



Series 300

General

The direct operated solenoid valve is the interface between pneumatic and electronic. In fact, it is actuated by an electrical signal and in turn gives a pneumatic signal directly available for small users or for actuating bigger pneumatic distributors.

A wide range of valves are needed for satisfying various applications. For this need we have available miniature components with very low volume and electrical impute as well as solenoid valves with large flow rate and power for heavy duty operations. These solenoid valves are usually 3/2, normally closed or normally open, but there are available the 2/2, closed or open, for vacuum and others.

Note that the direct operated valves can only be used with bases, individual or multiple with M5 or G 1/8" thread or with connections.

Some PNEUMAX solenoid valves are  homologated valid for USA and Canada (file n. VAIU2.E206325, VAIU8.E206325). For more details, refer to the coding, in the following pages.

The 10mm and 15mm solenoid valves are certified by UL in compliance with both Canadian and USA safety requirements as recognized component and included in the **UL file E206325** and bear the "UL Recognized Component" marking.

The 10mm and 15mm solenoid valves, since they are devices for "class 2 circuits", according with UL standard UL 429/CSA C22.2 N°139, are not considered dangerous for electric shock or fire and thus a **UL certification is not required for cables and connectors.**

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Use and maintenance

Maintenance is normally not required for these components therefore the spare parts list is not provided.

Their construction complexity and low cost do not make repair economically viable. It's easier and more economic to replace the complete valve in case of malfunction.

For proper lubrication use only hydraulic oil class H such as Castrol type MAGNA GC 32.

General

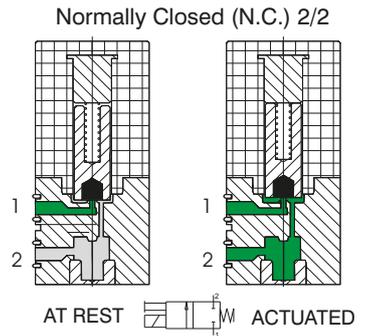
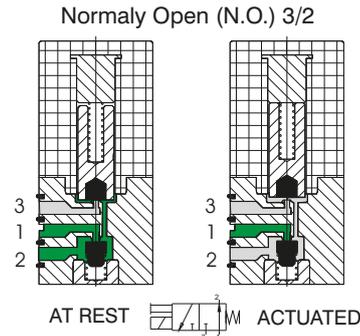
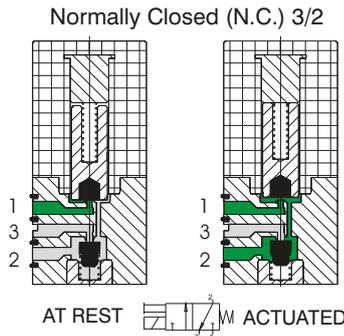
This series of directly operated valves is characterized by its reduced dimensions. They are designed to be mounted individually or on manifold. The high operating speed and high flow rate in consideration of the reduced dimensions, in combination with the high compatibility of the material used to manufacture them ensure a high variety of possible application fields.

All valves have manual override as standard and are available in 3/2 configuration N.O. and N.C. as well as 2/2 N.C. both 12 or 24 V DC or AC. Electrical connection can be via co moulded cables or via connector, in this configuration a LED indicates the coil status. Ensure that the fixing screws are tightened with 0.15Nm maximum.

The 10mm Speed-up version are built in accordance to the ISO 15218-2003 standard with a flow rate of 24NI/min. The coil integrates a dedicated circuit board which enables to contain the power consumption to 0.35W in case of the high flow rate version and to 0.1W in case of the standard flow rate version.

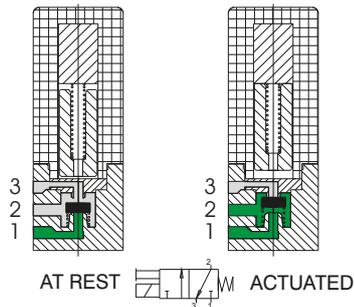
Functional schematics for standard version

- 1 = SUPPLY PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT



Functional schematics for Speed-up version

- 1 = SUPPLY PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT



1
AIR DISTRIBUTION



Construction characteristics:

Electrical part:

Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage, isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.

Mechanical part:

Stainless steel 430F armatures FPM poppets body in thermoplastic material and manual override and plug in nickel plated brass. Valves must be mounted on single or multiple manifold to be used.

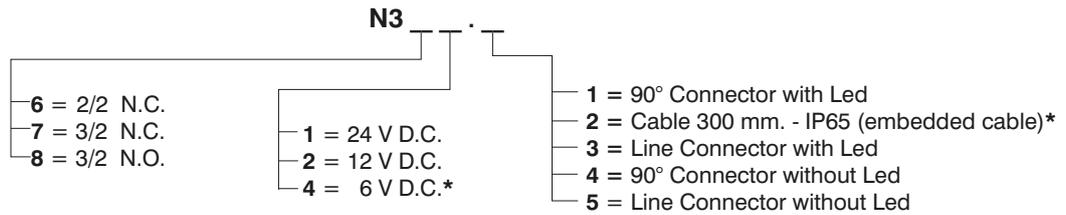
1
AIR DISTRIBUTION

Technical characteristics		Standard Version	Speed-Up Version
Pneumatic:	Working pressure	0 - 7 bar	
	Nominal diameter	0,7 mm	1,1 mm
	Temperature	-5° - +50°C	
	Maximun flow rate at 6 bar with Δp 1 bar	14 NI/min	24 NI/min
	Exhaust flow	22 NI/min	29 NI/min
	Max number of cycles per minute	2.700	
	Life	50 million	
Electric:	Voltages	12 - 24 Volt D.C.	
	Power	1,3 Watt	0,35 Watt ⁽¹⁾
	Voltage tollerance	-5% - +10%	
	Response time when energized *	8 ms	
	Response time when de-energized *	10 ms	
	Copper wire isolation class	F (155°C)	
	Protection degree	IP65 (with cables) IP40 (with connectors) IP00 (with Faston)	

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

(1) = consumption wrapping in opening phase 3, 5W (10 ms), consumption wrapping in maintenance phase 0.35 W.

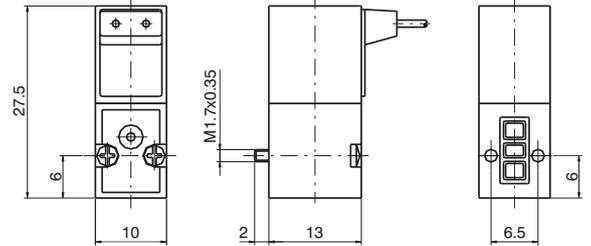
10 mm Standard miniature solenoid ordering codes



* = The CE Directive does not apply to these versions

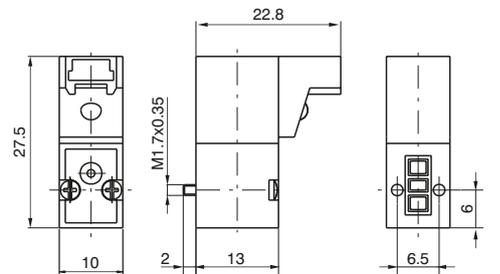
Miniature solenoid valve with cable

Weight 12 gr.



