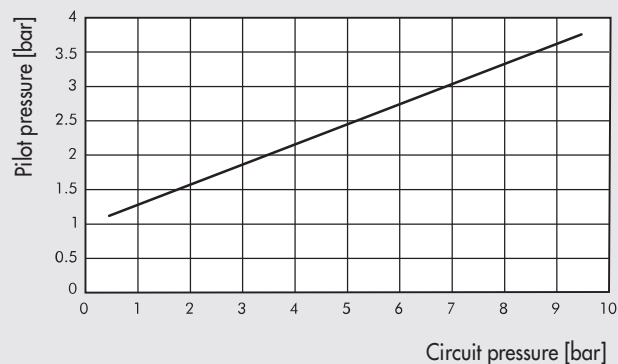


PNV L Ø 8 (Ø5/16")

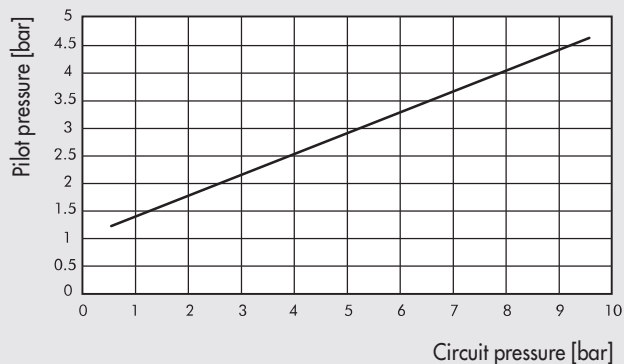


MINIMUM PILOT PRESSURE

PNV L Ø 6



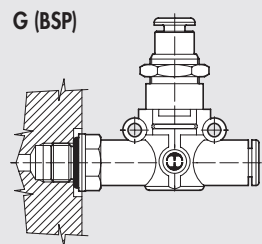
PNV L Ø 8 (Ø5/16")



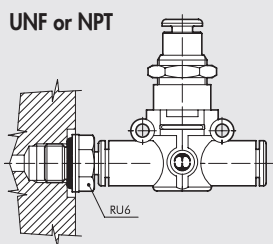
ASSEMBLY OPTIONS

A

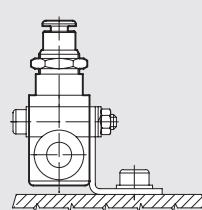
G (BSP)



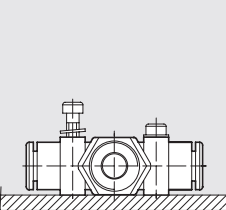
UNF or NPT



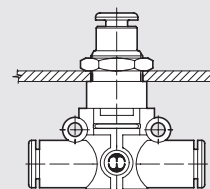
B



C



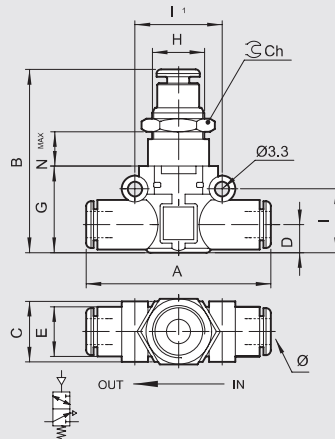
D



How to mount the PNV L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the PNV L straight onto the actuator or the control valve.
- UNF or NPT**: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the PNV L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the PNV L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the PNV L body for panel mounting.

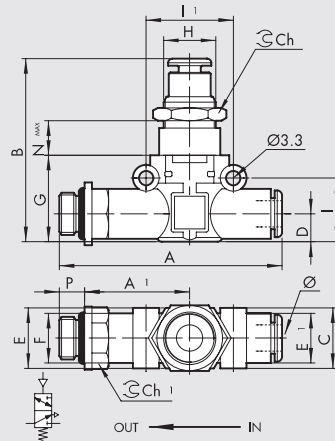
PNV L 3/2 NC PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9067616	PNV L 3/2 NC Ø6-Ø6	6	49.4	43.2	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	12
9067624	PNV L 3/2 NC Ø8-Ø8	8 ▲	57.3	49.7	18.7	9.1	13.8	26	M15x1	18.7	24	17	11.8

▲ Ø8 = Ø5/16"

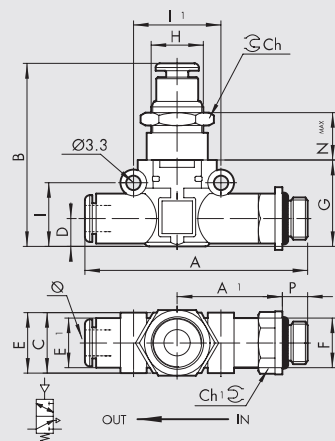
PNV L 3/2 NC PIPE - G (BSP) THREAD



Code	Ref.	F	Ø	P	A	AI	B	C	D	E	E1	G	H	I	II	Ch	Nmax
9067808	PNV L 3/2 NC Ø6-1/8	1/8	6	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12
9067809	PNV L 3/2 NC Ø6-1/4	1/4	6	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	12
9067810	PNV L 3/2 NC Ø8-1/8	1/8	8 ▲	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	11.8
9067811	PNV L 3/2 NC Ø8-1/4	1/4	8 ▲	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	11.8
9067812	PNV L 3/2 NC Ø8-3/8	3/8	8 ▲	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	11.8

▲ Ø8 = Ø5/16"

PNV L 3/2 NC G (BSP) THREAD - PIPE



Code	Ref.	Ø	F	P	A	AI	B	C	D	E	E1	G	H	I	II	Ch	Nmax
9067708	PNV L 3/2 NC 1/8-Ø6	6	1/8	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12
9067709	PNV L 3/2 NC 1/4-Ø6	6	1/4	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	12
9067710	PNV L 3/2 NC 1/8-Ø8	8 ▲	1/8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	11.8
9067711	PNV L 3/2 NC 1/4-Ø8	8 ▲	1/4	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	11.8
9067712	PNV L 3/2 NC 3/8-Ø8	8 ▲	3/8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	11.8

▲ Ø8 = Ø5/16"

IN-LINE SOLENOID VALVE SERIES SOV L

SOV L solenoid valves belong to the LINE ON LINE® family, which means they can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

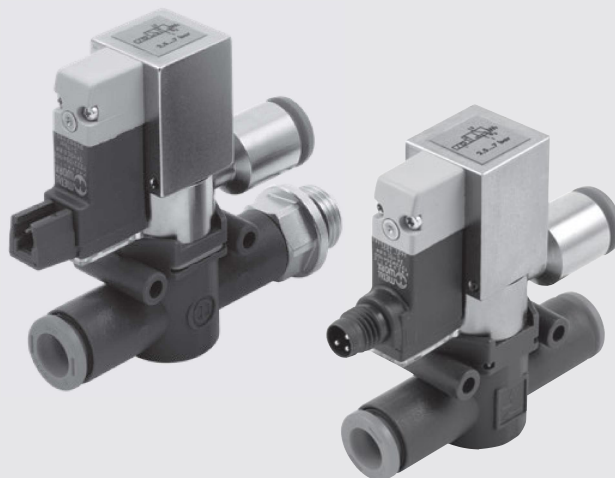
Though small in size, SOV L valves are solenoid-piloted and feature very high performance.

The spool distributor is fitted with special polyurethane gaskets to ensure a very long working life.

Each valve comes complete with a monostable manual control and LED.

The electrical connection can be the PLUG-IN type or the type with an M8 3 PIN IP65 threaded fitting.

Exhaust can be damped with an annular silencer or conveyed via a pipe fitting. The fitting for conveyed exhaust can be oriented freely.

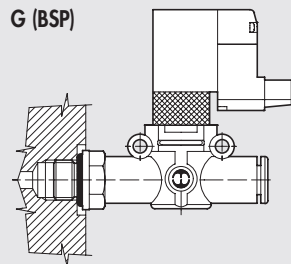


TECHNICAL DATA		Ø 6	Ø 1/4	Ø 8 (Ø5/16")
Operating pressure	MPa		0.3 to 0.7	
	bar		3 to 7	
	psi		43.5 to 101	
Temperature range	°C		5 to 50	
	°F		41 to 122	
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	270	270	500
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	380	380	700
Conductance C	Nl/min-bar	95.8	95.8	178.1
Coefficient b	bar/bar	0.145	0.145	0.129
Voltage	VDC		24	
Power			0.9	
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous		
Compatibility with oils		See chapter Z1		
Type of electrical connection		PLUG-IN - M8 3 PIN IP65 threaded fitting		

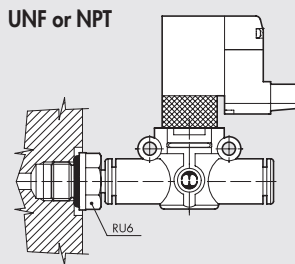
ASSEMBLY OPTIONS

Ⓐ

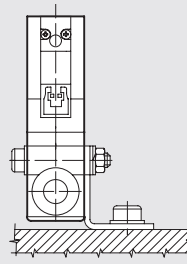
G (BSP)



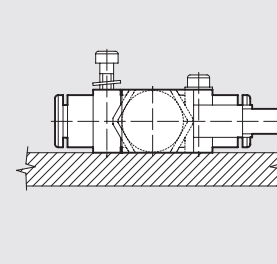
UNF or NPT



Ⓑ



Ⓒ

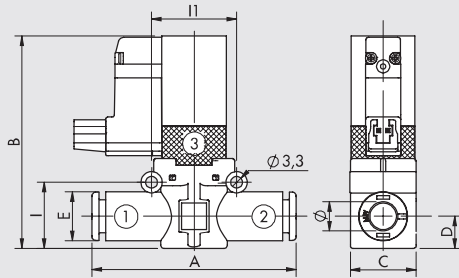


How to mount the SOV L:

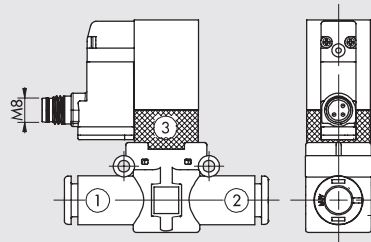
- Fig. Ⓐ **G (BSP)**: With the male threaded port it is possible to mount the SOV L straight onto the actuator.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the SOV L straight on to the actuator or the control valve.
- Fig. Ⓑ Fixing to the plate with the special SQU L bracket.
- Fig. Ⓒ There are two robust rings on the plastic body for fixing the SOV L straight onto the wall.

SOV L 3/2 NC-NO PIPE - PIPE SILENCED EXHAUST

PLUG-IN VERSION

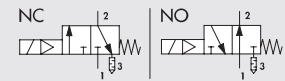


M8 VERSION



M8 CONNECTION

- 
 1 Not used
 3 0 V (Operation also with reverse polarity)
 4 +24V

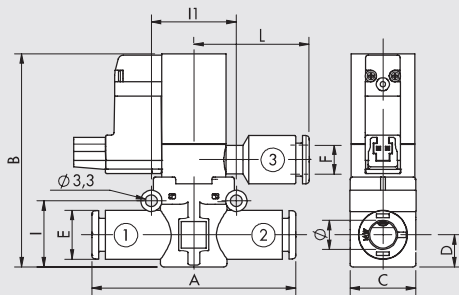


Code	Ref..	Ø	A	B	C	D	E	I	I1	Electrical connection
9069016	SOV L 3/2 NC Ø6-Ø6	6	49.4	57.5	14.7	6.4	11.4	14.6	20	PLUG-IN
906M016	SOV L 3/2 NC Ø6-Ø6 M8									M8
9069116	SOV L 3/2 NO Ø6-Ø6									PLUG-IN
9069016U	SOV L 3/2 NC Ø1/4-Ø1/4	1/4	49.4	57.5	14.7	6.4	11.4	14.6	20	PLUG-IN
906M016U	SOV L 3/2 NC Ø1/4-Ø1/4 M8									M8
9069116U	SOV L 3/2 NO Ø1/4-Ø1/4									PLUG-IN
9069024	SOV L 3/2 NC Ø8-Ø8	8 ▲	57.3	63.5	18.7	9.1	13.8	18.7	24	PLUG-IN
906M024	SOV L 3/2 NC Ø8-Ø8 M8									M8
9069124	SOV L 3/2 NO Ø8-Ø8									PLUG-IN

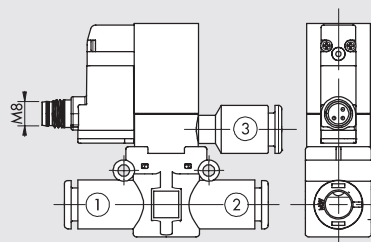
▲ Ø8 = Ø5/16"

SOV L 3/2 NC-NO PIPE - PIPE CONVEYED EXHAUST

PLUG-IN VERSION

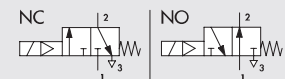


M8 VERSION



M8 CONNECTION

- 
 1 Not used
 3 0 V (Operation also with reverse polarity)
 4 +24V

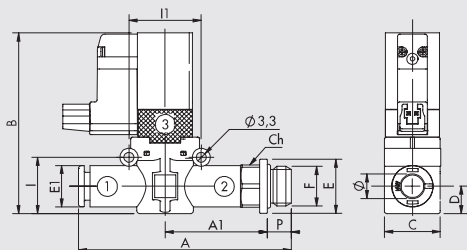


Code	Ref.	Ø	A	B	C	D	E	F	I	I1	L	Electrical connection
9069216	SOV L 3/2 NC Ø6-Ø6-Ø6	6	49.4	57.5	14.7	6.4	11.4	Ø 6	14.6	20	28.3	PLUG-IN
906M216	SOV L 3/2 NC Ø6-Ø6-Ø6 M8											M8
9069316	SOV L 3/2 NO Ø6-Ø6-Ø6											PLUG-IN
9069216U	SOV L 3/2 NC Ø1/4-Ø1/4-Ø1/4	1/4	49.4	57.5	14.7	6.4	11.4	Ø 1/4	14.6	20	28.3	PLUG-IN
906M216U	SOV L 3/2 NC Ø1/4-Ø1/4-Ø1/4 M8											M8
9069316U	SOV L 3/2 NO Ø1/4-Ø1/4-Ø1/4											PLUG-IN
9069224	SOV L 3/2 NC Ø8-Ø8-Ø8	8 ▲	57.3	63.5	18.7	9.1	13.8	Ø 8 ▲	18.7	24	30	PLUG-IN
906M224	SOV L 3/2 NC Ø8-Ø8-Ø8 M8											M8
9069324	SOV L 3/2 NO Ø8-Ø8-Ø8											PLUG-IN

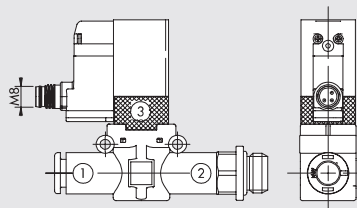
▲ Ø8 = Ø5/16"

SOV L 3/2 NC-NO PIPE - G (BSP) THREAD SILENCED EXHAUST

PLUG-IN VERSION



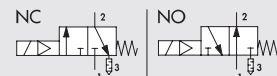
M8 VERSION



M8 CONNECTION



- 1 Not used
3 0 V (Operation also with reverse polarity)
4 +24V

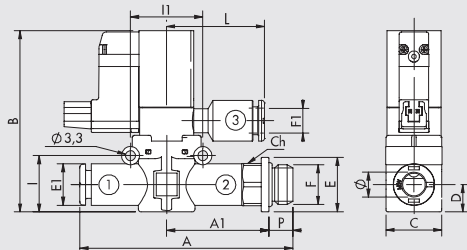


Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	I	I1	Ch	Electrical connection
9069408	SOV L 3/2 NC Ø6-1/8	6	1/8	6	58.5	27.8	57.5	14.7	6.4	14	11.4	14.6	20	12	PLUG-IN
906M408	SOV L 3/2 NC Ø6-1/8 M8														M8
9069508	SOV L 3/2 NO Ø6-1/8														PLUG-IN
9069409	SOV L 3/2 NC Ø6-1/4	6	1/4	8	61.5	28.8	57.5	14.7	6.4	18	11.4	14.6	20	14	PLUG-IN
906M409	SOV L 3/2 NC Ø6-1/4 M8														M8
9069509	SOV L 3/2 NO Ø6-1/4														PLUG-IN
9069410	SOV L 3/2 NC Ø8-1/8	8 ▲	1/8	6	66.2	31.8	63.5	18.7	9.1	15	13.8	18.7	24	14	PLUG-IN
906M410	SOV L 3/2 NC Ø8-1/8 M8														M8
9069510	SOV L 3/2 NO Ø8-1/8														PLUG-IN
9069411	SOV L 3/2 NC Ø8-1/4	8 ▲	1/4	8	70.6	34.2	63.5	18.7	9.1	18	13.8	18.7	24	14	PLUG-IN
906M411	SOV L 3/2 NC Ø8-1/4 M8														M8
9069511	SOV L 3/2 NO Ø8-1/4														PLUG-IN
9069412	SOV L 3/2 NC Ø8-3/8	8 ▲	3/8	9	72.2	34.8	63.5	18.7	9.1	22	13.8	18.7	24	17	PLUG-IN
906M412	SOV L 3/2 NC Ø8-3/8 M8														M8
9069512	SOV L 3/2 NO Ø8-3/8														PLUG-IN

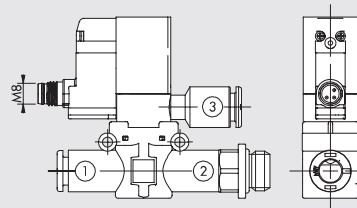
▲ Ø8 = Ø5/16"

SOV L 3/2 NC-NO PIPE - G (BSP) THREAD CONVEYED EXHAUST

PLUG-IN VERSION



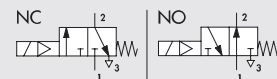
M8 VERSION



M8 CONNECTION



- 1 Not used
3 0 V (Operation also with reverse polarity)
4 +24V

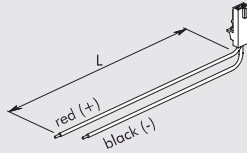


Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	F1	I	I1	L	Ch	Electrical connection
9069608	SOV L 3/2 NC Ø6-1/8-Ø6	6	1/8	6	58.5	27.8	57.5	14.7	6.4	14	11.4	Ø 6	14.6	20	28.3	12	PLUG-IN
906M608	SOV L 3/2 NC Ø6-1/8-Ø6 M8																M8
9069708	SOV L 3/2 NO Ø6-1/8-Ø6																PLUG-IN
9069609	SOV L 3/2 NC Ø6-1/4-Ø6	6	1/4	8	61.5	28.8	57.5	14.7	6.4	18	11.4	Ø 6	14.6	20	28.3	14	PLUG-IN
906M609	SOV L 3/2 NC Ø6-1/4-Ø6 M8																M8
9069709	SOV L 3/2 NO Ø6-1/4-Ø6																PLUG-IN
9069610	SOV L 3/2 NC Ø8-1/8-Ø8	8 ▲	1/8	6	66.2	31.8	63.5	18.7	9.1	15	13.8	Ø 8 ▲	18.7	24	30	14	PLUG-IN
906M610	SOV L 3/2 NC Ø8-1/8-Ø8 M8																M8
9069710	SOV L 3/2 NO Ø8-1/8-Ø8																PLUG-IN
9069611	SOV L 3/2 NC Ø8-1/4-Ø8	8 ▲	1/4	8	70.6	34.2	63.5	18.7	9.1	18	13.8	Ø 8 ▲	18.7	24	30	14	PLUG-IN
906M611	SOV L 3/2 NC Ø8-1/4-Ø8 M8																M8
9069711	SOV L 3/2 NO Ø8-1/4-Ø8																PLUG-IN
9069612	SOV L 3/2 NC Ø8-3/8-Ø8	8 ▲	3/8	9	72.2	34.8	63.5	18.7	9.1	22	13.8	Ø 8 ▲	18.7	24	30	17	PLUG-IN
906M612	SOV L 3/2 NC Ø8-3/8-Ø8 M8																M8
9069712	SOV L 3/2 NO Ø8-3/8-Ø8																PLUG-IN

▲ Ø8 = Ø5/16"

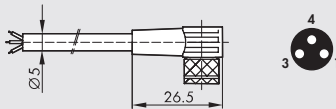
ACCESSORIES

PLUG-IN CONNECTOR



Code	Description
W0970512000	Plug-in connector Mach 11 L = 300 mm
W0970512007	Plug-in connector Mach 11 L = 1 m
W0970512002	Plug-in connector Mach 11 L = 2 m

90° M8 CONNECTOR WITH CABLE

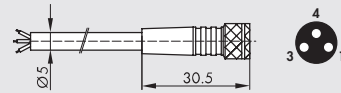


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 STRAIGHT CONNECTOR WITH CABLE

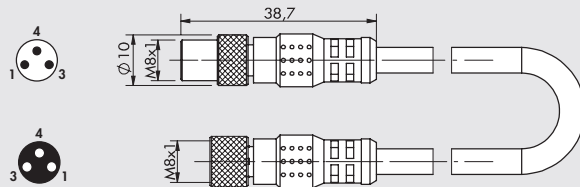


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 M - M8 F CONNECTOR

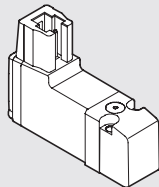


Code	Description
0240009009	M8-M8 3-pin straight connector with cable L = 3 m

Note: Can be used for direct connection to the modules with digital OUTPUT of the EB 80 valves

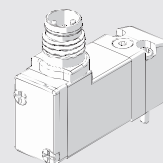
SPARE PARTS

PLUG-IN PILOT



Code	Description
722213541100	PLT-10 722213541100

M8 PILOT



Code	Description
7222M3541100	PLT-10 3/2 NC 0.8W 24VDC LED M8 with manual

MINIATURE REDUCER/ECONOMIZER, SERIES RML, RMC AND RMS

The RML R miniature pressure regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products.

The miniature pressure regulator is available in five different types:

- In-line with push-in input and output fitting
- In-line with threaded input port and push-in output fitting
- In-line with push-in input fitting and threaded output port
- At an angle with threaded input port and push-in output fitting
- Cartridge type for direct assembly in suitably worked slot.

The miniature pressure regulator is fitted with a relief valve for over-pressure exhaust.

- Particularly suitable for use between the valve and actuator and as a pressure regulator in secondary branches of the pneumatic system.



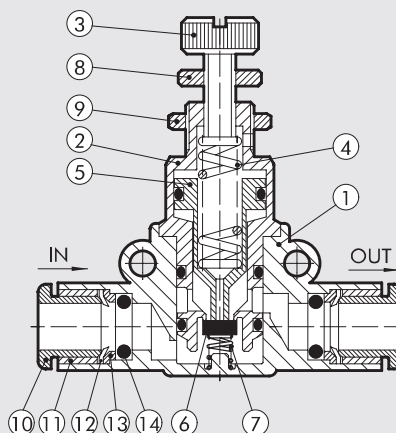
TECHNICAL DATA		RML					RMC			RMS		
		Ø 6	Ø 1/4"	Ø 8 (Ø 5/16")	Ø 3/8"	Ø 10	1/8	1/4	3/8	1/8	1/4	3/8
Threaded ports	G (BSP)	1/8"-1/4"	-	1/8"-1/4"-3/8"	-	1/4"-3/8"-1/2"	1/8"	1/4"	3/8"	1/8"	1/4"	3/8"
Pipe coupling	Ø	6	1/4"	8 ▲	3/8"	10	4 ▲ - 6 - 8	6 - 8	10	8 ▲ - 10 - 12	-	-
Regulation range		1 to 8 bar - 0.1 to 0.8 MPa - 14.5 to 116 psi										
Inlet pressure	MPa	0.2 to 1										
	bar	2 to 10										
	psi	29 to 145										
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 1 bar	Nl/min	150	260	300	300	150	260	300	150	260	300	300
Flow rate on exhaust at 6.3 bar (0.63 MPa - 91 psi)	Nl/min	400	600	1000	1000	400	600	1000	400	600	1000	1000
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous										
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	- 20 to + 60										
	°F	- 4 to + 140										
Assembly position		Available										
Notes		In the miniature regulator the pressure must always be set upwards										
Compatibility with oils		See chapter Z1										

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

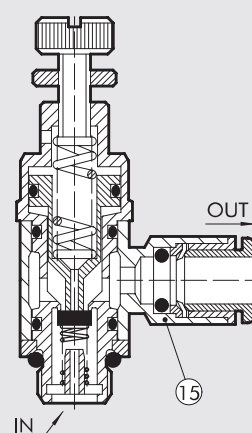
COMPONENTS

- 1 Technopolymer body (brass for RMC)
- 2 Nickel-plated brass insert
- 3 Nickel-plated brass adjusting screw
- 4 Steel adjusting spring
- 5 Brass piston rod
- 6 NBR shutter
- 7 Stainless steel shutter spring
- 8 Adjusting screw ring nut
- 9 Nickel-plated brass wall ring nut
- 10 Technopolymer release bushing
- 11 Technopolymer stop bushing (brass for RMC)
- 12 Stainless steel crimping spring
- 13 Technopolymer spring ring
- 14 NBR gasket
- 15 Nickel-plated brass rotating ring

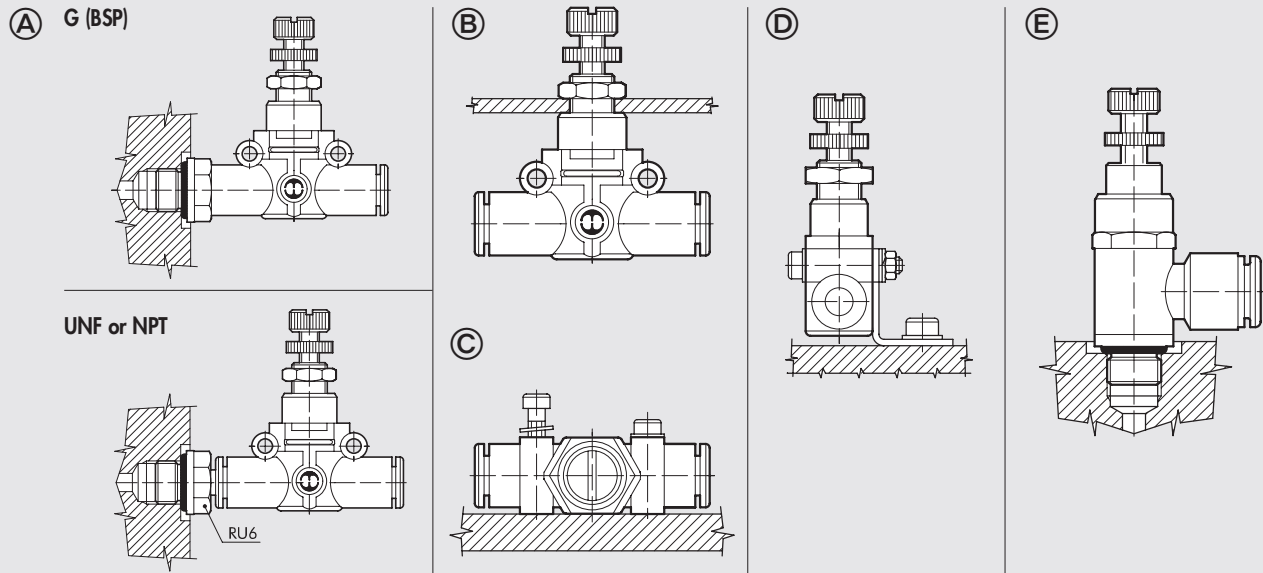
RML



RMC



ASSEMBLY OPTIONS

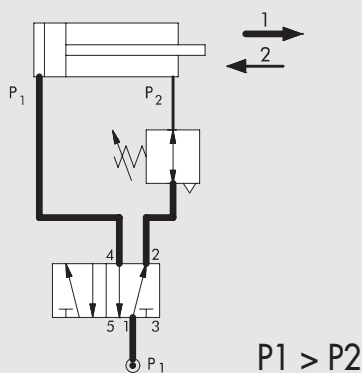


How to assembly RML/RMC:

- Fig. ① **G (BSP)**: Thanks to the male threaded part it's possible to assembly directly on the actuator or on the valve.
- **UNF or NPT**: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the RML straight on to the actuator or the control valve.
- Fig. ② By using the ring nut screwed on the threaded body it's possible the assembling on panels.
- Fig. ③ On the plastic body there are two strong ring for the direct wall assembly.
- Fig. ④ Fixing on plate trough the proper small square SQU L, except for Ø3/8 and Ø10.
- Fig. ⑤ For maintaining the tube the most parallel possible to the system, had been designed a specific version (RMC) with inlet and outlet at 90°.

POSSIBLE APPLICATIONS

ECONOMIZER

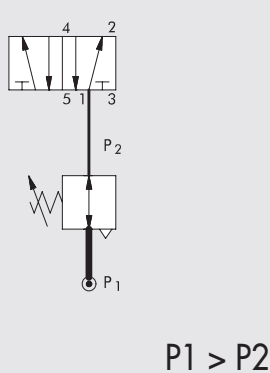


If in a cylinder you require a thrust in one direction only, e.g. piston rod extension, and a lower thrust and pressure is sufficient in the other direction, you can save a lot of energy by mounting an economizer valve.

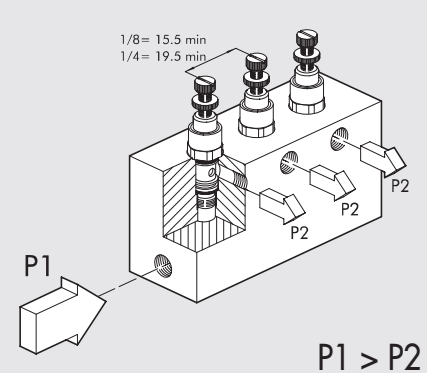
Example

Cylinder Ø 80 mm, stroke 200 mm, 6 bar,
12 cycles/min, 16 hours a day, 230 days a year.
Consumption: 144 Nl/min => 3460 kWh/year =>
880 litres of oil => 2428 kg of CO₂ => € 346/year.
If you install an economizer that reduces the pressure
from 6 to 2 bar, you SAVE: € 115/year.

REMOTE REDUCER



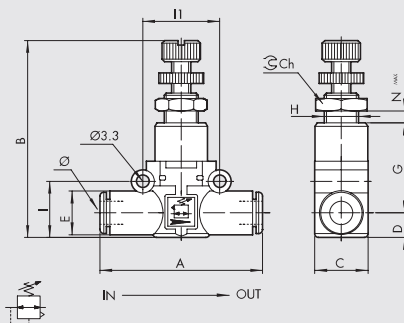
CARTRIDGE REDUCER, SERIE RMS



The cartridge regulator can be used:

- Fitted directly into the structure or along the air supply ducting.
- Package with common feed and separate regulated outlets.

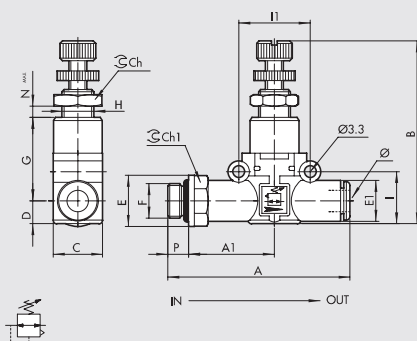
LINE-MOUNTED MINIATURE REDUCER, SERIES RML



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9061316	RML Ø6-Ø6	6	49.4	46±52	14.7	6.4	11.4	24.8	M9x0.75	14.6	20	11	4.5
9061316U	RML Ø1/4-Ø1/4	1/4	49.4	46±52	14.7	6.4	11.4	24.8	M9x0.75	14.6	20	11	4.5
9061324	RML Ø8-Ø8	8 ▲	57.3	52±58	18.7	9.1	13.8	27.4	M11x1	18.7	24	13	3.8
9061332U	RML Ø3/8-Ø3/8	3/8	65	59±66	21	10.9	16	30	M13x1	21.4	26	16	4.5
9061332	RML Ø10-Ø10	10	65	59±66	21	10.9	16	30	M13x1	21.4	26	16	4.5

▲ Ø8 = Ø5/16"

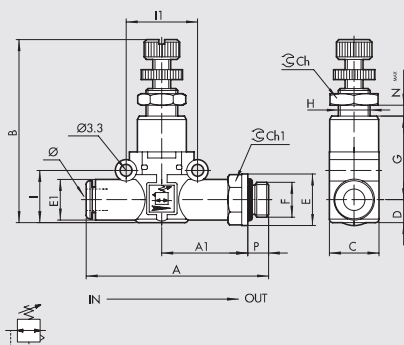
LINE-MOUNTED G (BSP) THREAD - PIPE MINIATURE REDUCER SERIES RML



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9061408	RML 1/8-Ø6	1/8	6	6	58.5	27.8	46±52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061409	RML 1/4-Ø6	1/4	6	8	61.5	28.8	46±52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061410	RML 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	52±58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061411	RML 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	52±58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061412	RML 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	52±58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8
9061415	RML 1/4-Ø10	1/4	10	8	79.9	39.2	59±66	21	10.9	18	16	30	M13x1	21.4	26	16	16	4.5
9061416	RML 3/8-Ø10	3/8	10	9	81.2	40.4	59±66	21	10.9	20	16	30	M13x1	21.4	26	16	17	4.5
9061417	RML 1/2-Ø10	1/2	10	11	83.7	40	59±66	21	10.9	26	16	30	M13x1	21.4	26	16	22	4.5

▲ Ø8 = Ø5/16"

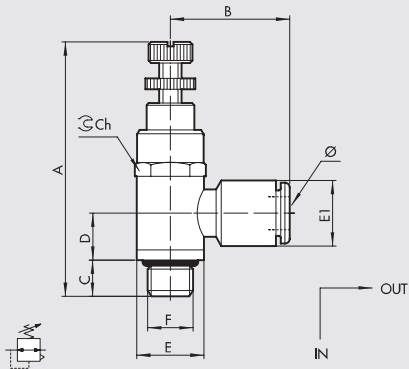
LINE-MOUNTED PIPE - G (BSP) THREAD MINIATURE REDUCER, SERIES RML



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9061508	RML Ø6-1/8	6	1/8	6	58.5	27.8	46±52	14.7	6.4	14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
9061509	RML Ø6-1/4	6	1/4	8	61.5	28.8	46±52	14.7	6.4	18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
9061510	RML Ø8-1/8	8 ▲	1/8	6	66.2	31.8	52±58	18.7	9.1	15	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061511	RML Ø8-1/4	8 ▲	1/4	8	70.6	34.2	52±58	18.7	9.1	18	13.8	27.4	M11x1	18.7	24	13	14	3.8
9061512	RML Ø8-3/8	8 ▲	3/8	9	72.2	34.8	52±58	18.7	9.1	22	13.8	27.4	M11x1	18.7	24	13	17	3.8
9061515	RML Ø10-1/4	10	1/4	8	79.9	39.2	59±66	21	10.9	18	16	30	M13x1	21.4	26	16	16	4.5
9061516	RML Ø10-3/8	10	3/8	9	81.2	40.4	59±66	21	10.9	20	16	30	M13x1	21.4	26	16	17	4.5
9061517	RML Ø10-1/2	10	1/2	11	83.7	40	59±66	21	10.9	26	16	30	M13x1	21.4	26	16	22	4.5

▲ Ø8 = Ø5/16"

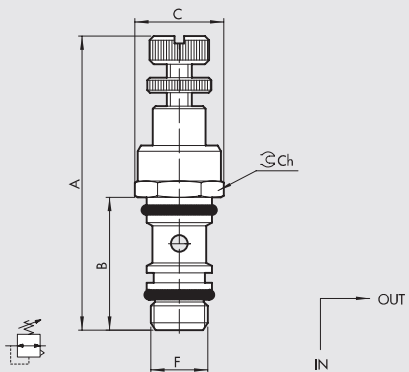
MINIATURE REDUCER, SERIES RMC



Code	Ref.	Ø	F	A	B	C	D	E	E1	Ch
9061102	RMC 1/8-Ø4	4 ▲	1/8	51÷57	20.4	7.1	12.7	14	9.5	14
9061108	RMC 1/8-Ø6	6	1/8	51÷57	23.7	7.1	12.7	14	11.3	14
9061110	RMC 1/8-Ø8	8 ▲	1/8	51÷57	25.6	7.1	12.7	14	13.8	14
9061109	RMC 1/4-Ø6	6	1/4	57÷63	25.1	9	11	18	11.3	17
9061111	RMC 1/4-Ø8	8 ▲	1/4	57÷63	27	9	11	18	13.8	17
9061112	RMC 1/4-Ø10	10	1/4	57÷63	32.2	9	11	18	16.5	17
9061113	RMC 3/8-Ø8	8 ▲	3/8	67÷74	28.5	9	13.4	21	13.8	21
9061114	RMC 3/8-Ø10	10	3/8	67÷74	32.8	9	13.4	21	16	21
9061115	RMC 3/8-Ø12	12	3/8	67÷74	35.3	9	13.4	21	19.5	21

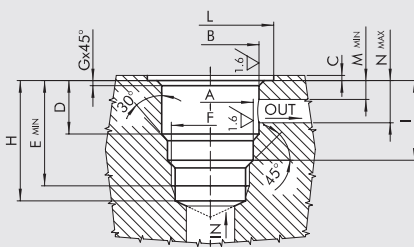
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

CARTRIDGE REDUCER, SERIES RMS



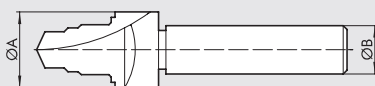
Code	Ref.	F	A	B	C	Ch
9061001	RMS 1/8	1/8	51÷57	24.3	15	14
9061002	RMS 1/4	1/4	57÷63	27.8	19	17
9061003	RMS 3/8	3/8	67÷74	33	23.5	21

SEAT OF A MINIATURE CARTRIDGE REDUCER



Code	F	A	B	C	D	E	G	H	I	L	M	N
SE.RMS 1/8	1/8	9.8 +0.1/-0	11.2 ±0.05	0.5 ±0.5	15.6 ±0.07	24.6	0.3	27	18.1 ±0.2	15.4	3.5	12
SE.RMS 1/4	1/4	13.5 +0.1/-0	14.4 ±0.05	0.5 ±0.5	17.5 ±0.07	28	0.4	31.2	20.8 ±0.2	19.4	3.5	13.5
SE.RMS 3/8	3/8	17 +0.1/-0	17.7 ±0.05	0.5 ±0.5	22 ±0.07	33.5	0.8	42	25.2 ±0.2	23.8	3.6	16.2

TOOL FOR RMS SEAT



Code	Ref.	Ø A	Ø B
9062001	UT.SE 1/8	16	12
9062002	UT.SE 1/4	20	15
9062003	UT.SE 3/8	26	15

IN-LINE PRESSURE GAUGE SERIES MAN L

The MAN L pressure gauge belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

Though small in size, this pressure gauge, which is supplied in a metal casing, ensures accurate reading. It can be angled in any direction simply by rotating manually.

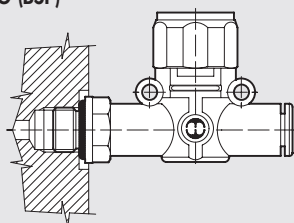


TECHNICAL DATA		Ø 4 (Ø5/32")	Ø 6	Ø 1/4"	Ø 8 (Ø5/16")	Ø 3/8"	Ø 10
Operating pressure	MPa				1.2		
	bar				12		
	psi				174		
Temperature range	°C				- 20 to + 60		
	°F				- 4 to + 140		
Precision					± 4% full scale		
Recommended pipe					Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid					Lubricated or unlubricated filtered compressed air; if used, must be continuous		
Compatibility with oils					See chapter Z1		

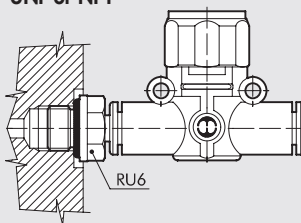
ASSEMBLY OPTIONS

Ⓐ

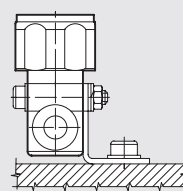
G (BSP)



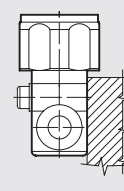
UNF or NPT



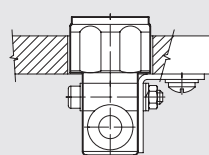
Ⓑ



Ⓒ



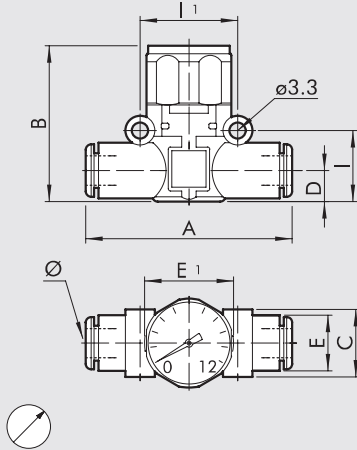
Ⓓ



How to mount the MAN L:

- Fig. Ⓐ **G (BSP)**: With the male threaded port it is possible to mount the MAN L straight onto the female thread.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the MAL L straight on to the actuator or the control valve.
- Fig. Ⓑ Fixing to the plate with the special SQU L bracket, except for Ø3/8 and Ø10.
- Fig. Ⓒ There are two robust rings on the plastic body for fixing the MAN L straight onto the wall.
- Fig. Ⓓ Use the SQL L bracket for panel mounting the MAN L.

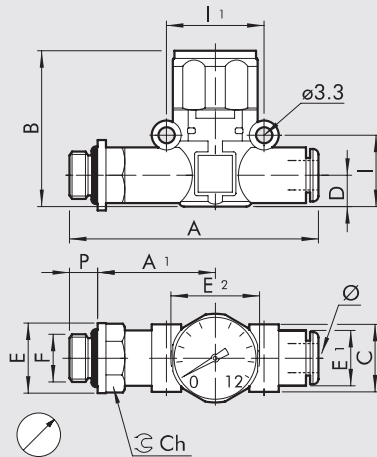
MAN L PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	E1	I	II
9067001	MAN L Ø4-Ø4	4 ▲	41.8	36.1	10.7	5.6	10	23	12.8	16
9067016	MAN L Ø6-Ø6	6	49.4	35	14.7	6.4	11.4	23	14.6	20
9067016U	MAN L Ø1/4-Ø1/4	1/4	49.4	35	14.7	6.4	11.4	23	14.6	20
9067024	MAN L Ø8-Ø8	8 ▲	57.3	41	18.7	9.1	13.8	23	18.7	24
9067032U	MAN L Ø3/8-Ø3/8	3/8	65.4	45	20.7	10.9	16	23	21.4	26
9067032	MAN L Ø10-Ø10	10	65.7	45	20.7	10.9	16	23	21.4	26

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

MAN L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	I	II	Ch
9067101	MAN L M5-Ø4	M5	4 ▲	4	47.7	22.7	36.1	10.7	5.6	9.9	10	23	12.8	16	9
9067102	MAN L 1/8-Ø4	1/8	4 ▲	6	51.5	24.6	36.1	10.7	5.6	14	10	23	12.8	16	12
9067108	MAN L 1/8-Ø6	1/8	6	6	58.5	27.8	35	14.7	6.4	14	11.4	23	14.6	20	12
9067109	MAN L 1/4-Ø6	1/4	6	8	61.5	28.8	35	14.7	6.4	18	11.4	23	14.6	20	14
9067110	MAN L 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	41	18.7	9.1	15	13.8	23	18.7	24	14
9067111	MAN L 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	41	18.7	9.1	18	13.8	23	18.7	24	14
9067112	MAN L 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	41	18.7	9.1	22	13.8	23	18.7	24	17
9067115	MAN L 1/4-Ø10	1/4	10	8	79.9	39.2	45	20.7	10.9	18	16	23	21.4	26	16
9067116	MAN L 3/8-Ø10	3/8	10	9	81.2	40.4	45	20.7	10.9	20	16	23	21.4	26	17
9067117	MAN L 1/2-Ø10	1/2	10	11	83.7	40	45	20.7	10.9	26	16	23	21.4	26	22

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

NOTES

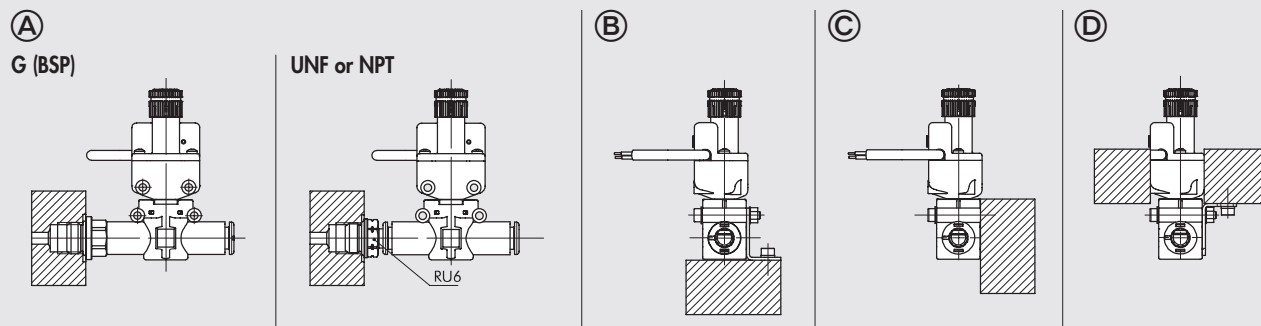
IN LINE PRESSURE SWITCH SERIES PRS L

The PRS L pressure switch belongs to the LINE ON LINE® range and can therefore be connected in series or in parallel to all other products. It is available in a version for tube-to-tube connection, which includes two automatic fittings, or in a version for thread-to-tube connection, which includes a nickel-plated brass male thread and an automatic fitting. The pressure switch can be installed in any position and orientation. It is supplied pre-assembled and complete with an electrical cable to save wiring time. You can choose between a 2-metre cable or an M8 connector with a 300-mm cable. It is a switchover contact, which means that both normally open and normally closed signals are provided. Adjustment is by means of a knurled knob with a push-lock system.



TECHNICAL DATA		Ø 6	Ø 1/4"	Ø 8 (Ø5/16")	Ø 3/8"	Ø 10
Maximum pressure	MPa			1		
	bar			10		
	psi			145		
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C			50		
	°F			122		
Adjustable pressure interval	bar			0.5 to 10		
Hysteresis (not adjustable)	bar			From 0.4 to 0.8 (see diagram following pages)		
Maximum current	A			2		
Maximum voltage	V			250		
Outside diameter of cable	mm			4.9		
Number of wires and cross section				3 x 0.5 mm ²		
Contacts				Normally-Open (NO) and Normally-Closed (NC)		
Protection				IP65		
Number of switchings				5 x 10 ⁶		
Recommended pipe				Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene		
Fluid				Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
Mounting position				In any position		

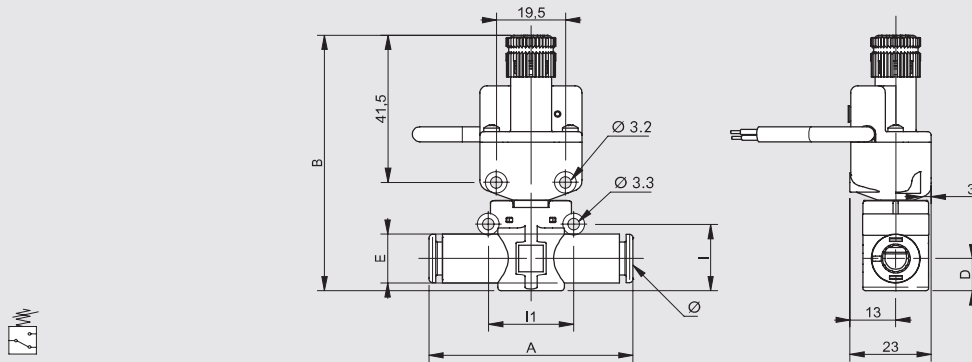
ASSEMBLY OPTIONS



How to mount the PRS L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the PRS L straight onto the female thread.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the PRS L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket, except for Ø3/8 and Ø10.
- Fig. C There are two robust rings on the plastic body for fixing the PRS L straight onto the wall.
- Fig. D Use the SQU L bracket for panel mounting the PRS L.

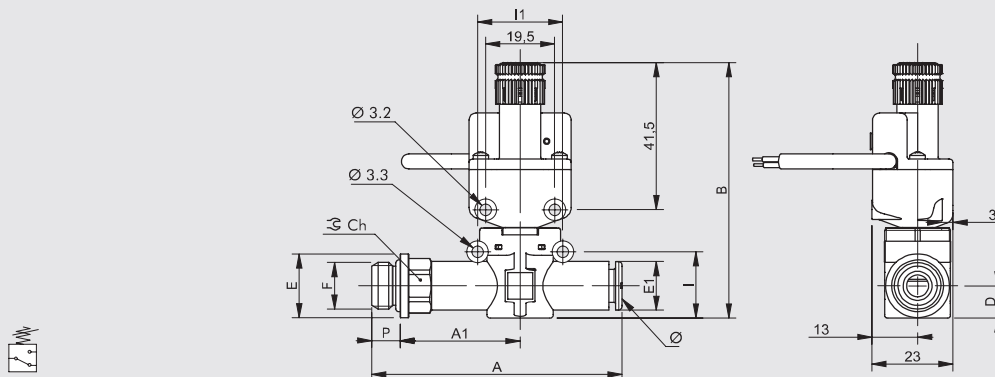
PRS L PIPE - PIPE



Code	Ref.	Ø	A	B	D	E	I	I1
9070016	PRS L Ø6-Ø6 2 metres cable	6	49.4	~ 72	6.4	11.4	14.6	20
9070116	PRS L Ø6-Ø6 M8 connector	6	49.4	~ 72	6.4	11.4	14.6	20
9070016U	PRS L Ø1/4-Ø1/4 2 metres cable	1/4	49.4	~ 72	6.4	11.4	14.6	20
9070116U	PRS L Ø1/4-Ø1/4 M8 connector	1/4	49.4	~ 72	6.4	11.4	14.6	20
9070024	PRS L Ø8-Ø8 2 metres cable	8 ▲	57.3	~ 73	9.1	13.8	18.7	24
9070124	PRS L Ø8-Ø8 M8 connector	8 ▲	57.3	~ 73	9.1	13.8	18.7	24
9070032U	PRS L Ø3/8-Ø3/8 2 metres cable	3/8	65.4	~ 76	10.9	16	21.4	26
9070132U	PRS L Ø3/8-Ø3/8 M8 connector	3/8	65.4	~ 76	10.9	16	21.4	26
9070032	PRS L Ø10-Ø10 2 metres cable	10	65.7	~ 76	10.9	16	21.4	26
9070132	PRS L Ø10-Ø10 M8 connector	10	65.7	~ 76	10.9	16	21.4	26

▲ Ø8 = Ø5/16"

PRS L THREAD - PIPE

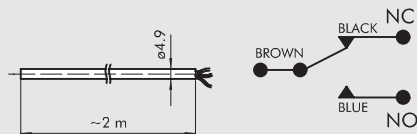


Code	Ref.	F	Ø	P	A	A1	B	D	E	E1	I	I1	Ch
9070208	PRS L 1/8-Ø6 2 metres cable	1/8	6	6	58.5	27.8	~ 72	6.4	14	11.4	14.6	20	12
9070308	PRS L 1/8-Ø6 M8 connector	1/8	6	6	58.5	27.8	~ 72	6.4	14	11.4	14.6	20	12
9070209	PRS L 1/4-Ø6 2 metres cable	1/4	6	8	61.5	28.8	~ 72	6.4	18	11.4	14.6	20	14
9070309	PRS L 1/4-Ø6 M8 connector	1/4	6	8	61.5	28.8	~ 72	6.4	18	11.4	14.6	20	14
9070210	PRS L 1/8-Ø8 2 metres cable	1/8	8 ▲	6	66.2	31.8	~ 73	9.1	15	13.8	18.7	24	12
9070310	PRS L 1/8-Ø8 M8 connector	1/8	8 ▲	6	66.2	31.8	~ 73	9.1	15	13.8	18.7	24	12
9070211	PRS L 1/4-Ø8 2 metres cable	1/4	8 ▲	8	70.6	34.2	~ 73	9.1	18	13.8	18.7	24	14
9070311	PRS L 1/4-Ø8 M8 connector	1/4	8 ▲	8	70.6	34.2	~ 73	9.1	18	13.8	18.7	24	14
9070212	PRS L 3/8-Ø8 2 metres cable	3/8	8 ▲	9	72.2	34.8	~ 73	9.1	22	13.8	18.7	24	17
9070312	PRS L 3/8-Ø8 M8 connector	3/8	8 ▲	9	72.2	34.8	~ 73	9.1	22	13.8	18.7	24	17
9070215	PRS L 1/4-Ø10 2 metres cable	1/4	10	8	79.9	39.2	~ 76	10.9	18	16	21.4	26	16
9070315	PRS L 1/4-Ø10 M8 connector	1/4	10	8	79.9	39.2	~ 76	10.9	18	16	21.4	26	16
9070216	PRS L 3/8-Ø10 2 metres cable	3/8	10	9	81.2	40.4	~ 76	10.9	20	16	21.4	26	17
9070316	PRS L 3/8-Ø10 M8 connector	3/8	10	9	81.2	40.4	~ 76	10.9	20	16	21.4	26	17
9070217	PRS L 1/2-Ø10 2 metres cable	1/2	10	11	83.7	40	~ 76	10.9	26	16	21.4	26	22
9070317	PRS L 1/2-Ø10 M8 connector	1/2	10	11	83.7	40	~ 76	10.9	26	16	21.4	26	22

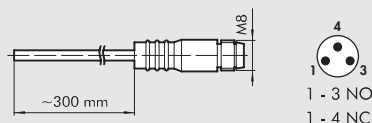
▲ Ø8 = Ø5/16"

WIRING DIAGRAM

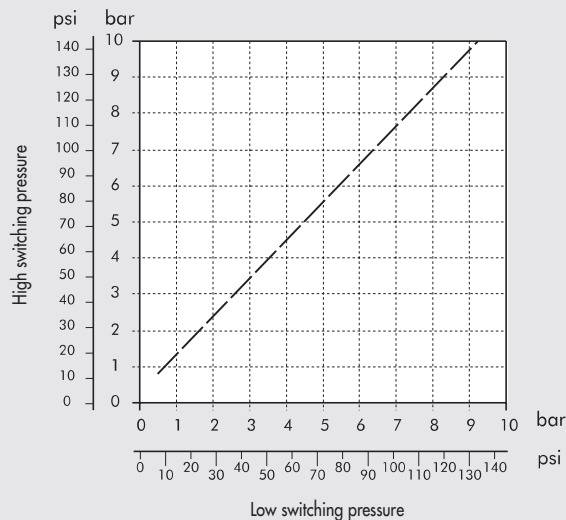
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR

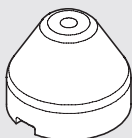


HYSTERESIS GRAPH



ACCESSORIES

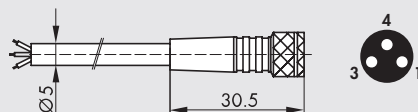
SECURITY KNOB



Code	Description
9200703	Security knob APR / pressure switch

Note: Pull outwards to remove the knob from the pressure switch on the unit. Insert the security knob and regulate the pressure switch. Then press the handle firmly to lock it in position. If the pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

M8 STRAIGHT CONNECTOR WITH CABLE

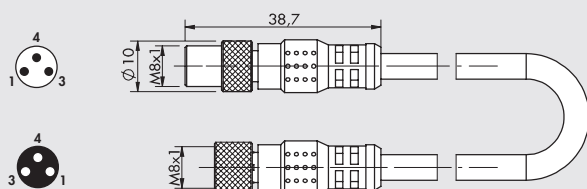


Pin	Cable color
1	Brown
3	Blue
4	Black

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Very flexible cables, class 6 according to IEC 60228

M8 ADAPTER CABLE FOR CONNECTING THE PRESSURE SWITCH TO THE EB 80 E CM DIGITAL INPUTS MODULE



Code	Description
0240010501	M8-M, M8-F 3-pole adapter with cable L = 0.3 m

Note: Can be used to connect the pressure switch to the module of digital INPUT 501 of the EB 80 valves, to the additional M8 INPUT module of the CM valves and to the Profibus-DP IP67 M8 input. Contact type NO (Normally open)

M8F	M8M	Function
pin 1	pin 1	Power supply +
pin 3	pin 4	Signal NO
pin 4	pin 3	Disconnect

NOTES



NOTES

IN-LINE PRESSURE INDICATOR SERIES LAM L

The LAM L pneumatic light indicator belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

When there is no pressure, the clear technopolymer bell looks empty.

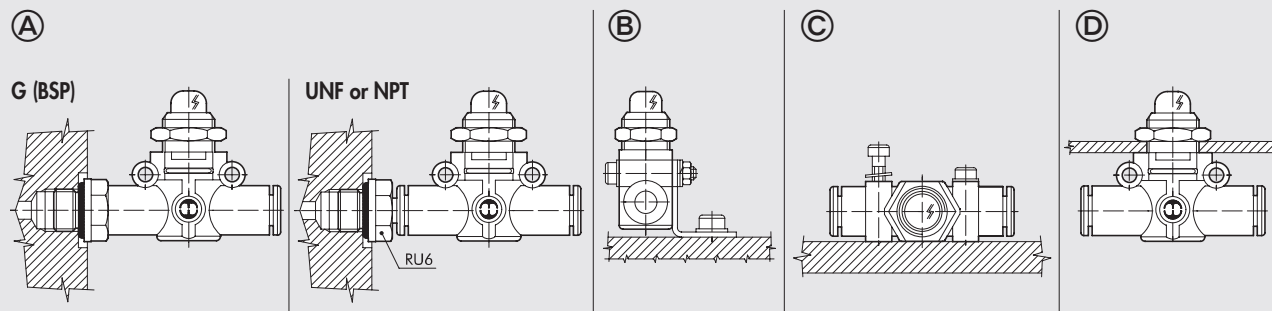
When there is pressure, a red signal appears.

The clear bell can be cleaned using normal detergents or ethyl alcohol, as the technopolymer used is fully compatible.



TECHNICAL DATA		Ø 6	Ø 1/4"	Ø 8 (Ø5/16")
Operating pressure	MPa		0.2 to 1	
	bar		2 to 10	
	psi		29 to 145	
Temperature range	°C		- 20 to + 60	
	°F		- 4 to + 140	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	420	420	800
Colour with pressure			Orange - Green	
Recommended pipe			Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid			Lubricated or unlubricated filtered compressed air; if used, must be continuous	
Compatibility with oils			See chapter Z1	

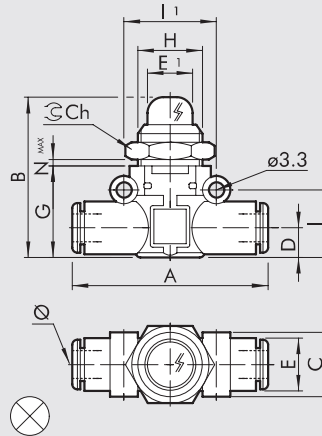
ASSEMBLY OPTIONS



How to mount the LAM L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the LAM L straight onto the female thread.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the LAM L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the LAM L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the LAM L body for panel mounting.

LAM L PIPE - PIPE

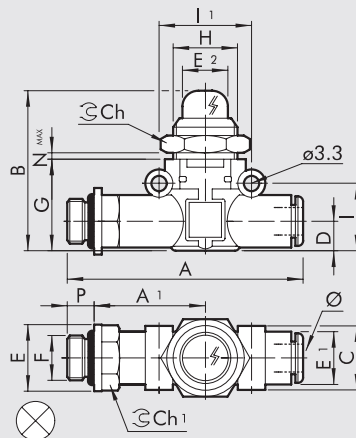


Code	Ref.	Ø	A	B	C	D	E	E1	G	H	I	I1	Ch	Nmax
9068016	LAM L Ø6-Ø6-A	6	49.4	37	14.7	6.4	11.4	10.6	21	M15x1	14.6	20	17	4.5
9068216	LAM L Ø6-Ø6-V													
9068016U	LAM L Ø1/4-Ø1/4-A	1/4	49.4	37	14.7	6.4	11.4	10.6	21	M15x1	14.6	20	17	4.5
9068216U	LAM L Ø1/4-Ø1/4-V													
9068024	LAM L Ø8-Ø8-A	8 ▲	57.3	41	18.7	9.1	13.8	10.6	26	M15x1	18.7	24	17	4.5
9068224	LAM L Ø8-Ø8-V													

A = Orange; V = Green

▲ Ø8 = Ø5/16"

LAM L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	G	H	I	I1	Ch	Ch1	Nmax
9068108	LAM L 1/8-Ø6-A	1/8	6	6	58.5	27.8	37	14.7	6.4	14	11.4	10.6	21	M15x1	14.6	20	17	12	4.5
9068308	LAM L 1/8-Ø6-V																		
9068109	LAM L 1/4-Ø6-A	1/4	6	8	61.5	28.8	37	14.7	6.4	18	11.4	10.6	21	M15x1	14.6	20	17	14	4.5
9068309	LAM L 1/4-Ø6-V																		
9068110	LAM L 1/8-Ø8-A	1/8	8 ▲	6	66.2	31.8	41	18.7	9.1	15	13.8	10.6	26	M15x1	18.7	24	17	14	4.5
9068310	LAM L 1/8-Ø8-V																		
9068111	LAM L 1/4-Ø8-A	1/4	8 ▲	8	70.6	34.2	41	18.7	9.1	18	13.8	10.6	26	M15x1	18.7	24	17	14	4.5
9068311	LAM L 1/4-Ø8-V																		
9068112	LAM L 3/8-Ø8-A	3/8	8 ▲	9	72.2	34.8	41	18.7	9.1	22	13.8	10.6	26	M15x1	18.7	24	17	17	4.5
9068312	LAM L 3/8-Ø8-V																		

A = Orange; V = Green

▲ Ø8 = Ø5/16"

IN-LINE SHUTOFF VALVE SERIES V2V L AND V3V L

V2V L and V3V L shutoff valves belong to the LINE ON LINE® family which means they can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

V2V is a two-way unidirectional valve, while V3V is a three-way valve with free discharge in the area around the control knob.

The locked version is probably the smallest available on the market.

A lock is provided to ensure the valve is kept in the closed position during machine maintenance. The valve is supplied complete with a lock and two keys.

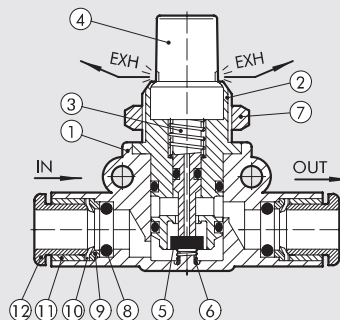


TECHNICAL DATA

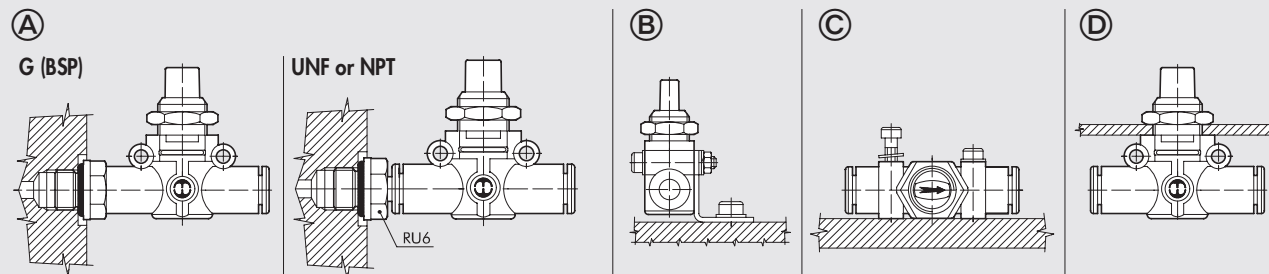
		Ø 6	Ø 1/4"	Ø 8 (Ø 5/16")	Ø 3/8"	Ø 10
Operating pressure	MPa			1		
	bar			10		
	psi			145		
Temperature range	°C			- 20 to + 60		
	°F			- 4 to + 140		
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	280	280	470	600	600
Exhaust flow rate at 6.3 bar	Nl/min	110	110	110	110	110
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene				
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous				
Compatibility with oils		See chapter Z1				

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Brass rod
- ④ Technopolymer knob
- ⑤ NBR valve
- ⑥ Stainless steel valve compression spring
- ⑦ Nickel-plated brass wall-mount ring nut
- ⑧ NBR gasket
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel folding spring
- ⑪ Technopolymer locking bushing
- ⑫ Technopolymer release bushing



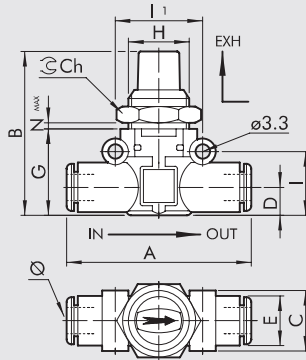
ASSEMBLY OPTIONS



How to mount the V2V/V3V L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the V2V/V3V L straight onto the female thread.
- **UNF or NPT**: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the V2V/V3V L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket, except for Ø3/8 and Ø10.
- Fig. C There are two robust rings on the plastic body for fixing the V2V/V3V L straight onto the wall.
- Fig. D The rig nut is screwed onto the threaded metal part of the V2V/V3V L body for panel mounting.

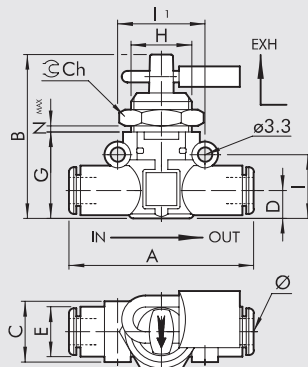
V2V/V3V L PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9065016	V2VL Ø6-Ø6	6	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066016	V3VL Ø6-Ø6												
9065016U	V2VL Ø1/4-Ø1/4	1/4	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066016U	V3VL Ø1/4-Ø1/4												
9065024	V2VL Ø8-Ø8	8 ▲	57.3	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066024	V3VL Ø8-Ø8												
9065032U	V2VL Ø3/8-Ø3/8	3/8	65	52	21	10.9	16	30	M18x1.5	21.4	26	22	5
9066032U	V3VL Ø3/8-Ø3/8												
9065032	V2VL Ø10-Ø10	10	65	52	21	10.9	16	30	M18x1.5	21.4	26	22	5
9066032	V3VL Ø10-Ø10												

▲ Ø8 = Ø5/16"

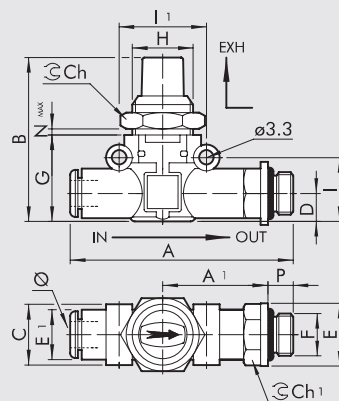
V2V/V3V L PIPE - PIPE PADLOCKED



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9065116	V2VL Ø6-Ø6 KEY	6	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066116	V3VL Ø6-Ø6 KEY												
9065116U	V2VL Ø1/4-Ø1/4 KEY	1/4	49.4	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066116U	V3VL Ø1/4-Ø1/4 KEY												
9065124	V2VL Ø8-Ø8 KEY	8 ▲	57.3	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066124	V3VL Ø8-Ø8 KEY												
9065132U	V2VL Ø3/8-Ø3/8 KEY	3/8	65	52	21	10.9	16	30	M18x1.5	21.4	26	22	5
9066132U	V3VL Ø3/8-Ø3/8 KEY												
9065132	V2VL Ø10-Ø10 KEY	10	65	52	21	10.9	16	30	M18x1.5	21.4	26	22	5
9066132	V3VL Ø10-Ø10 KEY												

▲ Ø8 = Ø5/16"

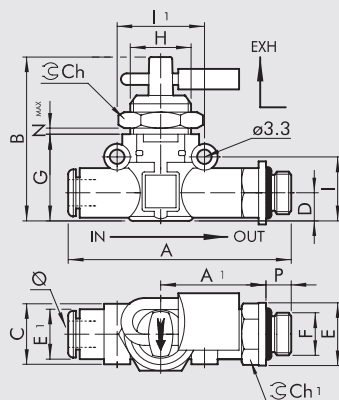
V2V/V3V L PIPE - G (BSP) THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065208	V2VL Ø6-1/8	6	1/8	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066208	V3VL Ø6-1/8																	
9065209	V2VL Ø6-1/4	6	1/4	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066209	V3VL Ø6-1/4																	
9065210	V2VL Ø8-1/8	8 ▲	1/8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066210	V3VL Ø8-1/8																	
9065211	V2VL Ø8-1/4	8 ▲	1/4	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066211	V3VL Ø8-1/4																	
9065212	V2VL Ø8-3/8	8 ▲	3/8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066212	V3VL Ø8-3/8																	
9065215	V2VL Ø10-1/4	10	1/4	8	79.9	39.2	52	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5
9066215	V3VL Ø10-1/4																	
9065216	V2VL Ø10-3/8	10	3/8	9	81.2	40.4	52	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5
9066216	V3VL Ø10-3/8																	
9065217	V2VL Ø10-1/2	10	1/2	11	83.7	40	52	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5
9066217	V3VL Ø10-1/2																	

▲ Ø8 = Ø5/16"

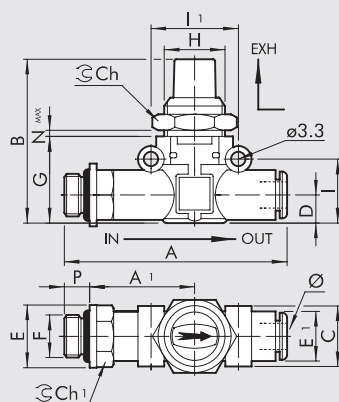
V2V/V3V L PIPE - G (BSP) THREAD PADLOCKED



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065308	V2V L Ø6-1/8 KEY	6	1/8	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066308	V3V L Ø6-1/8 KEY																	
9065309	V2V L Ø6-1/4 KEY	6	1/4	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066309	V3V L Ø6-1/4 KEY																	
9065310	V2V L Ø8-1/8 KEY	8 ▲	1/8	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066310	V3V L Ø8-1/8 KEY																	
9065311	V2V L Ø8-1/4 KEY	8 ▲	1/4	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066311	V3V L Ø8-1/4 KEY																	
9065312	V2V L Ø8-3/8 KEY	8 ▲	3/8	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066312	V3V L Ø8-3/8 KEY																	
9065315	V2V L Ø10-1/4 KEY	10	1/4	8	79.9	39.2	52	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5
9066315	V3V L Ø10-1/4 KEY																	
9065316	V2V L Ø10-3/8 KEY	10	3/8	9	81.2	40.4	52	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5
9066316	V3V L Ø10-3/8 KEY																	
9065317	V2V L Ø10-1/2 KEY	10	1/2	11	83.7	40	52	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5
9066317	V3V L Ø10-1/2 KEY																	

▲ Ø8 = Ø5/16"

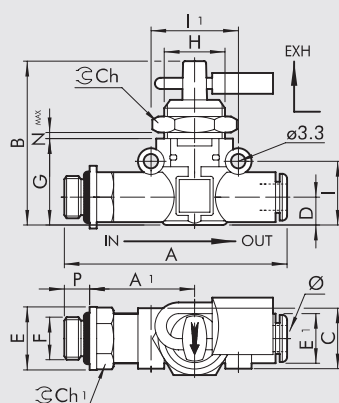
V2V/V3V L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065408	V2V L 1/8-Ø6	1/8	6	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066408	V3V L 1/8-Ø6																	
9065409	V2V L 1/4-Ø6	1/4	6	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066409	V3V L 1/4-Ø6																	
9065410	V2V L 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066410	V3V L 1/8-Ø8																	
9065411	V2V L 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066411	V3V L 1/4-Ø8																	
9065412	V2V L 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066412	V3V L 3/8-Ø8																	
9065415	V2V L 1/4-Ø10	1/4	10	8	79.9	39.2	52	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5
9066415	V3V L 1/4-Ø10																	
9065416	V2V L 3/8-Ø10	3/8	10	9	81.2	40.4	52	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5
9066416	V3V L 3/8-Ø10																	
9065417	V2V L 1/2-Ø10	1/2	10	11	83.7	40	52	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5
9066417	V3V L 1/2-Ø10																	

▲ Ø8 = Ø5/16"

V2V/V3V L G (BSP) THREAD - PIPE PADLOCKED



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065508	V2V L 1/8-Ø6 KEY	1/8	6	6	58.5	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066508	V3V L 1/8-Ø6 KEY																	
9065509	V2V L 1/4-Ø6 KEY	1/4	6	8	61.5	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066509	V3V L 1/4-Ø6 KEY																	
9065510	V2V L 1/8-Ø8 KEY	1/8	8 ▲	6	66.2	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066510	V3V L 1/8-Ø8 KEY																	
9065511	V2V L 1/4-Ø8 KEY	1/4	8 ▲	8	70.6	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066511	V3V L 1/4-Ø8 KEY																	
9065512	V2V L 3/8-Ø8 KEY	3/8	8 ▲	9	72.2	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066512	V3V L 3/8-Ø8 KEY																	
9065515	V2V L 1/4-Ø10 KEY	1/4	10	8	79.9	39.2	52	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5
9066515	V3V L 1/4-Ø10 KEY																	
9065516	V2V L 3/8-Ø10 KEY	3/8	10	9	81.2	40.4	52	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5
9066516	V3V L 3/8-Ø10 KEY																	
9065517	V2V L 1/2-Ø10 KEY	1/2	10	11	83.7	40	52	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5
9066517	V3V L 1/2-Ø10 KEY																	

▲ Ø8 = Ø5/16"

IN-LINE FLOW MICRO-REGULATOR SERIES RFL L



The RFL L flow micro-regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products.

The RFL L regulates the air input and thus the speed in pneumatic actuators.

Type U (unidirectional) regulates the flow only in one of the two directions of air flow and is available in the types with:

- push-in input and output fitting;
- push-in input fitting and threaded port on the exhaust (cylinder type);
- input threaded port and push-in fitting on the exhaust (valve type).

Type B (bidirectional) regulates the flow in both directions of air flow and is available in the types with:

- push-in input and output fitting;
- threaded port and push-in fitting.

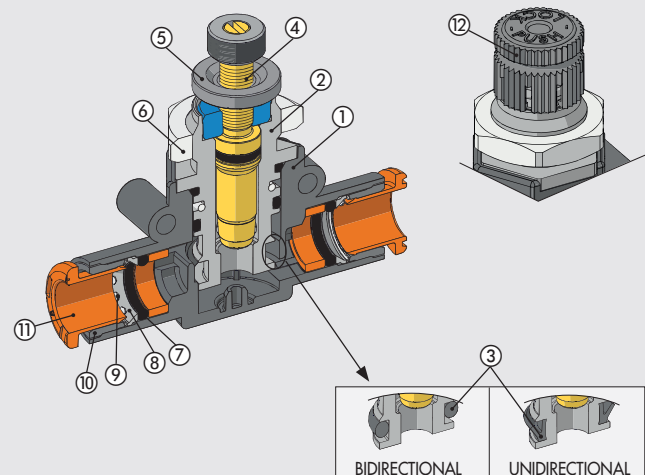


TECHNICAL DATA		Ø 4 (Ø5/32")	Ø 6	Ø 1/4"	Ø 8 (Ø5/16")	Ø 3/8" *	Ø 10 *
Max. operating pressure	MPa				1		
	bar				10		
	psi				145		
Temperature range	°C				- 20 to + 60		
	°F				- 4 to + 140		
Max flow rate on regulation at 6.3 bar	Nl/min	155	450	450	850	1400	1400
Flow rate on exhaust at 6.3 bar	Nl/min	160	550	550	950	1500	1500
Adjustment		Manual or using a screwdriver					
Internal system		Tapered needle					
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene					
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous					
Compatibility with oils		See chapter Z1					

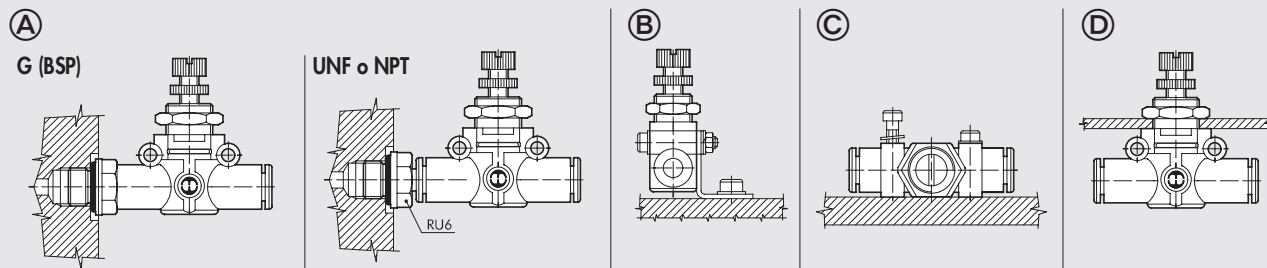
* To completely close the air flow in the PUSH-LOCK version, it is recommended to remove the plastic knob and tighten the pin with a screwdriver.

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass seal support
- ③ NBR gasket
- ④ Brass adjusting needle
- ⑤ Nickel-plated brass needle ring nut
- ⑥ Wall fixing ring nut
- ⑦ NBR seal
- ⑧ Technopolymer spring ring
- ⑨ Stainless steel clip-on spring
- ⑩ Technopolymer stop bushing
- ⑪ Technopolymer release bushing
- ⑫ Technopolymer knob



ASSEMBLY OPTIONS



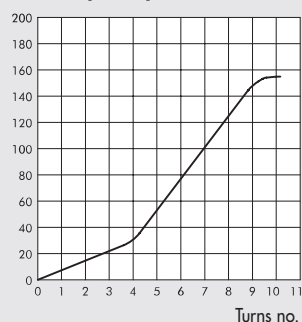
How to mount the RFL L:

- Fig. (A) **G (BSP)**: With the male threaded port it is possible to mount the RFL L straight onto the actuator or the control valve.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the RFL L straight on to the actuator or the control valve.
- Fig. (B) Fixing to the plate with the special SQU L bracket, except for $\varnothing 3/8$ and $\varnothing 10$.
- Fig. (C) There are two robust rings on the plastic body for fixing the RFL L straight onto the wall.
- Fig. (D) The ring nut is screwed onto the threaded metal part of the RFL L body for panel mounting.

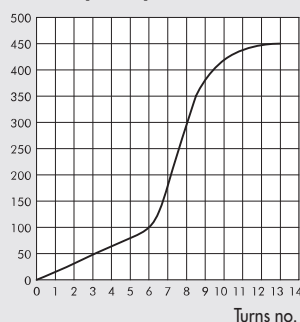
FLOW RATE CHARTS AT 6.3 bar DEPENDING ON THE TURNS EFFECTED BY THE REGULATION SCREW

RFL L $\varnothing 4$ ($\varnothing 5/32''$)

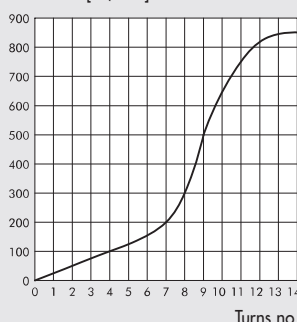
Flow rates [Nl/min]

RFL L $\varnothing 6$ - RFL L $\varnothing 1/4''$

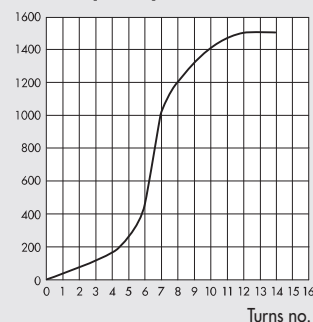
Flow rates [Nl/min]

RFL L $\varnothing 8$ ($\varnothing 5/16''$)

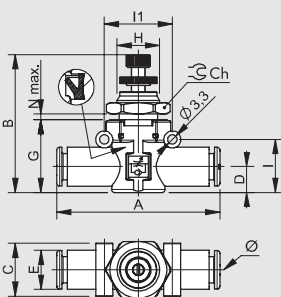
Flow rates [Nl/min]

RFL L $\varnothing 10$ - RFL L $\varnothing 3/8''$

Flow rates [Nl/min]

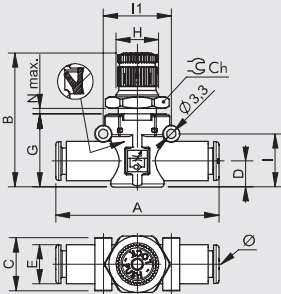


RFL L PIPE - PIPE UNIDIRECTIONAL



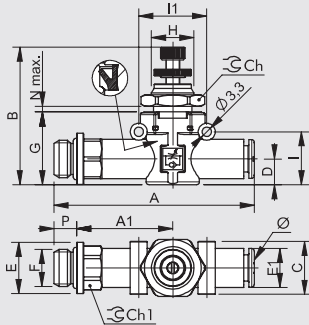
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9041301	RFL LU Ø4-Ø4	4 ▲	42	35.5÷38.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041316	RFL LU Ø6-Ø6	6	49.4	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041316U	RFL LU Ø1/4-Ø1/4	1/4	49.4	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041324	RFL LU Ø8-Ø8	8 ▲	57.3	44÷49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5
9041332U	RFL LU Ø3/8-Ø3/8	3/8	65	51.5÷60	21	10.9	16	30	M18x1.5	21.4	26	22	5.5
9041332	RFL LU Ø10-Ø10	10	65	51.5÷60	21	10.9	16	30	M18x1.5	21.4	26	22	5.5

▲ Ø4 = Ø5/32''; Ø8 = Ø5/16''

RFL L PIPE - PIPE UNIDIRECTIONAL PUSH-LOCK


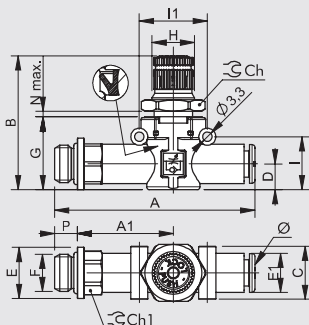
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9041366	RFL LU Ø6-Ø6 PL	6	49.4	42.3÷44.5	14.7	6.4	11.4	20	M15x1	14.6	20	15	4
9041366U	RFL LU Ø1/4-Ø1/4 PL	1/4	49.4	42.3÷44.5	14.7	6.4	11.4	20	M15x1	14.6	20	15	4
9041374	RFL LU Ø8-Ø8 PL	8 ▲	57.3	47.2÷49.4	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5
9041382U	RFL LU Ø3/8-Ø3/8 PL	3/8	65	53.5÷55.8	21	10.9	16	30	M18x1.5	21.4	26	22	5.5
9041382	RFL LU Ø10-Ø10 PL	10	65	53.5÷55.8	21	10.9	16	30	M18x1.5	21.4	26	22	5.5

▲ Ø8 = Ø5/16"

RFL L G (BSP) THREAD - PIPE UNIDIRECTIONAL CYLINDER VERSION


Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9041401	RFL LU M5-Ø4	M5	4 ▲	4	47.7	22.7	35.5÷38.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041402	RFL LU 1/8-Ø4	1/8	4 ▲	6	51.6	24.6	35.5÷38.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041408	RFL LU 1/8-Ø6	1/8	6	6	58.5	27.8	36÷41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041409	RFL LU 1/4-Ø6	1/4	6	8	61.5	28.8	36÷41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041410	RFL LU 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	44÷49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041411	RFL LU 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	44÷49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041412	RFL LU 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	44÷49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041415	RFL LU 1/4-Ø10	1/4	10	8	79.9	39.2	51.5÷60	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041416	RFL LU 3/8-Ø10	3/8	10	9	81.2	40.4	51.5÷60	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041417	RFL LU 1/2-Ø10	1/2	10	11	83.7	40	51.5÷60	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

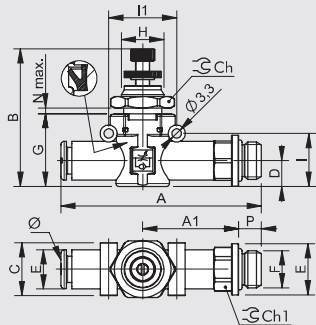
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

RFL L G (BSP) THREAD - PIPE UNIDIRECTIONAL CYLINDER VERSION PUSH-LOCK


Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9041458	RFL LU 1/8-Ø6 PL	1/8	6	6	58.5	27.8	42.3÷44.5	14.7	6.4	14	11.4	20	M15x1	14.6	20	15	12	4
9041459	RFL LU 1/4-Ø6 PL	1/4	6	8	61.5	28.8	42.3÷44.5	14.7	6.4	18	11.4	20	M15x1	14.6	20	15	14	4
9041460	RFL LU 1/8-Ø8 PL	1/8	8 ▲	6	66.2	31.8	47.2÷49.4	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041461	RFL LU 1/4-Ø8 PL	1/4	8 ▲	8	70.6	34.2	47.2÷49.4	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041462	RFL LU 3/8-Ø8 PL	3/8	8 ▲	9	72.2	34.8	47.2÷49.4	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041465	RFL LU 1/4-Ø10 PL	1/4	10	8	79.9	39.2	53.5÷55.8	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041466	RFL LU 3/8-Ø10 PL	3/8	10	9	81.2	40.4	53.5÷55.8	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041467	RFL LU 1/2-Ø10 PL	1/2	10	11	83.7	40	53.5÷55.8	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

▲ Ø8 = Ø5/16"

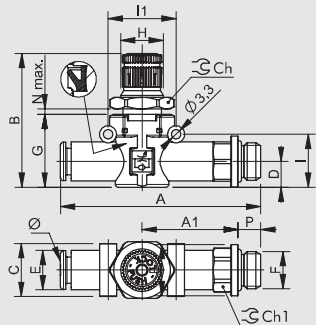
RFL L PIPE - G (BSP) THREAD UNIDIRECTIONAL VALVE VERSION



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9041501	RFL LU Ø4-M5	4 ▲	M5	4	47.7	22.7	35.5÷38.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041502	RFL LU Ø4-1/8	4 ▲	1/8	6	51.6	24.6	35.5÷38.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041508	RFL LU Ø6-1/8	6	1/8	6	58.5	27.8	36÷41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041509	RFL LU Ø6-1/4	6	1/4	8	61.5	28.8	36÷41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041510	RFL LU Ø8-1/8	8 ▲	1/8	6	66.2	31.8	44÷49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041511	RFL LU Ø8-1/4	8 ▲	1/4	8	70.6	34.2	44÷49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041512	RFL LU Ø8-3/8	8 ▲	3/8	9	72.2	34.8	44÷49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041515	RFL LU Ø10-1/4	10	1/4	8	79.9	39.2	51.5÷60	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041516	RFL LU Ø10-3/8	10	3/8	9	81.2	40.4	51.5÷60	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041517	RFL LU Ø10-1/2	10	1/2	11	83.7	40	51.5÷60	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

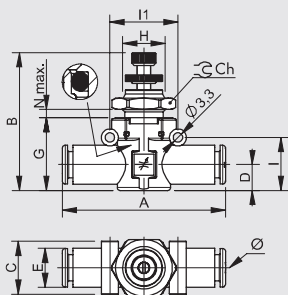
RFL L PIPE - G (BSP) THREAD UNIDIRECTIONAL VALVE VERSION PUSH-LOCK



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9041558	RFL LU Ø6-1/8 PL	6	1/8	6	58.5	27.8	42.3÷44.5	14.7	6.4	14	11.4	20	M15x1	14.6	20	15	12	4
9041559	RFL LU Ø6-1/4 PL	6	1/4	8	61.5	28.8	42.3÷44.5	14.7	6.4	18	11.4	20	M15x1	14.6	20	15	14	4
9041560	RFL LU Ø8-1/8 PL	8 ▲	1/8	6	66.2	31.8	47.2÷49.4	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041561	RFL LU Ø8-1/4 PL	8 ▲	1/4	8	70.6	34.2	47.2÷49.4	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041562	RFL LU Ø8-3/8 PL	8 ▲	3/8	9	72.2	34.8	47.2÷49.4	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041565	RFL LU Ø10-1/4 PL	10	1/4	8	79.9	39.2	53.5÷55.8	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041566	RFL LU Ø10-3/8 PL	10	3/8	9	81.2	40.4	53.5÷55.8	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041567	RFL LU Ø10-1/2 PL	10	1/2	11	83.7	40	53.5÷55.8	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

▲ Ø8 = Ø5/16"

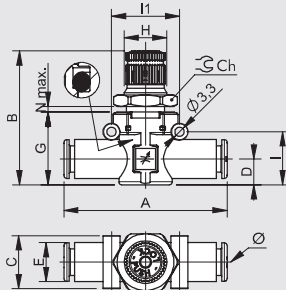
RFL L PIPE - PIPE BIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9041601	RFL LB Ø4-Ø4	4 ▲	42	35.5÷38.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041616	RFL LB Ø6-Ø6	6	49.4	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041616U	RFL LB Ø1/4-Ø1/4	1/4	49.4	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041624	RFL LB Ø8-Ø8	8 ▲	57.3	44÷49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5
9041632U	RFL LB Ø3/8-Ø3/8	3/8	65	51.5÷60	21	10.9	16	30	M18x1.5	21.4	26	22	5.5
9041632	RFL LB Ø10-Ø10	10	65	51.5÷60	21	10.9	16	30	M18x1.5	21.4	26	22	5.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

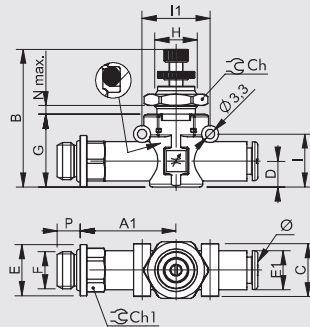
RFL L PIPE - PIPE BIDIRECTIONAL PUSH-LOCK



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9041666	RFL L B Ø6-Ø6 PL	6	49.4	42.3÷44.5	14.7	6.4	11.4	20	M15x1	14.6	20	15	4
9041666U	RFL L B Ø1/4-Ø1/4 PL	1/4	49.4	42.3÷44.5	14.7	6.4	11.4	20	M15x1	14.6	20	15	4
9041674	RFL L B Ø8-Ø8 PL	8 ▲	57.3	47.2÷49.4	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5
9041682U	RFL L B Ø3/8-Ø3/8 PL	3/8	65	53.5÷55.8	21	10.9	16	30	M18x1.5	21.4	26	22	5.5
9041682	RFL L B Ø10-Ø10 PL	10	65	53.5÷55.8	21	10.9	16	30	M18x1.5	21.4	26	22	5.5

▲ Ø8 = Ø5/16"

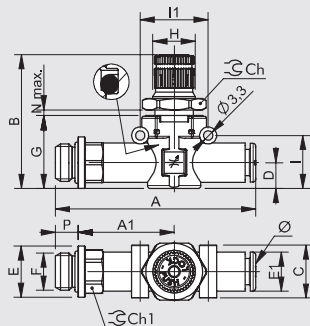
RFL L G (BSP) THREAD - PIPE BIDIRECTIONAL



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9041701	RFL L B M5-Ø4	M5	4 ▲	4	47.7	22.7	35.5÷38.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	4
9041702	RFL L B 1/8-Ø4	1/8	4 ▲	6	51.6	24.6	35.5÷38.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	4
9041708	RFL L B 1/8-Ø6	1/8	6	6	58.5	27.8	36÷41	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	4
9041709	RFL L B 1/4-Ø6	1/4	6	8	61.5	28.8	36÷41	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	4
9041710	RFL L B 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	44÷49	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041711	RFL L B 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	44÷49	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041712	RFL L B 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	44÷49	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041715	RFL L B 1/4-Ø10	1/4	10	8	79.9	39.2	51.5÷60	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041716	RFL L B 3/8-Ø10	3/8	10	9	81.2	40.4	51.5÷60	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041717	RFL L B 1/2-Ø10	1/2	10	11	83.7	40	51.5÷60	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

RFL L G (BSP) THREAD - PIPE BIDIRECTIONAL PUSH-LOCK

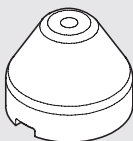


Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9041758	RFL L B 1/8-Ø6 PL	1/8	6	6	58.5	27.8	42.3÷44.5	14.7	6.4	14	11.4	20	M15x1	14.6	20	15	12	4
9041759	RFL L B 1/4-Ø6 PL	1/4	6	8	61.5	28.8	42.3÷44.5	14.7	6.4	18	11.4	20	M15x1	14.6	20	15	14	4
9041760	RFL L B 1/8-Ø8 PL	1/8	8 ▲	6	66.2	31.8	47.2÷49.4	18.7	9.1	15	13.8	26	M15x1	18.7	24	20	14	4.5
9041761	RFL L B 1/4-Ø8 PL	1/4	8 ▲	8	70.6	34.2	47.2÷49.4	18.7	9.1	18	13.8	26	M15x1	18.7	24	20	14	4.5
9041762	RFL L B 3/8-Ø8 PL	3/8	8 ▲	9	72.2	34.8	47.2÷49.4	18.7	9.1	22	13.8	26	M15x1	18.7	24	20	17	4.5
9041765	RFL L B 1/4-Ø10 PL	1/4	10	8	79.9	39.2	53.5÷55.8	20.7	10.9	18	16	30	M18x1.5	21.4	26	22	16	5.5
9041766	RFL L B 3/8-Ø10 PL	3/8	10	9	81.2	40.4	53.5÷55.8	20.7	10.9	20	16	30	M18x1.5	21.4	26	22	17	5.5
9041767	RFL L B 1/2-Ø10 PL	1/2	10	11	83.7	40	53.5÷55.8	20.7	10.9	26	16	30	M18x1.5	21.4	26	22	22	5.5

▲ Ø8 = Ø5/16"

ACCESSORIES RFL PUSH-LOCK

ANTI-TAMPERING KNOB



Code	Description
9200703	Anti-tampering knob

NOTE: Remove the knob on the Push-Lock RFL by pulling outwards.
Fit on the anti-tampering knob and make the necessary settings.
When the RFL has been set, press the knob firmly until it locks in position.
If the RFL needs to be recalibrated, remove the anti-tampering knob and push laterally using a screwdriver.

IN-LINE FIXED-REGULATION FLOW REGULATOR SERIES RFF L

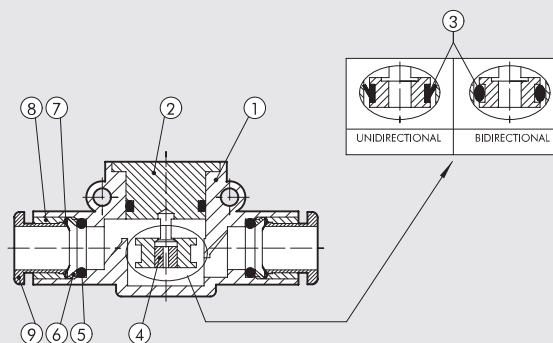
The in-line fixed regulation flow regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family. The RFF L regulates the flow of air, and hence the rate of operation of pneumatic actuators. Air flow is regulated by means of a choke with a calibrated diameter. A full range of diameters is available. The advantage of the RFF L over other adjustable versions is that there is no need for regulation during machine installation. Subsequent adjustments are not required either. Two versions are available. Version U (unidirectional) regulates the flow in one direction only. Version B (bidirectional) regulates the air flow in both directions.



TECHNICAL DATA		Ø 4 (Ø5/32")	Ø 6	Ø 8 (Ø5/16")
Max. operating pressure	MPa		1	
	bar		10	
	psi		145	
Temperature range	°C		- 20 to + 60	
	°F		- 4 to + 140	
Choke flow rate	NI/min		See table below	
Recommended pipe			Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene	
Fluid			Lubricated or unlubricated filtered compressed air; if used, must be continuous	
Compatibility with oils			See chapter Z1	

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass gasket holding insert
- ③ NBR gasket
- ④ Brass choke cartridge
- ⑤ NBR seal
- ⑥ Technopolymer spring ring
- ⑦ Stainless steel clip-on spring
- ⑧ Technopolymer stop bushing
- ⑨ Technopolymer release bushing



EXHAUST FLOW RATE AT 6.3 bar FOR VERSIONS C-U-V [NI/min]

Choke [mm]	Ø 4 (Ø5/32")	Ø 6	Ø 8 (Ø5/16")
Ø 0.2	142	552	912
Ø 0.3	144	554	914
Ø 0.4	147	557	917
Ø 0.5	153	563	923
Ø 0.6	155	565	925
Ø 0.8	172	582	942
Ø 1.0	190	600	960
Ø 1.3	225	635	995
Ø 1.5	250	660	1020

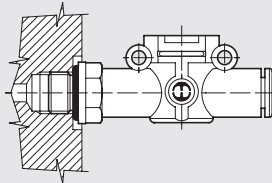
CHOKE FLOW-RATE AT 6 bar WITH RELIEF VALVE OPEN

Choke [mm]	Flow rate [NI/min]
Ø 0.2	2
Ø 0.3	4
Ø 0.4	7
Ø 0.5	13
Ø 0.6	15
Ø 0.8	32
Ø 1.0	50
Ø 1.3	85
Ø 1.5	110

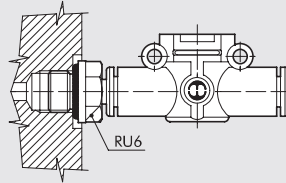
ASSEMBLY OPTIONS

Ⓐ

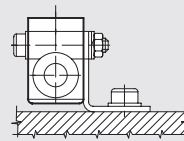
G (BSP)



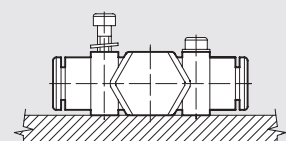
UNF or NPT



Ⓑ



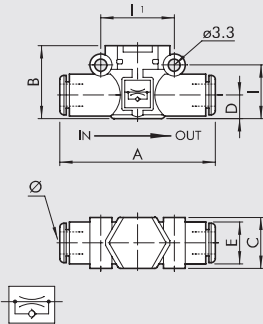
Ⓒ



How to mount the RFF L:

- Fig. Ⓐ **G (BSP)**: With the male threaded port it is possible to mount the RFF L straight onto the actuator or the control valve.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the RFF L straight on to the actuator or the control valve.
- Fig. Ⓑ Fixing to the plate with the special SQU L bracket.
- Fig. Ⓒ There are two robust rings on the plastic body for fixing the RFF L straight onto the wall.