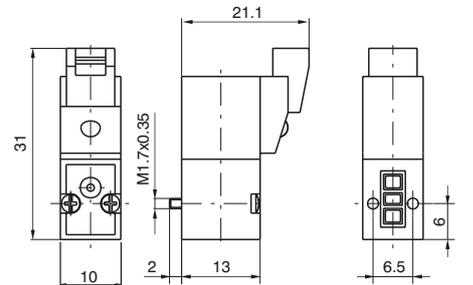
Miniature solenoid valve with 90° connector

Weight 12 gr.



Miniature solenoid valve with line connector

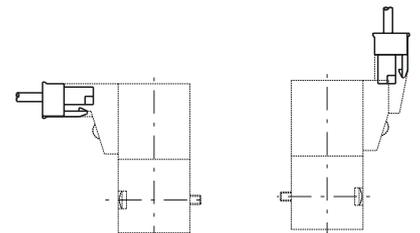
Weight 12 gr.



Connector

Ordering codes

- 371 .
 - 300 : Cable L = 300 mm
 - 600 : Cable L = 600 mm
 - 1000 : Cable L = 1000 mm

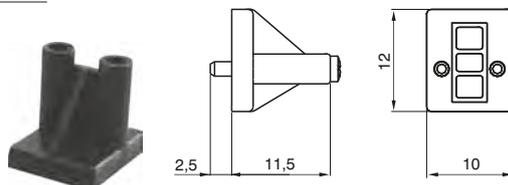


Weight 3 gr.

Closing plate

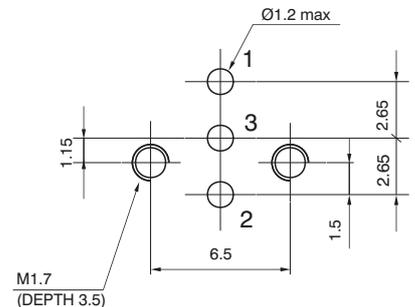
Ordering codes

395.00



Weight 5 gr.

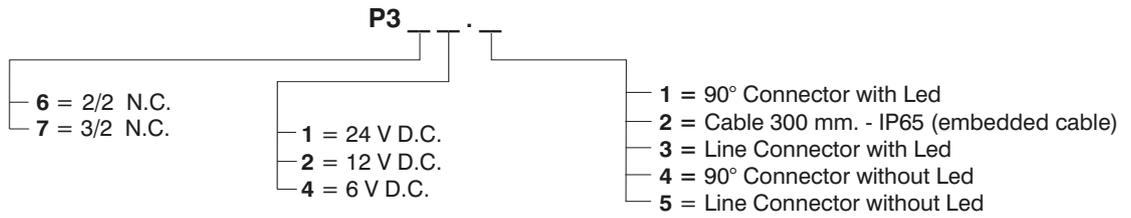
Interfaces dimensions



1
AIR DISTRIBUTION

10 mm - ISO 15218-2003 miniature solenoid ordering codes

The versions are not contemplated by the CE Directive

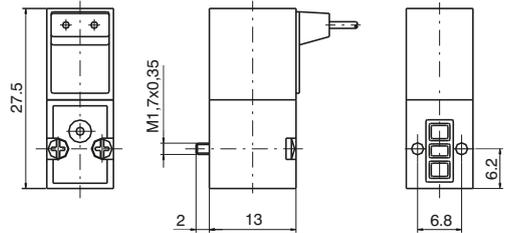


1 AIR DISTRIBUTION

Miniature solenoid valve with cable



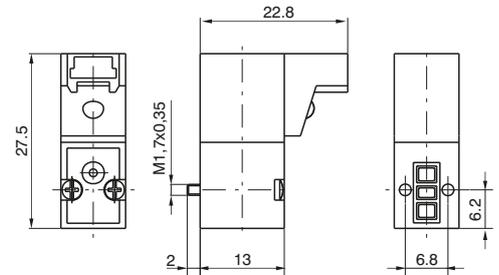
Weight 12 gr.



Miniature solenoid valve with 90° connector



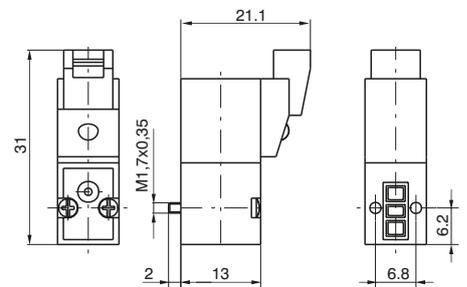
Weight 12 gr.



Miniature solenoid valve with line connector



Weight 12 gr.

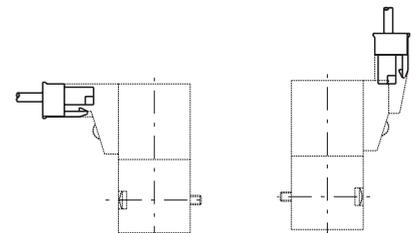


Connector

Ordering codes

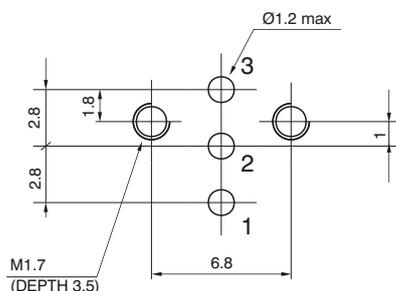
371 .

- 300 : Cable L = 300 mm
- 600 : Cable L = 600 mm
- 1000 : Cable L = 1000 mm



Weight 3 gr.

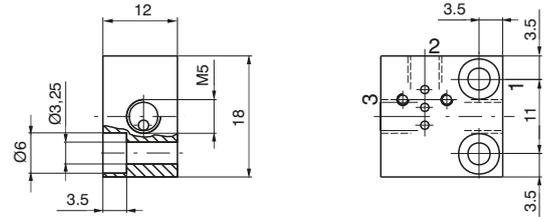
Interfaces dimensions 10 mm - ISO 15218



**Standard version
Individual base**

Ordering code

395.01



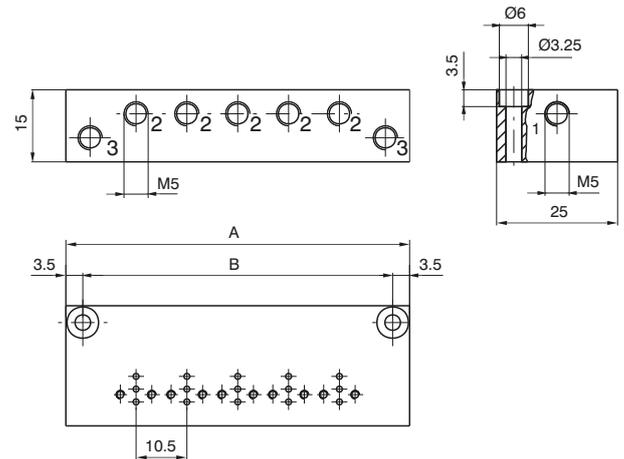
Weight 10 gr.