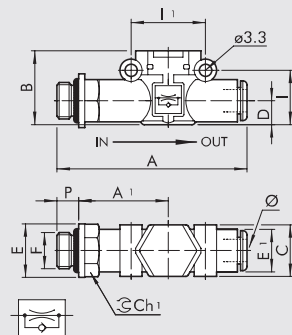
RFF L PIPE - PIPE UNIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	I	II
9070U11_*	RFF-U L Ø4-Ø4	4 ▲	42	17.5	10.7	5.6	10	12.8	16
9070U22_*	RFF-U L Ø6-Ø6	6	49.4	20	14.7	6.4	11.4	14.6	20
9070U33_*	RFF-U L Ø8-Ø8	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

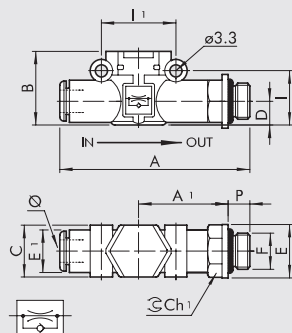
RFF L G (BSP) THREAD - PIPE UNIDIRECTIONAL CYLINDER VERSION



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	II	Ch1
9070C51_*	RFF-C L M5 - Ø4	M5	4 ▲	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070C61_*	RFF-C L 1/8 - Ø4	1/8	4 ▲	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070C62_*	RFF-C L 1/8 - Ø6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070C72_*	RFF-C L 1/4 - Ø6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070C63_*	RFF-C L 1/8 - Ø8	1/8	8 ▲	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070C73_*	RFF-C L 1/4 - Ø8	1/4	8 ▲	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070C83_*	RFF-C L 3/8 - Ø8	3/8	8 ▲	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

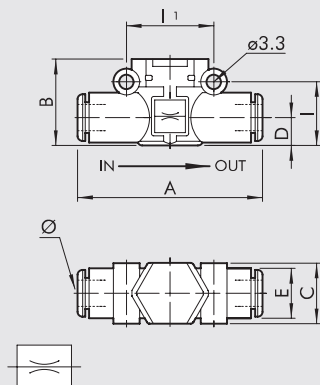
RFF L PIPE - G (BSP) THREAD UNIDIRECTIONAL VALVE VERSION



Code	Ref.	Ø	F	P	A	A1	B	C	E	E1	I	II	Ch1
9070V15_*	RFF-V L Ø4 - M5	4 ▲	M5	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070V16_*	RFF-V L Ø4 - 1/8	4 ▲	1/8	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070V26_*	RFF-V L Ø6 - 1/8	6	1/8	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070V27_*	RFF-V L Ø6 - 1/4	6	1/4	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070V36_*	RFF-V L Ø8 - 1/8	8 ▲	1/8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070V37_*	RFF-V L Ø8 - 1/4	8 ▲	1/4	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070V38_*	RFF-V L Ø8 - 3/8	8 ▲	3/8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.
▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

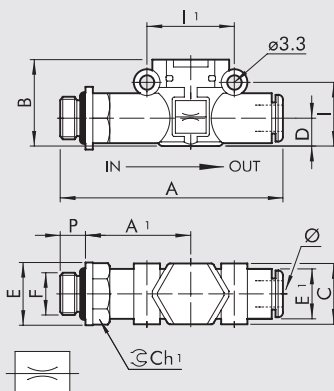
RFF L PIPE - PIPE BIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	I	I1
9070B11_*	RFF-B L Ø4-Ø4	4 ▲	42	17.5	10.7	5.6	10	12.8	16
9070B22_*	RFF-B L Ø6-Ø6	6	49.4	20	14.7	6.4	11.4	14.6	20
9070B33_*	RFF-B L Ø8-Ø8	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.
 ▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

RFF L G (BSP) THREAD - PIPE BIDIRECTIONAL



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	I1	Ch1
9070B51_*	RFF-B L M5 - Ø4	M5	4 ▲	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9070B61_*	RFF-B L 1/8 - Ø4	1/8	4 ▲	6	51.6	24.6	17.5	10.7	14	10	12.8	16	12
9070B62_*	RFF-B L 1/8 - Ø6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9070B72_*	RFF-B L 1/4 - Ø6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9070B63_*	RFF-B L 1/8 - Ø8	1/8	8 ▲	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9070B73_*	RFF-B L 1/4 - Ø8	1/4	8 ▲	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9070B83_*	RFF-B L 3/8 - Ø8	3/8	8 ▲	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17

* The last two digits indicate the narrowing Ø. To complete the code please look at the key to codes.
 ▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

KEY TO CODES

9 0 7 0 TYPE	B FUNCTION	11 Ø IN - Ø OUT	02 Ø CHOKE
9070 RFF L	B Bidirectional C For cylinder U Unidirectional V For valve	▲■ 11 = Ø 4 - Ø 4 ▲* 15 = Ø 4 - M5 ▲* 16 = Ø 4 - 1/8" ■ 22 = Ø 6 - Ø 6 * 26 = Ø 6 - 1/8" * 27 = Ø 6 - 1/4" ▲■ 33 = Ø 8 - Ø 8 ▲* 36 = Ø 8 - 1/8" ▲* 37 = Ø 8 - 1/4" ▲* 38 = Ø 8 - 3/8" ▲● 51 = M5 - Ø 4 ▲● 61 = 1/8" - Ø 4 ● 62 = 1/8" - Ø 6 ▲● 63 = 1/8" - Ø 8 ● 72 = 1/4" - Ø 6 ▲● 73 = 1/4" - Ø 8 ▲● 83 = 3/8" - Ø 8	02 = Ø 0.2 03 = Ø 0.3 04 = Ø 0.4 05 = Ø 0.5 06 = Ø 0.6 08 = Ø 0.8 10 = Ø 1.0 13 = Ø 1.3 15 = Ø 1.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

■ Only for B (bidirectional) and U (unidirectional) versions

* Only for V (valve) versions

● Only for C (cylinder) and B (bidirectional) versions

IN-LINE QUICK-EXHAUST VALVES SERIES VSR L



The VSR L quick-exhaust valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.

Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

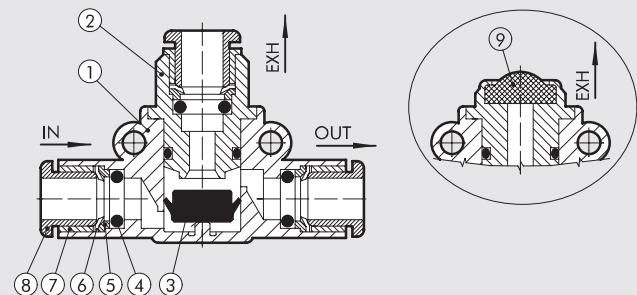
Exhaust can be silenced using a STAINLESS steel wire silencer, or conveyed using a push-in fitting.



TECHNICAL DATA		Ø 4 (Ø5/32")	Ø 6	Ø 1/4"	Ø 8 (Ø5/16")	Ø 3/8"	Ø 10
Inlet pressure	MPa	0.1 to 1					
	bar	1 to 10					
	psi	14.5 to 145					
Temperature range	°C	- 20 to + 60					
	°F	- 4 to + 140					
Inlet flow rate at 6.3 bar ΔP 1 bar	Nl/min	50	270	270	400	530	530
Exhaust flow rate at 6.3 bar	Nl/min	100	700	700	1000	1400	1400
Recommended pipe		Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene					
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous					
Compatibility with oils		See chapter Z1					

COMPONENTS

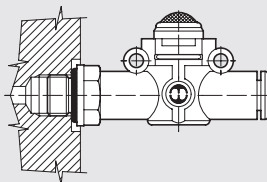
- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ NBR valve
- ④ NBR gasket
- ⑤ Technopolymer spring ring
- ⑥ Stainless steel folding spring
- ⑦ Brass or technopolymer locking bushing
- ⑧ Technopolymer release bushing
- ⑨ Stainless steel wire silencer



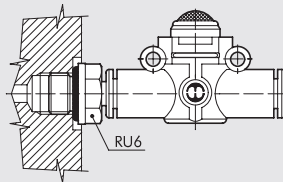
ASSEMBLY OPTIONS

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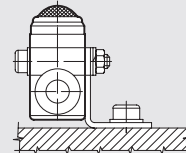
G (BSP)



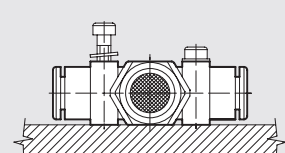
UNF or NPT



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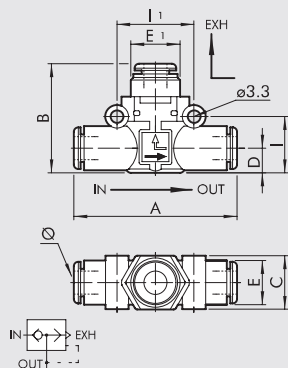
Ⓒ



How to mount the VSR L:

- Fig. Ⓐ **G (BSP)**: With the male threaded port it is possible to mount the VSR L straight onto the actuator.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the VSR L straight on to the actuator or the control valve.
- Fig. Ⓑ Fixing to the plate with the special SQU L bracket, except for Ø3/8 and Ø10.
- Fig. Ⓒ There are two robust rings on the plastic body for fixing the VSR L straight onto the wall.

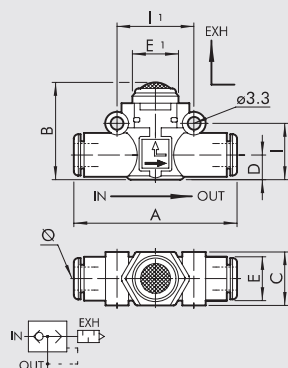
VSR L PIPE - PIPE, CONVEYED EXHAUST



Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063001	VSR L Ø4-Ø4-Ø4	4 ▲	41.8	25.8	10.7	5.6	10	9.7	12.8	16
9063016	VSR L Ø6-Ø6-Ø6	6	49.4	30.2	14.7	6.4	11.4	13	14.6	20
9063016U	VSR L Ø1/4-Ø1/4-Ø1/4	1/4	49.4	30.2	14.7	6.4	11.4	13	14.6	20
9063024	VSR L Ø8-Ø8-Ø8	8 ▲	57.3	35.9	18.7	9.1	13.8	15	18.7	24
9063032U	VSR L Ø3/8-Ø3/8-Ø3/8	3/8	65	41.5	21	10.9	16	17	21.4	26
9063032	VSR L Ø10-Ø10-Ø10	10	65	41.5	21	10.9	16	17	21.4	26

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

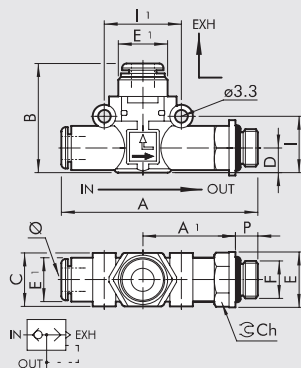
VSR L PIPE - PIPE, SILENCED EXHAUST



Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063101	VSR L Ø4-Ø4-SIL	4 ▲	41.8	19.8	10.7	5.6	10	10	12.8	16
9063116	VSR L Ø6-Ø6-SIL	6	49.4	25.5	14.7	6.4	11.4	14	14.6	20
9063116U	VSR L Ø1/4-Ø1/4-SIL	1/4	49.4	25.5	14.7	6.4	11.4	14	14.6	20
9063124	VSR L Ø8-Ø8-SIL	8 ▲	57.3	31.5	18.7	9.1	13.8	18	18.7	24
9063132U	VSR L Ø3/8-Ø3/8-SIL	3/8	65	37	21	10.9	16	17	21.4	26
9063132	VSR L Ø10-Ø10-SIL	10	65	37	21	10.9	16	17	21.4	26

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

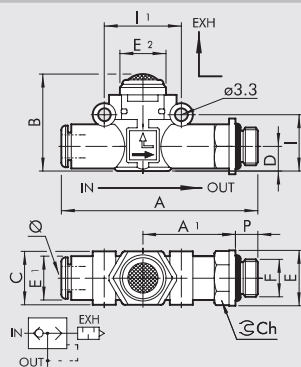
VSR L PIPE - G (BSP) THREAD, CONVEYED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063201	VSR L Ø4-M5-Ø4	4 ▲	M5	4	47.7	22.7	25.8	10.7	5.6	9.9	10	9.7	12.8	16	9
9063202	VSR L Ø4-1/8-Ø4	4 ▲	1/8	6	50.6	24.6	25.8	10.7	5.6	14	10	9.7	12.8	16	12
9063208	VSR L Ø6-1/8-Ø6	6	1/8	6	58.5	27.8	30.2	14.7	6.4	14	11.4	13	14.6	20	12
9063209	VSR L Ø6-1/4-Ø6	6	1/4	8	61.5	28.8	30.2	14.7	6.4	18	11.4	13	14.6	20	14
9063210	VSR L Ø8-1/8-Ø8	8 ▲	1/8	6	66.2	31.8	35.9	18.7	9.1	15	13.8	15	18.7	24	14
9063211	VSR L Ø8-1/4-Ø8	8 ▲	1/4	8	70.6	34.2	35.9	18.7	9.1	18	13.8	15	18.7	24	14
9063212	VSR L Ø8-3/8-Ø8	8 ▲	3/8	9	72.2	34.8	35.9	18.7	9.1	22	13.8	15	18.7	24	17
9063215	VSR L Ø10-1/4-Ø10	10	1/4	8	79.9	39.2	41.5	21	10.9	18	16	17	21.4	26	16
9063216	VSR L Ø10-3/8-Ø10	10	3/8	9	81.2	40.4	41.5	21	10.9	20	16	17	21.4	26	17
9063217	VSR L Ø10-1/2-Ø10	10	1/2	11	83.7	40	41.5	21	10.9	26	16	17	21.4	26	22

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

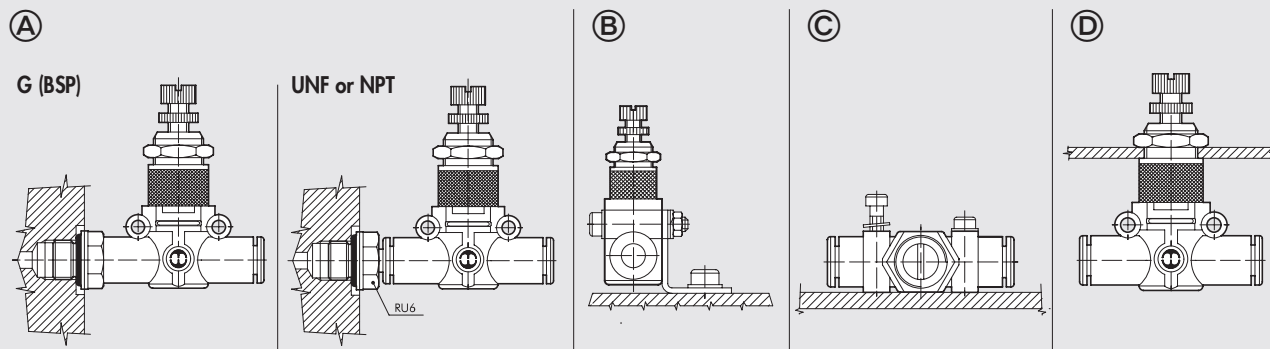
VSR L PIPE - G (BSP) THREAD, SILENCED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063301	VSR L Ø4-M5-SIL	4 ▲	M5	4	46.7	22.7	19.8	10.7	5.6	9.9	10	10	12.8	16	9
9063302	VSR L Ø4-1/8-SIL	4 ▲	1/8	6	50.6	24.6	19.8	10.7	5.6	14	10	10	12.8	16	12
9063308	VSR L Ø6-1/8-SIL	6	1/8	6	58.5	27.8	25.5	14.7	6.4	14	11.4	14	14.6	20	12
9063309	VSR L Ø6-1/4-SIL	6	1/4	8	61.5	28.8	25.5	14.7	6.4	18	11.4	14	14.6	20	14
9063310	VSR L Ø8-1/8-SIL	8 ▲	1/8	6	66.2	31.8	31.5	18.7	9.1	15	13.8	18	18.7	24	14
9063311	VSR L Ø8-1/4-SIL	8 ▲	1/4	8	70.6	34.2	31.5	18.7	9.1	18	13.8	18	18.7	24	14
9063312	VSR L Ø8-3/8-SIL	8 ▲	3/8	9	72.2	34.8	31.5	18.7	9.1	22	13.8	18	18.7	24	17
9063315	VSR L Ø10-1/4-SIL	10	1/4	8	79.9	39.2	37	21	10.9	18	16	17	21.4	26	16
9063316	VSR L Ø10-3/8-SIL	10	3/8	9	81.2	40.4	37	21	10.9	20	16	17	21.4	26	17
9063317	VSR L Ø10-1/2-SIL	10	1/2	11	83.7	40	37	21	10.9	26	16	17	21.4	26	22

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

ASSEMBLY OPTIONS

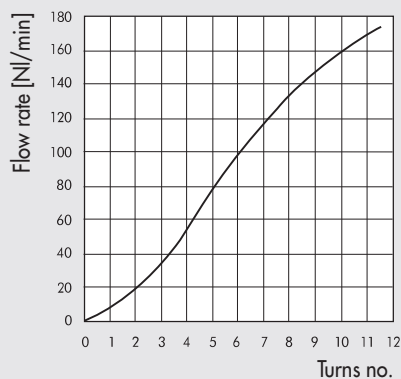


How to mount the VSRR L:

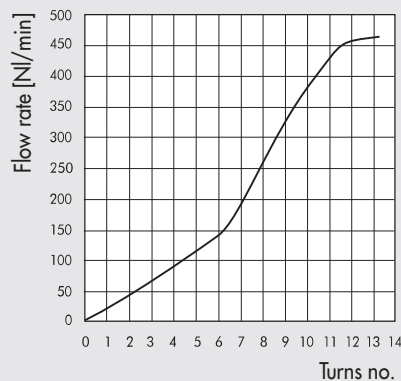
- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the VSRR L straight onto the actuator or the control valve.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the VSRR L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the VSRR L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the VSRR L body for panel mounting.

EXHAUST FLOW CHARTS VSRR L

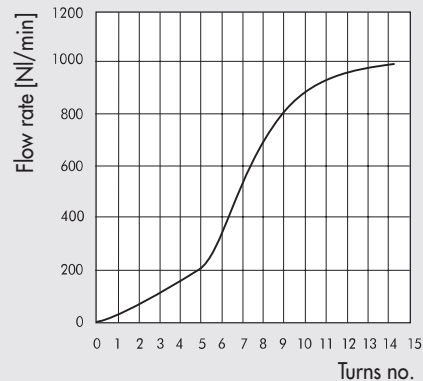
VSRR L Ø 4 (Ø5/32")



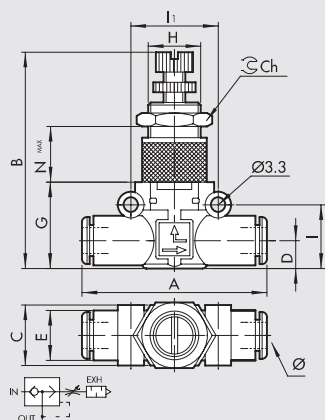
VSRR L Ø 6



VSRR L Ø 8 (Ø5/16")



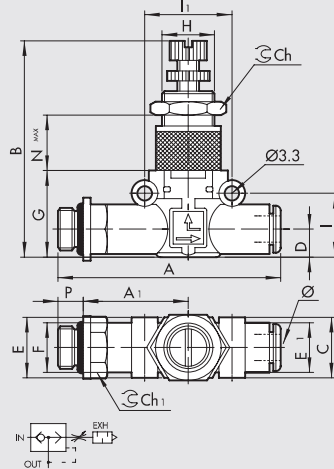
VSRR L PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9063501	VSRR L Ø4-Ø4	4 ▲	42	39.5-43.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	11.5
9063516	VSRR L Ø6-Ø6	6	49.4	47-52	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	15.5
9063524	VSRR L Ø8-Ø8	8 ▲	57.3	56-61.2	18.7	9.1	13.8	26	M15x1	18.7	24	17	18.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

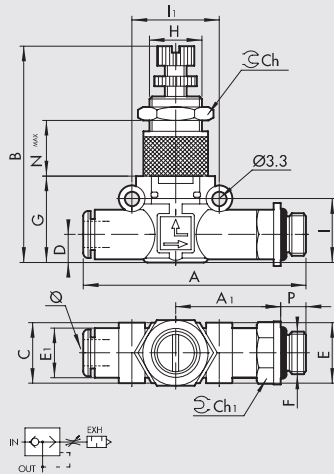
VSRR L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9063601	VSRR L M5-Ø4	M5	4 ▲	4	47.7	22.7	39.5-43.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	11.5
9063602	VSRR L 1/8-Ø4	1/8	4 ▲	6	51.6	24.6	39.5-43.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	11.5
9063608	VSRR L 1/8-Ø6	1/8	6	6	58.5	27.8	47-52	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	15.5
9063609	VSRR L 1/4-Ø6	1/4	6	8	61.5	28.8	47-52	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	15.5
9063610	VSRR L 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	56-61.2	18.7	9.1	15	13.8	26	M15x1	18.7	26	17	14	18.5
9063611	VSRR L 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	56-61.2	18.7	9.1	18	13.8	26	M15x1	18.7	26	17	14	18.5
9063612	VSRR L 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	56-61.2	18.7	9.1	22	13.8	26	M15x1	18.7	26	17	17	18.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

VSRR L PIPE - G (BSP) THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9063701	VSRR L Ø4-M5	4 ▲	M5	4	47.7	22.7	39.5-43.5	10.7	5.6	9.9	10	17.5	M9x0.75	12.8	16	11	9	11.5
9063702	VSRR L Ø4-1/8	4 ▲	1/8	6	51.6	24.6	39.5-43.5	10.7	5.6	14	10	17.5	M9x0.75	12.8	16	11	12	11.5
9063708	VSRR L Ø6-1/8	6	1/8	6	58.5	27.8	47-52	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	15.5
9063709	VSRR L Ø6-1/4	6	1/4	8	61.5	28.8	47-52	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	15.5
9063710	VSRR L Ø8-1/8	8 ▲	1/8	6	66.2	31.8	56-61.2	18.7	9.1	15	13.8	26	M15x1	18.7	26	17	14	18.5
9063711	VSRR L Ø8-1/4	8 ▲	1/4	8	70.6	34.2	56-61.2	18.7	9.1	18	13.8	26	M15x1	18.7	26	17	14	18.5
9063712	VSRR L Ø8-3/8	8 ▲	3/8	9	72.2	34.8	56-61.2	18.7	9.1	22	13.8	26	M15x1	18.7	26	17	17	18.5

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

NOTES

IN-LINE STOP VALVE SERIES STP L

The STP L stop valve belongs to the LINE ON LINE® family and can be connected in series or in parallel with the other products in the same family. It is available in a version for pipe-pipe connection, which includes two push-in fittings, and a version for thread-pipe connection, which includes a nickel-plated brass male thread and a push-in fitting. The stop valve is normally mounted on the inlet port of cylinders and allows the flow of air only in the presence of a pneumatic pilot.

Cylinder movement ceases if there is a drop in pneumatic pilot pressure. The compressed air port is a push-in fitting for Ø 4 (Ø5/32") pipe. This stop valve is available in a unidirectional version, so the flow can be interrupted in one direction, but remains free in the other direction. This valve can also be used as a unidirectional normally-closed 2/2 pneumatic control valve.



TECHNICAL DATA

Max. operating pressure

MPa

bar

psi

Temperature range

°C

°F

Recommended pipe

Fluid

Compatibility with oils

Ø 6

Ø 8 (Ø5/16")

1

10

145

-20 to +60

-4 to +140

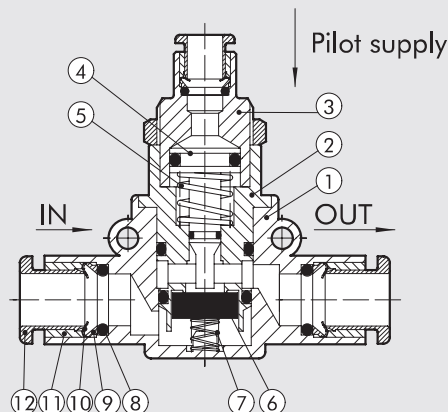
Rilsan PA 11 - Nylon 6 - Polyamide 12 - Polypropylene

Lubricated or unlubricated filtered compressed air; if used, must be continuous

See chapter Z1

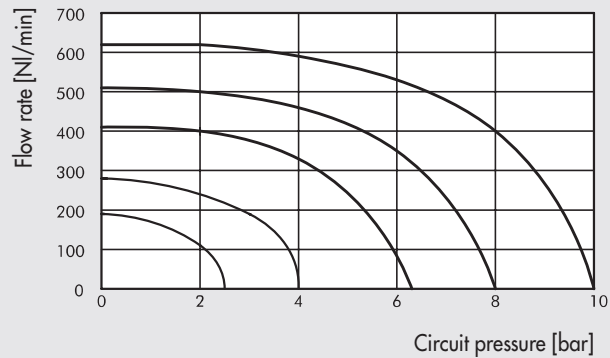
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ Nickel-plated brass pilot insert
- ④ AISI 303 steel rod
- ⑤ Stainless steel clamping spring
- ⑥ NBR seal
- ⑦ Stainless steel poppet spring
- ⑧ NBR seal
- ⑨ Technopolymer spring ring
- ⑩ Stainless steel clip-on spring
- ⑪ Technopolymer stop bushing
- ⑫ Technopolymer release bushing

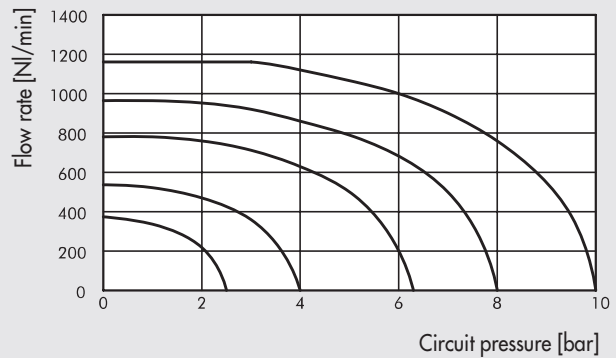


FLOW CHARTS

STP L Ø 6



STP L Ø 8 (Ø5/16")

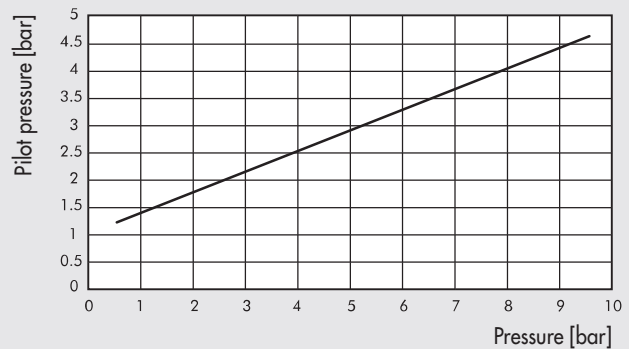


MINIMUM PILOT PRESSURE

STP L Ø 6



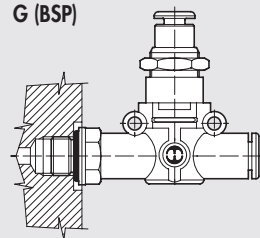
STP L Ø 8 (Ø5/16")



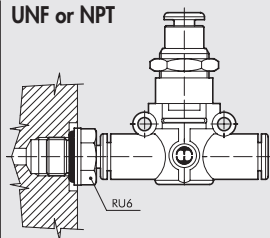
ASSEMBLY OPTIONS

A

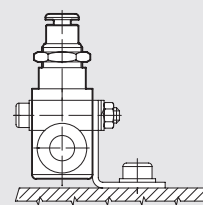
G (BSP)



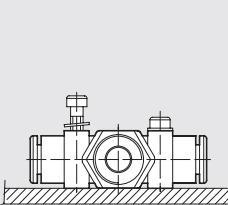
UNF or NPT



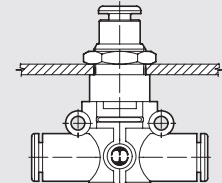
B



C



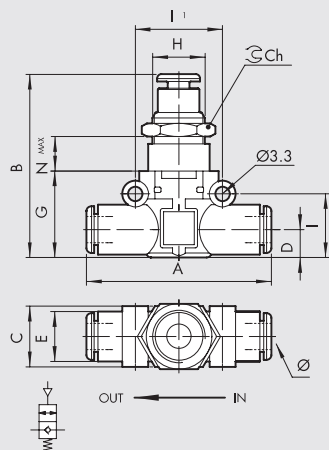
D



How to mount the STP L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the STP L straight onto the actuator or the control valve.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the STP L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket.
- Fig. C There are two robust rings on the plastic body for fixing the STP L straight onto the wall.
- Fig. D The ring nut is screwed onto the threaded metal part of the STP L body for panel mounting.

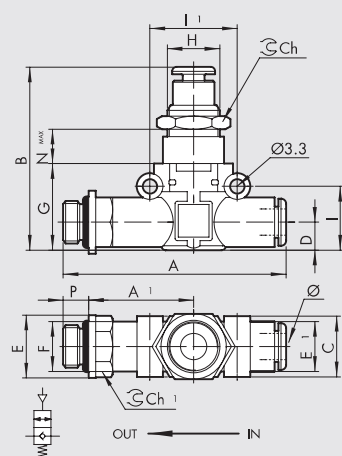
STP L 2/2 PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	G	H	I	II	Ch	Nmax
9065616	STP L 2/2 Ø6 - Ø6	6	49.4	43.2	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	12
9065624	STP L 2/2 Ø8 - Ø8	8 ▲	57.3	49.7	18.7	9.1	13.8	26	M15x1	18.7	24	17	11.8

▲ Ø8 = Ø5/16"

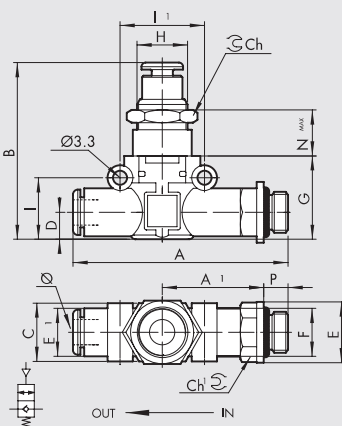
STP L 2/2 PIPE - G (BSP) THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065808	STP L 2/2 Ø6 - 1/8	6	1/8	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	12
9065809	STP L 2/2 Ø6 - 1/4	6	1/4	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	12
9065810	STP L 2/2 Ø8 - 1/8	8 ▲	1/8	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	11.8
9065811	STP L 2/2 Ø8 - 1/4	8 ▲	1/4	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	11.8
9065812	STP L 2/2 Ø8 - 3/8	8 ▲	3/8	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	11.8

▲ Ø8 = Ø5/16"

STP L 2/2 G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	II	Ch	Ch1	Nmax
9065708	STP L 2/2 1/8 - Ø6	1/8	6	6	58.5	27.8	43.2	14.7	6.4	14	11.4	20	M12x0.75	14.6	20	15	12	12
9065709	STP L 2/2 1/4 - Ø6	1/4	6	8	61.5	28.8	43.2	14.7	6.4	18	11.4	20	M12x0.75	14.6	20	15	14	12
9065710	STP L 2/2 1/8 - Ø8	1/8	8 ▲	6	66.2	31.8	49.7	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	11.8
9065711	STP L 2/2 1/4 - Ø8	1/4	8 ▲	8	70.6	34.2	49.7	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	11.8
9065712	STP L 2/2 3/8 - Ø8	3/8	8 ▲	9	72.2	34.8	49.7	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	11.8

▲ Ø8 = Ø5/16"

IN-LINE CHECK VALVE SERIES VNR L



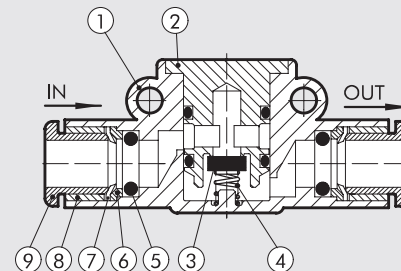
The VNR L check valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting. It is still the only check valve with holes for wall mounting.



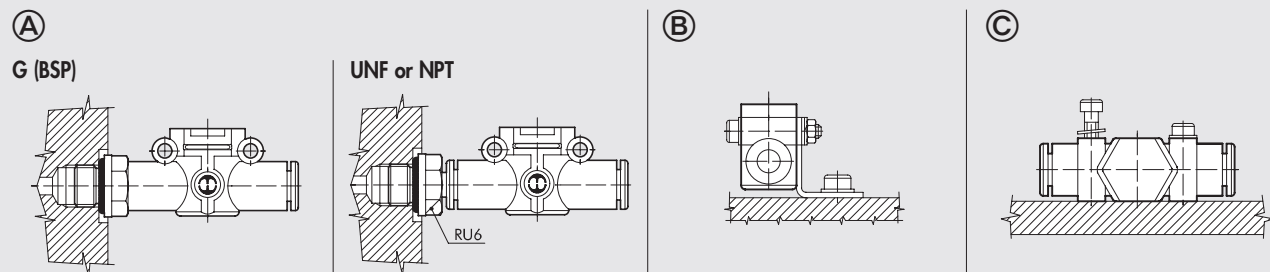
TECHNICAL DATA		Ø 4 (Ø5/32")	Ø 6	Ø 1/4"	Ø 8 (Ø5/16")	Ø 3/8"	Ø 10
Operating pressure	MPa	0.05 to 1.2					
	bar	0.5 to 12					
	psi	7.2 to 174					
Temperature range	°C	-20 to +60					
	°F	-4 to +140					
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	80	320	320	480	750	750
Recommended pipe		Rilsan PA11 - Nylon 6 - Polyamide 12 - Polypropylene					
Fluid		Lubricated or unlubricated filtered compressed air; if used, must be continuous					

COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass insert
- ③ NBR valve
- ④ Stainless steel valve compression spring
- ⑤ NBR gasket
- ⑥ Technopolymer spring ring
- ⑦ Stainless steel folding spring
- ⑧ Technopolymer locking bushing
- ⑨ Technopolymer release bushing



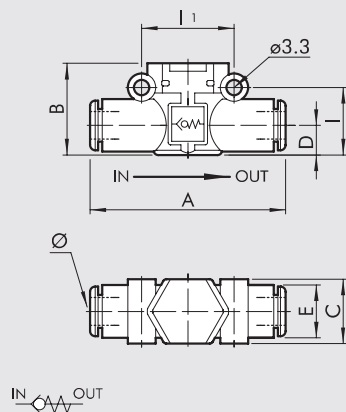
ASSEMBLY OPTIONS



How to mount the VNR L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the VNR L straight onto the female thread.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the VNR L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket, except for Ø3/8 and Ø10.
- Fig. C There are two robust rings on the plastic body for fixing the VNR L straight onto the wall.

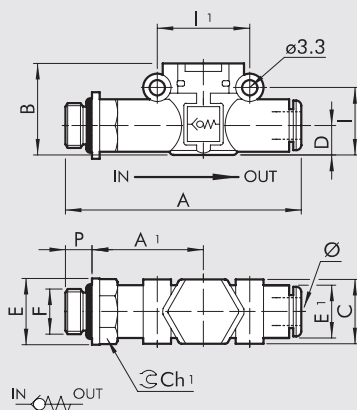
VNR L PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	I	I1
9064001	VNR L Ø4-Ø4	4 ▲	41.8	17.5	10.7	5.6	10	12.8	16
9064016	VNR L Ø6-Ø6	6	49.4	20	14.7	6.4	11.4	14.6	20
9064016U	VNR L Ø1/4-Ø1/4	1/4	49.4	20	14.7	6.4	11.4	14.6	20
9064024	VNR L Ø8-Ø8	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24
9064032U	VNR L Ø3/8-Ø3/8	3/8	65	30	21	10.9	16	21.4	26
9064032	VNR L Ø10-Ø10	10	65	30	21	10.9	16	21.4	26

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

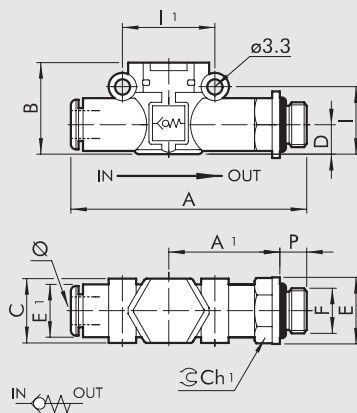
VNR L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	I1	Ch1
9064101	VNR L M5-Ø4	M5	4 ▲	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9064102	VNR L 1/8-Ø4	1/8	4 ▲	6	50.6	24.6	17.5	10.7	14	10	12.8	16	12
9064108	VNR L 1/8-Ø6	1/8	6	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9064109	VNR L 1/4-Ø6	1/4	6	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9064110	VNR L 1/8-Ø8	1/8	8 ▲	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9064111	VNR L 1/4-Ø8	1/4	8 ▲	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9064112	VNR L 3/8-Ø8	3/8	8 ▲	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17
9064115	VNR L 1/4-Ø10	1/4	10	8	79.9	39.2	30	20.7	18	16	21.4	26	16
9064116	VNR L 3/8-Ø10	3/8	10	9	81.2	40.4	30	20.7	20	16	21.4	26	17
9064117	VNR L 1/2-Ø10	1/2	10	11	83.7	40	30	20.7	26	16	21.4	26	22

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

VNR L PIPE - G (BSP) THREAD



Code	Ref.	Ø	F	P	A	A1	B	C	E	E1	I	I1	Ch1
9064201	VNR L Ø4-M5	4 ▲	M5	4	47.7	22.7	17.5	10.7	9.9	10	12.8	16	9
9064202	VNR L Ø4-1/8	4 ▲	1/8	6	50.6	24.6	17.5	10.7	14	10	12.8	16	12
9064208	VNR L Ø6-1/8	6	1/8	6	58.5	27.8	20	14.7	14	11.4	14.6	20	12
9064209	VNR L Ø6-1/4	6	1/4	8	61.5	28.8	20	14.7	18	11.4	14.6	20	14
9064210	VNR L Ø8-1/8	8 ▲	1/8	6	66.2	31.8	25.5	18.7	15	13.8	18.7	24	14
9064211	VNR L Ø8-1/4	8 ▲	1/4	8	70.6	34.2	25.5	18.7	18	13.8	18.7	24	14
9064212	VNR L Ø8-3/8	8 ▲	3/8	9	72.2	34.8	25.5	18.7	22	13.8	18.7	24	17
9064215	VNR L Ø10-1/4	10	1/4	8	79.9	39.2	30	20.7	18	16	21.4	26	16
9064216	VNR L Ø10-3/8	10	3/8	9	81.2	40.4	30	20.7	20	16	21.4	26	17
9064217	VNR L Ø10-1/2	10	1/2	11	83.7	40	30	20.7	26	16	21.4	26	22

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

IN-LINE FILTER SERIES FIL L



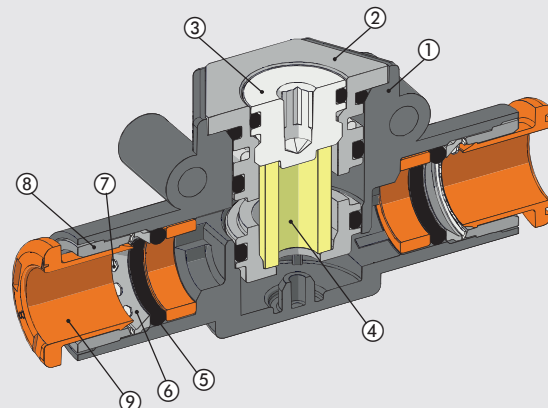
The FIL L filter is part of the LINE ON LINE® family, which means it can be connected in series or in parallel with all other products of the same line. Available in the version for pipe-pipe connection with two push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.

The sintered filter cartridge, which can be easily inspected and replaced by simply opening a removable cap, is available in 3 filtering grades of a different colour for easy identification: 5 µm (yellow), 20 µm (white) and 50 µm (blue).

[illegible]

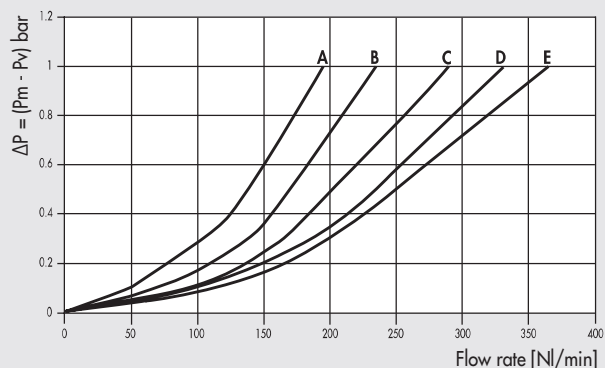
COMPONENTS

- ① Technopolymer body
- ② Nickel-plated brass filter insert
- ③ Nickel-plated brass filter cap
- ④ Sintered HDPE filter cartridge
- ⑤ NBR gasket
- ⑥ Technopolymer spring ring
- ⑦ Stainless steel clip-on spring
- ⑧ Technopolymer locking bushing
- ⑨ Technopolymer release bushing



FLOW CHART

FIL L Ø 8 (Ø 5/16") 20 µm - FIL L Ø 3/8" 20 µm - FIL L Ø 10 20 µm



A = 2.5 bar
B = 4 bar

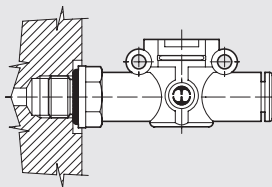
C = 6.3 bar
D = 8 bar

E = 10 bar

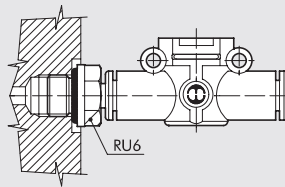
ASSEMBLY OPTIONS

A

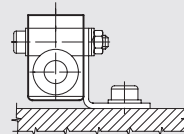
G (BSP)



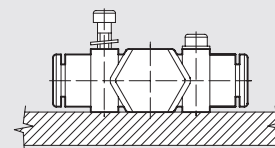
UNF or NPT



B



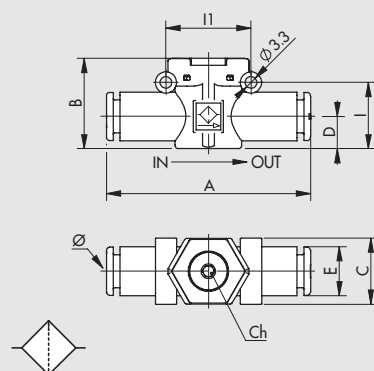
C



How to mount the FIL L:

- Fig. A **G (BSP)**: With the male threaded port it is possible to mount the FIL L straight onto the female thread.
UNF or NPT: Adding a RU6 fitting, with his male UNF or NPT thread, it is possible to mount the FIL L straight on to the actuator or the control valve.
- Fig. B Fixing to the plate with the special SQU L bracket (only for Ø8).
- Fig. C There are two robust rings on the plastic body for fixing the FIL L straight onto the wall.

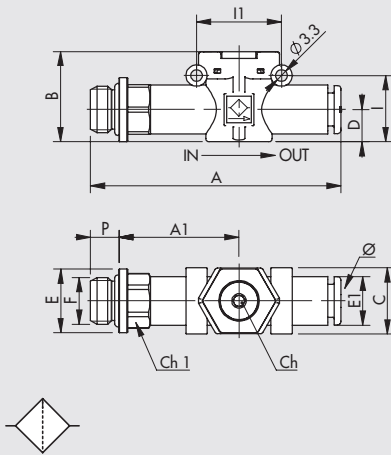
FIL L PIPE - PIPE



Code	Ref.	Ø	A	B	C	D	E	I	II	Ch
9070424	FIL L Ø8-Ø8 5 µm	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24	3
9070444	FIL L Ø8-Ø8 20 µm	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24	3
9070464	FIL L Ø8-Ø8 50 µm	8 ▲	57.3	25.5	18.7	9.1	13.8	18.7	24	3
9070432U	FIL L Ø3/8-Ø3/8 5 µm	3/8	65.4	29.7	20.7	10.9	16	21.4	26	3
9070452U	FIL L Ø3/8-Ø3/8 20 µm	3/8	65.4	29.7	20.7	10.9	16	21.4	26	3
9070472U	FIL L Ø3/8-Ø3/8 50 µm	3/8	65.4	29.7	20.7	10.9	16	21.4	26	3
9070432	FIL L Ø10-Ø10 5 µm	10	65.7	29.7	20.7	10.9	16	21.4	26	3
9070452	FIL L Ø10-Ø10 20 µm	10	65.7	29.7	20.7	10.9	16	21.4	26	3
9070472	FIL L Ø10-Ø10 50 µm	10	65.7	29.7	20.7	10.9	16	21.4	26	3

▲ Ø8 = Ø5/16"

FIL L G (BSP) THREAD - PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	I	I1	Ch	Ch1
9070510	FIL L 1/8-Ø8 5 µm	1/8	8 ▲	6	66.2	31.8	25.5	18.7	9.1	15	13.8	18.7	24	3	14
9070530	FIL L 1/8-Ø8 20 µm	1/8	8 ▲	6	66.2	31.8	25.5	18.7	9.1	15	13.8	18.7	24	3	14
9070550	FIL L 1/8-Ø8 50 µm	1/8	8 ▲	6	66.2	31.8	25.5	18.7	9.1	15	13.8	18.7	24	3	14
9070511	FIL L 1/4-Ø8 5 µm	1/4	8 ▲	8	70.6	34.2	25.5	18.7	9.1	18	13.8	18.7	24	3	14
9070531	FIL L 1/4-Ø8 20 µm	1/4	8 ▲	8	70.6	34.2	25.5	18.7	9.1	18	13.8	18.7	24	3	14
9070551	FIL L 1/4-Ø8 50 µm	1/4	8 ▲	8	70.6	34.2	25.5	18.7	9.1	18	13.8	18.7	24	3	14
9070512	FIL L 3/8-Ø8 5 µm	3/8	8 ▲	9	72.2	34.8	25.5	18.7	9.1	22	13.8	18.7	24	3	17
9070532	FIL L 3/8-Ø8 20 µm	3/8	8 ▲	9	72.2	34.8	25.5	18.7	9.1	22	13.8	18.7	24	3	17
9070552	FIL L 3/8-Ø8 50 µm	3/8	8 ▲	9	72.2	34.8	25.5	18.7	9.1	22	13.8	18.7	24	3	17
9070515	FIL L 1/4-Ø10 5 µm	1/4	10	8	79.9	39.2	29.7	20.7	10.9	18	16	21.4	26	3	16
9070535	FIL L 1/4-Ø10 20 µm	1/4	10	8	79.9	39.2	29.7	20.7	10.9	18	16	21.4	26	3	16
9070555	FIL L 1/4-Ø10 50 µm	1/4	10	8	79.9	39.2	29.7	20.7	10.9	18	16	21.4	26	3	16
9070516	FIL L 3/8-Ø10 5 µm	3/8	10	9	81.2	40.4	29.7	20.7	10.9	20	16	21.4	26	3	17
9070536	FIL L 3/8-Ø10 20 µm	3/8	10	9	81.2	40.4	29.7	20.7	10.9	20	16	21.4	26	3	17
9070556	FIL L 3/8-Ø10 50 µm	3/8	10	9	81.2	40.4	29.7	20.7	10.9	20	16	21.4	26	3	17
9070517	FIL L 1/2-Ø10 5 µm	1/2	10	11	83.7	40	29.7	20.7	10.9	26	16	21.4	26	3	22
9070537	FIL L 1/2-Ø10 20 µm	1/2	10	11	83.7	40	29.7	20.7	10.9	26	16	21.4	26	3	22
9070557	FIL L 1/2-Ø10 50 µm	1/2	10	11	83.7	40	29.7	20.7	10.9	26	16	21.4	26	3	22

▲ Ø8 = Ø5/16"

SPARE PARTS

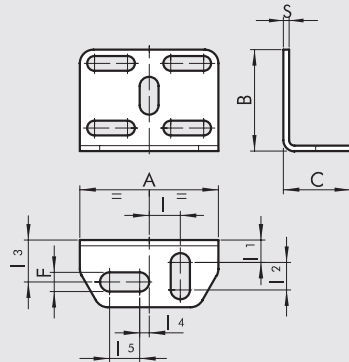
FILTERING ELEMENT



Code	Description
9062500	Filtering element 5 µm (yellow) LOL
9062501	Filtering element 20 µm (white) LOL
9062502	Filtering element 50 µm (blue) LOL

NOTES

FIXING SQUARE KIT



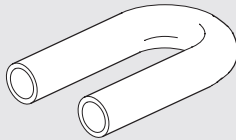
Code	Description	A	B	C	F	I	I1	I2	I3	I4	I5	S
9062110	SQU L	30	22	14.5	4.2	6.8	4.8	5.9	9.1	2	6.5	1.2

NOTE: comes with two M3x16 screws (for L.O.L. Ø 4▲), two M3x25 screws (for L.O.L. Ø 6-Ø1/4-Ø 8▲), two M3 hexagonal nuts, 2 groovers, 4 washers.

NOT COMPATIBLE WITH Ø3/8 AND Ø10

▲ Ø4 = Ø5/32"; Ø8 = Ø5/16"

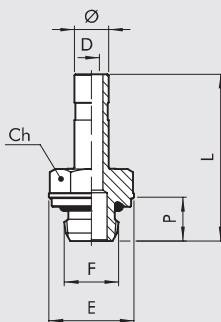
U-BOLT



Code	Description
9062216	TUB L Ø6-Ø6
9062216U	TUB L Ø1/4-Ø1/4
9062224	TUB L Ø8-Ø8 ▲

▲ Ø8 = Ø5/16"

RU6 - STEM ADAPTORS UNF or NPT



Code	Ref.	Ø	F	Ch		P	L	D	E
				Inc	mm				
2U06001	RU6	5/32	10-32 UNF	5/16	8	4	25.2	2	9
2U06002	RU6	5/32	1/8 NPT	0.472	12	6	27.7	2.5	13
2U06003	RU6	5/32	1/4 NPT	0.551	14	8	30.2	2.5	16.4
2U06000	RU6	1/4	10-32 UNF	5/16	8	4	25.7	2	9
2U06007	RU6	1/4	1/8 NPT	0.472	12	6	28.2	4	13
2U06008	RU6	1/4	1/4 NPT	0.551	14	8	30.5	4	16.4
2U06020	RU6	1/4	3/8 NPT	0.669	17	9	33.3	4	20
2U06009	RU6	5/16	1/8 NPT	0.472	12	6	29.2	5.5	13
2U06010	RU6	5/16	1/4 NPT	0.551	14	8	31.5	6	16.4
2U06011	RU6	5/16	3/8 NPT	0.669	17	9	34.3	6	20
2U06012	RU6	3/8	1/4 NPT	0.551	14	8	34.8	7.3	16.4
2U06013	RU6	3/8	3/8 NPT	0.669	17	9	37.6	7.3	20
2U06022	RU6	3/8	1/2 NPT	0.748	19	11	41.2	7.3	24.5

SUMMARY COUPLINGS



- COMPRESSED AIR QUICK-FIT COUPLING SERIES IAC

E2.2



- QUICK-FIT COUPLING FOR MOULD CONDITIONING SERIES ICS

E2.6

COMPRESSED AIR QUICK-FIT COUPLING SERIES IAC

The compressed air quick-fit coupling by Metal Work allows quick replacement of pneumatic equipment (drills, milling machines, screwers and actuators in general) without having to set the line pressure to zero each time. Rapid tool changeover can be easily obtained by fitting a female body on the branch under pressure and the male coupling on the actuator. The presence of a female coupling with a safety valve on the branch under pressure prevents air dispersion during disconnection.

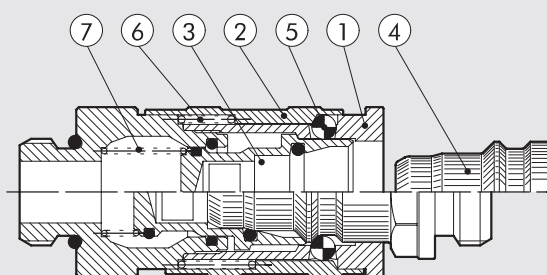


TECHNICAL DATA

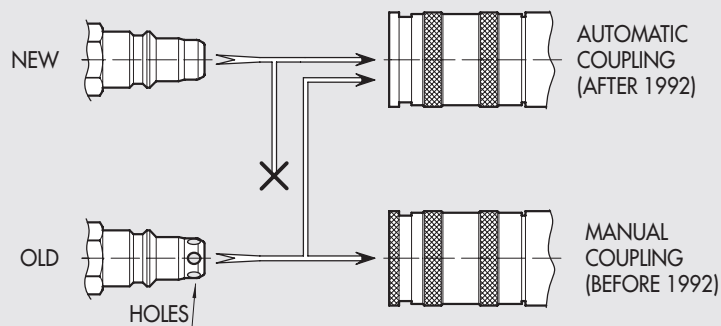
		MINI		100	200	300
Threaded coupling		1/8"	1/4"	1/4"	3/8"	1/2"
Maximum inlet pressure	MPa	3			3	
	bar	30			30	
	psi	435			435	
Flow rate at 6 bar (0.6 MPa - 87 psi) ΔP 1 bar (0.1 MPa - 14 psi)	Nl/min	480		750	1450	1750
Maximum temperature	°C	80			80	
	°F	176			176	

COMPONENTS

- ① Body: nickel-plated brass
- ② Ring nut: nickel-plated brass
- ③ Valve: nickel-plated brass
- ④ Coupling: carbonitrided and zinc-plated steel
- ⑤ Ball: stainless steel
- ⑥ Ring nut spring: AISI 302
- ⑦ Valve spring: AISI 302

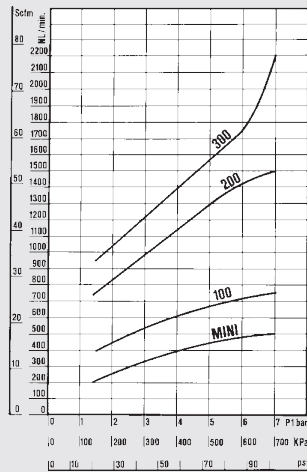


The actual male couplings don't have lateral holes. They cannot be coupled with the manual ports old production.

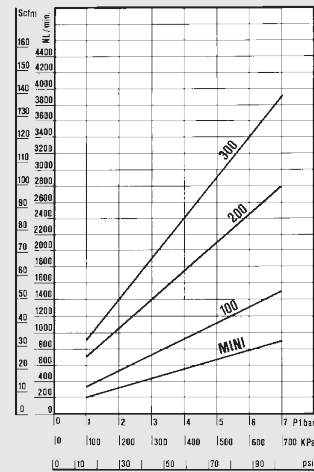


FLOW CHARTS

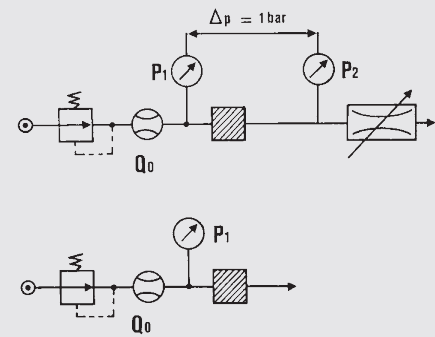
CURVE WITH $\Delta P = 1$ bar



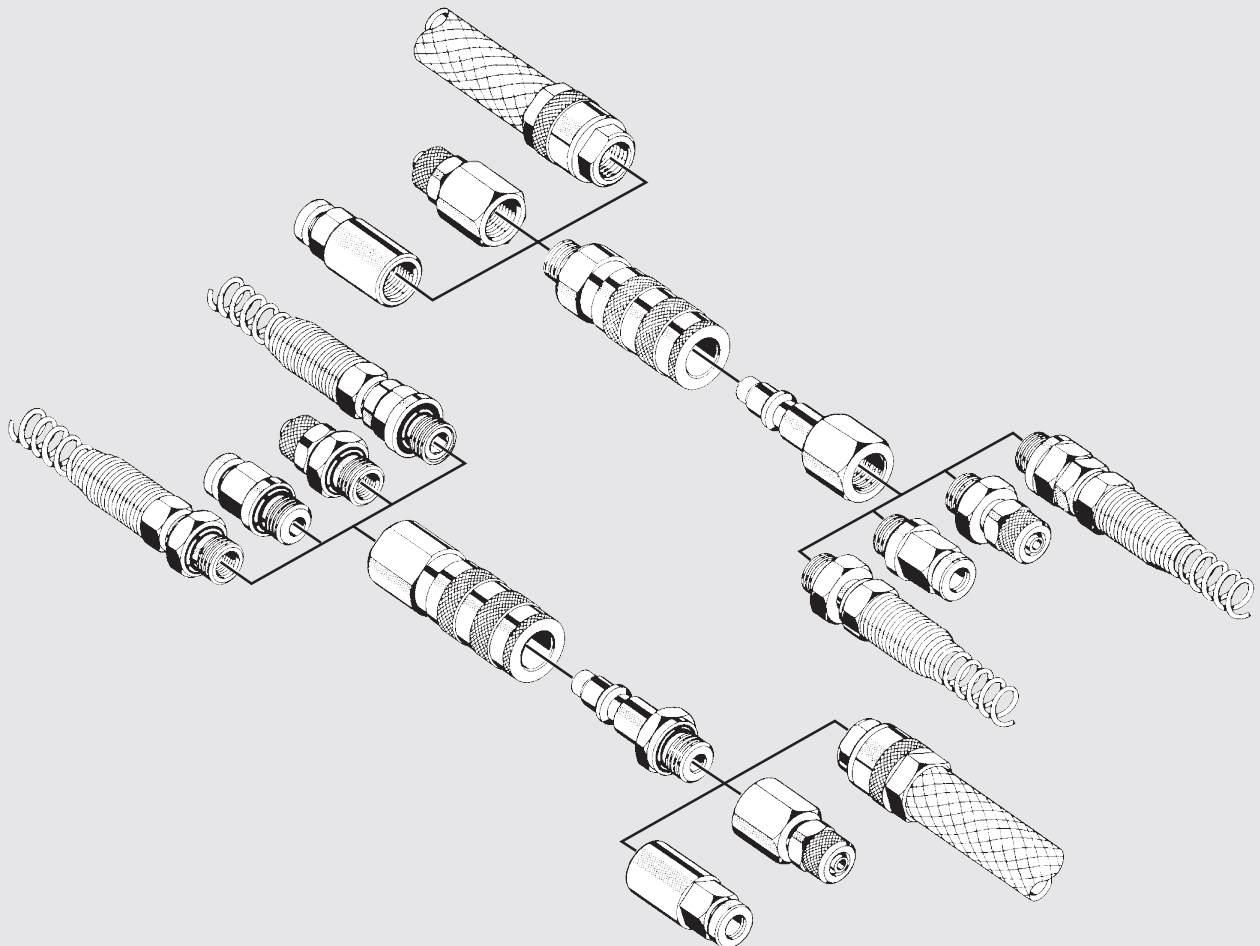
CURVE WITH FREE EXHAUST



FLOW TEST DIAGRAMS

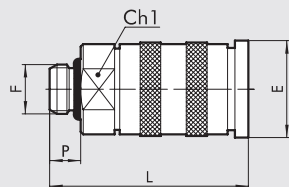


TYPICAL ASSEMBLIES



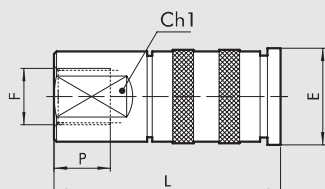
OVERALL DIMENSIONS AND ORDERING CODES

QUICK-FIT PORT, MALE



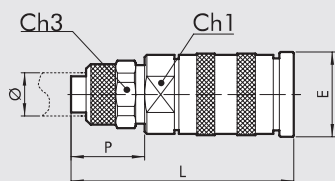
Code	Ref.	Mod.	F	Ch1	P	L	E	O-ring
0101001	01	mini	1/8	16	6.0	38.0	18.8	2031
0101002	02	mini	1/4	16	8.0	40.0	18.8	2043
0201101	101	100	1/4	21	8.0	50.0	24.4	2043
0301201	201	200	3/8	23	9.0	57.6	26.4	2056
0300202	201/A	200	1/4	23	8.0	56.6	26.4	2043
0401301	301	300	1/2	30	11.0	70.8	33.0	3068

QUICK-FIT PORT, FEMALE



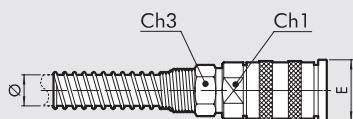
Code	Ref.	Mod.	F	Ch1	P	L	E
0101003	03	mini	1/8	16	7.0	40.5	18.8
0101004	04	mini	1/4	16	8.0	42.0	18.8
0201102	102	100	1/4	21	8.0	52.0	24.4
0301202	202	200	3/8	23	10.0	60.7	26.4
0401302	302	300	1/2	30	11.0	73.8	33.0

QUICK-FIT PORT, NYLON PIPE



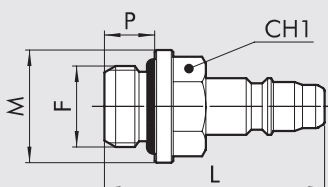
Code	Ref.	Mod.	Ø	Ch1	Ch3	P	L	E
0101005	05	mini	6/4	16	12	14.0	46.0	18.8
0101006	06	mini	8/6	16	14	14.0	46.0	18.8

QUICK-FIT PORT, NYLON PIPE WITH SPRING



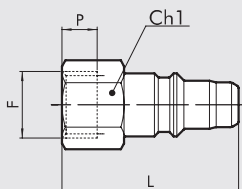
Code	Ref.	Mod.	Ø	Ch1	Ch3	E
0101007	07	mini	6/4	16	12	18.8
0101008	08	mini	8/6	16	14	18.8

QUICK-FIT COUPLING, MALE



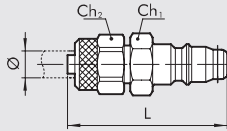
Code	Ref.	Mod.	F	Ch1	P	L	M	O-ring
0102011	11	mini	1/8	13	6.0	29.3	15	2031
0102012	12	mini	1/4	14	8.0	32.7	18	2043
0202111	111	100	1/4	14	8.0	42.2	18	2043
0302211	211	200	3/8	17	9.0	45.8	20	2056
0303205	211/A	200	1/4	16	8.0	46.2	18	2043
0402311	311	300	1/2	22	11.0	55.2	26	3068

QUICK-FIT COUPLING, FEMALE



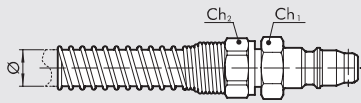
Code	Ref.	Mod.	F	Ch1	P	L
0102013	13	mini	1/8	14	7.0	29.5
0102014	14	mini	1/4	17	8.0	30.5
0202112	112	100	1/4	17	8.0	42.0
0302212	212	200	3/8	20	10.0	48.0
0402312	312	300	1/2	24	11.0	55.0

QUICK-FIT COUPLING, NYLON PIPE



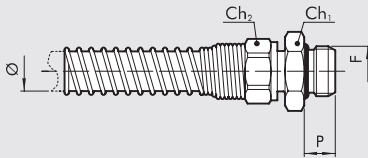
Code	Ref.	Mod.	Ø	Ch1	Ch2	L
0102015	15	mini	6/4	12	12	35.5
0102016	16	mini	8/6	14	14	35.5

QUICK-FIT COUPLING, NYLON PIPE WITH SPRING



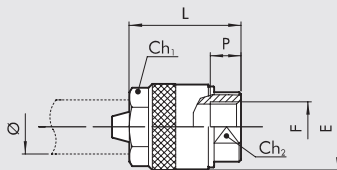
Code	Ref.	Mod.	Ø	Ch1	Ch2
0102017	17	mini	6/4	12	12
0102018	18	mini	8/6	14	14

NYLON PIPE FITTING WITH SPRING



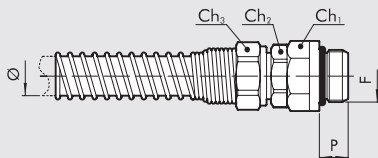
Code	Ref.	F	Ø	Ch1	Ch2	P
0010001	C1/Z	1/4	8/6	18	14	8
0010002	C1/Z	3/8	8/6	21	14	9
0010003	C1/Z	1/4	10/8	18	17	8
0010004	C1/Z	3/8	10/8	21	17	9
0010005	C1/Z	3/8	12/10	21	19	9

HOSE FITTING



Code	Ref.	F	Ø	Ch1	Ch2	P	L	E
2601001	40	1/4	6x14	18	16	8.0	29.0	23.0
2601002	41	1/4	8x17	21	16	8.0	31.0	25.0
2601003	42	1/4	10x19	23	17	8.0	31.0	27.0
2601004	43	1/2	13x23	27	24	11.0	35.5	31.0

SWIVEL NYLON PIPE FITTING WITH SPRING



Code	Ref.	F	Ø	Ch1	Ch2	Ch3	P	O-ring
2501010	50	1/4	6/4	16	14	12	8.0	2043
2501011	51	1/4	8/6	16	14	14	8.0	2043
2501012	52	3/8	10/8	19	17	17	9.0	2056
2501013	53	3/8	12/10	19	17	19	9.0	2056

NOTES

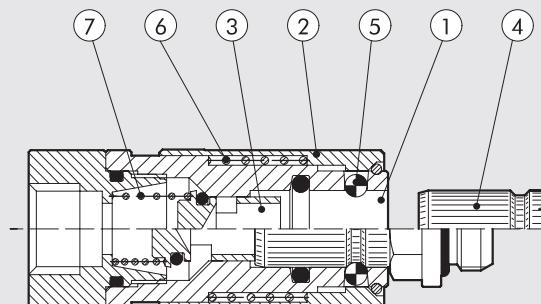
QUICK-FIT COUPLING FOR MOULD CONDITIONING SERIES ICS

The mould conditioning coupling was specifically designed to speed up and facilitate the replacement of moulds in injection moulding machines. Rapid mould changeover can be easily obtained by fitting a female body at the end of the pipes conveying the thermoregulating fluid and a male coupling to the moulds. With this configuration, each mould can be connected and disconnected from the thermoregulation circuit rapidly. The presence of a female coupling with a safety valve on the pipework prevents the outflow of fluid when coupling with or releasing from the mould.

[illegible]

COMPONENTS

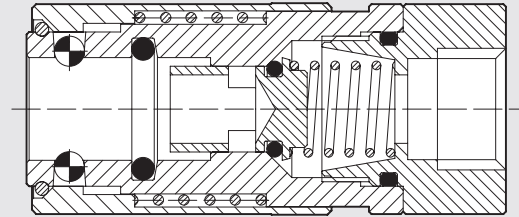
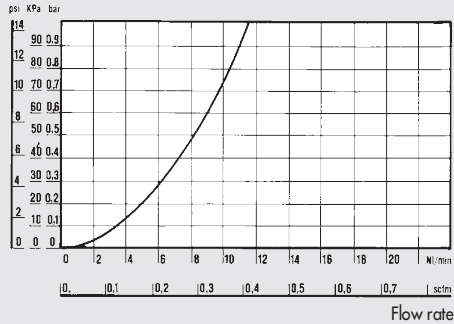
- ① Body: nickel-plated brass
- ② Ring nut: nickel-plated brass
- ③ Valve: nickel-plated brass
- ④ Coupling: nickel-plated brass
- ⑤ Ball: stainless steel
- ⑥ Ring nut spring: AISI 302
- ⑦ Valve spring: AISI 302



ICS WATER FLOW CHARTS WITH SAFETY VALVE

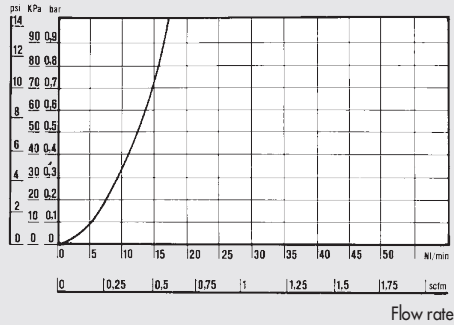
ICS/500 1/8"

ΔP - Pressure



ICS/400 1/4"

ΔP - Pressure



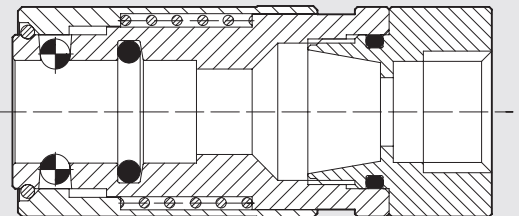
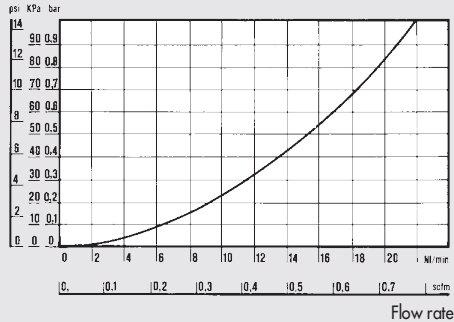
WITH SAFETY VALVE

The female body with safety valve prevents the outflow of thermoregulator fluid when coupling with or releasing from the mould.

ICS WATER FLOW CHARTS WITHOUT SAFETY VALVE

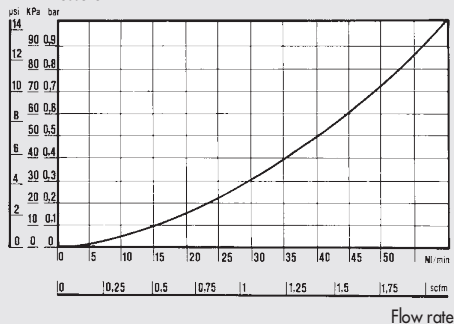
ICS/500 1/8"

ΔP - Pressure



ICS/400 1/4"

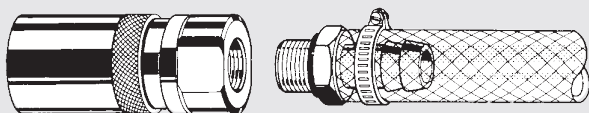
ΔP - Pressure



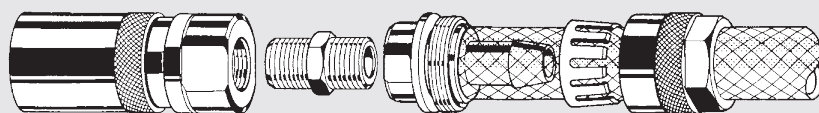
WITHOUT SAFETY VALVE

A version having a female body without a safety valve is available for when a high flow rate is required. This version allows a greater thermoregulator fluid flow rate but does not act as a fluid check valve when coupling with or releasing from the mould.

GENERAL FEATURES



Female body plus conventional hose fitting (pipe locked with metal circlip).



Female body plus self-locking hose fitting patented by Metal Work. When the outer ring nut is tightened, the gripper locks on the pipe.

FIG. A

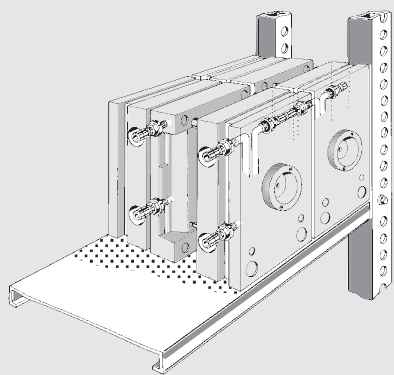


FIG. 1

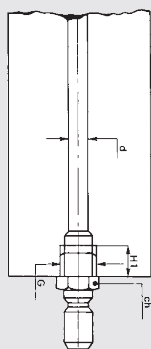
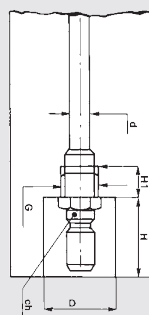


FIG. 2



The male fitting should be coupled with the mould so that it remains embedded (Fig. 2-4). This saves space and protects the coupling. The mould has no projecting parts, which would occupy more space on the storage shelving (Fig. A).

d	G	H1	Ch	D	H
4/6	1/8	7	13	20	23
7/9	1/4	9	14	26	30

FIG. B

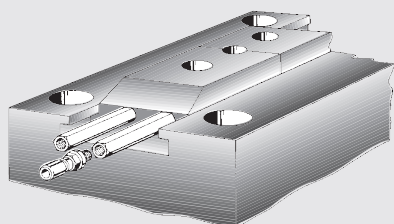


FIG. 3

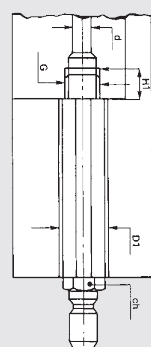
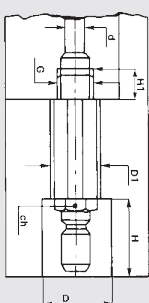


FIG. 4

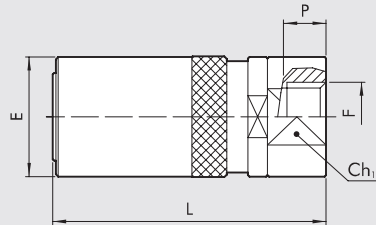


The Extension (see A25 fittings) is available as an accessory. It is extremely useful when parts inside the moulds need to be thermoregulated or when the presence of trucks makes it impossible to connect the moulds to the rubber pipe. (Fig. B).

d	G	H1	Ch	D	H	D1
4/6	1/8	7	13	20	23	17
7/9	1/4	9	14	26	30	21

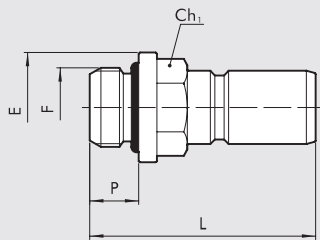
OVERALL DIMENSIONS AND ORDERING CODES

FEMALE PORT



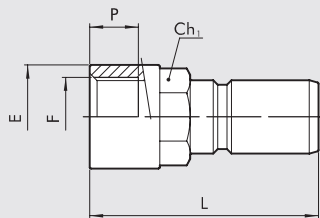
Code	Ref.	F	Safety valve	Ch1	P	L	E
0601040	501V	1/8	yes	16	7.0	45.0	19.0
0501040	401V	1/4	yes	21	8.0	56.0	25.0
0600040	503V	1/8	no	16	7.0	45.0	19.0
0500040	403V	1/4	no	21	8.0	56.0	25.0

MALE COUPLING



Code	Ref.	F	Ch1	P	L	E	O-ring FKM/FPM
0602001	511	1/8	13	6.0	28.5	15.0	2031
0502001	411	1/4	14	8.0	37.0	18.0	2043

FEMALE COUPLING



Code	Ref.	F	Ch1	P	L	E
0602002	512	1/8	12	7.0	28.0	14
0502002	412	1/4	14	8.0	37.5	17

NOTES

NOTES

SUMMARY FLOW REGULATOR



● INTRODUCTION FLOW MICRO-REGULATOR

E3.2



● FLOW MICRO-REGULATOR SERIES MRF COMPACT N and COMPACT O

E3.4



● FLOW MICRO-REGULATOR SERIES MRF HIGH-FLOW

E3.14



● FLOW MICRO-REGULATOR SERIES MRF PUSH-LOCK

E3.16



● IN-LINE FLOW MICRO-REGULATOR SERIES RFL L

E1.29



● IN-LINE FLOW REGULATOR SERIES RFL

E3.18

INTRODUCTION FLOW MICRO-REGULATOR

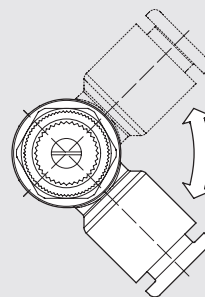
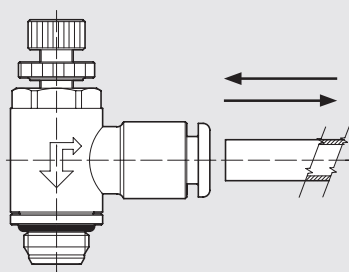
The job of flow microregulators is to regulate speed in the pneumatic cylinders. The configuration of both type C (to be mounted on the cylinder inlet) and type V (to be mounted on the valve port) is such as to ensure full flow on feed and regulated flow on discharge. Type B (bidirectional) can be used to regulate the flow both on feed and discharge. Flow microregulators are divided into 4 series:

- **MRF COMPACT O:** can be adjusted using a screwdriver; the regulation pin is lubricated with a particular antivibration grease; it has reduced dimensions and fine adjustment in the first turns; adjustment can be prevented by assembling a disposable cap (supplied separately) that can be removed using a tool.
- **MRF COMPACT N:** can be adjusted using the knob and/or screwdriver; adjustment can be prevented by tightening the ring nut; it has the same regulation curve as those in series O.
- **MRF HIGH-FLOW:** can be adjusted using the knob and/or screwdriver; adjustment can be prevented by tightening the ring nut; it is ideal for use in installations requiring high flow rates both on regulation and discharge. Available in G1/8 and G1/4 and with a technopolymer ring.
- **MRF PUSH-LOCK:** it is the only one in the MRF series with a PUSH-LOCK knob, that can be replaced by an anti-tampering knob (supplied separately). Available in G1/8 and G1/4 and with a technopolymer ring.

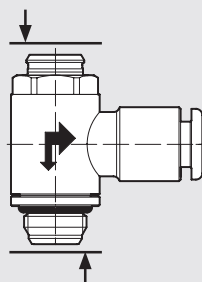


All the MRF with a pipe engage-release system of the latest generation that facilitates detachment of the pipe even under difficult operating conditions.

The rings can be rotated even with the MRF installed, which means that they can be mounted with the pipe facing towards any direction.

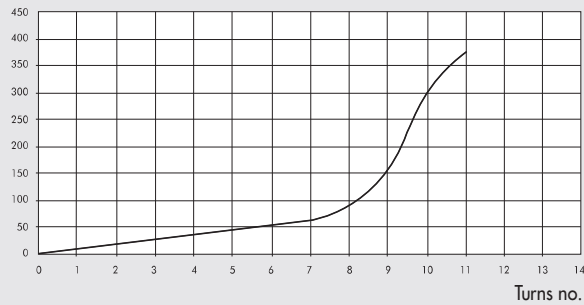


Special focus has been placed on miniaturisation of the components (mainly for COMPACT MRF series O), which saves considerable space.



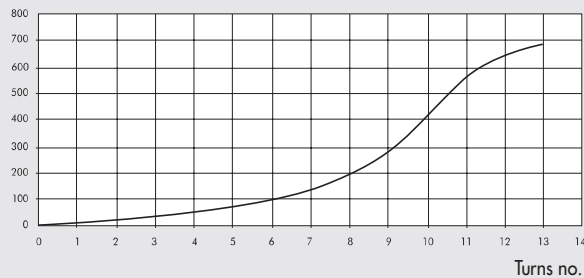
FLOW CHARTS

Flow rate [Nl/min]

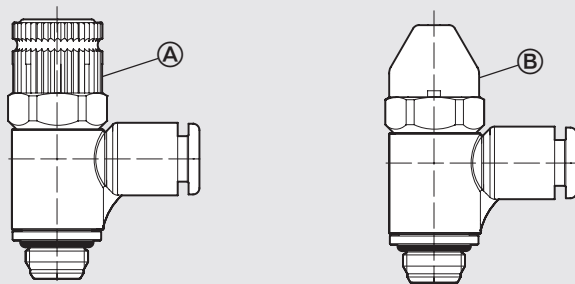


The regulation curve in the MRF series COMPACT N, COMPACT O and PUSH-LOCK takes place in two sections: in the first half of the flash pin stroke for very fine regulation and relatively low flow rates; in the second half, the flash pin quickly opens the passage so as to reach the maximum flow rate quickly.

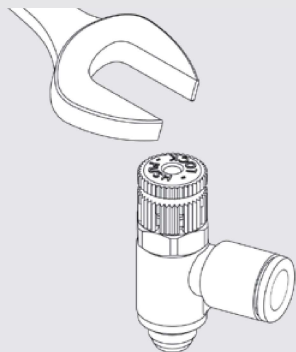
Flow rate [Nl/min]



The regulation curve in the MRF series HIGH-FLOW is divided into 3 sections: regulation is particularly accurate along the entire flash pin stroke and the maximum flow rate is reached at a good steady rate; in this way, the user can choose the solution which best fits the specific application.



A major innovative aspect of the new MRF is the possibility of using the PUSH-LOCK series that can be mounted with either a push-lock (A) or an anti-tampering knob (B). The push-lock knob prevents decalibration of the MRF due to vibration or incorrect torque. With the anti-tampering knob there is no way to change the position unless you remove the knob using a special tool.



All the new MRF can be fixed from the top using a universal wrench, a pipe wrench or an automatic screwdriver.

Thread	Maximum torque [Nm]*
M5	max 1.8
G1/8-1/8 NPT	max 6
G1/4-1/4 NPT	max 8
G3/8-3/8 NPT	max 10
G1/2-1/2 NPT	max 15

* measured on a metal female thread

FLOW MICROREGULATOR SERIES MRF COMPACT N and COMPACT O

Main features:

- reduced dimensions
- excellent regulation
- regulation with a screwdriver and disposable anti-tampering cap (COMPACT O)
- regulation with either a screwdriver and/or a knob, can be fixed with a ring nut (COMPACT N)
- available in all sizes (from M5 to G1/2) with a brass or a technopolymer ring
- available (from 10-32 UNF to 1/2 NPT) only with brass ring version COMPACT N
- can be mounted with an automatic screwdriver
- comes with a ring that can rotate even with the MRF mounted in position.

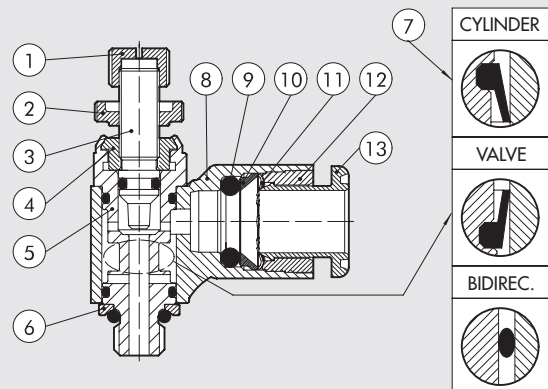


TECHNICAL DATA METRIC or G (BSP)		M5			G1/8				G1/4				G3/8			G1/2	
Pipe		Ø 4	Ø 5*	Ø 6	Ø 4	Ø 5*	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12	Ø 8	Ø 10	Ø 12	Ø 12	Ø 14
Max input pressure	MPa	1															
	bar	10															
	psi	145															
Temperature range: Technopolymer ring	°C	- 10 to + 50															
	°F	+ 14 to + 122															
Brass ring	°C	- 10 to + 70															
	°F	+ 14 to +158															
Max flow rate on regulation at 6.3 bar	Nl/min	150	155	155	350	360	380	400	750	850	950	1000	1250	1300	1400	2000	
Max flow rate on exhaust at 6.3 bar with closed needle	Nl/min	140	145	150	300	320	350	390	450	500	500	550	1030	1050	1250	1750	
Max flow rate on exhaust at 6.3 bar with open needle	Nl/min	240	245	245	450	510	600	650	850	1050	1150	1250	1700	1700	2100	2700	
Regulation		Manual (COMPACT N only) or using a screwdriver															
Internal system		Tapered needle															
Fluid		Filtered, lubricated or unlubricated compressed air															
* Pipe Ø 5 is only available with a brass ring																	

TECHNICAL DATA UNF or NPT		10-32 UNF		1/8 NPT				1/4 NPT				3/8 NPT		1/2 NPT	
Pipe		Ø 5/32	Ø 1/4	Ø 5/32	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/4	Ø 5/16	Ø 3/8	Ø 1/2	Ø 3/8	Ø 1/2	Ø 1/2	
Max input pressure	MPa	1													
	bar	10													
	psi	145													
Temperature range: Brass ring	°C	- 10 to + 70													
	°F	+ 14 to +158													
Max flow rate on regulation at 6.3 bar	Nl/min	150	155	350	380	400	400	750	850	950	1000	1300	1400	2000	
Max flow rate on exhaust at 6.3 bar with closed needle	Nl/min	140	150	300	350	390	390	450	275	500	550	1050	1250	1750	
Max flow rate on exhaust at 6.3 bar with open needle	Nl/min	240	245	450	600	650	650	850	1050	1150	1250	1700	2100	2700	
Regulation		Manual or using a screwdriver													
Internal system		Tapered needle													
Fluid		Filtered, lubricated or unlubricated compressed air													

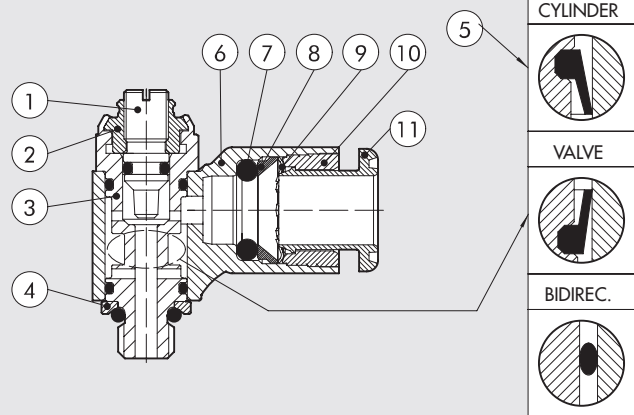
TYPE N COMPONENTS - M5 THREAD - 10-32 UNF

- ① Nickel-plated brass knob
- ② Nickel-plated brass securing ring nut
- ③ Brass needle
- ④ Nickel-plated brass bush
- ⑤ Nickel-plated brass body
- ⑥ Nickel-plated brass retaining ring
- ⑦ NBR gasket
- ⑧ Nickel-plated or technopolymer brass revolving ring
- ⑨ NBR gasket
- ⑩ Technopolymer spring supporting ring
- ⑪ Stainless steel grabbing spring
- ⑫ Technopolymer retaining bush
- ⑬ Technopolymer release bush



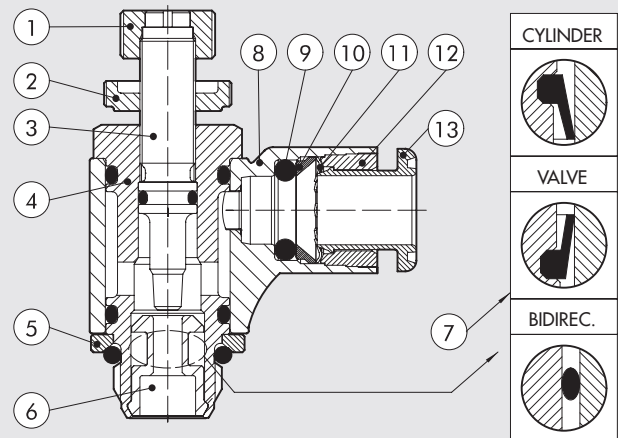
TYPE O COMPONENTS - M5 THREAD

- ① Brass needle
- ② Nickel-plated brass bush
- ③ Nickel-plated brass body
- ④ Nickel-plated brass retaining ring
- ⑤ NBR gasket
- ⑥ Nickel-plated or technopolymer brass revolving ring
- ⑦ NBR gasket
- ⑧ Technopolymer spring supporting ring
- ⑨ Stainless steel grabbing spring
- ⑩ Technopolymer retaining bush
- ⑪ Technopolymer release bush



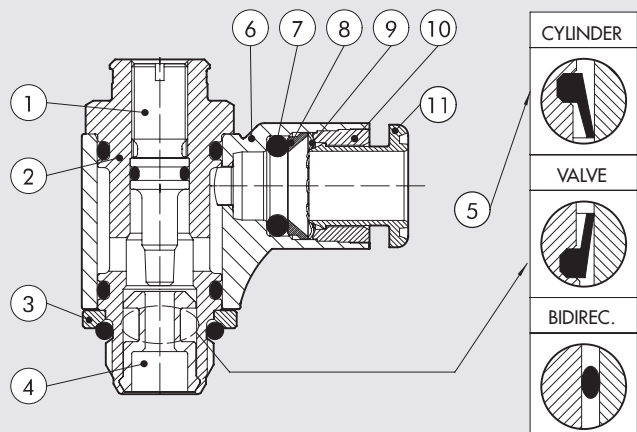
TYPE N COMPONENTS - THREAD FROM G1/8 TO G1/2 - FROM 1/8 NPT TO 1/2 NPT

- ① Nickel-plated brass knob
- ② Nickel-plated brass securing ring nut
- ③ Brass needle
- ④ Nickel-plated brass body
- ⑤ Nickel-plated brass retaining ring
- ⑥ Brass gasket holding insert
- ⑦ NBR gasket
- ⑧ Nickel-plated or technopolymer brass revolving ring
- ⑨ NBR gasket
- ⑩ Technopolymer spring supporting ring
- ⑪ Stainless steel grabbing spring
- ⑫ Technopolymer retaining bush
- ⑬ Technopolymer release bush



TYPE O COMPONENTS - THREAD FROM G1/8 TO G1/2

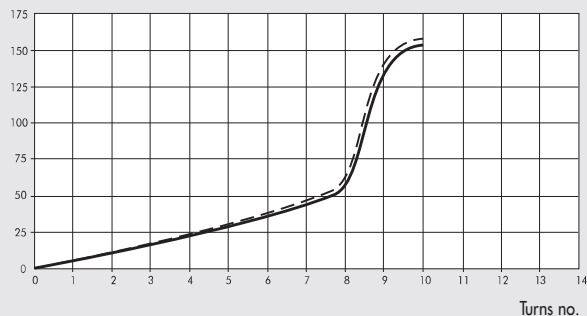
- ① Brass needle
- ② Nickel-plated brass body
- ③ Nickel-plated brass retaining ring
- ④ Brass gasket holding insert
- ⑤ NBR gasket
- ⑥ Nickel-plated or technopolymer brass revolving ring
- ⑦ NBR gasket
- ⑧ Technopolymer spring supporting ring
- ⑨ Stainless steel grabbing spring
- ⑩ Technopolymer retaining bush
- ⑪ Technopolymer release bush



FLOW CHARTS

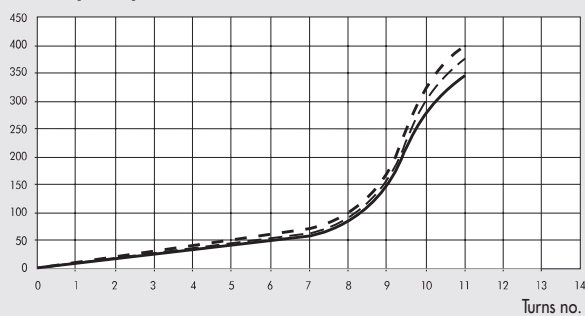
MRF M5 - 10-32 UNF

Flow rate [Nl/min]



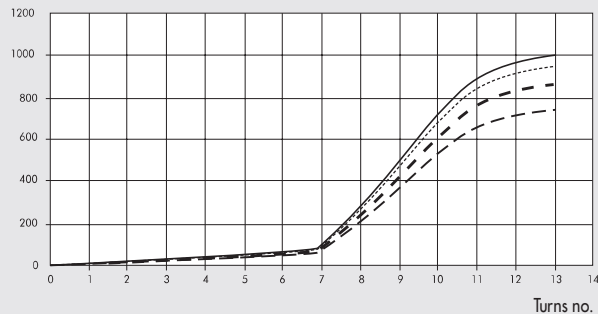
MRF G1/8 - 1/8 NPT

Flow rate [Nl/min]



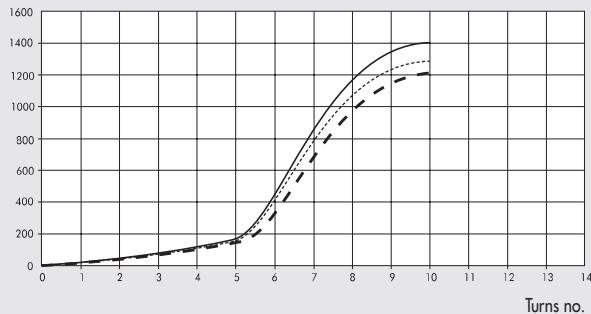
MRF G1/4 - 1/4 NPT

Flow rate [Nl/min]



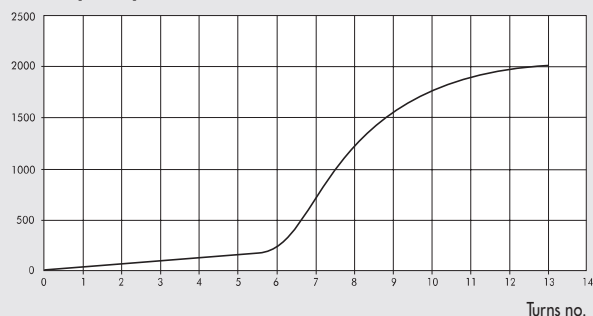
MRF G3/8 - 3/8 NPT

Flow rate [Nl/min]



MRF G1/2 - 1/2 NPT

Flow rate [Nl/min]



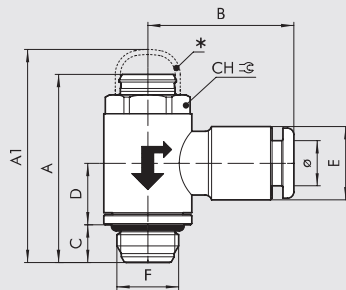
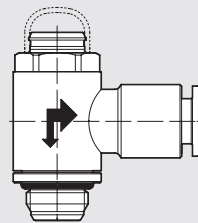
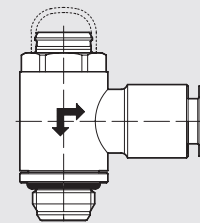
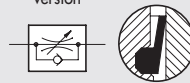
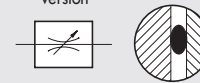
— Ø4 (5/32")
 - - - Ø6 - Ø1/4"
 - - - Ø8 (5/16")
 . . . Ø10 - Ø3/8"
 — Ø12 - Ø1/2"

SYNOPTIC, SIZES AND VERSIONS

M R F FAMILY	N TYPE	M RING	C FUNCTION	4 Ø TUBE / THREAD	M5 THREAD
Flow microregulator	N With knob and ring nut O Flash needle	M Nickel-plated brass with push-in fitting T Technopolymer with push-in fitting F Nickel-plated brass with female thread	C For cylinder V For valve B Bidirectional	MILLIMETER TUBE 4 Ø 4 (5/32") 5 Ø 5 6 Ø 6 8 Ø 8 (5/16") 10 Ø 10 12 Ø 12 14 Ø 14 G (BSP) THREAD 1/8 G1/8 Female 1/4 G1/4 Female 3/8 G3/8 Female 1/2 G1/2 Female INCH TUBES ▲ 1/4 Ø 1/4" 3/8 Ø 3/8" 1/2 Ø 1/2"	MTERIC or G (BSP) M5 M5 1/8 G1/8 1/4 G1/4 3/8 G3/8 1/2 G1/2 UNF or NPT ▲ 10-32 UNF 10-32 UNF 1/8 NPT 1/8 NPT 1/4 NPT 1/4 NPT 3/8 NPT 3/8 NPT 1/2 NPT 1/2 NPT

▲ Available only for version MRF compact "N" with brass ring.