**Standard version
multiple bases**

Ordering code

395 .

N° Places

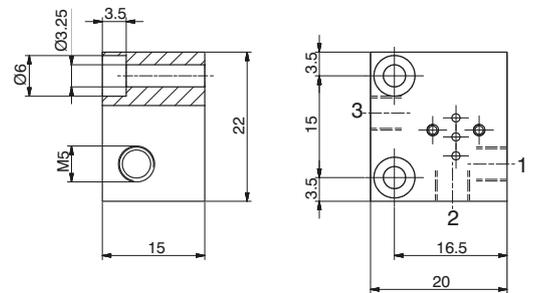


N° Places	02	03	04	05	06	07	08	09	10
A	39.5	50	60.5	71	81.5	92	102.5	113	123.5
B	32.5	43	53.5	64	74.5	85	95.5	106	116.5
Weight (gr.)	43	54	65	76	87	98	109	120	131

**Individual base for
ISO 15218-2003 version**

Ordering code

P395.01



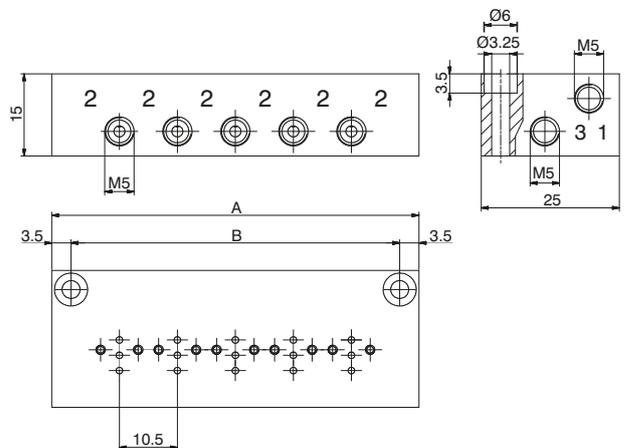
Weight 10 gr.

**Multiple base for
ISO 15218-2003 version**

Ordering code

P395 .

N° Places



N° Places	02	03	04	05	06	07	08	09	10
A	35	45.5	56	66.5	77	87.5	98	108.5	119
B	28	38.5	49	59.5	70	80.5	91	101.5	112
Weight (gr.)	43	54	65	76	87	98	109	120	131

General

This direct operated solenoid valve has minimum overall dimensions (15 mm wide). Its construction method is same as 10 mm valve, of course.

It is suitable to be single or gang mounted or as electro-operator for larger air flow distributors.

Can be utilized with compressed air and other fluids compatible with material used to build the solenoid valve.

The available versions, all equipped with manual override, are 3 ways, normally closed and normally open with DC and AC 50/60 Hz.

It's possible to install the N.O. valve on N.C. interface by using the registered reverse system included in the valve body.

The electrical connection is made with cables (300 mm.), FASTON or with connector.

This type of miniature solenoid valve is interchangeable with most of the same products available on the market.

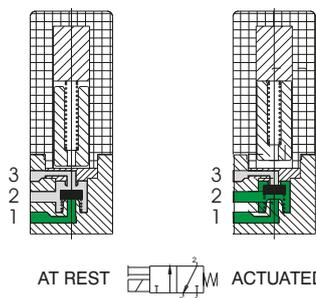
Coil can also be positioned at 180° to get the electrical connection located on the opposite side than override.

Make sure that the fastening screws are tightened with maximum torque of 0,75 Nm.

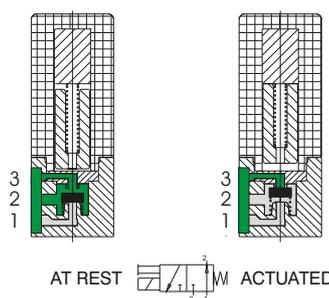
Functional schematics

- 1 = SUPPLY PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT

Normally Closed (N.C.) 3/2



Normally Open (N.O.) 3/2



Construction characteristics

Electrical part

Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage, isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.

Mechanical part

AISI 430F cores, AISI 302 return springs, FPM poppets, thermoplastic polyester body.

Technical characteristics

Pneumatics

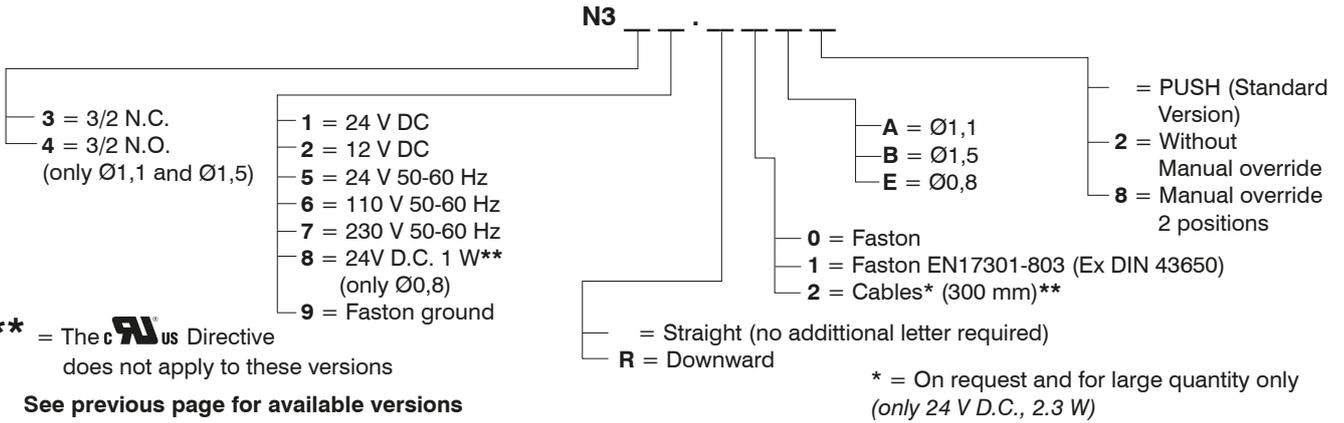
Nominal diameter	0.8	1,1 mm	1,5 mm (only D.C.)
Maximum flow rate at 6 bar with Δp 1 bar	20 NI/min	30 NI/min	50 NI/min
Working pressure for N.C.	0 - 10 bar		0 - 7 bar
Working pressure for N.O.	/	0 - 8 bar	0 - 5 bar
Temperature	-5° +50°C		
Life expectancy	50 million cycles (with standard working conditions)		