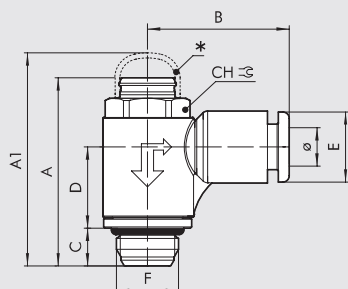
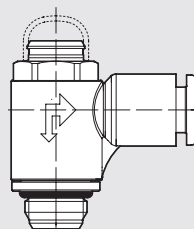
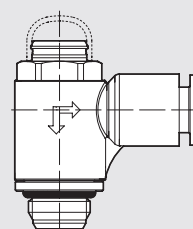
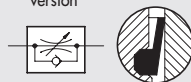
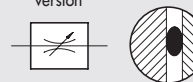
MRF COMPACT "O" BRASS RING

cylinder
versionvalve
versionbidirectional
version

* OPTIONAL ANTI-TAMPERING CAP

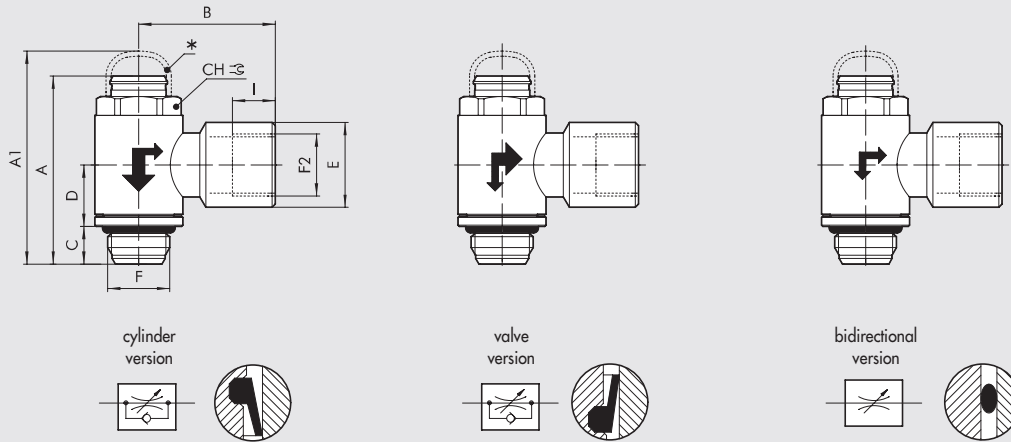
Code	Description	F	Ø	CH	A min	A max	A1	B	C	D	E
9001001C	MRFO MC 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001110V	MRFO MV 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001601B	MRFO MB 4 M5	M5	4	9	23.9	25	26.5	20.2	4	9.2	9.5
9001002C	MRFO MC 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001113V	MRFO MV 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001603B	MRFO MB 5 M5	M5	5	9	23.9	25	26.5	23.8	4	9.2	12
9001007C	MRFO MC 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001105V	MRFO MV 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001612B	MRFO MB 6 M5	M5	6	9	23.9	25	26.5	23.5	4	9.2	11.3
9001011C	MRFO MC 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001111V	MRFO MV 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001602B	MRFO MB 4 1/8	1/8	4	12	29.8	30.9	34	21.3	6	9.8	9.5
9001012C	MRFO MC 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001112V	MRFO MV 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001604B	MRFO MB 5 1/8	1/8	5	12	29.8	30.9	34	24.8	6	9.8	12
9001003C	MRFO MC 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001101V	MRFO MV 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001605B	MRFO MB 6 1/8	1/8	6	12	29.8	30.9	34	23	6	9.8	11.5
9001005C	MRFO MC 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001103V	MRFO MV 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001607B	MRFO MB 8 1/8	1/8	8	12	29.8	30.9	34	24.8	6	9.8	13.8
9001004C	MRFO MC 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001102V	MRFO MV 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001606B	MRFO MB 6 1/4	1/4	6	15	35.4	37	38.9	24.5	8	11.1	11.5
9001006C	MRFO MC 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001104V	MRFO MV 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001608B	MRFO MB 8 1/4	1/4	8	15	35.4	37	38.9	26.5	8	11.1	13.8
9001010C	MRFO MC 8 3/8	3/8	8	19	42.7	42.7	49.5	28.5	9	13.4	13.8
9001115V	MRFO MV 8 3/8	3/8	8	19	42.7	42.7	49.5	28.5	9	13.4	13.8
9001611B	MRFO MB 8 3/8	3/8	8	19	42.7	42.7	49.5	28.5	9	13.4	13.8
9001008C	MRFO MC 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001106V	MRFO MV 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001609B	MRFO MB 10 1/4	1/4	10	15	35.4	37	38.9	31.4	8	11.1	16.5
9001014C	MRFO MC 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001123V	MRFO MV 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001623B	MRFO MB 12 1/4	1/4	12	15	35.4	37	38.9	33	8	11.1	19.5
9001009C	MRFO MC 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001114V	MRFO MV 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001610B	MRFO MB 10 3/8	3/8	10	19	42.7	42.7	49.5	32.8	9	13.4	16
9001015C	MRFO MC 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001124V	MRFO MV 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001624B	MRFO MB 12 3/8	3/8	12	19	42.7	42.7	49.5	35.3	9	13.4	19.5
9001016C	MRFO MC 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5
9001125V	MRFO MV 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5
9001625B	MRFO MB 12 1/2	1/2	12	22	50.6	51.4	55.3	37	11	15.9	19.5
9001019C	MRFO MC 14 1/2	1/2	14	22	50.6	51.4	55.3	35	11	15.9	22
9001128V	MRFO MV 14 1/2	1/2	14	22	50.6	51.4	55.3	35	11	15.9	22
9001628B	MRFO MB 14 1/2	1/2	14	22	50.6	51.4	55.3	35	11	15.9	22

MRF COMPACT "O" TECHNOPOLYMER RING

cylinder
versionvalve
versionbidirectional
version

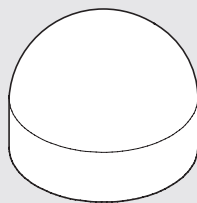
* OPTIONAL ANTI-TAMPERING CAP

Code	Description	F	Ø	CH	A min	A max	A1	B	C	D	E
9011001C	MRFOTC 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011110V	MRFOTV 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011601B	MRFOTB 4 M5	M5	4	9	23.9	25	26.5	19.1	4	9.5	9.2
9011007C	MRFOTC 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011105V	MRFOTV 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011612B	MRFOTB 6 M5	M5	6	9	23.9	25	26.5	20.8	4	9.5	11.3
9011011C	MRFOTC 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011111V	MRFOTV 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011602B	MRFOTB 4 1/8	1/8	4	12	29.8	30.9	34	21	6	12.9	9.2
9011003C	MRFOTC 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011101V	MRFOTV 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011605B	MRFOTB 6 1/8	1/8	6	12	29.8	30.9	34	22.3	6	12.9	11.3
9011005C	MRFOTC 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011103V	MRFOTV 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011607B	MRFOTB 8 1/8	1/8	8	12	29.8	30.9	34	25.6	6	12.9	13.8
9011004C	MRFOTC 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011102V	MRFOTV 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011606B	MRFOTB 6 1/4	1/4	6	15	35.4	37	38.9	24.3	8	15	11.3
9011006C	MRFOTC 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011104V	MRFOTV 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011608B	MRFOTB 8 1/4	1/4	8	15	35.4	37	38.9	27.2	8	15	13.8
9011008C	MRFOTC 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011106V	MRFOTV 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011609B	MRFOTB 10 1/4	1/4	10	15	35.4	37	38.9	28.6	8	15	16
9011014C	MRFOTC 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011123V	MRFOTV 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011623B	MRFOTB 12 1/4	1/4	12	15	35.4	37	38.9	31	8	15	19.5
9011009C	MRFOTC 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011114V	MRFOTV 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011610B	MRFOTB 10 3/8	3/8	10	19	42.7	42.7	49.5	30.3	9	17.9	16
9011015C	MRFOTC 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011124V	MRFOTV 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011624B	MRFOTB 12 3/8	3/8	12	19	42.7	42.7	49.5	32.4	9	17.9	19.5
9011016C	MRFOTC 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5
9011125V	MRFOTV 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5
9011625B	MRFOTB 12 1/2	1/2	12	22	50.6	51.4	55.3	34	11	20.1	19.5

MRF COMPACT "O" THREADED BRASS RING


* OPTIONAL ANTI-TAMPERING CAP

Code	Description	F	F2	CH	A min	A max	A1	B	C	D	E	I
9001020C	MRFOFC 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001120V	MRFOFV 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001620B	MRFOFB 1/8 1/8	1/8	1/8	12	29.8	30.9	34	21.4	6	9.8	13.3	6.7
9001021C	MRFOFC 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001121V	MRFOFV 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001621B	MRFOFB 1/4 1/4	1/4	1/4	15	35.4	37	38.9	25.5	8	11.1	16.7	8
9001022C	MRFOFC 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10
9001122V	MRFOFV 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10
9001622B	MRFOFB 3/8 3/8	3/8	3/8	19	42.7	42.7	49.5	31.5	9	13.4	20.2	10
9001023C	MRFOFC 1/2 1/2	1/2	1/2	22	50.6	51.4	55.3	36	11	15.9	25.5	11
9001126V	MRFOFV 1/2 1/2	1/2	1/2	22	50.6	51.4	55.3	36	11	15.9	25.5	11
9001626B	MRFOFB 1/2 1/2	1/2	1/2	22	50.6	51.4	55.3	36	11	15.9	25.5	11

ACCESSORIES MRF COMPACT "O"
ANTI-TAMPERING CAP


Code	Description
9090001	Cap MRF O M5
9090002	Cap MRF O 1/8-1/4
9090003	Cap MRF O 3/8-1/2

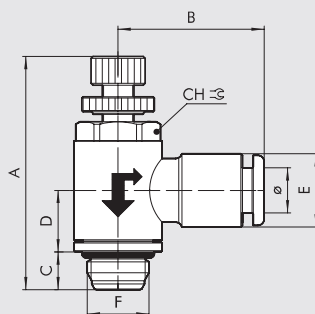
NOTE: Adjust the flow rate via the regulating pin.

Apply the anti-tampering cap and press on firmly to prevent access to the regulation pin.

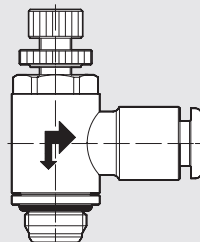
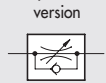
If the MRF needs to be recalibrated, remove the cap using the grippers provided.

IMPORTANT: The cap cannot be re-used after it has been removed.

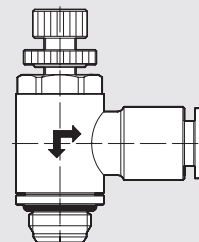
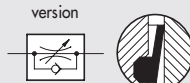
MRF COMPACT "N" BRASS RING



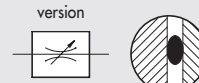
cylinder



valve



bidirectional

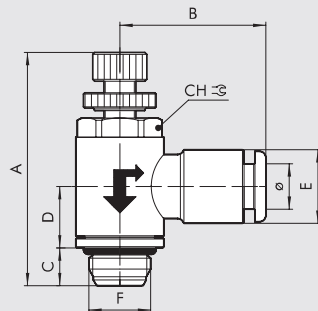
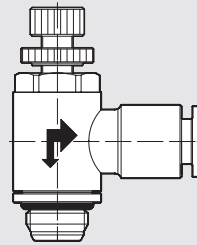
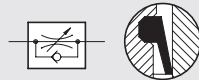
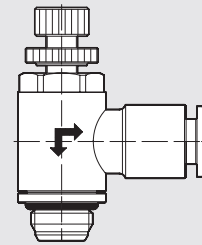
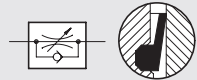
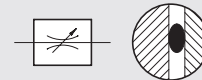


Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9031001C	MRF N M C 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031101V	MRF N M V 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031201B	MRF N M B 4 M5	M5	4	9	27.7	31	20.2	4	9.2	9.5
9031003C	MRF N M C 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031103V	MRF N M V 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031203B	MRF N M B 5 M5	M5	5	9	27.7	31	23.8	4	9.2	12
9031005C	MRF N M C 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031105V	MRF N M V 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031205B	MRF N M B 6 M5	M5	6	9	27.7	31	23.5	4	9.2	11.3
9031002C	MRF N M C 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031102V	MRF N M V 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031202B	MRF N M B 4 1/8	1/8	4	12	33.5	37.6	21.3	6	9.8	9.5
9031004C	MRF N M C 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031104V	MRF N M V 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031204B	MRF N M B 5 1/8	1/8	5	12	33.5	37.6	24.8	6	9.8	12
9031006C	MRF N M C 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031106V	MRF N M V 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031206B	MRF N M B 6 1/8	1/8	6	12	33.5	37.6	23	6	9.8	11.5
9031008C	MRF N M C 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031108V	MRF N M V 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031208B	MRF N M B 8 1/8	1/8	8	12	33.5	37.6	24.8	6	9.8	13.8
9031007C	MRF N M C 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031107V	MRF N M V 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031207B	MRF N M B 6 1/4	1/4	6	15	38.8	43.7	24.5	8	11.1	11.5
9031009C	MRF N M C 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031109V	MRF N M V 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031209B	MRF N M B 8 1/4	1/4	8	15	38.8	43.7	26.5	8	11.1	13.8
9031010C	MRF N M C 8 3/8	3/8	8	19	47.2	52	28.5	9	13.4	13.8
9031110V	MRF N M V 8 3/8	3/8	8	19	47.2	52	28.5	9	13.4	13.8
9031210B	MRF N M B 8 3/8	3/8	8	19	47.2	52	28.5	9	13.4	13.8
9031011C	MRF N M C 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031111V	MRF N M V 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031211B	MRF N M B 10 1/4	1/4	10	15	38.8	43.7	31.4	8	11.1	16.5
9031014C	MRF N M C 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031114V	MRF N M V 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031214B	MRF N M B 12 1/4	1/4	12	15	38.8	43.7	33	8	11.1	19.5
9031012C	MRF N M C 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031112V	MRF N M V 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031212B	MRF N M B 10 3/8	3/8	10	19	47.2	52	32.8	9	13.4	16
9031015C	MRF N M C 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031115V	MRF N M V 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031215B	MRF N M B 12 3/8	3/8	12	19	47.2	52	35.3	9	13.4	19.5
9031016C	MRF N M C 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5
9031116V	MRF N M V 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5
9031216B	MRF N M B 12 1/2	1/2	12	22	53	59.8	37	11	15.9	19.5
9031019C	MRF N M C 14 1/2	1/2	14	22	53	59.8	35	11	15.9	22
9031119V	MRF N M V 14 1/2	1/2	14	22	53	59.8	35	11	15.9	22
9031219B	MRF N M B 14 1/2	1/2	14	22	53	59.8	35	11	15.9	22

UNF
NPT

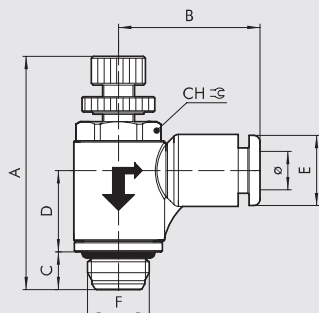
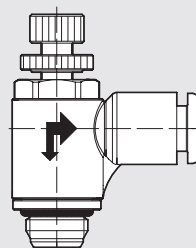
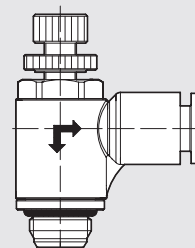
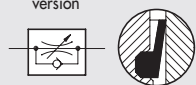
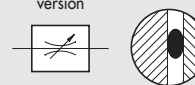
**METAL
WORK**
P N E U M A T I C

MRF COMPACT "N" BRASS RING - INCH TUBES AND UNF or NPT THREAD

cylinder
versionvalve
versionbidirectional
version

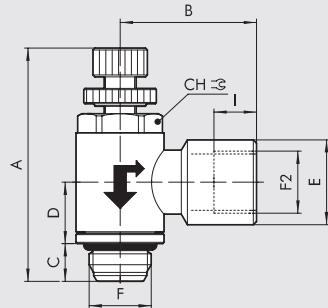
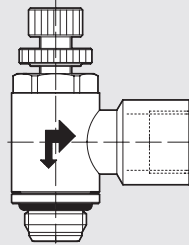
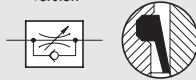
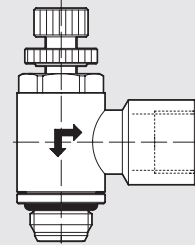
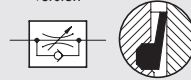
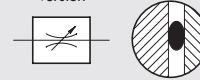
Code	Description	F	Ø	Ch		A min	A max	B	C	D	E
				Inc	mm						
9U31001C	MRF N M C 5/32 10-32 UNF	10-32 UNF	5/32"	0.354	9	27.7	31	20.2	4	9.2	9.5
9U31101V	MRF N M V 5/32 10-32 UNF	10-32 UNF	5/32"	0.354	9	27.7	31	20.2	4	9.2	9.5
9U31201B	MRF N M B 5/32 10-32 UNF	10-32 UNF	5/32"	0.354	9	27.7	31	20.2	4	9.2	9.5
9U31005C	MRF N M C 1/4 10-32 UNF	10-32 UNF	1/4"	0.354	9	27.7	31	21.3	4	9.2	11.8
9U31105V	MRF N M V 1/4 10-32 UNF	10-32 UNF	1/4"	0.354	9	27.7	31	21.3	4	9.2	11.8
9U31205B	MRF N M B 1/4 10-32 UNF	10-32 UNF	1/4"	0.354	9	27.7	31	21.3	4	9.2	11.8
9U31002C	MRF N M C 5/32 1/8 NPT	1/8 NPT	5/32"	0.472	12	33.5	37.6	21.3	6	9.8	9.5
9U31102V	MRF N M V 5/32 1/8 NPT	1/8 NPT	5/32"	0.472	12	33.5	37.6	21.3	6	9.8	9.5
9U31202B	MRF N M B 5/32 1/8 NPT	1/8 NPT	5/32"	0.472	12	33.5	37.6	21.3	6	9.8	9.5
9U31006C	MRF N M C 1/4 1/8 NPT	1/8 NPT	1/4"	0.472	12	33.5	37.6	21.3	6	9.8	11.8
9U31106V	MRF N M V 1/4 1/8 NPT	1/8 NPT	1/4"	0.472	12	33.5	37.6	21.3	6	9.8	11.8
9U31206B	MRF N M B 1/4 1/8 NPT	1/8 NPT	1/4"	0.472	12	33.5	37.6	21.3	6	9.8	11.8
9U31008C	MRF N M C 5/16 1/8 NPT	1/8 NPT	5/16"	0.472	12	33.5	37.6	24.8	6	9.8	13.8
9U31108V	MRF N M V 5/16 1/8 NPT	1/8 NPT	5/16"	0.472	12	33.5	37.6	24.8	6	9.8	13.8
9U31208B	MRF N M B 5/16 1/8 NPT	1/8 NPT	5/16"	0.472	12	33.5	37.6	24.8	6	9.8	13.8
9U31010C	MRF N M C 3/8 1/8 NPT	1/8 NPT	3/8"	0.472	12	33.5	37.6	27.8	6	9.8	16.5
9U31110V	MRF N M V 3/8 1/8 NPT	1/8 NPT	3/8"	0.472	12	33.5	37.6	27.8	6	9.8	16.5
9U31210B	MRF N M B 3/8 1/8 NPT	1/8 NPT	3/8"	0.472	12	33.5	37.6	27.8	6	9.8	16.5
9U31007C	MRF N M C 1/4 1/4 NPT	1/4 NPT	1/4"	0.591	15	38.8	43.7	23	8	11.1	13.8
9U31107V	MRF N M V 1/4 1/4 NPT	1/4 NPT	1/4"	0.591	15	38.8	43.7	23	8	11.1	13.8
9U31207B	MRF N M B 1/4 1/4 NPT	1/4 NPT	1/4"	0.591	15	38.8	43.7	23	8	11.1	13.8
9U31009C	MRF N M C 5/16 1/4 NPT	1/4 NPT	5/16"	0.591	15	38.8	43.7	26.5	8	11.1	13.8
9U31109V	MRF N M V 5/16 1/4 NPT	1/4 NPT	5/16"	0.591	15	38.8	43.7	26.5	8	11.1	13.8
9U31209B	MRF N M B 5/16 1/4 NPT	1/4 NPT	5/16"	0.591	15	38.8	43.7	26.5	8	11.1	13.8
9U31011C	MRF N M C 3/8 1/4 NPT	1/4 NPT	3/8"	0.591	15	38.8	43.7	29.8	8	11.1	16.5
9U31111V	MRF N M V 3/8 1/4 NPT	1/4 NPT	3/8"	0.591	15	38.8	43.7	29.8	8	11.1	16.5
9U31211B	MRF N M B 3/8 1/4 NPT	1/4 NPT	3/8"	0.591	15	38.8	43.7	29.8	8	11.1	16.5
9U31014C	MRF N M C 1/2 1/4 NPT	1/4 NPT	1/2"	0.591	15	38.8	43.7	34.3	8	11.1	21
9U31114V	MRF N M V 1/2 1/4 NPT	1/4 NPT	1/2"	0.591	15	38.8	43.7	34.3	8	11.1	21
9U31214B	MRF N M B 1/2 1/4 NPT	1/4 NPT	1/2"	0.591	15	38.8	43.7	34.3	8	11.1	21
9U31012C	MRF N M C 3/8 3/8 NPT	3/8 NPT	3/8"	3/4	19	47.2	52	30.6	9	13.4	16
9U31112V	MRF N M V 3/8 3/8 NPT	3/8 NPT	3/8"	3/4	19	47.2	52	30.6	9	13.4	16
9U31212B	MRF N M B 3/8 3/8 NPT	3/8 NPT	3/8"	3/4	19	47.2	52	30.6	9	13.4	16
9U31015C	MRF N M C 1/2 3/8 NPT	3/8 NPT	1/2"	3/4	19	47.2	52	36.5	9	13.4	20.2
9U31115V	MRF N M V 1/2 3/8 NPT	3/8 NPT	1/2"	3/4	19	47.2	52	36.5	9	13.4	20.2
9U31215B	MRF N M B 1/2 3/8 NPT	3/8 NPT	1/2"	3/4	19	47.2	52	36.5	9	13.4	20.2
9U31016C	MRF N M C 1/2 1/2 NPT	1/2 NPT	1/2"	7/8	22	53	59.8	37.8	11	15.9	20.2
9U31116V	MRF N M V 1/2 1/2 NPT	1/2 NPT	1/2"	7/8	22	53	59.8	37.8	11	15.9	20.2
9U31216B	MRF N M B 1/2 1/2 NPT	1/2 NPT	1/2"	7/8	22	53	59.8	37.8	11	15.9	20.2

MRF COMPACT "N" TECHNOPOLYMER RING

cylinder
versionvalve
versionbidirectional
version

Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9021001C	MRF NTC 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021101V	MRF NTV 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021201B	MRF NTB 4 M5	M5	4	9	27.7	31	19.1	4	9.5	9.2
9021005C	MRF NTC 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021105V	MRF NTV 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021205B	MRF NTB 6 M5	M5	6	9	27.7	31	20.8	4	9.5	11.3
9021002C	MRF NTC 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021102V	MRF NTV 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021202B	MRF NTB 4 1/8	1/8	4	12	33.5	37.6	21	6	12.9	9.2
9021006C	MRF NTC 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021106V	MRF NTV 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021206B	MRF NTB 6 1/8	1/8	6	12	33.5	37.6	22.3	6	12.9	11.3
9021008C	MRF NTC 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021108V	MRF NTV 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021208B	MRF NTB 8 1/8	1/8	8	12	33.5	37.6	25.6	6	12.9	13.8
9021007C	MRF NTC 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021107V	MRF NTV 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021207B	MRF NTB 6 1/4	1/4	6	15	38.8	43.7	24.3	8	15	11.3
9021009C	MRF NTC 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021109V	MRF NTV 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021209B	MRF NTB 8 1/4	1/4	8	15	38.8	43.7	27.2	8	15	13.8
9021011C	MRF NTC 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021111V	MRF NTV 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021211B	MRF NTB 10 1/4	1/4	10	15	38.8	43.7	28.6	8	15	16
9021014C	MRF NTC 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021114V	MRF NTV 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021214B	MRF NTB 12 1/4	1/4	12	15	38.8	43.7	31	8	15	19.5
9021012C	MRF NTC 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021112V	MRF NTV 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021212B	MRF NTB 10 3/8	3/8	10	19	47.2	52	30.3	9	17.9	16
9021015C	MRF NTC 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021115V	MRF NTV 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021215B	MRF NTB 12 3/8	3/8	12	19	47.2	52	32.4	9	17.9	19.5
9021016C	MRF NTC 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5
9021116V	MRF NTV 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5
9021216B	MRF NTB 12 1/2	1/2	12	22	53	59.8	34	11	20.1	19.5

MRF COMPACT "N" THREADED BRASS RING

cylinder
versionvalve
versionbidirectional
version

Code	Description	F	F2	CH	A min	A max	B	C	D	E	I
9031301C	MRF N F C 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031401V	MRF N F V 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031501B	MRF N F B 1/8 1/8	1/8	1/8	12	33.5	37.6	21.4	6	9.8	13.3	6.7
9031302C	MRF N F C 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031402V	MRF N F V 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031502B	MRF N F B 1/4 1/4	1/4	1/4	15	38.8	43.7	25.5	8	11.1	16.7	8
9031303C	MRF N F C 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10
9031403V	MRF N F V 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10
9031503B	MRF N F B 3/8 3/8	3/8	3/8	19	47.2	52	31.5	9	13.4	20.2	10
9031304C	MRF N F C 1/2 1/2	1/2	1/2	22	53	59.8	36	11	15.9	25.5	11
9031404V	MRF N F V 1/2 1/2	1/2	1/2	22	53	59.8	36	11	15.9	25.5	11
9031504B	MRF N F B 1/2 1/2	1/2	1/2	22	53	59.8	36	11	15.9	25.5	11

FLOW MICRO-REGULATOR SERIES MRF HIGH-FLOW

Main features:

- high flow rate during regulation and discharge
- excellent regulation features
- regulation using a screwdriver and/or a knob and fixing using a ring nut
- available in sizes 1/8 and 1/4 only with a technopolymer ring
- can be mounted with an automatic screwdriver
- fitted with a swivel ring with the MRF mounted in position.

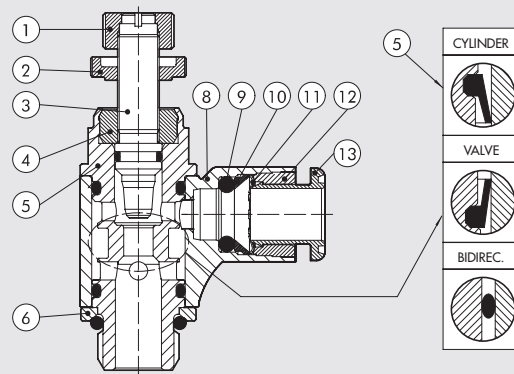


TECHNICAL DATA

		1/8			1/4			
Pipe		Ø 4	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12
Max input pressure	MPa				1			
	bar				10			
	psi				145			
Temperature range: technopolymer ring	°C				- 10 to + 50			
	°F				+ 14 to + 122			
Max flow rate on regulation at 6.3 bar	Nl/min	500	600	650	850	900	1150	1200
Max flow rate on exhaust at 6.3 bar with closed needle	Nl/min	400	500	600	700	850	875	950
Max flow rate on exhaust at 6.3 bar with open needle	Nl/min	500	750	900	1000	1250	1350	1450
Regulation		Manual or via screwdriver						
Internal system		Tapered needle						
Fluid		Filtered, lubricated or unlubricated compressed air						

COMPONENTS

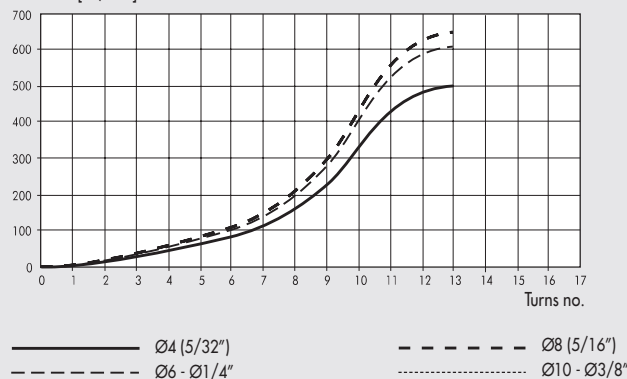
- 1 Nickel-plated brass knob
- 2 Nickel-plated brass securing ring nut
- 3 Brass needle
- 4 Nickel-plated brass bush
- 5 Nickel-plated brass body
- 6 Nickel-plated brass retaining ring
- 7 NBR gasket
- 8 Technopolymer swivel ring
- 9 NBR gasket
- 10 Technopolymer spring supporting ring
- 11 Stainless steel grabbing spring
- 12 Technopolymer retaining bush
- 13 Technopolymer release bush



FLOW CHARTS

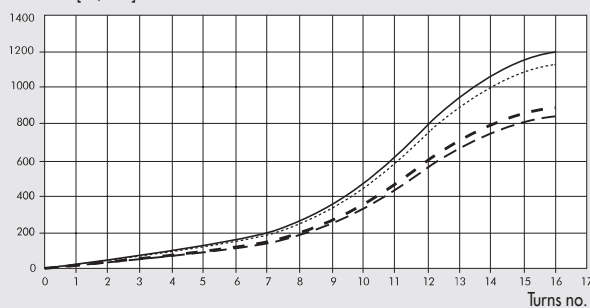
MRF 1/8

Flow rate [Nl/min]

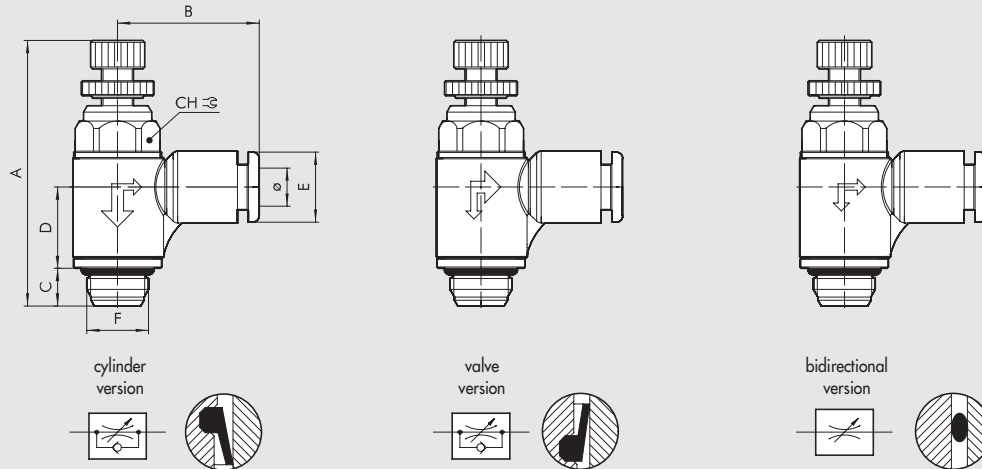


MRF 1/4

Flow rate [Nl/min]



MRF HIGH-FLOW



Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9025002C	MRF HTC 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025102V	MRF HTV 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025602B	MRF HTB 4 1/8	1/8	4	12	38.5	43.3	21	6	12.9	9.2
9025006C	MRF HTC 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025106V	MRF HTV 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025606B	MRF HTB 6 1/8	1/8	6	12	38.5	43.3	22.3	6	12.9	11.3
9025008C	MRF HTC 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025108V	MRF HTV 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025608B	MRF HTB 8 1/8	1/8	8	12	38.5	43.3	25.6	6	12.9	13.8
9025007C	MRF HTC 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025107V	MRF HTV 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025607B	MRF HTB 6 1/4	1/4	6	15	44.3	49.8	24.3	8	15	11.3
9025009C	MRF HTC 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025109V	MRF HTV 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025609B	MRF HTB 8 1/4	1/4	8	15	44.3	49.8	27.2	8	15	13.8
9025011C	MRF HTC 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025111V	MRF HTV 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025611B	MRF HTB 10 1/4	1/4	10	15	44.3	49.8	28.6	8	15	16
9025014C	MRF HTC 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5
9025114V	MRF HTV 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5
9025614B	MRF HTB 12 1/4	1/4	12	15	44.3	49.8	31	8	15	19.5

SYNOPTIC, SIZES AND VERSIONS

M R F FAMILY	H TYPE	T RING	C FUNCTION	4 Ø PIPE	1/8 Ø THREAD
Flow microregulator	H High flow	T Technopolymer with push-in fitting	C For cylinder V For valve B Bidirectional	4: Ø 4 6: Ø 6 8: Ø 8 10: Ø 10 12: Ø 12	1/8: 1/8 1/4: 1/4

FLOW MICRO-REGULATOR SERIES MRF PUSH-LOCK

Main features:

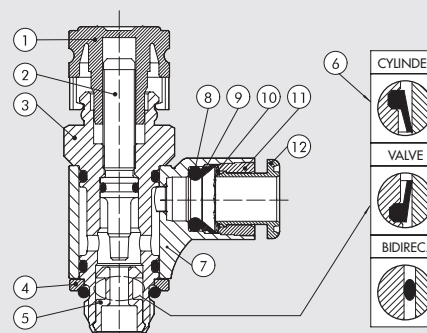
- excellent regulation
- regulation with a push-lock knob: when the desired position has been reached, the knob can be moved to the lock position to maintain the set regulation
- possibility of purchasing the anti-tampering cap that, when pushed into the lock position, prevents the MRF from being operated and any undesired regulation
- available in the sizes 1/8 and 1/4 only with a technopolymer ring
- can be fitted with an automatic screwdriver
- come with a swivel ring with the MRF mounted in position.



TECHNICAL DATA		1/8			1/4			
Pipe		Ø 4	Ø 6	Ø 8	Ø 6	Ø 8	Ø 10	Ø 12
Max. input pressure	MPa				1			
	bar				10			
	psi				145			
Temperature range: technopolymer ring	°C				- 10 to + 50			
	°F				+ 14 to + 122			
Max. flow rate on regulation at 6.3 bar	Nl/min	350	380	400	750	850	950	1000
Max. flow rate on exhaust at 6.3 with closed needle	Nl/min	300	350	390	450	475	500	550
Max. flow rate on exhaust at 6.3 with open needle	Nl/min	450	600	650	850	1050	1150	1250
Regulation		Manual with Push-Lock knob						
Internal system		Tapered needle						
Fluid		Filtered, lubricated or unlubricated compressed air						

COMPONENTS

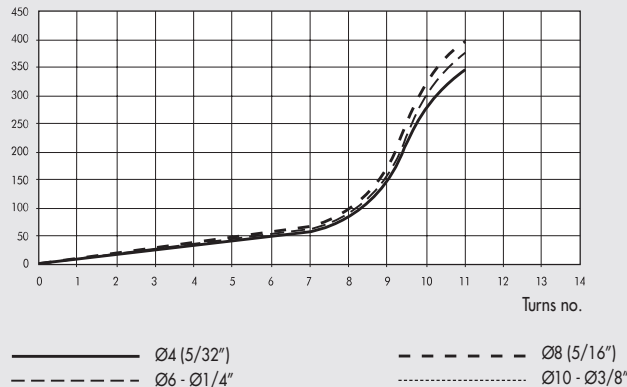
- ① Technopolymer knob
- ② Brass needle
- ③ Nickel-plated brass body
- ④ Nickel-plated brass retaining ring
- ⑤ Brass gasket holder insert
- ⑥ NBR gasket
- ⑦ Technopolymer revolving ring
- ⑧ NBR gasket
- ⑨ Technopolymer spring supporting ring
- ⑩ Stainless steel grabbing spring
- ⑪ Technopolymer retaining bush
- ⑫ Technopolymer release bush



FLOW CHARTS

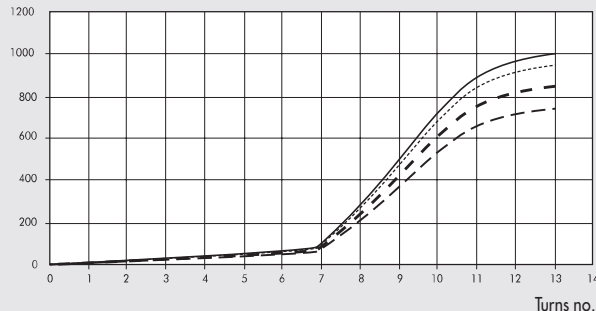
MRF 1/8

Flow rate [Nl/min]

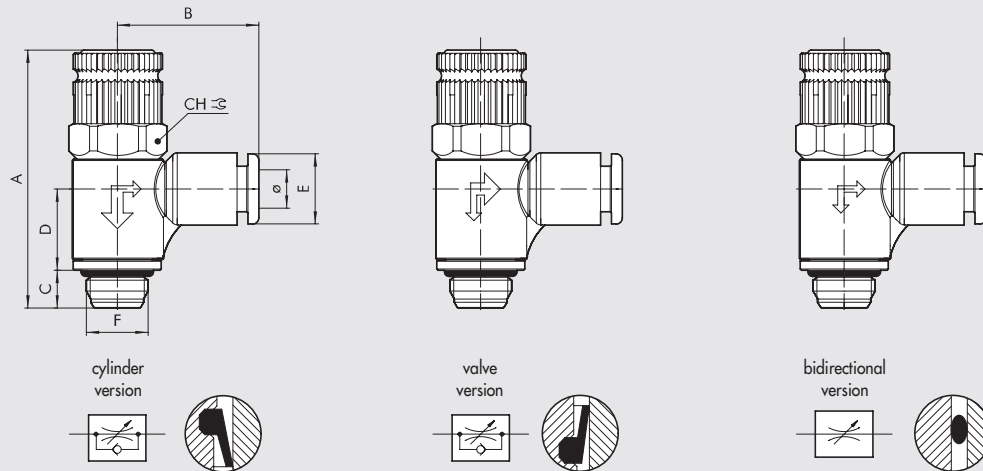


MRF 1/4

Flow rate [Nl/min]



MRF PUSH-LOCK



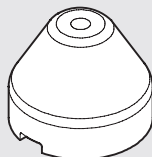
Code	Description	F	Ø	CH	A min	A max	B	C	D	E
9026002C	MRF PTC 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026102V	MRF PT V 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026602B	MRF PT B 4 1/8	1/8	4	14	41.2	43.4	21	6	12.9	9.2
9026006C	MRF PTC 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026106V	MRF PT V 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026606B	MRF PT B 6 1/8	1/8	6	14	41.2	43.4	22.3	6	12.9	11.3
9026008C	MRF PTC 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026108V	MRF PT V 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026608B	MRF PT B 8 1/8	1/8	8	14	41.2	43.4	25.6	6	12.9	13.8
9026007C	MRF PTC 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026107V	MRF PT V 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026607B	MRF PT B 6 1/4	1/4	6	15	46.6	48.8	24.3	8	15	11.3
9026009C	MRF PTC 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026109V	MRF PT V 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026609B	MRF PT B 8 1/4	1/4	8	15	46.6	48.8	27.2	8	15	13.8
9026011C	MRF PTC 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026111V	MRF PT V 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026611B	MRF PT B 10 1/4	1/4	10	15	46.6	48.8	28.6	8	15	16
9026014C	MRF PTC 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5
9026114V	MRF PT V 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5
9026614B	MRF PT B 12 1/4	1/4	12	15	46.6	48.8	31	8	15	19.5

SYNOPTIC, SIZES AND VERSIONS

M R F FAMILY	P TYPE	T RING	C RING	4 Ø PIPE	1/8 Ø THREAD
Flow microregulator	P Push-lock	T Technopolymer with push-in fitting	C For cylinder V For valve B Bidirectional	4: Ø 4 6: Ø 6 8: Ø 8 10: Ø 10 12: Ø 12	1/8: 1/8 1/4: 1/4

ACCESSORIES MRF PUSH-LOCK

ANTI-TAMPERING KNOB



Code	Description
9200703	Anti-tampering knob

NOTE: Remove the knob on the Push-Lock MRF by pulling outwards. Fit on the anti-tampering knob and make the necessary settings.
When the MRF has been set, press the knob firmly until it locks in position. If the MRF needs to be recalibrated, remove the anti-tampering knob and push laterally using a screwdriver.

IN-LINE FLOW REGULATOR SERIES RFL

The in-line flow regulator regulates the speed of the piston rod in the pneumatic cylinders.

Two versions are available:

- type U (unidirectional) regulates the flow only in one of the two directions of air flow.
- type B (bidirectional) regulates the flow in both directions of air flow.

Regulation: manual or with a screwdriver.

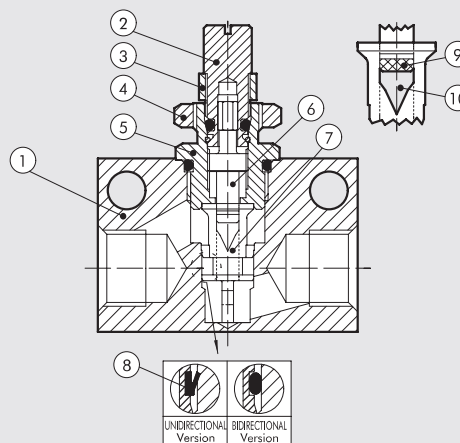
Max. temperature 70°C (158°F)

Max. pressure: 10 bar (1MPa-145 psi)

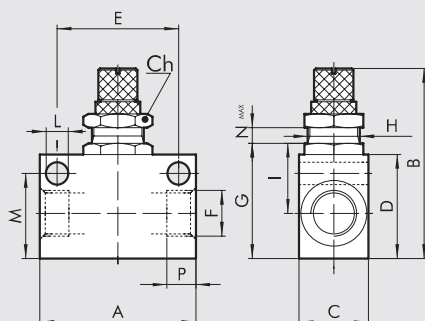


COMPONENTS

- ① Aluminium block
- ② Brass adjusting knob
- ③ Brass knob locking ring nut
- ④ Brass wall locking ring nut
- ⑤ Brass nipple
- ⑥ Brass regulation needle
- ⑦ Technopolymer gasket insert
- ⑧ NBR gasket
- ⑨ Part of needle
- ⑩ Flow window



DIMENSIONS

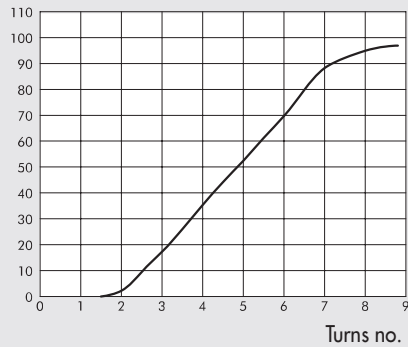


THREAD F	M5	1/8	1/4	3/8	1/2
P	4.2	7	8	10	11
E	15	25	35	35	44
H	M10x0.75	M12x1	M12x1	M15x1	M15x1
Nmax	3.3	5.5	5	7.5	7.5
A	21	31	45	50	59
B	37	48	53.5	59	67
C	14	16	20	25	30
G	18	25	33	34	43.5
I	11.6	15	22	22	24
D	16	22	30	30	40
M	12.5	18.2	24.5	25.5	35
Ch	12	16	16	20	20
L	4.2	4.2	6.5	6.5	6.5

FLOW CHARTS $P_m = 6$ bar

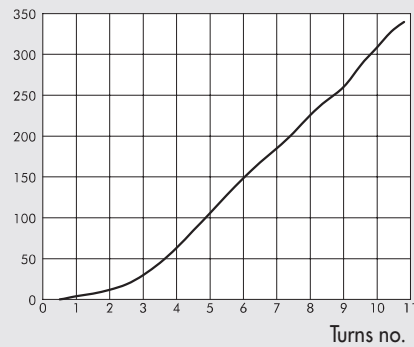
RFL M5

Flow rate [Nl/min]



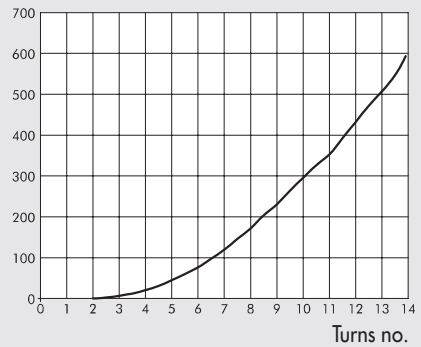
RFL 1/8

Flow rate [Nl/min]



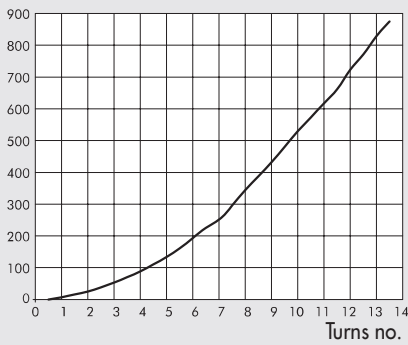
RFL 1/4

Flow rate [Nl/min]



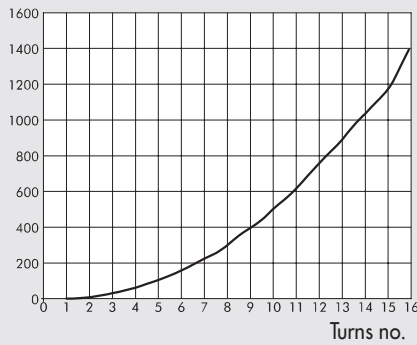
RFL 3/8

Flow rate [Nl/min]

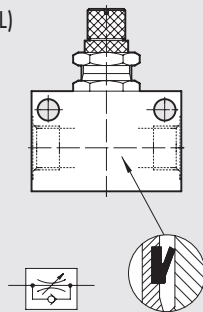


RFL 1/2

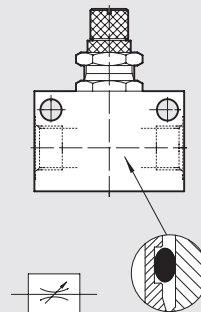
Flow rate [Nl/min]


ORDERING CODES

RFL U (UNIDIRECTIONAL)



RFL B (BIDIRECTIONAL)



Code	Ref.
9041001	RFL U M5
9041002	RFL U 1/8
9041003	RFL U 1/4
9041004	RFL U 3/8
9041005	RFL U 1/2

Code	Ref.
9041201	RFL B M5
9041202	RFL B 1/8
9041203	RFL B 1/4
9041204	RFL B 3/8
9041205	RFL B 1/2

NOTES

SUMMARY AUXILIARY VALVES



- QUICK EXHAUST VALVE SERIES VSR

E4.2



- STOP VALVE SERIES STP

E4.3



- SLIDE VALVE SERIES VCS

E4.6



- CIRCUIT SELECTOR VALVE SERIES VOR

E4.7



- CHECK VALVE SERIES VNR

E4.8



- PNEUMATIC LOGIC
- TIMER

E4.9

E4.11

QUICK EXHAUST VALVE SERIES VSR

New, more compact and lighter version.

Used to evacuate air in the cylinder quickly, which increases cylinder speed.

- Temperature 0-80°C (32°-176°F)
- Max. pressure 12 bar (1200 KPa)
- Min. pressure 0.5 bar (50 KPa)

Nominal flow rate (P → A) $\Delta P = 1$ bar [Nl/min]:

Pm [bar]	1/8	1/4	1/2
2.5	550	800	2400
4	700	1200	2800
6.3	900	1400	3600

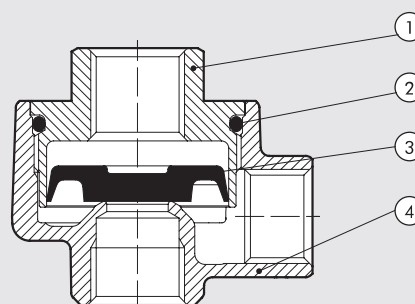
Empty flow rate (A → R) [Nl/min]:

Pm [bar]	1/8	1/4	1/2
2.5	800	1500	4400
4	1200	2450	6300
6.3	1800	3500	8000

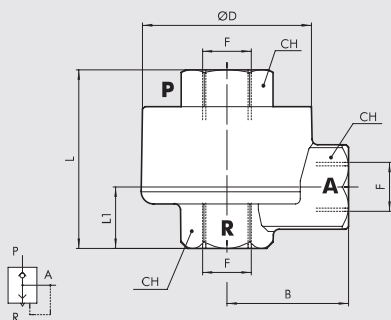


COMPONENTS

- ① Cap: nickel-plated brass for 1/8-1/4
anodized aluminium for 1/2
- ② O-ring: NBR
- ③ Lip-seal: Polyurethane
- ④ Body: nickel-plated brass

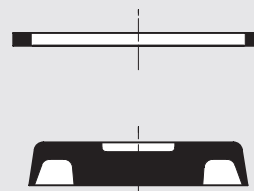


OVERALL DIMENSIONS AND ORDERING CODES



Code	Ref.	F	B	D	CH	L	L1	Weight [g]
9101201	VSR 1/8	1/8	18.5	29.5	14	32.5	13.4	80
9201201	VSR 1/4	1/4	23.3	34	17	40.5	16.9	115
9401201	VSR 1/2	1/2	35	47	27	45.7	16.2	230

SPARE GASKETS



Code	Ref.
9151501	Spare gaskets VSR 1/8
9251501	Spare gaskets VSR 1/4
9451501	Spare gaskets VSR 1/2

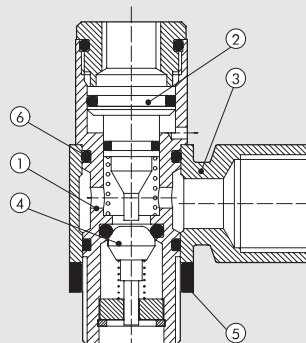
STOP VALVE SERIES STP

Stop valves mounted on the cylinder inlets allow a flow of air only in the presence of pneumatic pilot. The valves are available in both unidirectional and bidirectional versions; the bidirectional versions also include a solution with a manual button to vent the air in the circuit. This item is mainly used as a safety valve. When pressure drops in the pneumatic pilot, all cylinder movement is halted.

[illegible]

UNIDIRECTIONAL STOP VALVE COMPONENTS

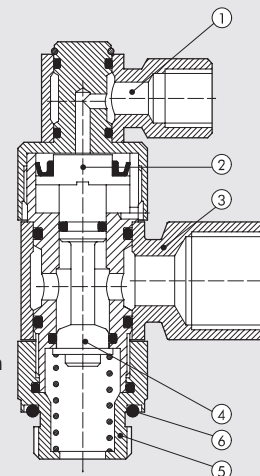
- ① Body: nickel-plated brass
- ② Piston rod: steel
- ③ Rotary ring: nickel-plated brass
- ④ Valve: steel
- ⑤ Gasket: technopolymer
- ⑥ Gasket O-Ring: NBR



BIDIRECTIONAL STOP VALVE COMPONENTS

1/8" - 1/4" - 3/8" - 1/2"

- ① Pilot ring: nickel-plated brass
- ② Piston rod: nickel-plated brass
- ③ Rotary ring: nickel-plated brass
- ④ Stem with valve: brass
- ⑤ Body: nickel-plated brass
- ⑥ Gasket O-Ring: NBR

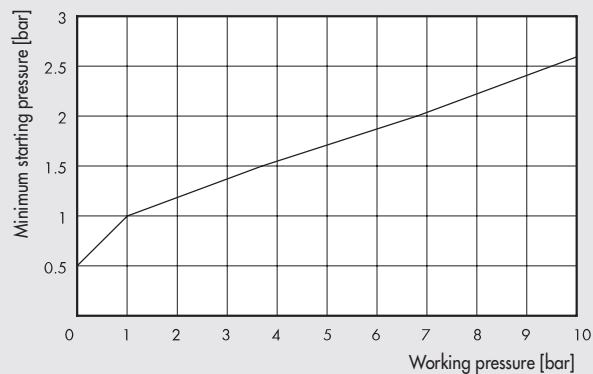


3/4"

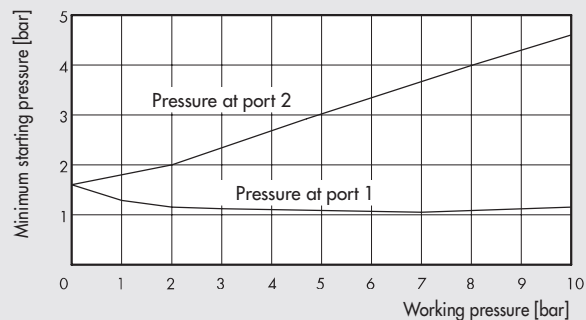
- ① Pilot ring: nickel-plated brass
- ② Piston rod: anodized aluminium
- ③ Rotary ring: anodized aluminium
- ④ Stem with valve: anodized aluminium
- ⑤ Body: anodized aluminium
- ⑥ Gasket O-Ring: NBR

STARTING PRESSURE

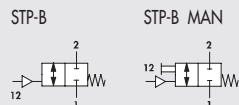
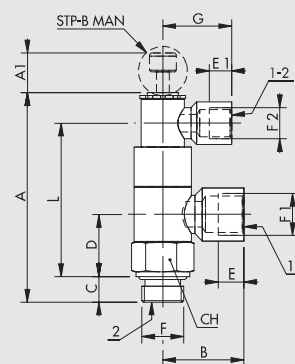
UNIDIRECTIONAL VALVE



BIDIRECTIONAL VALVE



BIDIRECTIONAL THREADED STOP VALVE

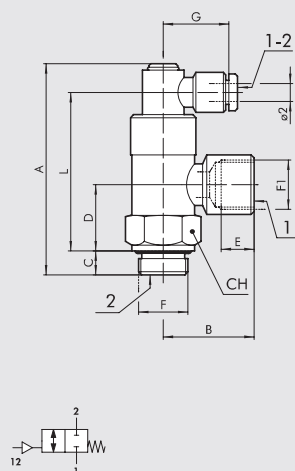


Code	Description	F	F1	F2	A	A1	B	C	D	E	E1	G	L	CH
W6001101001	STP-B 1/8-1/8-1/8	G 1/8	G 1/8	G 1/8	57.5	-	21.5	6	16	7	7	21.5	41.9	14
W6001111011	STP-B 1/4-1/4-1/8	G 1/4	G 1/4	G 1/8	65.7	-	25.5	8	19.5	8	7	21.5	48.1	17
W6001121021	STP-B 3/8-3/8-1/8	G 3/8	G 3/8	G 1/8	70.9	-	31	8	22.3	10	7	21.5	53.3	22
W6001131031	STP-B 1/2-1/2-1/8	G 1/2	G 1/2	G 1/8	83.5	-	40	12	27	14	7	21	61.5	27
W6001141041	STP-B 3/4-3/4-1/8	G 3/4	G 3/4	G 1/8	93.5	-	39	12	32.5	16	7	21	74	32

VERSION WITH RELEASE BUTTON

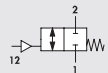
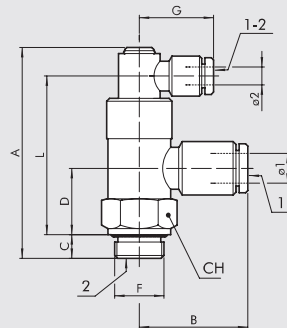
W6001201001	STP-B 1/8-1/8-1/8 MAN	G 1/8	G 1/8	G 1/8	57.5	12.5	21.5	6	16	7	7	21.5	41.9	14
W6001211011	STP-B 1/4-1/4-1/8 MAN	G 1/4	G 1/4	G 1/8	65.7	12.5	25.5	8	19.5	8	7	21.5	48.1	17

THREAD + PIPE BIDIRECTIONAL STOP VALVE



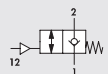
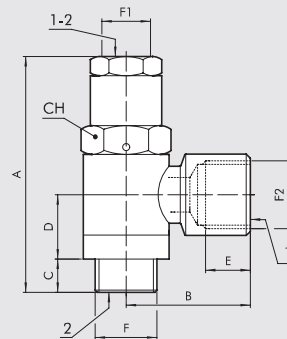
Code	Description	F	F1	Ø 2	A	B	C	D	E	G	L	CH
W6001101002	STP-B 1/8-1/8-Ø4	G 1/8	G 1/8	4	57.5	21.5	6	16	7	25	41.9	14
W6001111012	STP-B 1/4-1/4-Ø4	G 1/4	G 1/4	4	65.7	25.5	8	19.5	8	25	48.1	17
W6001121022	STP-B 3/8-3/8-Ø4	G 3/8	G 3/8	4	70.9	31	8	22.3	10	25	53.3	22

PIPE BIDIRECTIONAL STOP VALVE



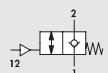
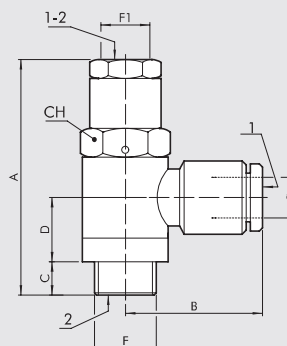
Code	Description	F	Ø 1	Ø 2	A	B	C	D	G	L	CH
W6001101106	STP-B 1/8-Ø6-Ø4	G 1/8	6	4	57.5	25	6	16	25	41.9	14
W6001111106	STP-B 1/4-Ø6-Ø4	G 1/4	6	4	65.7	27.5	8	19.5	25	48.1	17
W6001111108	STP-B 1/4-Ø8-Ø4	G 1/4	8	4	65.7	32	8	19.5	25	48.1	17
W6001121108	STP-B 3/8-Ø8-Ø4	G 3/8	8	4	70.9	31.5	8	22.3	25	53.3	22
W6001121110	STP-B 3/8-Ø10-Ø4	G 3/8	10	4	70.9	36.5	8	22.3	25	53.3	22
W6001131112	STP-B 1/2-Ø12-Ø4	G 1/2	12	4	83.5	41.5	12	27	25	71.5	27

UNIDIRECTIONAL THREADED STOP VALVE



Code	Description	F	F1	F2	A	B	C	D	E	F1	CH
W6001001001	STP-U 1/8-1/8	G 1/8	M5	G 1/8	43.5	21.5	6	13	7	M5	14
W6001011011	STP-U 1/4-1/4	G 1/4	G 1/8	G 1/4	49.5	25.5	7	13.5	8	G 1/8	17
W6001021021	STP-U 3/8-3/8	G 3/8	G 1/8	G 3/8	54.9	31	9	15	10	G 1/8	19
W6001031031	STP-U 1/2-1/2	G 1/2	G 1/8	G 1/2	61.5	40	10	17	14	G 1/8	24
W6001041041	STP-U 3/4-3/4	G 3/4	G 1/8	G 3/4	69	39	12	18.5	14	G 1/8	36

UNIDIRECTIONAL PIPE STOP VALVE



Code	Description	F	F1	Ø	A	B	C	D	F1	CH
W6001001106	STP-U 1/8-Ø6	G 1/8	M5	6	43.5	25	6	13	M5	14
W6001011106	STP-U 1/4-Ø6	G 1/4	G 1/8	6	49.5	27.5	7	13.5	G 1/8	17
W6001011108	STP-U 1/4-Ø8	G 1/4	G 1/8	8	49.5	32	7	13.5	G 1/8	17
W6001021108	STP-U 3/8-Ø8	G 3/8	G 1/8	8	54.9	31.5	9	15	G 1/8	19
W6001021110	STP-U 3/8-Ø10	G 3/8	G 1/8	10	54.9	36.5	9	15	G 1/8	19
W6001031112	STP-U 1/2-Ø12	G 1/2	G 1/8	12	61.4	41.5	10	17	G 1/8	24

SLIDE VALVE SERIES VCS

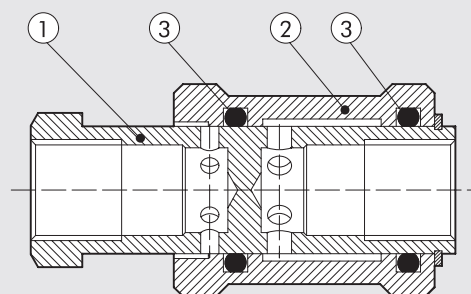
The 3/2 slide valve is normally used as a circuit on-off valve. When the ring nut is moved back, the system downstream is relieved; when the ring nut is moved forward, the system is supplied with compressed air.



TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Operating pressure		0 - 10 bar (0 - 1 MPa)			
Operating temperature range	°C	-10 to + 80			
Fluid		Lubricated or unlubricated filtered air			
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 0.5 bar	NI/min	430	680	1400	2200
Flow rate at 6.3 bar (0.63 MPa - 91 psi) ΔP 1 bar	NI/min	630	1040	2070	3330
Conductance C	NI/min · bar	170	247	537	833
Critical ratio b	bar/bar	0.2	0.3	0.1	0.2

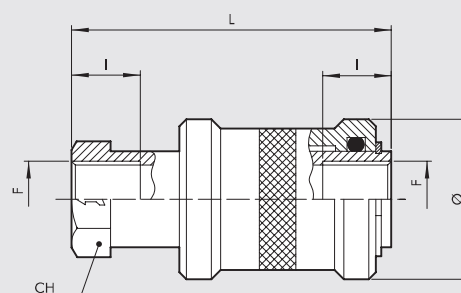
COMPONENTS

- ① Body: chromium-plated brass
- ② Ring nut: anodized aluminium
- ③ Seals: NBR



DIMENSIONS AND ORDERING CODES

Code	Description	F	Ø	I	L	CH
W0970050001	Slide valves 3/2	1/8"	25	10	48	11
W0970050002	Slide valves 3/2	1/4"	30	12	58	19
W0970050003	Slide valves 3/2	3/8"	35	12	68	22
W0970050004	Slide valves 3/2	1/2"	40	15	80	27



CIRCUIT SELECTOR VALVE SERIES VOR

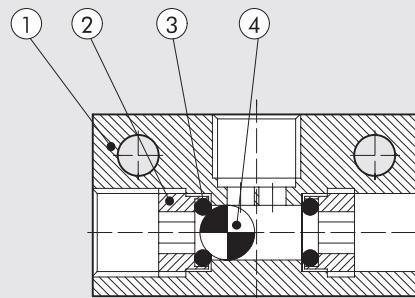


Circuit selector valves select two separate input signal without creating reciprocal interference, giving a single output signal.

[illegible]

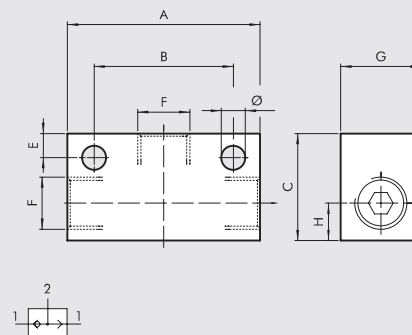
COMPONENTS

- ① Body: passivated aluminium
- ② Insert: brass
- ③ Seal: NBR
- ④ Ball: stainless steel



DIMENSIONS AND ORDERING CODES

Code	Description	A	C	G	H	E	B	F	Ø
W3603000001	VOR 1/8	36	20	15	7.5	4	25	G 1/8	4.5
W3603000002	VOR 1/4	43	25	20	8.5	6.5	25	G 1/4	4.5



CHECK VALVE
SERIES VNR

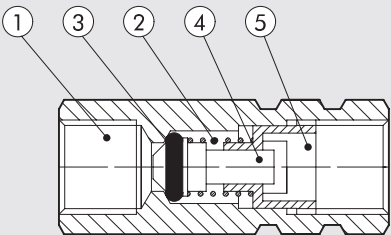
This allow air flow in only one of the two directions.



TECHNICAL DATA		1/8"	1/4"
Ports		G 1/8"	G 1/4"
Nominal diameter	mm	5.2	7
Nominal flow rate	NI/min	900	1100
Operating temperature range	°C	-10 to + 70	
	°F	14 to 158	
Operating pressure	bar	2 - 10	
	MPa	0.2 - 1	
Opening pressure	bar	0.05 (5 KPa)	
Fluid		Lubricated or unlubricated filtered air	

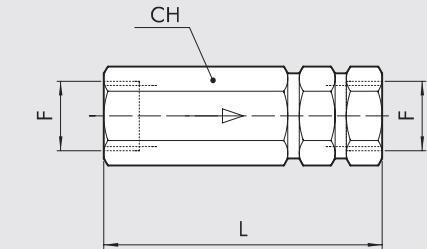
COMPONENTS

- ① Body: OT58 brass
- ② Valve spring: steel
- ③ Seal: NBR for 1/8"; FKM/FPM for 1/4"
- ④ Stem with OT58 brass valve
- ⑤ Stem insert: OT58 brass



DIMENSIONS AND ORDERING CODES

Code	Description	F	L	CH
W3601000001	VNR 1/8	1/8	35	13
W3601000002	VNR 1/4	1/4	41	17



CHECK VALVE SERIES VNR

ACCESSORIES

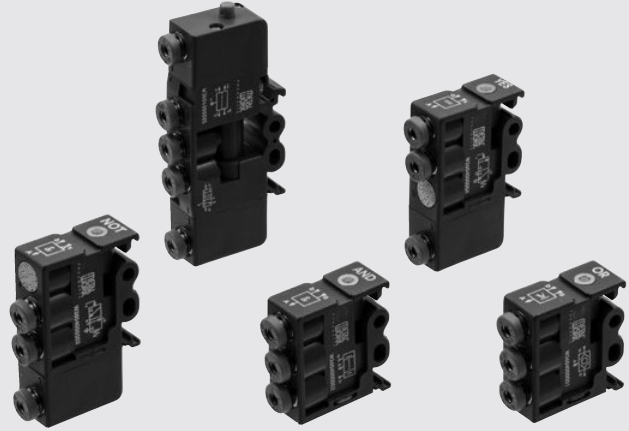
PNEUMATIC LOGIC



Metal Work logic elements are available with 5 different functions:
OR, AND, NOT, YES, MEMORY.

Main features common to all elements:

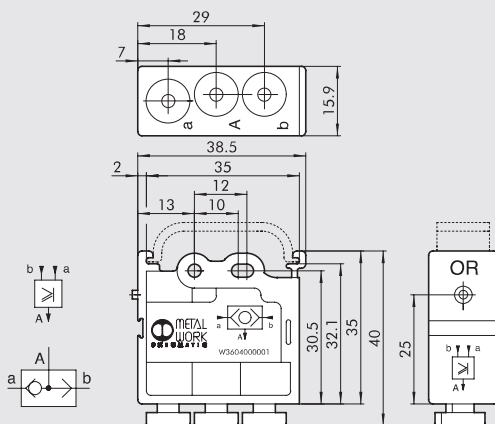
- Adaptor for Ω bar (DIN EN 50022) integral with the body.
- Built-in pressure indicator.
- Pipe locking system using $\varnothing 4$ built-in fittings.



TECHNICAL DATA

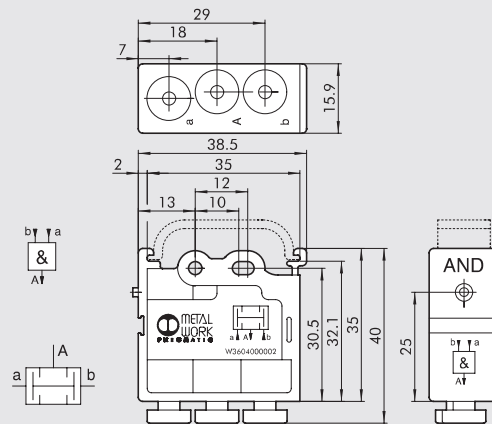
Operating temperature	°C	- 10 to + 60
Valve fitting		Push-in fitting for $\varnothing 4$ pipe
Pressure range	bar	OR - AND: from 1.5 to 8 bar YES-NOT - MEMORY: from 0 to 8 bar, pilot pressure from 1.5 to 8 bar NOT: 6 bar switching threshold = 0.4
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 MPa-87 psi) ΔP 1 bar (0.1 Mpa-14.5 psi)	Nl/min	100
Fluid		Lubricated or unlubricated filtered compressed air; must be uninterrupted when lubricated
Recommended lubricant		ISO and UNI FD22
Actionament		Via compressed air
Reset		AND-OR: via compressed air YES-NOT via mechanical spring MEMORY: via compressed air
Installation		In any position
Mounted		On Omega bar (DIN EN 50022) size 35 x 7 or 35 x 15 Wall-mounted with $\varnothing 4.2$ holes
MATERIALS		
Body		Technopolymer
Spool		Aluminium
Seal		NBR

LOGIC ELEMENT: OR



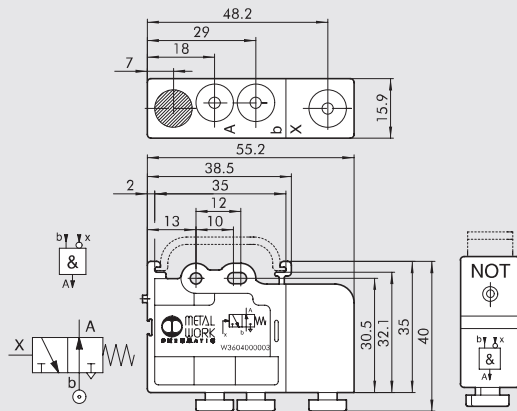
Code W3604000001 Description OR - logic sum

LOGIC ELEMENT: AND



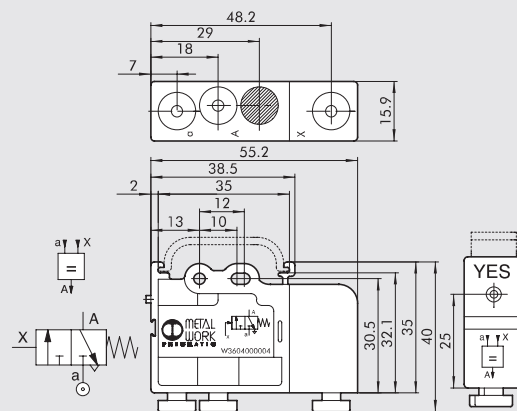
Code W3604000002 Description AND - logic product

LOGIC ELEMENT: NOT



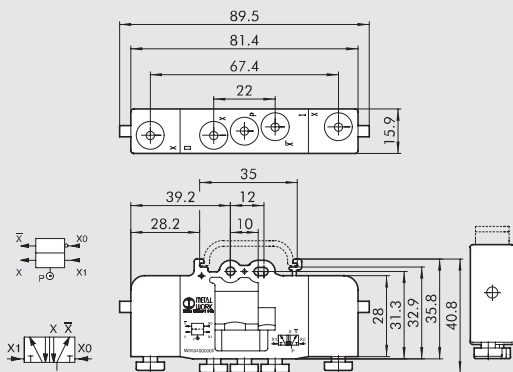
Code W3604000003 Description NOT - Negation

LOGIC ELEMENT: YES



Code W3604000004 Description YES - Affirmation

LOGIC ELEMENT: MEMORY



Code W3604000005 Description Memory

NOTES

TIMER



The Timer is part of Metal Work range of logic elements, which also includes OR, AND, NOT, YES, MEMORY.

The value of the signal output delay is set by rotating a knob. It can work both as 3/2 NC and 3/2 NO, depending on whether feeding is through port "a" or port "b".

The maximum delay time can be increased by unscrewing a plug and connecting the port to an external auxiliary tank.

- Adaptor for Ω bar (DIN EN 50022) integrated in the body.
- Pressure indicator via an orange pin
- Pipe clamping system using $\varnothing 4$ built-in push-on fittings.



TECHNICAL DATA

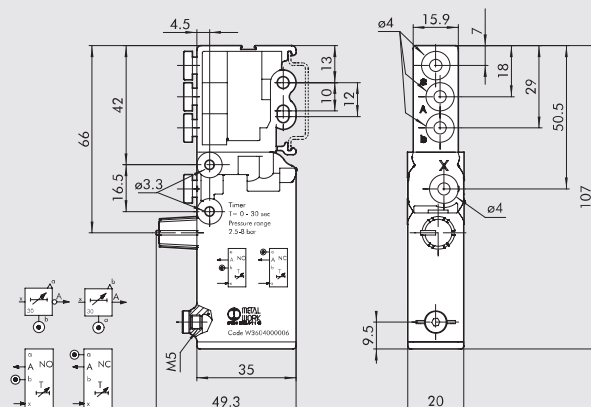
Temperature range	°C	- 10 to + 60
Valve coupling	mm	Push-in fitting for $\varnothing 4$ pipe
Pressure range	bar	From 2.5 to 8
Minimum pilot pressure	bar	2.5
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 Mpa, 87 psi) ΔP 1 bar (0.1 Mpa, 14.5 psi)	Nl/min	100
Delay setting range	s	From 0 to 30, at 6 bar
Signal shutoff time	s	< 0.1
Repeatability	s	± 0.4
Fluid		Filtered, lubricated or unlubricated compressed air. If used, must be continuous
Operating		By compressed air
Repositioning		By mechanical spring
Installation		In any direction
Assembly		On Ω bar (DIN EN 50022) size 35 x 7 $\varnothing 35 \times 15$ - Wall mounting using $\varnothing 4.2$ holes

MATERIALS

Body	Anodized aluminium / Technopolymer
Internal parts	Brass / Technopolymer
Gaskets	NBR
Spring	Spring steel

DIMENSIONS AND ORDERING CODES

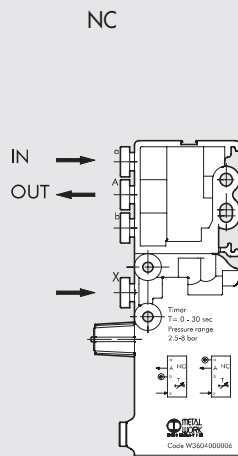
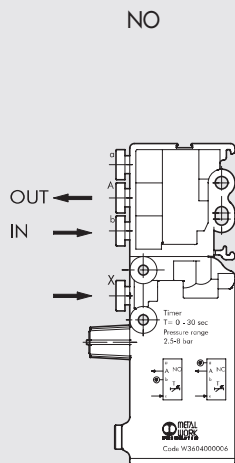
Code	Description
W3604000006	Timer



TIMER

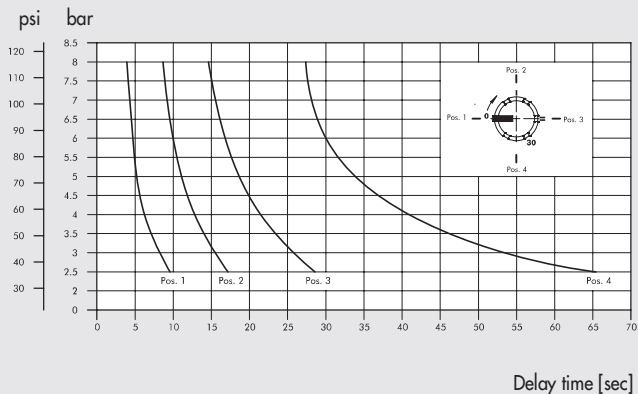
ACCESSORIES

NORMALLY OPEN AND NORMALLY CLOSED OPERATION



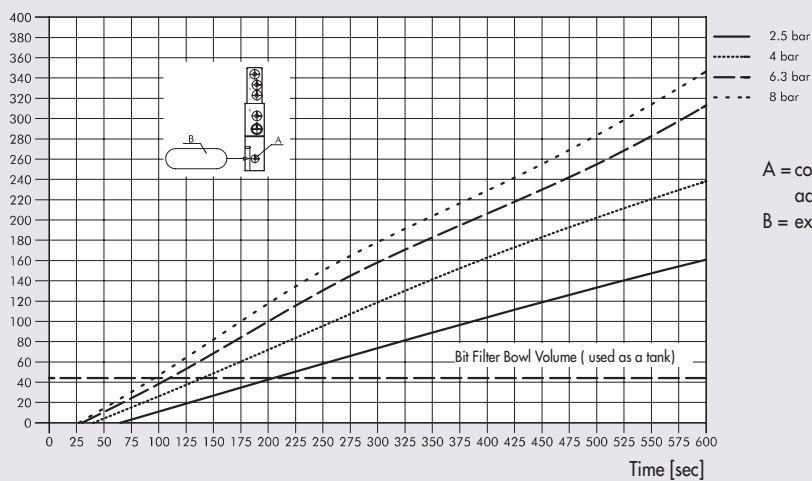
CHANGE IN THE DELAY WITH CHANGE IN PRESSURE AND KNOB POSITION

Pressure at X



HOW TO INCREASE THE DELAY

Tank volume [cm³]



A = coupling (plugged) for external additional tanks
B = external tank

NOTES

TIMER

ACCESSORIES

SUMMARY VARIOUS ACCESSORIES



● AIR-AIR PRESSURE MULTIPLIER (BOOSTER)

E5.2



● IN-LINE PROGRESSIVE STARTER VAP 1/4" AND 1/2"

E5.11



● ROTARY JOINTS AND DISTRIBUTION FRAMES

DISTRIBUTION
FRAMES

ROTARY
JOINTS

E5.13



● SILENCERS AND EXHAUST REGULATOR

E5.17

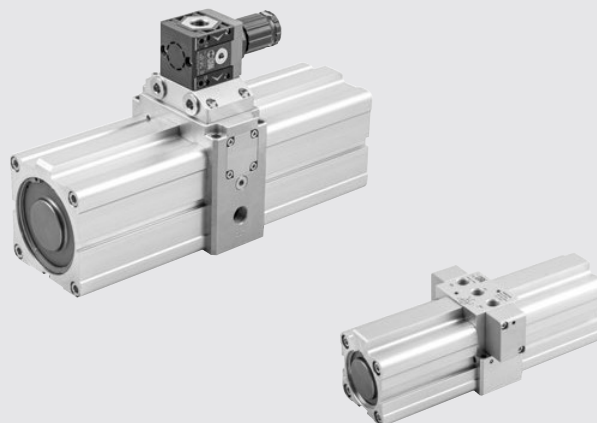


● PNEUMO-POWER

E5.22

AIR-AIR PRESSURE MULTIPLIER (BOOSTER)

The air-air pressure multiplier, or booster, is an automatic device that compresses air to give an outlet pressure that is double the inlet pressure. It is normally used to locally intensify the input pressure of one or more actuators. As it is entirely pneumatic it can be used when electric devices are not recommended. The booster can be supplied with or without a pressure regulator. It is fitted with check valves that maintain the outlet pressure even when the supply of compressed air is switched off. This means it is necessary to interrupt the supply and relieve the circuit before intervening on the device in any way. It is advisable to install a tank after the booster to prevent fluctuations in outlet pressure.



TECHNICAL DATA		BOOSTER Ø40		BOOSTER Ø63		BOOSTER Ø100	
		without regulator	with regulator	without regulator	with regulator	without regulator	with regulator
Fluid		Filtered unlubricated compressed air, Lubrication, if used, must be continuous.					
Threaded port		1/8"		3/8"		1/2"	
Inlet pressure	MPa			0.2 - 1			
	bar			2 - 10			
	psi			29 - 145			
Outlet pressure	MPa	max 2	max 1.6 (regulated)	max 2	max 1.6 (regulated)	max 2	max 1.6 (regulated)
	bar	max 20	max 16 (regulated)	max 20	max 16 (regulated)	max 20	max 16 (regulated)
	psi	max 290	max 232 (regulated)	max 290	max 232 (regulated)	max 290	max 232 (regulated)
Operating temperature	°C	-10 to +60	-10 to +50	-10 to +60	-10 to +50	-10 to +60	-10 to +50
	°F	14 to 140	14 to 122	14 to 140	14 to 122	14 to 140	14 to 122
Weight	g	1.380	1.600	4.240	5.350	13.100	14.050
Mounting		Wall or panel				Wall	
Installation		In any position					

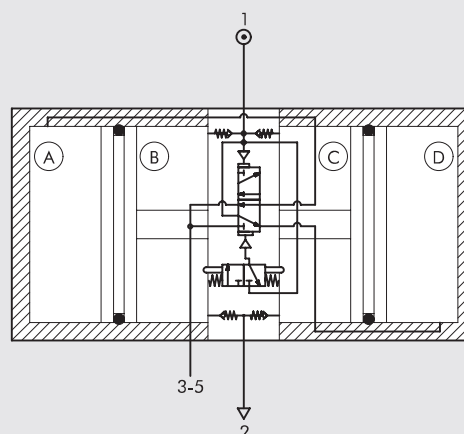
OPERATING LAYOUT

The pressure booster is comprised of a central body (with one 3-2 valve, one 5-2 valve and four check valves), two side liners and a through rod on which two pistons are mounted.

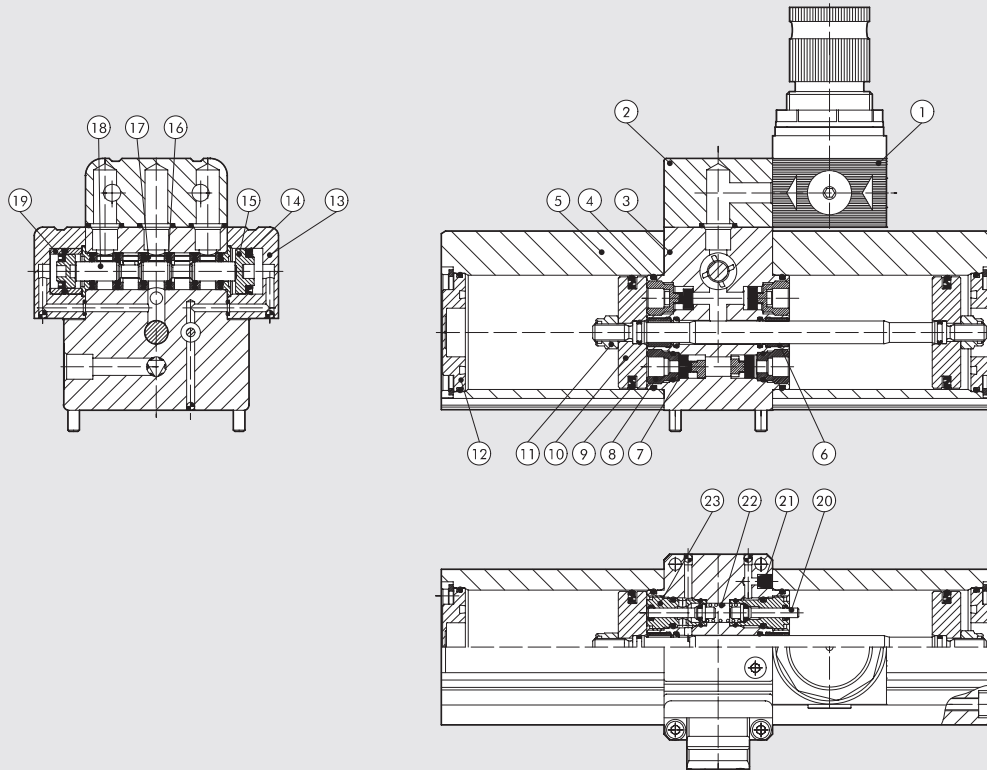
The supply air is compressed alternately by the two pistons in one of the two central chambers (B and C); the other central chamber and one of the two side chambers (A and D) operate the pistons; the external chamber, which is not involved in compression, is relieved.

Air compressed at a ratio of 2:1 passes through a check valve that maintains the output pressure even when compressed air is no longer supplied.

The valves in the central body, which are operated by mechanical pusher pistons, switch the function of the two pairs of chambers (A and D, B and C) at each piston stroke.



COMPONENTS

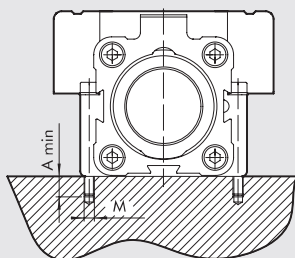


- ① PRESSURE REGULATOR (only for version with regulator)
- ② INTERFACE BLOCK (only for version with regulator): anodized aluminium
- ③ CENTRAL BODY: anodized aluminium
- ④ OR SEAL: NBR rubber
- ⑤ BARREL: anodized aluminium alloy section
- ⑥ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑦ POPPET: NBR rubber
- ⑧ CHECK VALVE: brass
- ⑨ PISTON GASKET: NBR rubber
- ⑩ PISTON: aluminium
- ⑪ SELF-LOCKING NUT: stainless steel

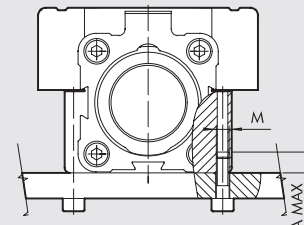
- ⑫ CYLINDER BASE: anodized aluminium
- ⑬ VALVE CONTROL: anodized aluminium
- ⑭ VALVE CONTROL GASKET: NBR rubber
- ⑮ VALVE PISTON: technopolymer
- ⑯ GASKET: NBR rubber
- ⑰ SPACER: technopolymer
- ⑱ SPOOL: nickel-plated aluminium
- ⑲ DIFFERENTIAL BUSHING: brass
- ⑳ PUSHER: stainless steel
- ㉑ SILENCER: technopolymer
- ㉒ SPRING: stainless steel
- ㉓ GUIDE BUSHING: brass

MOUNTING

On a wall using the screws provided with the Booster.



On a panel using screws (only for Ø40 and Ø63).

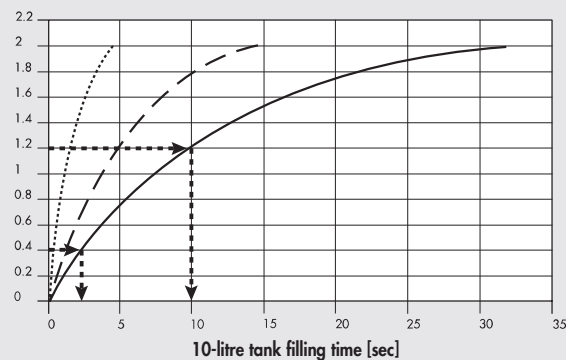


	Ø40	Ø63	Ø100
A	8	12	11.5
M	M4	M6	M10

	Ø40	Ø63
A	8	10
M	M5	M8

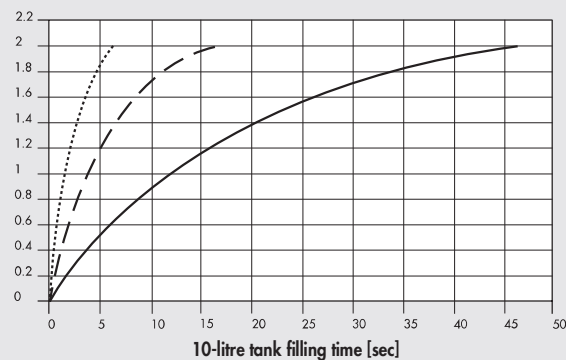
TANK FILLING CURVES

WITHOUT REGULATOR

Compression ratio $[p_2/p_1]$ 

— Ø40
 - - - Ø63
 Ø100

WITH REGULATOR

Compression ratio $[p_2/p_1]$ 

The graphs refer to the filling of a 10-litre tank and show the ratio of outlet to inlet pressure ($= p_2:p_1$) as a function of time (sec).

The graphs are valid for any inlet pressure between 2 and 10 bar.

The following formula can be used to calculate the time t (sec) required to switch from pressure ratio 1 to pressure ratio 2 in a tank of volume V (litres):

$$t = \frac{V (t_2 - t_1)}{10}$$

where t_1 and t_2 are the times shown on the x-axis, corresponding to ratios 1 and 2.

E.g.

$$1 = 0.4 \Rightarrow t_1 = 2.5 \text{ sec}$$

$$2 = 1.2 \Rightarrow t_2 = 10 \text{ sec}$$

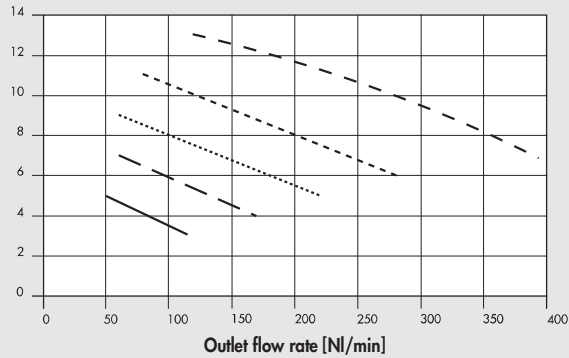
The time required to switch from 1 to 2 with a 25-litre tank is:

$$t = \frac{25 (10 - 2.5)}{10} \text{ sec} = 18.75 \text{ sec}$$

FLOW CHARTS

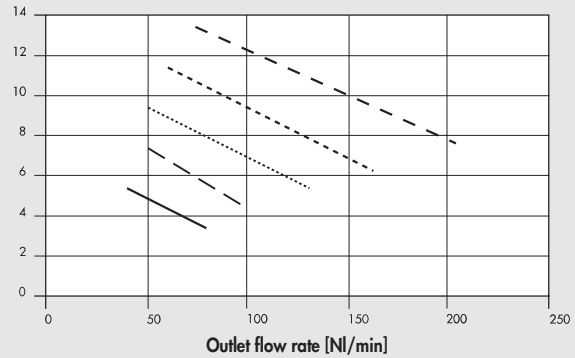
WITHOUT REGULATOR Ø40

Outlet pressure [bar]



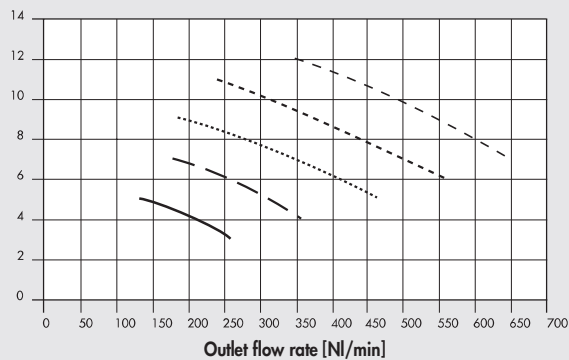
WITH REGULATOR Ø40

Outlet pressure [bar]



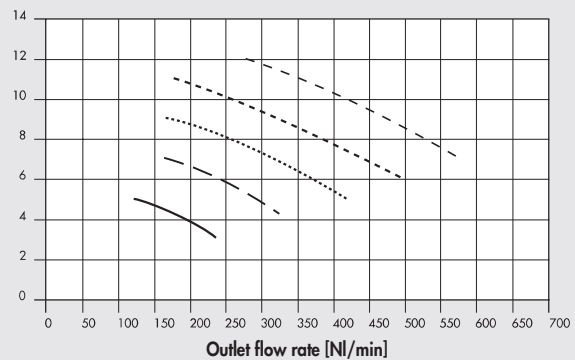
WITHOUT REGULATOR Ø63

Outlet pressure [bar]



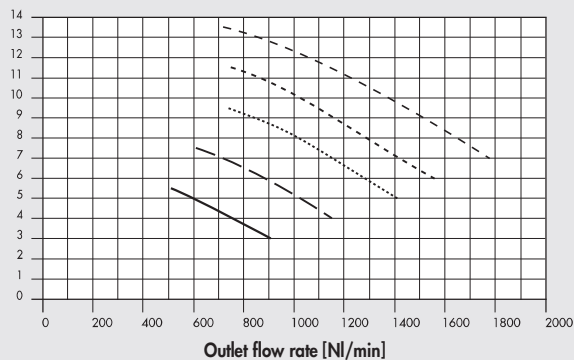
WITH REGULATOR Ø63

Outlet pressure [bar]



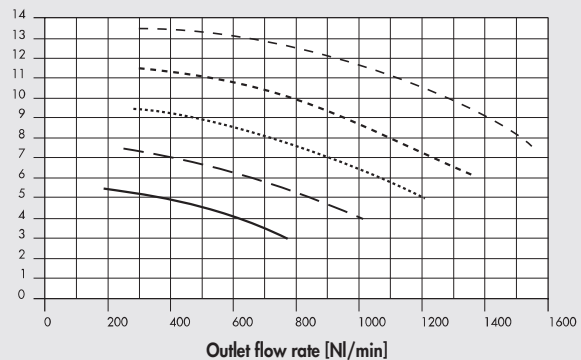
WITHOUT REGULATOR Ø100

Outlet pressure [bar]



WITH REGULATOR Ø100

Outlet pressure [bar]



INLET PRESSURE

- - - - - p1 = 7 bar

..... p1 = 6 bar

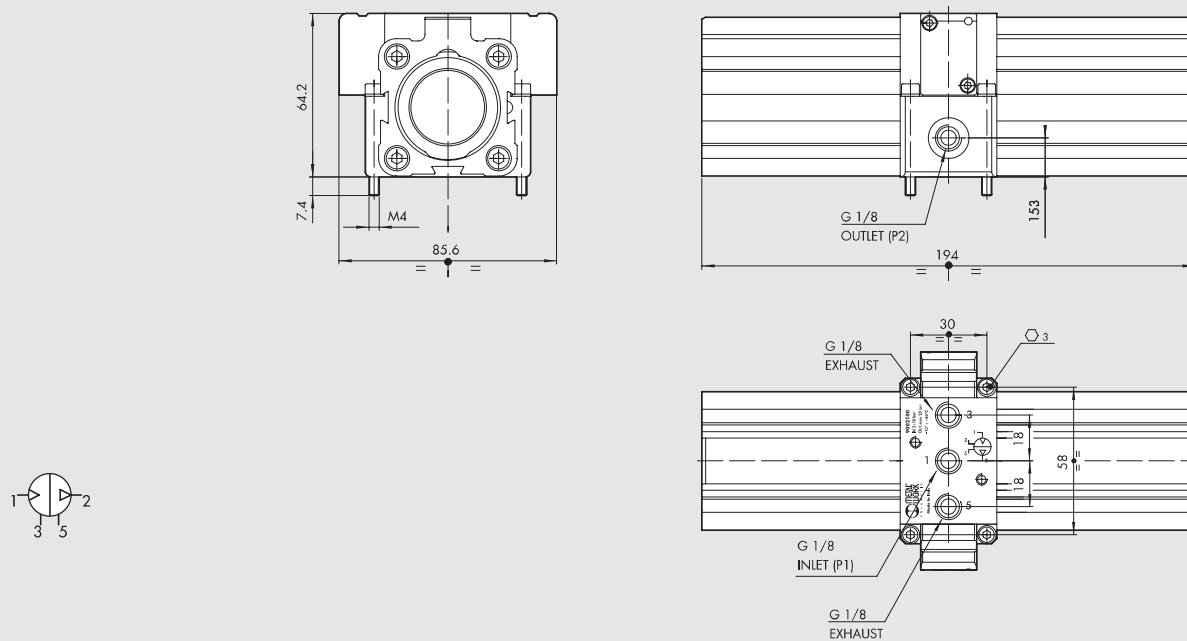
..... p1 = 5 bar

- - - - - p1 = 4 bar

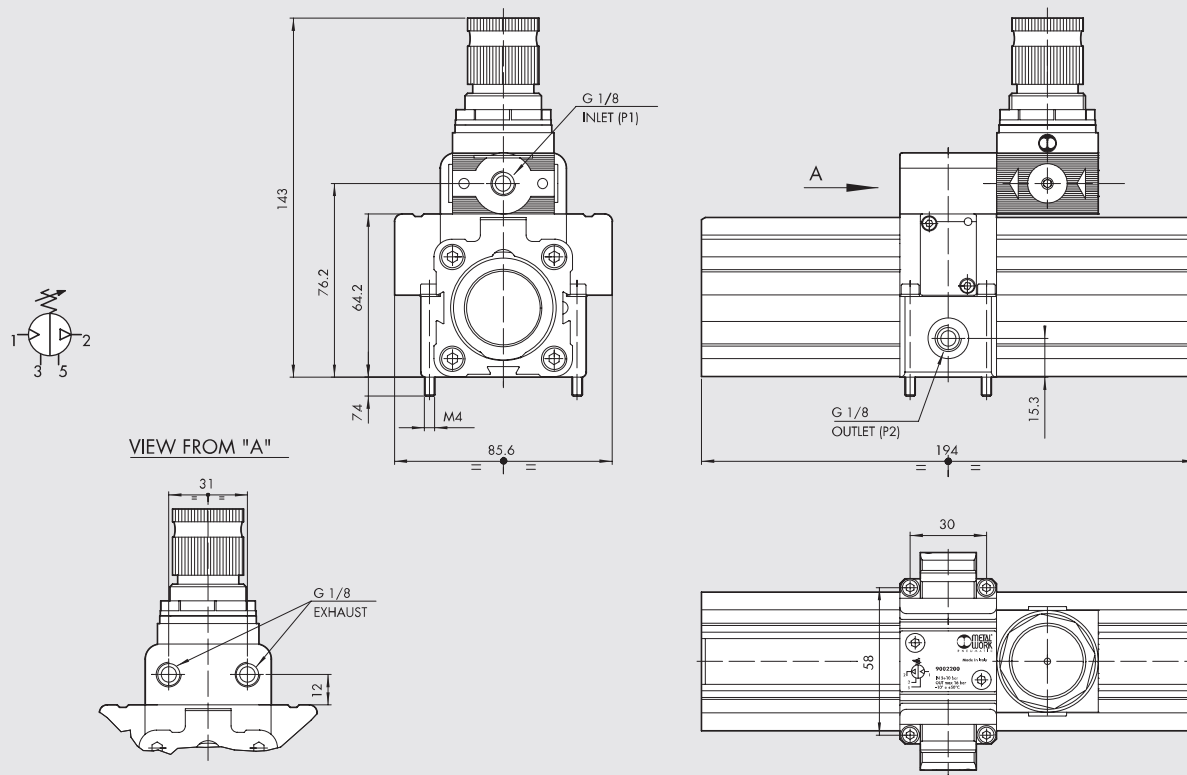
———— p1 = 3 bar

DIMENSIONS PRESSURE MULTIPLIER Ø40 (BOOSTER)

WITHOUT REGULATOR



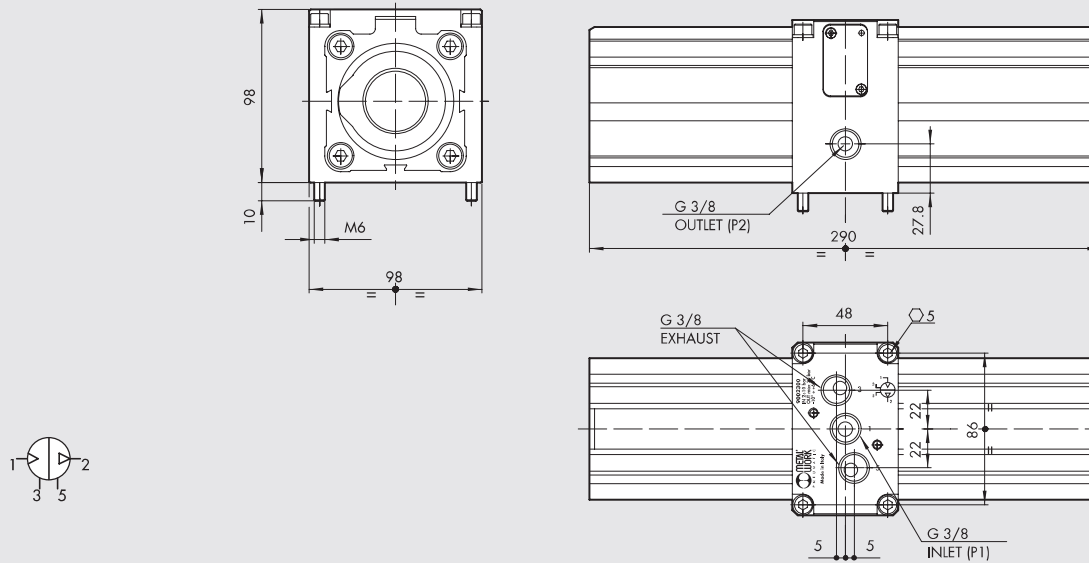
WITH REGULATOR



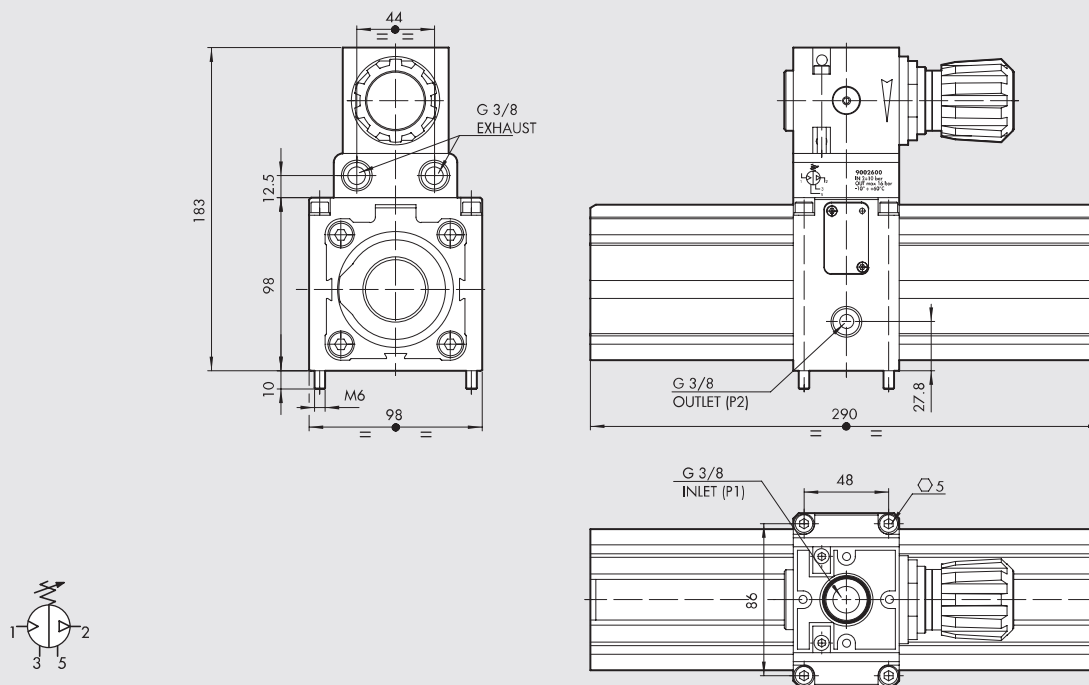
Code	Description
9002100	Booster Ø40
9002200	Booster Ø40 with regulator

DIMENSIONS PRESSURE MULTIPLIER Ø63 (BOOSTER)

WITHOUT REGULATOR



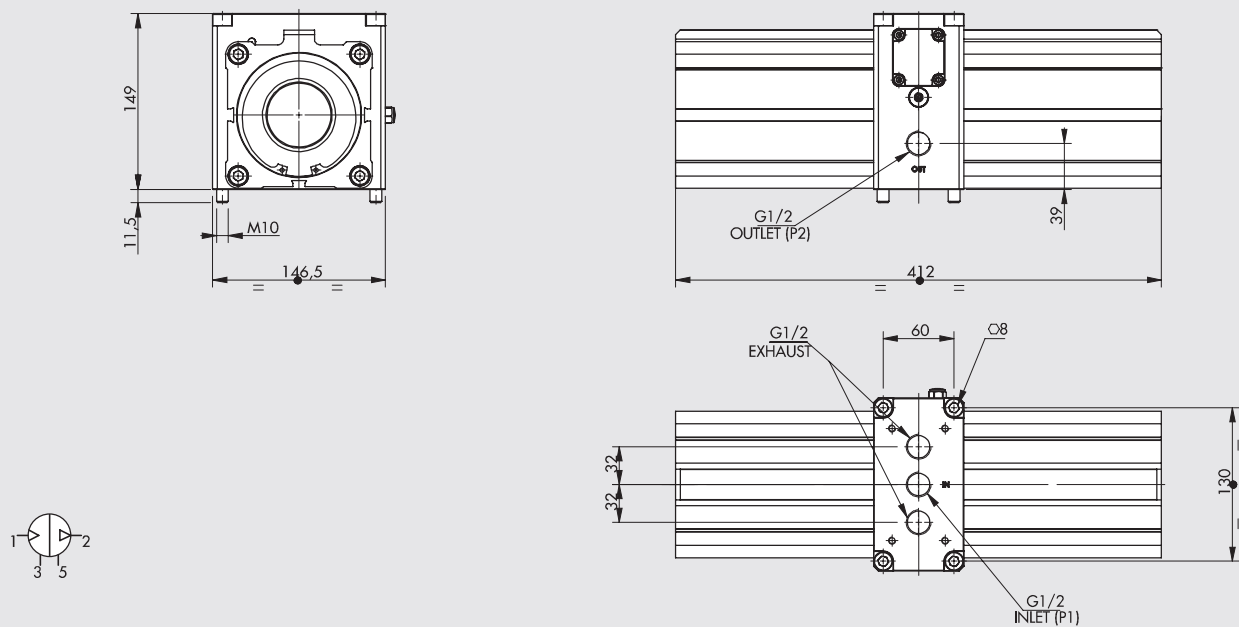
WITH REGULATOR



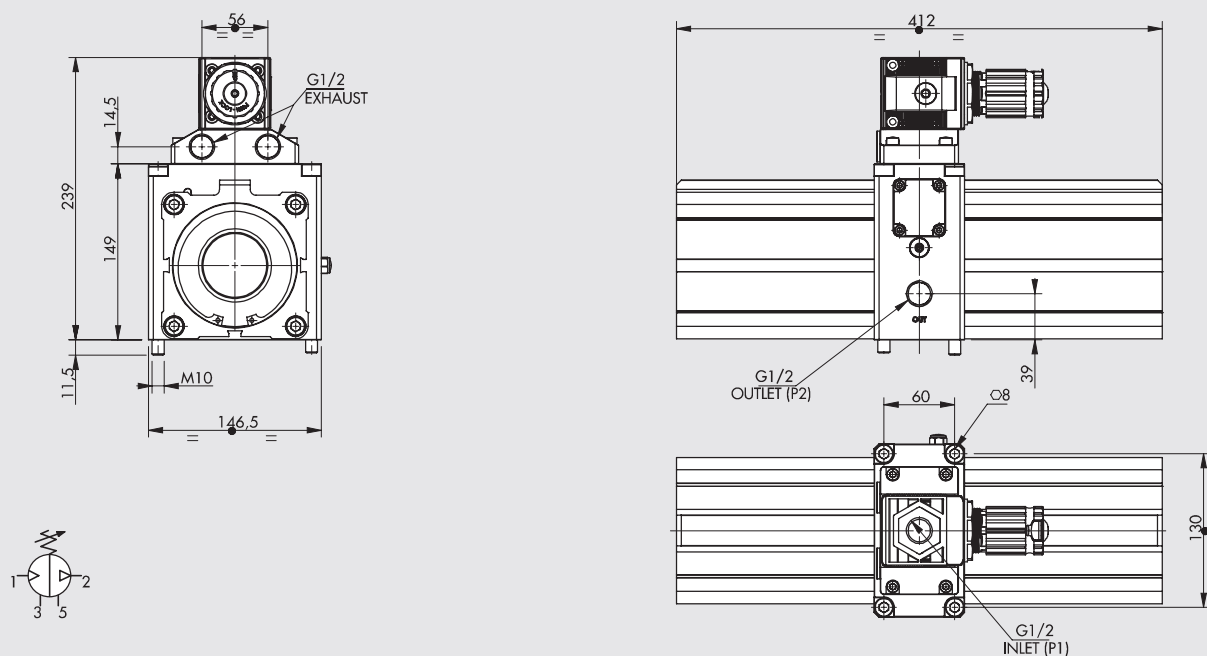
Code	Description
9002300	Booster Ø63
9002600	Booster Ø63 with regulator

DIMENSIONS PRESSURE MULTIPLIER Ø100 (BOOSTER)

WITHOUT REGULATOR



WITH REGULATOR

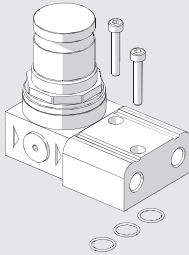


Code	Description
9002700	Booster Ø100
9002800	Booster Ø100 with regulator

ACCESSORIES

REGULATOR UNIT

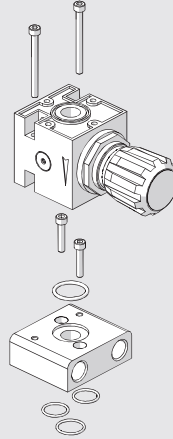
Ø40



Code	Description
9002180	Ø40 regulator unit

Note: Supplied with 2 screws, 3 O-ring

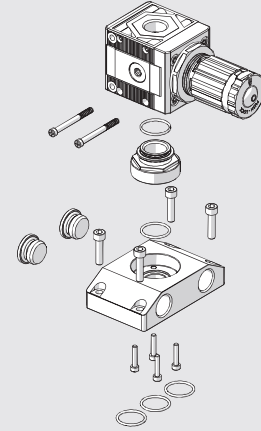
Ø63



Code	Description
9002380	Ø63 regulator unit

Note: Supplied with 4 screws, 4 O-ring

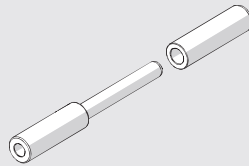
Ø100



Code	Description
9002780	Ø100 regulator unit

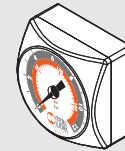
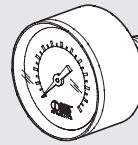
Note: Supplied with 10 screws, 5 O-ring

ACCESSORY FOR ASSEMBLING Ø100 BOOSTER VALVE GASKETS AND SPACERS



Code	Description
9002791	Accessory for assembling Ø100 Booster valve gaskets

PRESSURE GAUGE



Code	Description
9700101	M 40 1/8 012
9700110	M 40x40 1/8 012

N.B.: In case of use of the pressure gauge with Booster Ø100 it is necessary to purchase the appropriate adapter cod. 9210005

SILENCER

Ø40



Ø63



Ø100



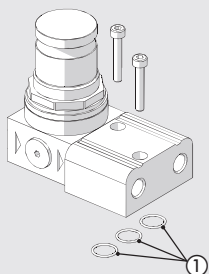
Code	Description
W0970530072	MW SPL-F silencer for Booster Ø40
W0970530014	MW SCQ silencer for Booster Ø63
W0970530055	MW SFE silencer for Booster Ø100

NOTES

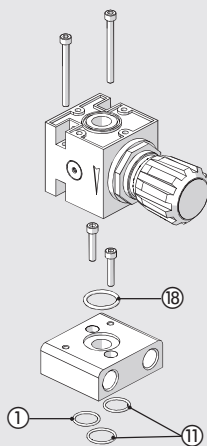
SPARE PARTS

SET OF GASKETS

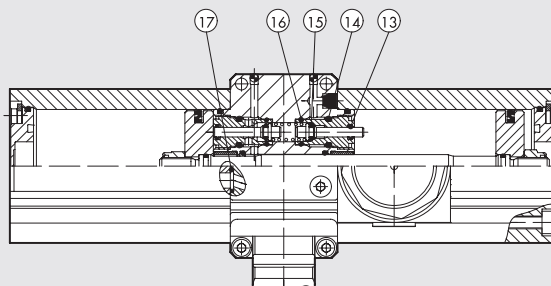
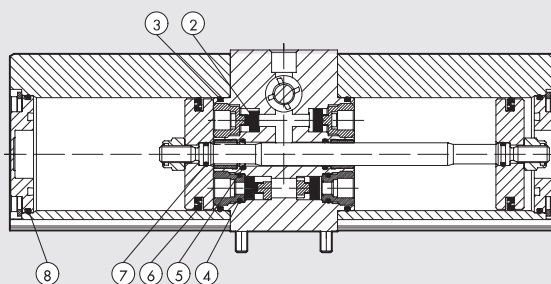
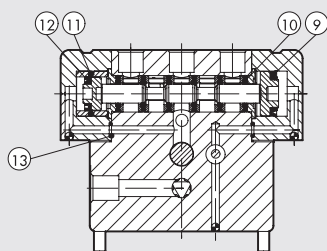
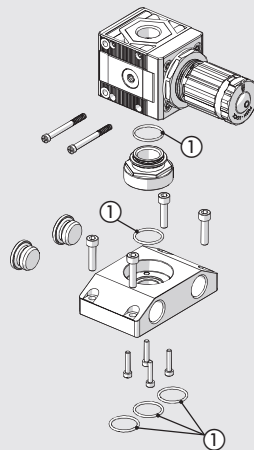
Ø40



Ø63



Ø100



Code	Description
9002190	Set of gaskets for Ø40 Booster (includes all indicated gaskets)
9002390	Set of gaskets for Ø63 Booster (includes all indicated gaskets)
9002790	Set of gaskets for Ø100 Booster (includes all indicated gaskets)

IN-LINE PROGRESSIVE STARTER VAP 1/4" AND 1/2"



The in-line progressive starter is a valve that regulates the flow of air until the outlet pressure reaches a certain value, at which the valve opens and allows air to flow at full rate.

This valve can be used to control a group of valves or a single valve, or it can be mounted between another valve and an actuator.

The air that enters inlet 1 passes through a choke that has a knob adjustment to control the flow. The valve opens completely when the outlet pressure reaches about 60% of the inlet pressure.

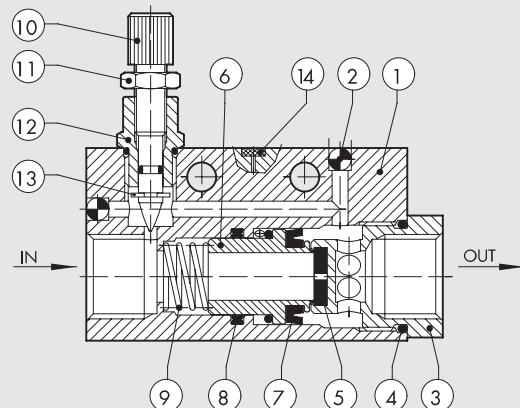
If the air supply is switched off, the valve discharges air from outlet 2 to inlet 1.



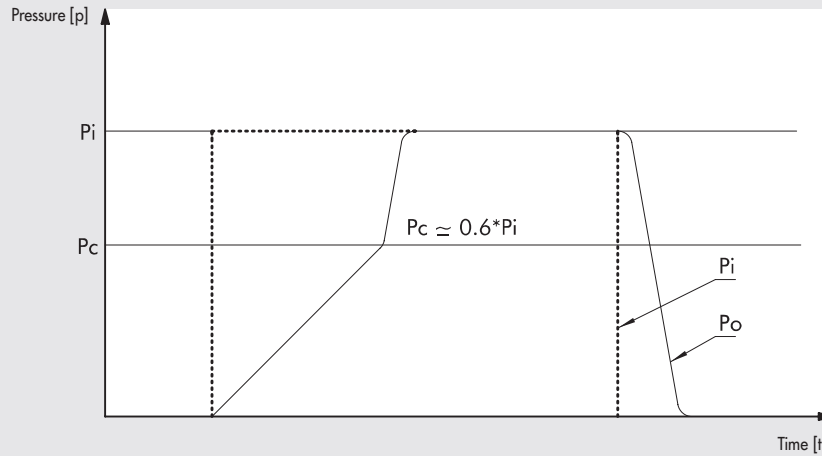
TECHNICAL DATA		VAP 1/4	VAP 1/2
Threaded ports		1/4"	1/2"
Type of valve		2/2 NC	
Minimum operating pressure	bar	2	
	psi	29	
	MPa	0.2	
Maximum operating pressure	bar	10	
	psi	145	
	MPa	1	
Switching pressure		About 60% of inlet pressure	
Operating frequency	Hz	max 5	
Flow rate at 6.3 bar, $\Delta P=0.5$ bar:	Nl/min	1050	2350
	scfm	37	83
Flow rate at 6.3 bar, $\Delta P=1$ bar:	Nl/min	1500	3100
	scfm	53	110
Maximum flow rate through flow regulator at 6.3 bar:	Nl/min	200	300
	scfm	7	11
Operating temperature	°C	from -10 to 70	
	°F	from 14 to 158	
Fluid		Filtered, lubricated or unlubricated, compressed air.	
		Lubrication, if used, must be continuous.	
Weight	g	90	220
Wall fixing screws		Min. M4x25	Min. M4x35
Mounting		In any position	

COMPONENTS

- ① BODY: anodized aluminium
- ② BALL: steel
- ③ INSERT: nickel-plated brass
- ④ O-Ring: NBR
- ⑤ POPPET: NBR
- ⑥ PISTON: anodized aluminium
- ⑦ PISTON GASKET: NBR
- ⑧ O-Ring: NBR
- ⑨ SPRING : steel
- ⑩ PIN: nickel-plated brass
- ⑪ NUT: nickel-plated brass
- ⑫ PIN HOLDER: nickel-plated brass
- ⑬ SNAP RING: zinc-plated steel
- ⑭ SILENCER

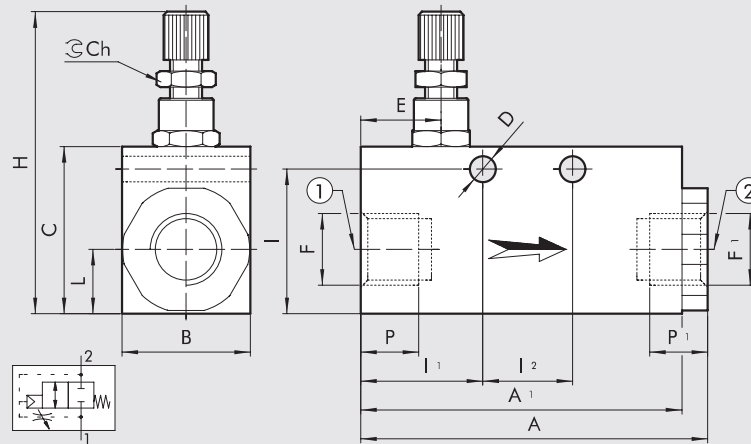


OPERATION



P_i = inlet pressure
 P_o = outlet pressure
 P_c = switching pressure

DIMENSION



Code	Description	F	F'	A	A'	B	C	Ch	D	E	H	I	I'	I''	L	P	P'
W3606000002	VAP 1/4	G1/4	G1/4	56	50	20	30	8	4.5	10	49-52	25.5	18	16	10	9	9
W3606000004	VAP 1/2	G1/2	G1/2	75.8	65	30	40	8	4.5	13	59-62	35.5	26.5	16	15	12	12

NOTES

ROTARY JOINTS AND DISTRIBUTION FRAMES



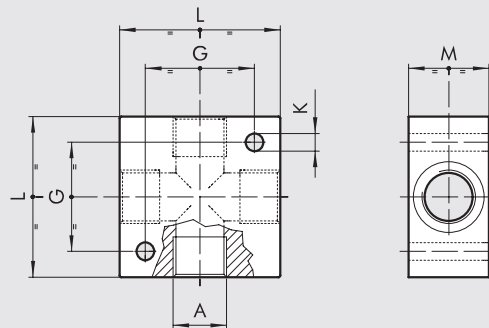
TECHNICAL DATA

Threaded ports		1/8	1/4	3/8	1/2
Max pressure	bar	0 - 12			
	MPa	0 - 1.2			
Operating temperature	°C	-10 - 80			
Fluid		Lubricated or unlubricated filtered air			
Body		Rotary joints: Nickel-plated brass			
		Distribution frame: Anodized aluminium			
Gaskets		NBR			



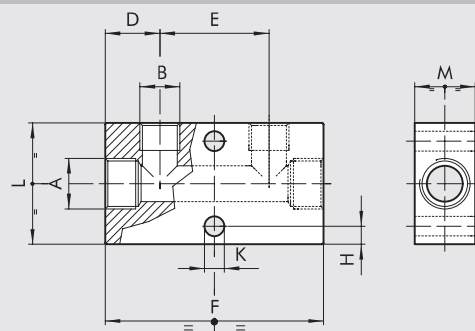
DISTRIBUTION FRAME

4-WAYS DISTRIBUTION FRAME



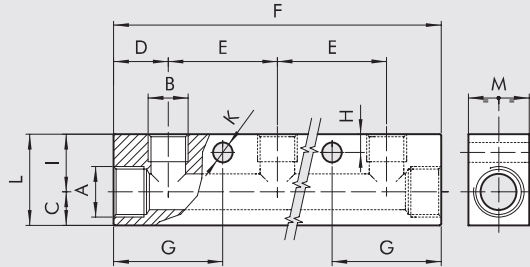
Code	A	G	K	L	M
W0501101001	G 1/8	17	4.5	25	15
W0501111002	G 1/4	26	5.5	40	20
W0501121003	G 3/8	34	5.5	50	25
W0501131004	G 1/2	34	5.5	50	30

DISTRIBUTION FRAM 2-WAYS LINEAR 1/8" - 1/4" OUTLETS



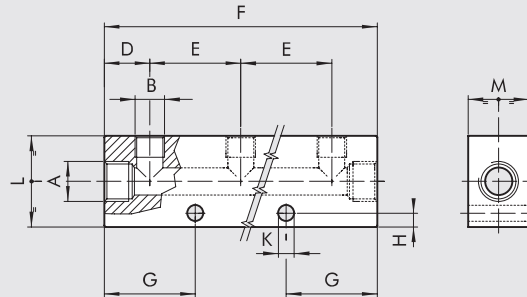
Code	INLETS		OUTLETS								
	N°	A	N°	B	D	E	F	H	K	L	M
W0502111001	2	G 1/4	2	G 1/8	15	30	60	4.5	5.3	30	20
W0502121002	2	G 3/8	2	G 1/4	18	36	72	6	6.5	40	20
W0502131002	2	G 1/2	2	G 1/4	22	36	80	6	6.5	40	30

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/4" OUTLETS



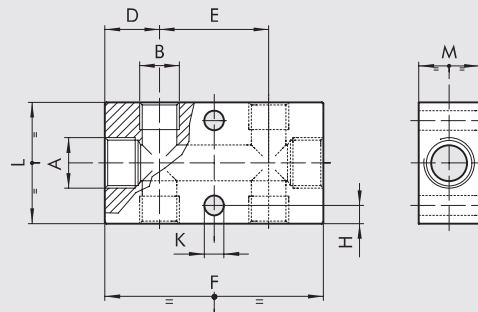
Code	INLETS		OUTLETS										L	M
	N°	A	N°	B	D	E	F	G	H	K	I	C		
W0502121006	2	G 3/8	3	G 1/4	18	36	108	36	6	6.5	19	11	30	20
W0502121008	2	G 3/8	4	G 1/4	18	36	144	36	6	6.5	19	11	30	20
W0502121010	2	G 3/8	5	G 1/4	18	36	180	36	6	6.5	19	11	30	20
W0502121012	2	G 3/8	6	G 1/4	18	36	216	36	6	6.5	19	11	30	20
W0502131006	2	G 1/2	3	G 1/4	18	36	108	36	6	6.5	24	16	40	30
W0502131008	2	G 1/2	4	G 1/4	18	36	144	36	6	6.5	24	16	40	30
W0502131010	2	G 1/2	5	G 1/4	18	36	180	36	6	6.5	24	16	40	30
W0502131012	2	G 1/2	6	G 1/4	18	36	216	36	6	6.5	24	16	40	30

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/8" OUTLETS

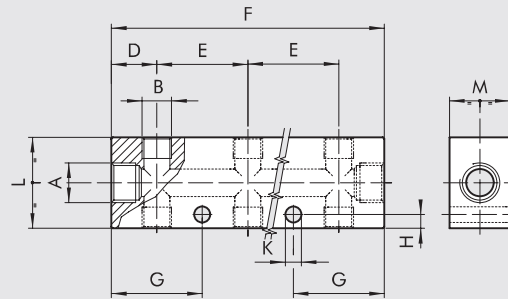


Code	INLETS		OUTLETS										L	M
	N°	A	N°	B	D	E	F	G	H	K	L	C		
W0502111005	2	G 1/4	3	G 1/8	15	30	90	30	4.5	5.3	30	20	30	20
W0502111007	2	G 1/4	4	G 1/8	15	30	120	30	4.5	5.3	30	20	30	20
W0502111009	2	G 1/4	5	G 1/8	15	30	150	30	4.5	5.3	30	20	30	20
W0502111011	2	G 1/4	6	G 1/8	15	30	180	30	4.5	5.3	30	20	30	20

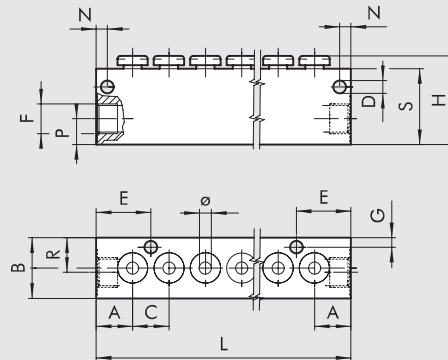
DISTRIBUTION FRAME WITH 2 OPPOSED OULETS



Code	INLETS		OUTLETS									
	N°	A	N°	B	D	E	F	H	K	L	M	
W0503111013	2	G 1/4	2+2	G 1/8	15	30	60	4.5	5.3	30	20	
W0503121014	2	G 3/8	2+2	G 1/4	18	36	72	6	6.5	40	20	
W0503131014	2	G 1/2	2+2	G 1/4	22	36	80	6	6.5	40	30	

DISTRIBUTION FRAME WITH 1/8"-1/4" OPPOSED OUTLETS


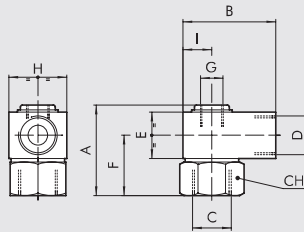
Code	INLETS		OUTLETS		D	E	F	G	H	K	L	M
	N°	A	N°	B								
W0503111015	2	G 1/4	3+3	G 1/8	15	30	90	30	4.5	5.3	30	20
W0503111017	2	G 1/4	4+4	G 1/8	15	30	120	30	4.5	5.3	30	20
W0503111019	2	G 1/4	5+5	G 1/8	15	30	150	30	4.5	5.3	30	20
W0503121016	2	G 3/8	3+3	G 1/4	18	36	108	36	6	6.5	40	20
W0503121018	2	G 3/8	4+4	G 1/4	18	36	144	36	6	6.5	40	20
W0503121020	2	G 3/8	5+5	G 1/4	18	36	180	36	6	6.5	40	20
W0503131016	2	G 1/2	3+3	G 1/4	22	36	116	40	6	6.5	40	30
W0503131018	2	G 1/2	4+4	G 1/4	22	36	152	40	6	6.5	40	30
W0503131020	2	G 1/2	5+5	G 1/4	22	36	188	40	6	6.5	40	30

DISTRIBUTOR, Ø 4-6-8 mm


Code	N. positions	Ø	F	A	B	C	D	E	G	H	L	M	N	P	R	S
7304106	6	4	1/8	12	20	12	4.2	3.7	3.1	29	84	6	3.7	8.5	11.4	25
7304112	12	4									156					
7306206	6	6	1/4	14	20	14.6	4.2	21.3	3.1	34	101	6	3.7	10	11	30
7306212	12	6									188.6					
7308306	6	8	3/8	18	25	16.6	4.2	26.3	4.2	39	119	5	5	14	14	35
7308312	12	8									218.6					

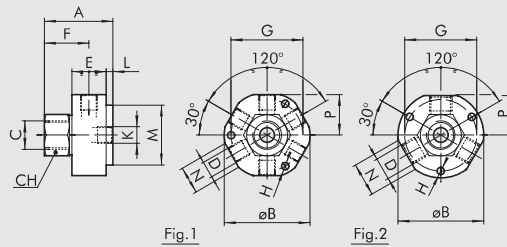
ROTARY JOINT

SINGLE ROTARY JOINT



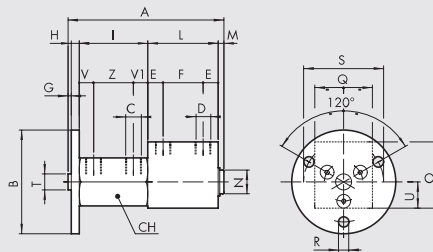
Code	A	B	C	D	E	F	G	H	I	CH	r.p.m.
W0511101101	32.5	30	G 1/8	G 1/8	16	22	-	16	8	16	550
W0511121121	32.5	30	G 1/4	G 1/4	16	22	-	16	8	16	550
W0511131131	44	40	G 3/8	G 3/8	25	28.5	G 1/8	25	12.5	22	300
W0511141141	55	65	G 1/2	G 1/2	30	35	G 3/8	40	20	30	200
W0511151151	70	65	G 3/4	G 3/4	40	45	G 1/2	40	20	36	160
W0511161161	80	80	G 1	G 1	45	52.5	G 3/4	50	26	45	140

MULTIPLE ROTARY JOINT



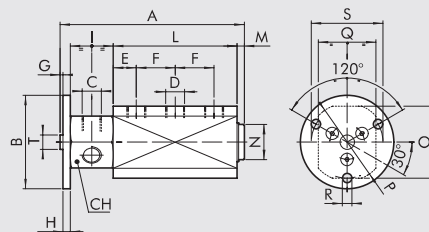
Code	Figure	A	B	INLETS		OUTLETS		E	F	G	H	K	L	M	N	P	CH	r.p.m.
				N°	C	N°	D											
W0513131101	1	45	49	1	G 3/8	6	G 1/8	25	28.5	42	4.2	G 1/8	4	35	17	22.6	22	300
W0512131121	2	45	49	1	G 3/8	3	G 1/4	25	28.5	42	4.2	G 1/8	4	35	19	23	22	300

2 INDEPENDENT WAY ROTARY JOINTS



Code	A	B	INLETS		OUTLETS		E	F	G	H	I	L	M	N	O	Q	R	S	T	U	V	VI	Z	CH	r.p.m.
			N°	C	N°	D																			
W0514101101	97	65	2	G 1/8	2	G 1/8	12	20	2	5	43	44	3	15	40	25	6.3	50	10	20	11.5	11.5	20	30	300
W0514121121	128	65	2	G 1/4	2	G 1/4	15	30	2	5	56	60	5	24	50	40	6.3	50	10	25	15	12	30	36	200

3 INDEPENDENT WAY ROTARY JOINTS

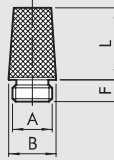


Code	A	B	INLETS		OUTLETS		E	F	G	H	I	L	M	N	O	P	Q	R	S	T	CH	r.p.m.
			N°	C	N°	D																
W0515121121	128	64	3	G 1/4	3	G 1/4	16	27	2	5	30	86	5	29	50	54	45	6.3	50	10	36	200

SILENCERS AND EXHAUST REGULATOR

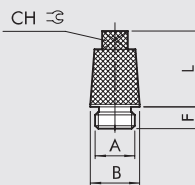


SILENCER MW SC



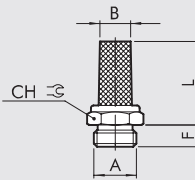
	Code	A	B ±0.2	F	L ±3%
Materials:	W0970530001	M5	6	4.5 ±0.5	10
Nickel-plated brass	W0970530002	G 1/8	12	6 ±0.5	15
Sintered nickel-plated bronze	W0970530003	G 1/4	15	6.7 ±0.5	19
	W0970530004	G 3/8	19	8.5 ±0.5	28.5
	W0970530005	G 1/2	23	8.7 ±0.5	33
Features:	W0970530006	G 3/4	29	11 ±1	40.5
Pmax: 12 bar	W0970530007	G 1	36	11.5 ±1	50.5
Temp.: -10°C - +80°C					

SILENCER MW SCQ



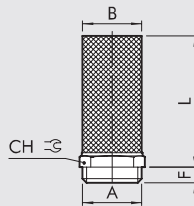
	Code	A	B ±0.2	F	L ±3%	CH
Materials:	W0970530012	G 1/8	12	6 ±0.5	15	7
Nickel-plated brass	W0970530013	G 1/4	15	7.5 ±0.5	19	8
Sintered nickel-plated bronze	W0970530014	G 3/8	19	8.5 ±0.5	29.2	10
	W0970530015	G 1/2	23	9 ±0.5	31.5	14
	W0970530016	G 3/4	29	10 ±1	41.5	17
Features:	W0970530017	G 1	36	12 ±1	51.2	23
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW SE



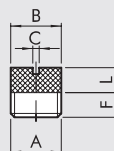
	Code	A	B ±0.5	F	L ±5%	CH
Materials:	W0970530021	M5	4	4 ±0.5	13	8
Nickel-plated brass	W0970530020	M7	5	5 ±0.5	21	10
Sintered nickel-plated bronze	W0970530022	G 1/8	7	6 ±0.5	21	13
	W0970530023	G 1/4	8.5	8 ±0.5	23.5	16
	W0970530024	G 3/8	11	8 ±0.5	33	19
Features:	W0970530025	G 1/2	15	9 ±0.5	37	24
Pmax: 12 bar	W0970530026	G 3/4	21.5	9 ±1	43.5	30
Temp.: -10°C - +80°C	W0970530027	G 1	27	10 ±1	56	36

HIGH-CAPACITY SILENCER MW SL



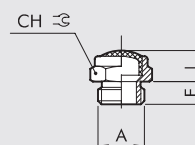
	Code	A	B ±1	F	L ±5%	CH
Materials:	W0970530036	G 3/4	37	12 ±1	215	50
Nickel-plated brass	W0970530037	G 1	37	12 ±1	215	50
Sintered nickel-plated bronze	W0970530038	G 1 1/4	37	15 ±1.5	215	50
	W0970530039	G 1 1/2	37	15 ±1.5	215	50
	W0970530040	G 2	37	17 ±1.5	220	65
Features:						
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW STT



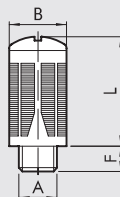
	Code	A	B ±0.2	F	L ±3%	C
Materials:	W0970530042	G 1/8	9.5	6.5 ±0.5	6	2
Nickel-plated brass	W0970530043	G 1/4	12.6	6 ±0.5	7	1.5
Sintered nickel-plated bronze	W0970530044	G 3/8	16.2	7.5 ±0.5	8.5	1.5
	W0970530045	G 1/2	20.5	10 ±0.5	9.6	2.5
	W0970530046	G 3/4	26	11 ±1	12	1.5
Features:	W0970530047	G 1	33	13 ±1	11	-
Pmax: 12 bar						
Temp.: -10°C - +80°C						

SILENCER MW SFE



	Code	A	F	L ±3%	CH
Materials:	W0970530051	M5	3.7 ±0.5	4.7	8
Nickel-plated brass	W0970530052	G 1/8	6.2 ±0.5	8.2	13
Stainless steel wire	W0970530053	G 1/4	7.7 ±0.5	11.3	16
	W0970530054	G 3/8	8 ±0.5	11.5	19
	W0970530055	G 1/2	9 ±0.5	13	24
Features:	W0970530056	G 3/4	9 ±1	15	30
Pmax: 12 bar	W0970530057	G 1	10 ±1	18	36
Temp.: -10°C - +80°C					

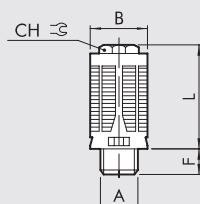
DYNAMIC SILENCER MW SPL



	Code	A	B ±0.2	F	L ±3%
Materials:	W0970530062	G 1/8	15.4	6.2 ±0.5	27
Black acetal resin	W0970530063	G 1/4	19.6	8 ±0.5	35
Acoustic insulation	W0970530064	G 3/8	24.7	11.3 ±0.5	47
	W0970530065	G 1/2	24.7	10.7 ±0.5	47
	W0970530066	G 3/4	48	18 ±1	96
	W0970530067	G 1	48	18 ±1	97

Features:
Pmax: 6 bar
Temp.: -10°C - +60°C

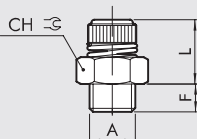
SILENCER MW SPL-F



	Code	A	B ±0.2	F ±0.5	L ±3%	CH
Materials:	W0970530072	G 1/8	16.3	5.5	29	10
Black acetal resin	W0970530073	G 1/4	20	7.4	36.5	13
Felt	W0970530074	G 3/8	24.8	11	47	17
	W0970530075	G 1/2	24.8	11	47	17

Features:
Pmax: 12 bar
Temp.: -10°C - +60°C

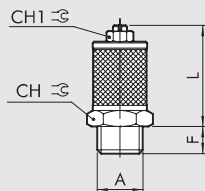
SILENCED EXHAUST REGULATOR MW SVE



	Code	A	F	L ±0.5	CH
Materials:	W0970520001	G 1/8	6.7 ±0.5	19 - 23	13
Nickel-plated brass	W0970520002	G 1/4	7.4 ±0.5	21 - 24.5	15
Sintered nickel-plated bronze	W0970520003	G 3/8	9.7 ±0.5	23.5 - 29.5	22
Stainless steel spring	W0970520004	G 1/2	10.6 ±0.5	23 - 28	22
	W0970520005	G 3/4	12 ±1	29 - 35	30
	W0970520006	G 1	13.8 ±1	27 - 34	36

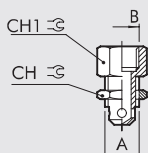
Features:
Pmax: 12 bar
Temp.: -10°C - +80°C

SILENCED EXHAUST REGULATOR MW SVL



	Code	A	F	L ±0.5	CH	CH1
Materials:	W0970520010	M5	4 ±0.5	17 ÷ 27	8	6
Nickel-plated brass	W0970520009	M7	4.5 ±0.5	19 ÷ 31	8	5.5
Sintered nickel-plated bronze	W0970520011	G 1/8	7 ±0.5	31 ÷ 40	16	9
	W0970520012	G 1/4	7.5 ±0.5	30 ÷ 37.5	16	9
	W0970520013	G 3/8	10.5 ±0.5	37.5 ÷ 51.5	22	9
Features:	W0970520014	G 1/2	12.4 ±0.5	39.5 ÷ 47.5	22	9
Pmax: 12 bar	W0970520015	G 3/4	12.4 ±1	56.5 ÷ 81	30	13
Temp.: -10°C - +80°C	W0970520016	G 1	12.4 ±1	58.5 ÷ 84.5	36	13

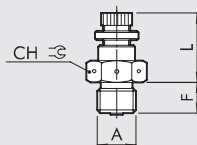
EXHAUST REGULATOR MW DSN



	Code	A	B	CH	CH1
Materials:	W0970520021	G 1/8	G1/8	12	12
Nickel-plated brass	W0970520022	G 1/4	G1/8	14	16
	W0970520023	G 3/8	G1/4	19	17
	W0970520024	G 1/2	G1/4	24	22

Features:
Pmax: 12 bar
Temp.: -10°C - +80°C

EXHAUST REGULATOR MW DSE

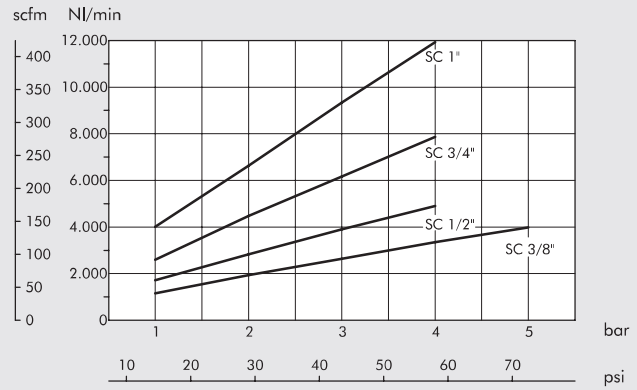
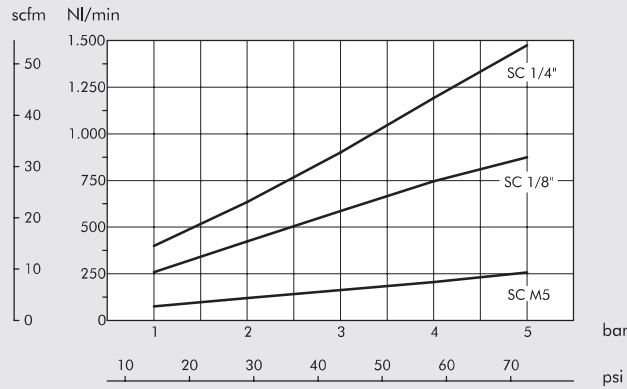


	Code	A	F	L ±0.5	CH
Materials:	W0970520031	G 1/8	7.5 ±0.5	16.8 - 20	14
Nickel-plated brass	W0970520032	G 1/4	10 ±0.5	21.5 - 29	17

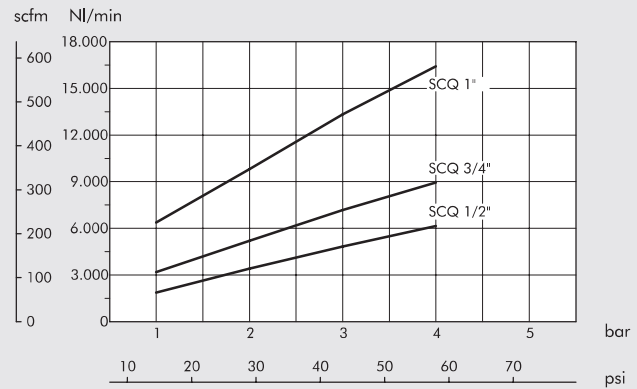
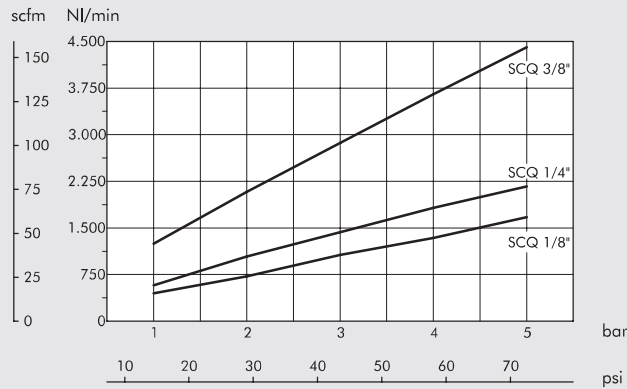
Features:
Pmax: 12 bar
Temp.: -10°C - +80°C

FLOW CHARTS

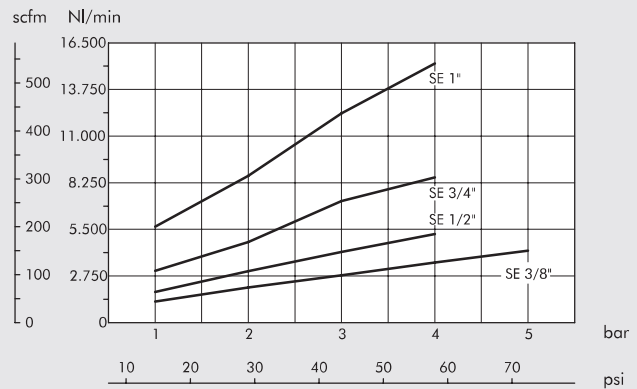
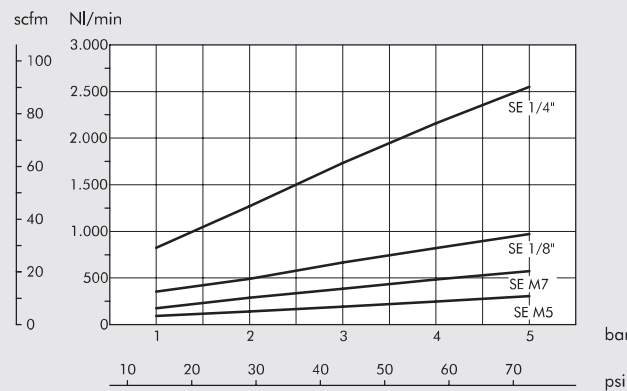
SILENCER MW SC



SILENCER MW SCQ

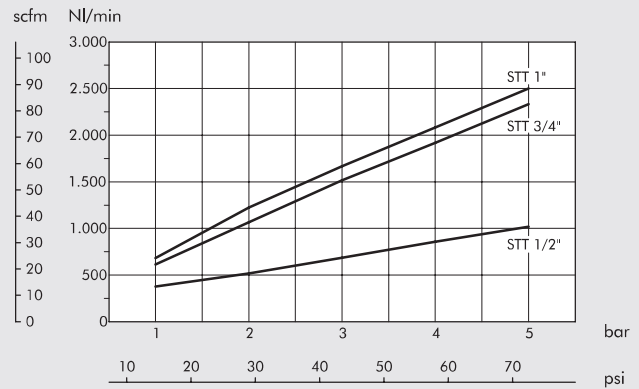
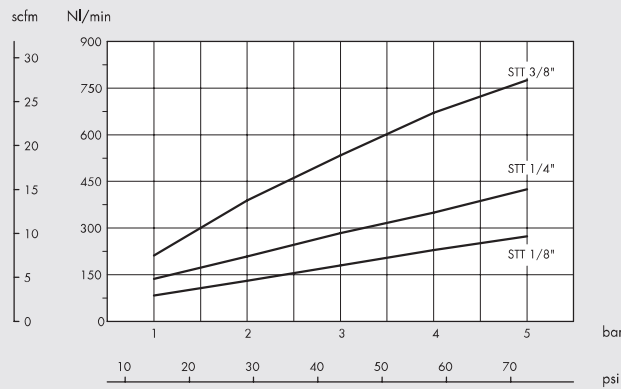


SILENCER MW SE

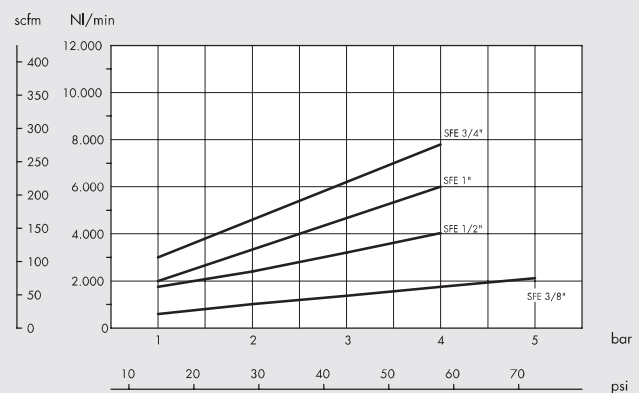
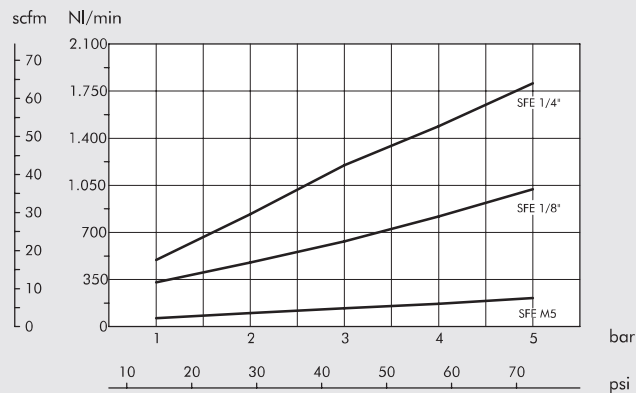


FLOW CHARTS

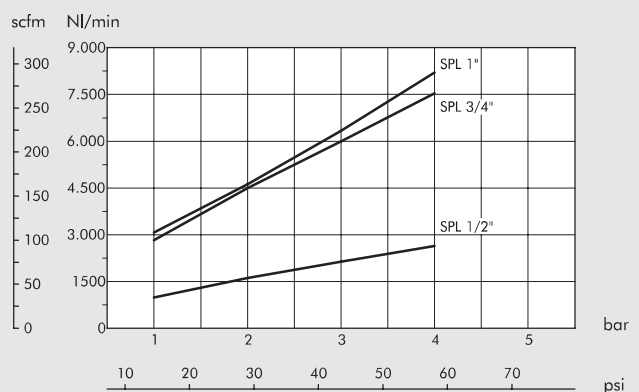
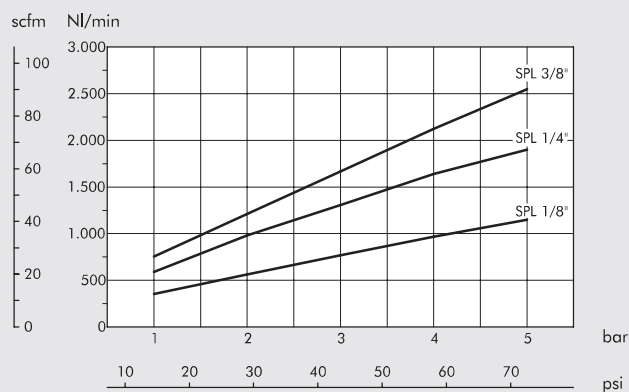
SILENCER MW STT



SILENCER MW SFE

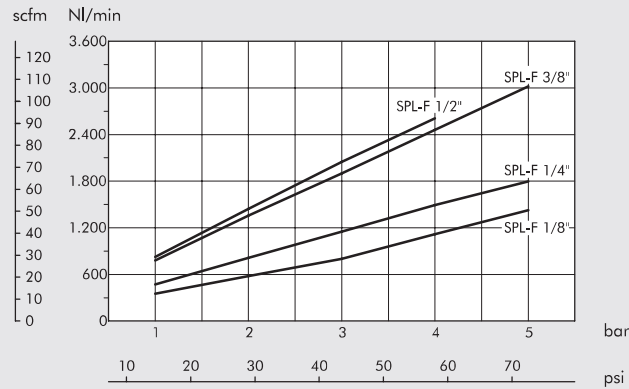


SILENCER MW SPL

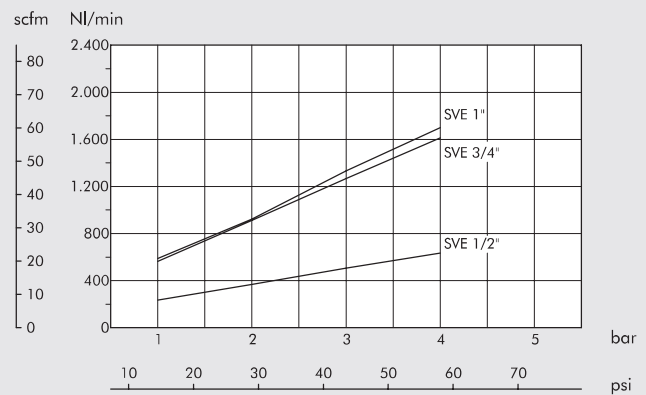
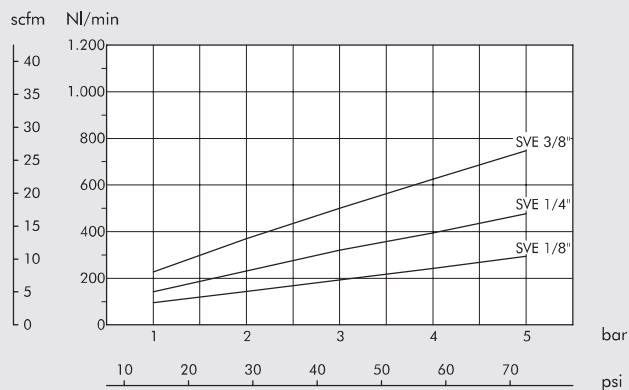


FLOW CHARTS

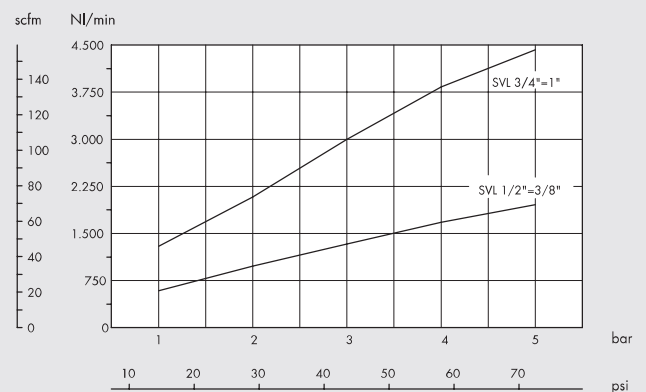
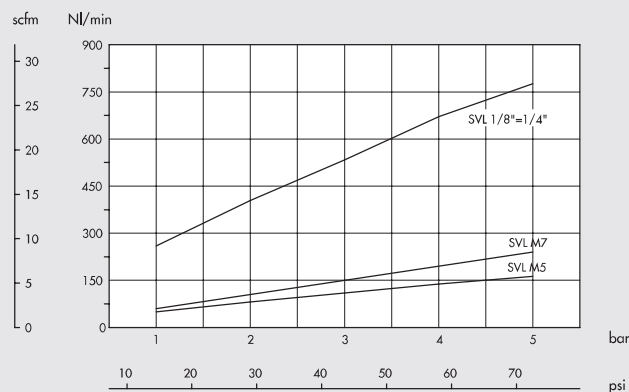
SILENCER MW SPL-F



SILENCER MW SVE



SILENCER MW SVL



NOISE ABATEMENT

Reduction of the noise that you obtain mounting a silencer on a compressed air exhaust, measured by feeding at 5 bar, at a distance of 1 m with 45° angle to the axis of the silencer (for SFE model at 90° in order to avoid the direct jet).

Middle values in the sizes.

MW SC - 35 dB
 MW SCQ - 35 dB
 MW SE - 28 dB
 MW STT - 32 dB
 MW SFE - 30 dB

MW SPL - 30 dB
 MW SPL-F - 35 dB
 MW SVE - 25 dB
 MW SVL - 25 dB

Supplies 24V electric power via an M8 connector. Compressed air to power the generator can be supplied merely by connecting a pipe to the 1/8" threaded port. To interrupt energy production, all you have to do is to switch off the compressed air supply by means of a cock or solenoid valve. Voltage remains constant irrespective of changes in input pressure or the load applied (within the limits specified in the catalogue). An easy-to-read light display shows the status of the appliance at all times.



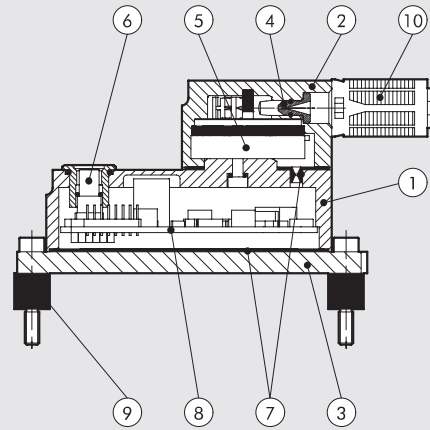
TECHNICAL DATA		50-1	50-2	50-3
Maximum power at 7 bar	W	3	7.5	12
Nominal voltage supplied		24 VDC		
Voltage tolerance		±3%		
Ripple and Noise		Including line regulation, load regulation and factory setup mMax 250 mV p-p o 79 mV rms		
Rise time at 7 bar at max. load	sec	2.5	1.5	1
Hold time at 7 bar at 50% of load	sec	1.3	0.9	0.8
Electrical connector		See graph on page E5.25 M8 - 3 poles		
Overload protection and short-circuit		"Hiccup mode" with automatic recovery upon cessation of overload		
Overvoltage protection		Intervention if output voltage > 120% than nominal value		
Electromagnetic compatibility		In compliance with the following standards: EN 61000-2: Part 6-2: Generic standards - Immunity for industrial environments EN 61000-2: Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments		
Life at 6.3 bar	h	20.000		
Signals		LED diagnostics. Visual signals are flanked by a diagnostic pin on the M8 connector, which closes a GND contact when the voltage is 24 VDC ±3%		
Index of protection for electronic devices		IP 65		
Input fluid		Filter unlubricated air		
Minimum input pressure	bar	4	3	3
Maximum input pressure	bar	7	7	7
Max air consumption at 7 bar (Leq)	NI/min	32	50	75
Air ports		Input: G1/8" Exhaust: G1/8"		
Temperature range	°C	0 - 50		
Max noise level at 7 bar		75 dB		
Casing material		Painted aluminium		
Assembly position		Any		
Fixing		Using 3 M4x10 screws		
Weight	g	The device can be stabilised using rubber vibration dampers forniti in dotazione 330		

LED DIAGNOSTICS OVERVIEW

LED off or red LED flashing	Temporarily on start-up: the output voltage has not yet reached 24V If this condition persists, the applied load is probably excessive with respect to the input pressure.
Green LED fixed	Normal operation: the output voltage has reached 24V Optimal use of the compressed air supply.
Green LED flashing	Normal operation: the output voltage has reached 24V but the generator is used below capacity (can supply more power at the same compressed air supply)
Red and Green LED flashing	Charge short-circuited: output voltage is automatically cut off. It will return within the tolerance range upon elimination of overload.
Red LED fixed	The maximum supply pressure has been exceeded and the device risks getting damaged.

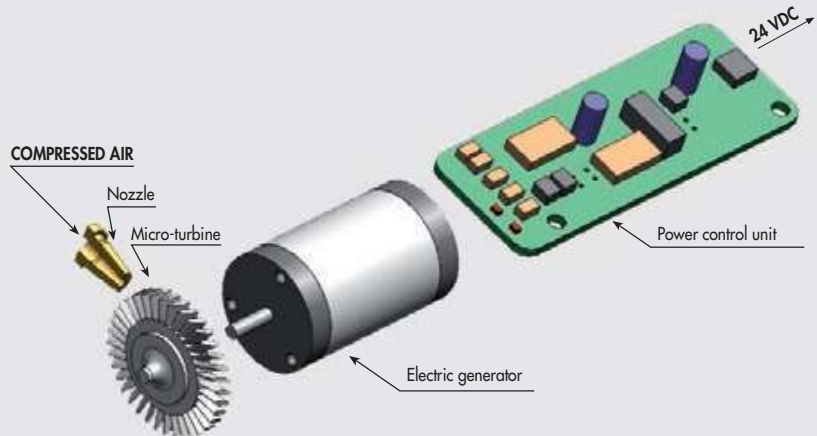
COMPONENTS

- ① Aluminium body, treated and painted
- ② Aluminium body, treated and painted
- ③ Aluminium base, treated and painted
- ④ Brass nozzle
- ⑤ Turbine and electrical generator unit
- ⑥ M8 3-pin connector
- ⑦ NBR gaskets
- ⑧ Electronic board
- ⑨ Vibration dampers
- ⑩ Silencer



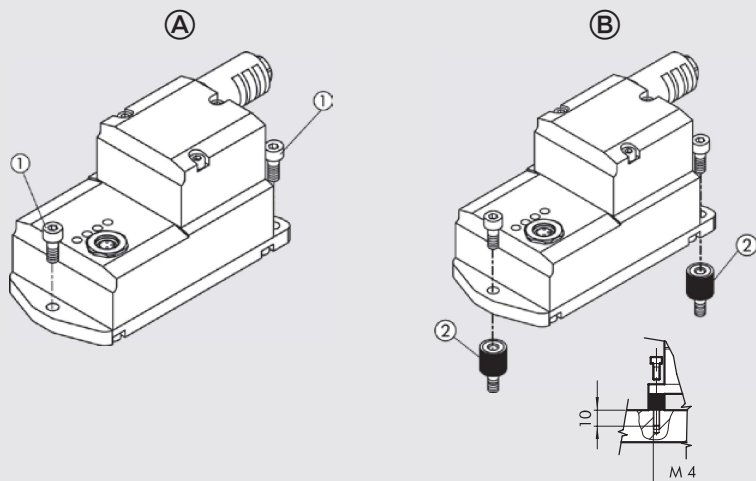
FUNCTION DIAGRAM

The compressed air is supplied via a nozzle that converts pressure energy into kinetic energy. The supersonic jet of air strikes the blades of a micro-turbine, which is integral with an electrical generator. An electronic power management unit ensures constant voltage output at varying input pressures and applied electrical loads. The electrical power thus generated can supply any type of utility.

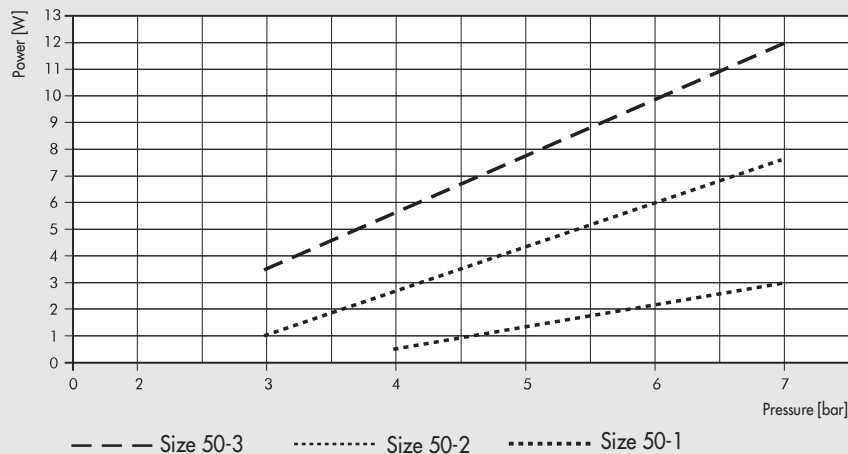


FIXING

The generator can be fixed on a flat surface using the 3 M4x10 screws ① (fig. A), and the 3 vibration dampers ② supplied with the device (fig. B)

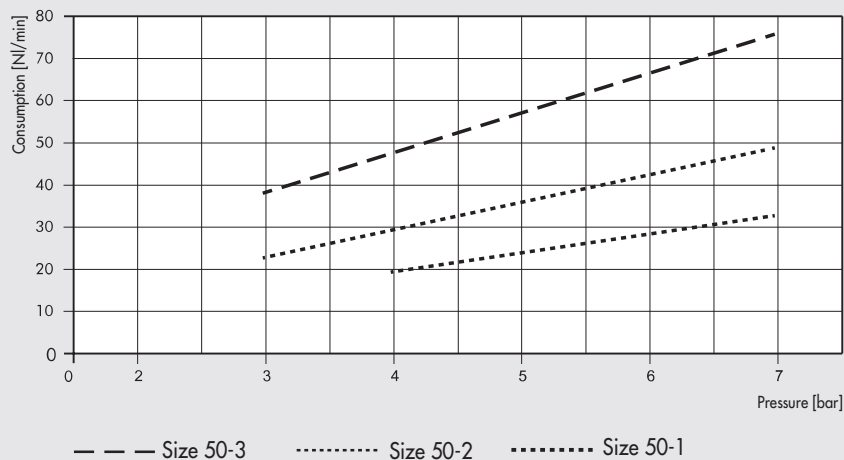


PRESSURE / AVAILABLE POWER

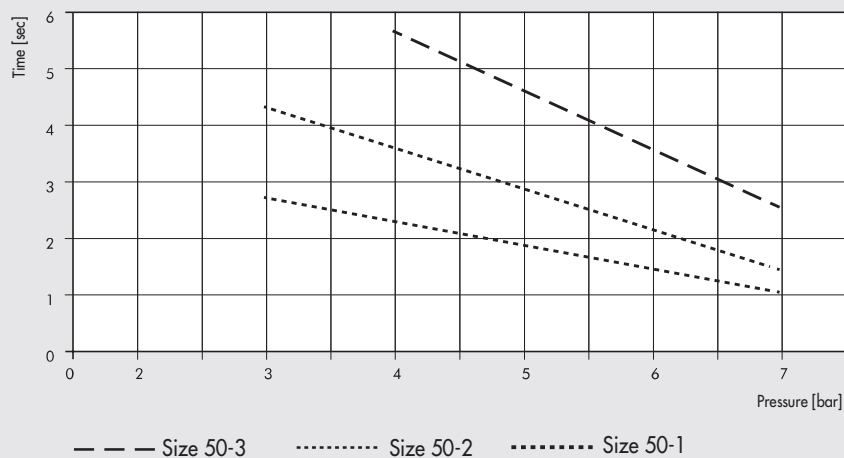


Important: if the input pressure is not sufficient to generate the power required by the electric load, the generator keeps switching on and off (intermittently). You only need to increase the air pressure (as shown in the chart) to get the required power.

PRESSURE / AIR CONSUMPTION

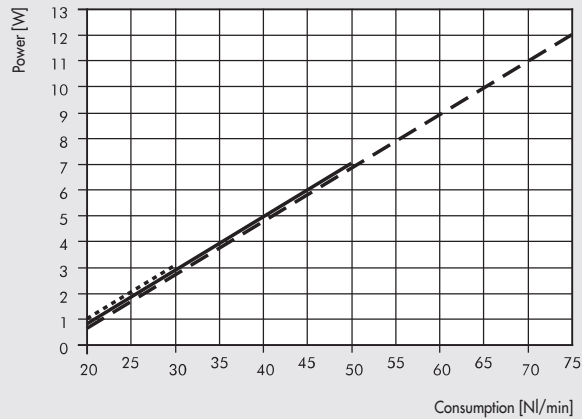


PRESSURE AND ACTUATION TIME WITH ELECTRICAL LOAD



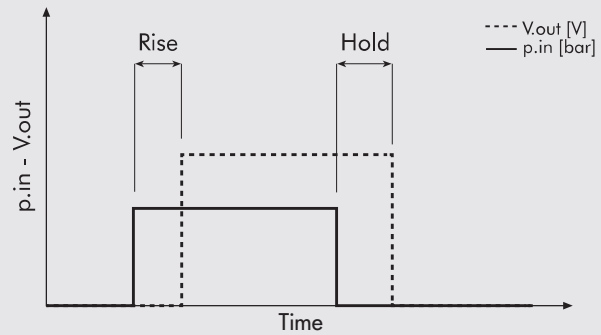
The above graph shows, for a set input pressure, the maximum time required to reach the rated output voltage (with maximum electrical load applicable for this pressure) as the size of the device changes. For example, with a size 50-2 device having an input pressure of 5.2 bar, a 24VDC output voltage will be available about two seconds after start-up.

AVAILABLE AIR / POWER CONSUMPTION



--- Size 50-3 — Size 50-2 Size 50-1

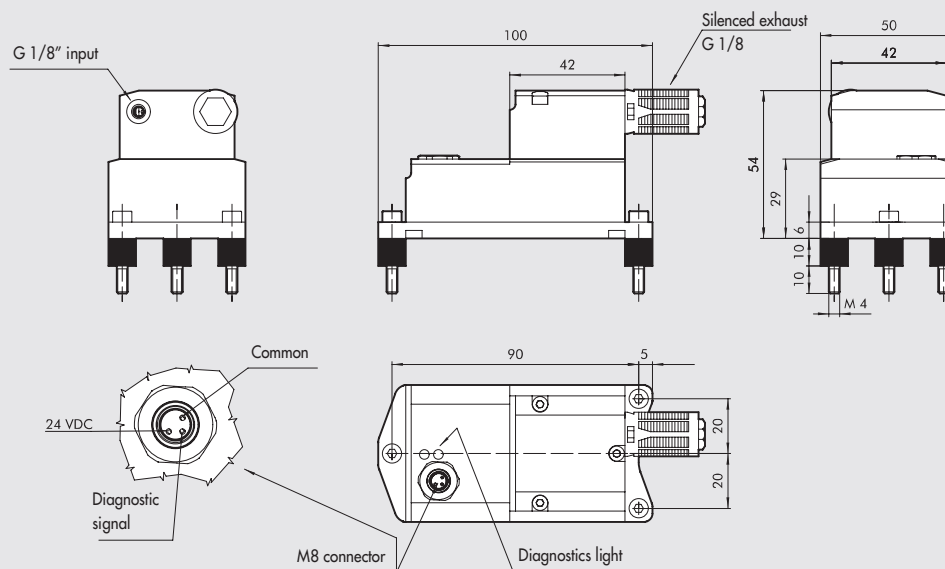
RISE TIME AND HOLD TIME GRAPH



Rise time: the delay from activation of the compressed air supply to 24V power supply to the M8 connector.

Hold time: the time for which 24V is maintained after the compressed air supply has been switched off.

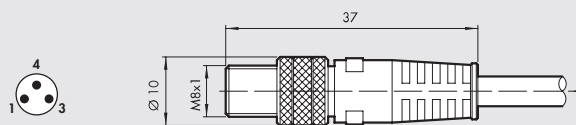
DIMENSIONS



Code	Description
0251530000	PNEUMO POWER 50-1 3 W 24 VDC
0251550000	PNEUMO POWER 50-2 7.5 W 24 VDC
0251570000	PNEUMO POWER 50-3 12 W 24 VDC

ACCESSORIES

M8 CONNECTOR WITH CABLE



Pin	Wire color	
1	Brown	+ 24V
3	Blue	GND
4	Black	Diagnostics

Code	Description
0240009053	M8 male 3-pin connector with 2.5 metres of cable

NOTES

STAINLESS STEEL ACCESSORIES



- FLOW MICRO-REGULATOR SERIES MRFX

E6.2



- IN-LINE FLOW REGULATOR SERIES RFLX

E6.4



- CHECK VALVE SERIES VNRX

E6.6

FLOW MICRO-REGULATOR SERIES MRFX

Main features:

- AISI 316L (EN 1.4404) stainless steel body and FKM/FPM seals
- reduced dimensions
- excellent regulation
- adjustment using an Allen wrench
- available in Ø4 - Ø6 - Ø8 - Ø10 and 1/8" - 1/4" - 3/8" threaded ports
- comes with a ring that can rotate even with the MRF mounted in position.



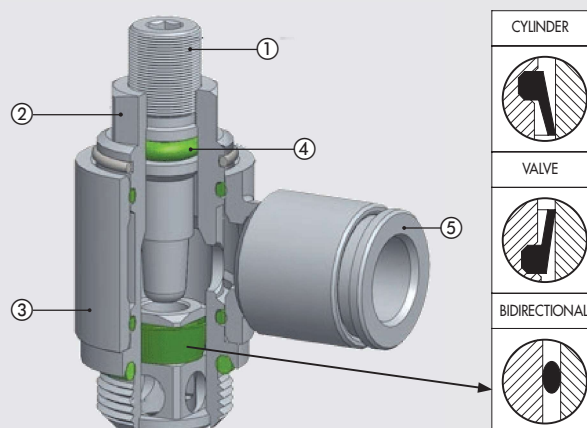
CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.

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COMPONENTS

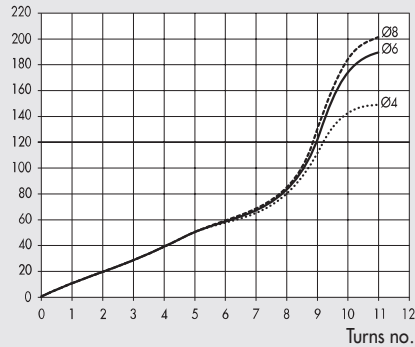
- ① REGULATION NEEDLE: AISI 316L stainless steel
- ② BODY: AISI 316L stainless steel
- ③ REVOLVING RING: AISI 316L stainless steel
- ④ GASKET: FKM/FPM
- ⑤ RELEASE BUSHING: AISI 316L stainless steel



FLOW CHARTS

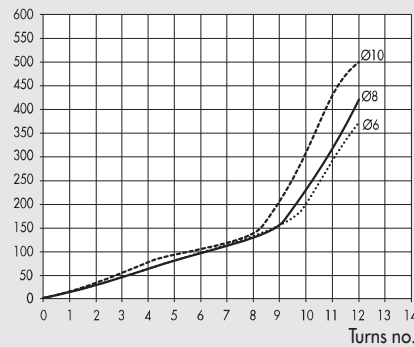
MRFX 1/8" - PIPE Ø 4 - Ø 6 - Ø 8

Flow rate [Nl/min]



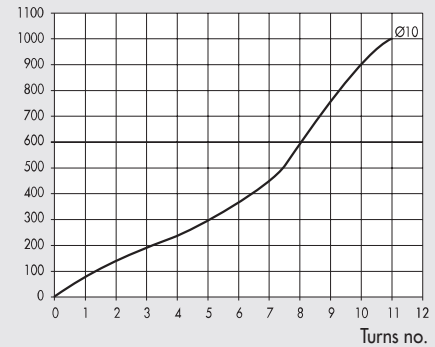
MRFX 1/4" - PIPE Ø 6 - Ø 8 - Ø 10

Flow rate [Nl/min]



MRFX 3/8" - PIPE Ø 10

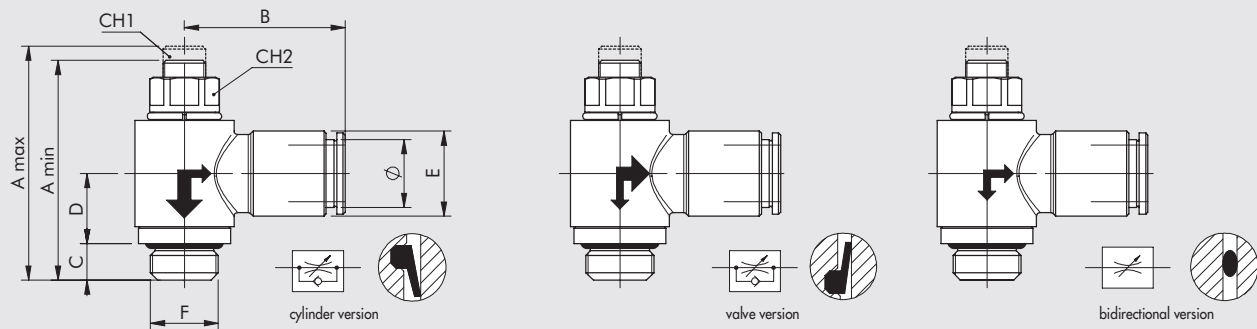
Flow rate [Nl/min]



SYNOPTIC, SIZES AND VERSIONS

M R F FAMILY	O TYPE	X MATERIAL	C FUNCTION	4 Ø PIPE	1/8 Ø THREAD
Flow micro-regulator	O Needle with hexagon socket	X AISI 316L stainless steel	C For cylinder V For valve B Bidirectional	4 Ø 4 6 Ø 6 8 Ø 8 10 Ø 10	1/8 G 1/8" 1/4 G 1/4" 3/8 G 3/8"

DIMENSIONS AND ORDERING CODES



Code	Description	F	Ø	CH1	CH2	A min	A max	B	C	D	E
9001011CX	MRFOXC 4 1/8	1/8	4	2	9	29	32	19.5	5	10.5	9
9001011VX	MRFOXV 4 1/8	1/8	4	2	9	29	32	19.5	5	10.5	9
9001011BX	MRFOXB 4 1/8	1/8	4	2	9	29	32	19.5	5	10.5	9
9001003CX	MRFOXC 6 1/8	1/8	6	2	9	29	32	22	5	10.5	12
9001003VX	MRFOXV 6 1/8	1/8	6	2	9	29	32	22	5	10.5	12
9001003BX	MRFOXB 6 1/8	1/8	6	2	9	29	32	22	5	10.5	12
9001004CX	MRFOXC 6 1/4	1/4	6	3	10	35	40	23.5	6.5	11.5	12
9001004VX	MRFOXV 6 1/4	1/4	6	3	10	35	40	23.5	6.5	11.5	12
9001004BX	MRFOXB 6 1/4	1/4	6	3	10	35	40	23.5	6.5	11.5	12
9001005CX	MRFOXC 8 1/8	1/8	8	2	9	29	32	22.5	5	10.5	14
9001005VX	MRFOXV 8 1/8	1/8	8	2	9	29	32	22.5	5	10.5	14
9001005BX	MRFOXB 8 1/8	1/8	8	2	9	29	32	22.5	5	10.5	14
9001006CX	MRFOXC 8 1/4	1/4	8	3	10	35	40	24	6.5	11.5	14
9001006VX	MRFOXV 8 1/4	1/4	8	3	10	35	40	24	6.5	11.5	14
9001006BX	MRFOXB 8 1/4	1/4	8	3	10	35	40	24	6.5	11.5	14
9001008CX	MRFOXC 10 1/4	1/4	10	3	10	35	40	26.5	6.5	11.5	16
9001008VX	MRFOXV 10 1/4	1/4	10	3	10	35	40	26.5	6.5	11.5	16
9001008BX	MRFOXB 10 1/4	1/4	10	3	10	35	40	26.5	6.5	11.5	16
9001009CX	MRFOXC 10 3/8	3/8	10	4	14	42	52	28	9	13	16
9001009VX	MRFOXV 10 3/8	3/8	10	4	14	42	52	28	9	13	16
9001009BX	MRFOXB 10 3/8	3/8	10	4	14	42	52	28	9	13	16

IN-LINE FLOW REGULATOR SERIES RFLX

The in-line flow regulator regulates the speed of the piston rod in the pneumatic cylinders.

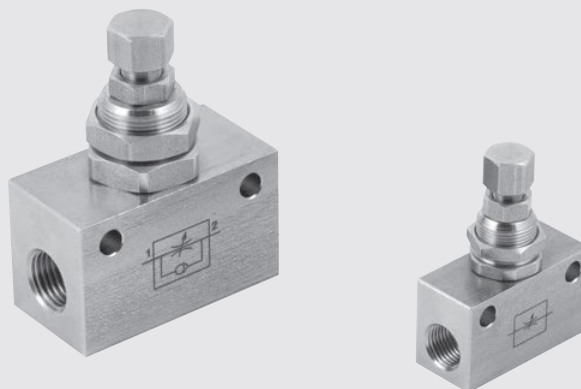
Two versions are available:

- type U (unidirectional) regulates the flow only in one of the two directions of air flow.
- type B (bidirectional) regulates the flow in both directions of air flow.

Regulation: manual or with box wrench.

AISI 316L (EN 1.4404) stainless steel body

The gasket are in FKM/FPM.



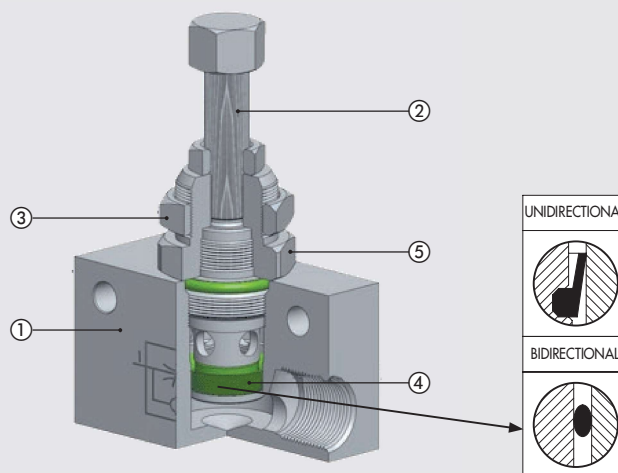
CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.

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COMPONENTS

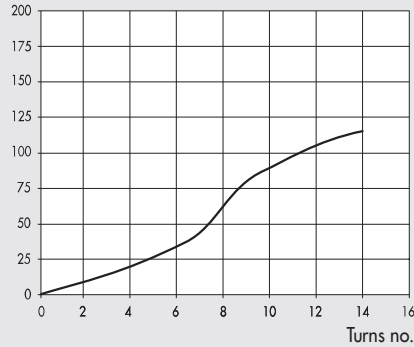
- ① BLOCK: AISI 316L stainless steel
- ② REGULATION NEEDLE: AISI 316L stainless steel
- ③ WALL LOCKING RING NUT: AISI 316L stainless steel
- ④ GASKET: FKM/PPM
- ⑤ NIPPLE: AISI 316L stainless steel



FLOW CHARTS

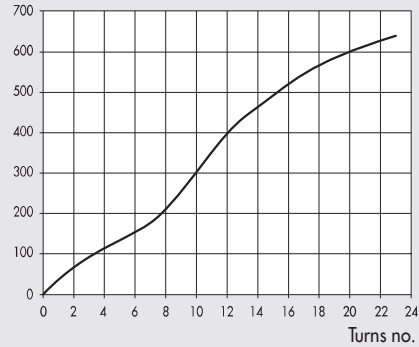
RFLX 1/8"

Flow rate [Nl/min]



RFLX 1/4"

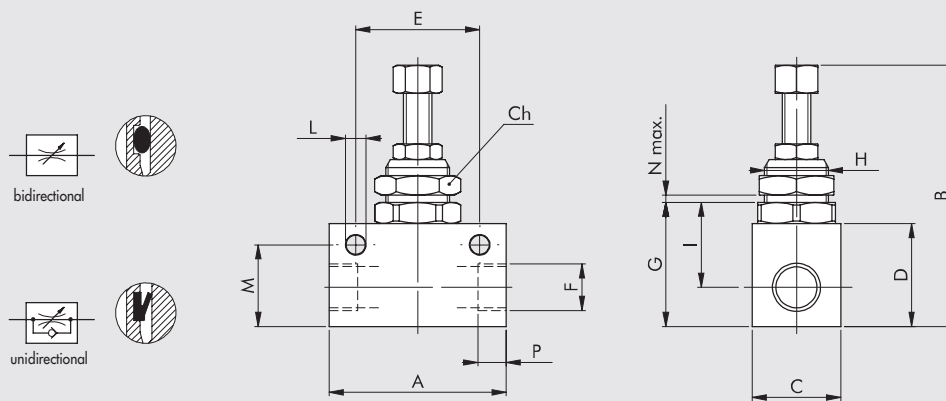
Flow rate [Nl/min]



SYNOPTIC, SIZES AND VERSIONS

R F L FAMILY	X MATERIAL	U FUNCTION	1/8 Ø THREAD
In-line flow regulator	X AISI 316L stainless steel	U Unidirectional B Bidirectional	1/8 G 1/8" 1/4 G 1/4"

DIMENSIONS AND ORDERING CODES



Code	Description	F	P	E	H	N max	A	B max	C	G	I	D	M	Ch	L
9041002X	RFLX U 1/8	1/8	8.5	24	M12x0.75	4.5	34	56	15	23	13	20	16	14	4.5
9041003X	RFLX U 1/4	1/4	7	35	M18x1.5	4.5	50	75	25	35	20	30	23	22	5.5
9041202X	RFLX B 1/8	1/8	8.5	24	M12x0.75	4.5	34	56	15	23	13	20	16	14	4.5
9041203X	RFLX B 1/4	1/4	7	35	M18x1.5	4.5	50	75	25	35	20	30	23	22	5.5

CHECK VALVE SERIES VNRX

This allow air flow in only one of the two directions.
AISI 316L (EN 1.4404) stainless steel body.
The gasket are in FKM/FPM.



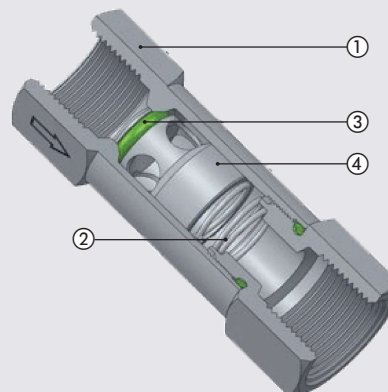
CERTIFIED

- NSF/ANSI 169 standard: products in contact with food.

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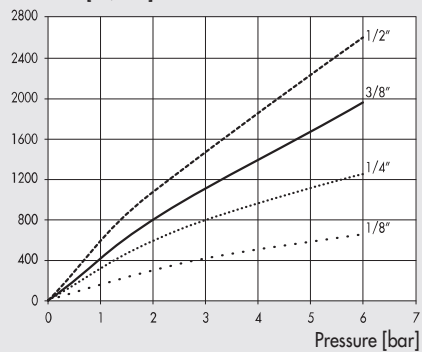
COMPONENTS

- ① BODY: AISI 316L stainless steel
- ② VALVE SPRING: AISI 302 stainless steel
- ③ GASKET: FKM/FPM
- ④ POPPET: AISI 316L stainless steel

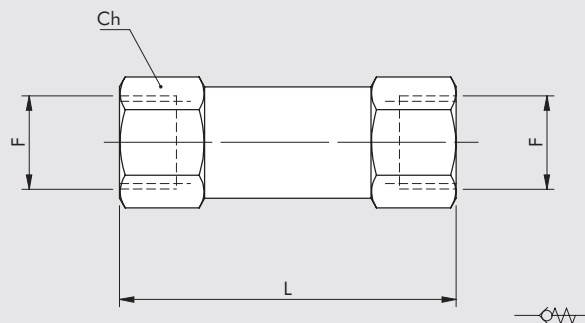


FLOW CHARTS

Flow rate [Nl/min]



DIMENSIONS AND ORDERING CODES



Code	Description	F	L	Ch
W3601000001X	VNR X 1/8	1/8	40	13
W3601000002X	VNR X 1/4	1/4	48	16
W3601000003X	VNR X 3/8	3/8	51	21
W3601000004X	VNR X 1/2	1/2	62	24

NOTES

NOTES

SUMMARY ACCESSORIES UNF or NPT THREAD AND INCH PIPES



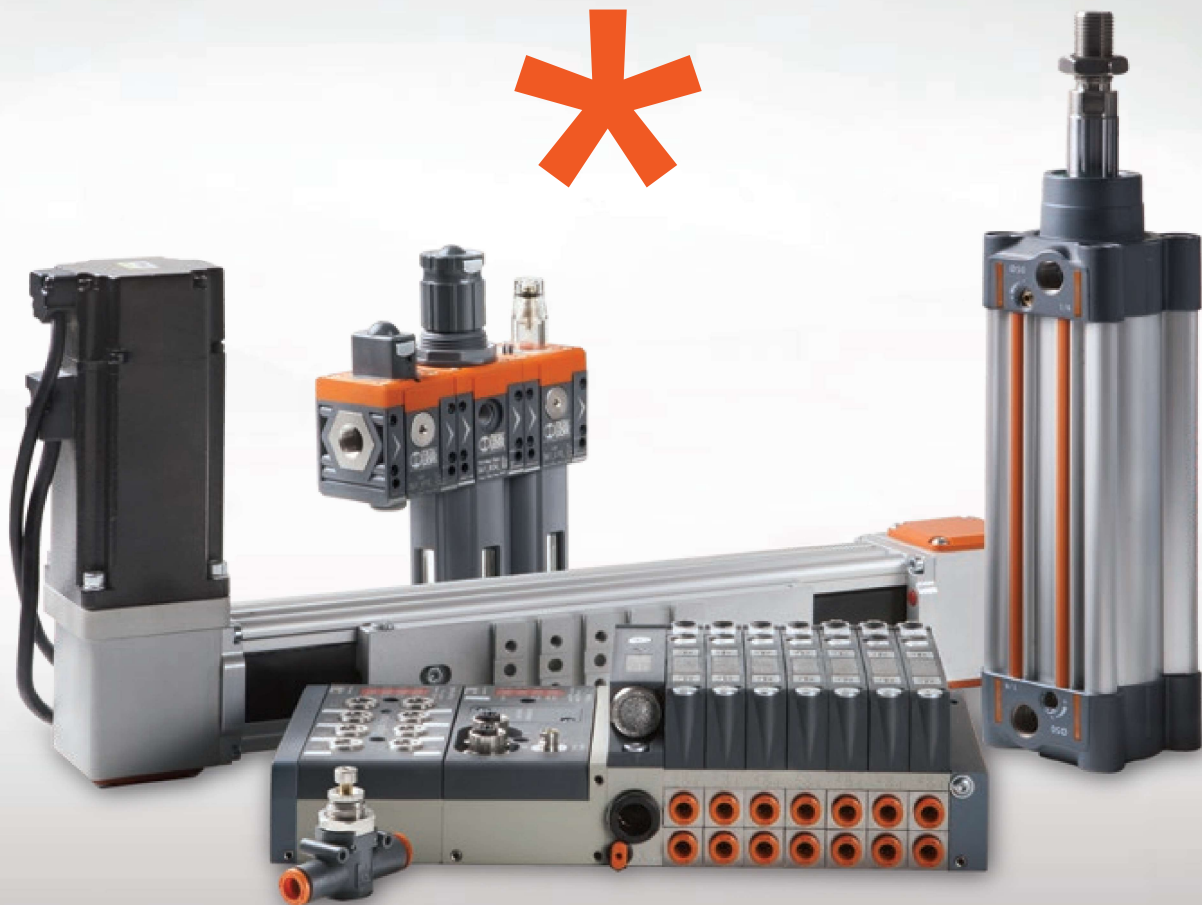
- MRF COMPACT "N" BRASS RING - INCH TUBES AND UNF or NPT THREAD

🛒 E3.11

UNF
NPT

SUMMARY ACCESSORIES UNF OR NPT THREAD AND INCH PIPES

ACCESSORIES



CUSTOM PRODUCTS

These products were designed and developed to meet customer specific requirements.

Among the many custom products made by Metal Work, we have selected a few that may have a more general value.

They differ from standard products mainly in that they are produced according to a specific order, are subject to a minimum order batch and the delivery time and price vary from case to case.

Please contact our sales offices for further information and quotation.

● KIT PNEUMATIC MOTION®	G1
● CUSTOM ACTUATORS	G2
● CUSTOM VALVES	G3
● CUSTOM UNITS	G4
● CUSTOM FITTINGS AND ACCESSORIES	G5

KIT PNEUMATIC MOTION® SUMMARY



● KIT PNEUMATIC MOTION® CONFIGURABLE (KIT PMC)

G1.4



● KIT PNEUMATIC MOTION® READY (KIT PMR)

G1.5



● KIT PNEUMATIC MOTION® CUSTOM

G1.11

KIT PNEUMATIC MOTION® CONFIGURABLE (KIT PMC)



An on-line configurator is provided for the ease-and-quick selection of the cylinder, the valve and the accessories in a "basket" of frequently used products.

ISO Ø 12 to Ø 200 cylinders of any stroke, electric or hand-operated valves, cylinder accessories, sensors, fittings, flow regulators and the pipe are currently available.

With the KIT PMC, you can reduce the search and selection times and use the right amount of each component. The delivery time is short and depends, however on the type of products chosen.



TECHNICAL DATA

Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to +60
	°F	14 to 140
Fluid		Unlubricated air
Cylinder version		Magnetic double-acting cushioned (Ø12 is not cushioned), C45 chromed and ground piston rod, NBR gaskets
Cylinder bore	mm	12, 16, 20, 25 to ISO 6432;
	mm	32, 40, 50, 63, 80, 100, 125, 160, 200 to ISO 15552
Strokes	mm	for bore 12: strokes from 1 to 200;
		for bore 16: strokes from 1 to 300;
		for bores 20 and 25: strokes from 1 to 500;
		for bores from 32 to 80: strokes from 1 to 2800;
		for bores 100 and 125: strokes from 1 to 2600;
		for bores 160 and 200: strokes from 1 to 2800.
N.B. Cylinders with stroke 50, 100 and 200 are normally available from stock.		
Inrush pressure	bar	Ø 12 0.8 Ø 16 0.6 Ø 20 0.6 Ø 25 0.6 Ø 32 0.4 Ø 40 0.4 Ø 50 0.3 Ø 63 0.3 Ø 80 0.2 Ø 100 0.2 Ø 125 0.2 Ø 160 0.15 Ø 200 0.1
Theoretic force at 6 bar:		
in thrust	N	68 121 188 295 483 754 1178 1870 3016 4712 7363 12064 18850
	kg force	6.9 12.3 19 30 49 77 120 191 307 480 751 1230 1922
in traction	N	51 104 158 247 415 633 990 1682 2721 4418 6881 11310 18096
	kg force	5.2 10.6 16 25 42 65 101 171 277 450 701 1153 1845
Accessories for cylinders		Accessories for piston rods and cylinder body selectable via the configurator
Valve versions	Valve versions	A 90° lever and 24V DC electro-pneumatic valve in the following configurations: 3/2 normally closed; monostable 5/2; bistable 5/2; 5/3 closed centres
Fittings		Push-in; pipe Ø and thread are chosen by the configurator to fit the selected cylinder or valve.
Flow regulator		Taper pin with push-in fitting, can be adjusted either manually or with a screwdriver. Pipe Ø and thread are chosen by the configurator according to the cylinder selected.
Coil		22 mm side, 2W, 24VDC
Position sensors		T7 Series SQUARE, REED with 2 wires 2.5 m or HALL with 3 wires 2.5 m
Pipe		Ø chosen by the configurator according to the cylinder selected. Freely settable length [m]

N.B.: For detailed information of each individual component, see the specific chapters.

KIT PNEUMATIC MOTION® READY (KIT PMR)



This kit provides an extremely simple and easy way to make a pneumatic movement.

Each pack contains a pneumatic cylinder, a valve and all the components required for connection.

The main strengths of this solution are:

- a drastic reduction of search activities and the choice of the most suitable components that have already been selected by Metal Work;
- the components are provided in the correct amount, while for some of them, such as the fittings, usually the sales package contains many pieces;
- very short delivery time.

The kit is available in two versions:

- the JOYSTICK version with manual cylinder control;
- the ELECTRIC version, with electric cylinder control and the checking of the piston rod position via sensors.

These kits are the result of a statistical sales analysis and meet the requirements of a very wide range of applications.

For those who are interested in a ready-packed kit but require a different composition, the Metal Work sales network is available to provide customized kits with loose component parts or ready-assembled and tested assemblies.



TECHNICAL DATA				
Max operating pressure	bar	10		
	psi	145		
Temperature range	°C	-10 to +60		
	°F	14 to 140		
Fluid		Unlubricated air		
Cylinder version		Magnetic double-acting cushioned, C45 chromed and ground piston rod, NBR gaskets		
Cylinder bore	mm	25	32	50
Strokes	mm	50; 100	50; 100; 200	50; 100; 200
Inrush pressure	bar	0.6	0.4	0.3
Theoretic force at 6 bar:				
in thrust	N	295	483	1178
	kg force	30	49	120
in traction	N	247	415	1057
	kg force	25	42	108
Valve versions		With 90° lever, 5/2 1/8"; electropneumatic, monostable 5/2 1/8", 24VDC		
Fittings		Push-in for Ø 6 pipe, 1/8" thread		
Flow regulator		With taper pin, push-in fitting for Ø 6 pipe, regulation by hand or with a screwdriver		
Coil		Side 22 mm, 2W, 24VDC		
Position sensors		T7 Series SQUARE, REED with 2 wires 2.5 m		
Pipe		Outside Ø 6 mm, inside Ø 4 mm, polyurethane		

INSTRUCTIONS

A video explains how to assemble and adjust the components:

Tutorial in English



Tutorial in Italian



- N.B.:** For detailed information of each individual component, see the specific chapters.
The codes of individual components are shown in the following pages, with the kit ordering codes.

The image displays three variations of the 3000 series pneumatic cylinder:

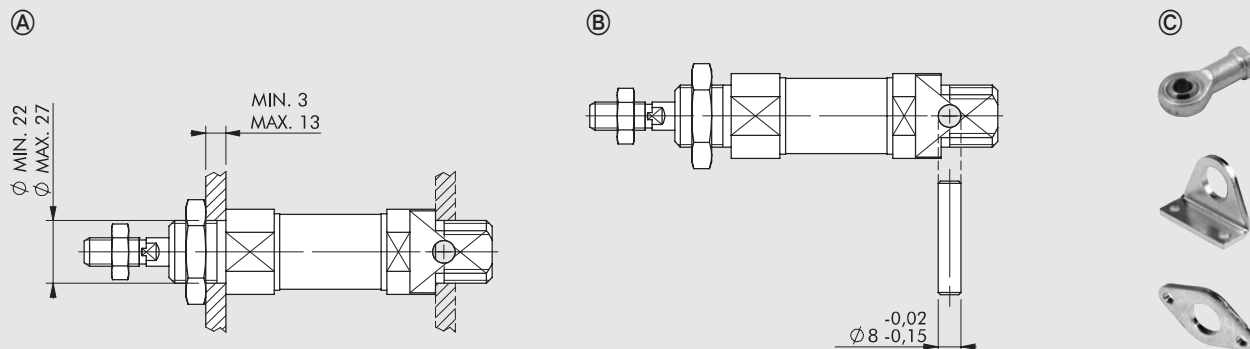
- Left Diagram:** A standard single-acting cylinder. It features a tie rod (1) connecting the piston rod (4) to the front end cap (2). The piston rod is secured with a lock nut (4bis) and a lock washer (5). The front end cap (2) has a cushioning adjustment screw (3). The cylinder is shown with two flexible air lines connected to the ports.
- Middle Diagram:** A single-acting cylinder with a tie rod. It has a similar design to the standard version but includes a tie rod (1) and a lock nut (4bis) to secure the piston rod (4). The front end cap (2) has a cushioning adjustment screw (3). The cylinder is shown with two flexible air lines connected to the ports.
- Right Diagram:** A double-acting cylinder with a solenoid valve. It features a solenoid valve (6) mounted on the front end cap (2). The solenoid valve has two ports (9, 10) for air supply and two ports (11, 12) for the cylinder. The solenoid valve is connected to a solenoid coil (7) and a solenoid valve body (8). The cylinder is shown with two flexible air lines connected to the ports.

- N.B.:** For detailed information of each individual component, see the specific chapters.
The codes of individual components are shown in the following pages, with the kit ordering codes.

FIXING OPTIONS

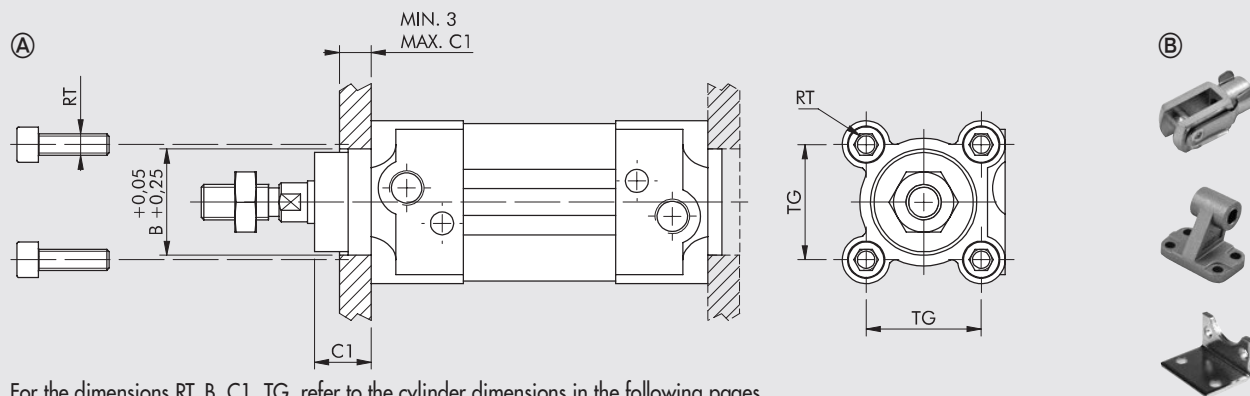
ISO 6432 Ø25

- Ⓐ Insert the front head or the rear head of the cylinder in a perforated sheet metal
- Ⓑ Insert a steel pin into the hole of the rear cylinder head
- Ⓒ The fixing accessories see chapter "Accessories for ISO 6432 mini-cylinders"



ISO 15552 Ø32; Ø50

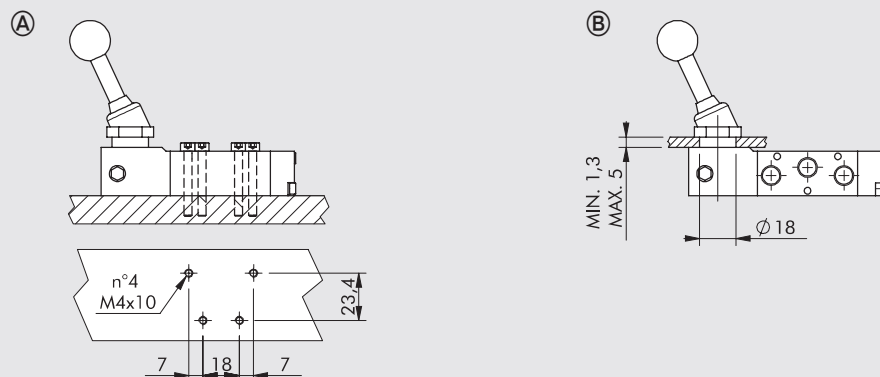
- Ⓐ With 4 screws in the threaded holes of the front head or the rear head
- Ⓑ The fixing accessories see chapter "Accessories for ISO 15552 cylinders"



For the dimensions RT, B, C1, TG, refer to the cylinder dimensions in the following pages.