Electrical

Voltage D.C.	24 V DC	12-24 V DC	
Voltage A.C.	/	24-110-230 Volt 50/60 Hz	/
Power consumption D.C.	1 Watt	2,3 Watt	
Power consumption A.C.	/	2,8 VA (at starting) 2,5 VA (at speed)	/
Voltage tolerance	-5% - +10%		
Response time *	10-12 ms		
Isolating class	F (155°C)		
Protection degree	IP65 (with cables) IP40 (with connectors) IP00 (with faston)		

(*) *Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

15 mm miniature solenoid ordering codes



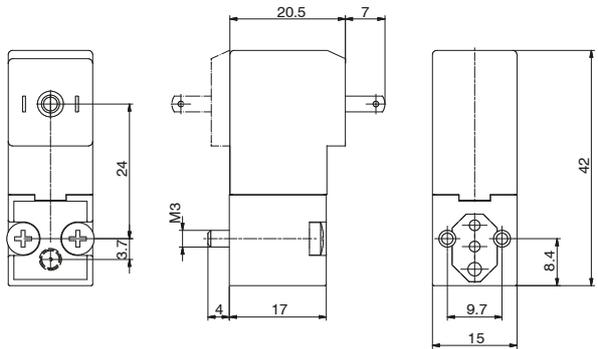
** = The CE Directive does not apply to these versions

See previous page for available versions

With Faston



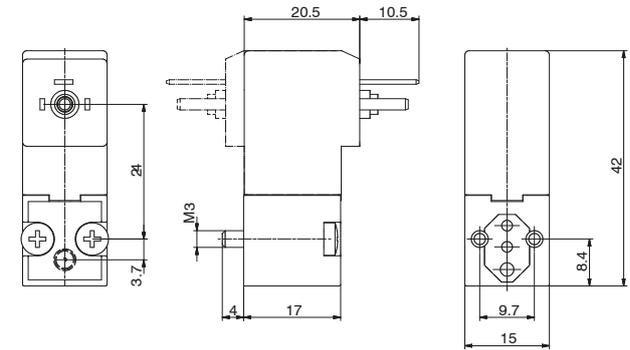
Weight 36 gr.



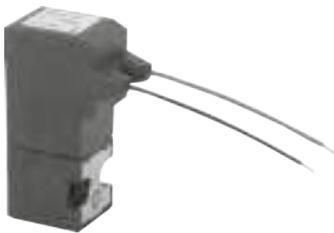
With Faston EN17301-803 (Ex DIN 43650)



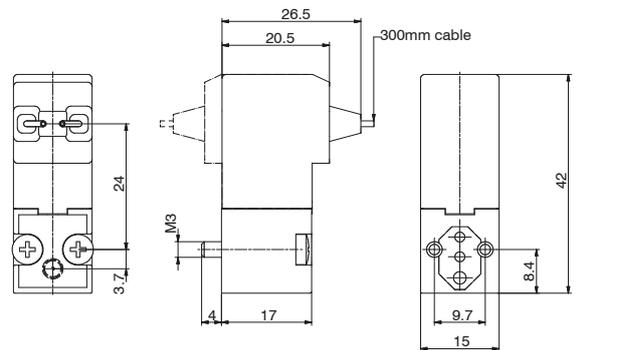
Weight 36 gr.



With Cables (300 mm)



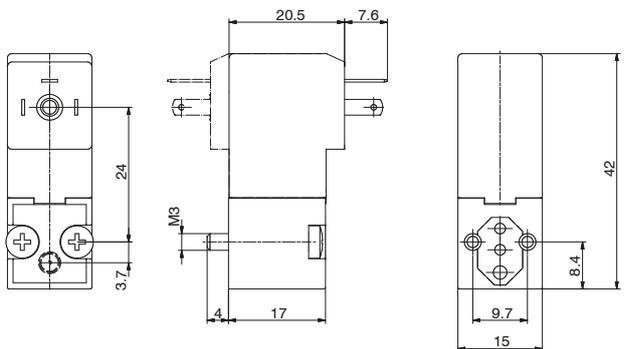
Weight 38 gr.



With Faston ground



Weight 38 gr.

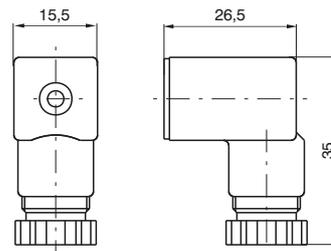


1
AIR DISTRIBUTION

Connector

Ordering code

- 315.11.00** Standard
- 315.12.00** for faston EN17301-803 (Ex DIN 43650)
- 315.11.0 L** Led
 - 1 = 24 V D.C. / A.C.
 - 2 = 110 V 50/60 Hz
 - 3 = 230 V 50/60 Hz
- 315.12.0 L** for faston EN17301-803 (Ex DIN 43650) with Led
 - 1 = 24 V D.C. / A.C.
 - 2 = 110 V 50/60 Hz
 - 3 = 230 V 50/60 Hz

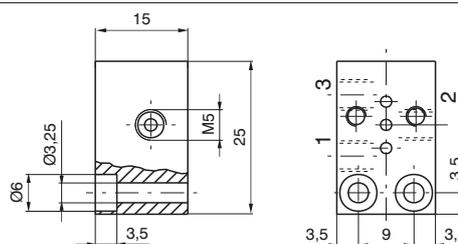


Weight 13 gr.

Single use base

Ordering code

355.01



Weight 18 gr.

Multiple bases

Ordering code

A = Orifice M5

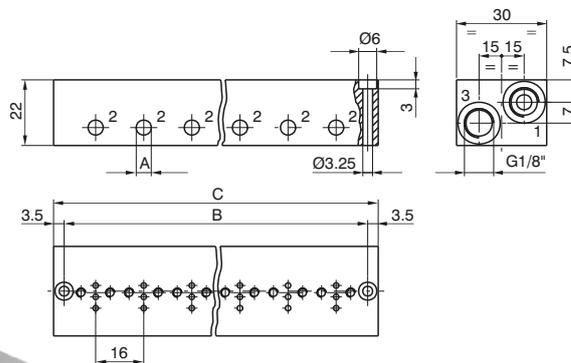
A = Pipe fitting Ø4

355 .

354 .

N° PLACES

N° PLACES



N° places	02	03	04	05	06	07	08	09	10
B	37	53	69	85	101	117	133	149	165
C	44	60	76	92	108	124	140	156	172
Weight (gr.)	66	92	116	141	165	190	216	242	266

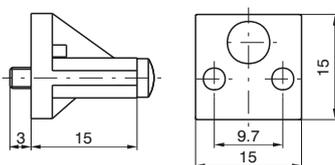
Closing plate

Ordering code

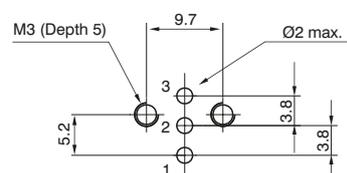
355.00



Weight 6 gr.