VALVES

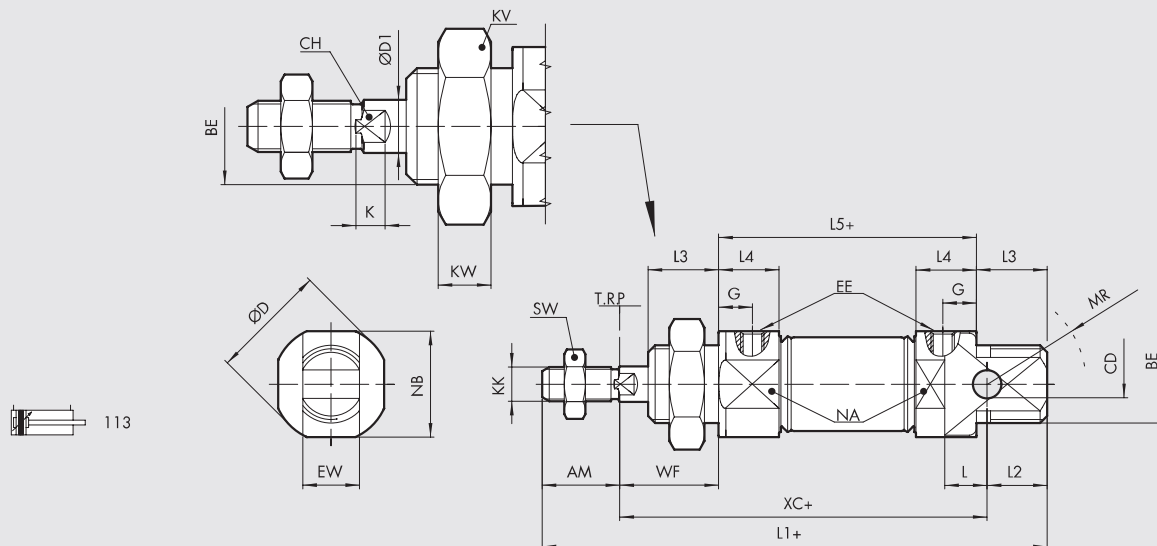
- Ⓐ With four M4 screws inserted into the kit; use at least two of them
- Ⓑ For the lever-operated valve, panel mounting



DIMENSIONS

CYLINDER ISO 6432

+ = ADD STROKE

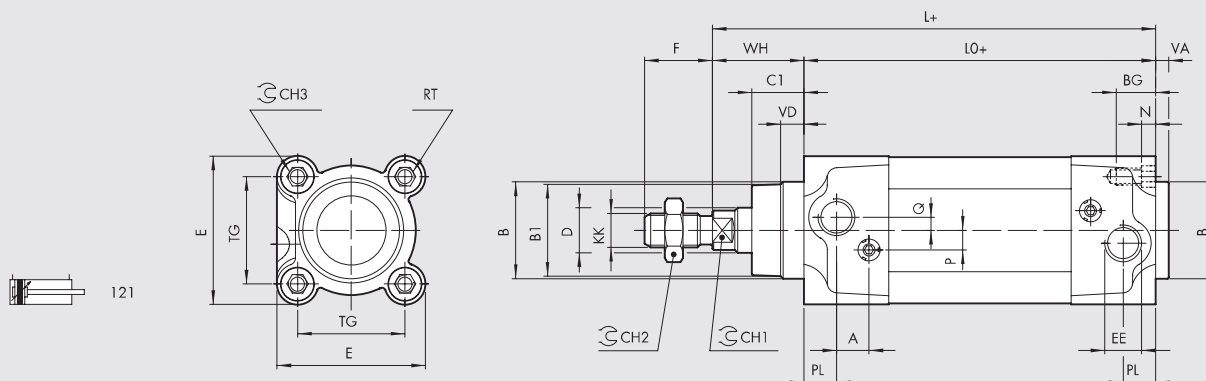


Code	Ø	AM ^{+0.0/-2.0}	BE	CD ^{H9}	ØD	ØD1	G	EE	EW ^{d13}	L	L1	L2	L3	L4	L5	KK	XC ^{a1}	WF ^{a1,2}	KW	KV	MR	NA	NB	SW	CH	K
1130250__CN	25	22	M22x1.5	8	33	10	9	G1/8	16	12	143	17	20	17.1	73	M10x1.25	104	28	7	32	21	30	30	17	8	5

__ = Enter the stroke in mm to complete the code (see next page).

CYLINDER ISO 15552

+ = ADD STROKE

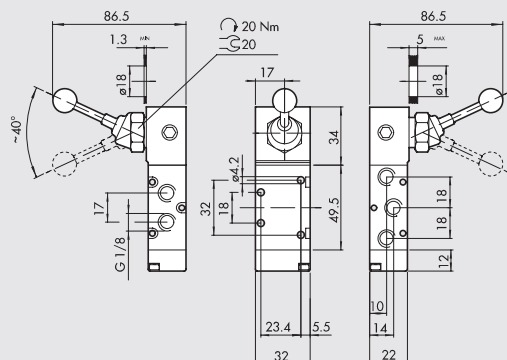


Code	Ø	PL	VD	A	B	B1	WH	C1	CH1	CH2	CH3	KK	D	TG	VA	F	EE	RT	E	L	L0	BG	N	P	Q
1213320__CN	32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	14.5	4.5	6	4
1213500__CN	50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	17.5	5.5	6	6

__ = Enter the stroke in mm to complete the code (see next page).

VALVES SERIES 70, HAND OPERATED

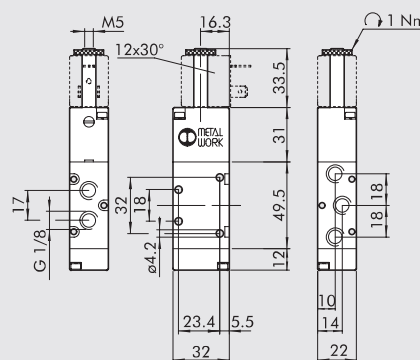
90° LEVER 5/2 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010000400	MAV 25 LEB OO	197

VALVES SERIES 70, SOLENOID/PNEUMATIC

MONOSTABLE 5/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7010021100	SOV 25 SOS OO	128

ORDERING CODES

JOYSTICK VERSION, WITH MANUAL LEVER CONTROL

		KIT COMPONENTS		
Code	Description	Description	Code	Quantity
9004102520000001	Pneu Kit, Joystick Ø 25 c50, 5/2 1/8 valve	ISO 6432 cylinder Ø 25, stroke 50, magnetic, cushioned	1130250050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Joystick kits *	See below	
9004102520000002	Pneu Kit, Joystick Ø 25 c100, 5/2 1/8 valve	ISO 6432 cylinder Ø 25, stroke 100, magnetic, cushioned	1130250100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Joystick kits *	See below	
9004103220000001	Pneu Kit, Joystick Ø 32 c50, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 50, magnetic, cushioned	1213320050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Joystick kits *	See below	
9004103220000002	Pneu Kit, Joystick Ø 32 c100, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 100, magnetic, cushioned	1213320100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Joystick kits *	See below	
9004103220000003	Pneu Kit, Joystick Ø 32 c200, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 200, magnetic, cushioned	1213320200CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Joystick kits *	See below	
9004105020000001	Pneu Kit, Joystick Ø 50 c50, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 50, magnetic, cushioned	1213500050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Joystick kits *	See below	
9004105020000002	Pneu Kit, Joystick Ø 50 c100, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 100, magnetic, cushioned	1213500100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Joystick kits *	See below	
9004105020000003	Pneu Kit, Joystick Ø 50 c200, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 200, magnetic, cushioned	1213500200CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Joystick kits *	See below	

* Parts common to all Joystick kits

- Valve with 90° lever 5/2 1/8, MAV 25 LEB OO	7010000400	1
- Straight push-in fitting RL1 6 1/8	2L01007	3
- Silencer series MWSFE 1/8	W0970530052	2
- Straight push-in fitting RL2 6 1/4 female	2L02006	1
- TCE M4x30 screw to UNI 5931/8.8, zinc-plated	-	4
- C98 polyurethane pipe, outside Ø 6, inside Ø 4	-	4 m

ELECTRIC VERSION, WITH SOLENOID VALVE CONTROL AND POSITION SENSORS

		KIT COMPONENTS		
Code	Description	Description	Code	Quantity
9004102510000001	Pneu Kit, Electric Ø 25 c50, 5/2 1/8 valve	ISO 6432 cylinder Ø 25, stroke 50, magnetic, cushioned	1130250050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		Sensor clamp for Ø 25 cylinder	W0950000625	2
		+ parts common to all Electric kits *	See below	
9004102510000002	Pneu Kit, Electric Ø 25 c100, 5/2 1/8 valve	ISO 6432 cylinder Ø 25, stroke 100, magnetic, cushioned	1130250100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		Sensor clamp for Ø 25 cylinder	W0950000625	2
		+ parts common to all Electric kits *	See below	
9004103210000001	Pneu Kit, Electric Ø 32 c50, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 50, magnetic, cushioned	1213320050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Electric kits *	See below	
9004103210000002	Pneu Kit, Electric Ø 32 c100, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 100, magnetic, cushioned	1213320100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Electric kits *	See below	
9004103210000003	Pneu Kit, Electric Ø 32 c200, 5/2 1/8 valve	ISO 15552 cylinder Ø 32, stroke 200, magnetic, cushioned	1213320200CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/8	9021006C	2
		+ parts common to all Electric kits *	See below	
9004105010000001	Pneu Kit, Electric Ø 50 c50, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 50, magnetic, cushioned	1213500050CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Electric kits *	See below	
9004105010000002	Pneu Kit, Electric Ø 50 c100, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 100, magnetic, cushioned	1213500100CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Electric kits *	See below	
9004105010000003	Pneu Kit, Electric Ø 50 c200, 5/2 1/8 valve	ISO 15552 cylinder Ø 50, stroke 200, magnetic, cushioned	1213500200CN	1
		MRF flow regulator, Compact N, technopolymer C 6 1/4	9021007C	2
		+ parts common to all Electric kits *	See below	
		* Parts common to all Electric kits Electric		
		- Solenoid valve 5/2, monostable 1/8, SOV 25 SOS OO	7010021100	1
		- Straight push-in fitting RL1 6 1/8	2L01007	3
		- Silencer series MWSFE 1/8	W0970530052	2
		- Coil 22 mm 2W 24VDC	W0215000101	1
		- Connector 22 mm	W0970510011	1
		- Sensor T7 square Reed 2 wires, 2.5 m	W095414	2
		- Straight push-in fitting RL2 6 1/4 female	2L02006	1
		- TCE M4x30 screw to UNI 5931/8.8, zinc-plated	-	4
		- C98 polyurethane pipe, outside Ø 6, inside Ø 4	-	4 m

NOTES

KIT PNEUMATIC MOTION® CUSTOM



The Metal Work sales network can provide customized kits for both individual loose components and complete ready-assembled and tested electro-pneumatic panels.

This service is convenient for use in many applications:

- the customer prepares a list of materials required to equip a machine assembly or subassembly; the components can be delivered in a one-time supply ready for the machine assembly line;
- pneumatic or electro-pneumatic panels can be supplied with air treatment units, valves, terminal boards, couplings and other components;
- automation sub-assemblies, such as axles complete with cable carrier chain, connector block and sensors, can be supplied.

Metal Work experts can provide advice in the choice and size of components. Upon receipt of the order, Metal Work or the local P Service will prepare and deliver "Kit pneumatic motion® custom".



EXAMPLES

ASSEMBLED PLATES



CONTROL CABINETS



ACTUATORS WITH ASSEMBLED ACCESSORIES



NOTES



NOTES

CUSTOM ACTUATORS SUMMARY

CYLINDERS ACCORDING TO STANDARDS AND VARIANTS

ISO 6432 MINI-CYLINDERS



- ISO 6432 MINI-CYLINDER WITH LIMITED REAR HEAD

G2.4

- ISO 6432 MINI-CYLINDER OPPOSING

G2.5



- ISO 6432 MINI-CYLINDER PERFORATED THROUGH-ROD

G2.6



- ISO 6432 MINI-CYLINDERS TWO-FLAT Ø 25

G2.7

ISO 15552 CYLINDERS



- ISO 15552 CYLINDER MULTI-POSITION

G2.9



- ISO 15552 CYLINDER LONG INTERNAL CUSHIONING

G2.10



- TANK DERIVED FROM CYLINDER ISO 15552 STD

G2.11

- ISO 15552 CYLINDER WITH MECHANICALLY ADJUSTABLE STROKE

G2.13



- ISO 15552 CYLINDER COMMON OPPOSING PISTON ROD

G2.14



- ISO 15552 CYLINDER WITH THROUGH-ROD AND LOCK

G2.16



- ISO 15552 CYLINDER PERFORATED THROUGH-ROD

G2.17



- ISO 15552 CYLINDER TANDEM THROUGH-ROD

G2.18



- ISO 15552 CYLINDER Ø 160-200 LOW-FRICTION

G2.19

COMPACT CYLINDERS

- COMPACT CYLINDER SERIES CMPC WITH CENTRING RING

G2.21

- COMPACT CYLINDER SERIES CMPC WITH BUILT-IN MALE HINGE

G2.22



- SHORT-STROKE CYLINDER SERIES SSCY ANTI-ROTATION WITH EXTENDED COLUMNS

G2.23

- SHORT-STROKE CYLINDER SERIES SSCY WITH THREADS IN THE LINER

G2.24



- **SHORT-STROKE CYLINDER SERIES SSCY SINGLE ACTING WITH HINGES**

G2.25



- **SHORT-STROKE CYLINDER SERIES SSCY THROUGH-ROD ANTI-ROTATION**

G2.26

OTHER CYLINDERS



- **ROUND CYLINDER SERIES SHORT RNDC**

G2.28



- **ROUND CYLINDER SERIES RNDC WITH REDUCED HEAD**

G2.34



- **ROUND CYLINDER SERIES RNDC PERFORATED THROUGH-ROD**

G2.35



- **ROUND CYLINDER SERIES E**

G2.36

ACCESSORIES



- **SHOCK ABSORBERS**

G2.38

- **SPECIAL PISTON RODS**

G2.41

ROTARY ACTUATORS



- **ISO 15552 CYLINDER ROTARY**

G2.44

V-Lock



- **COMPACT PRECISION SLIDE SERIES S14K, WITH INDUCTIVE SENSOR**

G2.45

HYDRAULIC BRAKE



- **HYDRAULIC BRAKE SERIES BRK Ø 40 mm WITH FIXING HOLES TO DISTANCE 40 mm**

G2.46

ELECTRIC CYLINDER



- **ELECTRIC CYLINDER SERIES ELEKTRO ISO 15552 WITH ACME SCREW (ACME)**

G2.47



- **ELECTRIC CYLINDER SERIES ELEKTRO ISO 15552 EK WITH DIRECT CURRENT MOTOR**

G2.49



- **STEPPING MOTORS WITH IP65 ENCODER (WITH OR WITHOUT BRAKE)**

G2.51



- **FIELDBUS DRIVES FOR STEPPING MOTORS**

G2.53

ISO 6432 MINI-CYLINDER WITH LIMITED REAR HEAD

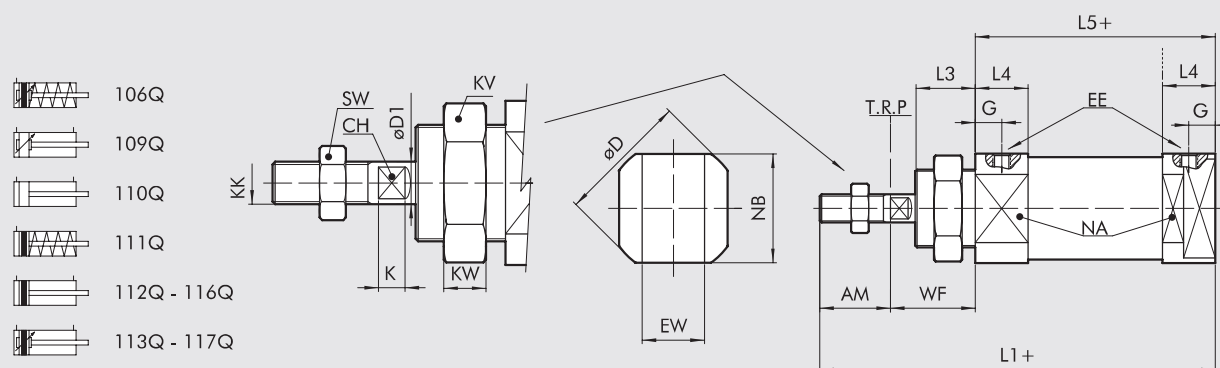
The threaded part of the rear head is removed to save space. But this means there is no way to fix the cylinder using the rear head since there is no threaded part or hole for mounting the accessories.

N.B.: For technical data refer to the standard version.



DIMENSIONS

+ = ADD THE STROKE



Ø	AM ^{+0.0/-2.0}	øD	øD1	E	G	EE	EW ^{d13}	L1	L3	L4	L5	L6	KK	XC ^{±1}	WF ^{±1.2}	KW	KV	NA	NB	SW	CH	K
8	12	16.7	4	M5	6	M5	8	74	12	10	46	46	M4	64	16	7	19	15	15	7	3	3
10	12	16.7	4	M5	6	M5	8	74	12	10	46	46	M4	64	16	7	19	15	15	7	3	3
12	16	19	6	M5	6	M5	12	87	17	10	49	47	M6	75	22	8	24	17	17	10	5	3.5
16	16	19.7	6	1/8	6	M5	12	94	17	10	56	53	M6	82	22	8	24	18	18	10	5	3.5
20	20	27.9	8	1/8	8	G 1/8	16	112	17	15	68	61	M8	95	24	7	32	24	24	13	7	4.6
25	22	33	10	1/8	9	G 1/8	16	123	20	18	73	66.5	M10x1.25	104	28	7	32	30	30	17	8	5

KEY TO CODES

CYL	1 1 2 TYPE	Q	1 6 BORE	—	0 2 0 STROKE	C MATERIAL	P GASKETS
■	106 SE cushioned	Q Special head	▼ 08	Progressive letter assigned by Metal Work	Ø 8 to 10 stroke 0 to 100 mm	A C45 chrome rod, aluminium piston rod	P Polyurethane
■	109 DEA		▼ 10		Ø 12 to 16 stroke 0 to 200 mm	C C45 chrome rod, technopolymer piston rod	N NBR
■	110 DE		▼ 12		Ø 20 to 25 stroke 0 to 500 mm	Z Stainless steel piston rod and nut aluminium piston	● V FKM/FPM
■	111 SE		16			X Stainless steel piston rod and nut technopolymer piston	● B Low temperature
■	112 DEM		20				
◆	113 DEMA		25				
■	116 DEM for mechanical lock						
■	117 DEMA for mechanical lock						

DE: Double-acting (non-cushioned, not magnetic)
 DEM: Magnetic double-acting (non-cushioned)
 DEMA: Magnetic double-acting (cushioned)
 DEA: Cushioned double-acting (non-magnetic)
 SE: Single-acting (magnetic)

● Only available for non-magnetic versions and with aluminium piston (A or Z)
 ▼ Stainless steel piston rod
 ■ Available from Ø 16
 ◆ Available from Ø 12
N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.

ISO 6432 MINI-CYLINDER OPPOSING

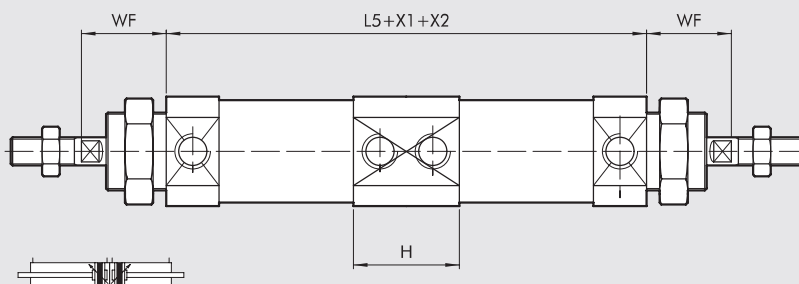


The two cylinders come with a single common rear head.
This type of cylinder is available with diameter 12 DEM, 16 DEM and Ø 25 DEMA.

N.B.: For technical data refer to the standard version.

DIMENSIONS

X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE



For other dimensions, refer to the standard version.

Ø	H	L5	WF ^{±1,2}
8	-	-	16
10	-	-	16
12	20	98	22
16	20	112	22
20	-	-	24
25	36	146	28

KEY TO CODES

CYL	1 0 7 TYPE	0	1 6 BORE	0 0 2 0 STROKE	C MATERIAL	P GASKETS
	107 Opposing	0 Standard V Without head nut S Non-magnetic ▲ G No stick slip	▼ 08 ▼ 10 ▼ 12 16 20 25	Ø 8 to 10 stroke 0 to 100 mm Ø 12 to 16 stroke 0 to 200 mm Ø 20 to 25 stroke 0 to 500 mm	A C45 chrome rod, aluminium piston rod C C45 chrome rod, technopolymer piston rod Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	P Polyurethane N NBR ● V FKM/FPM ● B Low temperature

N.B.: Specify in the comment area whether without DEM or DEMA.

DEM: Magnetic double-acting (non-cushioned)

DEMA: Magnetic double-acting (cushioned)

● Only available for non-magnetic versions (S) and with aluminium piston (A or Z)

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

▼ Stainless steel piston rod

ISO 6432 MINI-CYLINDER PERFORATED THROUGH-ROD

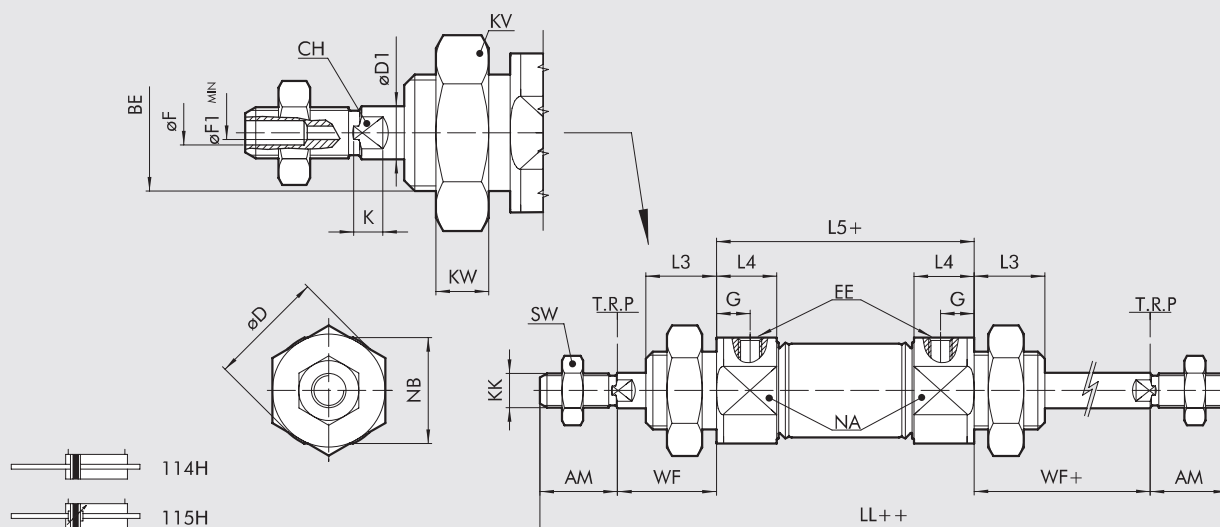
N.B.: For technical data refer to the standard version.



DIMENSIONS

+ = ADD THE STROKE

++ = ADD TWICE THE STROKE



Ø	AM ^{+0.0/-2.0}	BE	øD	øD1	øF	øF1	G	EE	LL	L3	L4	L5	KK	WF ^{±1.2}	KW	KV	NA	NB	SW	CH	K
20	20	M22x1.5	33	8	5	2.5	8	G 1/8	156	17	15	68	M8	24	7	32	28	28	13	7	4.6
25	22	M22x1.5	33	10	5	3	9	G 1/8	173	20	18	73	M10x1.25	28	7	32	30	30	17	8	5

KEY TO CODES

CYL	1 1 5 TYPE	H	2 0 BORE	0 0 2 0 STROKE	Z MATERIAL	P GASKETS
	114 DEM through-rod 115 DEMA through-rod	H Perforated rod	20 25	Max 125 mm	C C45 chrome piston rod, technopolymer piston Z Stainless steel piston rod and nut aluminium piston	P Polyurethane N NBR ● V FKM/FPM ● B Low temperature

DEM: Magnetic double-acting (non-cushioned)

DEMA: Magnetic double-acting (cushioned)

● Only available for non-magnetic versions and with aluminium piston

N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.

The non-stick slip version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use no-lubricated air only.

ISO 6432 MINI-CYLINDERS TWO-FLAT Ø 25



This version is used to maintain objects fixed to the piston rod angularly and apply torques with the limits specified in the technical characteristics. The piston rod of two-flat cylinders features two opposite longitudinal surfaces. It is made of stainless steel. The cylinder front head, which is made of two parts, includes a sintered bronze bush that prevents the piston rod from rotating on its axis. A special polyurethane gasket ensures airtightness and the scraping of any deposit of dirt. The double-acting magnetic version with end-of-stroke cushioning is available. Pneumatic cushioning on the rear head only is available on specific request, i.e. for piston rod retraction. The piston rod has a Ø of 12 mm, which is greater than that stated in ISO 6432 (Ø 10), to the advantage of robustness. The cylinder length is greater than the ISO 6432 standard.



TECHNICAL DATA		Ø25
Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	70
Fluid		Unlubricated air. Lubrication, if used, must be continuous
Design		Chamfered stainless steel barrel
Standard strokes $\pm$	mm	from 1 to 300
Versions		Magnetic double-acting; Single piston rod or through piston rod; No stick-slip
Inrush pressure	bar	0.8
Max torque on piston rod	Nm	0.2
Maximum rotation on the rod	degrees	1° 30'
Forces generated at 6 bar thrust/retraction	N	280/170
Single piston rod weights		
	stroke = 0	g
Through-rod weights	each mm stroke	g
	stroke = 0	g
Through-rod weights	each mm stroke	g
	stroke = 0	g
Notes		For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.
		$\pm$ Maximum recommended strokes. Higher values can create operating problems

KEY TO CODE

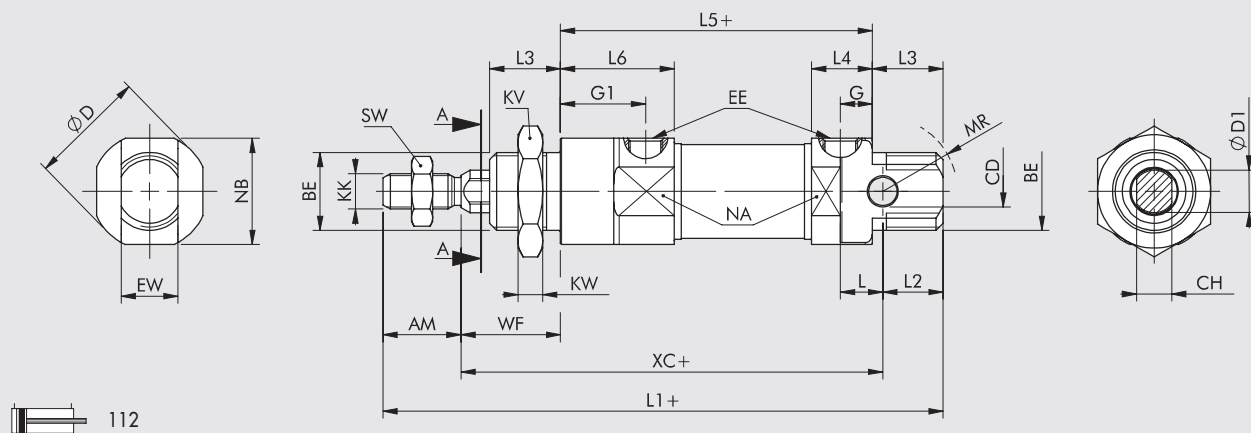
CYL	1 1 2 TYPE	0	2 5 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
112	DEM	0 Standard	25	Stroke 1 to 300 mm	F "Two-Flat" piston rod	P Polyurethane
114	DEM through-rod	Δ G No stick-slip			AlSi 303 stainless steel nut	

DEM: Magnetic double-acting (non-cushioned)

Δ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

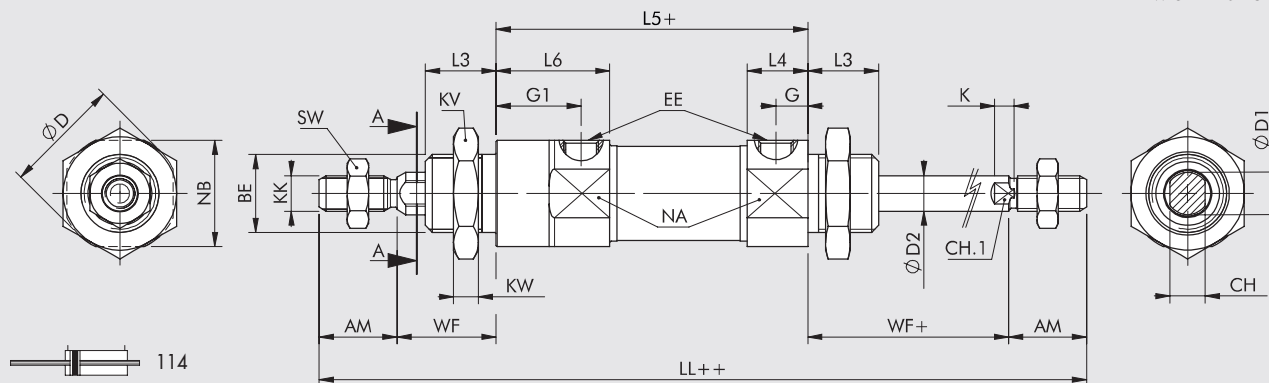
DIMENSIONS

STANDARD VERSION



THROUGH-ROD VERSION

+ = ADD THE STROKE
++ = ADD TWICE THE STROKE



Ø	AM	BE	ØCD ^{H9}	ØD	ØD1	ØD2	G	G1	EE	EW ^{d13}	L	LL	L1	L2	L3	L4	L5	L6	KK	XC ^{±1}	WF ^{±1,2}	KW	KV	MR	NA	NB	SW	CH	CH1	K
25	22	M22x1.5	8	33	12	10	9	24	G 1/8	16	12	188	158.1	17	20	17.1	88	32.1	M10x1.25	119.1	28	7	32	21	30	30	17	10	8	5

ACCESSORIES

All the accessories of ISO 6432 cylinders can be used, with the exception of the piston rod lock.

NOTES

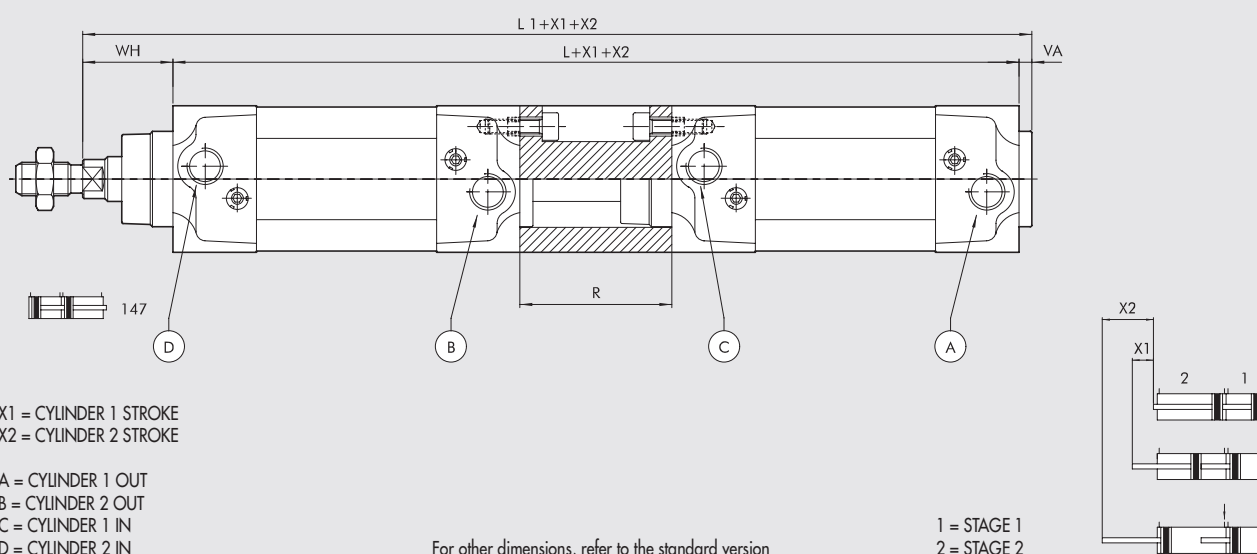
ISO 15552 CYLINDER MULTI-POSITION



Two paired cylinders. The first stage defines the shorter stroke and the second one the total stroke.



DIMENSIONS



X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE

A = CYLINDER 1 OUT
B = CYLINDER 2 OUT
C = CYLINDER 1 IN
D = CYLINDER 2 IN

For other dimensions, refer to the standard version

Ø	WH	VA	R	L	L ₁
32	26	4	55	243	273
40	30	4	55	265	299
50	37	4	68	280	321
63	37	4	68	310	351
80	46	4	92	348	398
100	51	4	92	368	423
125	65	6	120	440	511

KEY TO CODES

CYL	1 4 7 TYPE	0	3 2 BORE	—	0 5 0 STROKE	C MATERIAL	P GASKETS
	147 Multi-position	0 Standard S Non-magnetic ▲ G No stick slip A Type A 3 Serie 3	32 40 50 63 80 ■ 100 ■ 125	Progressive letter assigned by Metal Work	from 25 to 2800 mm (stroke X2 to be specified)	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets B Low temperature

- ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.
- In the code of cylinder with letter in fourth position Ø 100 becomes A1; Ø 125 becomes A2

N.B.: Specify stroke X1 and stroke X2 in the description

ORDERING EXAMPLE: Cylinder 147032__CP with stroke X1 = 30 mm, stroke X2 = 50 mm. Metal Work will generate its own special product code according to the key to code.

Please contact our sales offices for further information and quotation.

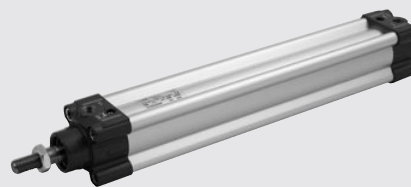
ISO 15552 CYLINDER LONG INTERNAL CUSHIONING

This special version can be provided if, for aesthetic reasons or requirements in assembling the fixing accessories, the long cushioning specified in the catalogue is not required.

The following versions are currently available:

- Ø 50, 63 and 80 cushioning length 100 mm
- Ø 63, cushioning length 150 mm
- Ø 100, cushioning length 80 mm

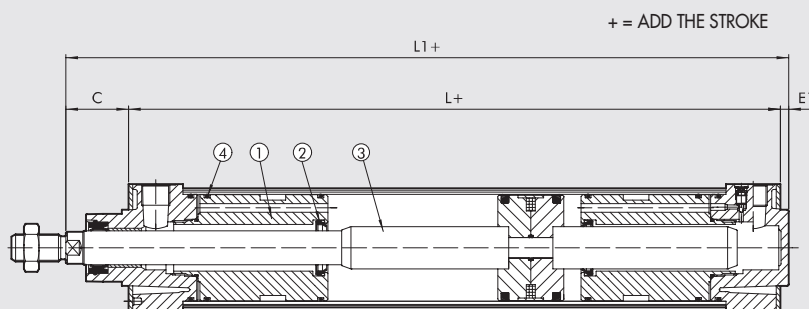
N.B.: For technical data refer to the standard version.



COMPONENTS

- ① CUSHIONING EXTENSION:
aluminium
- ② CUSHIONING GASKET:
polyurethane, NBR or FKM/FPM
- ③ CUSHIONING CONE: OT 58
- ④ STATIC O-rings: NBR

Refer to standard ISO 15552 cylinder for the parts not specified in the drawing.



Ø	Cushioning Length	C	E1	L	L1
50	100	37	5	305	342
63	100	37	5	331	368
	150	37	5	431	468
80	100	46	8	316	362
100	80	51	8	242	293

For other dimensions, refer to the standard version.

KEY TO CODES

CYL	1 3 1 TYPE	Z	3 2 BORE	-	0 5 0 STROKE	A MATERIAL	P GASKETS
	131 Long Cushioning	Z Special	32 40 50 63 80 A1 = 100 A2 = 125	Progressive letter assigned by Metal Work	Max 2500 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets B Low temperature

N.B.: Specify in the comment area whether **magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s
in order to prevent surging. Use no-lubricated air only.

NOTES

TANK DERIVED FROM CYLINDER ISO 15552 STD



These tanks are derived by fixing two rear heads of an ISO 15552 cylinder to a liner. For management requirements associated with the liner production system, the code shows a fictitious stroke that is obtained by subtracting the basic value L from the total length of the liner (L_{tot}).

These products are not PED-certified. This certification is not required when the product of pressure in the tank (expressed in bar) and the volume (expressed in litres) is less than 50.



TECHNICAL DATA

Operating pressure	bar	max 10 (max 1 MPa - 145 psi)
Temperature range	°C	-25 to +80
Bore	mm	32 to 200

CALCULATION OF THE LINER LENGTH

V (Litres) = Requested volume

D (mm) = Cylinder bore

L_{tot} (mm) = Jacket length

$$L_{tot} = \frac{4V \times 10^6}{3.14 \times D^2}$$

Example

V = 3,5 l

D = 100 mm

$$L_{tot} = \frac{(4 \times 3.5) \times 10^6}{3.14 \times 100^2} = 446 \text{ mm}$$

In order to determine the cylinder code, you need to calculate the "fictitious stroke" Z of the relevant pneumatic cylinder.

See dimensions on the following page:

Z = L_{tot} - L

For D100 L = 58

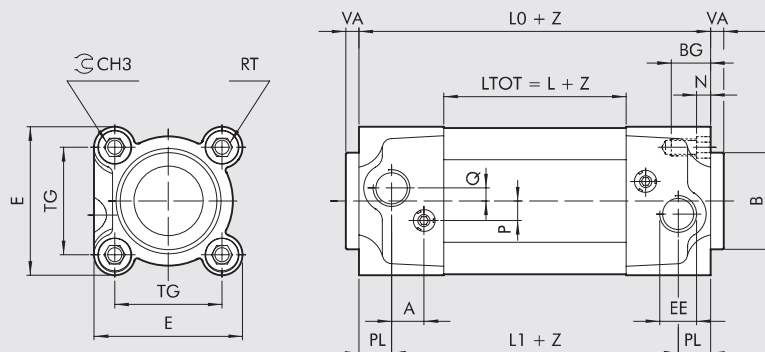
Z = 446 - 58 = 388 mm

KEY TO CODES

CYL	1 2 8 TYPE	B	3 2 BORE	0 0 5 0 FICTITIOUS STROKE *	O P MATERIAL
	128 Execution special	B Tank	32 40 50 63 80 A1 = 100 A2 = 125	Ø 32 - 63 Max 2800 mm Ø 80 - 125 Max 2600 mm	OP
	W128 Execution special	B Tank	A3 = 160 A4 = 200	Max 2800 mm	OP

* Fictitious stroke Z = L_{tot} (jacket length) - L (basic value)

DIMENSIONS 32 to 125

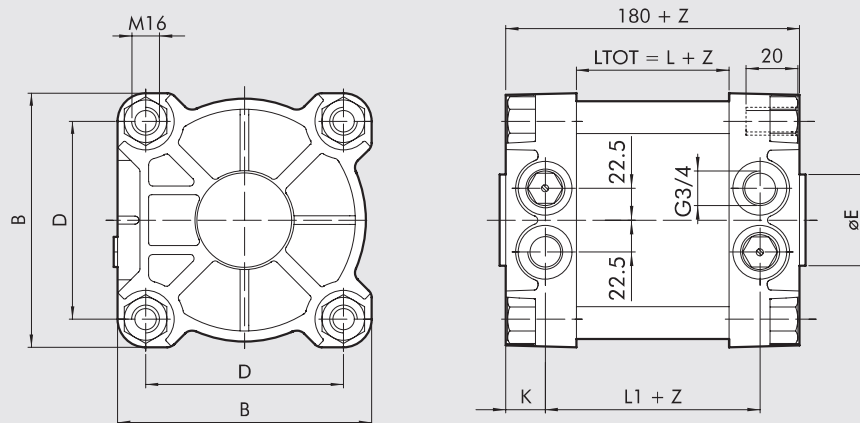


128B

Z = Fictitious stroke

Ø	PL	A	B	CH ₃	TG	VA	EE	RT	E	L	L ₁	L ₀	BG	N	P	Q
32	10	10	30	6	32.5	4	G1/8	M6	46	42	74	94	14.5	4.5	6	4
40	12	10	35	6	38	4	G1/4	M6	54	49	81	105	14.5	4.5	6	4
50	14	10	40	8	46.5	4	G1/4	M8	64.5	46	78	106	17.5	5.5	6	6
63	16	10	45	8	56.5	4	G3/8	M8	75.5	57	89	121	17.5	5.5	6	6
80	18	12	45	10	72	4	G3/8	M10	94	52	92	128	21.5	5.5	10	7
100	20	12	55	10	89	4	G1/2	M10	111	58	98	138	21.5	5.5	10	7
125	25	10	60	12	110	6	G1/2	M12	135	70	110	160	25.5	6.5	12	8

DIMENSIONS 160 to 200



W128B

Z = Fictitious stroke

Ø	B	ØE	D	L	L ₁	K
160	180	65	140	80	124	28
200	200	75	175	80	122	29

ISO 15552 CYLINDER WITH MECHANICALLY ADJUSTABLE STROKE



This cylinder originates from the through-rod version with a bolt to adjust the piston rod retraction stroke.

A plastic pad is mounted on the piston rod to reduce noise.

The adjustment may involve part or whole of the stroke.

Note that the rear cushioning loses efficiency as the stroke is reduced.

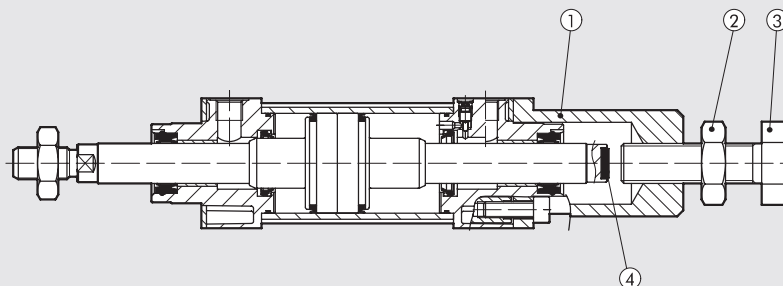
The flange or rear leg accessories cannot be attached.

N.B.: Existing types: Ø 32; Ø 40; Ø 50; Ø 63; Ø 80; Ø 100 mm

For technical data refer to the standard version.

COMPONENTS

- ① ALUMINIUM SCREW SUPPORT
- ② LOCKING NUT
- ③ STROKE-ADJUSTING SCREW
- ④ SOUND-DAMPENING PAD



Coding 122Z_ _ _

NOTES

When making an inquiry, please specify the reference cylinder data, including the stroke and the length of adjustment.

For example: cylinder obtained from 1213500200CN with a stroke adjustment of 40 mm.

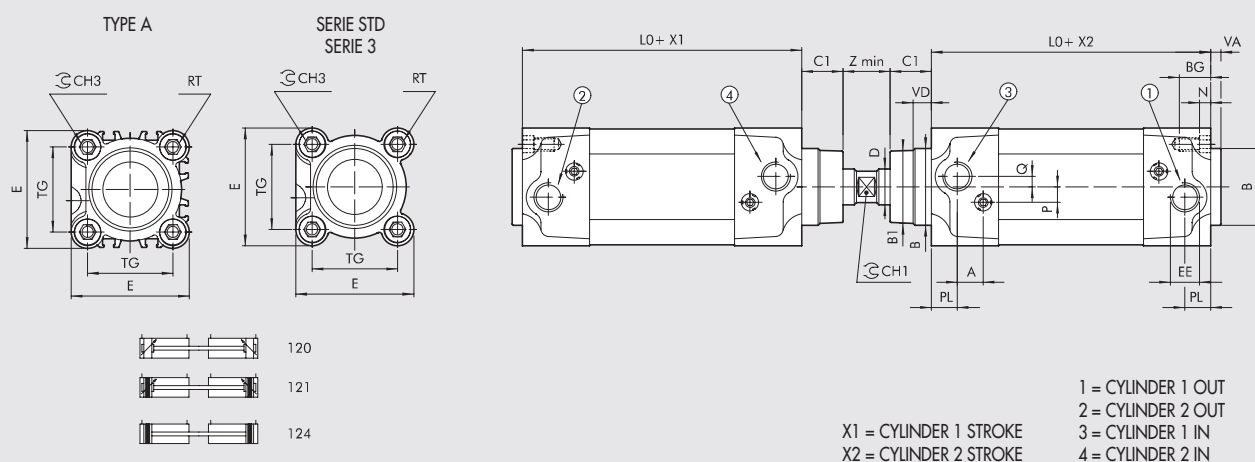
ISO 15552 CYLINDER COMMON OPPOSING PISTON ROD

Two cylinders with a single common piston rod. The total length varies with the port supplied. This allows 4 different positions to be obtained.

N.B.: For technical data refer to the standard version.



DIMENSIONS



Ø	PL	VD	A	B	B ₁	C ₁	CH ₁	CH ₃	D	TG	VA	EE	RT	E	L ₀	BG	N	P	Q	Z
32	10	6.5	10	30	28	16	10	6	12	32.5	4	G1/8	M6	46	94	14.5	4.5	6	4	14
40	12	8	10	35	33	20	13	6	16	38	4	G1/4	M6	54	105	14.5	4.5	6	4	14
50	14	13	10	40	38	25	17	8	20	46.5	4	G1/4	M8	64.5	106	17.5	5.5	6	6	16
63	16	14	10	45	40	25	17	8	20	56.5	4	G3/8	M8	75.5	121	17.5	5.5	6	6	16
80	18	12	12	45	43	33	22	10	25	72	4	G3/8	M10	94	128	21.5	5.5	10	7	17
100	20	14	12	55	49	38	22	10	25	89	4	G1/2	M10	111	138	21.5	5.5	10	7	17
125	25	20	10	60	54	45	27	12	32	110	6	G1/2	M12	135	160	25.5	6.5	12	8	26

KEY TO CODES

CYL	1 2 1 TYPE	Z	3 2 BORE	—	0 0 5 0 STROKE	C MATERIAL	P GASKETS
120	Single-acting cushioned, non-magnetic	Z Special A Type A 3 Serie 3	32 40 50 63 80 A1 = 100 A2 = 125	Progressive letter assigned by Metal Work	from 25 to 2800 mm (stroke X2 to be specified)	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to 63 mm with <1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets ● B Low temperature

N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s in
order to prevent surging. Use no-lubricated air only.

● Only available for versions with aluminium piston (A or Z)

In the order description, specify in sequence stroke X1, stroke X2 and value Z, and non-stick slip if necessary (the sum of strokes X1 + X2 + Z must not exceed 2800 mm).
ORDERING EXAMPLE: Cylinder with common opposing piston rod 121Z32_ _ CP with stroke X1 = 30 mm, stroke X2 = 50 mm, Z = 15 mm. Metal Work will create its own
special product code according to the following key to codes.



NOTES

ISO 15552 CYLINDER WITH THROUGH-ROD AND LOCK

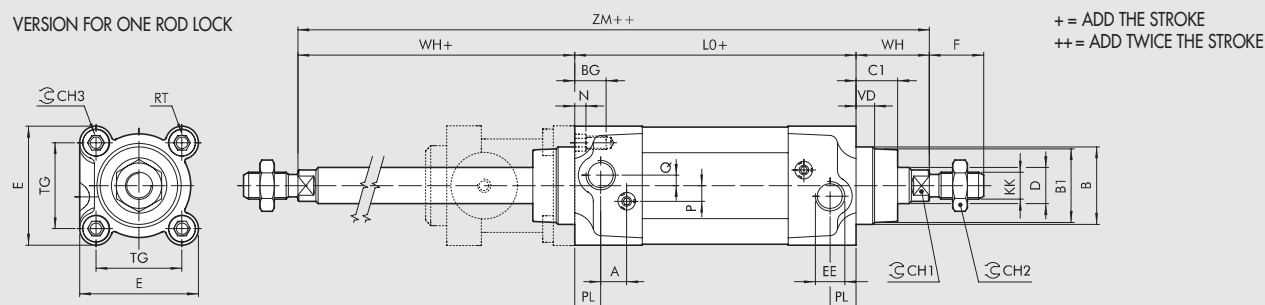
One or both piston rods are extended to hold one or two rod locks.

N.B.: For technical data refer to the standard version.

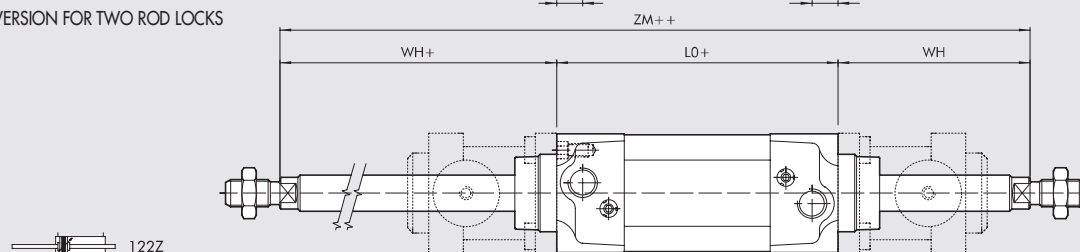


DIMENSIONS

VERSION FOR ONE ROD LOCK



VERSION FOR TWO ROD LOCKS



Ø	PL	VD	A	B	B ₁	WH	C ₁	CH ₁	CH ₂	CH ₃	KK	D	TG	VA	F	EE	RT	E	L	L ₀	ZM	BG	N	P	Q
32	10	6.5	10	30	28	68	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	188	14.5	4.5	6	4
40	12	8	10	35	33	75	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	200	14.5	4.5	6	4
50	14	13	10	40	38	94	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	237	17.5	5.5	6	6
63	16	14	10	45	40	94	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8	M8	75.5	158	121	252	17.5	5.5	6	6
80	18	12	12	45	43	123	33	22	30	10	M20x1.5	25	72	4	40	G3/8	M10	94	174	128	297	21.5	5.5	10	7
100	20	14	12	55	49	128	38	22	30	10	M20x1.5	25	89	4	40	G1/2	M10	111	189	138	317	21.5	5.5	10	7
125	25	20	10	60	54	187	45	27	41	12	M27x2	32	110	6	54	G1/2	M12	135	225	160	412	25.5	6.5	12	8

KEY TO CODES

CYL	1 2 2 TYPE	Z	3 2 BORE	—	0 5 0 STROKE	C MATERIAL	P GASKETS
	122 Through-rod	Z Special	32 40 50 63 80 A1 = 100 A2 = 125	Progressive letter assigned by Metal Work	from 25 to 2600 mm	A C45 chromed rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets B Low temperature

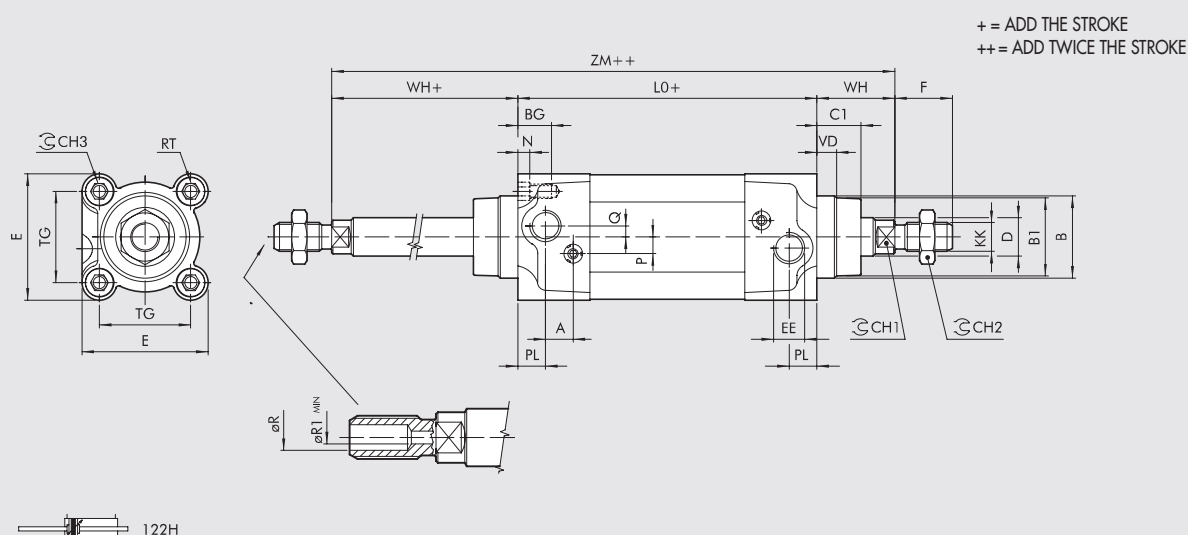
N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**. The **non-stick slip** version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use **no-lubricated air** only.

ORDERING EXAMPLE: Cylinder 122040100CP with 1 piston rod lock. Metal Work will create its own special product code according to the following key to codes:

ISO 15552 CYLINDER PERFORATED THROUGH-ROD



DIMENSIONS



Ø	PL	VD	A	B	B ₁	WH	C ₁	CH ₁	CH ₂	CH ₃	KK	D	TG	VA	F	EE	RT	E	L	L ₀	ZM	BG	N	P	Q	ØR	ØR1
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8 M6	46	120	94	146	14.5	4.5	6	4	5.5	4	
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4 M6	54	135	105	165	14.5	4.5	6	4	7	5	
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4 M8	64.5	143	106	180	17.5	5.5	6	6	8.5	7	
63	16	14	10	45	40	37	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8 M8	75.5	158	121	195	17.5	5.5	6	6	8.5	7	
80	18	12	12	45	43	46	33	22	30	10	M20x1.5	25	72	4	40	G3/8 M10	94	174	128	220	21.5	5.5	10	7	10	8	
100	20	14	12	55	49	51	38	22	30	10	M20x1.5	25	89	4	40	G1/2 M10	111	189	138	240	21.5	5.5	10	7	10	8	
125	25	20	10	60	54	65	45	27	41	12	M27x2	32	110	6	54	G1/2 M12	135	225	160	290	25.5	6.5	12	8	14	10	

KEY TO CODES

CYL	1 2 2 TYPE	H	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
	122 Through-rod	H Perforated rod	32 40 50 63 80 A1 = 100 A2 = 125	Ø32 max 100 Ø40 max 150 Ø50 max 190 Ø63 max 200 Ø80 max 220 Ø100 max 225 Ø125 max 250	A C45 chromed rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets B Low temperature

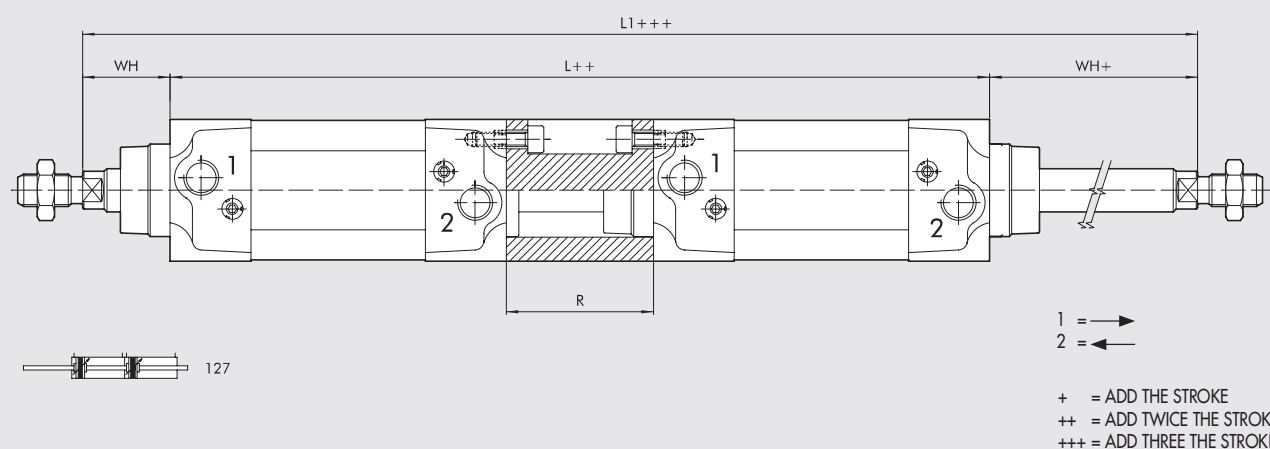
N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**. The non-stick slip version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use no-lubricated air only.

ISO 15552 CYLINDER TANDEM THROUGH-ROD

N.B.: For technical data refer to the standard version.



DIMENSIONS



Ø	WH	R	L	L ₁
32	26	55	243	295
40	30	55	265	325
50	37	68	280	354
63	37	68	310	384
80	46	92	348	440
100	51	92	368	470
125	65	120	440	570

For other dimensions, refer to the standard version.

KEY TO CODES

CYL	1 2 7 TYPE	0	3 2 BORE	-	0 5 0 STROKE	C MATERIAL	P GASKETS
	127 Through-rod	0 Diameter S Non-magnetic ▲ G No stick slip	32 40 50 63 80 A1 = 100 A2 = 125	Progressive letter assigned by Metal Work	from 25 to 2800 mm	A C45 chromed rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets N NBR gaskets V FKM/FPM gaskets B Low temperature

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only.

ISO 15552 CYLINDER Ø 160-200 LOW-FRICTION



Typically used in pneumatic lifters, this cylinder is characterised by a number of special machining, the use of fewer gaskets and a special grease, all with the aim of mitigating friction and avoiding the stick-slip effect.

Indeed, you can choose either the version operating with piston rod extension or piston rod retraction, which means that only the pressure chamber gaskets are fitted, except for the piston rod gasket, which is always present for the purpose of scraping the piston rod.

In fact, it is a single-acting cylinder without a return spring, where the piston rod is repositioned by forces external to the cylinder.

The grease grade chosen has characteristics that remain constant over time, even in the event of accidental contact with water. It is thus recommended not to use lubricated air as oil could remove the grease and reduce cylinder performance.

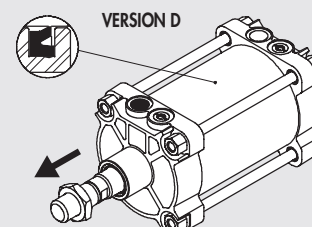
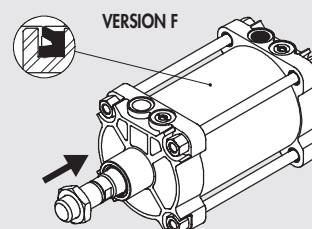
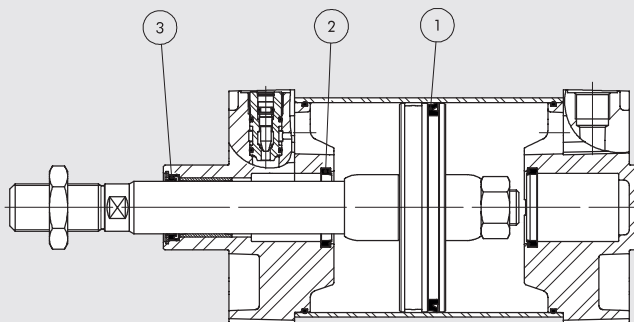


TECHNICAL DATA

Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-20 to +80
Fluid		Unlubricated air
Bore	mm	160, 200
Design		Round barrel with tie rods
Strokes	mm	from 25 to 1200
Versions		Single-acting when the piston rod extends or retracts, without a return spring; magnetic or non-magnetic; cushioned
Inrush pressure	bar	0.05
Forces generated		See cylinder "General technical data" at the beginning of the chapter A1
Weight		See cylinder "General technical data" at the beginning of the chapter A1

COMPONENTS

- ① Piston gasket, NBR
- ② Cushioning gasket, polyurethane
- ③ Piston rod gasket, NBR



KEY TO CODES

CYL	W 1 2 1 TYPE	D LOW-FRICTION, VERSION	A 3 BORES	0 0 5 0 STROKE
	W120 Non magnetic	D Rear chamber pressure, cushioning and piston rod gaskets	A3 160	0025 to 1200 mm
	W121 Magnetic	F Front chamber pressure and cushioning	A4 200	

NOTES

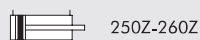
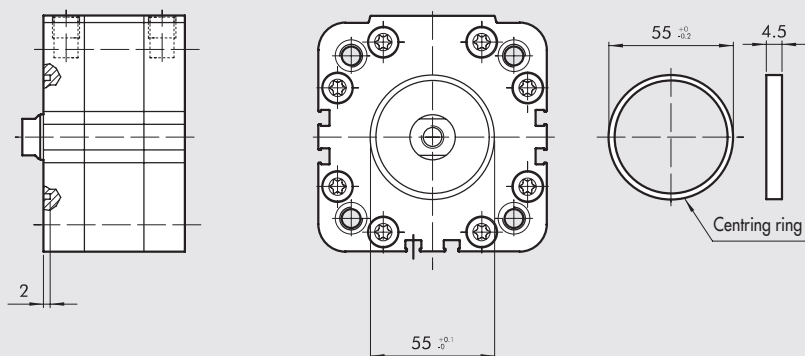
CUSTOM PRODUCTS

COMPACT CYLINDER SERIES CMPC WITH CENTRING RING



The face of the front head contains a circular groove in which a centring ring can be inserted. The Ø 80 cylinder is currently available.

DIMENSIONS Ø80



250Z-260Z



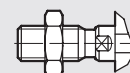
253Z-263Z



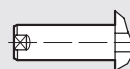
254Z-264Z

For other dimensions, refer to the standard version

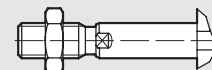
SE-DE MALE PISTON ROD



SE EXTENDED PISTON ROD



SE MALE EXTENDED PISTON ROD



ORDERING CODES

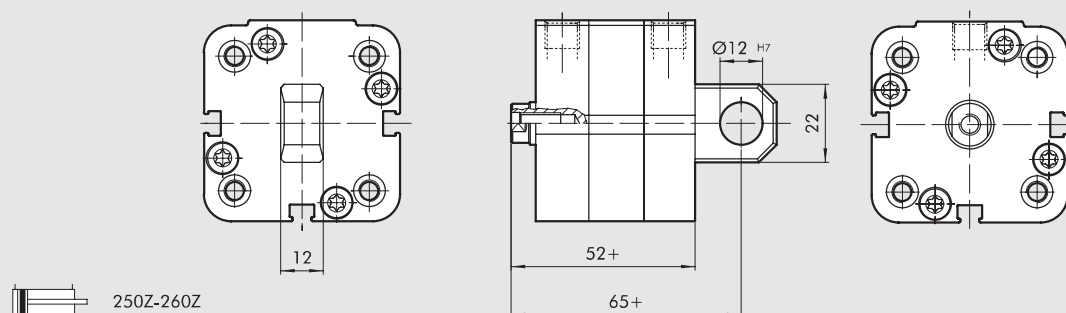
Code	Description
82873M4	Centring ring D55
260Z80A__CP	ISO cylinder series CMPC ø 80 double-acting, centre distance female piston rod with centring slot

COMPACT CYLINDER SERIES CMPC WITH BUILT-IN MALE HINGE

The rear head of the cylinder is integral with a male hinge.
This unit is particularly compact compared to the standard version, in which the male hinge is screwed onto the head.
This version is designed for the Ø 40 mm cylinder with ISO centre distance.

DIMENSIONS Ø 40 CYLINDER

+ = ADD THE STROKE



250Z-260Z

253Z-263Z

254Z-264Z

For other dimensions, refer to the standard version

KEY TO CODES

CYL	2 5 TYPE	1	Z	3 2 BORE	— Progressive letter assigned by Metal Work	0 5 0 STROKE	C MATERIAL	P GASKETS
25	Compact cylinder centre distances to ISO male piston rod	● 0 Double-acting ● 3 Single-acting retracting piston rod	Z Special	32 40 50 63 80 A1=100			▷ C C45 piston rod chromium-plated ▷ X Stainless steel piston rod ○ A C45 chromed rod, aluminium piston ○ Z Stainless steel piston rod and nut aluminium piston	▶ P Polyurethane V FKM/FPM
26	Compact cylinder centre distances to ISO female piston rod	● 4 Single-acting extended piston rod						

- Can also be used as double-acting with spring return
 - ▶ Only for standard double acting and standard through rod double acting version
- N.B.:** Specify in the comment area whether **magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use no-lubricated air only.

- ▷ Only for P version (Polyurethane gaskets)
- Only for Ø 32 to 100 V version (FKM/FPM gaskets) and for Ø 80 and 100 P version (Polyurethane gaskets)

STROKES

Standard stroke for single-acting cylinders	Standard stroke for double-acting cylinders	Max. recommended strokes for double-acting cylinders
Ø 32 to 100 → 25 mm	Ø 32 to 100 → from 5 to 80 mm	Ø 32; Ø 40 → 300 mm Ø 50; Ø 63 → 400 mm Ø 80; Ø 100 → 500 mm

Maximum recommended strokes. Higher values can create operating problems

SHORT-STROKE CYLINDER SERIES SSCY ANTI-ROTATION WITH EXTENDED COLUMNS

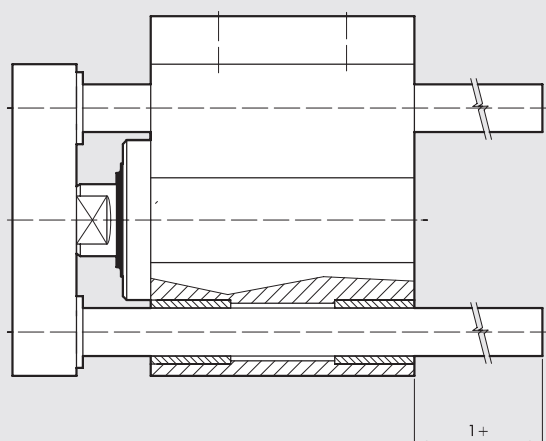


The jacket contains two guide bushes, one at the front and one at the rear. The columns have been extended, so they are guided better and have less radial play.



DIMENSIONS

+ = ADD THE STROKE



For other dimensions, refer to the standard version.

KEY TO CODES

CYL	2 1 7 TYPE	Z	1 6 BORE	-	0 2 0 STROKE	C MATERIAL	P GASKETS
	217 Double acting, anti-rotation	Z Special	12 16 20 25 32 40 50 63 80 ◆ 100	Progressive letter assigned by Metal Work	Ø 12 - 63 stroke from 5 to 120 mm Ø 80 - 100 stroke from 5 to 150 mm	C C45 chrome rod, technopolymer piston rod Ø 12 to 63 mm A C45 chrome rod, aluminium piston rod (standard Ø 80 to 100 mm) X Stainless steel piston rod and nut technopolymer piston Ø 12 to 63 mm Z Stainless steel piston rod and nut aluminium piston (standard Ø 80 to 100 mm)	P Polyurethane N NBR ● V FKM/FPM ● B Low temperature

- ◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
- Only available for non-magnetic versions and with aluminium piston (A or Z)

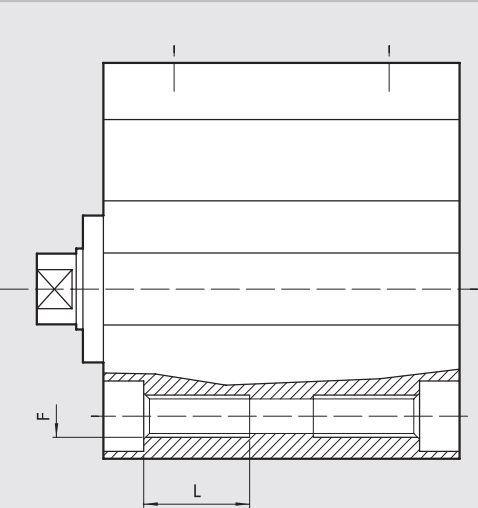
N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use no-lubricated air only.

NOTES

SHORT-STROKE CYLINDER SERIES SSCY WITH THREADS IN THE LINER

These threads can be made for the longitudinal holes in the liner.
The threads can be made from the piston rod side or the opposite side.

RECOMMENDED THREADS



Ø	F	L
12	M5	10
16	M5	10
20	M6	12
25	M6	12
32	M8	12
40	M8	12
50	M8	16
63	M10	20
80	M10	20
100	M14	28

Note: It is preferable to leave the existing spot-facing in standard cylinder liners.

NOTES

ORDERING EXAMPLE: Cylinder 2120400050CP with threads M6x12 in the cylinder liner, piston rod side.

CUSTOM PRODUCTS SHORT-STROKE CYLINDER SERIES SSCY WITH THREADS IN THE LINER

SHORT-STROKE CYLINDER SERIES SSCY SINGLE ACTING WITH HINGES



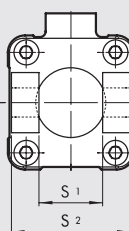
These are SSCY single-acting cylinders with pre-assembled male (model BA) or female (model B) rocking hinge.



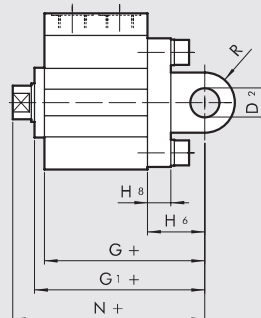
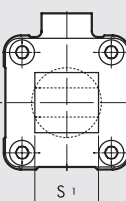
DIMENSIONS FOR SER VERSIONS

+ = ADD THE STROKE

Rocking version
Female (model B)



Rocking version
Male (model BA)



208



210

Ø	Stroke	D ₂	G	G ₁	H ₆	H ₈	N	R	S ₁	S ₂
32	5 - 25	10	59	62.8	22	10	70.3	11	26	45
	> 25 - 50		67	70.8						
40	5 - 25	12	64.5	69.7	25	10	78.2	13	28	52
	> 25 - 50		72.5	77.5						
50	5 - 25	12	66.5	73.2	27	12	80.2	13	32	60
	> 25 - 50		74.5	81.2						
63	5 - 25	16	74	80.7	32	12	89.7	17	40	70
	> 25 - 50		82	88.7						

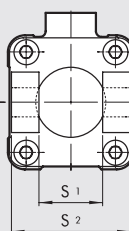
Note: For other dimensions, refer to the standard version.

DIMENSIONS FOR SSE VERSIONS

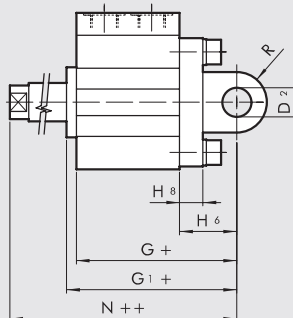
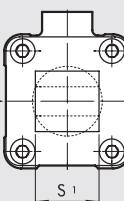
+ = ADD THE STROKE

++ = ADD TWICE THE STROKE

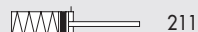
Rocking version
Female (model B)



Rocking version
Male (model BA)



209



211

Ø	Stroke	D ₂	G	G ₁	H ₆	H ₈	N	R	S ₁	S ₂
32	5 - 50	10	59	62.8	22	10	70.3	11	26	45
	> 25 - 50		67	70.8						
40	5 - 50	12	64.5	69.7	25	10	78.2	13	28	52
	> 25 - 50		72.5	77.5						
50	5 - 50	12	66.5	73.2	27	12	80.2	13	32	60
	> 25 - 50		74.5	81.2						
63	5 - 50	16	74	80.7	32	12	89.7	17	40	70
	> 25 - 50		82	88.7						

Note: For other dimensions, refer to the standard version.

KEY TO CODES

CYL	208 TYPE	Z	32 BORE	—	015 STROKE	C MATERIAL	P GASKETS
	208 Single-acting retracted rod, non-magnetic	Z Special	32	Progressive letter assigned by Metal Work	See above	C C45 chrome piston rod, technopolymer piston Ø 12 to 63 mm	P Polyurethane gaskets
	209 Single-acting extended rod, non-magnetic		40			A C45 chrome piston rod, aluminium piston (standard Ø 80 to 100 mm)	N NBR gaskets
	210 Single-acting, retracted rod		50			X Stainless steel piston rod and nut technopolymer piston Ø 12 to 63 mm	● V FKM/FPM gaskets
	211 Single acting, extended rod		63			Z Stainless steel piston rod and nut aluminium piston (standard Ø 80 to 100 mm)	● B Low temperature

- Only available for versions with aluminium piston (A or Z)

Please contact our sales offices for further information and quotation.

SHORT-STROKE CYLINDER SERIES SSCY THROUGH-ROD ANTI-ROTATION



KEY TO CODES

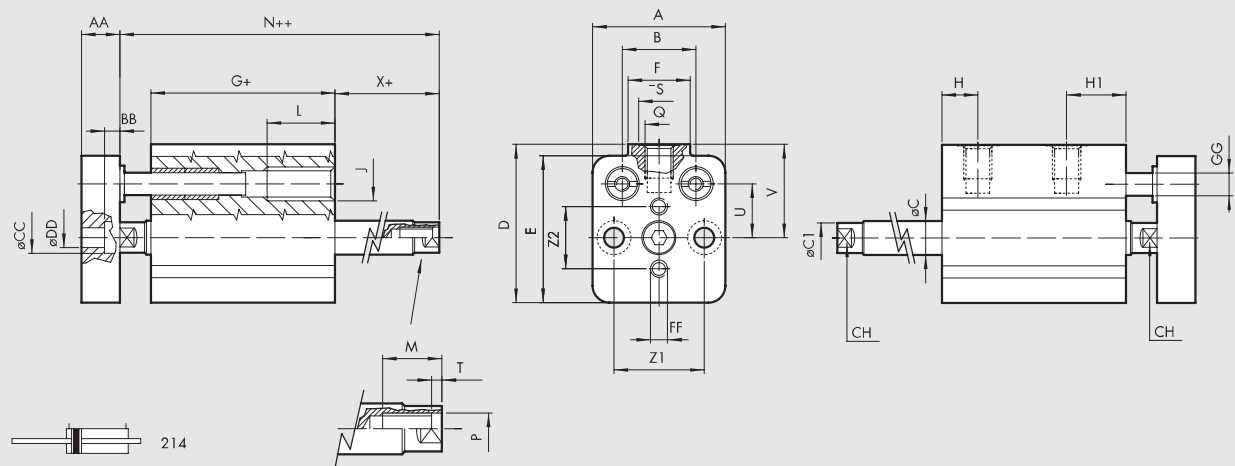
CYL	2 1 4 TYPE	Z	1 6 BORE	-	0 0 2 0 STROKE	C MATERIAL	P GASKETS
	214 Double acting, through-rod	Z Special	12 16 20 25 32 40 50 63 80 ◆ 100	Progressive letter assigned by Metal Work	Ø12 - 63 stroke from 5 to 120 mm Ø80 - 100 stroke from 5 to 150 mm	C C45 chrome rod, technopolymer piston rod Ø 12 to 63 mm A C45 chrome rod, aluminium piston rod (standard Ø 80 to 100 mm) X Stainless steel piston rod and nut technopolymer piston Ø 12 to 63 mm Z Stainless steel piston rod and nut aluminium piston (standard Ø 80 to 100 mm)	P Polyurethane N NBR V FKM/FPM B Low temperature

- ◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
- Only available for non-magnetic versions and with aluminium piston (A or Z)

N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s
in order to prevent surging. Use no-lubricated air only.

DIMENSIONS Ø 12

+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

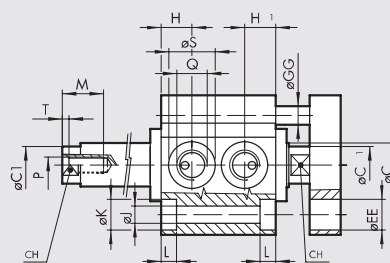
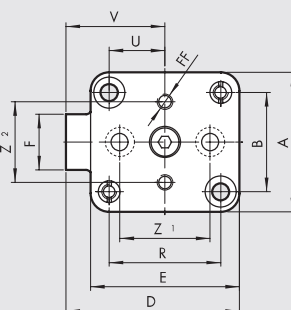
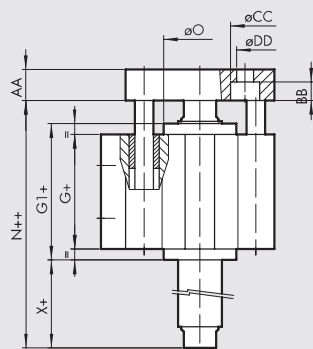


Ø	A	B	øC	øC ₁	CH	D	E	F	G	H	H ₁	J	L	M	N	P	T	Z ₁	Z ₂	Q	øS	U	V	AA	BB	øCC	øDD	FF	øGG	X
12	23.5	13	6	5.5	5	28	26	11	32.5	6.5	10.5	M6	12	7	43.5	M3	2	16	11	M5	8	9.5	16.5	8	3.5	6	3.5	M3	4	5.5

DIMENSIONS Ø16 to Ø100

+ = ADD THE STROKE

++ = ADD TWICE THE STROKE



Ø	A	B	øC	øC ₁	D	E	F	G	G ₁	H	H ₁	J	K	L	N	Z ₁	Z ₂	Q	R	øS	CH	U	V	AA	BB	øCC	øDD	øEE	FF	øGG	øO
16	28	20	8	7.5	33	28	11	36.8	-	6.7	10.5	3.7	6	3.7	45.8	20	15	M5	20	8	7	10	19	8	3.5	6	3.5	6	M3	4	-
20	32	22	10	9	37	32	11	36	-	6.5	10.5	4.6	7.5	4.6	45	22	18	M5	22	8	8	11	21	8	5	7.5	4.5	7.5	M4	6	-
25	37	26	10	9	47.5	39	18	35.7	42.7	8.5	8.5	4.6	7.5	4.6	54.7	22	22	G1/8	28	15	8	14	28	8	5	7.5	4.5	8	M4	6	20
32	45	32	12	11	56	48	18	37	44.5	10	10	5.5	10	5.7	59.5	26	26	G1/8	36	15	10	18	32	10	6	10	5.5	10	M5	8	25
40	54.5	40	12	11	62.7	54.5	18	39.5	49.9	10	10	5.5	10	5.7	66.9	34	34	G1/8	40	15	10	20	35.5	10	6	10	5.5	10	M5	8	30
50	66	50	16	15	73	66	18	39.5	52.9	11	11	6.6	11	6.8	66.9	43	43	G1/8	50	15	13	25	40	12	7	11	6.5	11	M6	10	35
63	80	62	16	15	88	80	23	42	55.4	12	12	9	15	9	73.4	55	55	G1/8	62	15	13	31	48	12	9	14	9	15	M6	10	35
80	100	82	20	19	110	100	26	57	77.4	14	14	9	15	9	93.4	70	70	G1/4	82	19	17	41	60	14	9	14	9	15	M8	12	44
100	124	103	25	24	134	124	26	64	85.4	15	15	11	18	11	104.6	94	94	G1/4	103	19	22	51.5	72	17	9	14	9	18	M8	12	56

Ø	X	P	M	T
16	4.5	M5	10	2
20	4.5	M5	10	2
25	6	M5	10	2
32	7.5	M6	15	2.5
40	8.5	M6	15	2.5
50	7	M8	18	3.5
63	9	M8	18	3.5
80	8	M10	18	4
100	9.6	M12	20	5

NOTES

ROUND CYLINDER SERIES SHORT RNDC

Short clean profile cylinders with hinge built into the rear head.

Available in different versions:

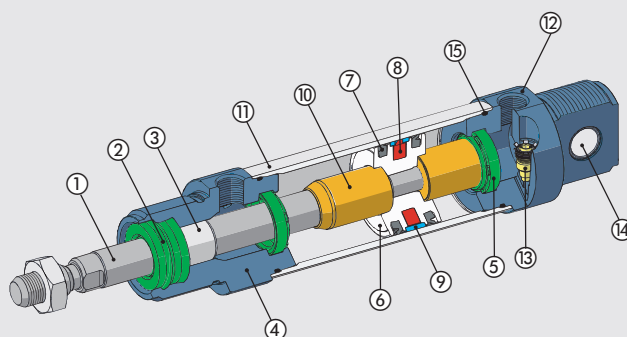
- configuration with or without magnet
- single- and double-acting - single or through-rod
- with pneumatic cushioning or sound-proof version
- range of gaskets available in NBR, POLYURETHANE, FKM/FPM (for high temperatures) and low-temperature gaskets.



TECHNICAL DATA			Ø32	Ø40	Ø50	Ø63
Max operating pressure		bar	10			
		MPa	1			
		psi	145			
Temperature range	POLYURETHANE	°C	-25 to +80			
	NBR	°C	-10 to +80			
	FKM/FPM	°C	-10 to +150 (non-magnetic cylinders)			
	Low temperature	°C	-35 to +80			
Design			Screwed heads			
Fluid			Unlubricated air. Lubrication, if used, must be continuous			
Standard strokes ✚	single-acting	mm	1 to 250			
	double-acting	mm	1 to 500			
Versions			Double-acting, Double-acting through-rod, Double-acting cushioned, Double-acting through-rod cushioned, Single-acting retracted, No stick-slip. Available magnetic and non-magnetic versions.			
Magnet for sensors			See cylinder “General technical data” at the beginning of the chapter			
Inrush pressure		bar	0.4		0.3	
Forces generated at 6 bar thrust/retraction			For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.			
Notes			✚ Maximum recommended strokes. Higher values can create operating problems.			

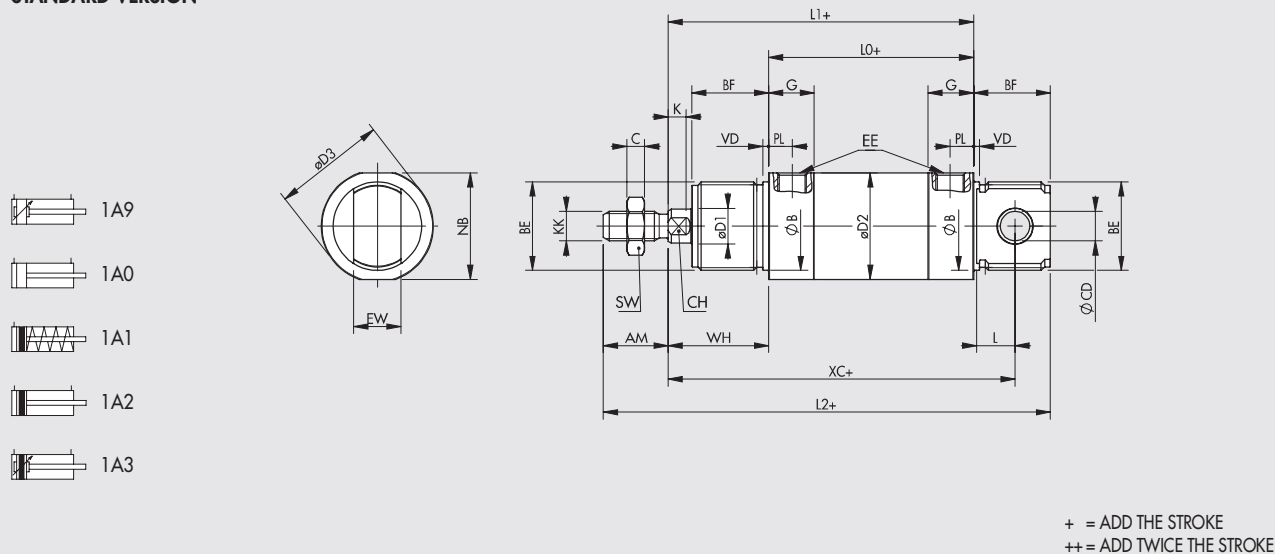
COMPONENTS

- PISTON ROD: C45 steel or stainless steel, thick chromed
- PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- GUIDE BUSHING: steel strip with bronze and PTFE insert
- FRONT CYLINDER HEAD: anodized aluminium alloy
- CUSHIONING GASKET: polyurethane, NBR or FKM/FPM
- PISTON: aluminium alloy
- PISTON GASKET: polyurethane, NBR or FKM/FPM
- MAGNET: plastoferrite
- GUIDE RING: technopolymer
- CUSHIONING CONE: brass
- BARREL: anodized aluminium alloy
- REAR CYLINDER HEAD: anodized aluminium alloy
- CUSHIONING NEEDLE: brass, with needle out movement safety system even when fully open
- REAR BUSHING: steel strip with bronze and PTFE insert
- Static O-rings: NBR or FKM/FPM

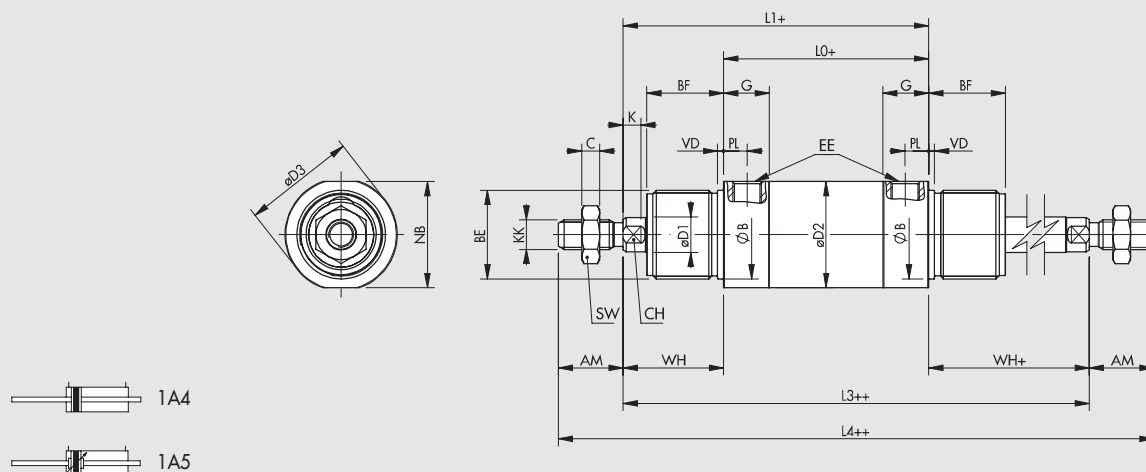


DIMENSIONS

STANDARD VERSION



THROUGH-ROD VERSION



Ø	AM	WH	BE	BF	KK	Ø CD (H10)	EW	Ø D1	Ø D2	Ø D3	NB	Ø B (h9)	VD	G	PL	EE	L	L0	L1	L2	L3	L4	XC±1	SW	C	CH	K
32	22	34	M30x1.5	26	M10x1.25	10	16	12	36	38	36	30	2	15.5	8	G1/8	13	69.5	103.5	151.5	137.5	181.5	117.5	17	6	10	6
40	24	39	M38x1.5	30	M12x1.25	12	18	16	45	46	43	38	3	21	10	G1/4	15	84.6	123.6	177.6	162.6	210.6	139.6	19	7	13	6
50	32	44	M45x1.5	33	M16x1.5	16	21	20	55	57	54	45	3	19.6	9.8	G1/4	16	86.2	130.2	195.2	174.2	238.2	147.2	24	8	17	8
63	32	45	M45x1.5	33	M16x1.5	16	21	20	68	70	67	45	3	24	11.5	G3/8	16	94.2	139.2	204.2	184.2	248.2	156.2	24	8	17	8

VERSION 1A1... (SINGLE-ACTING)

Stroke	L0				L1				L2				XC			
	Ø 32	Ø 40	Ø 50	Ø 63	Ø 32	Ø 40	Ø 50	Ø 63	Ø 32	Ø 40	Ø 50	Ø 63	Ø 32	Ø 40	Ø 50	Ø 63
0 - 50	69.5	84.6	86.2	94.2	103.5	123.6	130.2	139.2	151.5	177.6	195.2	204.2	117.5	139.6	147.2	156.2
51 - 100	98.5	113.6	121.7	130.7	132.5	156.1	165.7	175.7	180.5	210.1	230.7	240.7	146.5	172.1	182.7	192.7
101 - 150	127.5	146.1	157.2	167.2	161.5	188.6	201.2	212.2	209.5	242.6	266.2	277.2	175.5	204.6	218.2	229.2
151 - 200	156.5	178.6	192.7	203.7	190.5	221.1	236.7	248.7	238.5	275.1	301.7	313.7	204.5	237.1	253.7	265.7
201 - 250	185.5	211.1	228.2	240.2	219.5	253.6	272.2	285.2	267.5	307.6	337.2	350.2	233.5	269.6	289.2	302.2

For all the other values, see previous table.

KEY TO CODES

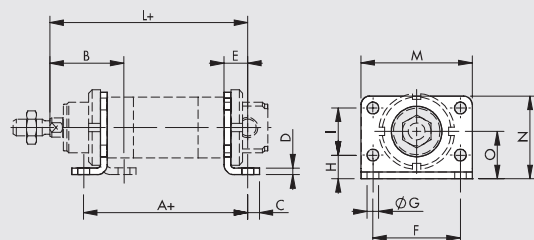
CYL	1 A 0 TYPE	0	3 2 BORE	0 0 5 0 STROKE	A MATERIAL	P GASKETS
	1A9 Cushioned double-acting 1A0 Double-acting 1A1 Magnetic single-acting 1A2 Magnetic double-acting 1A3 Magnetic double-acting cushioned 1A4 Magnetic double-acting through-rod 1A5 Magnetic double-acting cushioned, through-rod	0 Standard ▲ G No stick-slip S Non-magnetic	32 40 50 63	For the maximum suppliable strokes, look at the technical data	A C45 chrome piston rod, aluminium piston Z Stainless steel piston rod and nut aluminium piston	P Polyurethane N NBR ● V FKM/FPM ● B Low temperature

- ▲ For speeds lower than 0.2m/s, to prevent surging. Use no-lubricated air only
 ● Only available for non-magnetic versions (S)

ACCESSORIES FOR ROUND CYLINDER SERIES SHORT RNDC: FIXINGS

FOOT MODEL AC

+ = ADD STROKE

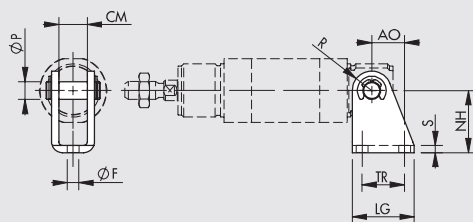


Code	Ø	A	B	C	D	E	F	ØG	H	I	L	M	N	O	Weight [g]
W0950320002	32	97.5	44	7	4	14	52	7	14	28	117.5	66	49	28	104
W0950400002	40	124.6	49	10	5	20	60	9	18	30	138.6	80	58	33	190
W0950500002	50	126.2	58	10	6	20	70	9	20	40	150.2	90	70	40	296
W0950500002	63*	134.2	59	10	6	20	70	9	20	40	159.2	90	70	40	296

* On Ø 63, it can be used only if mounted outwards
 Note: Individually packed

COUNTER-HINGE MODEL BCS

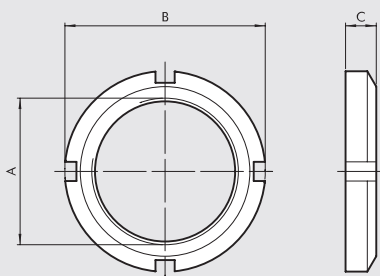
+ = ADD STROKE



Code	Ø	AO	TR j13	ØF H13	ØP 17	CM	R	S	NH	LG	Weight [g]
W0950320022	32	18.5	24	6.6	10	16.1	11	4	35 ^{+0.40} _{-0.20}	35	105
W0950400022	40	24.5	30	9	12	18.1	13	5	40 ^{+0.40} _{-0.20}	45	185
W0950500022	50 - 63	28	34	9	16	21.1	14	6	45 ^{+0.50} _{-0.20}	50	290

Note: Supplied complete with pin and 2 snap rings

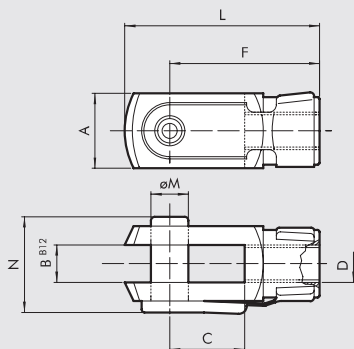
HEAD LOCK RING MODEL G



Code	Ø	A	B	C	Weight [g]
W0950320010	32	M30x1.5	45	7	46
W0950400010	40	M38x1.5	50	8	56
W0950500010	50 - 63	M45x1.5	58	9	124

Note: Individually packed

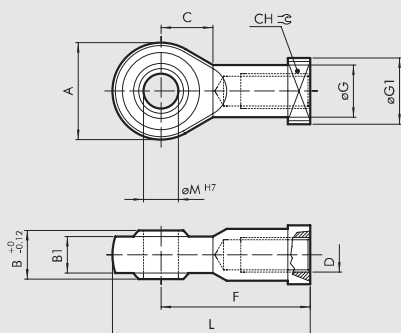
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50 - 63	16	32	16	32	83	64	M16x1.5	40	340

Note: Individually packed

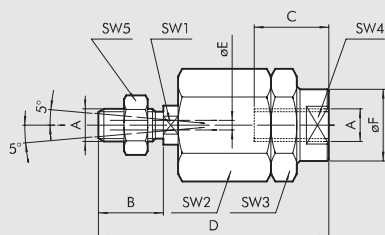
SPHERICAL JOINT MODEL GA-M



Code	Ø	Ø M	C	B1	B	A	L	F	D	Ø G	CH	Weight [g]
W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	116
W0950502025	50 - 63	16	22	15	21	42	85	64	M16x1.5	22	22	226

Note: Individually packed

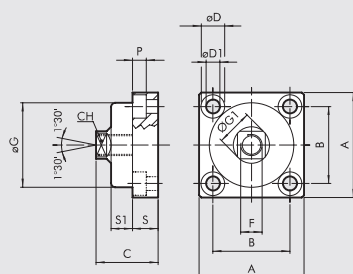
ARTICULATED JOINT MODEL GA-K



Code	Ø	A	B	C	D	Ø E	Ø F	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	50 - 63	M16x1.5	32	32	103	4	32	20	41	41	30	24	620

Note: Individually packed

FLEXIBLE COLLAR - MODEL GA



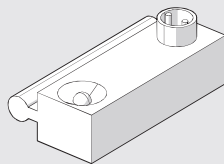
Code	Ø	A	B	C	CH	Ø D	Ø D1	F	Ø G	Ø G1	P	S	S1	Weight [g]
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	40	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950506021	50 - 63	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628

Note: Individually packed

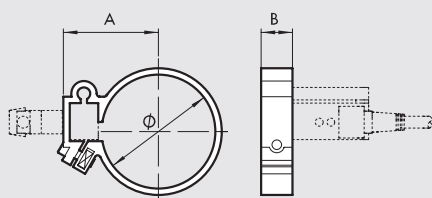
ACCESSORIES FOR ROUND CYLINDER SERIES SHORT RND: MAGNETIC SENSORS

SENSOR SERIES DSM - Ø 32-50

For codes and technical data, see **chapter A6**.



SENSOR BRACKET - Ø 32-50



Code	Bore	Model	Ø	A	B
W0950000132	32	Bracket DXF 36-32	36	29.5	10
W0950000140	40	Bracket DXF 45-40	45	34.5	10
W0950000150	50	Bracket DXF 52-50	55	38.5	10

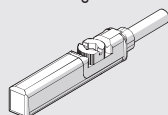


FOR MOUNTING ON THE CYLINDER Ø 50 INSERT THE ALUMINIUM SPACER ① YOU FIND IN THE PACKAGE

RETRACTABLE SENSOR - Ø 63

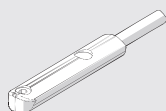
SENSOR, SQUARE TYPE

Latest generation,
secure fixing



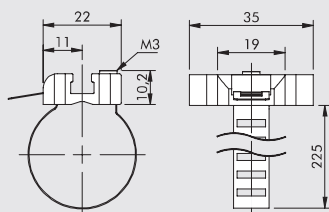
SENSOR, OVAL TYPE

Traditional



For codes and technical data, see **chapter A6**.

UNIVERSAL SENSOR BRACKET - Ø 63



Code	Bore	Model
W0950001103	63	Sensor bracket 8 to 63

Note: Individually packed

MATERIAL

Bracket: stainless steel

Sensor holder: zamak

NOTES

CUSTOM PRODUCTS

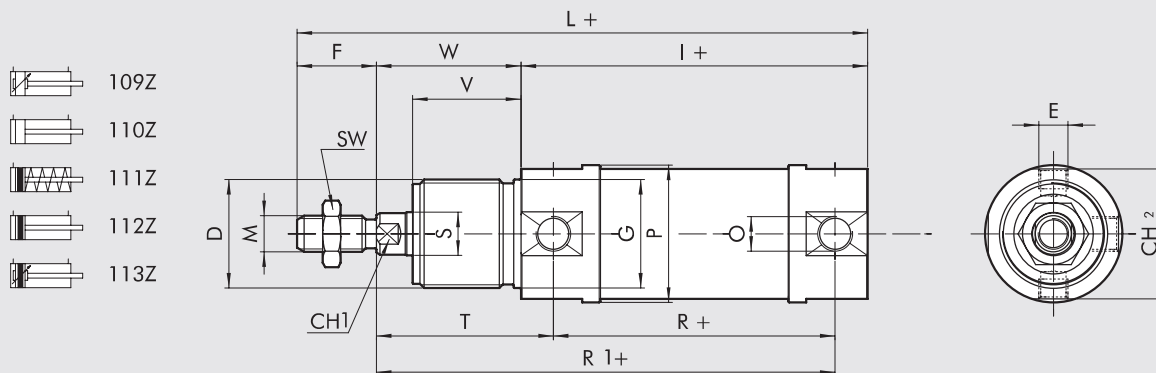
ROUND CYLINDER SERIES RNDC WITH REDUCED HEAD

The rear head does not have a threaded nose, which gives a shorter overall length compared to a standard cylinder.



DIMENSIONS

+ = ADD THE STROKE



DIMENSIONS OF DOUBLE-ACTING

Ø	D	E	F	Ø G	CH1	I	L	M	N	O	Ø P	R	Ø S	SW	T	CH2	V	W	L1
32	M30x1.5	M8x1	22	30	10	96	158	M10x1.25	14	G1/8	38	78	12	17	49	36	30	40	220
40	M38x1.5	M10x1	24	38	13	113	182	M12x1.25	16	G1/4	46	89	16	19	57	43	35	45	251
50	M45x1.5	M12x1.5	32	45	17	120	202	M16x1.5	18	G1/4	57	96	20	24	62	54	38	50	284

DIMENSIONS OF SINGLE-ACTING

			I			L			R1		
Lower limit	Stroke	Upper limit	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50
0	< C ≤	50	96	113	120	172	198	220	127	146	158
50	< C ≤	100	125	145.5	155.5	201	230.5	255.5	156	178.5	193.5
100	< C ≤	150	154	178	191	230	263	291	185	211	229
150	< C ≤	200	183	210.5	226.5	259	295.5	326.5	214	243.5	264.5
200	< C ≤	250	212	243	262	288	328	362	243	276	300

For all the other values, see previous table, except for "T" and "R" which are both replaced by "R1"

KEY TO CODES

CYL	1 1 2 TYPE	Z	3 2 BORE	—	0 2 5 STROKE	C MATERIAL	P GASKETS
	109 DEA	Z Special	32	Progressive letter assigned by Metal Work	25 to 500 mm	A C45 chrome rod, aluminium piston rod	P Polyurethane
	110 DE		40			C C45 chrome rod, technopolymer piston rod	N NBR
	111 SE		50			Z Stainless steel piston rod and nut aluminium piston	● V FKM/FPM
	112 DEM					X Stainless steel piston rod and nut technopolymer piston	● B Low temperature
	113 DE MA						

DE: Double-acting (non-cushioned, not magnetic)
 DEM: Magnetic double-acting (non-cushioned)
 DE MA: Magnetic double-acting (cushioned)
 DEA: Cushioned double-acting (non-magnetic)
 SE: Single-acting (magnetic)

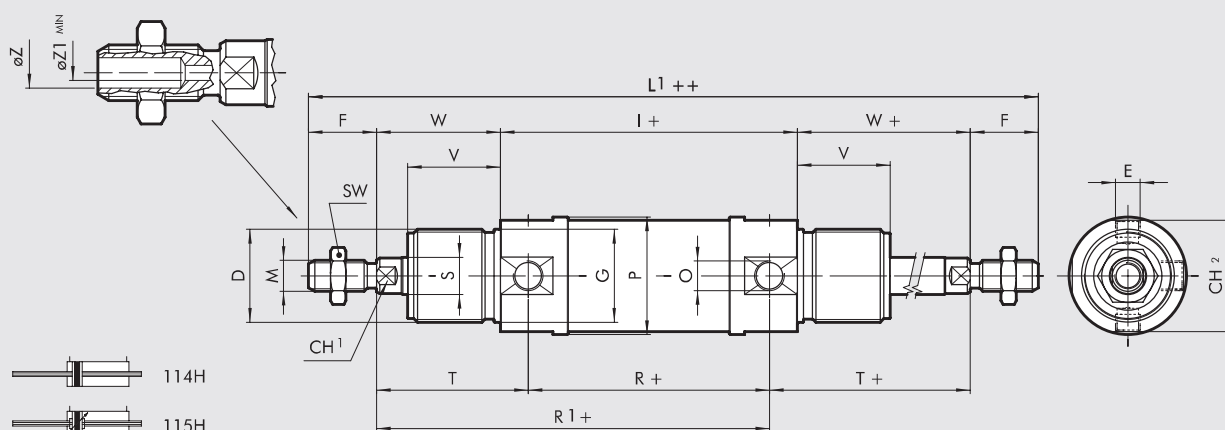
● Only available for non-magnetic versions and with aluminium piston (A or Z)
 ■ Only available for versions with aluminium piston (A or Z)
 N.B.: Specify in the comment area whether **magnetic** or **non-stick slip**.
 The non-stick slip version is to be used with speeds lower than 0.2 m/s in order to prevent surging. Use no-lubricated air only.

ROUND CYLINDER SERIES RNDC PERFORATED THROUGH-ROD



DIMENSIONS

+ = ADD THE STROKE
++ = ADD TWICE THE STROKE



ϕ	D	E	F	ϕG	CH1	I	L	M	N	O	ϕP	R	ϕS	SW	T	CH2	V	W	L1	ϕZ	$\phi Z1$
32	M30x1.5	M8x1	22	30	10	96	172	M10x1.25	14	G1/8	38	78	12	17	47	36	30	40	220	5.5	4
40	M38x1.5	M10x1	24	38	13	113	198	M12x1.25	16	G1/4	46	89	16	19	57	43	35	45	251	7	5
50	M45x1.5	M12x1.5	32	45	17	120	220	M16x1.5	18	G1/4	57	96	20	24	62	54	38	50	284	8.5	7

KEY TO CODES

CYL	1 1 4 TYPE	H	3 2 BORE	-	0 2 5 STROKE	C MATERIAL	P GASKETS
	114 DEM through-rod 115 DEMA through-rod	H Perforated rod	32 40 50	Progressive letter assigned by Metal Work	ϕ 32 max 110 ϕ 40 max 120 ϕ 50 max 170	A C45 chrome rod, aluminium piston rod C C45 chrome rod, technopolymer piston rod Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	P Polyurethane N NBR ● V FKM/FPM ● B Low temperature

DEM: Magnetic double-acting (non-cushioned)
DEMA: Magnetic double-acting (cushioned)

● Only available for non-magnetic versions and with aluminium piston (A or Z)

N.B.: Specify in the comment area whether **non-magnetic** or **non-stick slip**.
The non-stick slip version is to be used with speeds lower than 0.2 m/s in order
to prevent surging. Use no-lubricated air only.

ROUND CYLINDER SERIES E

Cylinders with small axes compared to the "RNDC" series.
No threaded noses of the front and rear heads are provided.

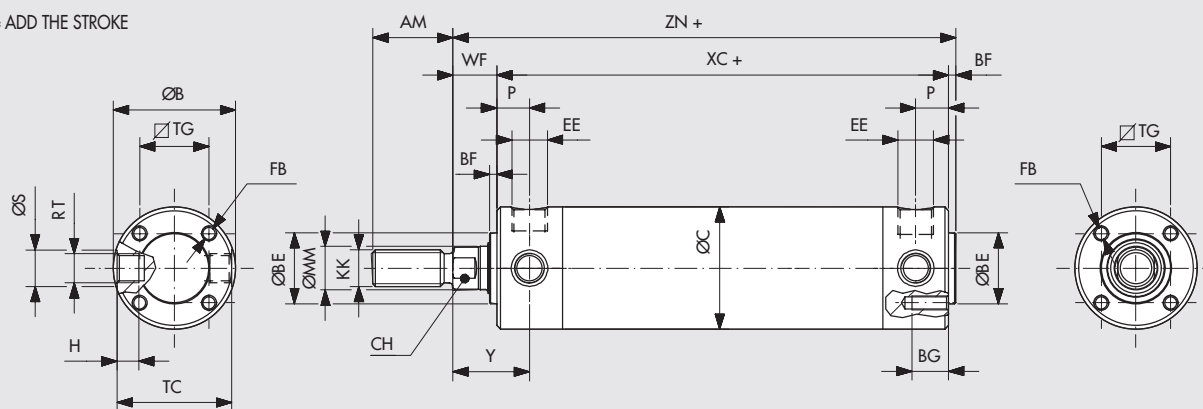


TECHNICAL DATA

Operating pressure	bar	10
Temperature range	°C	-20 to +80
Lubrication		The cylinders are prelubricated
Available versions		Double-acting / Double-acting not magnetic
Standard strokes	mm	0 to 500
Supplying conditions		The cylinders are supplied with plastic cups on the threaded ports and protected by a plastic net On request the cylinders can be supplied with nuts mounted on piston rod, with labels printed with customer's logo and code number
Materials	Jacket	AISI 304
	Piston rod	AISI 303
	Head	Aluminium anodized
	Gaskets	NBR for piston
	Pistons	Aluminium
	Guide bushing	Technopolymer

DIMENSIONS

+ = ADD THE STROKE



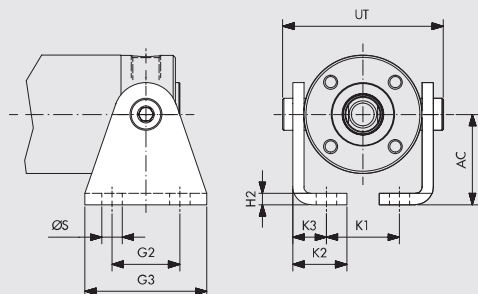
Ø	AM	ØBE	BG	H	ØB	EE	FB	KK	ØMM	P	RT	ØS	CH	TG	TC	BF	WF	ZN	Y	XC	ØC
32	22	19.5	10	6	33.5	G 1/8	M4	M10x1.25	12	9	M8x1	10	10	19	31.5	2	12	86	21	74	33.6
40	23	22.5	10	7.5	41.5	G 1/8	M5	M12x1.25	16	10	M10x1	12	13	23.5	39	2	12	92	22	80	41.6
50	23	28	12	10	52.3	G 1/4	M6	M12x1.25	16	13	M12x1.5	14	13	28.5	49	2	13	97	26	84	52.4
63	30	35	12	10	65	G 1/4	M8	M16x1.5	20	13	M12x1.5	14	17	35.5	62	2	13	99	26	86	65.4

KEY TO CODES

CYL	W 1 1 6	0 3 2	0 0 5 0
	TYPE	BORE	STROKE
	W116 Non-magnetic double-acting	032	From 0 to 500 mm
	W117 Magnetic double-acting	040	
		050	
		063	

ACCESSORIES FOR ROUND CYLINDER SERIES E

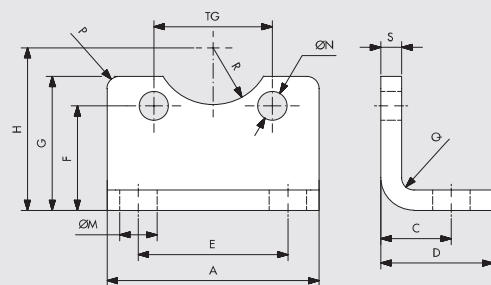
HINGE



Code	Ø	ØS	G2	G3	H2	K1	K2	K3	AC	UT
W0950320052	32	7	20	35	4	15.5	20	13	25	47
W0950400052	40	7	28	42	4	23.5	20	13	28	57
W0950500052	50	9	30	54	5	32.3	24	15	40	71
W0950630052	63	9	40	64	5	40.5	26.5	17.5	47	84

Note: the cod corresponds to 2 piece

FOOT FLANGE



Code	Ø	D	C	ØM	E	A	S	G	H	F	R	TG	ØN	P	Q
W0950320051	32	16	7.5	7	18	32	4	22	25	16	10	19	5	2	2
W0950400051	40	16	7	7	27	40	4	23	28	16	11.5	23.5	6	2	2
W0950500051	50	17	10	9	36	51	5	33	40	17	14	28.5	7	3	3
W0950630051	63	19	10	9	45	61	5	38	47	19	17.5	35.5	9	4	3

Note: Individually packed

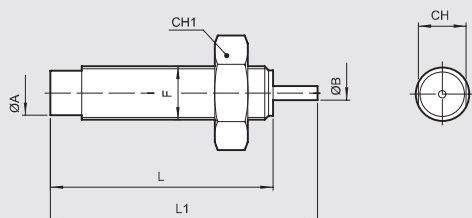
NOTES

SHOCK ABSORBERS

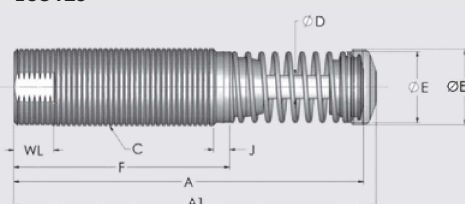
These shock absorbers are supplied on rodless cylinders, and on slides and on rotating actuators. This description is a guide to the identification of the features for ordering spare parts.
Slides S9, S11 and S12 without a shock absorbers are designed to hold one at a later stage.



DIMENSIONS AND ORDERING CODES



ECO125

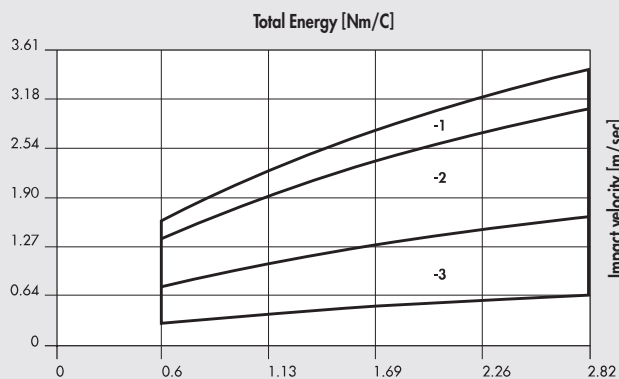


Code	Description	ØA	ØB	F	L	L1	CH	CH1	Stroke	Ek/ cycle	Ek/ hour	Me	S*	Use on standard products	Notes
0950004020	Shock abs. MC30EU M1-NB+nut M8X1	-	2.5	M8x1	40.9	52	-	10	8	3.5	5600	0.4-1.9	1		
W0950005300	Shock abs. MC30EU M2-NB+nut M8X1	-	2.5	M8x1	40.9	52	-	10	8	3.5	5600	1.8-5.4	2	S14 ø8	
0950004001	Shock abs. ECO8 MC2+nut M8X1	6.6	2.5	M8x1	40.9	47	-	12	6.4	3	5650	-	2	S11-S12 ø12	
0950004021	Shock abs. MC30EU M3-NB+nut M8X1	-	2.5	M8x1	40.9	52	-	10	8	3.5	5600	5-15	3		
0950004022	Shock abs. ECO10 MF1+nut M10X1	8.6	3	M10x1	46.5	54	-	13	7	6	12400	-	1		
0950004002	Shock abs. ECO10 MF2+nut M10X1	8.6	3	M10x1	46.5	54	-	13	7	6	12400	-	2	S11-S12 ø16-ø20	
W0950005301	Shock abs. RT-10+nut M10X1	8.6	3	M10x1	46.5	54	-	13	7	6	18000	5-15	3	S14 ø16 GD_K, ø12-ø16 DAPK1	
0950004009	Shock abs. ECO10-MF3+nut M10X1	8.6	3	M10x1	46.5	54	-	13	7	6	12400	-	3	R3 ø16 external shock absorbers	
0950004003	Shock abs. ECO15 MF1+nut M12X1	9.9	3	M12x1	62.2	72.4	11	15	10.4	10	28200	-	1	Rodless ø16, S11-S12 ø25	
0950004023	Shock abs. ECO15 MF2+nut M12X1	9.9	3	M12x1	62.2	72.4	11	15	10.4	10	28200	-	2		
0950004010	Shock abs. ECO15 MF4+nut M12X1	9.9	3	M12x1	62.2	72.4	11	15	10.4	10	28200	-	4	R3 ø20-ø22 external shock absorbers	
0950004012	Shock abs. MC150EUMH+nut M14X1.5	-	4.8	M14x1.5	69.1	86.6	-	17	12.5	20	34000	8.6-86	1	DAPK2	
0950004013	Shock abs. MC150EUMH2+nut M14X1.5	-	4.8	M14x1.5	69.1	86.6	-	17	12.5	20	34000	70-200	2	DAPK2	
0950004004	Shock abs. ECO25 MC2+nut M14X1.5	10.9	4	M14x1.5	81.3	97.5	12	17	16	26	34000	-	2	Rodless ø25, S11-S12 ø30, GD_K ø20-ø25	
W0950005303	Shock abs. SC190EU M3-NB+nut M14X1.5	-	4	M14x1.5	87.7	110.1	12	17	16	25	34000	9-45	3	S14 ø25	Use on standard products
0950004008	Shock abs. ECO25-MC4+nut M14X1.5	10.9	4	M14x1.5	81.3	97.5	12	17	16	26	34000	-	4	R3 ø30	
0950004014	Shock abs. SC190EUM7+nut M14X1.5	-	4	M14x1.5	87.7	110.1	12	17	16	25	34000	136-1550	7	DAPK2	Do not use in pressurised vessels
0950004015	Shock abs. ECO S 25 MC2+nut M14X1.5	10.9	4	M14x1.5	69.5	82.7	12	17	12.7	20	34000	-	2	R3 ø25 and R3 ø25-ø30 external shock absorbers	
0950004025	Shock abs. ECO50 MC1+nut M20X1.5	16.3	4.8	M20x1.5	95.5	118.4	18	24	22	54	53700	-	1		
0950004005	Shock abs. ECO50 MC2+nut M20X1.5	16.3	4.8	M20x1.5	95.5	118.4	18	24	22	54	53700	-	2	Rodless ø32, R3 ø40 and R3 external shock absorbers, GD_K ø32	
0950004026	Shock abs. ECO50 MC3+nut M20X1.5	16.3	4.8	M20x1.5	95.5	118.4	18	24	22	54	53700	-	3		
0950004027	Shock abs. ECO100 MF1+nut M25X1.5	22	6.4	M25x1.5	128.8	102.6	23	32	25	90	70000	-	1		
0950004006	Shock abs. ECO100 MF2+nut M25X1.5	22	6.4	M25x1.5	128.8	102.6	23	32	25	90	70000	-	2	Rodless ø40-ø50, GD_K ø40	
0950004028	Shock abs. ECO100 MF3+nut M25X1.5	22	6.4	M25x1.5	128.8	102.6	23	32	25	90	70000	-	3		
Code	Description	A	A1	C	D	E	E1	F	J	WF	WL	Me	S*	Use on standard products	Notes
0950004029	Shock abs. ECO125 MF1+nut M36X1.5	140.2	145.3	M36x1.5	9.5	29	30.5	87	25	160	91000	-	1		
0950004030	Shock abs. ECO125 MF2+nut M36X1.5	140.2	145.3	M36x1.5	9.5	29	30.5	87	25	160	91000	-	2		
0950004007	Shock abs. ECO125 MF3+nut M36X1.5	140.2	145.3	M36x1.5	9.5	29	30.5	87	25	160	91000	-	3	Rodless ø63	

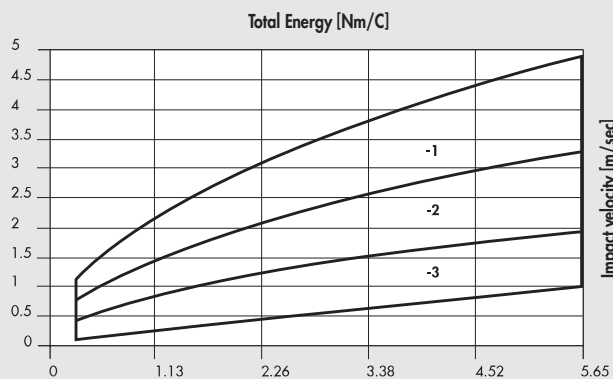
S* = CUSHIONING (low = high speeds, low masses, SOFT shock absorber / high = low speeds, high masses, HARD shock absorber)

SHOCK ABSORBERS CHOICE DIAGRAMS

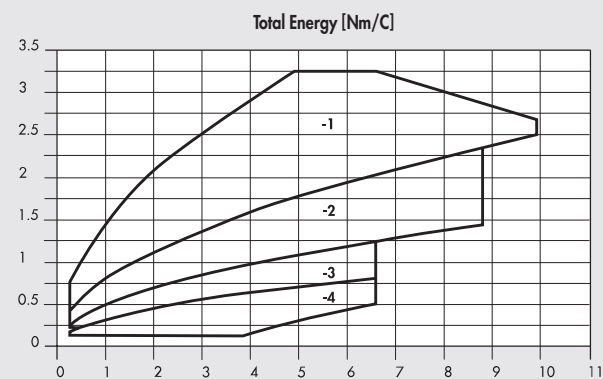
M8x1



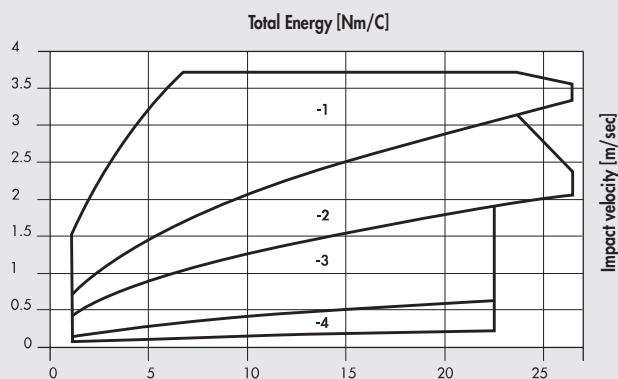
M10x1



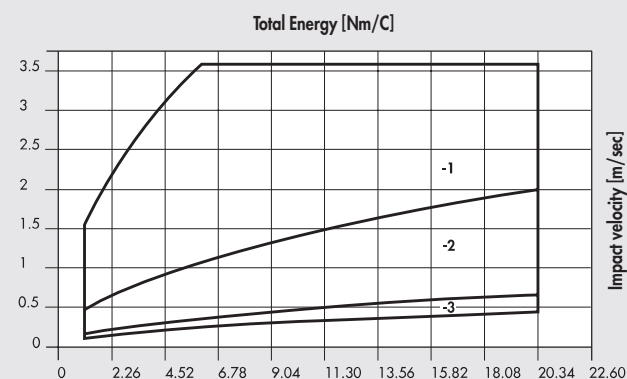
M12x1



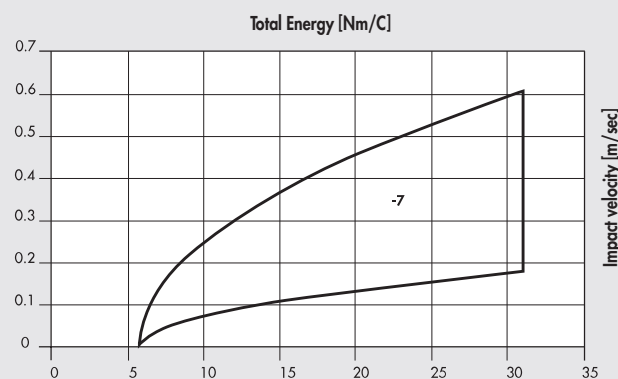
M14x1.5



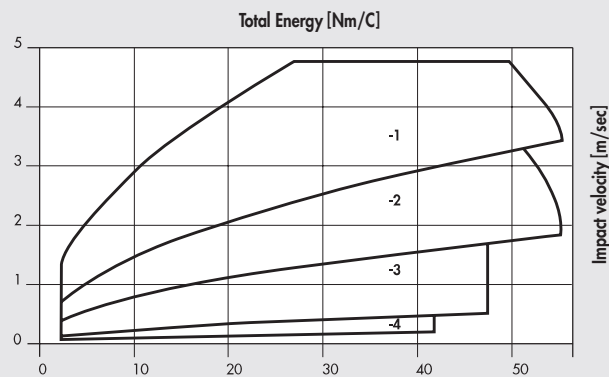
M14x1.5 L = 69.5



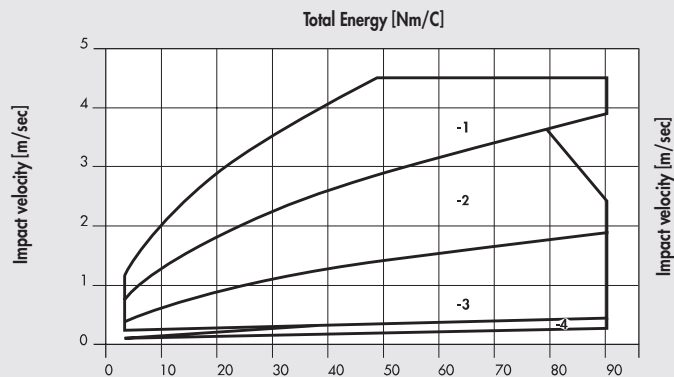
M14x1.5 S = 7



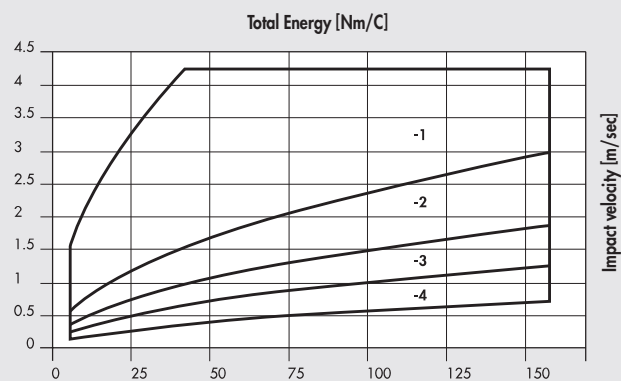
M20x1.5



M25x1.5



M36x1.5



NOTES

SPECIAL PISTON RODS



The main types of special piston rod have been classified in order to highlight the difference compared to standard piston rods. In general, all types of Metal Work cylinders can be supplied with special piston rods unless problems of dimensions or production process are encountered. Below is a list of cylinders available with a special piston rod:

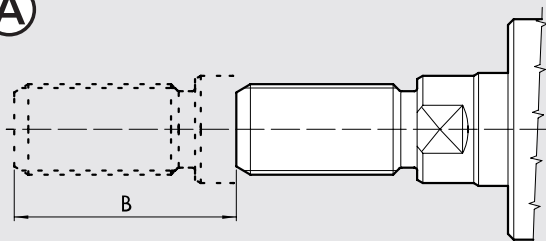
- ISO 6432 mini-cylinder, series STD and series TP
- ISO 15552 cylinder series STD, type A, series 3, with "Combi" piston rod gasket and TWO-FLAT
- ISO 15552 cylinder Ø160-200
- ISO 21287 cylinder series LINER
- Compact cylinder series CMPC, series CMPC TWO-FLAT
- Round cylinder series RNDC
- Short-stroke cylinder series SSCY

N.B.: Taking the order codes specified by the customer, Metal Work will generate its own special product code each time.

PISTON ROD WITH ENHANCED PROJECTION

TYPE

(A)



Sample configuration:

Cil 1210400100CP extended piston rod type A: B = 50

Price: please contact our sales offices

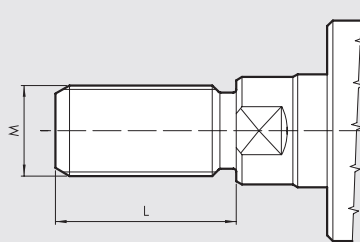
Delivery: 3 working days

Minimum quantity: 1 piece

PISTON ROD WITH SPECIAL THREAD

TYPE

(B)



- The nut for the piston rod is not included
- Applies to $L \leq 3 \times M$
- Applies to metric threads
- The thread diameter must be less than the piston rod diameter

Sample configuration:

Cil 1210400100CP special thread type B: M = M10 x 1.25 L = 30

Price: please contact our sales offices

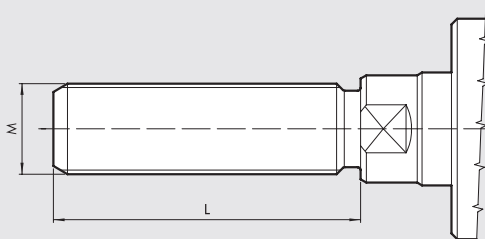
Delivery: 3 working days

Minimum quantity: 1 piece

PISTON ROD WITH EXTRA-LONG THREAD

TYPE

(C)



- Not included in the nut of the piston rod
- Applies to $L > 3 \times M$
- Applies to metric threads
- The thread diameter must be less than the piston rod diameter

Sample configuration:

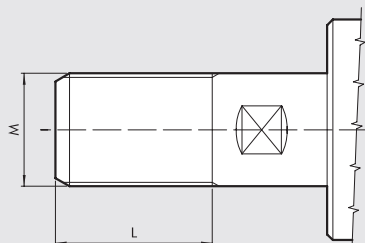
Cil 1210400100CP special thread type C: M = 12 x 1.25 L = 50

Price: please contact our sales offices

Delivery: 5 working days

Minimum quantity: 1 piece

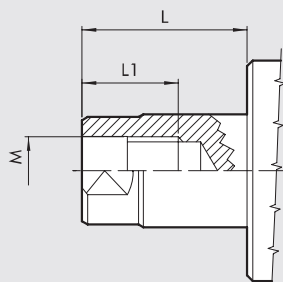
PISTON ROD WITH THREAD WITHOUT UNDERCUT

TYPE
D

- The nut of the piston rod is only included if the thread is standard for that cylinder.
- Applies to $L \leq 3 \times M$
- Applies to metric threads

Sample configuration:Cil 1210400100CP thread without undercut type D: $M = M12 \times 1.25$ $L = 24$ **Price:** please contact our sales offices**Delivery:** 3 working days**Minimum quantity:** 1 piece

PISTON ROD WITH FEMALE THREAD

TYPE
E

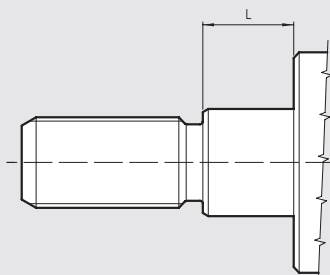
- $L1 \leq 4 \text{ times } M$
- Applies to metric threads

The standard $L1$ value for Metal Work is:

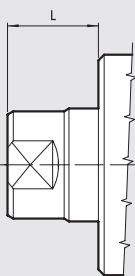
M	M3	M4	M5	M6	M8	M10	M12
L1	8	10	12	14	16	20	24

Sample configuration:Cil 1210400100CP female thread type E: $M = M8$, $L1 = 16$, $L = 10$ **Price:** please contact our sales offices**Delivery:** 3 working days**Minimum quantity:** 1 piece

PISTON ROD WITHOUT KEY PLANE

TYPE
F**Sample configuration:**Cil 1210400100CP without key plain type F: $L = 5$ **Price:** please contact our sales offices**Delivery:** 3 working days**Minimum quantity:** 1 piece

UNTHREADED PISTON ROD

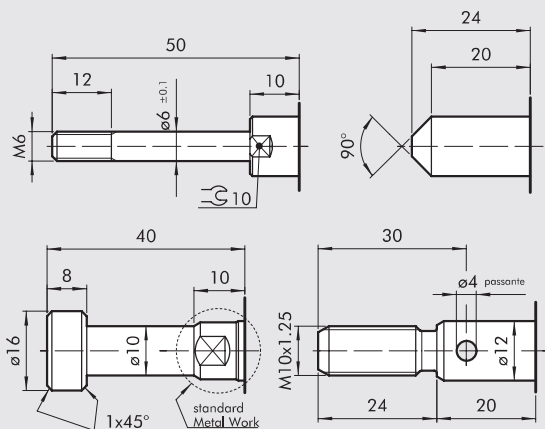
TYPE
G**Sample configuration:**Cil 1210400100CP without thread type G: $L = 10$ **Price:** please contact our sales offices**Delivery:** 3 working days**Minimum quantity:** 1 piece

SPECIAL PISTON RODS TO DRAWING

TYPE



EXAMPLES



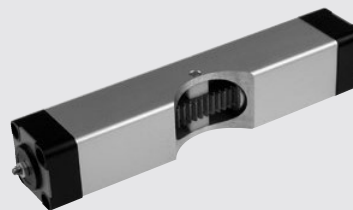
- A drawing with values, and work tolerances if necessary, must be provided. A few examples are shown here.

Price / Delivery / Minimum quantity: please contact our sales offices

NOTES

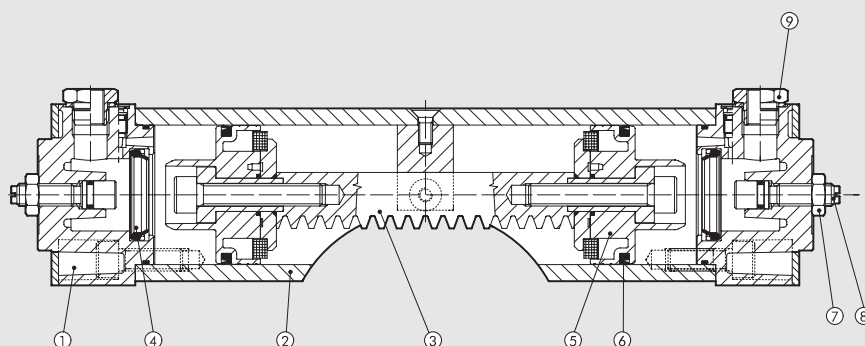
ISO 15552 CYLINDER ROTARY

Fitted with a visible rack for coupling to a pinion provided by the customer.
The cylinder diameter is 50 mm.
The total stroke is 70 mm with possible end-of-stroke adjustment.
The rack has module $m = 2$. Retracting sensors can be fixed to the cylinder liner.



COMPONENTS

- ① HEAD: made of die-cast aluminium
- ② JACKET: made of anodized and calibrated aluminium sections
- ③ RACK: UNI 6588 made of steel
- ④ CUSHIONING GASKET: polyurethane
- ⑤ HALF-PISTON: self-lubricating technopolymer with built-in cushioning olives
- ⑥ PISTON ROD GASKET: made of NBR
- ⑦ LOCKING NUT: made of steel
- ⑧ STROKE ADJUSTING SCREW: made of AISI 303 steel
- ⑨ A4/Z 1/8" ADAPTOR: made of nickel-plated brass



ORDERING CODES

128Z50A070CN Cylinder Ø 50 stroke 70 rotary

NOTES

COMPACT PRECISION SLIDE SERIES S14K, WITH INDUCTIVE SENSOR



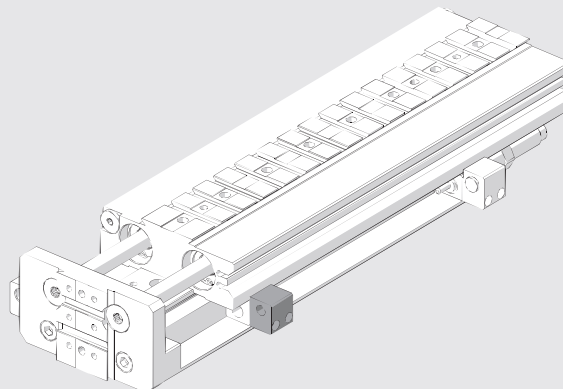
Flat, compact precision slides with two cylinders.

The fixed and moving parts are moved by a sturdy ball recirculation carriage running on hardened guides. Elastic mechanical stop or shock absorbers are used to achieve adjustable stop at the end of the stroke.

A three-position version is available allowing an intermediate stop.

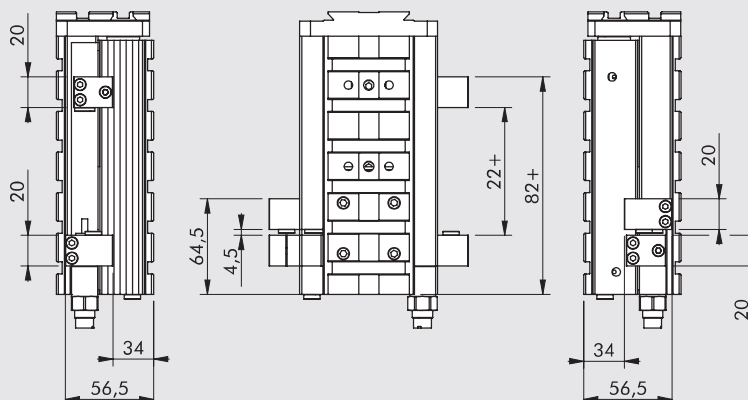
Slots are provided in the body for end-of-stroke sensors.

Provision for housing two M8 inductive sensors detecting the slide (out-in) limit switches is available for size 25 only. The sensors are screwed onto the fixed body by means of two sensor-holding blocks, while two more blocks with a metal stop are fixed to the mobile part; the dimensions at the sides are slightly larger.

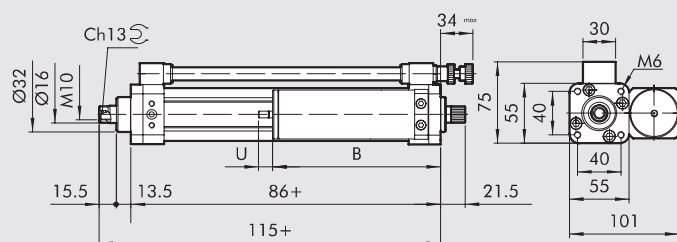


TECHNICAL DATA		S14K-25
Operating pressure	bar	2 to 8
	psi	29 to 116
Temperature range	°C	-10 to +80
Fluid		Dry or lubricated 10 µm filtered compressed air. Lubrication, if used, must be continuous
Maximum speed	m/s	0.8
Versions		With shock absorbers – With elastic mechanical stop
Bore		2 x Ø 25
Piston rod diameter	mm	12
Strokes	mm	10, 20, 30, 40, 50, 80, 100, 125, 150, 200
Stroke reduction by adjusting the decelerators retraction	mm	30 extension / 30 retraction
Stroke reduction by adjusting the buffers retraction	mm	15 extension / 15 retraction
Maximum impact energy with hydraulic decelerators	J	20
Maximum impact energy with buffers	J	0.5
Sensors		Sensors Magnetic Hall or Reed or M8 inductive proximity
Theoretical thrust force at 6 bar	N	589
Theoretical pull force at 6 bar	N	453
Repeatability in stop positions	mm	0.02 (with shock absorbers); 0.02 (with buffers and 5 bar minimum pressure)
Monitoring position		Any
Notes		Lubrication recommended: every 2 million cycles for strokes below 100 mm and 1 million for longer strokes (grease code 9910506)

DIMENSIONS



HYDRAULIC BRAKE SERIES BRK Ø 40 mm WITH FIXING HOLES TO DISTANCE 40 mm



+ = ADD THE STROKE

The drawing is illustrative of a type of brakes.
The differences compared to the standard are:

- Length 86 + (instead of 84 +)
- Length 115 + (instead of 114 +)
- Length 13.5 (instead of 14.5)
- Length 21.5 (instead of 22.5)
- Length 34 max (instead of 35 max)



NOTES

ELECTRIC CYLINDER SERIES ELEKTRO ISO 15552 WITH ACME SCREW (ACME)



An electric cylinder with a connection interface in accordance with ISO 15552.

The piston rod is moved forwards by a lead screw and nut with a trapezoidal outline (Acme): this is an irreversible system that can be used to move the loads vertically. If the motor power supply fails, the load is supported by the screw. The piston has a gauged driving band that minimises the clearance with the jacket (the screw is made of steel while the nut is in brass).

The cylinder can be equipped with a built-in non-rotating system featuring two opposing slides that run in separate longitudinal slots in the barrel. The piston comes with magnets and the barrel has longitudinal slots for housing sensors. The piston rod has increased outside diameter and thickness to make it extra rigid and more resistant to radial and peak loads.

A system for greasing the screws is included. Numerous standard accessories for pneumatic cylinders, including intermediate hinge, can be used for mounting the cylinder.

The motor can be selected from an optimised range.

There is a version for in-line assembly, where the drive shaft is jointed directly onto the screw. There is also a geared motor version, where transmission is provided by pulleys and a cog belt standard 1:1.

Suitable motor drives are provided.

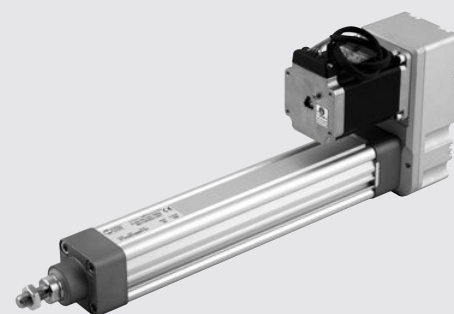
Special adaptor flanges and joints can be provided if the customer wishes to use a particular make of motor.

It is advisable to lubricate the cylinder every 50 km or at least once a year (preferably with MOBILITH SHC 460 grease).

in-line version



geared version



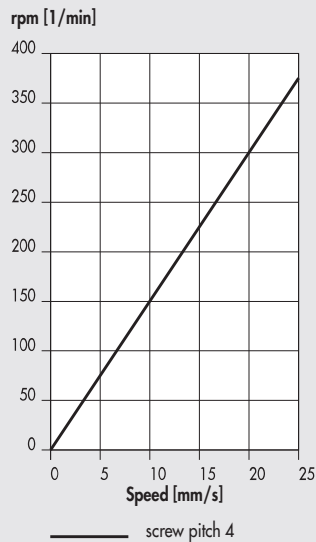
TECHNICAL DATA			Ø 32	Ø 50	Ø 63	Ø 80
Piston rod thread			M10x1.25	M16x1.5	M16x1.5	M20x1.5
Temperature range		WITH MOTOR °C	see single motor data sheet			
		ONLY MECHANICS °C	from -10 to +50			
Electrical protection rating with		STEPPING motors	IP40 or IP55 (see key to codes)			
Maximum stroke		mm	500	1500		
Positioning repeatability		mm	± 0.1			
Positioning accuracy		mm	± 0.5 **			
Overall radial oscillation of the piston rod (without load) for 100 mm of stroke		mm	0.4			
Versions			With or without piston rod non-rotating			
Uncontrolled impact at the end of stroke			NOT ALLOWED (it provides an extra-stroke minimum 5 mm)			
Sensor magnet			YES			
Maximum angle of twist of the piston rod for non-rotating version			0°/45°			
Work position			Any			
Duty cycle			20%			

** indicative average data that gets influenced by various factors such as the stroke, the type of motor, the cylinder version, etc ...

MECHANICAL FEATURES			Ø 32	Ø 50	Ø 63	Ø 80
Screw pitch (p)	mm		4			
Screw diameter	mm		14	16	20	30
Maximum liftable load	kg		100	200	400	800
	N		1000	2000	4000	8000
Maximum speed (V _{max})	mm/s		25			

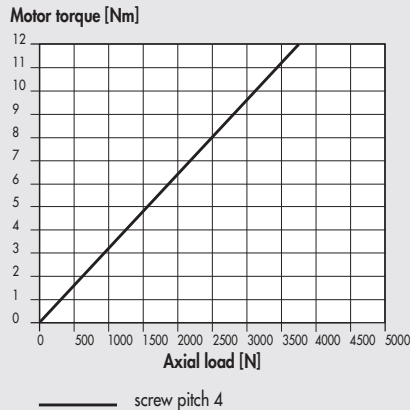
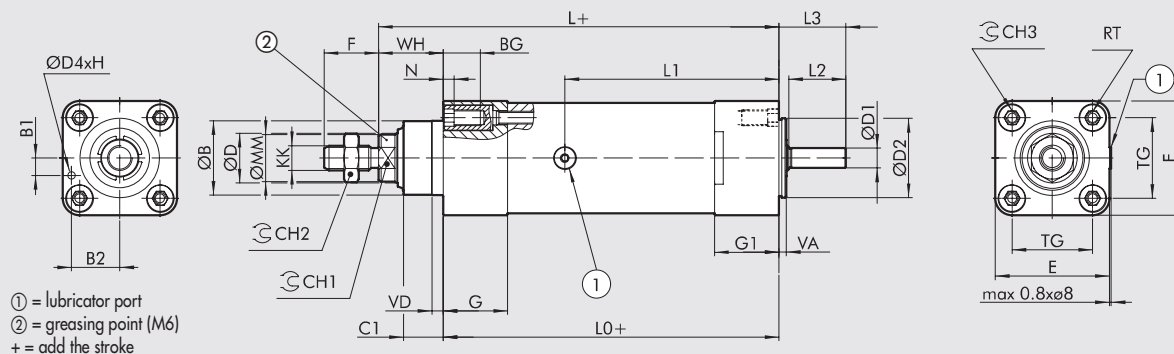
PISTON ROD SPEED AS A FUNCTION OF rpm

The graph shows the direct correspondence between the number of turns (1/min) and the translation speed of the stem (mm/s).
In any case all the other conditions and limitations of each specific cylinder will have to be complied.


DRIVE TORQUE AS A FUNCTION OF THE AXIAL LOAD APPLIED TO THE PISTON ROD

The friction generated in the mechanical system is taken into account.

Ø 32, Ø 50, Ø 63, Ø 80


CYLINDER DIMENSIONS (WITHOUT MOTOR)


Ø	ØB (d11)	B1	B2	BG	C1	CH1	CH2	CH3	ØD (f7)	ØD1 (h7)	ØD2	ØD4 (h7)	E	F	G	G1	H	KK	L	L0
32	30	7	19.5	14.5	16	17	17	6	20	8	32	3	46	22	26	26	9	M10x1.25	168.4	134
50	40	7	28	17.5	25	21	24	8	25	9	50	3	64.5	32	30	30	9	M16x1.5	201.4	157
63	45	9	34.5	17.5	25	26	24	8	30	14	63	3	75.5	32	32	46	9	M16x1.5	227.4	183
80	60	15	42.5	21	31	40	30	10	45	19	80	3	93	40	38	67	9	M20x1.5	331.4	248

Ø	L1	L2	L3	ØMM	N	RT	TG	VA	VD	WH
32	86.3	23	27	19	4.5	M6	32.5	3	4.5	34.4
50	100.8	24	28.4	24	5.5	M8	46.5	5.5	5.5	44.4
63	122.3	34	39.5	29.5	5.5	M8	56.5	5.5	6.5	44.4
80	181.1	41.7	47.2	44	5	M10	72	5.5	17.5	53.4

KEY TO CODES CYLINDER (WITHOUT MOTOR)

CYL	37 TYPE	1	V	32 BORE	0100 STROKE	1 SCREW PITCH	5 VERSION
	37 Electric actuators	1 ISO 15552 electric cylinder	V Acme screw	32 50 63 80		1 Screw pitch 4	5 Without antirotation IP40 6 With antirotation IP40 7 Without antirotation IP55/IP65 8 With antirotation IP55/IP65

ELECTRIC CYLINDER SERIES ELEKTRO ISO 15552 EK WITH DIRECT CURRENT MOTOR



Electric cylinders in the ELEKTRO ISO 15552 EK series (with ISO 15552 interface) can also be supplied with a DC motor for simplified control of the movement and reduced costs in terms of product and management system at the same time.

For the new line with DC motors, the forward movement of the piston rod can be obtained either with a trapezoidal screw and nut or a screw.

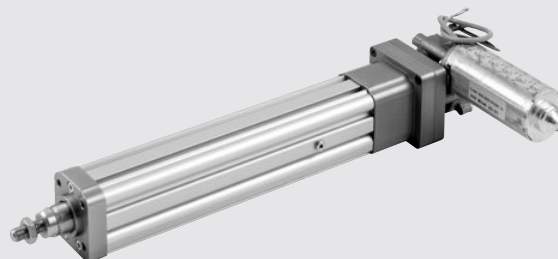
The cylinder incorporates an anti-rotation system obtained from two engineering polymer pads that run in the special slots inside the cylinder liner. On request, a version without anti-rotation is also available.

The piston comes complete with a magnet and the liner has slots for mounting magnetic sensors.

A system for greasing the screw/nut is included.

The motor supplied is ready equipped with an incorporated gearbox, it is axially connected to the cylinder and includes a pair of "Hall" sensors for possible position control.

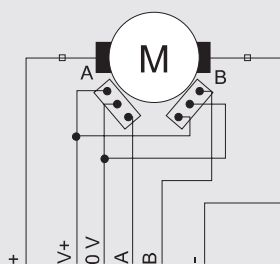
Can be coupled with 37D3112000 drive. 



TECHNICAL DATA		Lead screw	Trapezoidal screw
Screw pitch	mm	5	4
Screw diameter	mm	12	14
Piston rod thread		Male, M10x1.25	
Ambient temperature	°C	0 ÷ 40	
Degree of protection with motor mounted		IP40	
Minimum stroke	mm	At least 2 times the screw pitch	
Maximum stroke	mm	500	
Versions		In line, with or without anti-rotation of the piston rod	
Uncontrolled impact at the end of stroke		NOT ALLOWED (it provides an extra-stroke minimum 5 mm)	
Sensor magnet		YES	
Work position		Any	
Duty Cycle		20% **	
Motor		Direct current DC	
Supply voltage	VDC	24	
Input power with MAX torque	W	48	
Input current with MAX torque	A	2	
Max axial load	N	See graphic on next page	
Maximum speed	mm/s	See graphic on next page	
Maximum load in vertical position and motor powered off (reversibility)	N	100	Irreversible (max recommended 1000)
Interference suppression		LC circuit	
Direction of rotation		According to polarity	
Encoder		Two-channel, three motor pulses/revolution per channel, NPN.	
Resolution	mm/imp.	0.085	0.068

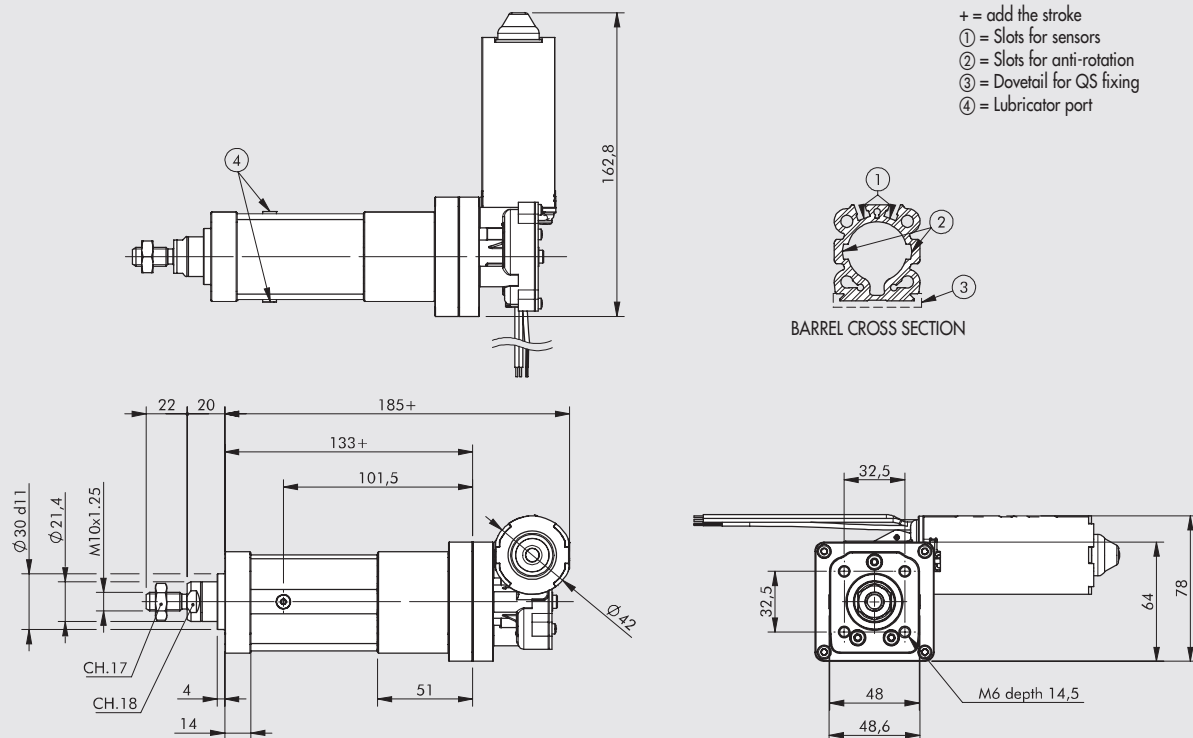
** maximum motor temperature, measured on the outer surface, must NOT exceed 70°C

CYLINDER CONNECTION AND WIRING DIAGRAM



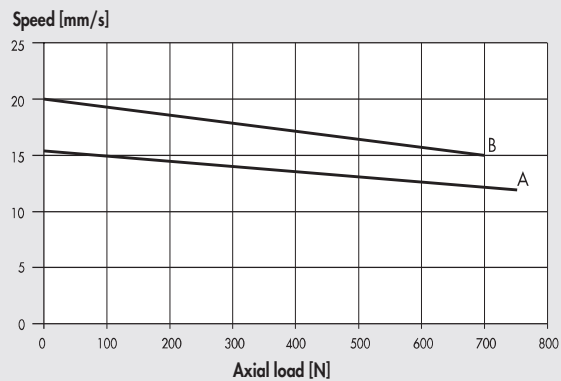
Function	Corresponding wire colour
Motor power supply +	Red
Motor power supply -	Blue
ENCODER Power supply + V+ 5 ÷ 20 VDC	Brown
Encoder 0 V supply	White
Encoder channel A (NPN)	Green
Encoder channel B (NPN)	Yellow

DIMENSIONS



AXIAL LOAD CURVES AS A FUNCTION OF SPEED

Ø32 with gearmotor CC 1/19.67 24VDC / max 2A



A = with trapezoidal screw 14x4
B = with lead screw 12x5

ACCESSORIES

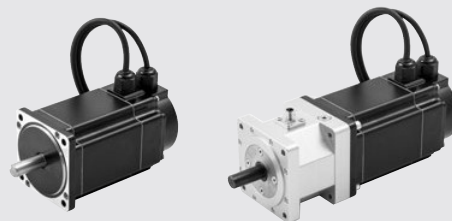
The accessories of the ELEKTRO ISO 15552 EK series electric cylinders can be used, with the exception of the rear clamps.

STEPPING MOTORS WITH IP65 ENCODER (WITH OR WITHOUT BRAKE)



For the ELEKTRO series actuators, Metal Work offers a range of stepping motors other than the standard one.

In case of interest, you can send a new specific request of actuator sizing that will be examined by our engineers given that such parameters as performance, features and dimensions may vary.



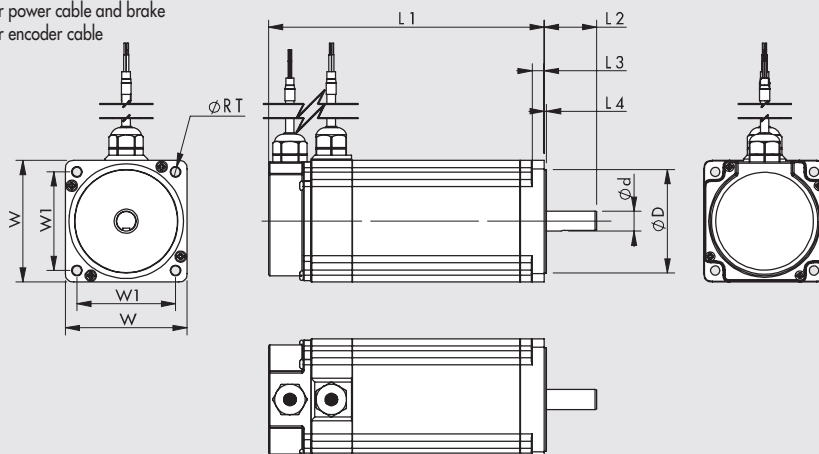
TECHNICAL DATA		MOTOR 37M8230002	MOTOR 37M8470002	MOTOR 37M8470003	MOTOR 37M3230002	MOTOR 37M3470002	MOTOR 37M3470003
Motor type		STEPPING + ENCODER			STEPPING with BRAKE + ENCODER		
Nominal torque	Nm	2.3	7.4	9.2	2.3	7.4	9.2
Coupling flange		NEMA 24	NEMA 34	NEMA 34	NEMA 24	NEMA 34	NEMA 34
Base step angle		1.8°±0.09°			1.8°±0.09°		
Bipolar current	A	5	6	6	5	6	6
Resistance	Ω	0.45	0.54	0.72	0.45	0.54	0.72
Inductance	mH	1.8	5	7.3	1.8	5	7.3
Bipolar holding torque	Nm	3	8.5	12	3	8.5	12
Rotor inertia	kgmm ²	69	360	540	69	360	540
Mass	kg	1.4	3.6	5	1.4	3.6	5
Temperature range	°C	from -10 to +50					
Degree of protection		IP65					
Motor encoder		Incremental					
Type of output circuit		Differential					
Output signal channels		2 channels (NO zero mark)					
Resolution	positions per rev	1000					
Encoder supply voltage	VDC	5					
BRAKE							
Braking torque	Nm	-			2	9	9
Supply voltage	VDC	-			24	24	24
Power consumption	W	-			11	18	18
Connecting time	ms	-			6	7	7
Delay time	ms	-			2	2	2
Connecting time	ms	-			25	40	40

DIMENSIONS OF VERSION WITHOUT BRAKE

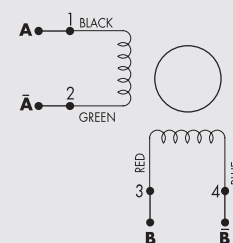
Motors are supplied with 1-metre long ready-wired cables, with free wires to the drive.

1 = access for power cable and brake

2 = access for encoder cable



WIRING DIAGRAM



Encoder	Color	Function
1	Black	GND
2	Red	VCC
3	Blue/White	EA-
4	Blue	EA+
5	Orange/White	EB-
6	Orange	EB+

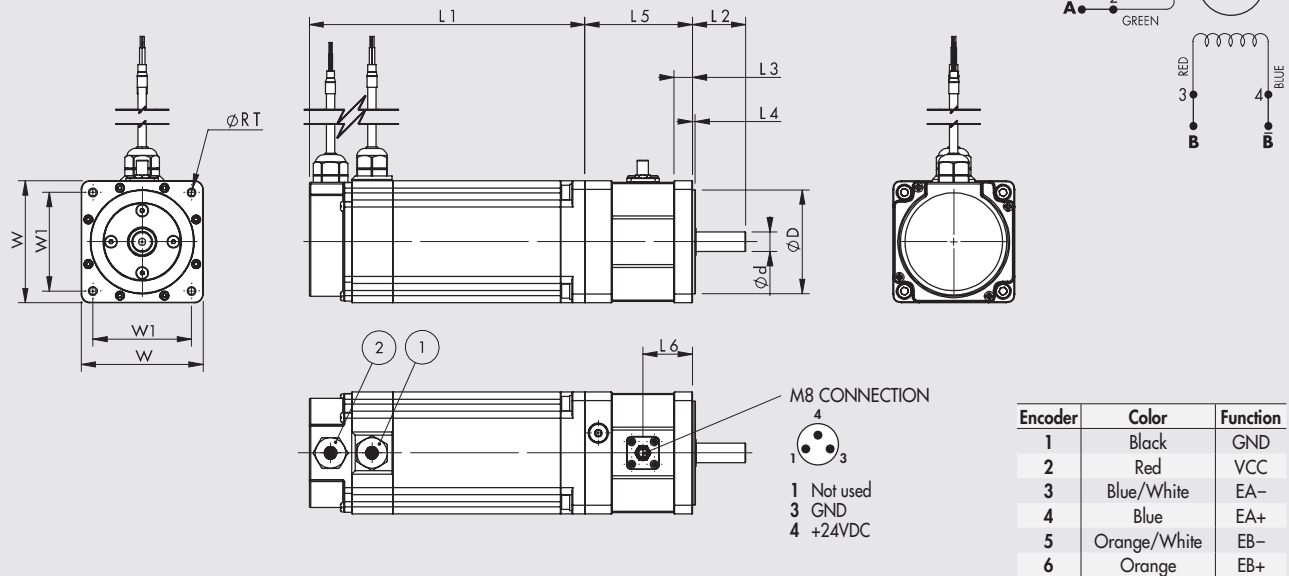
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.05	L1 ±1	L2 ±1	L3	L4 ±0.2	RT	W	W1
STEPPING + ENCODER	37M8230002	2.3	NEMA 24	10	36	107.2	21	5	1.6	5	60	50
	37M8470002	7.4	NEMA 34	14	73	156.5	37	9	1.6	6.5	85.85	69.58
	37M8470003	9.2	NEMA 34	14	73	194.5	37	9	1.6	6.5	85.85	69.58

Please contact our sales offices for further information and quotation.

DIMENSION OF VERSION WITH BRAKE

Motors are supplied with 1-metre long ready-wired cables, with free wires to the drive.

1 = access for power cable and brake
2 = access for encoder cable



Motor type	Motor code	Motor torque [Nm]	Braking torque [Nm]	ød 0/-0.013	øD ±0.25	L1 ±1	L2 ±1	L3	L4 ±0.2	L5	L6	RT	W	W1
STEPPING	37M3230002	2.3	2	8	38.1	107.2	21	15	1.6	65.8	32.9	4.25	60	47.16
+ ENCODER	37M3470002	7.4	9	14	73	156.5	37.5	13	1.6	76	35	6.25	86	69.58
+ BRAKE	37M3470003	9.2	9	14	73	194.5	37.5	13	1.6	76	35	6.25	86	69.58

STANDARD AND ALTERNATIVE SYNOPSIS

Motor type	Standard code	Alternative (with encoder)	Motor type	Standard code	Alternative	Motor type	Standard code	Alternative
STEPPING	37M1470000	37M8470003	STEPPING	37M8220000	37M8230002	STEPPING	37M3220000	37M3230002
	37M1220000	37M8230002	+ ENCODER	37M8230000	37M8230002	+ ENCODER	37M3230000	37M3230002
				37M8470000	37M8470003	+ BRAKE	37M3430000	37M3470002
							37M3460000	37M3470002
							37M3450000	37M3470002
							37M3470000	37M3470003

ACCESSORIES FOR BRAKE

CABLE WITH STRAIGHT CONNECTOR

Code	Description
02400A0100	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 1 m
02400A0250	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 2.5 m
02400A0500	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 5 m
02400A1000	M8 female 3 PIN HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

CABLE WITH 90° CONNECTOR

Code	Description
02400B0100	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 1 m
02400B0250	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 2.5 m
02400B0500	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 5 m
02400B1000	M8 female 3 PIN 90° HIGH FLEX CL6 connector with cable L = 10 m

Note: Very flexible cables, class 6 according to IEC 60228

FIELD BUS DRIVES FOR STEPPING MOTORS



This range comprises mini-step bipolar chopper drives of up to 1/128 steps, with a fieldbus interface for driving STEPPING motors of all sizes, with a rated current of up to 12A.

The fieldbuses available are Profinet IO, EtherCAT, Ethernet/IP.

These drives consist of a board housed in a metal box, and they are fitted with removable screw connectors with separate logic and power.

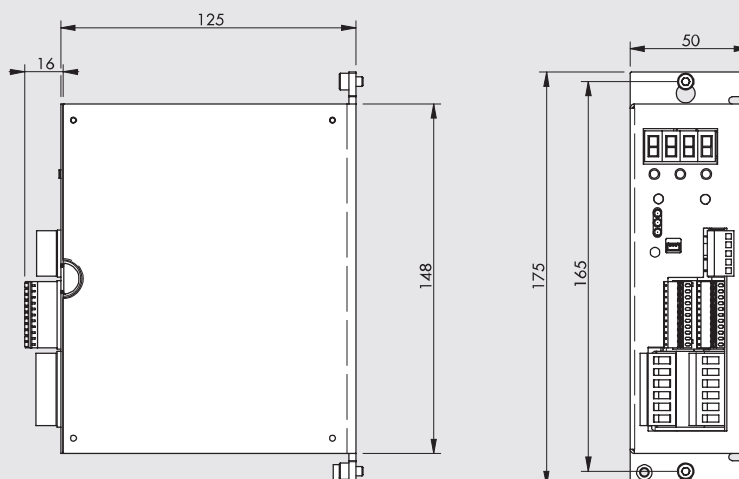
Each drive:

- features digital and analogue I/O;
- can control differential and single-ended encoders;
- can control the parking brake and perform reset procedures by means of limit switches;
- can handle power supply voltages of up to 125VDC and up to 90VAC;
- is space saving;
- offers high versatility in use;
- provides automatic and configurable power reductions.



DRIVE TECHNICAL DATA							
Drive code		37D1442001	37D1442002	37D1442003	37D1642000	37D1642004	37D1642005
Model		HT721			HT 741		
STEPPING motor drive		Metal box					
Dimensions	mm	170 x 139 x 49					
Connectors		Screw type					
Onboard power supply		NO					
Control (fieldbus)		Profinet IO	EtherCAT	Ethernet/IP	Profinet IO	EtherCAT	Ethernet/IP
Operating voltage range (power)	VDC	24 - 90			24 - 140		
	VAC	18 - 60			18 - 100		
Operating voltage range (logic)	VDC	24					
Current range	A	1 - 7			1 - 12		
Pulses per rev values selected by dip-switch	pulse/rev	200, 400, 800, 1000, 1600, 3200, 6400, 12800, 25600					
Encoder control		Differential 5V, Single Ended 12 - 24V					
Automatic current reduction with motor off	%	YES (0, 25, 50, 100%)					
Type of inputs/analogue outputs	VDC	0 - 10					
Type of inputs/digital outputs		PNP - NPN configurable opto-insulated					
Protections		Overtemperature, overvoltage, undervoltage, short-circuit protection at digital outputs					
Weight	g	720					

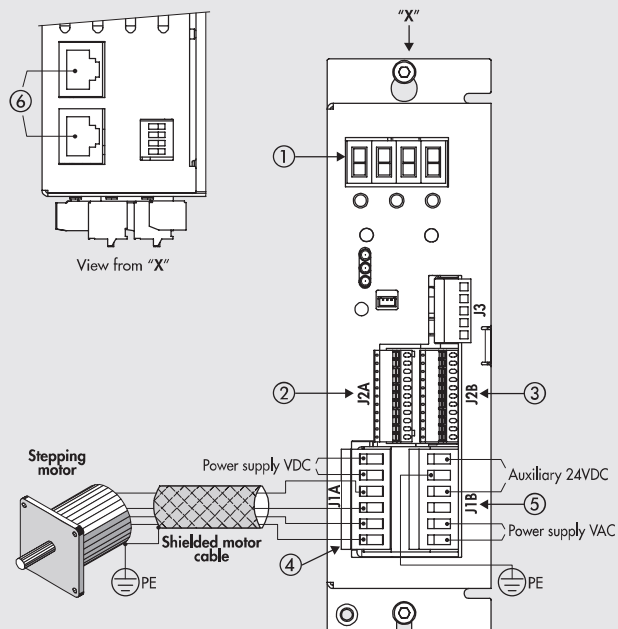
OVERALL DIMENSIONS



WIRING DIAGRAM FOR STEPPING MOTOR DRIVES

- ① 4-DIGIT DISPLAY and PROGRAMMING KEYS: to set some system operating parameters.
- ② ENCODER- DIGITAL INPUT CONNECTORS: push-pull, line-driver and open-collector encoders can be connected.
There are 3 PNP and NPN user configurable digital inputs.
- ③ DIGITAL OUTPUT TO ANALOG INPUT CONNECTOR: there are 3 user configurable digital outputs and three 0-10V analogue inputs.
- ④ DC MOTOR PHASE AND POWER SUPPLY STAGE CONNECTOR.
- ⑤ AC POWER SUPPLY STAGE AND LOGIC STAGE CONNECTOR.
- ⑥ Profinet IO, EtherCAT, EtherNet/IP FIELDBUS CONNECTION

Log on to www.metalwork.it to view the instruction manual.



NOTES



NOTES

CUSTOM VALVES SUMMARY

VALVES



- MINIVALVES SERIES VME, MECHANICALLY HAND OPERATED

G3.4



- VALVES SERIES 70, HAND OPERATED

G3.6



- VALVES SERIES 70, MECHANICALLY OPERATED, 1/8"

G3.9



- VALVES SERIES 70 PNEUMATIC

G3.12



- VALVES SERIES 70, SOLENOID/PNEUMATIC

G3.13

- REPOSITIONING FOR VALVES SERIES 70

G3.18



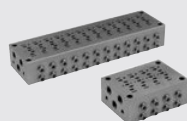
- PILOT WITH THROUGH BASE

G3.19



- SOLENOID VALVE CNOMO WITH HAND LEVER OPERATOR

G3.20



- MULTIPLE BASES FOR MACH 18 VALVES

G3.21



- VALVES ISO 5599/1, PNEUMATIC SERIES IPV

G3.22



- VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV

G3.23

VALVE ISLANDS AND FIELDBUS

- **HDM FOR THE SPLASH AREA**

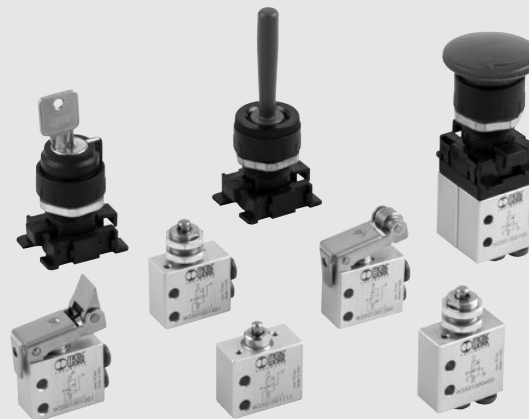
G3.25

- **MULTIMACH WITH FRONT ATTACHMENT**

G3.27

MINIVALVES SERIES VME, MECHANICALLY HAND OPERATED

- Minivalves with 2/2 or 3/2 NO NC poppet
- Installation in any position
- Push-in fittings for pipe Ø 4, Ø 6 mm and M5 on the valve body
- Low actuation force
- Rapid, accurate signal
- Mechanical actuation
- The 2 places adapter allows manual actuation of 1 or 2 VME valves with manual Ø 22 panel actuators. Thus it is possible to obtain 3/2, 5/2, 5/3 open centre and 5/3 pressure centre pneumatic functions.
- On request, it is possible to place a NC-NO electric switch next to a VME valve for mixed solenoid/pneumatic signals.

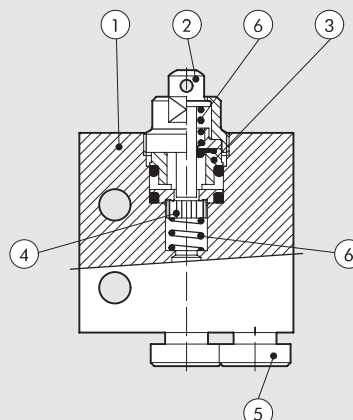


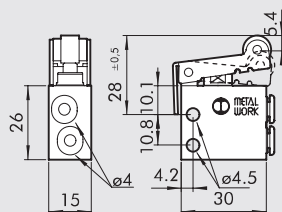
TECHNICAL DATA

Valve fitting port		Push-in fitting for pipe Ø 4 or Ø 6 and M5 (axial or side)
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous
Type		With poppet
Versions		Mechanical and manual
Operators:		With Plunger – Plunger for wall-mounting – Roller lever – Unidirectional roller lever
• mechanical		Depending on the type of actuation panel selected
• manual		
Operating pressure	bar	from 0.5 to 10
Operating temperature range	°C	from -10 to +60
Nominal diameter	mm	2.5
Conductance C	Nl/min · bar	16.5
Critical ratio b	bar/bar	0.03
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	35
Flow rate at 6 bar ΔP 1 bar	Nl/min	60
Actuation force – Plunger at 6 bar	N	8
Recommended lubricant		ISO and UNI FD22
Installation		In any position
Compatibility with oils		See chapter Z1

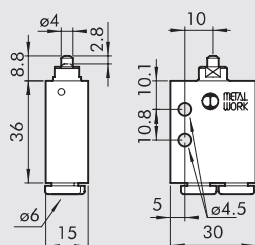
COMPONENTS

- ① VALVE BODY: Aluminium
- ② BUTTON: chemically nickel-plated brass
- ③ DISTANCE PLATES: Brass
- ④ GASKETS: NBR
- ⑤ PUSH-IN FITTING CARTRIDGES: stainless steel, brass and plastic
- ⑥ SPRINGS: stainless steel

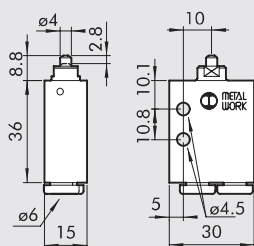


ROLLER LEVER 2/2 NC Ø 4 - SIDE FITTINGS


Symbol	Code	Description	Weight [g]
	8286919	VME2-0S NC Ø4	42

PLUNGER 3/2 NO Ø 6 - AXIAL FITTINGS


Symbol	Code	Description	Weight [g]
	W3501000130	VME1-30 NO Ø6	51

PLUNGER 3/2 NC Ø 6 - AXIAL FITTINGS


Symbol	Code	Description	Weight [g]
	W3501000131	VME1-31 NC Ø6	51

VALVES SERIES 70, HAND OPERATED

TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure range:				
• version with direct control	bar	Vacuum ÷ 10		
• Pilot-assisted version	bar	from 2.5 to 10		
Operating temperature range		from -10 to +60		
Nominal diameter	mm	5	7.5	15
Conductance C	NI/min · bar	121.43	264.26	971.43
Critical ratio b	bar/bar	0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar	NI/min	400	750	3200
Flow rate at 6 bar ΔP 1 bar	NI/min	550	1100	4600

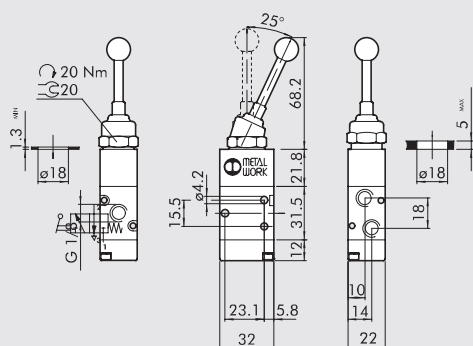


SYNOPTIC, SIZES AND VERSION

M A V FAMILY	2 DIMENSIONS	3 FUNCTION	P P OPERATION 14	S REPEATED OPERATION (12)	N C FURTHER DETAILS
MAV manual valves	2 1/8" 3 1/4" 4 1/2"	3 3/2 5 5/2 6 5/3 8 2 x 3/2	PP drawer VL axial lever LE 90° lever BRE arranged for manual panel actuators SP special	A pneumatic/ mechanical spring* S mechanical spring B bistable D differential O stable for 5/3 P pneumatic	NC normally closed NO normally open OO no indication CC closed centres OC open centres PC pressure centres SP special
*on demand					

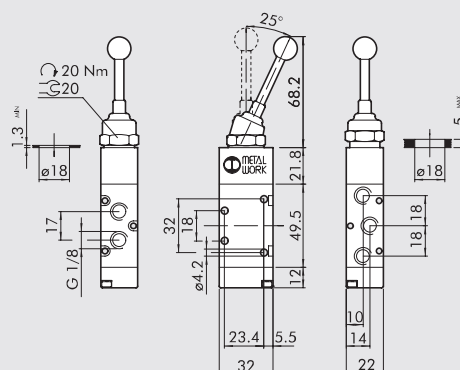
VALVES SERIES 70, HAND OPERATED, 1/8"

FRONT LEVER 3/2, 1/8" MONOSTABLE

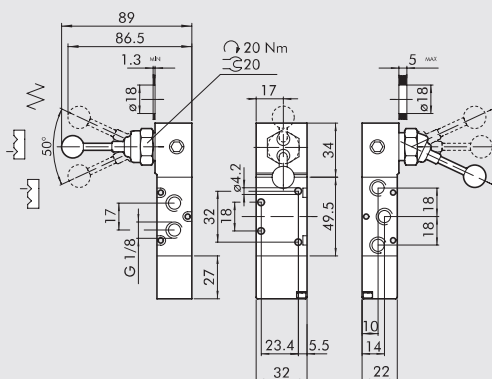


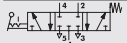
Symbol	Code	Abbrev.	Weight [g]
	8800801	MAV 23 VLS NC	130

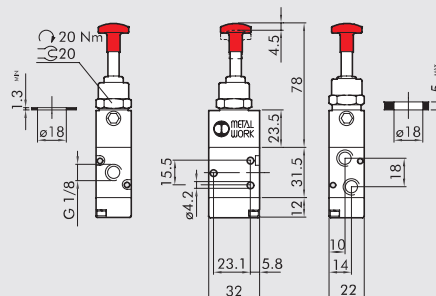
FRONT LEVER 5/2, 1/8" MONOSTABLE

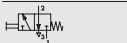


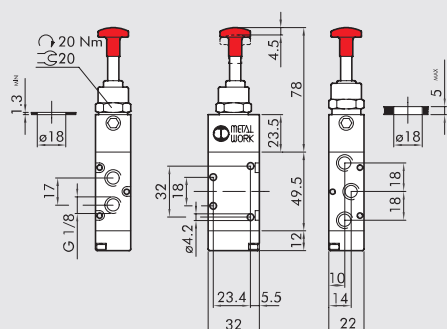
Symbol	Code	Abbrev.	Weight [g]
	8826334	MAV 25 VLS OO	156

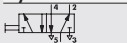
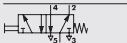
90° ANGULAR LEVER 5/3, 1/8" WITH 2 STABLE POSITIONS


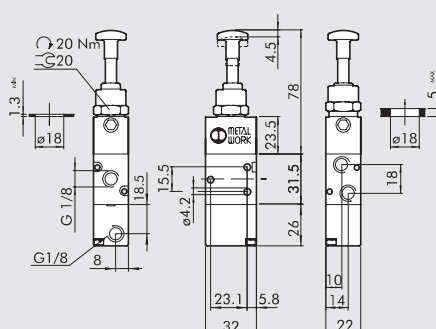
Symbol	Code	Abbrev.	Weight [g]
	8829106	MAV 26 SPB CC	242
	8294569	MAV 26 SPB OC	242

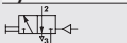
RED DRAWER 3/2, 1/8"


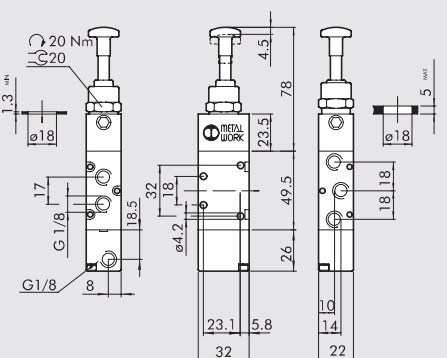
Symbol	Code	Abbrev.	Weight [g]
	7010001301	MAV 23 PPB OO	134
	7010001201	MAV 23 PPS NC	134

RED DRAWER 5/2, 1/8"


Symbol	Code	Abbrev.	Weight [g]
	7010001601	MAV 25 PPB OO	160
	7010001501	MAV 25 PPS OO	160

DRAWER 3/2, 1/8" PNEUMATIC RETURN


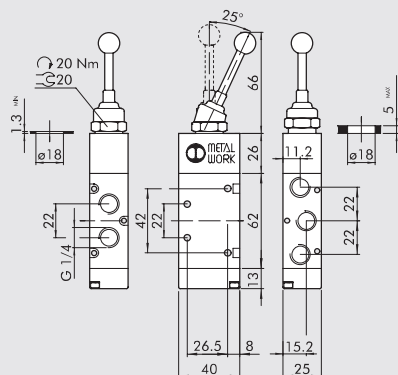
Symbol	Code	Abbrev.	Weight [g]
	8826503	MAV 23 PPP NC	148

DRAWER 5/2, 1/8" PNEUMATIC RETURN


Symbol	Code	Abbrev.	Weight [g]
	8287369	MAV 25 PPP NC	174

NOTES

FRONT LEVER 5/2, 1/4" MONOSTABLE



Symbol	Code	Abbrev.	Weight [g]
	8826332	MAV 35 VLS OO	194

[illegible]

Symbol	Code	Abbrev.	Weight [g]
	8826526	MAV 36 LES SP	354

[illegible]

Symbol	Code	Abbrev.	Weight [g]
	8396201	MAV 36 LES SP	354

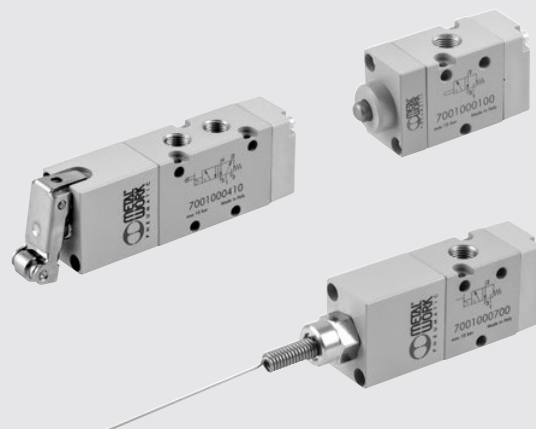
G3.8

VALVES SERIES 70, MECHANICALLY OPERATED, 1/8"



TECHNICAL DATA

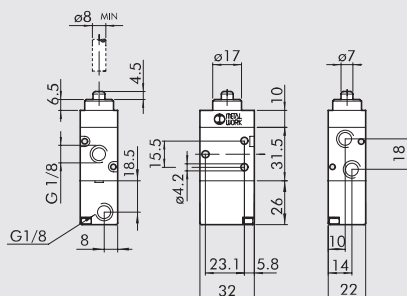
Thread at valve ports		1/8"
Operation force at 6 bar:		
• Version with direct control	N	50
• Pilot-assisted Version	N	6
Operating pressure:		
• Version with direct control	bar	from vacuum to 10
• Pilot-assisted version	bar	from 2.5 to 10
Operating temperature range	°C	from -10 to +60
Nominal diameter	mm	5
Conductance C	NI/min · bar	121.43
Critical ratio b	bar/bar	0.32
Flow rate at 6 bar ΔP 0.5 bar	NI/min	400
Flow rate at 6 bar ΔP 1 bar	NI/min	550



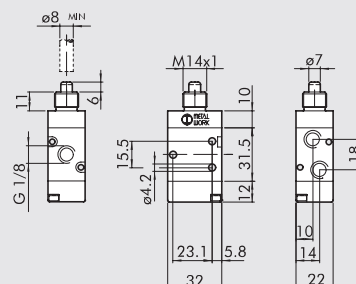
SYNOPTIC, SIZES AND VERSION

MEV FAMILY	2 DIMENSIONS	3 FUNCTION	T A OPERATORS 14	S RESETTING (12)	N C FURTHER DETAILS
MEV mechanically operated valves	2 1/8"	3 3/2 5 5/2	TA plunger BR bidirectional roller UR unidirectional roller TS sensitive plunger RS sensitive roller AS sensitive aerial LL frontal roller lever LV unidirectional lever LS sensitive lever LR extended roller lever	S mechanical springs A pneumatic/mechanical spring* P pneumatic B bistable	NC normally closed OO 5/2 SP special
				*on demand	

PLUNGER 3/2, 1/8" PNEUMATIC RETURN



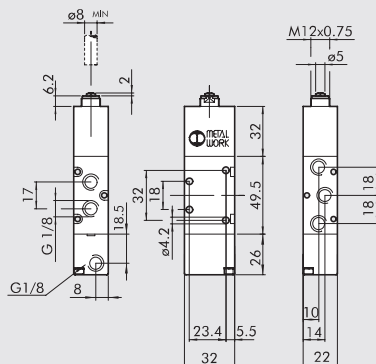
PLUNGER 3/2, 1/8" FOR FIXING TO PANEL



Symbol	Code	Abbrev.	Weight [g]
	8825961	MEV 23 TAP OO	102

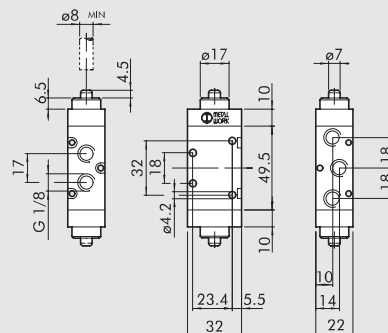
Symbol	Code	Abbrev.	Weight [g]
	8829123	MEV 23 TAS SP	102

PILOT-ASSISTED PLUNGER 5/2, 1/8" PNEUMATIC RETURN



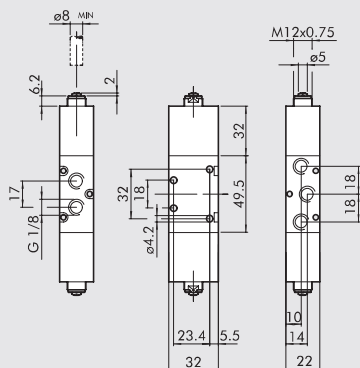
Symbol	Code	Abbrev.	Weight [g]
	7010001902	MAV 25 BTP OO	166

DOUBLE PLUNGER 5/2, 1/8"



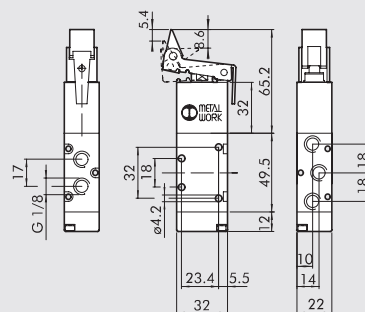
Symbol	Code	Abbrev.	Weight [g]
	7001000130	MEV 25 TAB OO	143

PILOT-ASSISTED DOUBLE PLUNGER 5/2, 1/8"



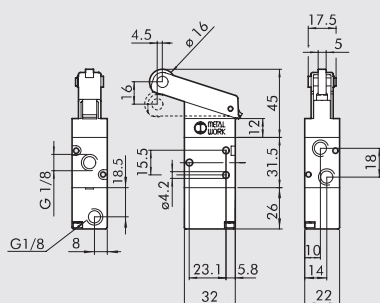
Symbol	Code	Abbrev.	Weight [g]
	7001000230	MEV 25 TSB OO	233

PILOT-ASSISTED UNIDIRECTIONAL ROLLER LEVER 5/2, 1/8"



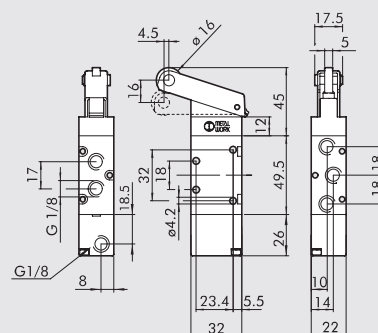
Symbol	Code	Abbrev.	Weight [g]
	7001000413	MEV 25 LUS OO	189

ROLLER LEVER 3/2, 1/8" PNEUMATIC RETURN



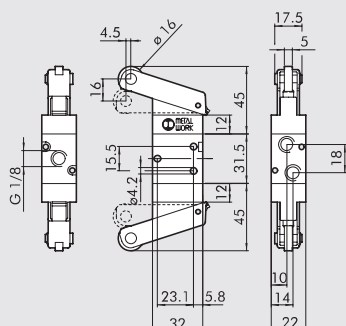
Symbol	Code	Abbrev.	Weight [g]
	8293308	MEV 23 BRP NC	144

ROLLER LEVER 5/2, 1/8" PNEUMATIC RETURN



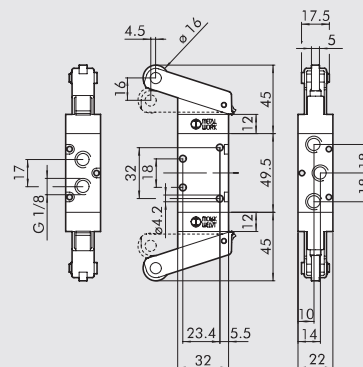
Symbol	Code	Abbrev.	Weight [g]
	88301P4	MEV 25 BRP OO	170

DOUBLE ROLLER LEVER 3/2, 1/8"



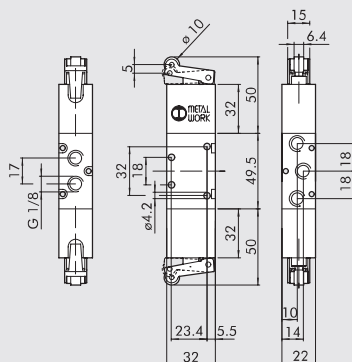
Symbol	Code	Abbrev.	Weight [g]
	7001000530	MEV 23 BRB OO	223

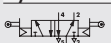
DOUBLE ROLLER LEVER 5/2, 1/8"



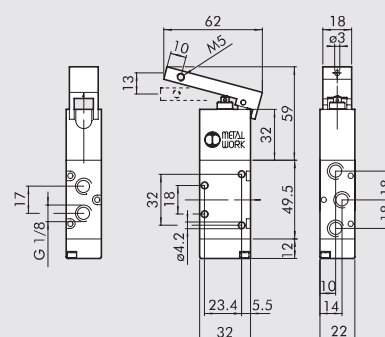
Symbol	Code	Abbrev.	Weight [g]
	7001000540	MEV 25 BRB OO	285

PILOT-ASSISTED DOUBLE ROLLER LEVER 5/2, 1/8"



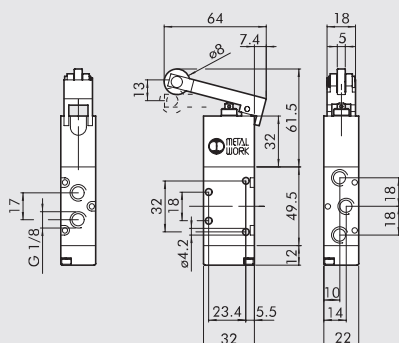
Symbol	Code	Abbrev.	Weight [g]
	7001000430	MEV 23 RSB OO	255

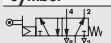
PILOT-ASSISTED LEVER WITHOUT ROLLER 5/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	7001000411	MEV 25 LSS OO	209

EXTENDED PILOT-ASSISTED ROLLER LEVER 5/2, 1/8"

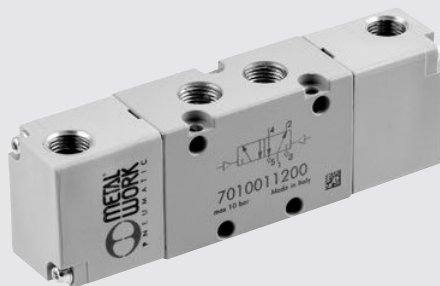


Symbol	Code	Abbrev.	Weight [g]
	7001000412	MEV 25 LRS OO	213

NOTES

VALVES SERIES 70, PNEUMATIC

TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure	bar	from vacuum to 10		
Minimum pilot pressure				
• monostable	bar	2.5		
• bistable	bar	1		
Operating temperature range	°C	from -10 to +60		
Nominal diameter	mm	5	7.5	15
Conductance C	Nl/min · bar	121.43	264.26	971.43
Critical ratio b	bar/bar	0.32	0.27	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	4600
TRA / TRR monostable at 6 bar	ms	6/15	7/15	16/46
TRA / TRR bistable at 6 bar	ms	7/7	7/7	16/16

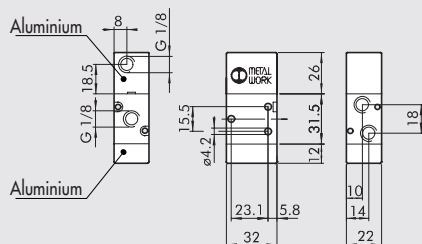


SYNOPTIC, SIZES AND VERSION

P N V		2		3		P N		S		N C	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
PNV	pneumatic valves	2	1/8"	3	3/2	PN	pneumatic	S	mechanical springs	OO	5/2
		3	1/4"	5	5/2			B	bistable	NC	normally closed
		4	1/2"	6	5/3			D	differential	NO	normally open
								O	stable for 5/3	CC	closed centres
								A	pneumatic/mechanical spring*	OC	open centres
								*on demand		PC	pressure centres

VALVES SERIES 70 PNEUMATIC 1/8"

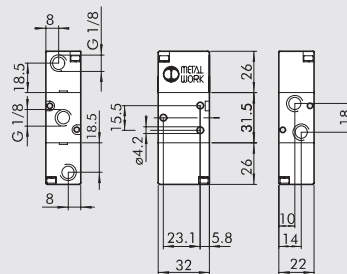
MONOSTABLE 3/2, NC 1/8" FOR HIGH TEMPERATURE



Working temperature: -10° to +80°C / Use ethylic alcohol anti-freeze

Symbol	Code	Abbrev.	Weight [g]
	8000211	PNV 23 PNS	148

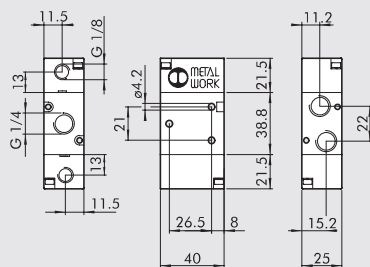
DIFFERENTIAL BISTABLE 3/2, 1/8"



Symbol	Code	Abbrev.	Weight [g]
	8830196	PNV 23 PND NC	96

VALVES SERIES 70 PNEUMATIC 1/4"

DIFFERENTIAL BISTABLE 3/2, 1/4"



Symbol	Code	Abbrev.	Weight [g]
	8829108	PNV 33 PND NC	134

NOTES

VALVES SERIES 70, SOLENOID/PNEUMATIC



TECHNICAL DATA		1/8"	1/4"	3/8"	1/2"
Operating pressure:					
• monostable	bar	from 2.5 to 10			
• bistable	bar	from 1 to 10			
• asserved	bar	from vacuum to 10			
Minimum pilot pressure	bar	2.5			
Operating temperature range	°C	from -10 to +60			
Nominal diameter	mm	5	7.5	13.3	15
Conductance C	Nl/min · bar	121.43	264.26	505.52	971.43
Critical ratio b	bar/bar	0.32	0.27	0.32	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	1560	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	2150	4600
TRA / TRR monostable at 6 bar	ms	15/35	19/45	21/72	36/60
TRA / TRR bistable at 6 bar	ms	20/20	21/21	18/18	30/30
Hand operator		bistable			
Coil voltage values		12; 24 VDC - 24; 110; 220 VAC 50/60Hz			
Power		2 W (DC) 3VA (AC)			
Voltage tolerance	%	from -10 to +15			
Insulation class		F 155			
Maximum coil nut torque	Nm	1			



SYNOPTIC, SIZES AND VERSION

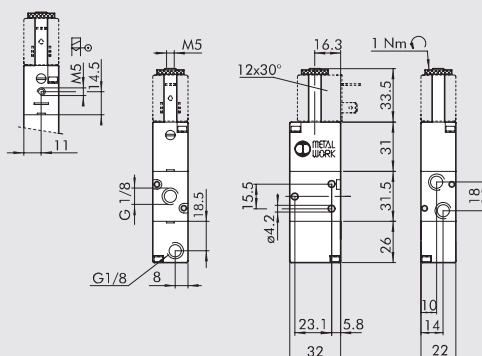
SOV FAMILY		2 DIMENSIONS	3 FUNCTION	SO OPERATORS 14	S RESETTING (12)	NC FURTHER DETAILS
SOV solenoid/ pneumatic	2	1/8"	3 3/2	SO solenoid	S mechanical springs	NC normally closed
	3	1/4"	5 5/2	SE solenoid assisted	B bistable	NO normally open
	C	3/8"	6 5/3		D differential	CC closed centres
	4	1/2"			P pneumatic	OC open centres
					♦ A pneumatic/mechanical spring	PC pressure centres
					L pneumatic spring	OO no indication
						▲ SP special
						ML hand lever operator

♦ On demand

▲ Only available for size 1/8", 1/4" and 3/8"

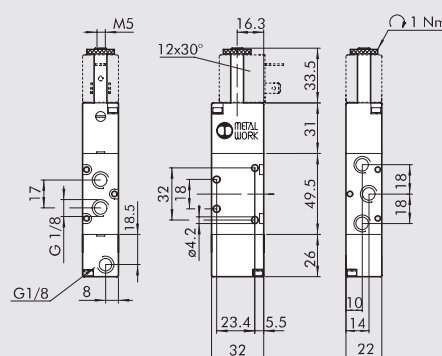
VALVES SERIES 70, SOLENOID/PNEUMATIC, PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/8"

MONOSTABLE 3/2 NC, 1/8" PNEUMATIC RETURN



Symbol	Code	Abbrev.	Weight [g]
	7010020800	SOV 23 SOP NC	114
	7010020510	SOV 23 SEP NC	114

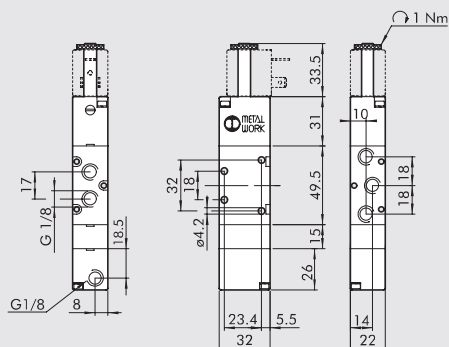
MONOSTABLE 5/2, 1/8" PNEUMATIC RETURN



Symbol	Code	Abbrev.	Weight [g]
	7010021501	SOV 25 SOP OO	142

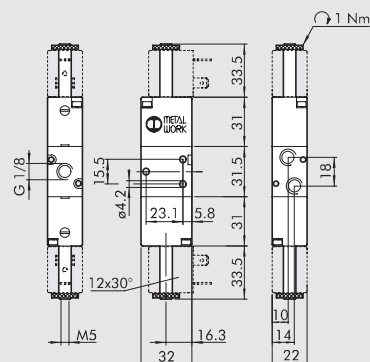
Please contact our sales offices for further information and quotation.