Interface dimensions



15mm Solenoid valves Manifold with electric multipoint connection

General

Also for this 15mm solenoid valves series we have realized the possibility of the assembling on the base with multipoint connection, this for making faster the connection and the harness of them.

Realized from a shaped outline, it results compact because it uses a relevant multipoint connection available only with a 37 poles connector from 10 to 32 solenoid valves (with steps of 2), available in line or at 90° and IP40 protection. On the base it is possible to put some threaded cartridges with push-in fittings for Ø3 – Ø3,17 Ø4 tube or M5 threaded.

The application field of these new configurations is the standard of 3/2 valves, where it is needed to realize groups or Manifolds provided with integrated electric connection to make easier and faster the connection and the harness of them (control of single acting cylinders with small dimensions, pilot system of valves with bigger dimensions etc..).

Constructive characteristics:

Constructive principle:

From 10 up to 32 solenoid valves (with steps of 2)

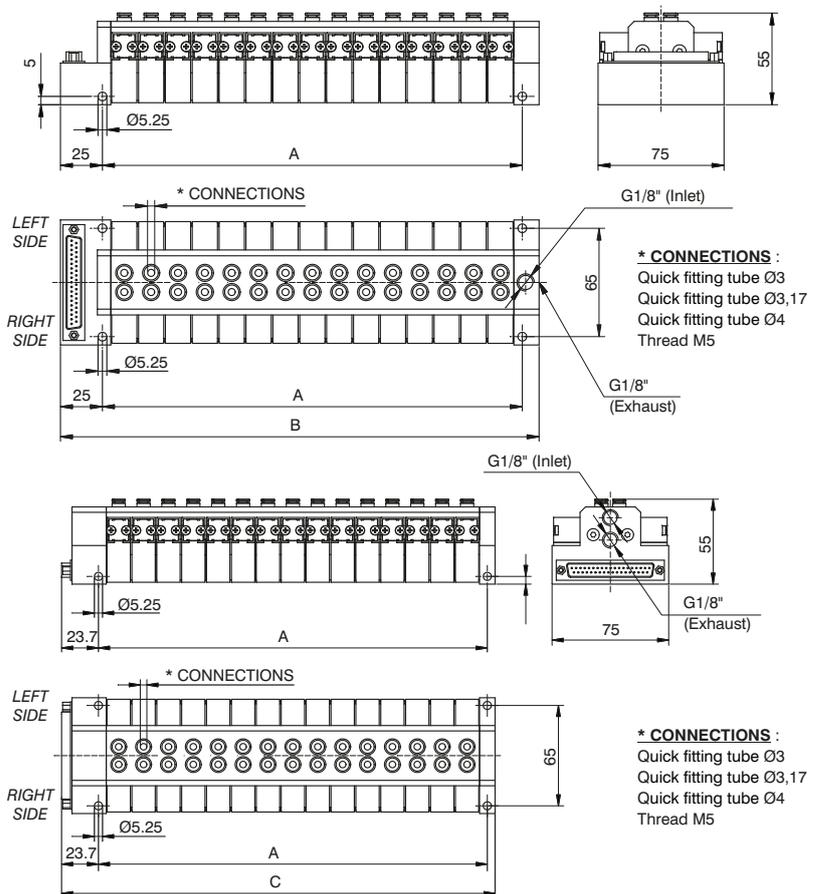
Extremely compact solution

IP40 protection (without visualisation led)

Possibility of having different working connections (Ø3, Ø3,17, Ø4 tubes, M5)

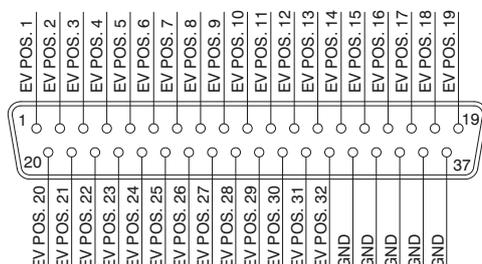
The new coding key requires the use of the same type of solenoid valves (there aren't codes for groups with a mixed configuration).

Overall dimensions

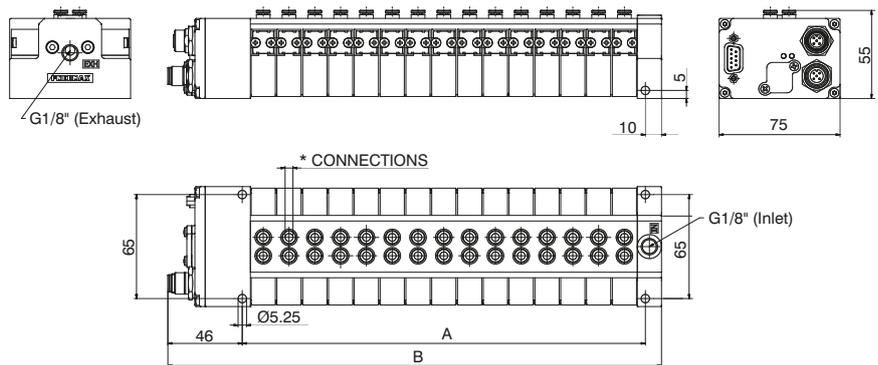


N° places	A	B	C
10	90	125	118,7
12	106	141	134,7
14	122	157	150,7
16	138	173	166,7
18	154	189	182,7
20	170	205	198,7
22	186	221	214,7
24	202	237	230,7
26	218	253	246,7
28	234	269	262,7
30	250	285	278,7
32	266	301	294,7

SUB-D 37 POLES CONNECTORS



Overall dimensions
Manifold with CANopen® node



N° positions	A	B
10	90	146
12	106	162
14	122	178
16	138	194
18	154	210
20	170	226
22	186	242
24	202	258
26	218	274
28	234	290
30	250	306
32	266	322

Manifold layout configuration

Connector type
0 = in line connector
9 = 90° connector
C = with CANopen® node

Connections size and type
3 = quick fitting tube Ø3
C = quick fitting tube Ø3.17
4 = quick fitting tube Ø4
A = M5 thread

35M . NW 0

N° positions
A = 10 positions
B = 12 positions
C = 14 positions
D = 16 positions
E = 18 positions
F = 20 positions
G = 22 positions
H = 24 positions
L = 26 positions
M = 28 positions
N = 30 positions
P = 32 positions

N° positions
 plugged side left
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

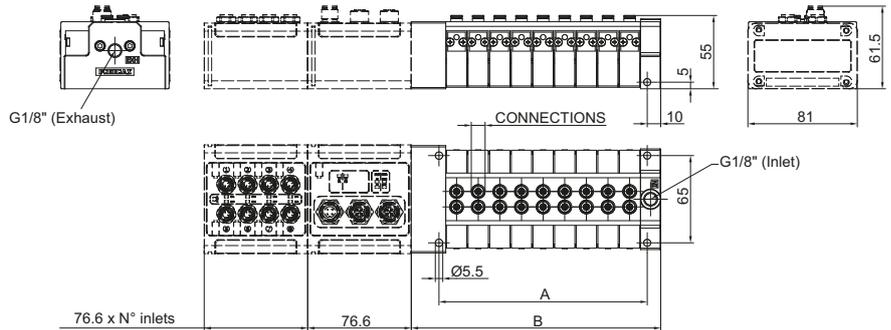
N° positions
 plugged side right
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

Valve type
A = N331.R0A (EV. 3/2 NC 24VDC d.1,1)
B = N331.R0B (EV. 3/2 NC 24VDC d.1,5)
C = N338.R0E (EV. 3/2 NC 24VDC 1W d.0,8)
D = N341.R0A (EV. 3/2 NO 24VDC d.1,1)
E = N341.R0B (EV. 3/2 NO 24VDC d.1,5)
F = N335.R0A (EV. 3/2 NC 24VAC d.1,1)

NOTE:
 The "R" letter indicates that the coil is mounted upside-down (faces down). For prices and technical features of these valves please refer to the correspondent standard version (not R) included in the price list and catalogue.

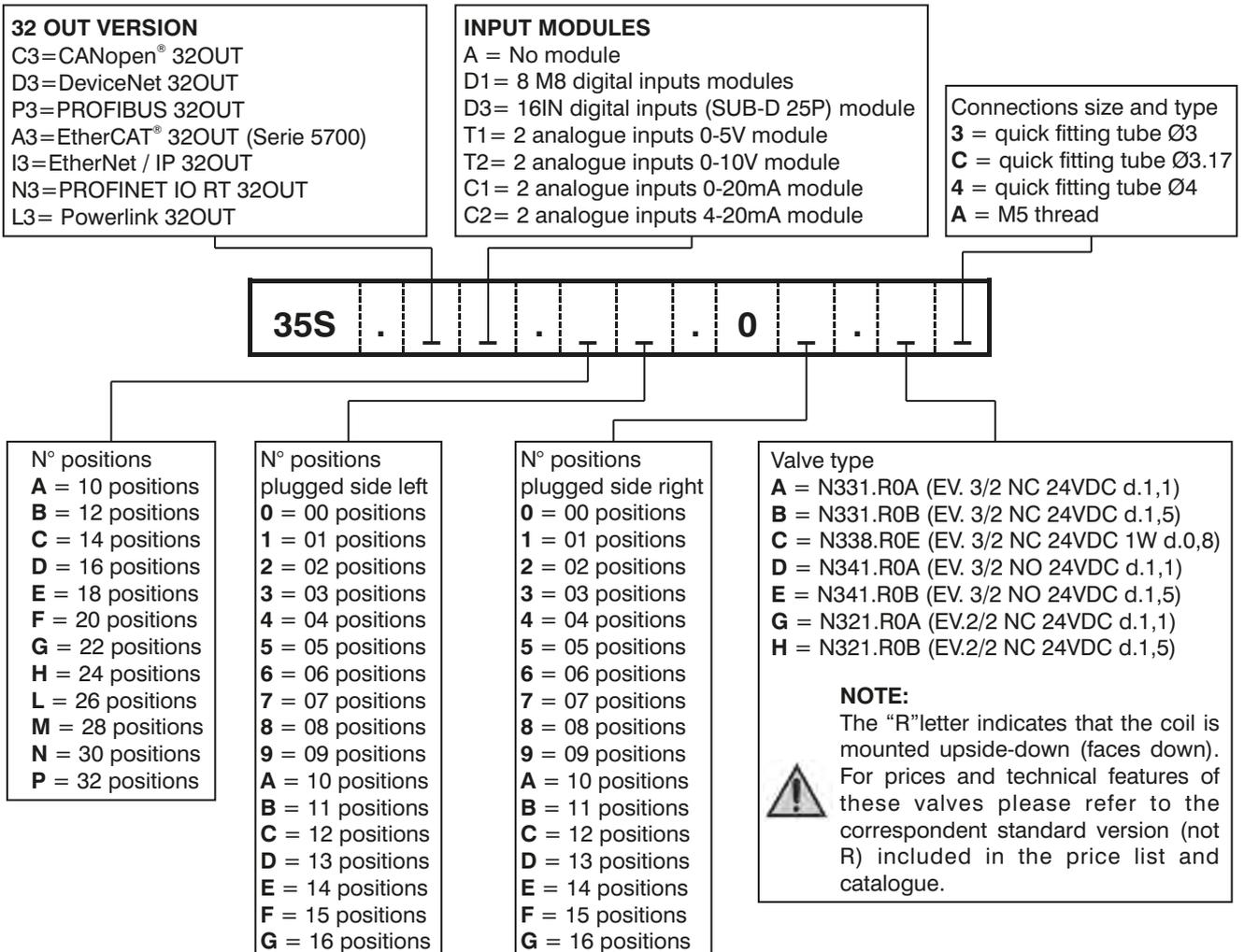
Overall dimensions

Manifold with Optyma-F serial system (slave + input modules)

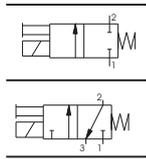


N° positions	A	B
10	90	120,50
12	106	136,50
14	122	152,50
16	138	168,50
18	154	184,50
20	170	200,50
22	186	216,50
24	202	232,50
26	218	248,50
28	234	264,50
30	250	280,50
32	266	296,50

Manifold layout configuration with Optyma-F serial system (slave + input modules)

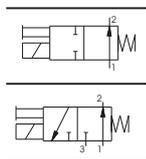
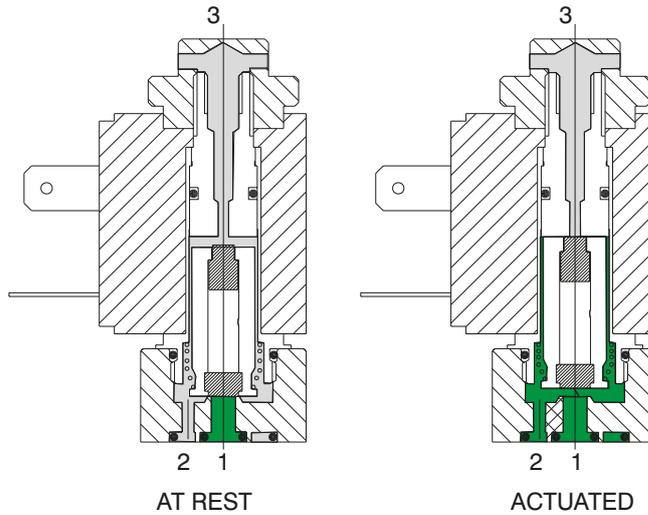