MONOSTABLE 5/3, 1/8" PNEUMATIC RETURN



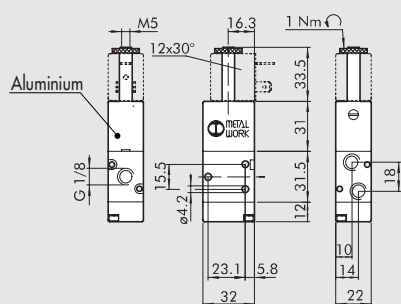
Symbol	Code	Abbrev.	Weight [g]
	7010022800	SOV 26 SOP CC	204

BISTABLE DIFFERENTIAL 3/2, 1/8"



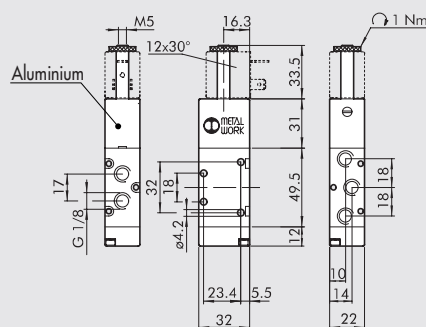
Symbol	Code	Abbrev.	Weight [g]
	8287210	SOV 23 SOD NC	135

MONOSTABLE 3/2, NC 1/8" HAND-OPERATED ON THE FEED SIDE



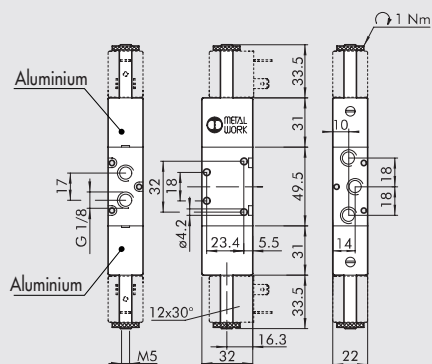
Symbol	Code	Abbrev.	Weight [g]
	8830195	SOV 23 SOS NC SP	100

MONOSTABLE 5/2, 1/8" HAND-OPERATED ON THE FEED SIDE



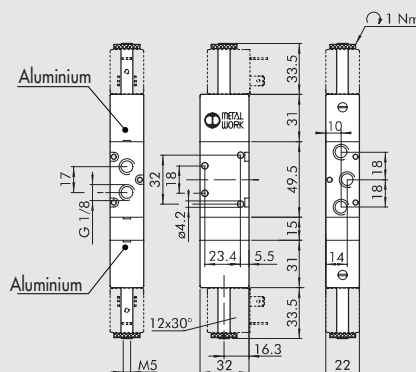
Symbol	Code	Abbrev.	Weight [g]
	8286807	SOV 25 SOS SP	128

BISTABLE 5/2, 1/8" HAND-OPERATED ON THE FEED SIDE

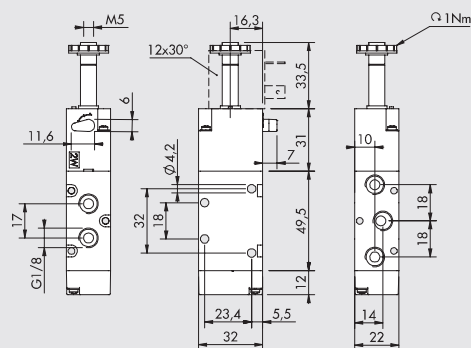


Symbol	Code	Abbrev.	Weight [g]
	8286808	SOV 25 SOB SP	160

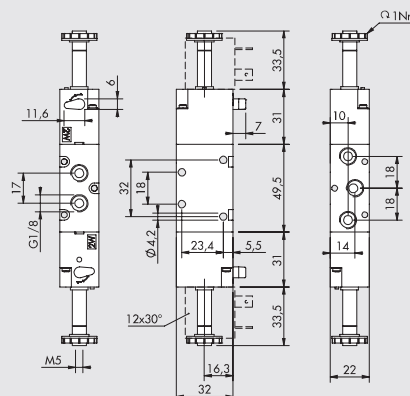
MONOSTABLE 5/3, 1/8" HAND-OPERATED ON THE FEED SIDE



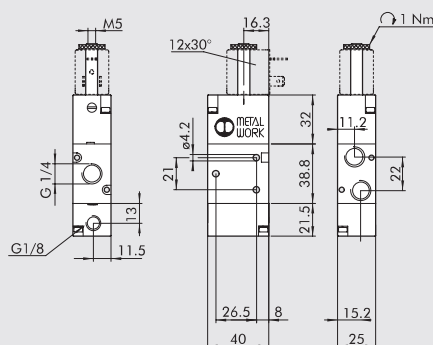
Symbol	Code	Abbrev.	Weight [g]
	8286911	SOV 26 SOS SP	190

MONOSTABLE 5/2 1/8" HAND LEVER OPERATOR


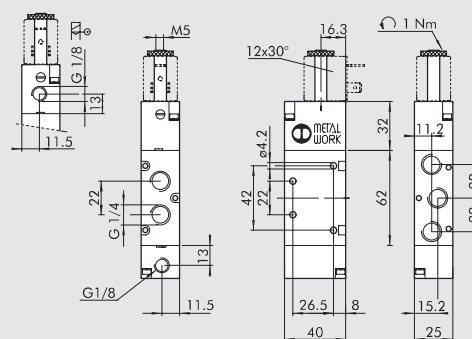
Symbol	Code	Abbrev.	Weight [g]
	88291AT	SOV 25 SOS ML	128

BISTABLE 5/2 1/8" HAND LEVER OPERATOR


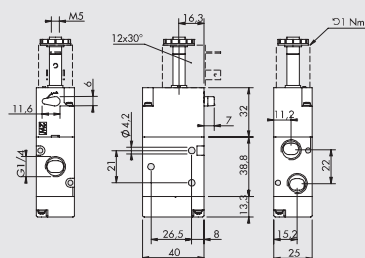
Symbol	Code	Abbrev.	Weight [g]
	88291AV	SOV 25 SOB ML	160

VALVES SERIES 70, SOLENOID/PNEUMATIC, PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/4"
MONOSTABLE 3/2 NC, 1/4" PNEUMATIC RETURN


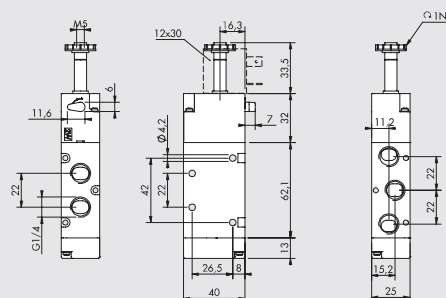
Symbol	Code	Abbrev.	Weight [g]
	7020020800	SOV 33 SOP OO	166

MONOSTABLE 5/2, 1/4" PNEUMATIC RETURN


Symbol	Code	Abbrev.	Weight [g]
	7020021700	SOV 35 SOP OO	214
	7020021800	SOV 35 SEP OO	214

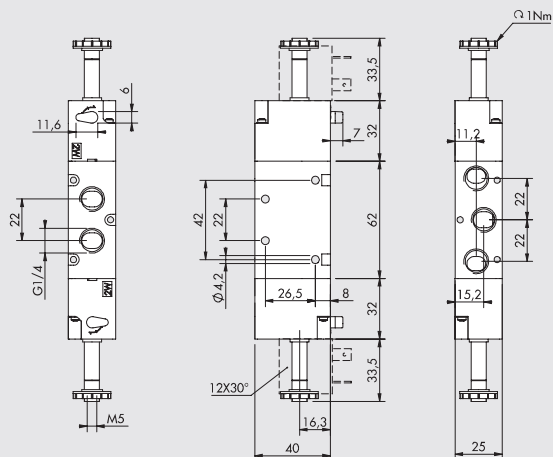
MONOSTABLE 3/2 NC 1/4" HAND LEVER OPERATOR


Symbol	Code	Abbrev.	Weight [g]
	88291C1	SOV 33 SOS NC ML	152

MONOSTABLE 5/2 1/4" HAND LEVER OPERATOR


Symbol	Code	Abbrev.	Weight [g]
	88291AR	SOV 35 SOS ML	200

BISTABLE 5/2 1/4" HAND LEVER OPERATOR

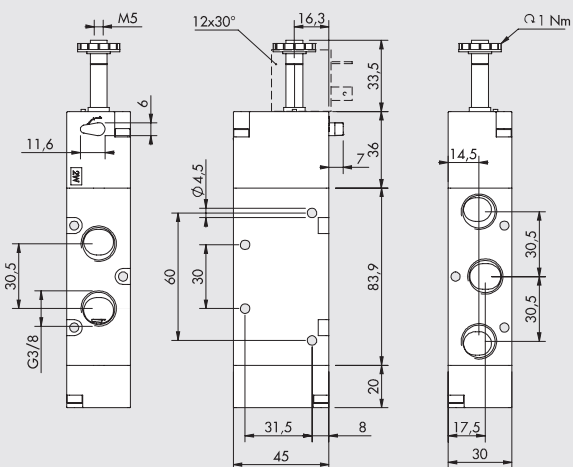


Symbol	Code	Abbrev.	Weight [g]
	88291AS	SOV 35 SOB ML	236

NOTES

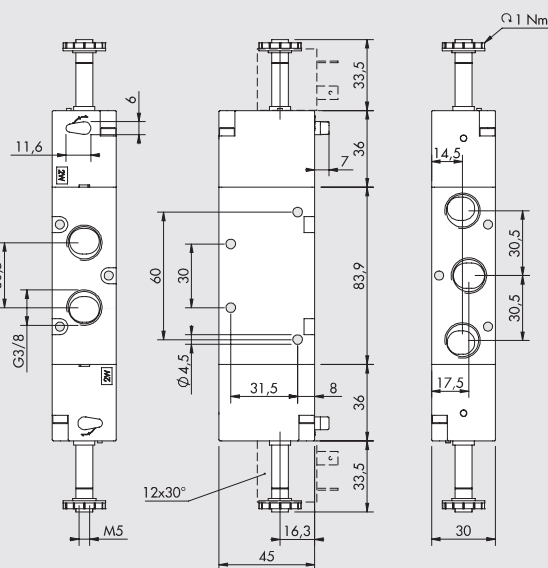
VALVES SERIES 70, SOLENOID/PNEUMATIC, 3/8"

MONOSTABLE 5/2 3/8" HAND LEVER OPERATOR

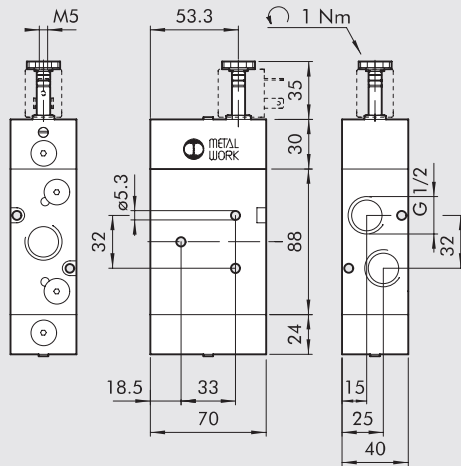


Symbol	Code	Abbrev.	Weight [g]
	8827298	SOV C5 SOS ML	361

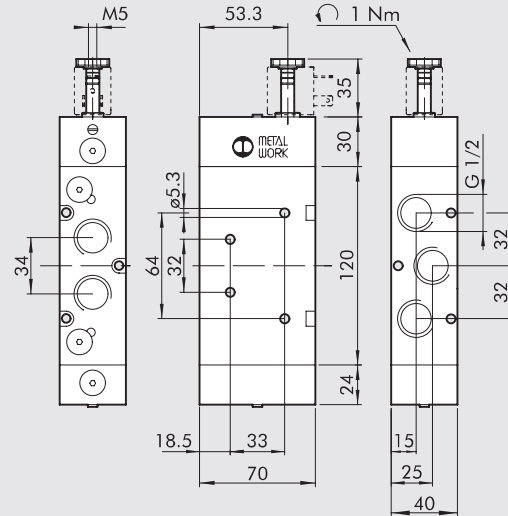
BISTABLE 5/2 3/8" HAND LEVER OPERATOR



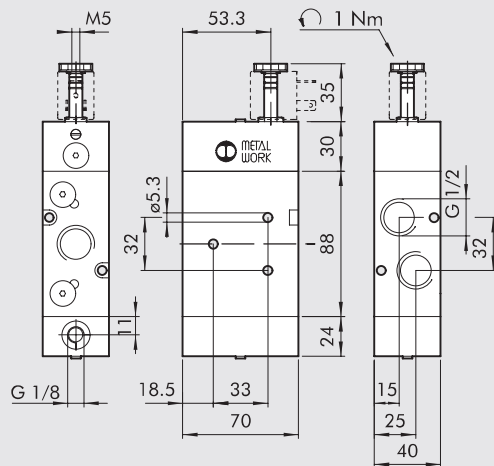
Symbol	Code	Abbrev.	Weight [g]
	88272A5	SOV C5 SOB ML	400

VALVES SERIES 70, SOLENOID/PNEUMATIC, 1/2"
MONOSTABLE 3/2 NO, 1/2" PNEUMATIC SPRING


Symbol	Code	Abbrev.	Weight [g]
	7030020820	SOV 43 SOL NO	940

MONOSTABLE 5/2, 1/2" PNEUMATIC SPRING


Symbol	Code	Abbrev.	Weight [g]
	7030021820	SOV 45 SOL OO	1120

MONOSTABLE 3/2 NC, 1/2" PNEUMATIC RETURN


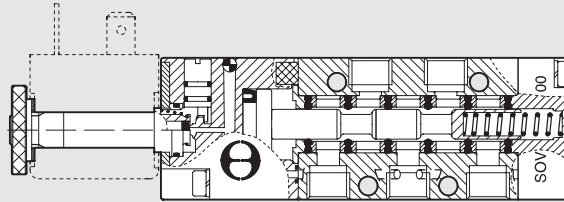
Symbol	Code	Abbrev.	Weight [g]
	7030020201	SOV 43 SOP NC	930

NOTES

REPOSITIONING FOR VALVES SERIES 70

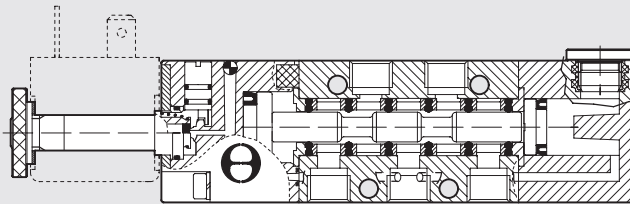
MONOSTABLE WITH "S" MECHANICAL SPRING RETURN

When the solenoid pilot deactivates, the valve is switched by a mechanically-operated spring.



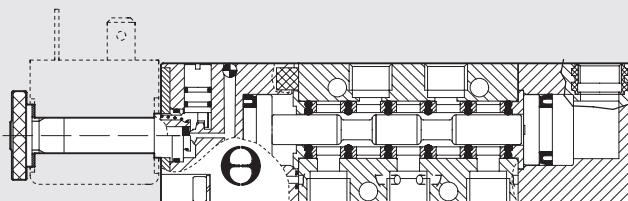
MONOSTABLE WITH "L" PNEUMATIC SPRING RETURN

When the solenoid valve is actuated, the valve switches when the diameter of the control piston is greater than that of the pneumatic spring piston.



BISTABLE WITH SOLENOID CONTROL AND "P" PNEUMATIC CONTROL

When the solenoid valve is actuated, the valve only switches when pressure is cut out from the pneumatic control, because both pistons have the same diameter.



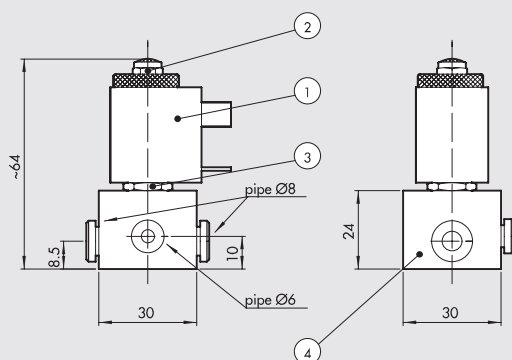
PILOT WITH THROUGH BASE



The base has a through hole with push-in fittings for a $\varnothing 8$ pipe. A 3/2 NC solenoid pilot is mounted on the base, and the output port is connected to a push-in fitting for a $\varnothing 6$ pipe. A silencer is mounted on the pilot drain side. The unit comes complete with a 22-mm coil.

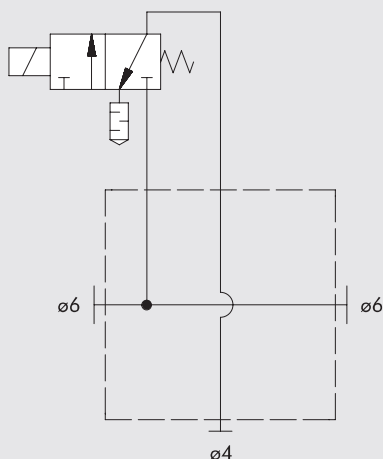


DIMENSIONS AND ORDERING CODES



- ① 22 mm coil, $\varnothing 8$ 5W-24 VDC
- ② Silencer
- ③ 3/2 Pilot, NC 5W:
 - Bore 1.1 mm
 - Max application pressure 10 Bar
- ④ Body made of anodized aluminium

PNEUMATIC SYSTEM DIAGRAM



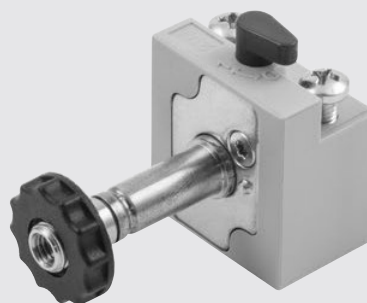
Code	Description
8826323	Special 3/2 pilot

NOTES

SOLENOID VALVE CNOMO WITH HAND LEVER OPERATOR

Solenoid valve to CNOMO 060580.

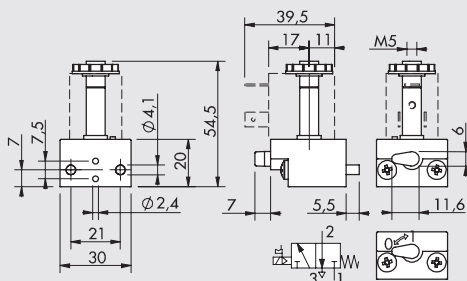
- 3/2 version normally closed.
- Assembly on manifold base.



TECHNICAL DATA

Operating pressure	bar	Max 10
Operating temperature range	°C	−10 to 60
Solenoid rating		100% ED
Fluid		Filtered lubricated or unlubricated air
System		With poppet
Nominal flow rate	Nl/min	40
TRA/TRR at 6 bar	ms	22/32
Maximum coil nut torque	Nm	1
Tightening torque for M4 fixing screws	Nm	1

DIMENSIONS AND ORDERING CODES



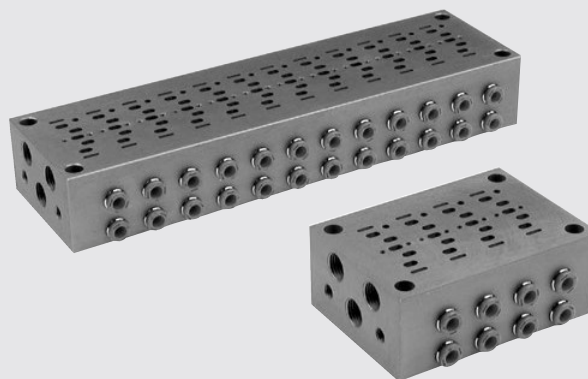
NOTES

Code	Description
88291B9	Cnomo 3/2 with bistable hand lever operator

MULTIPLE BASES FOR MACH 18 VALVES

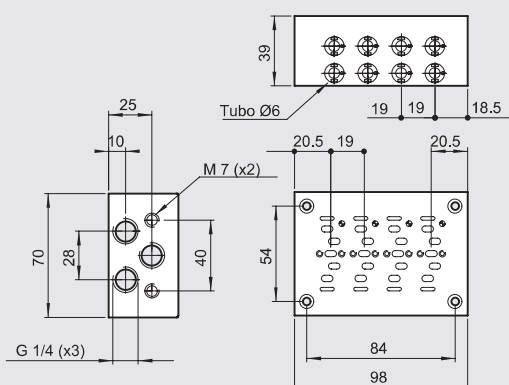


These multiple bases come complete with cartridges and push-in fitting for $\varnothing 6$ pipes on all output ports.

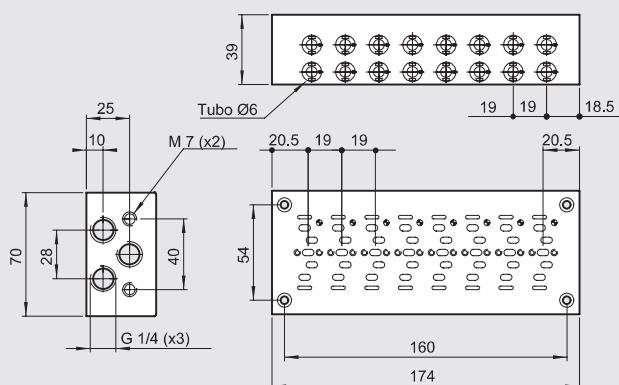


DIMENSIONS AND ORDERING CODES

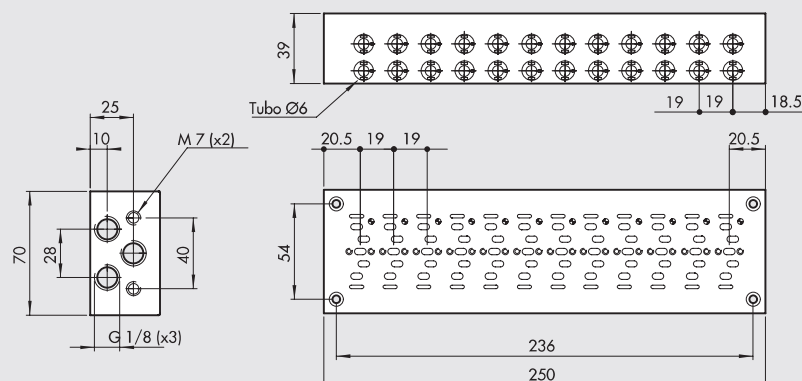
4 POSITIONS



8 POSITIONS



12 POSITIONS



Code	Description	Weight [g]
8826176	4-position base	660
8826177	8-position base	1190
8826178	12-position base	1720

Please contact our sales offices for further information and quotation.

VALVES ISO 5599/1, PNEUMATIC SERIES IPV

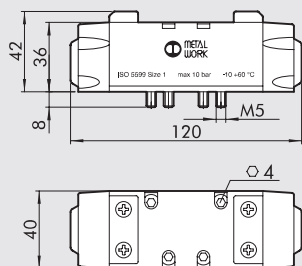
TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure	bar	from vacuum to 10		
Minimum operation pressure:				
• monostable	bar	2.5		
• bistable	bar	1		
Operating temperature range	°C	from -10 to +60		
Nominal diameter	mm	7.5	12	15
Conductance C	Nl/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	1100	2700	4600
Response times at 6 bar:				
• monostable	ms	12	24	35
• bistable	ms	20	30	45
Repositioning response times at 6 bar:				
• monostable	ms	30	43	55
• bistable	ms	20	30	45
Hand operator		Monostable on valve body		



SYNOPTIC, SIZES AND VERSION

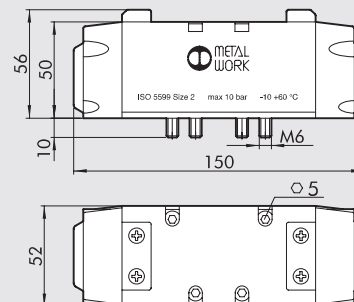
I P V		5		5		P N		S		O O	
FAMILY		DIMENSIONS		FUNCTION		OPERATORS 14		RESETTING (12)		FURTHER DETAILS	
IPV	ISO pneumatic	5	ISO 1	5	5/2	PN	pneumatic	S	mechanical springs	OO	5/2
		6	ISO 2	6	5/3			B	bistable	CC	closed centres
		7	ISO 3					D	differential	OC	open centres
								L	pneumatic spring	PC	pressure centres
										SP	special

PNEUMATIC ACTUATION - ISO 1 PNEUMATIC SPRING



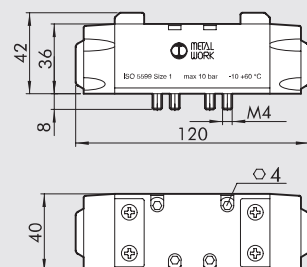
Symbol	Code	Abbrev.	Weight [g]
	7051011420	IPV 55 PNL OO	310

PNEUMATIC ACTUATION - ISO 2 PNEUMATIC SPRING



Symbol	Code	Abbrev.	Weight [g]
	7052011420	IPV 65 PNL OO	705

ANTI-STALL PNEUMATIC ACTUATION



Symbol	Code	Abbrev.	Weight [g]
	8294645	IPV 55 PNB SP	310

The valve normally switches when it is actuated, irrespective of the spool position.
N.B.: M4 screws are not to ISO 5599
 A typical application is for the control of reciprocating pumps.

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV



TECHNICAL DATA		ISO 1	ISO 2	ISO 3
Operating pressure:	bar			
• monostable	bar	from 2.5 to 10		
• bistable	bar	from 1 to 10		
• pilot-assisted	bar	from vacuum to 10		
Minimum pilot pressure	bar	2.5		
Operating temperature range	°C	from -10 to +60		
Nominal diameter	mm	7.5	12	15
Conductance C	Nl/min · bar	250	657.14	971.43
Critical ratio b	bar/bar	0.36	0.25	0.43
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	700	1800	3200
Flow rate at 6 bar ΔP 1 bar	Nl/min	1100	2700	4600
TRA / TRR monostable at 6 bar	ms	24 / 50	39 / 60	50 / 120
TRA / TRR bistable at 6 bar	ms	20 / 20	25 / 25	35 / 35
Solenoid pilot	Standards CNOMO			
Hand operator	Bistable on solenoid pilot Monostable on valve body			
Coils	30 mm side DIN 43650 Form A - ISO 4400 22 mm side			
Maximum coil nut torque	Nm	1		

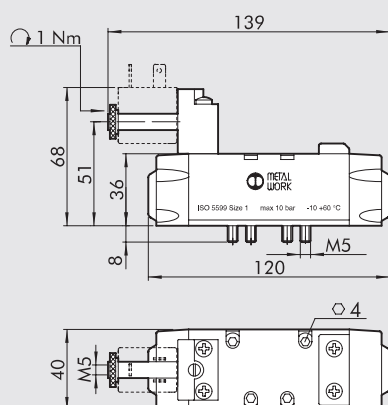


SYNOPTIC, SIZES AND VERSION

ISV FAMILY		5 DIMENSIONS	3 FUNCTION	SO OPERATORS 14	S RESETING (12)	OO FURTHER DETAILS
ISV solenoid/pneumatic		5 ISO 1	5 5/2	SO solenoid	S mechanical springs	OO 5/2
		6 ISO 2	6 5/3	SE solenoid assisted	B bistable	CC closed centres
		7 ISO 3			D differential	OC open centres
					L pneumatic spring	PC pressure centres
					P pneumatic control	SP special
						◆ ML hand lever operator

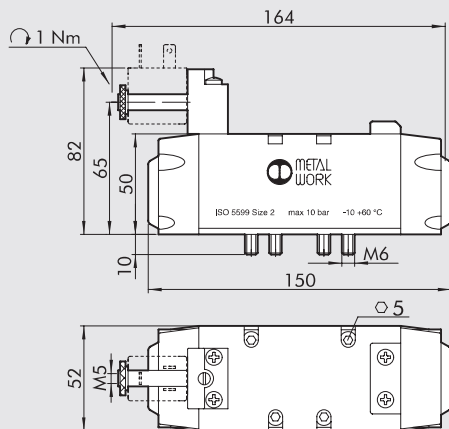
◆ Only available for size ISO 3

MONOSTABLE 5/2, ISO 1 PNEUMATIC RETURN – PNEUMATIC SPRING



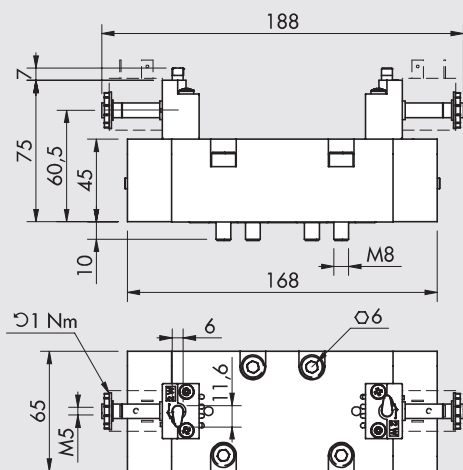
Symbol	Code	Abbrev.	Weight [g]
	7051021700	ISV 55 SOP OO	344
	8293307	ISV 55 SOL OO	344

MONOSTABLE 5/2, ISO 2 PNEUMATIC RETURN



Symbol	Code	Abbrev.	Weight [g]
	7052021700	ISV 65 SOP OO	715

BISTABLE 5/2, ISO 3 WITH HAND LEVER OPERATOR



Symbol	Code	Abbrev.	Weight [g]
	88291B2	ISV 75 SOB ML	1230

NOTES

HDM FOR THE SPLASH AREA



A flange made of technopolymer with an EPDM foam gasket separates the fitting area, called the splash area, from the valves.

The valves are standard HDM for Ø 6mm pipes. The input end plate and the blind end plate are designed to be fixed onto the base.

For technical data refer to the standard version.

Islands with 4, 6 or 8 valves can be provided.

The dimensions of the base are the same in all cases.



AVAILABLE COMPONENTS

- **End plate 1-25D spec:** end plate with supply port, Ø 10 mm pipe and 25-pin connector.
- **End plate 1 + pilot-25D spec.:** end plate with supply port, Ø 10 mm pipe, separate pilot (Ø 4 mm pipe) and 25-pin connector.
- **End plate 1 Profibus-DP spec.:** end plate with supply port, Ø 10 mm pipe and Profibus connection.
- **End plate 1 + Profibus -DP pilot spec.:** end plate with supply port, Ø 10 mm pipe, separate pilot (Ø 4 mm pipe) and Profibus connection.
- **Valves:** the solenoid valves are standard HDM with Ø 6 mm pipe.
- **Special blind end plate:** special blind end plate for fixing to the plate.
- **Intermediate blind 7R:** blind intermediate end plate with separate supply and discharge ports, Ø 6 mm pipes, width 11.5 mm.
The intermediate end plate is installed instead of a valve, so there can be 3, 5 or 7 valves.

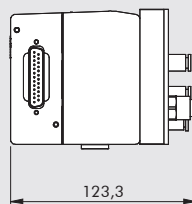
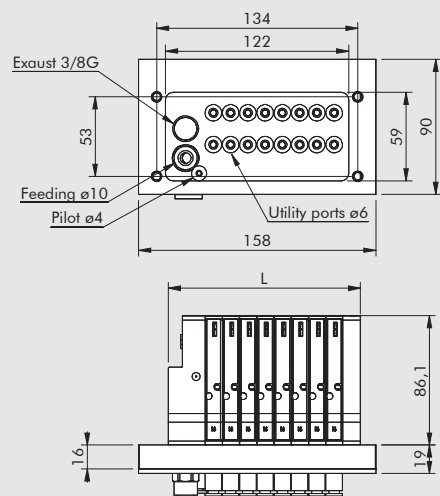
EXAMPLE OF AN ORDERING CODE

HDM for splash area; End plate 1+ Profibus-DP pilot; V6-V6-V6-7R-I6-I6-5.

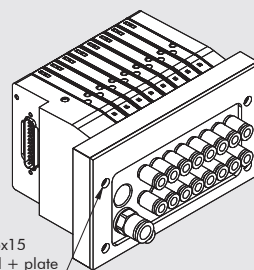
An island will be supplied with an input end plate with separate supply and pilot, Profibus connection, three 5/2 monostable valves, one blind intermediate end plate, two 3/2 NC dual valves and one blind end plate.

DIMENSIONS

HDM

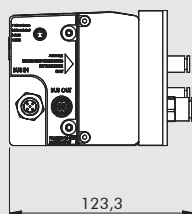
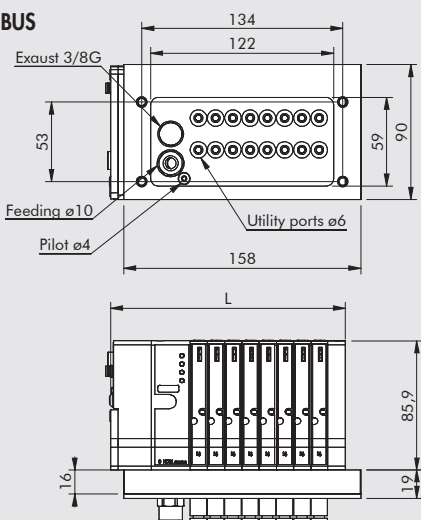


No. valves	L
4	82.4
6	105.2
8	128

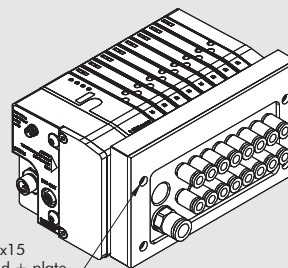


N° 4 holes M6x15
fixing of island + plate
to the structure

HDM + PROFIBUS



No. valves	L
4	110.9
6	133.7
8	156.5



n 4 holes M6x15
fixing of island + plate
to the structure

AVAILABLE ISLANDS

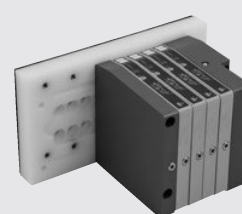
8 positions



6 positions



4 positions



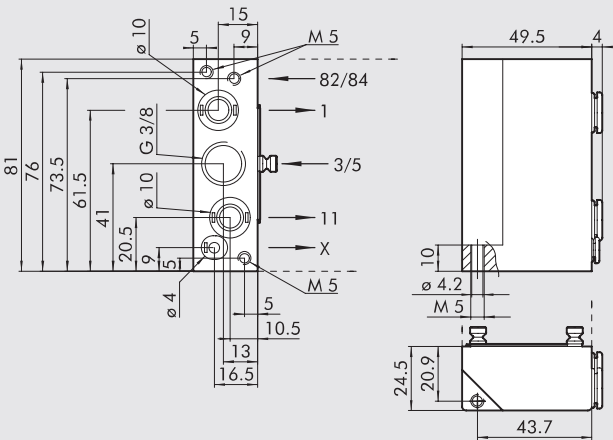
MULTIMACH WITH FRONT ATTACHMENT



There are M5 threaded holes at the front of terminal 1-11 and the blind terminal that allow the panel-type unit to be mounted as shown in the photo.

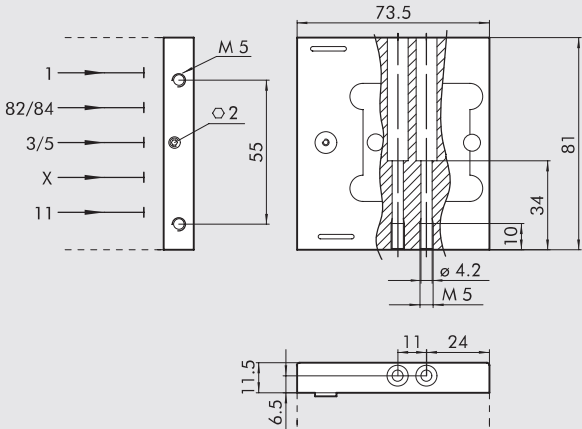


TERMINAL 1-11 FRONT ATTACHMENT



Code	Description
0227300202	Kit terminal 1-11 front attachment

BLIND TERMINAL – FRONT ATTACHMENT



Code	Description
0227300501	Blind terminal and front attachment kit

CUSTOM UNITS SUMMARY

Syntesi®



- Syntesi® PROGRESSIVE START VALVE

G4.4

bit



- bit FILTER WITHOUT FILTERING ELEMENT

G4.6



- bit MICRO-REGULATORS WITH SPECIAL GREASE

G4.7



- bit MICRO-REGULATORS WITH SOME PARTS MISSING

G4.8



- bit MICRO-REGULATORS WITH SAFETY VALVE LOCK

G4.9



- R-FR bit BRACKET CENTRE DISTANCE 40 mm

G4.10

Skillair®



- Skillair® 300 CLEANER WITHOUT FILTERING ELEMENT

G4.12

- Skillair® 200 FILTER-REGULATOR WITH METAL BOWL

G4.13



- Skillair® REGULATOR WITH FOOD INDUSTRY SUITABLE GREASE

G4.14



- Skillair® REGULATORS WITH SPECIAL GREASE

G4.15



- Skillair® SERVO PILOTED PILOT REGULATOR

G4.16



- Skillair® 100 5-POSITION SUB-BASE

G4.17



- Skillair® SHUT-OFF VALVE LOCKABLE IN 2 POSITIONS

G4.18



- OIL CHECK VALVE WITH DRAIN Skillair® 100

G4.19



- OIL CHECK VALVE Skillair® 200

G4.20



- OIL CHECK VALVE Skillair® 300

G4.21

New deal

	● New deal 1/4" FILTER-REGULATOR WITH NON-REGULATED AIR INTAKE	G4.22
	● New deal FILTERS WITHOUT FILTERING ELEMENT	G4.23
	● New deal 3/8" LUBRICATOR WITH OIL FILLING FROM THE TOP	G4.24
	● New deal BOTTON OIL FILLING LUBRICATOR	G4.25
	● New deal 1/4" AIR INTAKE WITH WALL FIXING	G4.26
	● New deal AIR INTAKE 3/8" - 1/2" SPECIAL	G4.27
	● New deal 1" REGULATOR WITH SPECIAL GREASE	G4.28
	● TANK-BOWL R1/2"	G4.29
	● OIL CHECK VALVE WITH DRAIN New deal 1/4"	G4.30
	● OIL CHECK VALVE New deal 3/8"-1/2"	G4.31
	● OIL CHECK VALVE New deal - ASSEMBLY	G4.32

ONE

	● ONE SERIE SAFE AIR®	G4.34
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PRECISION REGULATION AND PRESSURE CONTROL

	● PRE-SET bit	G4.38
	● PRE-SET New deal AND Skillair®	G4.39
	● PRESSURE SWITCH WITH TWO ELECTRIC SIGNALS	G4.40
	● PRESSURE SWITCHES	G4.41

SYNTESI® PROGRESSIVE START VALVE

The progressive start valve (VAP) is a pneumatic component that allows air enter the circuit gradually, thereby avoiding excessive pressure bursts. A sophisticated system of internal valves allows two separate stages of operation. During the first stage, a quantity of air that can be regulated via a pin flows from the VAP. The second stage starts when the downstream pressure reached 40 to 60% of the upstream pressure, during which full-port flow is achieved.

When the supply pressure is cut off, the VAP still remains open to allow the system to be relieved downstream.

In the final relief stage, part of the downstream pressure is relieved by the VAP itself.

The progressive start valve (VAP) is particularly useful on machinery where it is important to prevent actuators from moving rapidly and out of control, or where, for safety reasons, the air in-feed needs to be gentle and gradual.

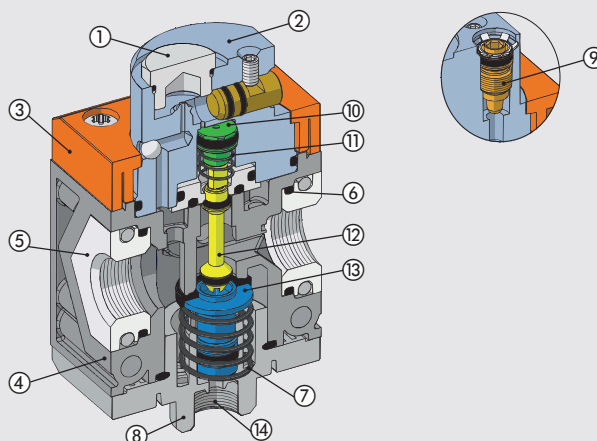
It, however, there is a major leak in the downstream system, it may never be possible to achieve the pressure required to open the valve completely.



TECHNICAL DATA		VAP SY1			VAP SY2			
Threaded port		1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
Threaded discharge port		1/8"			1/4"			
Inlet pressure		bar 3 - 15			3 - 13			
		MPa 0.3 - 1.5			0.3 - 1.3			
		psi 43 - 217			43 - 188			
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 0.5 bar (0.05 MPa; 7 psi)	Nl/min	900	1000	1100	2800	3600	3600	
	scfm	32	39	39	99	127	127	
Flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	1250	1500	1600	4400	4800	4800	
	scfm	44	53	57	156	170	170	
Drain flow rate at 6.3 bar (0.63 MPa; 91 psi)	Nl/min	500			2700			
	scfm	18			96			
Maximum flow rate start-up, at 6.3 bar (0.63 MPa; 91 psi) with regulation pin completely unscrewed	Nl/min	170			700			
	scfm	6			25			
Min/max temperature at 10 bar; 1 MPa; 145 psi		°C From -10 to +50			From -10 to +50			
Weight		193	185	179	477	452	448	437
Fluid		Compressed air or other inert gases						
Mounting position		In any position						
Additional air take-off, for pressure gauges or fittings		1/8", front and rear			1/4", front and rear			
Additional air take-off flow rate at 6.3 bar (0.63 MPa; 91 psi) ΔP 1 bar (0.1 MPa; 14 psi)	Nl/min	500			1500			
	scfm	18			53			
Wall fixing screws		No. 2 M4 screws			No. 2 M5 screws			

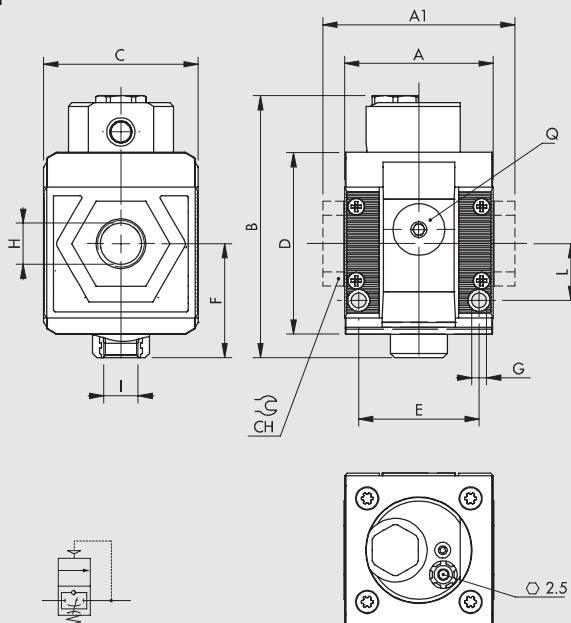
COMPONENTS

- ① OT58 nickel-plated brass cap
- ② Anodized aluminium upper block
- ③ Technopolymer flange
- ④ Technopolymer body
- ⑤ IN/OUT bushing made of OT58 nickel-plated brass or passivated aluminium for 3/4" - 1"
- ⑥ O-ring NBR gasket
- ⑦ Stainless steel valve spring
- ⑧ Technopolymer bottom plug
- ⑨ OT58 brass progressive start regulation pin
- ⑩ OT58 brass internal valve
- ⑪ Stainless steel spring stem recovery
- ⑫ OT58 brass stem
- ⑬ OT58 brass main valve with vulcanized gasket
- ⑭ OT58 brass threaded insert

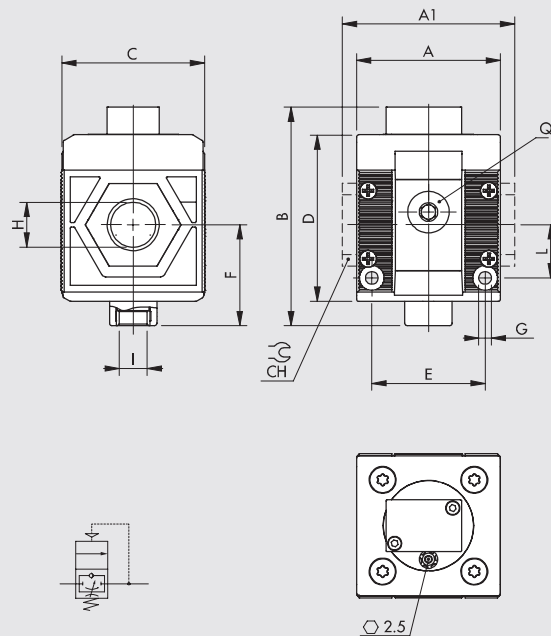


DIMENSIONS

SY1



SY2



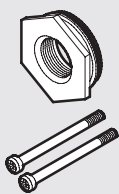
	VAP SY1			VAP SY2				
H (threaded port)	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"	
A		42			60.5			
A1	-	-	44	-	-	95	95	
B		74			92.5			
C		44			61			
CH		-		-	-	32	36	
D		51.5			70.5			
E		33.5			47.5			
F		32.2			42.7			
G		Hole for M4 screws			Hole for M5 screws			
I (exhaust))		1/8"			1/4"			
L		16			22.5			
Q (additional air takes-off)		1/8"			1/4"			

ORDERING CODES

Code	Description
82950D9	VAP SY1 without bushings
82950D8	VAP SY2 without bushings

ACCESSORIES

THREADED PORT



Code	Description
9210001	Kit IN OUT 1/8 SY1
9210002	Kit IN OUT 1/4 SY1
9210003	Kit IN OUT 3/8 SY1
9210011	Kit IN OUT 3/8 SY2
9210012	Kit IN OUT 1/2 SY2
9210013	Kit IN OUT 3/4 SY2
9210014	Kit IN OUT 1 SY2

Max torque 0.4 Nm for SY1
Max torque 2.5 Nm for SY2

NOTES

bit FILTER WITHOUT FILTERING ELEMENT

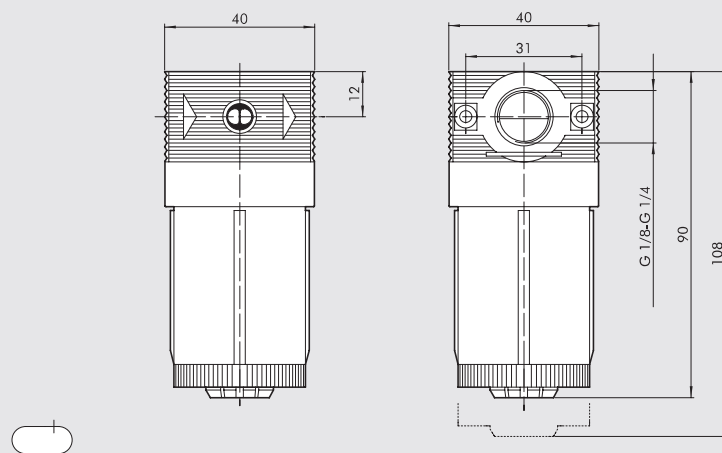
This is a standard filter without a filtering element that can be used as a tank.

Instead of the RMSA there is a plastic cap similar to the one used for lubricator bowls.

N.B.: For technical data refer to the standard version.



DIMENSIONS



ORDERING CODES

Code	Description
8292109	Fil BIT 1/8 without filtering element
8292111	Fil BIT 1/4 without filtering element

N.B.: Capacity: ~ 30 cm³.

bit MICRO-REGULATORS WITH SPECIAL GREASE



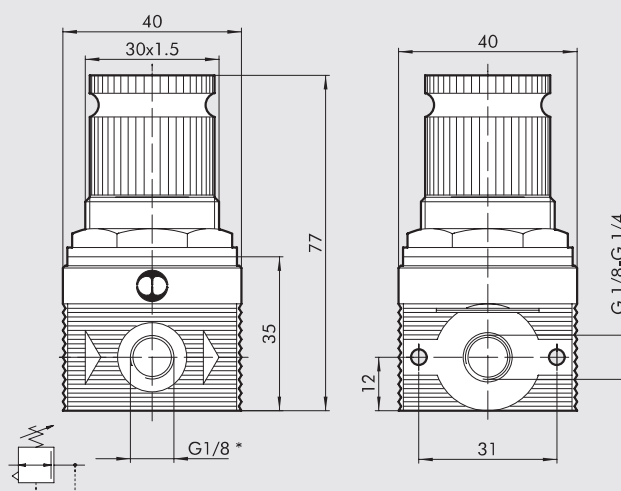
BERULUB OX 40 is used to lubricate the inner parts that come into contact with the flow of air oxygen-compatible grease. In this case, the compressed air that may come into contact with oxygen is not polluted.

N.B.: MW regulators have been designed and tested for use with compressed air. No claims can be made by the user if they are used with other fluids.

N.B.: For technical data refer to the standard version.



DIMENSIONS



* Pressure gauge port

ORDERING CODES

Code	Description
8826701	MR Bit 1/8 02 with special grease

NOTES

BERULUB OX 40 EP: is a white silicone-based oil for oxygen installations, used as a lubricant in pressure reducers, valves and other equipment in healthcare sectors and for the lubrication of O-ring seals in autogenous welding systems.

At an operating temperature of 60° C, the grease pressure limit is 60 bar.

The grease temperature range is from -40 to +200°C.

Suitable for lubricating sliding and rolling elements made of metal (steel and non-ferrous metal) or synthetic material.

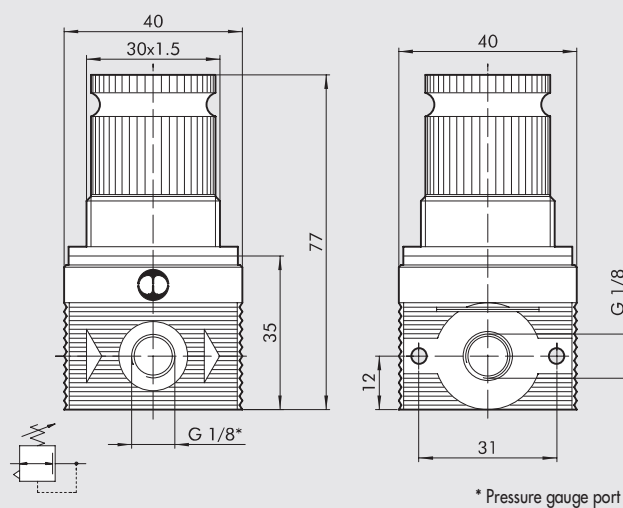
bit MICRO-REGULATORS WITH SOME PARTS MISSING

These bit micro-regulators are supplied incomplete for installation requirements.

N.B.: For technical data refer to the standard version.



WITHOUT RING NUT AND BOX

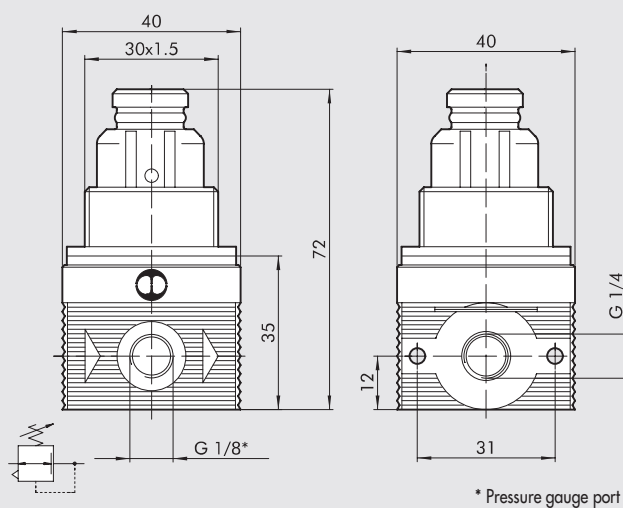


ORDERING CODES

Code	Description
8286801	MR BIT 1/8 04 without ring nut

N.B.: Supplied unpacked and without ring nut.

WITHOUT RING NUT AND KNOB



ORDERING CODES

Code	Description
8384501	MR BIT 1/4 02 without ring nut and knob
8384502	MR BIT 1/4 08 without ring nut and knob

N.B.: Supplied without fixed ring nut and without adjusting knob.

bit MICRO-REGULATORS WITH SAFETY VALVE LOCK



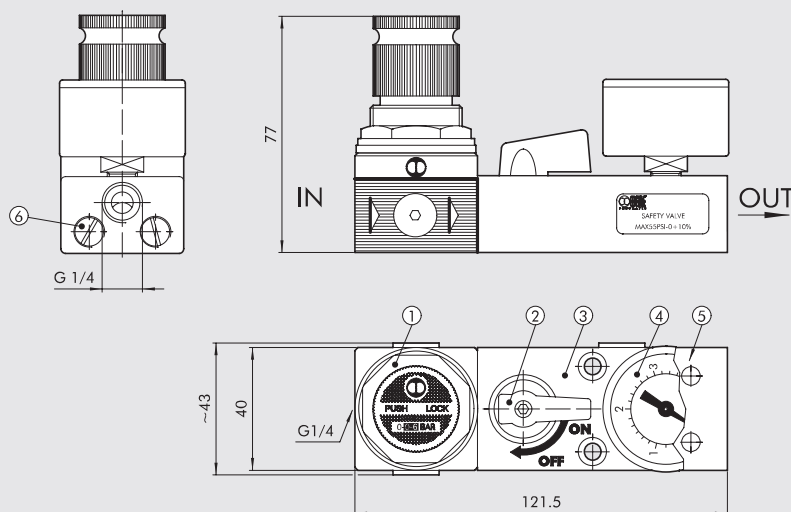
This comprises a bit unit that has been preset at max. 4 bar, a ball cock valve, a 0 to 4 bar pressure gauge and two safety valves set at 3.8 bar $+0 / -10\%$.

It is used to supply compressed air to mixers and other devices where it is important for the pressure not to exceed the maximum value even when the regulator is faulty.



DIMENSIONS

- ① MR Bit 1/4 04 max 4 bar
- ② Ball tap
- ③ Painted aluminium body
- ④ Pressure gauge 04 Ø 40
- ⑤ Valve drain
- ⑥ Safety valves



ORDERING CODES

Code	Description
8825970	MR Bit + safety valve lock + ball cock valve

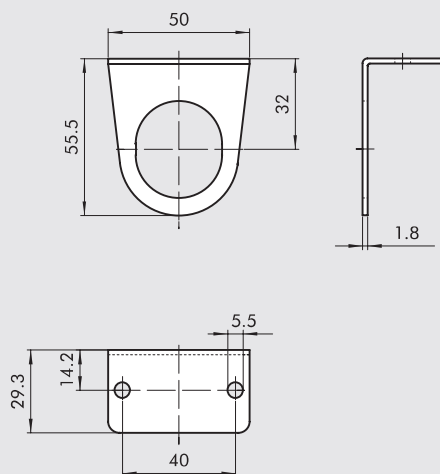
R-FR bit BRACKET

CENTRE DISTANCE 40 mm

The centre distance of the fixing holes on this bracket is 40 mm.



DIMENSIONS



ORDERING CODES

Code	Description
8000210	R-FR fixing bracket centre distance 40

Material: white zinc-plated steel.



NOTES

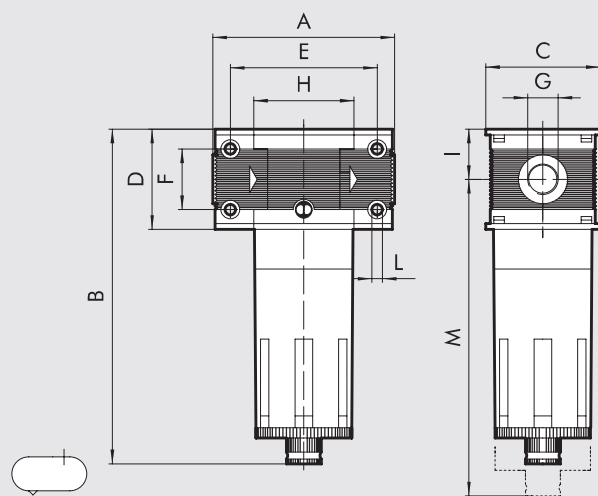
Skillair® 300 CLEANER WITHOUT FILTERING ELEMENT

This is an STD cleaner without a filtering element that can be used as a tank.

N.B.: For technical data refer to the standard version.



DIMENSIONS



	DEP 300
Threaded port G	1/2"
A	110
B	195
C	72
D	65
E	92
F	42
H	65
I	32.5
L	M5 hole
M	215

ORDERING CODES

Code	Description
8825975	Dep 300 1/2 without filtering element

N.B.: The cup inside the bowl is made of nickel-plated OT58 brass.

NOTES

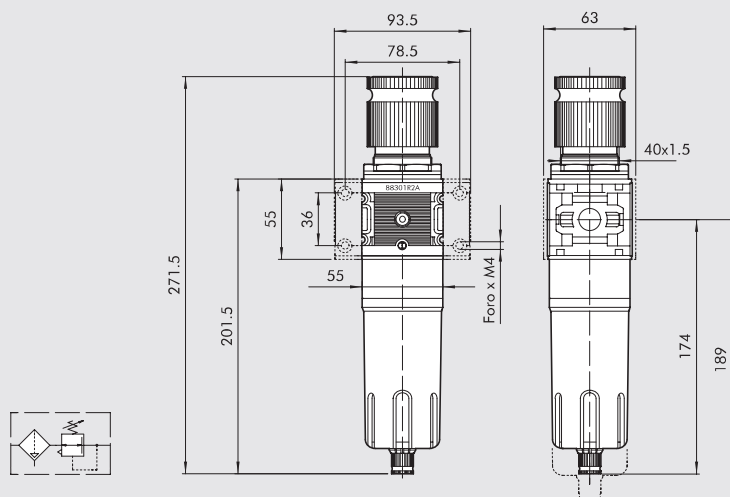
Skillair® 200 FILTER-REGULATOR WITH METAL BOWL



This is a FR with black painted aluminium bowl.
The inner cup is made of clear plastic.

N.B.: For technical data refer to the standard version.

DIMENSIONS



ORDERING CODES

Code	Description
88301R2A	FR 200 20 08 with metal bowl without end plates

N.B.: The plates on the regulator body are marked with the part code.

NOTES

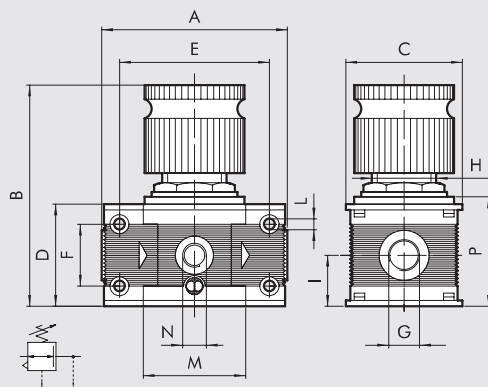
Skillair® REGULATOR WITH FOOD INDUSTRY SUITABLE GREASE

As it is compatible for use in the food industry, Molycote 111 grease is used to lubricate internal parts that come into contact with the air flow.

N.B.: For technical data refer to the standard version.



DIMENSIONS

[illegible]

ORDERING CODES

Code	Description
8825935	Reg 100 1/4 08 Molykote
8825960	Reg 200 1/2 08 Molykote

NOTES

Molykote 111: is a clear, high-viscosity white silicon grease approved by the British Standard WRC. It is important not to mix it with other types of grease.

Skillair® REGULATORS WITH SPECIAL GREASE



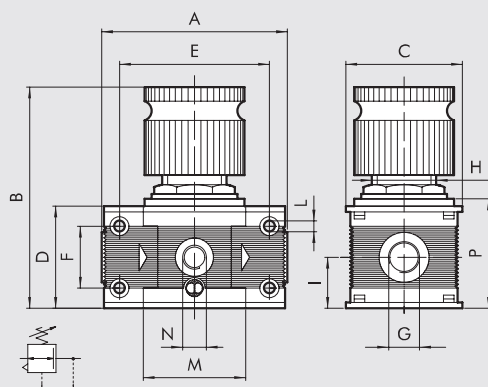
BERULUB OX 40 EP is used to lubricate the inner parts that come into contact with the flow of air oxygen-compatible grease. In this case, the compressed air that may come into contact with oxygen is not polluted.

N.B.: MW regulators have been designed and tested for use with compressed air. No claims can be made by the user if they are used with other fluids.

N.B.: For technical data refer to the standard version.



DIMENSIONS



Threaded port G	REG 100		REG 300		
	1/4"	3/8"	1/2"	3/4"	1"
A	78		110		112
B	98		148		
C	50		72		
D	43		65		
E	63		92		
F	26		42		
H	30 x 1.5		48 x 1.5		
I	21.5		32.5		
L	M4 hole		M5 hole		
M	43		65		
N (pressure gauge port)	1/8"		1/8"		
P	46		69		

ORDERING CODES

Code	Description
8826185	Reg 100 3/8 012 with special grease
8826186	Reg 300 012 with special grease without end plates

NOTES

BERULUB OX 40 EP: is a white silicone-based oil for oxygen installations, used as a lubricant in pressure reducers, valves and other equipment in healthcare sectors and for the lubrication of O-ring seals in autogenous welding systems. At an operating temperature of 60° C, the grease pressure limit is 60 bar. The grease temperature range is from -40 to +200° C. Suitable for lubricating sliding and rolling elements made of metal (steel and non-ferrous metal) or synthetic material.

Skillair® SERVO PILOTED PILOT REGULATOR

This is made by combining the bottom of the pilot regulator and the top of the Skillair® pilot regulator.

- Double rolling diaphragm to ensure maximum stroke and flow rate.
- Low load losses.
- High in pressure setting accuracy.
- High sensitivity during relieving.

A slight air leak is required for correct operation of the regulator and is not to be considered as a malfunction.



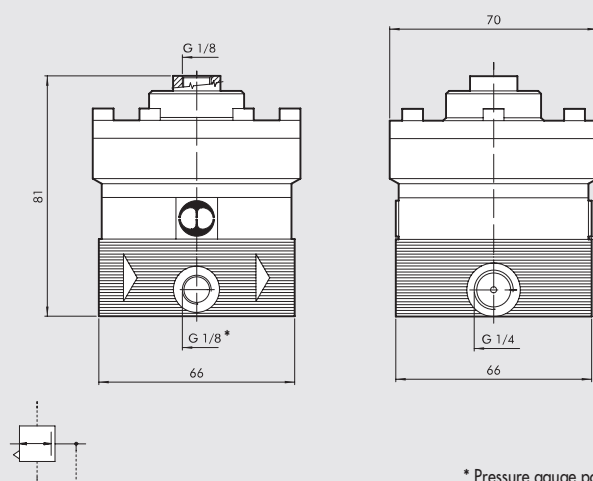
TECHNICAL DATA

Threaded port	
Setting range	bar
Max. input pressure	MPa
	bar
	psi
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 0.5 bar (0.05 MPa to 7 psi)	
Flow rate at 6.3 bar (0.63 MPa to 91 psi) ΔP 1 bar (0.1 MPa to 14 psi)	
Fluid	
Max temperature at 1 MPa; 10 bar; 145 psi	°C
	°F
Weight	kg
Mounting position	
Pressure gauge port	
Notes on use	

PILOT REGULATOR

1/4"
Depending on the pilot
1.3
13
188
120 NL/min - 4.3 scfm
140 NL/min - 5 scfm
Filtered, lubricated or unlubricated compressed air.
Lubrication, if used, must be continuous.
50
122
0.6
In any position
1/8"
The regulator pressure must always be set upwards
For increased sensitivity, use a pressure regulator with a rated pressure
as close as possible to the required value.
Do not take air from the pressure gauge ports. Mount directly on Reg 400.

DIMENSIONS



* Pressure gauge port

ORDERING CODES

Code	Description
8293317	Reg P 1/4 pilot

Skillair® 100

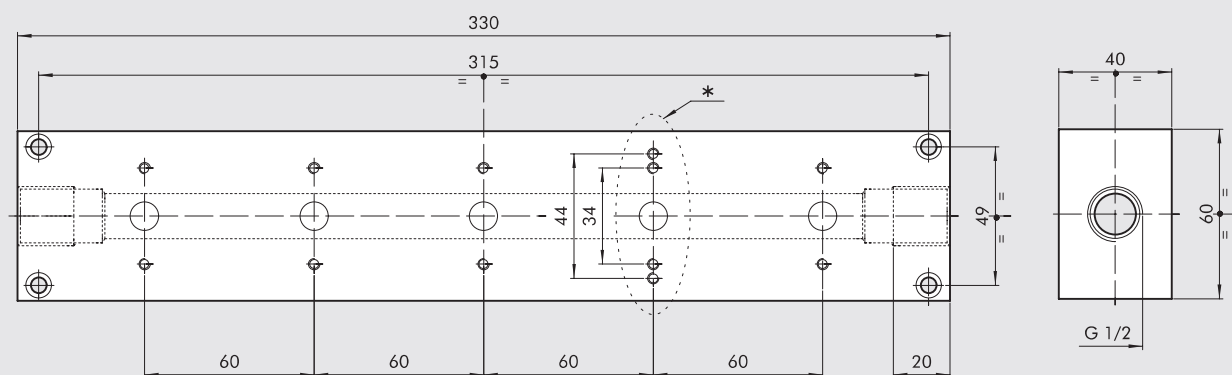
5-POSITION SUB-BASE



A 5-position sub-base for the Skillair® 100.
The 4th position can be used for the Skillair® 200.



DIMENSIONS



* Position also compatible with Skillair® 200

ORDERING CODES

Code	Description
8000209	SK 100 5-position sub-base

N.B.: The code does not include adaptor bases.

NOTES

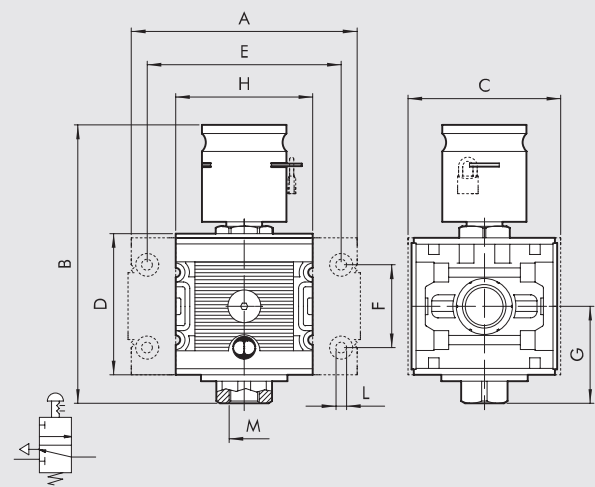
Skillair® SHUT-OFF VALVE LOCKABLE IN 2 POSITIONS

Unlike the standard V3V, which can only be locked in the closed position, this version can be locked during operation.

N.B.: For technical data refer to the standard version.



DIMENSIONS

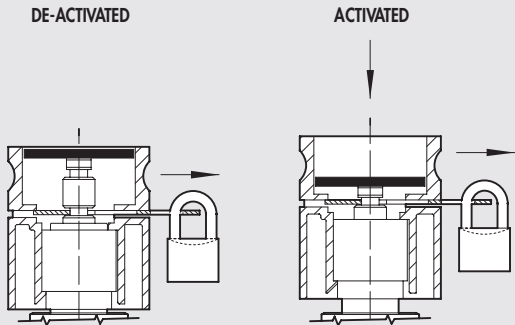


	V3V 100		V3V 200			V3V 300		
Threaded port G	1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
A	78		93.5			110		
B	106		119			132		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
H	43		55.5			65		
I	33.5		40			46.5		
L	M4 hole		M5 hole			M5 hole		
M (relief)	1/8"		1/4"			3/8"		

ORDERING CODES

Code	Description
8286464A	V3V 100 lockable in 2 positions without end plates
8286465A	V3V 200 lockable in 2 positions without end plates
8286466A	V3V 300 lockable in 2 positions without end plates

OPERATION



OIL CHECK VALVE WITH DRAIN

Skillair® 100

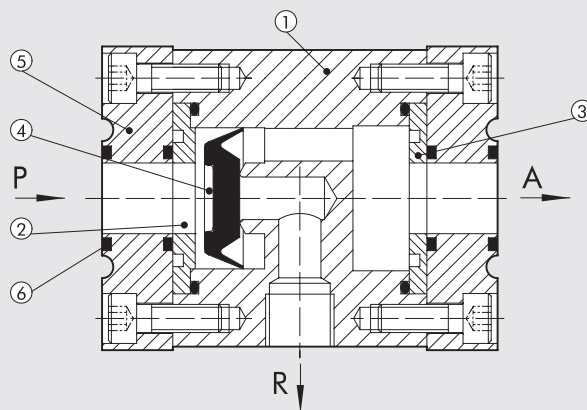


This module can be inserted between two Skillair® 100 elements (e.g. a filter and a lubricator) to prevent the oil from returning due to back pressure. In this case oil is drained out via a 1/8" (R) threaded coupling.

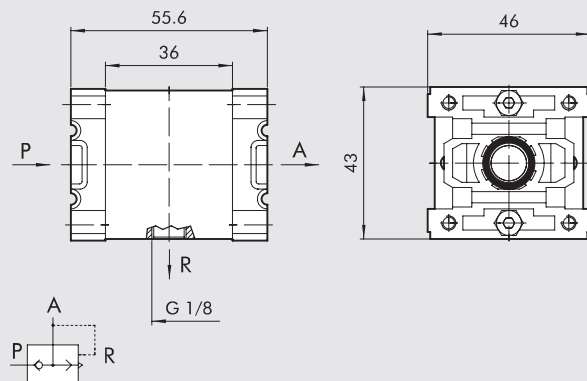


COMPONENTS

- ① Black anodised aluminium body
- ② Anodised aluminium input plate
- ③ Anodised aluminium output plate
- ④ Adiprene lip seal
- ⑤ Adaptor base made of zamak
- ⑥ NBR seals



DIMENSIONS



ORDERING CODES

Code	Description
8282717	VNRO 100

OIL CHECK VALVE

Skillair® 200

This module can be inserted between two Skillair® 200 elements (e.g. a filter and a lubricator) to prevent the oil from returning due to back pressure.

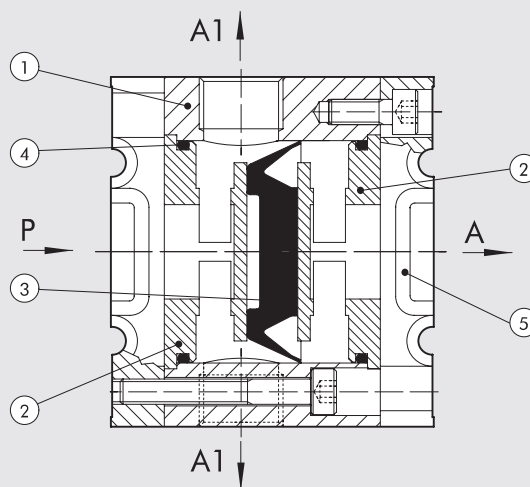
1/4" couplings (A1) to be used as air intakes are mounted before the VNRO.



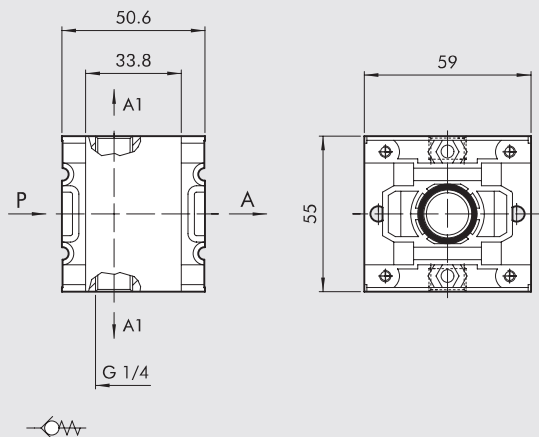
COMPONENTS

- ① Body made of black anodised aluminium
- ② Input spacer ring made of OT58 nickel-plated brass
- ③ Output spacer ring made of OT58 nickel-plated brass
- ④ Adiprene lip gasket
- ⑤ Adaptor base made of zamak

A1 = air intakes before VNRO



DIMENSIONS



ORDERING CODES

Code	Description
8331521	VNRO 200

OIL CHECK VALVE

Skillair® 300

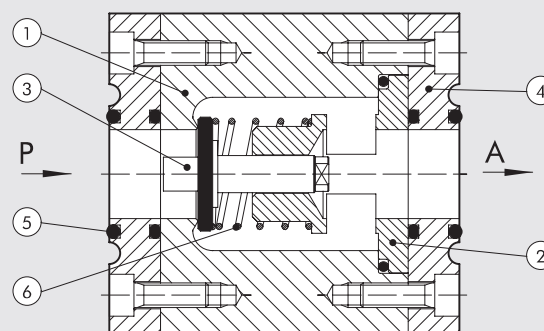


This module can be inserted between two Skillair® 300 elements (e.g. a filter and a lubricator) to prevent the oil from returning due to back pressure.

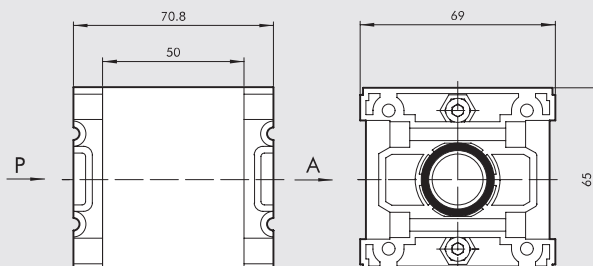


COMPONENTS

- ① Body made of black anodised aluminium
- ② spacer ring made of OT58 nickel-plated brass
- ③ Valve with NBR vulcanized gasket
- ④ Adaptor base made of zamak
- ⑤ NBR seals
- ⑥ Stainless steel valve spring



DIMENSIONS



ORDERING CODES

Code	Description
8149903	VNRO 300

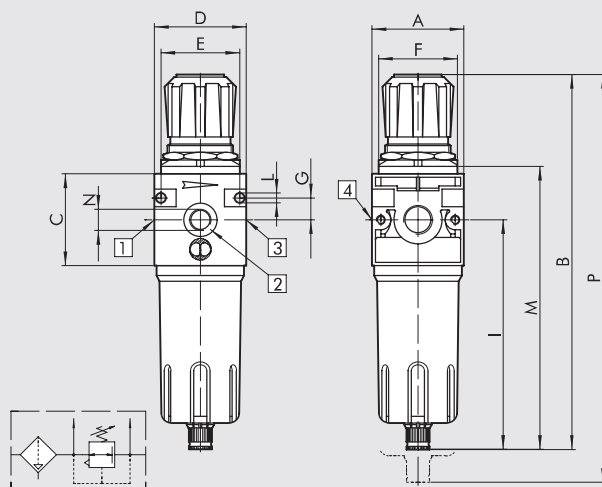
Newdeal 1/4" FILTER-REGULATOR WITH NON-REGULATED AIR INTAKE

The main feature of this filter-regulator is that the 1/8" front port (2) is connected to the filtered non-regulated air pipe, while the rear port (4) is connected to the filtered and regulated air pipe, as with standard ports.

N.B.: For technical data refer to the standard version.



DIMENSIONS

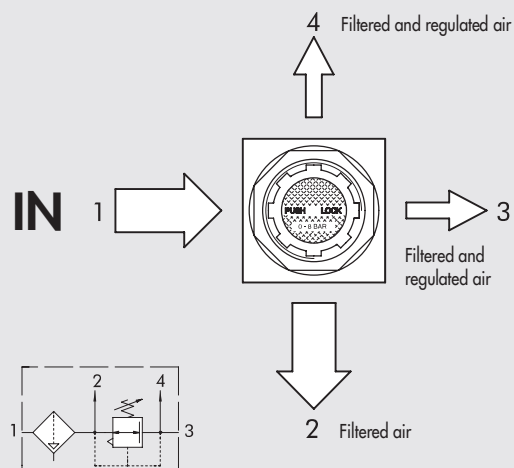


	FR ND 1/4"
Threaded port	1/4"
A	42
B	190
C	42
D	42
E	36
F	30 x 1.5
G	10
I	121
L	M4 hole
M	145
N	1/8"
P	233

ORDERING CODES

Code	Description
8293155	FR ND 1/4 20 08 RMSA

OPERATING SCHEME



Newdeal FILTERS WITHOUT FILTERING ELEMENT

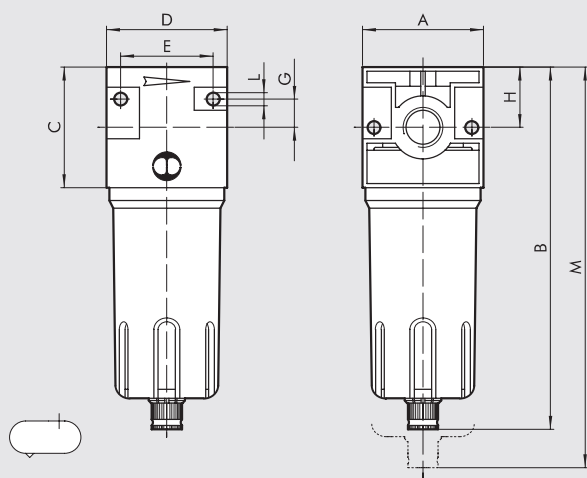


These are standard filters without a filtering element that can be used as tanks.

N.B.: For technical data refer to the standard version.



DIMENSIONS

[illegible]

ORDERING CODES

Code	Description
8842323	Fil ND 3/8 without filtering element
8826446	Fil ND 1/2 without filtering element
8826449	Fil ND 1 without filtering element

Bowl capacity: ND 3/8-1/2 = ~ 200 cm³
ND 1 = ~ 490 cm³

NOTES

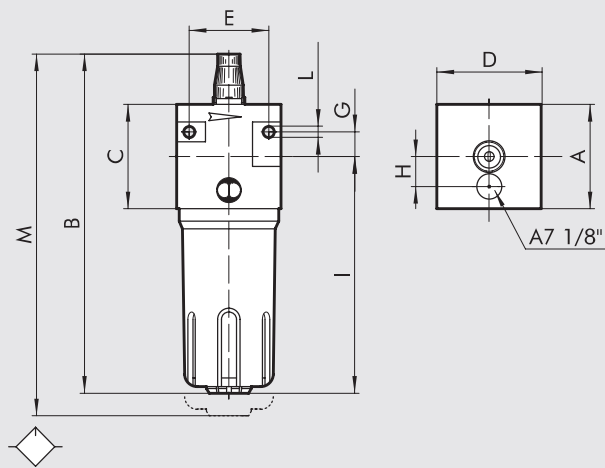
New deal 3/8" LUBRICATOR WITH OIL FILLING FROM THE TOP

This is a lubricator with a 1/8" hole at the top of the body to allow oil filling from the top without the need to remove the bowl. During use, the hole in the lubricator is plugged by an A7 fitting.

N.B.: For technical data refer to the standard version.



DIMENSIONS



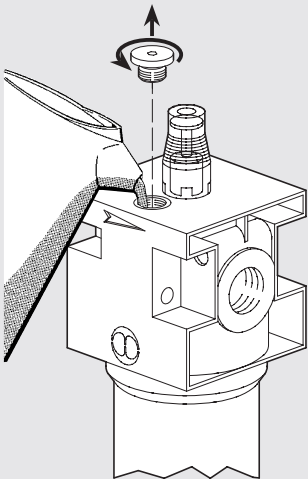
	LUB ND 3/8"
Threaded port	3/8"
A	60
B	195
C	60
D	60
E	46
G	14
H	17.2
I	136
L	M4 hole
M	220

ORDERING CODES

Code	Description
8283110	Lub ND 3/8 with oil filling from the top

N.B.: Disconnect the pressure feed before filling the system with oil.
The body is painted grey.

OPERATING SCHEME



CUSTOM PRODUCTS New deal 3/8" LUBRICATOR WITH OIL FILLING FROM THE TOP

Newdeal BOTTON OIL FILLING LUBRICATOR



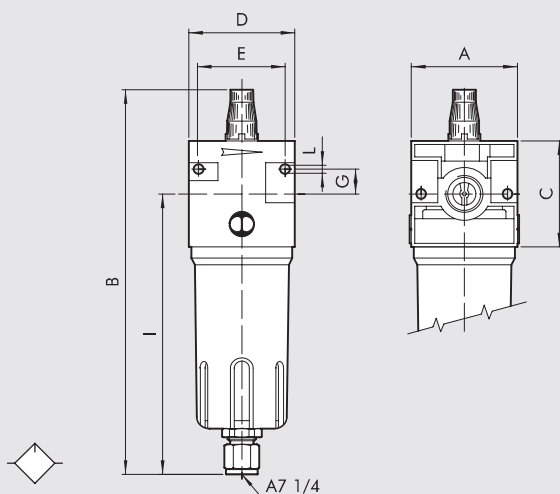
At the bottom of the bowl is a 1/4" fitting for oil filling without having to remove the bowl.

During use, the 1/4" hole in the lubricator is plugged by an A7 fitting, supplied with the lubricator.

N.B.: For technical data refer to the standard version.



DIMENSIONS

[illegible]

ORDERING CODES

Code	Description
8826439	Lub ND 1/4 with oil filling
8826440	Lub ND 1/2 with oil filling
8826441	Lub ND 1 with oil filling

N.B.: Supplied with 2 screws.

Disconnect the pressure feed before filling the system with oil.

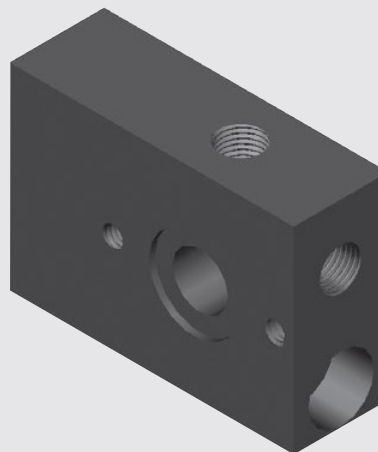
NOTES

New deal 1/4"

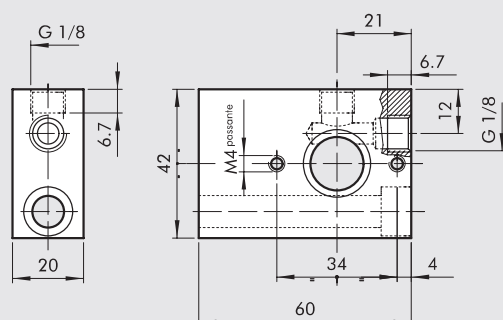
AIR INTAKE WITH WALL FIXING

The air intake has a depth of 60 mm to allow an New Deal 1/4" group to be fixed to the wall yet detached from it.

N.B.: With M4 fixing holes, the air intake cannot be connected directly to a regulator or filter-regulator.



DIMENSIONS

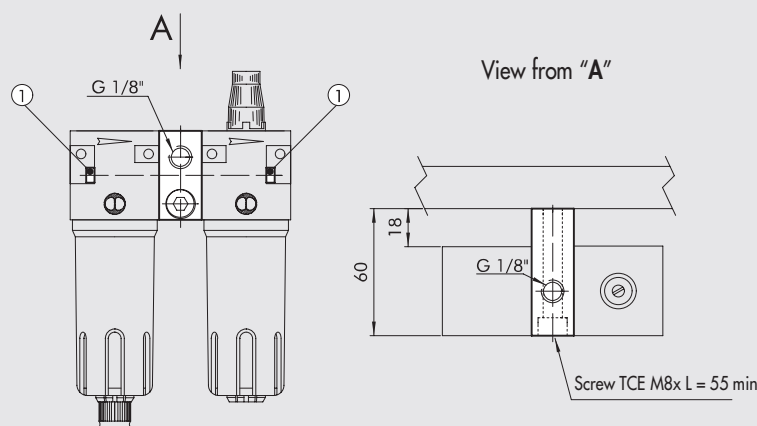


ORDERING CODES

Code	Description
8286810	New Deal 1/4 air intake L = 60

N.B.: Supplied complete with 4 M4x35 (①) securing screws and seal.
Material: black anodised aluminium.

TYPICAL ASSEMBLY



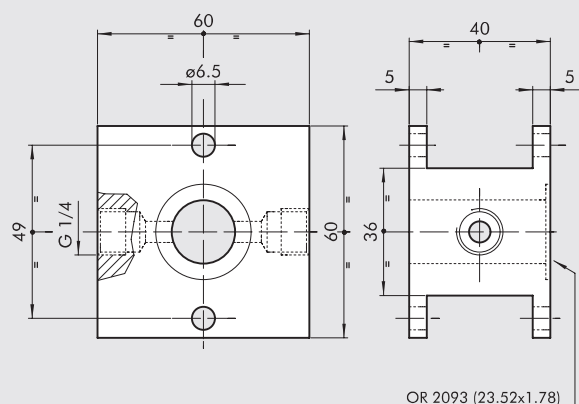
Newdeal AIR INTAKE 3/8" - 1/2" SPECIAL



Due to its special design, the PA can be inserted between 2 regulators using four M5x10 screws.
The air outlets are situated on opposite sides, so that can be one at the front and one at the rear (Fig. 1), or one at the top and one at the bottom by rotating PA by 90° (Fig. 2).



DIMENSIONS



ORDERING CODES

Code	Description
8096902	New Deal air intake 3/8-1/2 special

N.B.: Supplied complete with one O-ring seal.
Material: black anodised aluminium.

TYPICAL ASSEMBLY

Fig. 1

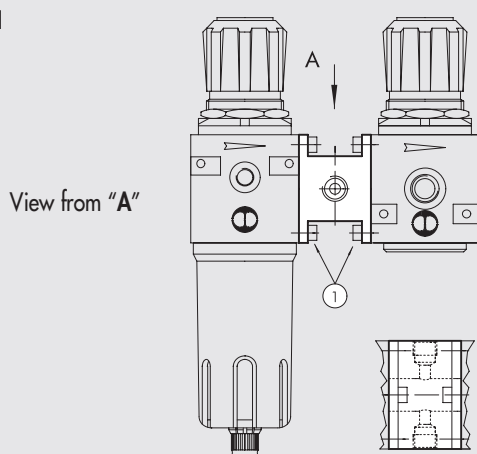
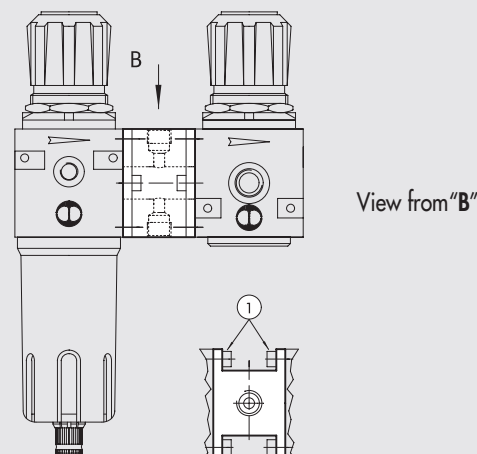


Fig. 2



① Screws TCE M5x10

Newdeal 1" REGULATOR WITH SPECIAL GREASE

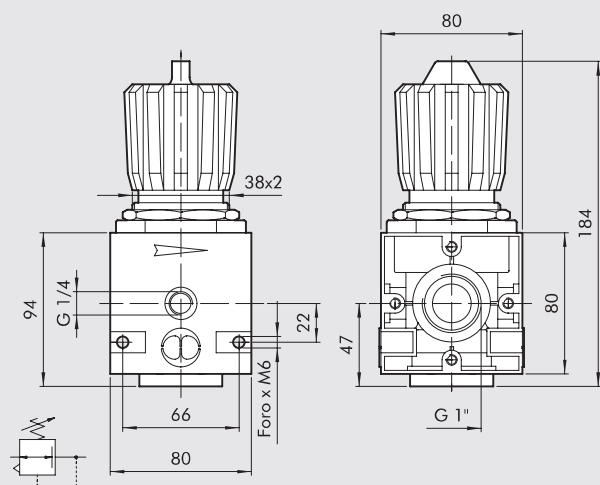
BERULUB OX 40 EP is used to lubricate the inner parts that come into contact with the flow of air oxygen-compatible grease. In this case, the compressed air that may come into contact with oxygen is not polluted.

N.B.: MW regulators have been designed and tested for use with compressed air. No claims can be made by the user if they are used with other fluids.

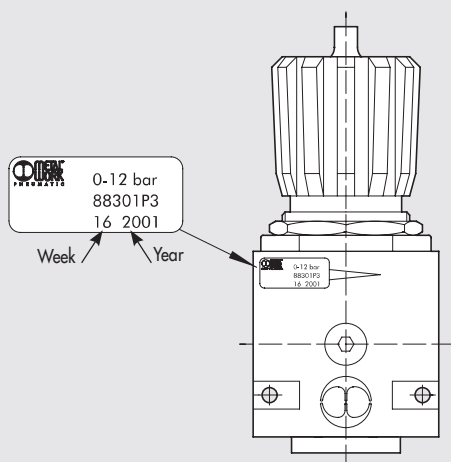
N.B.: For technical data refer to the standard version.



DIMENSIONS



IDENTIFICATION LABEL



ORDERING CODES

Code	Description
88301P3	Reg ND 1 012 with special grease

NOTES

BERULUB OX 40 EP: is a white silicone-based oil for oxygen installations, used as a lubricant in pressure reducers, valves and other equipment in healthcare sectors and for the lubrication of O-ring seals in autogenous welding systems. At an operating temperature of 60°C, the grease pressure limit is 60 bar. The grease temperature range is from -40 to +200° C. Suitable for lubricating sliding and rolling elements made of metal (steel and non-ferrous metal) or synthetic material.

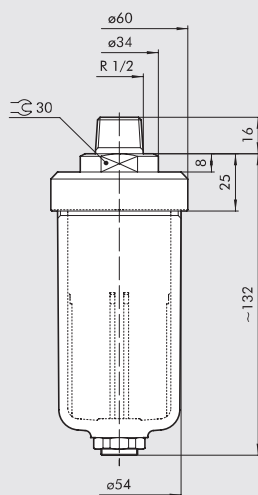
TANK-BOWL R1/2"



The SCAL bowl is made of clear plastic and used as a tank.
The cap is made of orange painted brass.



DIMENSIONS



ORDERING CODES

Code	Description
8261112	R1/2 tank-bowl

N.B.: The capacity is about 164 cm³.

NOTES

OIL CHECK VALVE WITH DRAIN New deal 1/4"

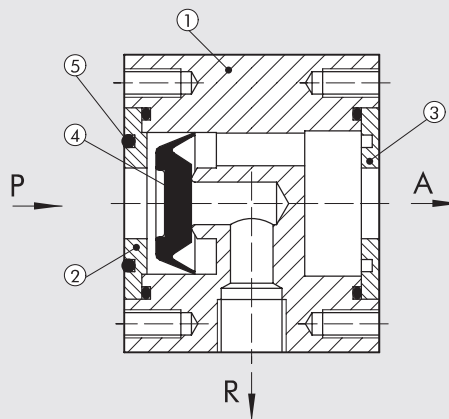
This module can be inserted between two New Deal 1/4" elements (e.g. a filter and a lubricator) to prevent the oil from returning due to back pressure. In this case oil is drained out via a 1/8" (R) threaded coupling.

N.B.: Use M4x75 screws to connect a regulator or filter-regulator to the lubricator.

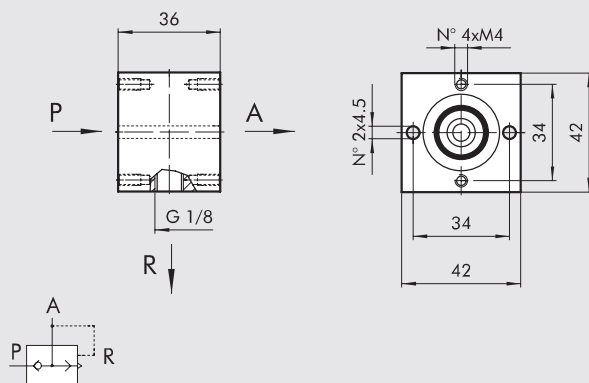


COMPONENTS

- ① Black anodised aluminium body
- ② Anodised aluminium input plate
- ③ Anodised aluminium output plate
- ④ Adiprene lip seal
- ⑤ NBR seals



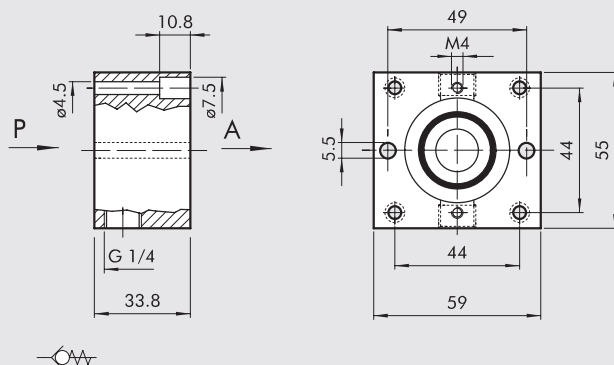
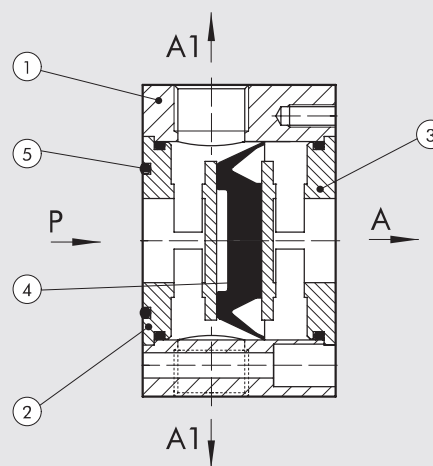
DIMENSIONS



ORDERING CODES

Code	Description
8293138	VNRO New Deal 1/4

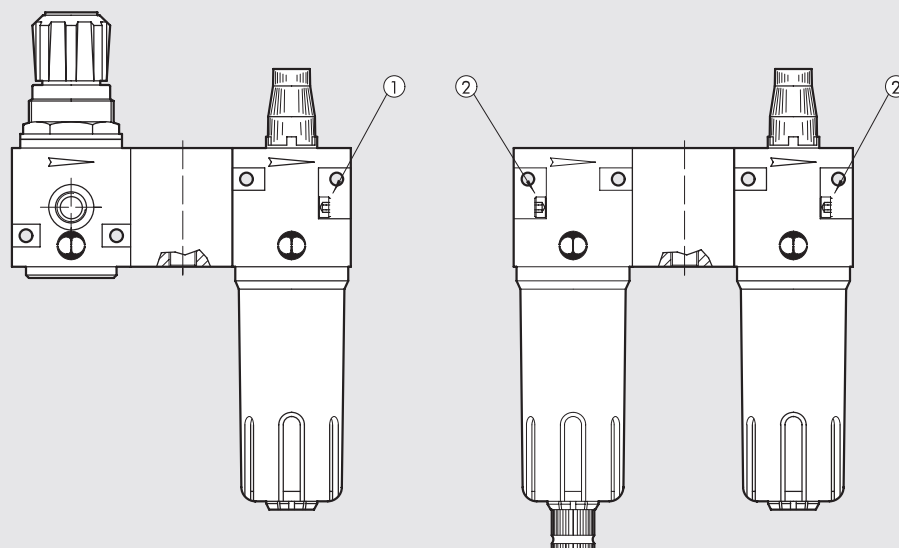
N.B.: Comes complete with 2 M4x82 tie rods and 2 connecting bushings.



N.B.: Supplied complete with 2 M5x90 hex screws.

OIL CHECK VALVE Newdeal - ASSEMBLY

ASSEMBLY



① M4x75 for ND 1/4"
M5x90 for ND 3/8"-1/2"

② M4x40 for ND 1/4"
M5x55 for ND 3/8"-1/2"

NOTES



NOTES



ONE SAFE AIR® is a pneumatic safety component consisting of a ONE air treatment unit arranged in series with a 3/2 electro-pneumatic valve with spool monitoring.

A pressure switch is placed between the ONE unit and the monitored valve to indicate the presence of pressure.

The safety function consists of discharging the circuit downstream the component.

A maximum pressure valve is installed after the monitored valve.

ONE SAFE AIR® comes in various configurations, all based on electric ONE units.

ONE SAFE AIR® is a component classified in category 4 according to ISO EN 13849 and is suitable for use in safety circuits up to PL = e.

The product come with:

- a voluntary examination certificate no. BVI-24-MAC-CV-0009 issued by Bureau Veritas in accordance with EN ISO 1384.

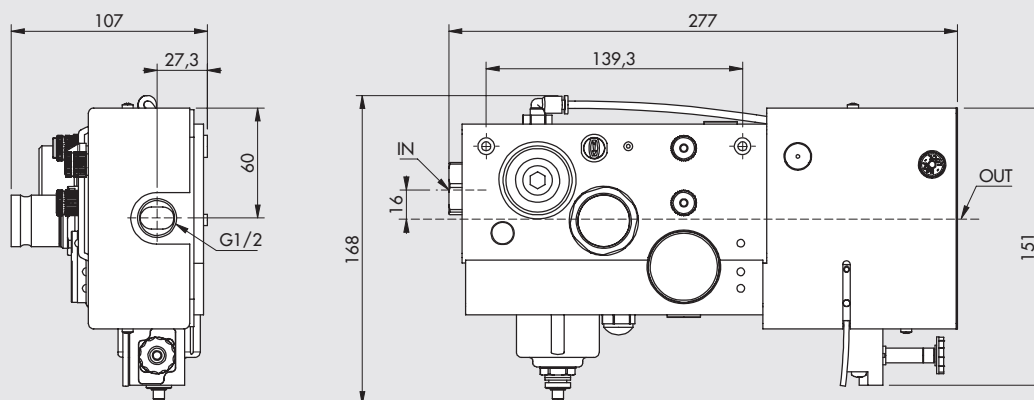


TECHNICAL DATA

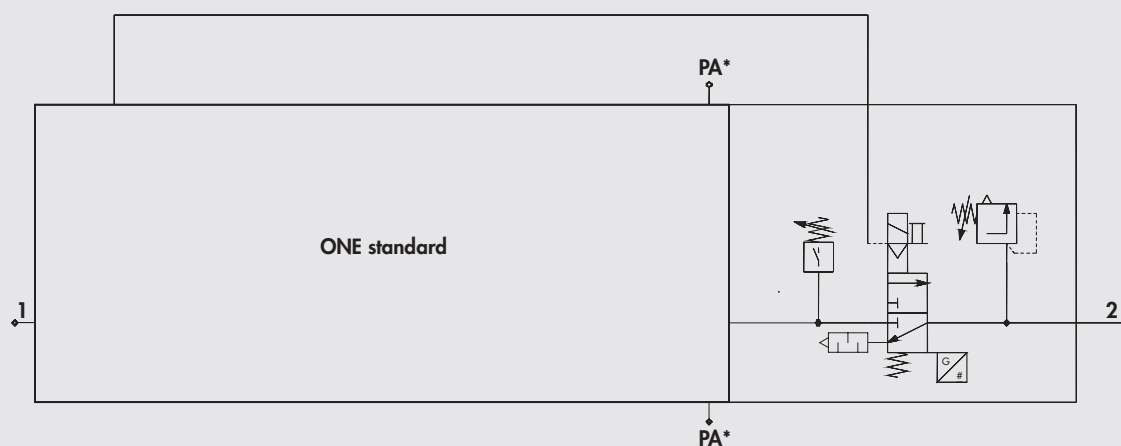
Operation	mm	Dual 3/2 monostable valve with pressure regulation
Fluid		Filtered unlubricated air (50 µm)
Operating temperature range	°C	-10 to +50
Operating pressure	bar	2.5 to 10
Delivery flow rate at 6.3 bar Δp 0.5 bar (with 1/2" input thread)	Nl/min	2900
Delivery flow rate at 6.3 bar Δp 1 bar (with 1/2" input thread)	Nl/min	3600
Flow rate on free exhaust silencer (ONE) at 6.3 bar	Nl/min	1600
Flow rate on free exhaust silencer (valve) at 6.3 bar	Nl/min	4600
TRA/TRR at 6.3 bar (safety valve)	ms/ms	36/60
TRA/TRR at 6.3 bar	ms/ms	Depending on the APR/60
Solenoid pilot		According Cnomo
Manual actuator		Monostable on solenoid pilot
Coils		30 mm side, Ø 8 hole
		2 W - 24 VDC; 3.5 VA - 24, 110, 220 VAC 50/60 Hz
		22 mm side, Ø 8 hole
		2 W - 12, 24 VDC; 3.5 VA - 24, 110, 220 VAC 50/60 Hz
		Certified EN 60204.1 and VDE 0580*
Max coil ring nut torque	Nm	1
Maximum safety pressure switch current	A	2
Maximum safety pressure switch voltage	V	250
Pressure switch contacts		Normally open (NO) and normally closed (NC)
Insulation class of the solenoid ONE		F155
Switching time		100% ED
Electrical connector		M12x1, 5-PIN 90°, according to CEI IEC 60947-5-2 *
Power solenoid ONE	W	3/0.3
Voltage solenoid ONE	V	24VDC ±10%
Type of sensor used		Hall effect
Wall fixing (max. panel thickness 10 mm)		Front, with M5x75 screws or back, with M6x70 screws. The screws are included in the supply.
Maximum torque screws ONE	Nm	3.5 ±0.5
Mounting position		Vertical
Direction of flow		From left to right
Weigh	kg	2.5
Compatibility with oils		See chapter Z1
Class of protection		IP65 with coil and connector mounted
Noise level		Max. 78 dBA with silenced relief
B10d		20 x 10 ⁶ cycles
Categoria - ISO EN 13849		4
DC Low		High (>99 %)
CCF		90
PL - ISO EN 13849		Suitable for use in safety circuits up to PL=e

* To avoid malfunctions, we recommend using Metal Work accessories.