Functional schematics

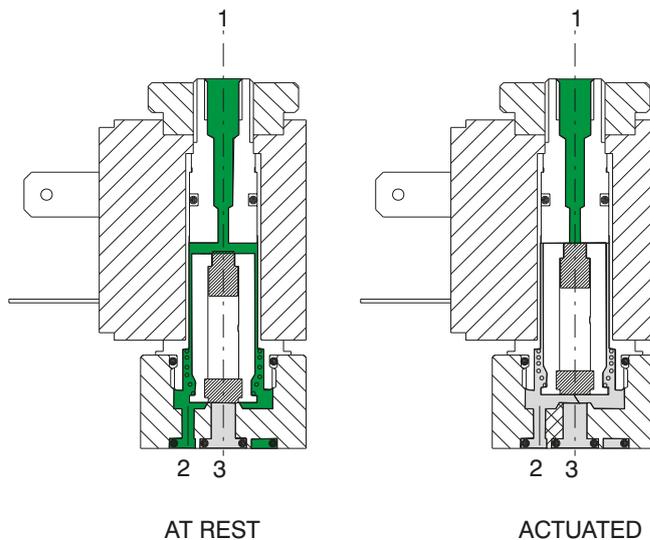


- 1 = INLET PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT
(Plugged if 2/2)

Normally Closed (N.C.) 3/2 or 2/2



Normally Open (N.O.) 3/2 or 2/2



Construction characteristics

Electrical parts: Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts: Nickel plated brass tube nitrile viton seals stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickered brass manual override, nickel steel coil lock nut, zinc steel mounting screw. To be usable, the solenoids and microsolenoids have to be attached either to a base or directly to the distributor's operators by means of connectors M5 or G 1/8". These solenoids are available in all voltages and frequencies used in the world. The following are the technical characteristics of the solenoid.

1
AIR DISTRIBUTION



Technical characteristics

Pneumatic	Working pressure	0 - 10 bar	
	Orifice size	1,3 mm	(0,9 mm for 2 W)
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	50°C	
	Maximum flow rate at 6 bar with Δp 1 bar	53 NI/min	(20NI/min. for 2 W)
	Cycles/minute	700	
	Fluids	Air-vacuum-inert gases	
	Lubrication	non required	
Life	45 to 50 million cycles		
Electrical	Power consumption holding - D.C	5 W	(2.5 W) low consumption
	Power consumption holding - A.C	9 VA	(6 VA) low consumption
	Operating voltage tolerance	$\pm 10\%$	
	Response time opening *	8 ms	
	Response time closing *	6 ms	
	Insulation of the copper wire	H	
	Insulation of the coil	F	
	Connector protection	IP 65	
Cable protection	DIN 43650 INDUSTRIAL FORM		

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

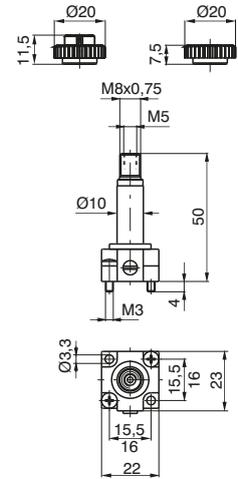
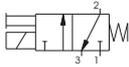
Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products- replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve. Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the mechanical part is not mounted to avoid destruction of the coil. The electrical connections have to be perfect, especially where low currents are used (12-24V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Mechanical actuator for miniature solenoid valve

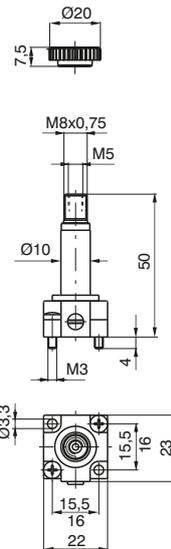
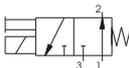
Ordering code

- M 2** Normally Closed (N.C.)
- M 2P** Normally Closed (N.C.) threaded lock nut
- M 2/9** Normally Closed (N.C.) 2 W 24 VDC



Weight 51 gr.

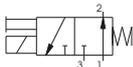
- M 2/1** Normally Open (N.O.) air feeding through fix flunger



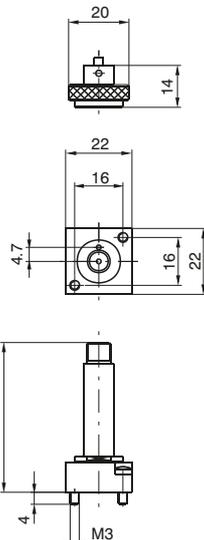
Weight 48 gr.

- Normally Open (N.O.) air feeding through base

MM 7

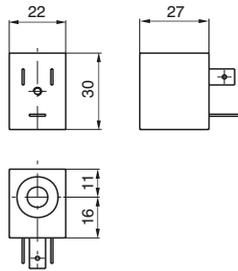


Weight 46 gr.



Ordering code	Available voltages	
N.O.	Coil	
MB10/1	24 D.C. (8 Watt)	Direct current
MB17/1	24/50	Alternating current 50 Hz
MB21/1	48/50	
MB22/1	110/50	
MB24/1	230/50	
MB37/1	24/60	Alternating current 60 Hz
MB39/1	110/60	
MB41/1	230/60	
MB56/1	24/50-60	Alternating current 50/60 Hz
MB57/1	110/50-60	
MB58/1	230/50-60	

Coil

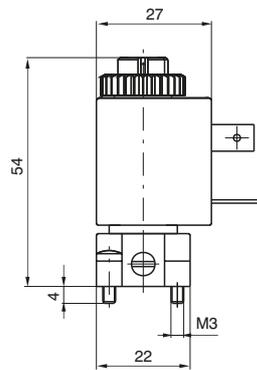
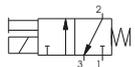


Weight 54 gr.

* Use only with M2/9

Ordering code	Available voltages Coils
MB 4 MB 5 MB 6	12 D.C. 24 D.C. 48 D.C. Direct current
MB 9*	24 D.C. (2 Watt) (Direct current, low consumption)
MB 17 MB 21 MB 22 MB 24	24/50 48/50 110/50 230/50 Alternating current 50 Hz
MB 37 MB 39 MB 41	24/60 110/60 230/60 Alternating current 60 Hz
MB 56 MB 57 MB 58	24/50-60 110/50-60 230/50-60 Alternating current 50/60 Hz
MB 66 MB 67 MB 68	24/50-60 110/50-60 230/50-60 Alternating current (low consumption) 50/60 Hz

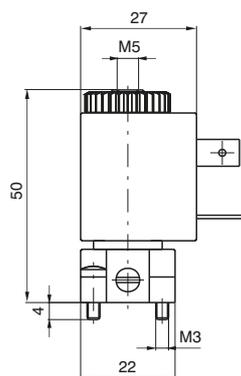
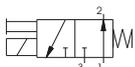
Miniature solenoid valve Normally Closed (N.C.)