DIMENSIONS



OVERALL DIAGRAM



* No safety function is provided for PA.

NOTES

ORDERING CODES

EXAMPLE	A	B	C	D	E	F	G	H	I	L	M
	ONE electric	Air intake	Degree of filtration	Clogged filter signal	Condensate drain	Pressure regulation	Valves	Pressure switch	Air outlet	Various	
	54	3	2	1	1	8	7	1	0	S	1
	54 ONE electric	3 1/2"	2 20 µm	0 NO	0 RMSA	4 0.5 to 4 bar	5 V3V manual and V3V electric	0 NO	0 Without bushing	5 Safe air®	1 M8 pressure switch (0.3 m) + M8 sensor (0.3 m)
		4 3/4"	5 5 µm	1 YES	1 automatic (RA)	8 0.5 to 8 bar	6 V3V manual with padlock and V3V electric	1 YES			3 M8 pressure switch (0.3 m) + 3 wire sensor (2 m)
	5 1"						7 V3V manual and APR electric				6 2 m pressure switch + M8 sensor (0.3 m)
							8 V3V manual with padlock and APR electric				8 2 m pressure switch + 3 wire sensor (2 m)
							9 only V3V electric				
							A only APR electric				

A ONE electric

B Air intake

There are 3 different gas cylindrical threads: 1/2", 3/4" and 1".

C Degree of filtration

A cartridge with a degree of filtering of 5 µm (yellow) or 20 µm (white) is available. This value is marked on the plug.

D Clogged filter signal

If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the orange indicator will project from the body by a few millimetres.

E Condensate drain

RMSA: the condensate is drained out automatically only by relieving the air pull the knurled knob for having the same result.

Automatic (RA): a floating system that automatically drains the condensate out whenever the level of water in the bowl reaches the set value.

F Pressure regulation

There are 2 possible regulation fields.

The value is marked on the regulation knob.

G Valves

There are 6 different combinations.

- **5 - V3V manual and V3V electric:** two V3V in series are present, one is manual the other electrical. By operating both the valve the air flow is allowed. If one or two are switched OFF, the air downstream is relieved. The electrical one can also be operated manually by reefing pushed the "TEST" button.
- **6 - V3V manual with padlock and V3V electric:** like the previous, with the padlock device in "OFF" position.
- **7 - V3V manual and APR electric:** One manual V3V and one soft start valve are present. When both are operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
- **8 - V3V manual with padlock and APR electric:** like the previous, with the padlock device on the manual V3V in "OFF" position.
- **9 - V3V electric:** It's present only the electrical V3V. The valve will open if it is powered on. When the power supply is switched off, the valve closes and air downstream is relieved. The valve can also be operated manually by keeping pushed the test button.
- **A - APR electric:** It's present only the electric soft start valve. When it is powered ON, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.

H Pressure switch

The pressure switch has a switching contact, which means you can have a normally-open signal or a normally-close signal. It is also connected to the NC and NO LEDs which come on if the actual pressure is less or greater than the set pressure, respectively. The LEDs only come on if an electric charge is connected to them.

I Air outlet without bushings

L Safe air® versions

M Type sensors

PRE-SET bit

The following two types are available:

- **Regulators with fixed setting:** that can be set and locked with pressure at a fixed value. The adjusting screw can be fixed with Loctite to lock regulation.
- **Regulators with maximum pressure setting:** pressure can be regulated up to the maximum preset value. A spacer can be inserted on the adjusting screw to limit pressure.

Both types can be supplied with a standard knob or a blank unserigraphed knob.

MR regulators and FR filters-regulators can also be supplied.

N.B.: For technical data refer to the standard version.



The table below lists some of the versions currently available:

Code	Description	Type of setting	PM	PR	Notes
8295005	MR BIT 1/8 02 TF 2	TF	6	2	Without knob
8286723	MR BIT 1/8 04 TF 3	TF	6	3	Unserigraphed knob
8801703	MRA BIT 1/4 04 TF 4	TF	6	4	For water – unserigraphed knob
8286862	MR BIT 1/4 08 TF 8	TF	10	8	Unserigraphed knob
8849233	MRA BIT 1/8 01 TM 1	TM	6	1	For water – unserigraphed knob
8286783	MR BIT 1/4 02 TM 1.5	TM	6	1.2	Unserigraphed knob
8295007	MR BIT 1/4 02 FC TM 1.8	TM	6	1.8	02 FC standard knob
8825972	MR BIT 1/8 04 TM 4	TM	6	4	04 standard knob
8825936	MR BIT 1/4 04 TM 4	TM	6	4	04 standard knob
8238506	MR BIT 1/4 04 TM 5	TM	6	5	Unserigraphed knob
8292123	MR BIT 1/8 08 TM 6	TM	7.5	6	06 knob
88301N3	MR BIT 1/4 08 TM 6	TM	7.5	6	06 knob

TF = fixed setting

TM = maximum setting

PM = upstream pressure

PR = regulated pressure

NOTES

The fixed or maximum upstream pressure and regulated pressure must always be defined.

The regulators must have a tolerance on the nominal value, measured without flow rate, as follows:

- for fixed setting: ± 0.1 bar
- for max pressure setting: $\pm 15\%$ of the maximum regulated pressure, and in no case less than ± 0.4 bar.

PRE-SET Newdeal AND Skillair®



The following two types are available:

- **Regulators with fixed setting:** that can be set and locked with pressure at a fixed value.
The adjusting screw can be fixed with Loctite to lock regulation.
- **Regulators with maximum pressure setting:** pressure can be regulated up to the maximum preset value.
A spacer can be inserted on the adjusting screw to limit pressure.

Both types can be supplied with a standard knob or a blank unserigraphed knob.

MR regulators and FR filters-regulators can also be supplied.

N.B.: For technical data refer to the standard version.



NOTES

The fixed or maximum upstream pressure and regulated pressure must always be defined

The regulators must have a tolerance on the nominal value, measured without flow rate, as follows:

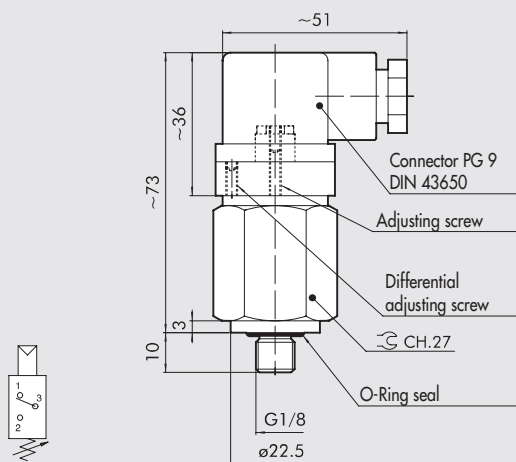
- for fixed setting: ± 0.1 bar
- for max pressure setting: $\pm 15\%$ of the maximum regulated pressure, and in no case less than ± 0.4 bar.

PRESSURE SWITCH WITH TWO ELECTRIC SIGNALS

This pressure switch has two separate electric signals for opening and closing. The pressure difference for opening and closing can be regulated. The pressure switch comes with connector and fairlead.



DIMENSIONS



TECHNICAL DATA

Operating pressure	bar	from 1 to 10
Maximum static pressure	bar	80
Switching tolerance at 25 °C	bar	±0.4
Differential		min 10% - max 30% actual value
Temperature range	°C	from -5 to +90
Maximum voltage	VAC	250
Max. current intensity	A	6 (resistive) - 2 (inductive)
Degree of protection		IP65 DIN40050
Body		brass
Connector and fairlead	PA	6.6
Electric contacts		silver-coated copper 3µm
Diaphragm		NBR
Max. no. of switching at 25° (diaphragm)		120 cycles/1'
Max. no. of switching at 25° (piston)		60 cicli/1'
Mechanical life		1000000 cycles
Torque	Nm	17
Weight	g	140

ORDERING CODES

Code	Description
9000301	Adjustable pressure switch 1/8" PSM 10 R18 NA-NC

NOTES

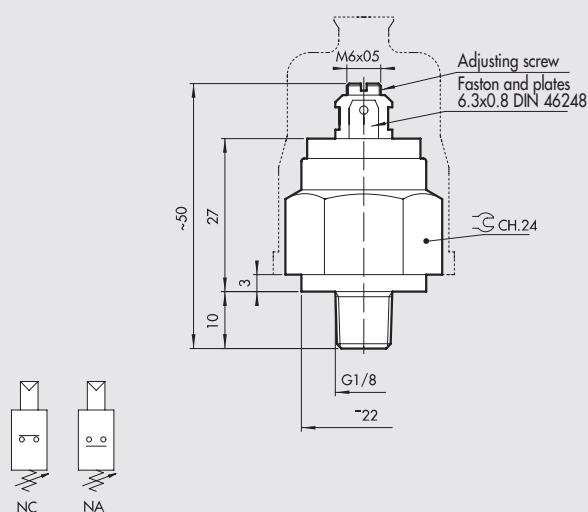
PRESSURE SWITCHES



These pressure switches send an electric signal when they reach a pressure that can be adjusted by means of a screw.
The NO version sends a signal if the pressure exceeds the set value.
The NC version sends a signal if the pressure is below the set value.



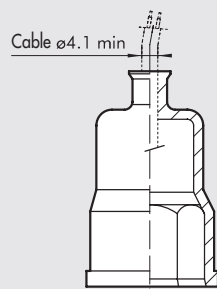
DIMENSIONS



TECHNICAL DATA

Operating pressure	bar	from 1 to 10
Maximum static pressure	bar	80
Switching tolerance at 25 °C	bar	±0.5
Fixed differential at 25 °C	bar	0.2
Temperature range	°C	from -5 to +120
Type of contact		NA o NC
Maximum voltage	V AC/DC	48
Maximum working power	VA	20
Max. current intensity	A	0.5 (resistive) - 0.2 (inductive)
Rigidity test		1500 V - 10 mA - 10 s
Degree of protection		IP00
Degree of protection with CAP1		IP54
Body		brass
Faston contact holding frame	PA	6.6 charged
Electric contacts		silver-coated copper 3µm
Diaphragm		FKM
Max. no. of switching at 25°		200 cycles/1'
Mechanical life		1000000 cycles
Torque	Nm	17
Weight	g	65

SAFETY CAP



ORDERING CODES

Code	Description
9000101	Adjustable pressure switch 1/8" PMN 10 NA
9000201	Adjustable pressure switch 1/8" PMN 10 NC
9000901	Safety cap CAP1

NOTES

CUSTOM PRODUCTS

CUSTOM FITTINGS AND ACCESSORIES SUMMARY



FITTINGS

PUSH-IN FITTINGS



- RL1 Ø6 M7 Ø EXTERNAL 9.95

G5.2



- RL34 Ø6 1/8" STAINLESS STEEL

G5.3

FITTING SERIES A, B, C, D



- FITTINGS SERIE A SPECIAL

G5.4



- FITTINGS SERIE B SPECIAL

G5.7



- FITTINGS SERIE C SPECIAL

G5.8



- FITTINGS SERIE D SPECIAL

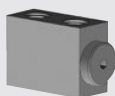
G5.10

ACCESSORIES



- DISTRIBUTOR 14x4/2 - 2x8/6

G5.11



- 3+1 WAY DISTRIBUTION FRAME 1/8"

G5.12



- 4-WAY DISTRIBUTION FRAME M12x1.5

G5.13



- MINIATURE PRESSURE GAUGES

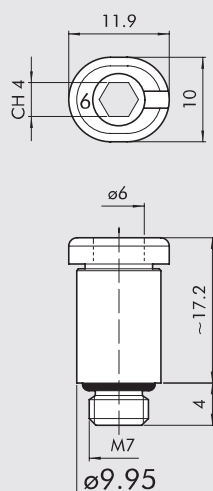
G5.14

RL1 Ø6 M7 Ø EXTERNAL 9.95

This fitting can be mounted on valve units that are 10 mm thick.
The pipe is retained by means of a brass clamp.



DIMENSIONS



ORDERING CODES

Code	Description
2M01011	RL1 Ø6 M7 Ø external 9.95

NOTES

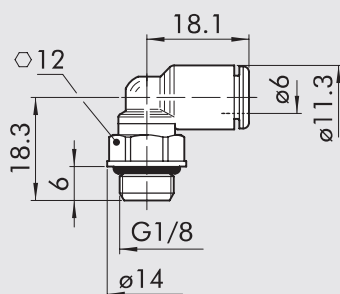
RL34 Ø6 1/8" STAINLESS STEEL



This fitting is ideal for corrosive environments, such as in washing systems using detergents containing nitric acid.
The coupling is made of AISI 316 stainless steel, the plastic parts are made of PBT and the gaskets of NBR.
Available also with black body and red release bush.



DIMENSIONS



ORDERING CODES

Code	Description
8826146	RL34 Ø6 1/8

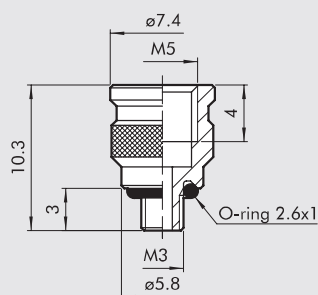
NOTES

FITTINGS SERIE A SPECIAL

The figure shows a sample application of custom-made fittings. Owing to the fitting construction technology, the minimum production batch is 1000 pieces per order.

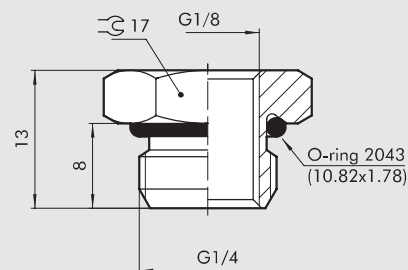


A4/Z M3-M5



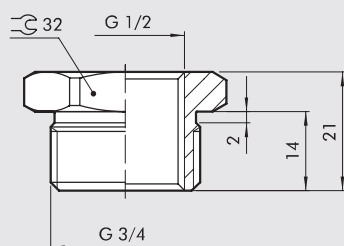
Code	Description
8000204	A4/Z M3-M5

A4/Z 1/4-1/8 WITH OR



Code	Description
88259F2	A4/Z 1/4-1/8 with OR

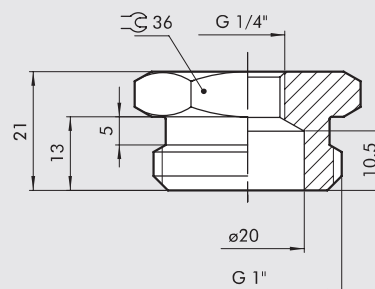
A4/Z 3/4-1/2



Code	Description
2151007	A4/Z 3/4-1/2

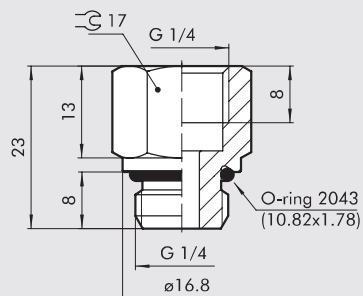
N.B.: Not nickelled

A4/Z 1-1/4



Code	Description
2151008	A4/Z 1-1/4

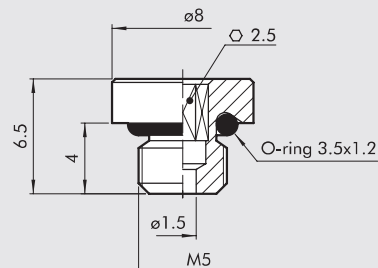
A5/Z 1/4-1/4 WITH OR



Code	Description
8825951	A5/Z 1/4-1/4 with OR

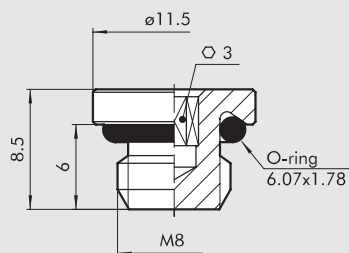
N.B.: Not nickelled

A7 M5 WITH HOLE Ø1.5



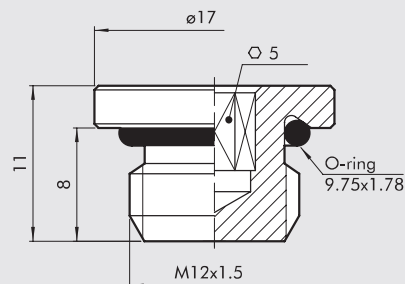
Code	Description
8000205	A7 M5 with hole Ø1.5

A7 M8



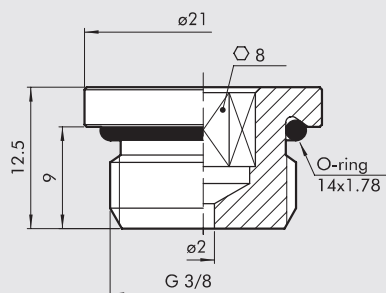
Code	Description
8286772	A7 M8

A7 M12x1.5



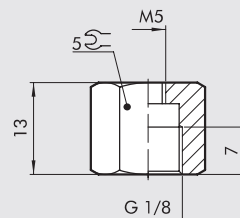
Code	Description
8826326	A7 M12x1.5

A7 3/8 WITH HOLE Ø2

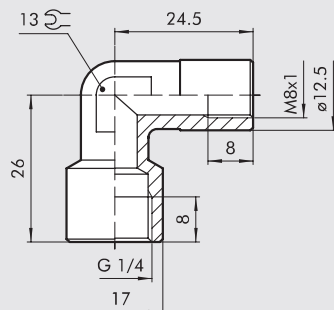


Code	Description
8000206	A7 3/8 with hole Ø2

A8 1/8-M5

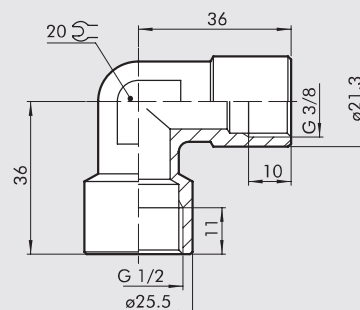


Code	Description
8204738	A8 1/8-M5

A9 M8x1-1/4

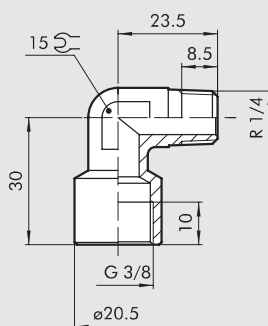
Code	Description
8000207	A9 M8x1-1/4

N.B.: Not nickelled

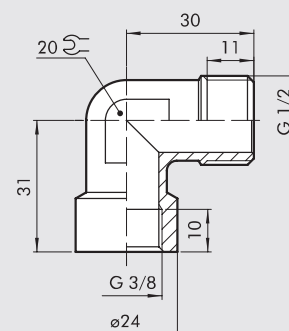
A9 3/8-1/2

Code	Description
2109106	A9 3/8-1/2

N.B.: Not nickelled

A10 G3/8-R1/4

Code	Description
8000208	A10 G3/8-R1/4

A10 3/8-1/2

Code	Description
8849239	A10 3/8-1/2

NOTES

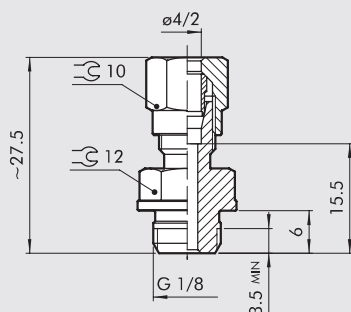
FITTINGS SERIE B SPECIAL



The figure shows a sample application of custom-made fittings.
Owing to the fitting construction technology, the minimum production batch is 1000 pieces per order.

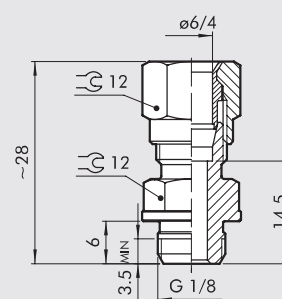


B1/Z 4/2-1/8



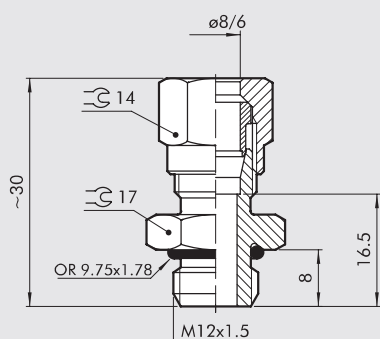
Code	Description
8821206	B1/Z 4/2-1/8

B1/Z 6/4-1/8



Code	Description
8821201	B1/Z 6/4-1/8

B1/Z 8/6-M12x1.5 WITH OR



Code	Description
8826329	B1/Z 8/6-M12x1.5 with OR

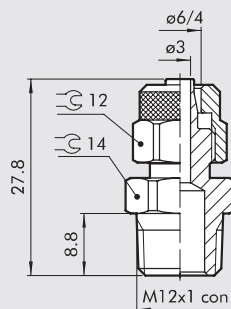
NOTES

FITTINGS SERIE C SPECIAL

The figure shows a sample application of custom-made fittings.
Owing to the fitting construction technology, the minimum production batch is 1000 pieces per order.

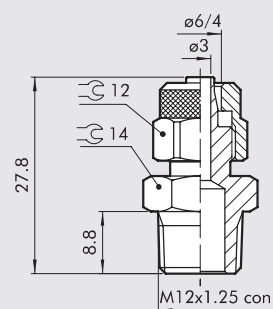


C1 6/4 M12x1 CONICAL



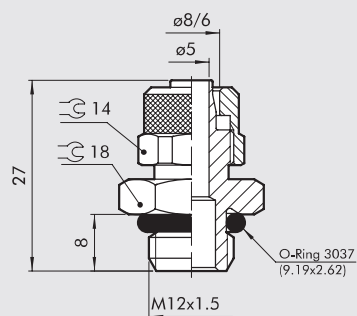
Code	Description
2353002	C1 6/4 M12x1 conical

C1 6/4 M12x1.25 CONICAL



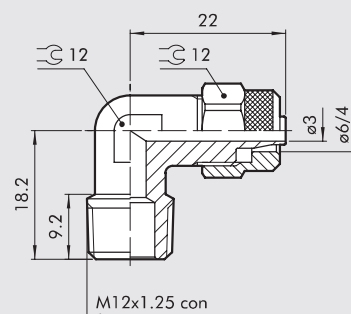
Code	Description
2353001	C1 6/4 M12x1 conical

C1/Z 8/6 M12x1.5



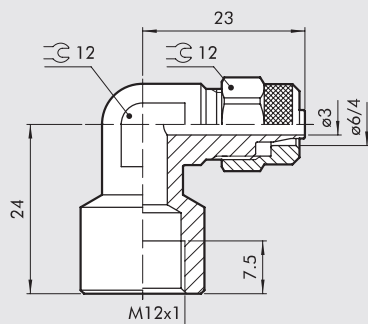
Code	Description
8826362	C1/Z 8/6 M12x1.5

C5 6/4 M12x1.25 CONICAL



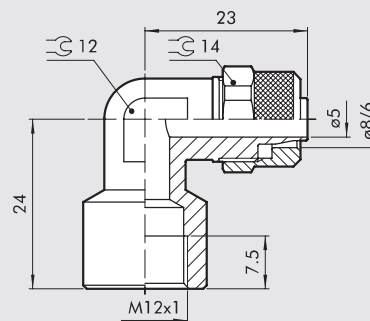
Code	Description
2354001	C5 6/4 M12x1.25 conical

C5/F 6/4 M12x1



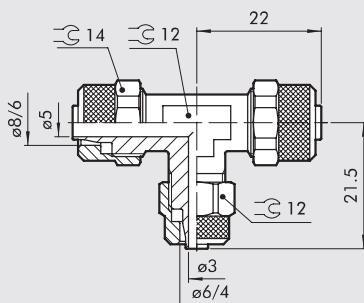
Code	Description
8826539	C5/F 6/4 M12x1

C5/F 8/6 M12x1



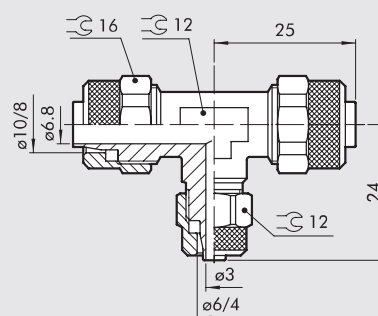
Code	Description
8826524	C5/F 8/6 M12x1

C9 8/6 - 6/4



Code	Description
8260401	C9 8/6 - 6/4

C9 10/8 - 6/4



Code	Description
8849208	C9 10/8 - 6/4

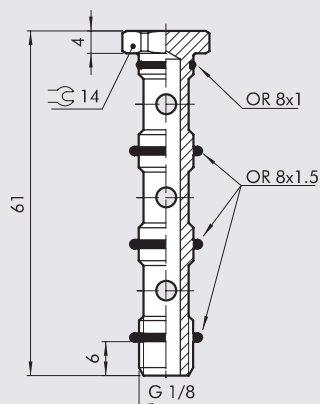
NOTES

FITTINGS SERIE D SPECIAL

The figure shows a sample application of custom-made fittings.
Owing to the fitting construction technology, the minimum production batch is 1000 pieces per order.

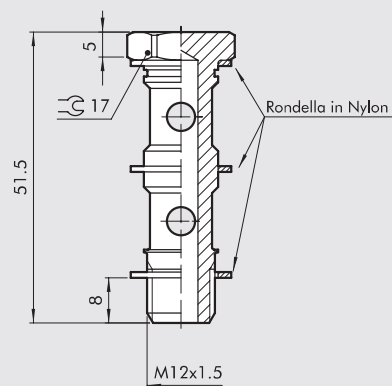


D8/3 1/8 WITH OR



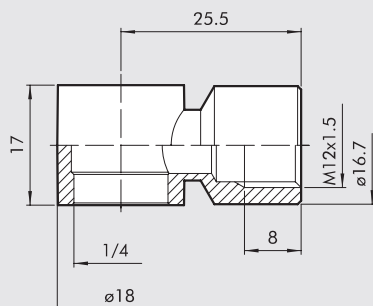
Code	Description
8045526	D8/3 1/8 with OR
N.B.: For models R28-R29	

D8 M12x1.5 WITH WASHER



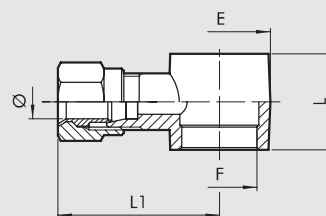
Code	Description
8294629	D8 M12x1.5 with washer
N.B.: For models R13-R14-D5-D6-D12-D17	

D12 1/4 M12x1.5



Code	Description
8826330	D12 1/4 M12x1.5

D17 (UNLOSABLE OLIVE)

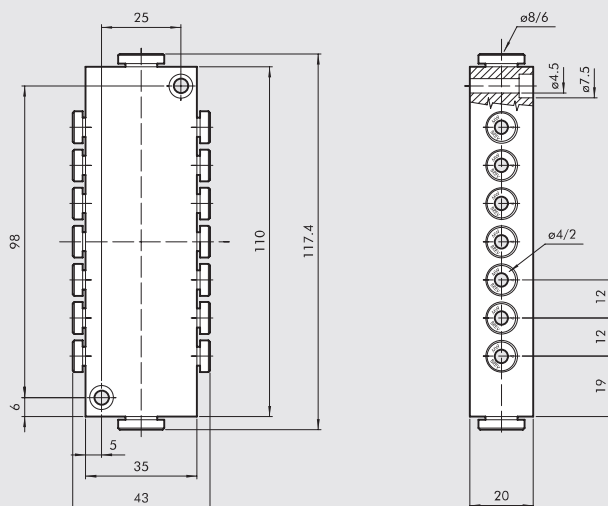


Code	Ref.	Ø	F	Ch1	L	L1	E
2417103	D17	6/4	1/4	12	17	28	18

DISTRIBUTOR 14x4/2 - 2x8/6



DIMENSIONS



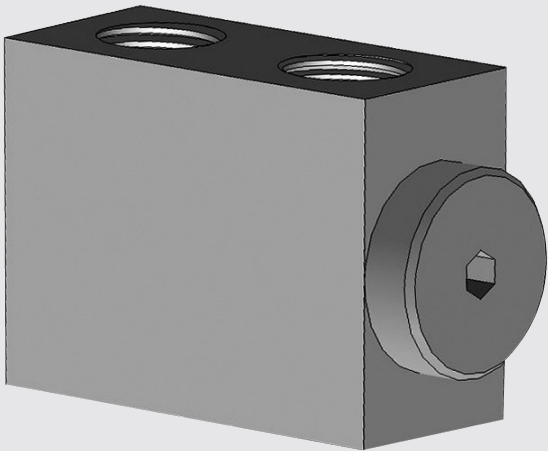
ORDERING CODES

Code	Description
8294572	Distributor 14x4/2 - 2x8/6

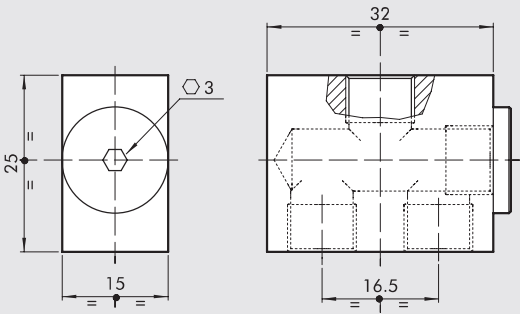
N.B.: Anodised aluminium

3+1 WAY DISTRIBUTION FRAME 1/8"

The A7 can be moved to another position and the desired output plugged, or it can be removed completely to give a 4-way manifold.



DIMENSIONS

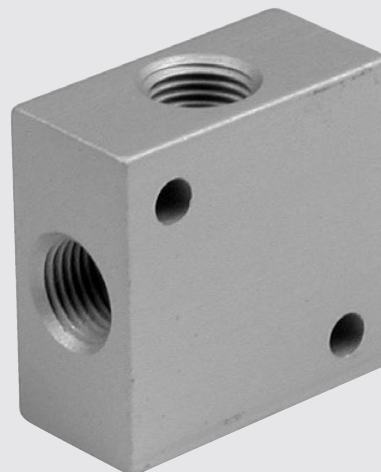


ORDERING CODES

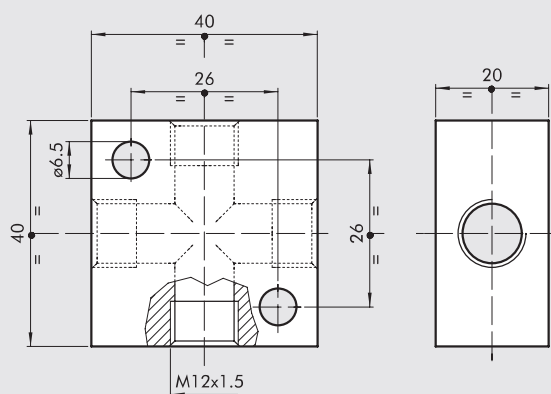
Code	Description
8045527	Distributor 3+1 way 1/8

N.B.: Anodised aluminium

4-WAY DISTRIBUTION FRAME M12x1.5



DIMENSIONS



ORDERING CODES

Code	Description
8826328	4-way distribution frame M12x1.5

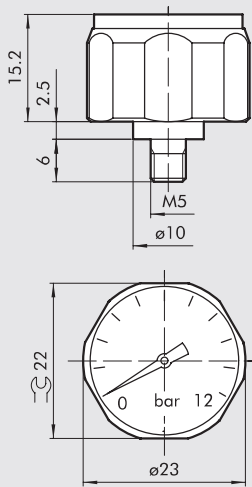
N.B.: Anodised aluminium

MINIATURE PRESSURE GAUGES

Despite their reduced dimensions, these miniature pressure gauges ensure high precision reading.



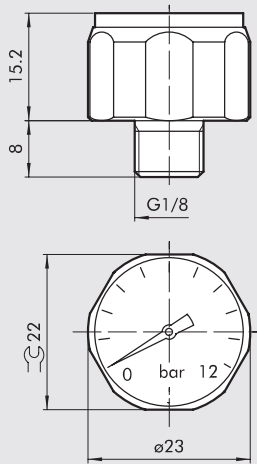
M5 PRESSURE SWITCH DIMENSIONS



ORDERING CODES

Code	Description
9062101	Pressure switch 0-12 Ø23 M5

1/8" PRESSURE SWITCH DIMENSIONS



ORDERING CODES

Code	Description
9062100	Pressure switch 0-12 Ø23 1/8

NOTES

- Nickel-plated brass box
- Accuracy ±4% full scale
- Maximum operating pressure 12 bar (1.2 MPa)

NOTES

CUSTOM PRODUCTS

DOCUMENTATION

TECHNICAL DOCUMENTATION

PRINCIPLES OF PNEUMATICS

PRESSURE:

The ratio between a force and the surface on which it acts.

$$P = \frac{F \text{ (N)}}{S \text{ (m}^2\text{)}} = Pa$$

ATMOSPHERIC PRESSURE:

Equivalent to the pressure exerted on a surface at sea level at 20°C and with 65% humidity: 10.33 m H₂O; 760 mm Hg; 1.013 x 10⁵ Pa.

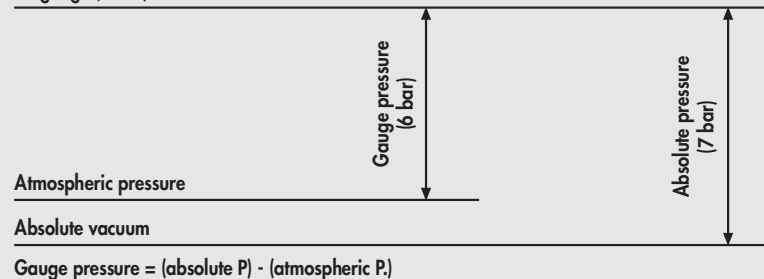
ABSOLUTE PRESSURE:

The pressure above the absolute zero value - pressure 0 = absolute vacuum.

GAUGE PRESSURE:

The pressure referring to ambient atmospheric pressure: it is normally indicated by the pressure gauges used in pneumatic circuits.

Pressure read
on gauge (6 bar)



UPSTREAM PRESSURE:

Pressure of the compressed air at the pneumatic component inlet.

DOWNSTREAM PRESSURE:

Pressure of the compressed air at the pneumatic component outlet.

ΔP PRESSURE DROP:

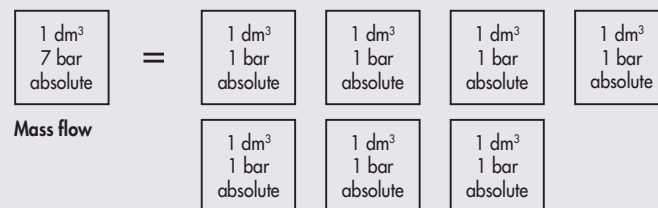
Difference between upstream and downstream pressure.

FLOW RATE:

The volume of air passing through a given section in a unit of time.

In pneumatics, the volume unit of measurement is NI (Normal litre).

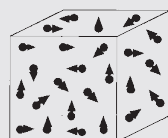
In practice it represents the volumetric capacity of the air referring to ambient atmospheric pressure. E.g. in a conduit of a given section, there is a mass flow of 1 litre of air (1 dm³) at 7 bar absolute pressure. This value expressed as volume of air corresponds to 7 litres of air (7 dm³) at the ambient atmospheric pressure (1 bar).



- With the same pressure, the flow rate is directly proportional to the port cross section.
- With the same cross section, the pressure is directly proportional to the flow rate.
- Without a ΔP (difference between upstream and downstream pressure), there can be no flow rate.

PASCAL'S LAW:

A confined fluid transmits externally applied pressure uniformly in all directions.



Density of air, measured to 20°C to the atmospheric pressure: 1.275 $\frac{\text{kg}}{\text{m}^3}$

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENT k_v

Coefficient k_v gives approximate values when used for compressed air.

The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > \frac{P_1}{2}$$

$$Q_N = 28,6 \cdot k_v \cdot \sqrt{P_2 \cdot \Delta P} \cdot \sqrt{\frac{293}{273 + t}}$$

$$\text{Supersonic flow: } P_2 < \frac{P_1}{2}$$

$$Q_N^* = 14,3 \cdot k_v \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

k_v = hydraulic coefficient in $\frac{l}{min} \left(\frac{kg}{dm^3 \cdot bar} \right)^{1/2}$

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

ΔP = difference in pressure $P_1 - P_2$ [bar]

t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C AND B

The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > b \cdot P_1$$

$$Q_N = C \cdot P_1 \cdot \sqrt{1 - \left(\frac{r-b}{1-b} \right)^2} \cdot \sqrt{\frac{293}{273 + t}}$$

$$\text{Supersonic flow: } P_2 < b \cdot P_1$$

$$Q_N^* = C \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

C = conductance in [Nl/min · bar]

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

r = downstream pressure ratio: upstream pressure P_2 / P_1

b = critical pressure ratio $b = P_2^* / P_1$

t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C_v

The flow rate Q_N at a normal volume through a valve is:

$$\text{Subsonic flow: } P_2 > 0.528 \cdot P_1$$

$$Q_N = 400 \cdot C_v \cdot \sqrt{P_2 \Delta P} \cdot \sqrt{\frac{273}{273 + t}}$$

$$\text{Supersonic flow: } P_2 < 0.528 \cdot P_1$$

$$Q_N^* = 200 \cdot C_v \cdot P_1 \cdot \sqrt{\frac{273}{273 + t}}$$

where

Q_N = flow rate at a normal volume [Nl/min]

Q_N^* = critical flow rate at a normal volume [Nl/min]

C_v = coefficient of flow [US · GPM / p.s.i.]

P_1 = absolute upstream pressure [bar]

P_2 = absolute downstream pressure [bar]

t = input air temperature [°C]

CALCULATING THE NOMINAL FLOW RATE

The nominal flow rate Q_{Nn} of a valve, i.e. the flow at normal volume passing through a valve with ($P_1 = 6$ [bar] ($P_1 = 7$ [bar] absolute) and $\Delta P = 1$ [bar], can be obtained from the previous formula as follows:

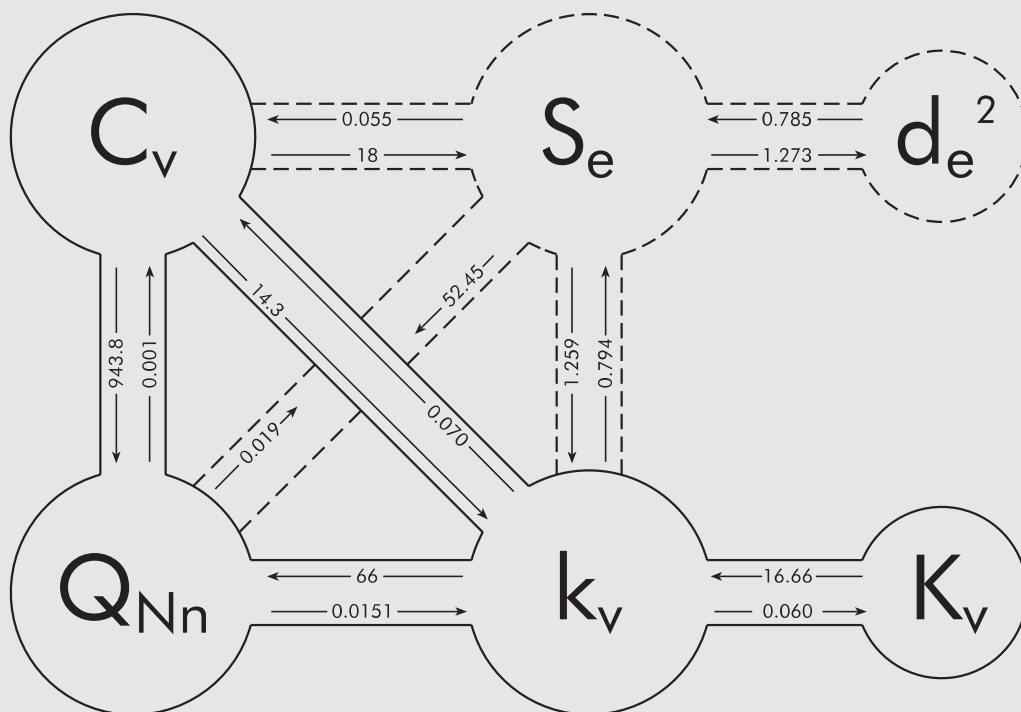
$$Q_{Nn} = 66 \cdot k_v$$

$$Q_{Nn} = 943.8 \cdot C_v$$

$$Q_{Nn} = 7 \cdot C \cdot \sqrt{1 - \left(\frac{0.857 - b}{1 - b} \right)^2}$$

Equalising the first two formulae gives: $k_v = 14.3 \cdot C_v$

- REACTIONS BETWEEN Q_{Nn} - C_v - k_v - K_v - S_e - d_e^2



Q_{Nn} = flow rate in [Nl/min] with $p_1 = 6$ [bar] ($P_1 = 7$ [bar] absolute) and $\Delta P = 1$ [bar]

k_v hydraulic coefficient in $\frac{l}{min} \left(\frac{kg}{dm^3 \cdot bar} \right)^{1/2}$

K_v hydraulic coefficient in $\frac{m^3}{h} \left(\frac{kg}{dm^3 \cdot bar} \right)^{1/2}$

C_v coefficient of flow [US · GPM / p.s.i.]

S_e equivalent cross section [mm²]

$d_e^2 = S_e \cdot \frac{4}{\pi}$ through diameter² in [mm²] obtained from the equivalent cross section

CONVERSION TABLES

TABLE 1 - CONVERSION BETWEEN SYSTEMS OF MEASUREMENT

	Technical system and CGS system	→ Multiply by	International system	← Multiply by	British system
Length	m	1	m	0.0254	in (inch)
			m	0.3048	ft (foot)
Time	s	1	s	1	s
Area	m ²	1	m ²	0.000645	in ²
			m ²	0.0929	ft ²
Volume	m ³	1	m ³	16.39·10 ⁻⁴	in ³
			m ³	0.02832	ft ³
Speed	m·s ⁻¹	1	m·s ⁻¹	0.3048	ft·s ⁻¹
Acceleration	m·s ⁻²	1	m·s ⁻²	0.3048	ft·s ⁻²
Mass	kg·s ⁻² ·m ⁻¹	9.81	kg	0.4536	lb (pound)
			kg	14.594	slug = lb·f·s ² ·ft ⁻¹
Force	kg o kp	9.81	N	4.4483	lb f (pound)
	kg	0.981	da N = 10 N		
Torque	kg·m	9.81	N·m	1.356	lb f·ft
Density	kg·s ⁻² ·m ⁻³	9.81	kg·m ⁻³	16.02	lb·ft ⁻³
Specific weight	kg·m ⁻³	9.81	N·m ⁻³	157.16	lb f·ft ⁻³
Work, energy	kg·m	9.81	J	1.356	lb f·ft
			KWh = 3.6·10 ⁶ J		
Heat	Cal	4186	J	1055.1	BTU
Power	kg·m·s ⁻¹	9.81	W	1.3558	lb f·ft·s ⁻¹
	CV	735	W	745.7	HP
Pressure	kg·m ⁻²	9.81	Pa	6.8948·10	p.s.i.=lb f·in ⁻²
	kg·cm ⁻²	9.81·10	Pa		
	kg·cm ⁻²	0.981	bar = 10 ⁵ Pa		
Mass flow	kg·s·m ⁻¹	9.81	kg·s ⁻¹	0.4536	lb·s ⁻²
Volume flow	m ³ ·s ⁻¹	1	m ³ ·s ⁻¹	0.02832	ft·s ⁻¹
	Nl/min ⁻¹	0.0000167	Nm ³ ·S ⁻¹	0.000472	scfm
Dynamic viscosity	kg·s·m ⁻²	9.81	Pa·s	6.896	lb f·s·in ⁻²
	Po (poise-system CGS)	0.1	Pa·s		
Kinematic viscosity	m ² ·s ⁻²	1	m ² ·s ⁻²	0.0929	ft ² ·s ⁻¹
	St (stokes-system CGS)	10 ⁻⁴	m ² ·s ⁻²		
	Technical system and CGS system	← Divide by	International system	→ Divide by	British system

TABLE 2 - TEMPERATURE CONVERSION

$$^{\circ}\text{F} = [1.8 \cdot ^{\circ}\text{C}] + 32$$

$$^{\circ}\text{C} = [^{\circ}\text{F} - 32] \cdot 0.55$$

$$\text{K} = ^{\circ}\text{C} + 273$$

$$^{\circ}\text{C} = \text{degrees Celsius}$$

$$\text{K} = \text{degrees Kelvin}$$

$$^{\circ}\text{F} = \text{degrees Fahrenheit}$$

TABLE 3 - MULTIPLES AND SUB-MULTIPLES

Name	Symbol	Value
tera	T	10 ¹²
giga	G	10 ⁹
mega	M	10 ⁶
kilo	k	10 ³
etto	h	10 ²
deca	da	10
deci	d	10 ⁻¹
centi	c	10 ⁻²
milli	m	10 ⁻³
micro	μ	10 ⁻⁶
nano	n	10 ⁻⁹
pico	p	10 ⁻¹²

TABLE 4 - PRESSURE UNIT CONVERSION FACTORS

To obtain the pressure for the following units, multiply the number given for the source units by the coefficient shown.

Source units	Pa	kPa	MPa	bar	mbar	kp/cm ²	cm H ₂ O	mm H ₂ O	mm Hg	p.s.i.
Pa	1	10 ⁻³	10 ⁻⁶	10 ⁻⁵	10 ⁻²	10.1972·10 ⁻⁶	10.1972·10 ⁻³	101.972·10 ⁻³	7.50062·10 ⁻³	0.145038·10 ⁻³
kPa	10 ³	1	10 ⁻³	10 ⁻²	10	10.1972·10 ⁻³	101.972	101.972	7.50062	0.145038
MPa	10 ⁶	10 ³	1	10	10 ⁴	10.1972	10.1972·10 ³	101.972·10 ³	7.50062·10 ³	0.145038·10 ³
bar	10 ⁵	10 ²	10 ⁻¹	1	10 ³	1.01972	1.01972·10 ³	10.1972·10 ³	750.062	14.5038
mbar	100	0.1	10 ⁻⁴	10 ⁻³	1	1.01972·10 ⁻³	1.01972	10.1972	0.750062	14.5038·10 ⁻³
kp/cm ²	98066.5	98.0665	98.0665·10 ⁻³	0.989665	980.665	1	1000	10.000	735.559	14.2233
cm H ₂ O	98.0665	98.0665·10 ⁻³	98.0665·10 ⁻⁶	0.98665·10 ⁻³	0.98665	10 ⁻³	1	10	0.735559	14.2233·10 ⁻³
mm H ₂ O	9.80665	9.80665·10 ⁻³	9.80665·10 ⁻⁶	9.80665·10 ⁻⁶	9.80665·10 ⁻³	10 ⁻⁴	0.1	1	73.5559·10 ⁻³	14.2233·10 ⁻³
mm Hg	133.322	133.322·10 ⁻³	133.322·10 ⁻⁶	1.33322·10 ⁻³	1.33322	1.35951·10 ⁻³	1.35951	13.5951	1	19.3368·10 ⁻³
p.s.i.	6894.76	6.89476	6.89476·10 ⁻³	68.9476·10 ⁻³	68.9476	70.307·10 ⁻³	70.307	703.07	51.7149	1

TABLE 5 - AIR CONSTANTS

Entity	Symbol	Value
Dynamic viscosity	μ	$17.89 \cdot 10^{-6}$ Pa s
Kinematic viscosity	γ	$14.61 \cdot 10^{-6}$ m ² s ⁻¹
Density	ρ	1.225 kg m ⁻³
Specific heat at constant pressure	C_p	1.004 KJ kg ⁻¹ K ⁻¹
Speed of sound	a	340.29 m s ⁻¹
Gas constant	R	287.1 J kg ⁻¹ K ⁻¹

TABLE 6 - CONTENT OF WATER VAPOUR IN SATURATED COMPRESSED AIR

Grams of water vapour per cubic metre (g/m³) of air at ambient atmospheric pressure 1.013 bar (0 bar gauge pressure), saturated and compressed at the given pressures and temperatures.

	Pressure - bar												
Temperature °C	0	0.4	0.63	1	1.6	2.5	4	6.3	8	10	12.5	16	20
0	4.82	3.45	2.97	2.42	1.87	1.39	0.97	0.67	0.54	0.44	0.36	0.29	0.23
5	6.88	4.93	4.24	3.46	2.68	1.99	1.39	0.95	0.77	0.63	0.52	0.41	0.33
10	9.41	6.74	5.80	4.73	3.66	2.72	1.90	1.30	1.06	0.87	0.70	0.56	0.45
15	12.7	9.08	7.83	6.39	4.94	3.67	2.56	1.76	1.43	1.17	0.95	0.76	0.61
20	17.4	12.5	10.7	8.75	6.77	5.02	3.51	2.41	1.95	1.60	1.30	1.04	0.84
25	23.6	16.9	14.6	11.9	9.18	6.82	4.77	3.27	2.65	2.17	1.77	1.40	1.14
30	30.5	21.8	18.8	15.3	11.9	8.81	6.16	4.22	3.43	2.81	2.29	1.81	1.47
35	39	27.9	24	19.6	15.2	11.3	7.87	5.40	4.38	3.59	2.92	2.32	1.88
40	49.6	35.5	30.6	24.9	19.3	14.3	10	6.87	5.57	4.55	3.72	2.95	2.39
45	63.5	45.45	39.2	31.9	24.7	18.3	12.8	8.79	7.13	5.84	4.76	3.77	3.06
50	81	58	49.9	40.7	31.5	23.4	16.4	11.2	9.10	7.45	6.07	4.82	3.90

TABLE 7 - VOLUME FLOW UNIT CONVERSION FACTORS

To obtain volume flow for the following units, multiply the number given for the source units by the coefficient shown.

Source units	m ³ /s	l/s	cm ³ /s	m ³ /h	m ³ /min	l/h	l/min	ft ³ /min (scfm)	gallone/min UK	gallone/min USA
m ³ /s	1	10 ³	10 ⁶	3600	60	3.6·10 ³	60·10 ³	2.1188·10 ³	13.198·10 ³	15.850·10 ³
l/s	10 ⁻³	1	10 ³	3.6	60·10 ⁻³	3.6·10 ³	60	2.1188	13.198	15.850
cm ³ /s	10 ⁻⁶	10 ⁻³	1	3600·10 ⁻⁶	60·10 ⁻⁶	3.6	60·10 ⁻³	2.1188·10 ⁻³	13.198·10 ⁻³	15.850·10 ⁻³
m ³ /h	0.277778·10 ⁻³	0.27778	0.277778·10 ³	1	16.667·10 ⁻³	10 ³	16.667	0.58856	3.6661	4.4028
m ³ /min	16.667·10 ⁻³	16.667	16.667·10 ³	60	1	6·10 ⁴	10 ³	35.313	219.97	264.17 ⁻³
l/h	0.27778·10 ⁻⁶	0.27778·10 ⁻³	0.27778	10 ⁻³	16.667·10 ⁻⁶	1	16.667·10 ⁻³	0.58856·10 ⁻³	3.6661·10 ⁻³	4.4028·10 ⁻³
l/min	16.667·10 ⁻⁶	16.667·10 ⁻³	16.667 ⁻⁶	60·10 ⁻³	10 ⁻³	60 ⁻³	1	35.313·10 ⁻³	219.97·10 ⁻³	264.17·10 ⁻³
ft ³ /min	0.47195·10 ⁻³	0.47195	0.47195·10 ³	1.6990	28.317·10 ⁻³	1.6990·10 ³	28.317	1	6.2288	7.4804
UK gallon/min	75.768·10 ⁻⁶	75.768 ⁻³	75.768	0.27276	4.5461·10 ⁻³	272.76	4.5461	0.16054	1	1.2009
US gallon/min	63.090·10 ⁻⁶	63.090·10 ⁻³	63.090	0.22712	3.7854·10 ⁻³	227.12	3.7854	0.13368	0.83266	1

TABLE 8 - RECOMMENDED FLOW RATE

Maximum recommended flow rate in Nl/min for pneumatic circuit piping. Flow rate values are calculated as follows:

- pipes Ø 2 to Ø 12 with a pressure drop equal to 0.3% of operating pressure per metre of pipe.
- pipes Ø 15 to Ø 40 with a pressure drop equal to 0.15% of the operating pressure per metre of pipe.

Inside diameter in mm - Nominal diameter in gas inches											
Pressure bar	Ø 2	Ø 4	1/8" Ø 6	1/4" Ø 8	3/8" Ø 10	Ø 12	1/2" Ø 15	3/4" Ø 20	1" Ø 25	1 1/4" Ø 32	1 1/2" Ø 40
2	3.5	19	53	110	190	300	370	750	1350	2500	4300
4	6.2	35	97	200	350	550	700	1400	2400	4500	7800
6	9	50	140	290	500	800	1000	2000	3500	6500	11500
8	11.8	66	185	380	660	1050	1300	2600	4500	8500	15000
10	14.5	82	230	470	820	1300	1600	3250	5700	10500	18500

TABLE 9 - INDICATIVE AIR CONSUMPTION FOR DIFFERENT TYPES OF EQUIPMENT

Type of equipment	Consumption at full load NI/min.	Type of equipment	Consumption at full load NI/min.
6 mm Ø drill	300	Bench tamper	350
12 mm Ø drill	500	8 kg tamper	700
20 mm Ø drill	1150	10 mm Ø riveting machine	450
45 mm Ø drill	1650	20 mm Ø riveting machine	1000
M6 screwdriver or bolt screw	300	4 kg chisel	380
M10 screwdriver or bolt screw	400	6 kg chisel	500
M16 impulse screw	1150	Small paint-spray gun	160
M25 impulse screw	1650	Industrial paint-spray gun	500
1" Ø wheel grinder	350	1 mm Ø cleaning bellows	65
6" Ø disk grinder	1500	2 mm Ø cleaning bellows	250
9" Ø disk grinder	2100	5 mm Ø nozzle sandblasting machine	1600
Polishing machine	1200	8 mm Ø nozzle sandblasting machine	4200
1000 kg hoist	2150	Plaster sprayer	500
Spot welder	300	Heavy-duty concrete vibrator	2500
		35 kg concrete breaker	1650
		18 kg breaker	1850
		30 kg breaker	2850

DEGREE OF PROTECTION

NORMA EN 60529 E CEI 529

IP 6 5

DEGREE
OF PROTECTION
AGAINST
THE PENETRATION
OF LIQUIDS

DEGREE OF PROTECTION AGAINST
THE PENETRATION OF FOREIGN
BODIES COMING INTO CONTACT
WITH LIVE PARTS.

1 st No.	DESCRIPTION	2 nd No.	DESCRIPTION
0	Not protected	0	Not protected
1	Protected against solid bodies greater than Ø 50 mm	1	Protected against water falling vertically (condensate)
2	Protected against solid bodies greater than Ø 12 mm	2	Protected against drops of water falling up to 15° off the vertical
3	Protected against solid bodies greater than Ø 2.5 mm	3	Protected against rain water up to 60° off the vertical
4	Protected against solid bodies greater than Ø 1 mm	4	Protected against sprays of water from any direction.
5	Protected against dust	5	Protected against jets of water fired from any direction
6	Totally protected against dust	6	Protected against sea waves or the like
		7	Protected against the effects of immersion

CHECK COMPATIBILITY

Pneumatic products include elastomer gaskets that are made of acryl-nitrile butadiene (NBR), polyurethane or fluorocarbon rubber (FKM/FPM).

It is important for them not to come into contact with incompatible substances, which could cause them to swell or crack and subsequently malfunction.

In particular, it is necessary to check compatibility of:

- the oil used in the air compressor
- any oil used in the lubricator
- the oil or cutting fluids used on the machine, which could get into the cylinders and from there the valves.

We have drawn up a compatibility table containing a list of chemicals and elastomers, and also Hostaform®, the technopolymer most commonly used in our products. Please refer to the English webpage <https://www.metalwork.it/pneumatic-components/compatibility-materials-0001408.html> or the Italian webpage <https://www.metalwork.it/componenti-pneumatici/materiali-compatibilita-0001407.html>

The website <http://divapps.parker.com/divapps/seal/mobile/FluidCompatibility/Desktop/> of Parker Pradifa, one of our gasket suppliers, contains an interactive table defining incompatibility.

Below are some the oils that are definitely compatible with all the elastomers used with our products:

- UNI and ISO FD 22 lubricants (Energol HPL, Spinesso, Mobil DTE, Tellus Oil).
- low pressure compressor oil: SHELL CORENA OIL D 46
- high pressure compressor oil: SHELL RIMULA X OIL 40.

Please note that some ester-based synthetic oils used in compressors are extremely incompatible with NBR and polyurethane. ROTORIL 8000 F2 is one of them.

Metal Work can provide you with further information or carry out research and tests if required.

AIR PURITY CLASS

The ISO 8573-1 standard establishes the level of air quality in terms of solid particles, humidity and oil concentration.

Example:

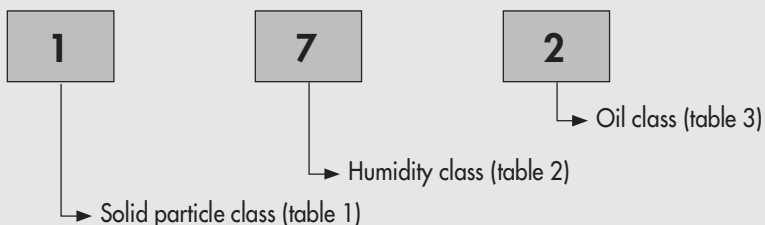


TABLE 1 - SOLID PARTICLE CLASSES

Class	Maximum number of particles for m ³		
	Particle size, d [μm]		
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0
0	As specified by the equipment user or supplier and more stringent than class 1		
1	≤ 20000	≤ 400	≤ 10
2	≤ 400000	≤ 6000	≤ 100
3	Not specified	≤ 90000	≤ 1000
4	Not specified	Not specified	≤ 10000
5	Not specified	Not specified	≤ 100000
Class	Concentration, C _p [mg/m ³]		
6	0 < C _p ≤ 5		
7	5 < C _p ≤ 10		
X	C _p > 10		

TABLE 2 – HUMIDITY CLASSES

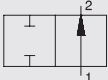
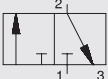
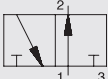
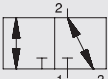
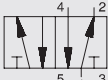
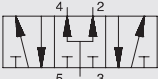
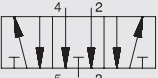
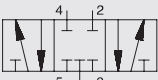
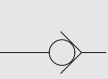
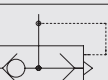
Class	Pressure dewpoint [°C]
0	As specified by the equipment user or supplier and more stringent than class 1
1	≤ -70
2	≤ -40
3	≤ -20
4	≤ +3
5	≤ +7
6	≤ +10
Class	Concentration of liquid water, C _w [g/m ³]
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

TABLE 3 – OIL CLASSES

Class	Oil concentration (aerosol, liquid, vapour) [mg/m ³]
0	As specified by the equipment user or supplier and more stringent than class 1
1	≤ 0.01
2	≤ 0.1
3	≤ 1
4	≤ 5
X	> 5

PNEUMATIC SYMBOL

DISTRIBUTION AND REGULATION

	2-way/2 positions valve (2/2) normally closed		Sequence valve
	2-way/2 positions valve (2/2) normally open		Pressure reducer without blowoff valve
	3-way/2 positions valve (3/2) normally closed		Pressure reducer with blowoff relief valve
	3-way/2 positions valve (3/2) normally open		Pressure piloted reducer with blowoff relief valve
	3-way/2 positions valve (3/2) NC-NO		Shutoff valve
	5-way/2 positions valve (5/2)		Dual pressure valve (AND element)
	5-way/3 positions valve (5/3) pressurized centres		Progressive pneumatic starter (APR)
	5-way/3 positions valve (5/3) open centres		Progressive solenoid starter (APR)
	5-way/3 positions valve (5/3) closed centres		Progressive pneumatic starter (APR) (SK 100 only)
	Unidirectional valve		Progressive solenoid starter (APR) (SK 100 only)
	Check valve with spring		3-way shutoff valve (V3V) with lockable control
	Circuit selector valve (OR element)		3-way shutoff valve (V3V) with pneumatic control
	Quick-release valve		3-way shutoff valve (V3V) with solenoid control
	Flow regulator with variable choke		2/2 progressive pneumatic valve (VAP) (SK 100 only)
	Unidirectional flow regulator with variable throat		2/2 progressive solenoid valve (VAP) (SK 100 only)

CONTROLS



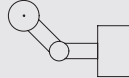
Manual control



Mechanical control
with sensitive roller lever



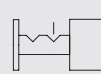
Manual pushbutton control



Mechanical control
with unidirectional roller lever



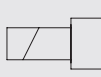
Manual lever control



Mechanical control with drawer



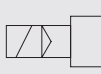
Manual control with 2-position lever



Electrical control



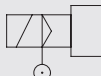
Manual control with 3-position lever



Solenoid control



Manual pedal-operated control



Solenoid, pilot-assisted control



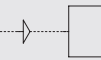
Mechanical control with ferrule



Piezoelectric control



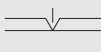
Mechanical control with sensitive ferrule



Pneumatic control



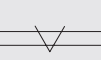
Mechanical control with spring



Mechanical stop

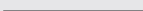
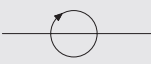
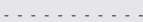
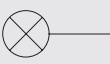
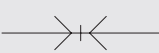
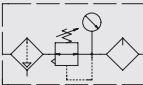
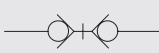
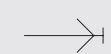
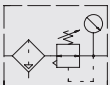


Mechanical control with roller lever

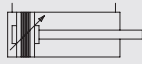
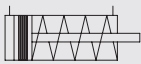
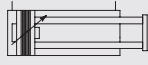
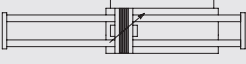
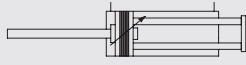
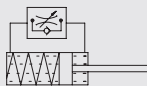
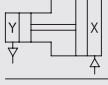
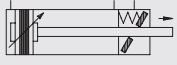
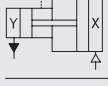
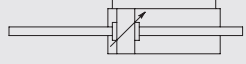
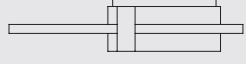
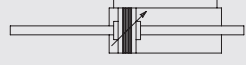
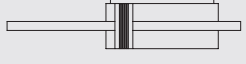
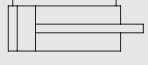
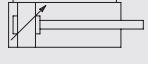
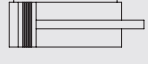
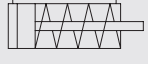
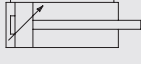


Release device

TRANSMISSION AND PREPARATION

	Pneumatic pressure source		Quick-fit (de-coupling with closed terminal section)
	Operating line		1-way swivel coupling
	Pilot line		3-way swivel coupling
	Discharge line		Silencer
	Flexible line connection		Tank
	Electric cable		Filter
	Line connection (welding, screwing)		Condensate separator with manual discharge
	Line connection (welding, screwing)		Condensate separator with automatic discharge
	Crossing of unconnected lines		Filter with condensate separator with manual discharge
	Discharge point		Filter with condensate separator with automatic discharge
	Discharge hole without connection		Lubricator
	Discharge hole with connection		Pressure gauge
	Power pick-up point with closing cap		Pressure switch
	Power pick-up point with port		Optical tester
	Quick-fit coupling without unidirectional valve		FRL+pressure gauge maintenance unit
	Quick-fit coupling with unidirectional valve		FRL+pressure gauge simplified maintenance unit
	Quick-fit coupling (de-coupling with open terminal section)		FR+pressure gauge maintenance unit

TRANSFORMATION

	DE magnetic cylinder with adjustable bilateral cushioning		SE magnetic cylinder
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning		Hydraulic brake with adjustment in one direction only
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning		Hydraulic brake with adjustment in both directions
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning - single through rod		Cushion
	DE magnetic cylinder with adjustable bilateral cushioning + DZB mechanical lock		Pressure multiplier for fluids with identical characteristics
	DE magnetic cylinder with adjustable bilateral cushioning + DZBA mechanical lock		Pressure multiplier for fluids with different characteristics
	DE cylinder with adjustable bilateral cushioning, through-rod		Pneumatic/hydraulic transducer
	DE through-rod cylinder		Constant volume compressor
	DE magnetic cylinder with adjustable bilateral cushioning, through-rod		Constant volume pneumatic motor, unidirectional flow
	DE magnetic cylinder, through-rod		Constant volume pneumatic motor, bidirectional flow
	DE cylinder		Variable volume pneumatic motor, unidirectional flow
	DE cylinder with cushioning		Variable volume pneumatic motor, bi-directional flow
	DE magnetic cylinder		Rotary pneumatic motor
	SE cylinder		Cylinder with adjustable single cushioning

NOTES



Metal Work SpA has always placed great emphasis on environmental issues, and now – following creation of the Environmental Management System and receipt of UNI EN ISO 14001 certification in 2000 – we wish to make our commitment public.

Metal Work is fully committed to:

- A. complying with all the applicable laws and regulations
- B. continuously seeking to reduce emissions and waste
- C. continuously seeking to reduce the consumption of water, energy and raw materials
- D. adopting technological processes having the lowest environmental impact
- E. training all employees in order to encourage the adoption of measures to safeguard the environment.



Metal Work products are sold all over the world. Being pneumatic products, they intrinsically consume large amounts of energy. We are aware of this and we feel it our responsibility to provide our customers with information to help them reduce energy wastage.

At the end of their working life, our products have to be disposed of. Even at this final stage, it is important to note that most of their parts can be recycled, which is why we provide you with information to help you to dispose of them correctly.

MATERIALS USED IN METAL WORK PRODUCTS

Nearly all Metal Work **products** are designed so that at the end of their working life they can be taken apart to separate the constituents. Only certain small subassemblies are difficult to dismantle, so they have to be disposed of still assembled. The materials of which our products are made are listed in detail on the first page of the catalogue for each family, under the heading "Component Parts". There is a full list and a cutaway drawing of a typical product in each family. The choice of using selected materials and lubricants has contributed to position Metal Work products in the class of NON-HAZARDOUS SPECIAL WASTE at the end of their useful life, in accordance with Directive 91/689/CE. This condition only applies if the products have not been contaminated during operation by pollutants included in the list of hazardous substances.

Product **packaging** adopts the following criteria:

- Each product comes in a cardboard box. The cardboard is corrugated and made of recycled material. The printed words cover a small area to save as much ink as possible.
 - When cardboard boxes cannot be used as they do not provide enough protection or the right shape is unavailable, some products are protected by sheets of polyethylene bubble wrap.
 - Small products are contained in clear polyethylene bags.
 - Gaskets are contained in black polyethylene bags as they are sensitive to light.
 - Pneumatic cylinders are protected by polyethylene mesh.
 - The single products are then placed in larger boxes, which are also made of recycled corrugated cardboard and have a white paper film on the outside.
 - The boxes and loose products are held in position inside the larger box by means of crumbled sheets of paper which are fully recycled and can be reused.
- As a result of this policy, 95% of the packaging material is comprised of cardboard, and 80% of this is obtained from recycled paper.



Metal Work is a member of CONAI, the Italian Packaging Consortium, set up to promote the recovery and recycling of packaging material. It must be highlighted that Metal Work is required by law to pay CONAI an environmental contribution of € 30/tonne for paper and cardboard, and € 72.30/tonne for plastic packaging (2008 figures). Clearly, it is in the interest of all of us to reduce the weight of packaging, recycle it and prefer paper to plastic.



Below is a list of materials and general indications on how to dispose of them.

METAL

- Aluminium
- Cast aluminium alloy
- Cast zamak
- Steel
- Brass
- Sintered bronze

These materials can be taken to a recycling plant as scrap.

PLASTIC

- POM - Acetal Polyoxymethylene Copolymer: Hostaform® and others
- PA - Polyamide polymer/Nylon: Grilamid, Durethan® and others
- ABS - Acrylonitrile butadiene styrene polymer: Novodur and others
- PET - Polyester resin: Rynite® and others
- PPS - Poly-Phenylene Sulphide: Fortron®
- PTFE - Polytetrafluoroethene

These materials can be taken to a recycling plant.

ELASTOMERS

- NBR
- Polyurethane
- FKM/FPM

Since they are only used in our products in small quantities, are greasy and, after long use, are also covered in metal filings, these materials are not taken to a recycling plant but are classified as **non-hazardous special waste**.

OTHERS

- Magnets (neodymium, plastroferrite, plasto-neodymium)
- PC boards
- Magnetic sensors
- Coils (PA+steel+copper)
- Power cables (PA or PU + copper)

These materials, which are generally present in our products in small quantities, are classified as **non-hazardous special waste** and are normally accepted as **urban waste**.

Large amount of power cables and coils can be **sold** as **scrap** to companies specialised in recycling power cables.

PACKAGING

- Cardboard
- Polyethylene bubble wrap – LDPE
- Polyethylene mesh – LDPE
- Clear or black polyethylene bags

These materials can be **fully recyclable** and can be **taken to disposal centres** for paper and plastic.

SYMBOLS LABELLING OF MATERIALS AND PACKAGING

Labelling to identify the packaging material is optional, and is a self-declared statement by the manufacturer. The normative reference for handling used packaging is Directive 94/62/CE as revised by Directive 2004/12/CE.

Other interesting international standards are:

- EN ISO 1043:2002: Plastics – Symbols and abbreviations
- EN ISO 11469:2001: Plastics – Identification and marking of plastic products
- EN ISO 14021:2002: Environmental labels and declarations – Self-declared environmental claims.



Mobius cycle. This means the material can be recycled.



This means that the material, which can be recycled, contains X % by mass of recycled material.



The RECY symbol, together with the manufacturer's identification code, certifies that the cardboard packaging possesses the requirements to be recycled by the Paper Mills Association.



Marks indicating the material used for packaging and liquid containers.
NO LONGER USED.

Material identification abbreviation and number (Resolution 97/129/CE) + graphic symbol (CR 14311:2002)

MATERIAL	ABBREVIATION	NUMBER	SYMBOL
Polyethylene terephthalate	PET	1	
High-density polyethylene	HDPE	2	
Polyvinyl chloride	PVC	3	
Low-density polyethylene	LDPE	4	
Polypropylene	PP	5	
Polystyrene	PS	6	
Other technopolymers		7	
Corrugated cardboard	PAP	20	
Non-corrugated cardboard	PAP	21	
Paper	PAP	22	
Steel FE	40		
Aluminium	ALU	41	
Other metals		42	
Wood	FOR	50	
Colourless glass	GL	70	
Green glass	GL	71	
Brown glass	GL	72	
Paper and cardboard/various metals	C/*	80	
Paper and cardboard/plastic	C/*	81	
Paper and cardboard/aluminium	C/*	82	
Paper and cardboard/tin	C/*	83	
Paper and cardboard/plastic/aluminium	C/*	84	
Paper and cardboard/plastic/aluminium/tin	C/*	85	
Plastic/aluminium	C/*	90	
Plastic/tin	C/*	91	
Plastic/various metals	C/*	92	
Glass/plastic	C/*	95	
Glass/aluminium	C/*	96	
Glass/tin	C/*	97	
Glass/various metals	C/*	98	

*: Abbreviation of predominant material. Examples:

C/PAP 84: material comprised of paper or cardboard, plastic and aluminium, with a predominance of paper or cardboard (brick).

C/LPDE 90: material comprised of plastic and aluminium, with a predominance of plastic (coffee pack).

ENERGY SAVING

Compressed air is clean energy but producing it requires electricity, which costs money and consumes environmental resources. Below are some indicative averages of the energy ratio of compressed air to its sources. The values vary as a function of the output of the compressor and other factors.

Specific power:	6.5	W/Nl/min	i.e. it takes 6.5 W to generate 1 normal litre per minute of compressed air.
Oil factor:	0.254	lit oil/kWh	i.e. 0.254 litres of oil are burnt to produce 1 kW/h.
	0.00165	lit oil/Nl/min/h	i.e. 0.00165 litres of oil are burnt to produce 1 Nl/min of compressed air.
CO ₂ factor:	0.702	kg/kWh	i.e. 0.702 kg of carbon dioxide is dispersed into the environment to produce 1 kWh.
	0.00456	kg/Nl/min/h	i.e. 0.00456 kg of carbon dioxide is dispersed into the environment to produce 1 Nl/min. for 1 hour.
Cost of air:	0.00065	€/Nl/min/h	i.e. it cost € 0.00065 to generate 1 normal litre/minute of compressed air for one hour.

EXAMPLE:

Flow rate 100 Nl/min, for 10 hours a day for 230 days a year:

Power:	$6.5 \times 100 \text{ Nl/min} = \mathbf{650 \text{ W}}$
Electricity consumption:	$650 \text{ W} \times 10 \text{ hours/day} \times 230 \text{ days/year} = 1495.000 \text{ Wh} = \mathbf{1495 \text{ kWh/year}}$
Oil burnt equivalent:	$0.254 \text{ l/kWh} \times 1495 \text{ kWh} = \mathbf{380 \text{ litres/year}}$
Carbon dioxide emissions:	$0.702 \text{ kg/kWh} \times 1495 \text{ kWh} = \mathbf{1050 \text{ kg/year}}$

THE 4 PILLARS OF SAVING

Considerable energy savings can be achieved by following four simple rules

1 Choose the correct cylinder size

Pneumatic actuators, especially cylinders, consume at each stroke an amount of air that depends on the pressure and the bore.

Using the right cylinder at the right pressure allows considerable saving.

A cylinder that requires a smaller flow enables you to associate valves, fittings and pipes of a smaller size, thereby saving on the cost of the products.

Example

Cylinder Ø 80 mm, stroke 200 mm, 6 bar,
12 cycles/min, 16 hours a day, 230 days a year.
Consumption: 144 Nl/min → 940 W → 3460 kWh/year →
880 litres of oil → 2428 kg of CO₂.

If you pay € 0.10/kWh: → € 346/year.

If the cylinder has been oversized by mistake and a 63 mm cylinder could be used in its place, the figure would be:

Consumption: 90 Nl/min → 584W → 2140 kWh/year →
546 litres of oil → 1502 kg of CO₂.

If you pay € 0.10/kWh: → € 214/year.

SAVE: € 132 a year.

2 Use economizers

If in a cylinder you require a thrust in one direction only, e.g. piston rod extension, and a lower thrust and pressure is sufficient in the other direction, you can save a lot of energy by mounting an economizer valve.

It reduces feed pressure to the cylinder chamber and allows air to flow freely during discharge.

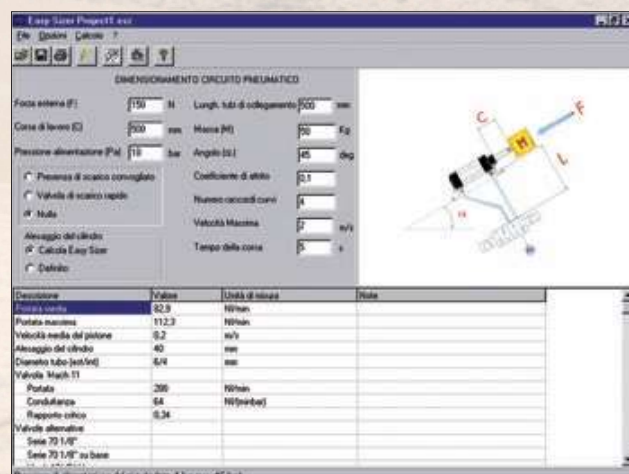
Example

If, in the previous example, you install on one of the ports of the Ø 80 cylinder an economizer that reduces the pressure from 6 to 12 bar,

you SAVE: € 115 a year.



provides easy-to-use software called **EASY SIZER...**



proposes a series of **miniature economizers...**



...for sizing pneumatic cylinders, valves, pipes and units.
You can download it from www.metalwork.it

...to mount straight onto the cylinder port or in line on the pipe.
See the line-on-line catalogue, series RML-RMS-RMC.

3 Eliminate air leaks

Compressed air leaks in the system waste a large amount of money.

The problem is that, besides electricity consumption, the compressor undergoes more stress than necessary, even when the machine is not in operation.

Two things can be done to reduce this wastage.

- Periodically check for air leaks.

This should be done when the machinery is not running, so that the leaks can be heard.

So-called sniffers can be bought from the trade to help you detect even small leaks.

- Fit solenoid valves on each machine.

These cutout devices seal off the flow of air when the machine is off.

This prevents accidental leaks and wastage for production requirements when cleaning using compressed air.

Example

In a system operating at 6 bar, there is a leak equivalent to that of a 2 mm hole.

The air flow, in this case, is 220 Nl/min.

The leak is 24 hours a day all year round.

Consumption:

220 Nl/min → 1430 W → 12526 kWh/year →

3180 litres of oil → 8.8 tonnes CO₂.

If electricity costs € 0.10/kWh → you **WASTE € 1252 a year**.

4 Design and operate the air distribution system correctly

The rules of good practice must be followed when designing, developing and operating a pneumatic system.

The followings aspects should be taken into consideration.

- Size pipes so as not to have excessive load losses.

See Table 8 – RECOMMENDED FLOW RATE on page Z1.6 in the catalogue.

- Size the compressor and the system for the minimum required pressure - pressure that is too high requires additional energy, which is then lost.

If a system contains a few components requiring a higher pressure, you can use a pressure multiplier, or booster, for them only.

- Deactivate compressors when not used.

Even when not in use, they consume 30-40% of the full power.

Example

A system operates at 7 bar. The average air consumption is 10 Nm³/min for 16 hours a day for 230 days a year.

But it would be enough to use air at 6 bar.

Reducing the pressure from 7 to 6 bar gives the following:

Air saving of:

1.42 Nm³/min. → 9.29 kW ⇒ 34100 kWh/year →

8680 litres of oil → 24 tonnes CO₂.

If electricity costs 0.10 €/kWh: → you **SAVE € 3410 a year**.



offers shut-off **solenoid valves**...



...of the V3V type, with instant opening, or the APR type, with progressive start up.
Refer to the catalogue of Skillair, New Deal and One units.



proposes high-efficiency pressure multipliers **boosters**...



...that can be used to increase the air pressure only for components that effectively require it.

PNEUMATICS AND POTENTIALLY EXPLOSIVE ATMOSPHERES: EUROPEAN DIRECTIVE 2014/34/EU (ATEX)

As from 1st July 2003, all products marketed in the European Union and intended for use in potentially explosive atmospheres must be approved in compliance with European Directive 2014/34/EU, also known as ATEX.

This new directive also applies to non-electrical components, such as pneumatic controls, for which approval is mandatory.

The main innovations introduced by the new directive 2014/34/EU are:

- Inclusion of non-electrical equipment and devices, such as pneumatic cylinders.
- Each device is assigned a category associated to certain potentially explosive atmospheres.
- All products must bear the CE marking.
- Instructions for use and declarations of conformity must be supplied for each product sold for use in potentially explosive atmospheres.
- Products intended for use in potentially explosive atmospheres due to the presence of dust come under this directive, as do products destined for areas in which hazardous gases are present.

A potentially explosive atmosphere may contain gases, mists, vapours or dust that form in factories or other areas in which flammable substances are continuously or occasionally present.

An explosion can occur when flammable substances and a source of ignition are present simultaneously in a potentially explosive atmosphere.

A source of ignition can be:

- of electrical origin (electric arcs, induced currents, heat generated by the Joule effect)
- of mechanical origin (hot surfaces generated by friction, sparks generated by impact between metal bodies, electrostatic discharge, adiabatic compression)
- of chemical origin (exothermic reactions between materials)
- a naked flame

Products subject to approval are all those which, during normal use or due to a malfunction, present one or more sources of ignition for potentially explosive atmospheres.

Responsibility lies both with the manufacturer of the device and whoever installs it in equipment that is to operate in a hazardous atmosphere. This requires co-operation between the parties to ensure correspondence between the category of device and the hazardous area in which it is to operate.

The manufacturer of the device must comply with the specifications and classify the product according to directive 2014/34/EU. The manufacturer of the equipment, who knows the area in which the device will be operating, must select a suitable device according to the category, pursuant to directive 99/92/CE.

THE COMBINATION OF ELECTRICAL AND MECHANICAL PARTS

According to Directive 2014/34/EU, both electrical and mechanical devices are subject to approval.

It is important to note that the component which is classified in the lowest category defines the category of the entire device of which it is a part. If, for example, the coil is marked Ex II 2 ... and the valve is marked Ex II 3... the coil + valve assembly must not be put into service in zone 1 or 21, only in zone 2 or 22.



GROUPS AND CATEGORIES

Devices for use in potentially explosive areas are divided into the following groups:

- GROUP I: devices used in mines
- GROUP II: devices used in surface installations

DEVICES FOR MINES GROUP I

Explosive gas content	No limit	Below a set limit
Category of device to be used according to 2014/34/EU	M1	M2

DEVICES FOR SURFACE INSTALLATIONS GROUP II

ZONES	0	20	1	21	2	22
Type of atmosphere	G	D	G	D	G	D
	GAS	DUST	GAS	DUST	GAS	DUST
Presence of hazardous atmosphere	Continuously (>1000 h/year)*		Not present during normal operation (>10 <1000 h/year)*		Accidental presence (>0.1 <10 h/year)*	
Category of devices to use according to 2014/34/EU	1		2		3	

*indicative

CORRESPONDENCE BETWEEN ZONES AND CATEGORIES ACCORDING TO 2014/34/EU.

- ZONE 0/ZONE 20 → CATEGORY 1: Devices in this category ensure an adequate degree of safety even in the presence of rare malfunctions.
These devices are used in zones in which an explosive atmosphere is present continuously for long periods.
- ZONE 1/ZONE 21 → CATEGORY 2: Devices in this category ensure an adequate degree of safety even in the presence of a probable malfunction.
These devices are used in zones in which an explosive atmosphere is present occasionally.
- ZONE 2/ZONE 22 → CATEGORY 3: Devices in this category ensure an adequate degree of safety during normal operation.
These devices are used in zones in which an explosive atmosphere is rarely present and only for brief periods.

MARKING: HOW TO READ IT

MARKING ON ELECTRICAL EQUIPMENT (EN 60079)

	A	B	C	D	E	F	G	H	L	M	N	O
EXAMPLE		II	3	G	Ex	nA	IIC	T4	Gc	/	X	20°C<Ta<60°C
		II	3	D	Ex	tc	IIIC	T120°C	Dc	IP65	X	20°C<Ta<60°C

- A** Means the equipment can be used in an ATEX zone
- B** Group: mining or other industries
- C** Category: indicates use in various zones
- D** Type of explosive atmosphere:
G = gas
D = dust
- E** Means the equipment may be used in an ATEX zone
- F** Method of protection from ignition sources (more than one possible)
tc = protection by enclosures
nA = non-sparking protection
mA, mB = protection by encapsulation
ia, ib, ic = intrinsic safety
- G** Division of the explosivity group
IIC: explosive subgroup that comprises all types of gas
IIIC: explosive subgroup that includes combustible particles, conductive dust and not

- H** Temperature class:
maximum surface temperature in atmosphere with gas
maximum surface temperature in atmospheres with dust
- L** **Gc** = explosive atmospheres due to the presence of gas
Dc = explosive atmospheres due to the presence of dust
- M** Index of protection
- N** Presence of specific operating conditions
- O** Ambient temperature for use of the equipment

MARKING ON NON-ELECTRICAL EQUIPMENT (UNI CEI EN ISO 80079-36 and UNI CEI EN ISO 80079-37) FROM 1 NOVEMBER 2019

	A	B	C	D	E	G	H	L	N	O
EXAMPLE		II	2	G	Ex h	IIC	T5	Gb	X	-10°C<Ta<80°C
		II	2	D	Ex h	IIIC	T100°C	Db	X	-10°C<Ta<80°C

- A** Means the equipment can be used in an ATEX zone
- B** Group: mining or other industries
- C** Category: indicates use in various zones
- D** Type of explosive atmosphere:
G = gas
D = dust
- E** Means the equipment may be used in an ATEX zone
- G** Division of the explosivity group
IIC: explosive subgroup that comprises all types of gas
IIIC: explosive subgroup that includes combustible particles, conductive dust and not

- H** Temperature class:
maximum surface temperature in atmosphere with gas
maximum surface temperature in atmospheres with dust
- L** **Gb** = explosive atmospheres due to the presence of gas
Db = explosive atmospheres due to the presence of dust
- N** Presence of specific operating conditions
- O** Ambient temperature for use of the equipment

MARKING ON NON-ELECTRICAL EQUIPMENT (UNI EN 13463) UNTIL OCTOBER 31, 2019

EXAMPLE	A	B	C	D	E	F	G	H	L
		II	2	GD	c	T4	T120°C	X	20°C<aT<60°C

- A** Means the equipment can be used in an ATEX zone
- B** Group: mining or other industries
- C** Category: indicates use in various zones
- D** Type of explosive atmosphere:
G = gas
D = dust
- E** Method of protection from ignition sources:
c = protection by constructional safety
- F** Temperature class:
maximum surface temperature in atmosphere with gas
- G** Maximum surface temperature in atmospheres with dust
- H** Presence of specific operating conditions
- L** Ambient temperature for use of the equipment

TYPE OF PROTECTION AGAINST SOURCES OF IGNITION

Protection symbol	Zones						Description
	0	20	1	21	2	22	
c			X	X	X	X	Protection through constructional safety (UNI CEI EN ISO 80079-37)
d			X	X	X	X	Flameproof enclosure. Type of protection of an electrical apparatus that contains parts capable of triggering an explosion in an enclosure able to withstand the pressures generated by internal explosions.
e			X	X	X	X	Enhanced safety. Electrical appliance with a high safety coefficient.
i	ia	X	X	X	X	X	Intrinsic safety. Electrical circuit in which neither sparks nor temperatures can trigger an explosion during normal operation or a malfunction.
	ib		X	X	X	X	
m			X	X	X	X	Encapsulation. Special casing in which the parts that could trigger an explosion are immersed in a substance that prevents contact with the explosive atmosphere.
n					X	X	Type of protection for electrical appliances designed so that they do not ignite the surrounding explosive atmosphere during normal operation and in specific conditions of malfunction. There are 5 categories: nA (non-scintillating); nC (hermetic seal); nR (limited respiration); nL (limited energy); nP (pressurisation).
o			X	X	X	X	Immersion. Electrical appliance immersed in oil.
p			X	X	X	X	Pressurised enclosure. Pressurisation with respect to the external pressure is maintained by means of an inert gas.
q			X	X	X	X	Enclosure containing filling powder.

TEMPERATURE CLAS

GROUP I: Temperature $\leq 150\text{ °C}$ or $\leq 450\text{ °C}$ according to the layer of dust accumulated on the device.

GROUP II:	Temperature classes for gas (G)	Admissible surface temperature
	T1	450 °C
	T2	300 °C
	T3	200 °C
	T4	135 °C
	T5	100 °C
	T6	85 °C

USER AND SUPPLIER: OBLIGATIONS AND RESPONSIBILITIES

It is important to highlight the need for the user and supplier to collaborate and to exchange all the information required to define the types of products that can be used in full compliance with the safety standards.

USER: after performing a company-wide risk analysis (pursuant to directive 99/92/EC) and identifying the risk zone in which the purchased part will be operating, the user must inform the SUPPLIER, who must check that the products supplied are compatible with the zone indicated and that the environmental conditions are within the set operating range for the parts.

It is also important to make sure that the operating instructions are always attached to the products supplied.

CONFORMITY DECLARATIONS, CERTIFICATES, INSTRUCTIONS

Please look at our website <https://www.metalwork.it/pneumatic-components/certificates-products/cert-8>



SAFETY COMPONENTS: OVERVIEW OF THE STANDARDS

INTRODUCTION

The issue of safety in the workplace is of absolute importance and over the years the standard setters have developed a series of continuously evolving standards, the focal point of which remains the Machinery Directive.

In order to ensure conformity of the machine, the manufacturer must verify that it meets the safety requirements listed in the directive and guarantee compliance with the harmonised standards published in the European Union's Official Journal and relating to the product in question.

There are three types of safety standard for machinery:

- type **A**, which establish general principles applying to the design of all machinery
- type **B**, which deal with one or more safety aspects for a wide range of machinery
- type **C**, which deal in detail with the specific category of machines

Type **A** standards include EN ISO 12100, which cover the basic concepts and general principles for the design of safe machinery, and EN ISO 14121, which describe a hazard identification and risk assessment method.

Type **B** standards include EN ISO 13840, which provides the tools for designing parts of control systems linked to machine safety, mainly the control systems, which are made of components featuring various kinds of technology to reduce risks associated with use of the machine, and IEC 62061, which only refers to systems using electrical and electronic technologies.

One of the main affinities between EN ISO 13849 and IEC 62061 is that the former establishes as the desired safety parameter an index called PL (performance level) and the latter identifies a similar parameter called SIL (safety integrity level). Both indices represent the machine's reliability in terms of the probability of a dangerous failure. The table below shows their relationship:

PL	SIL
a	No correspondence
b	1
c	1
d	2
e	3

EN 982 and EN 983 are also type B standards and both deal with safety, but unlike the previous standards they concern components (hydraulic and pneumatic respectively) rather than controlled devices.

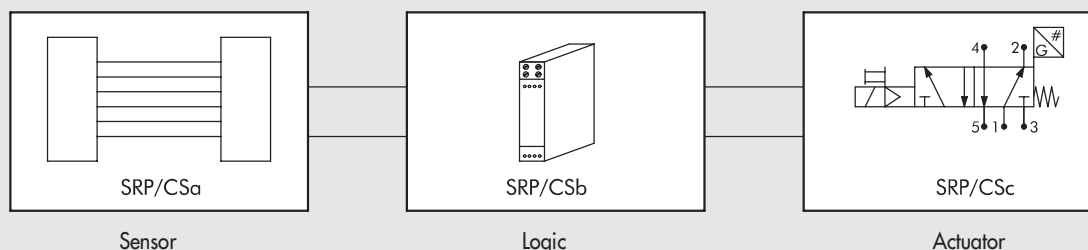
When type **C** standards exist for a particular machine, the manufacturer can adopt them directly to achieve the presumption of compliance with the Machinery Directive; if no type C standard exists, it is still necessary to implement a risk-reduction strategy like the one described in harmonised standards type A and B.

Since revision 98/37/EC, the Machinery Directive has dealt not only with machines but also with safety components, namely components made and sold specifically to achieve a safety function and the breakage or malfunction of which jeopardizes personal health and safety.

EN ISO 13849

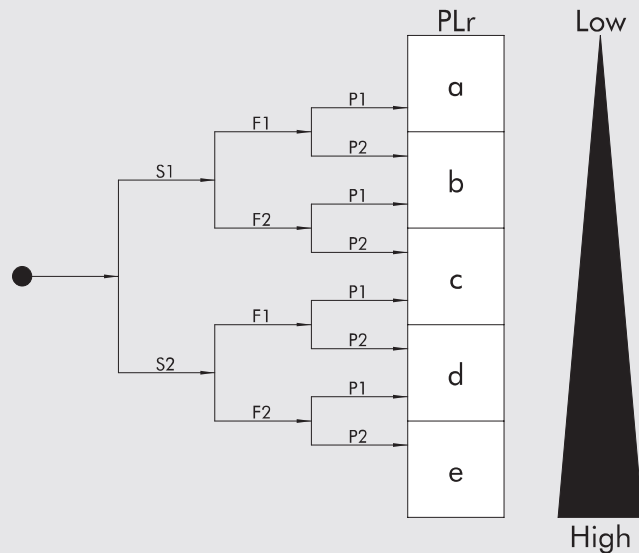
When type C standards do not exist for a particular machine, the manufacturer can adopt the risk-reduction strategy indicated in EN ISO 13849. This standard is divided into two parts: the first part sets out the general principles and the method to follow; the second part is dedicated to validation of the results.

According to the first part of the standard, a machine designer can reduce the risk by designing special safety-related parts of control systems (SRP/CS) that perform one or more safety functions, such as emergency stops, prevention of unexpected start-up, isolation and energy dissipation. We quote the example of a function comprising three SRP/CSs: a safety barrier (input – sensor), a PLC (processing - logic) and a valve (output - actuator). In the event of intrusion, the barrier relays a signal to the PLC, which activates the valve, the job of which is to relieve a section of the pressurized pneumatic circuit, thereby providing isolation and energy dissipation.



For each safety function it is necessary to determine the Performance Level requested (PLr), according to the procedure indicated in Annexe A to the standard. The following are assessed:

- the severity of the lesion (S), resulting from the failure
- the hazard exposure frequency (F)
- the possibility of avoiding the hazard (P)



If, for example, the severity of a lesion resulting from a failure is low and/or the hazard exposure frequency is low and/or the hazard avoidance possibility is high, the PLr will be low. On the contrary, if the severity and/or exposure frequency is/are high and/or the hazard avoidance possibility is low, then the PLr for that safety function will be high.

Therefore, for each SRP/CS or combination of SRP/CSs performing a safety function, the machine designer must determine the achievable performance level PL.

Certain parameters including the following must be used for this calculation:

- MTTFd (Mean Time to dangerous Failure) of the single components
- DC (Diagnostic Coverage)
- CCF (Common Cause Failure)
- function structure
- compliance of the components used with the basic and/or proven safety principles.

The **MTTFd**, which is the mean time between two dangerous failures, can be obtained from values referring to the operating cycles of the safety function and the B10d of the components, namely the number of cycles 10 percent of the components suffer a dangerous failure. The B10d is equal to double B10, which in turn is an index of the reliability of the component obtainable by following the instructions in EN ISO 19973.

The B10d values of Metal Work products are published on the company's website:

<https://www.metalwork.it/pneumatic-components/safety-directive-0001162.html>

DC (diagnostic coverage) and **CCF** (common cause failure) are obtained using the appendices to EN ISO 13849-1; DC can be determined using failure mode and effects analysis (FMEA) or a similar method.

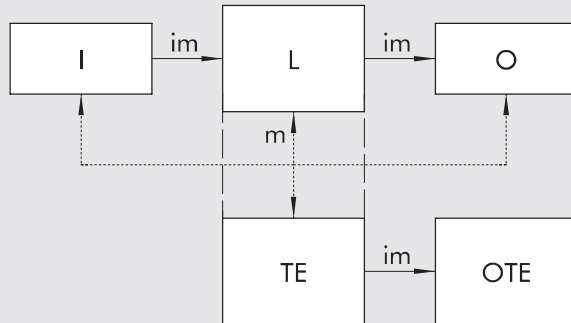
The structure of the function depends on the architecture. One possible kind is unmonitored single-channel architecture:



Were:

- im:** interconnection means
- I:** input device, e.g. sensor
- L:** logic
- O:** output device, e.g. valve

Then comes single-channel architecture with diagnostics. In this case, a module called Test Equipment (TE) provides an output (OTE) in some way linked to the status of the safety function:



Were:

im: interconnection means

I: input device, e.g. sensor

L: logic

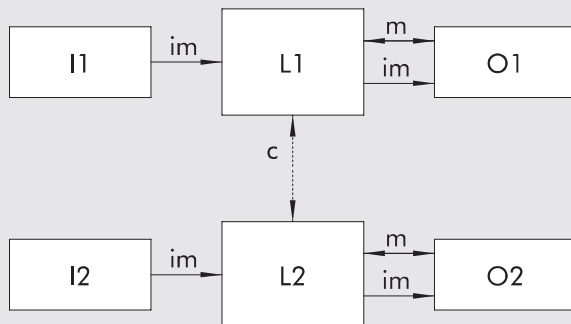
m: means of surveillance

O: output device, e.g. valve

OTE: Test Equipment OUTPUT

TE: Test Equipment

A third example is double-channel architecture, which exploits the redundancy of a function – if one channel fails the other remains active:



Were:

im: interconnection means

I1, I2: input device, e.g. sensor

L1, L2: logic

m: means of surveillance

O1, O2: output device, e.g. valve

c: crossed check

As regards the conformity of components used to the basic and/or proven safety principles, reference should be made to a series of considerations presented in EN ISO 13849 standards, which guarantee that the SRP/CS and related components comply with the design, construction and assembly principles.

With these data, the machine designer can determine the safety function category (B, 1, 2, 3 or 4, in increasing order of importance) and the PL achieved; It is important therefore to check it is equal to or greater than the PLr required.

UL AND CSA STANDARDS



UL is an independent organisation involved in the safety certification of products for the North American market. The coils are certified to UL standard 429 - electrically-operated valves.

The UR mark concerns UL-recognised components and is used for the components that are part of a larger product or system. This is why UR can be read on the coil.

The certification of these components is only valid if they are used under the manufacturer's stated conditions (e.g. in our case, voltage +10%).

Companies manufacturing certified components are included in the UL-list of certified manufacturers.

The list does not include the name Metal Work but rather the name AMISCO (UL file E343908), with which we have an agreement for the supply and customisation of coils.

The use of approved coils does not automatically certify its application on a specific machine or plant. Such approval will therefore be up to the manufacturer of the machine or plant.

CSA (Canadian Standard Association) safety standards are applicable in Canada. The coil complies with CSA 22.2.

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