Weight 100 gr.

Ordering code	Available voltages Miniature solenoid valve N.C.
M 2.4 M 2.5 M 2.6 M 2.9	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) Direct current
M 2.17 M 2.21 M 2.22 M 2.24	24/50 48/50 110/50 230/50 Alternating current 50 Hz
M 2.37 M 2.39 M 2.41	24/60 110/60 230/60 Alternating current 60 Hz
M 2.56 M 2.57 M 2.58	24/50-60 110/50-60 230/50-60 Alternating current 50/60 Hz
M 2.66 M 2.67 M 2.68	24/50-60 110/50-60 230/50-60 Alternating current (low consumption) 50/60 Hz

Miniature solenoid valve Normally Open (N.O.)



Weight 103 gr.

Ordering code	Available voltages Miniature solenoid valve N.O.
M 2/1.4 M 2/1.5 M 2/1.6 M 2/1.9	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) Direct current
M 2/1.17 M 2/1.21 M 2/1.22 M 2/1.24	24/50 48/50 110/50 230/50 Alternating current 50 Hz
M 2/1.37 M 2/1.39 M 2/1.41	24/60 110/60 230/60 Alternating current 60 Hz
M 2/1.56 M 2/1.57 M 2/1.58	24/50-60 110/50-60 230/50-60 Alternating current 50/60 Hz

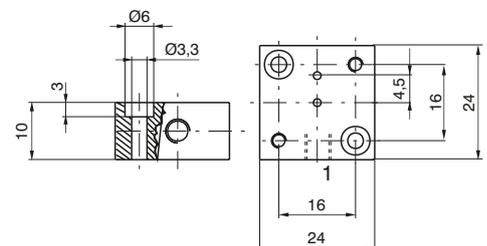
External feeding base

Use with solenoid valves for piloting pressure different from the using pressure

Ordering code

305.10.05

Weight 18 gr.



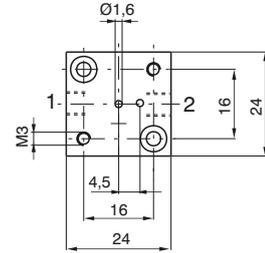
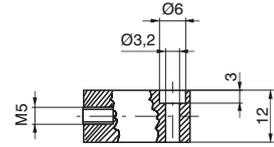
Individual base



In line ports - thread M5

1 = INLET PORT (N.C.)
2 = OUTLET PORT

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT



Ordering code

305.00.00

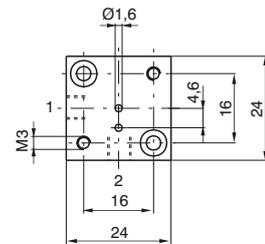
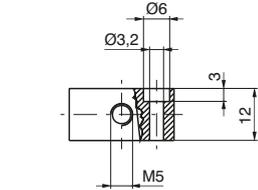
Weight 56 gr.

90° Port - thread M5



1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C.)

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT



Ordering code

305.90.00

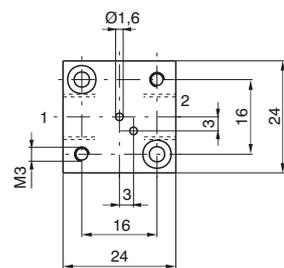
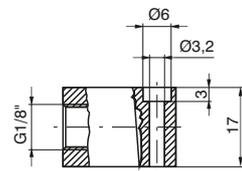
Weight 56 gr.

In line ports - thread G 1/8"



1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C.)

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT



Ordering code

305.00.18

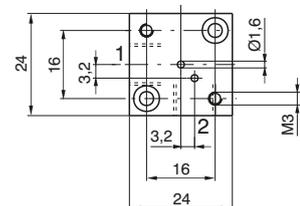
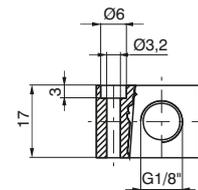
Weight 75 gr.

90° Port - thread G 1/8"



1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C.)

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT

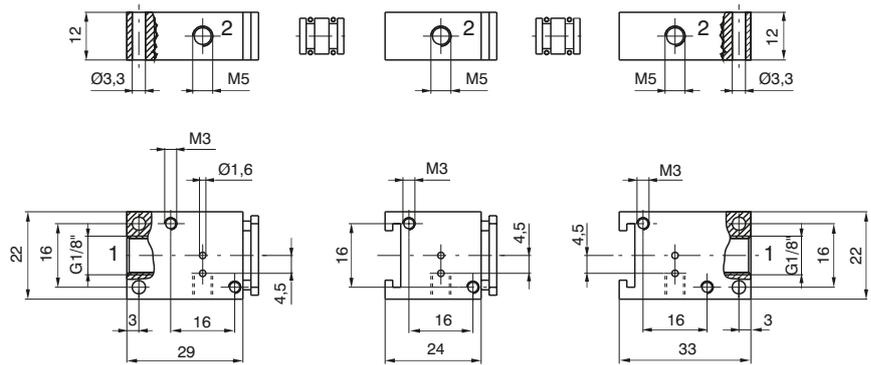


Ordering code

305.90.18

Weight 75 gr.

Modular bases for series mounting



Ordering code

Initial base
305.05.00
Weight 57 gr.

Intermediate base
305.06.00
Weight 44 gr.

Last base
305.07.00
Weight 53 gr.

Bored spacer
305.05.01
Weight 3 gr.

Solid spacer
305.05.02
Weight 4 gr.

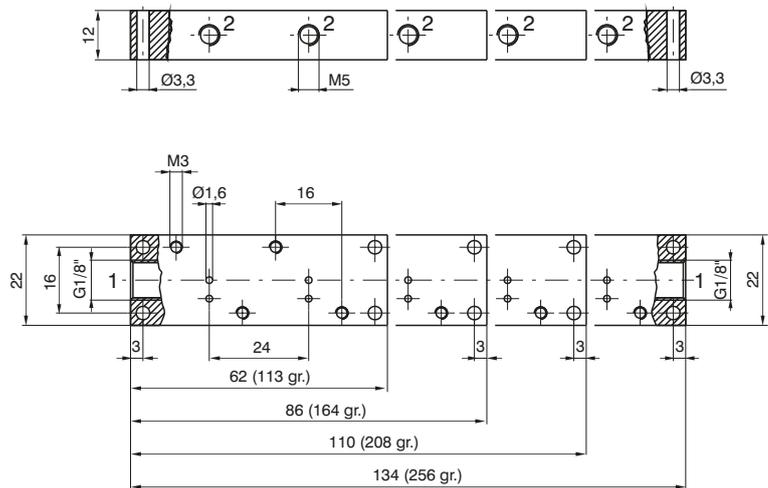
Initial base

Intermediate base

Last base

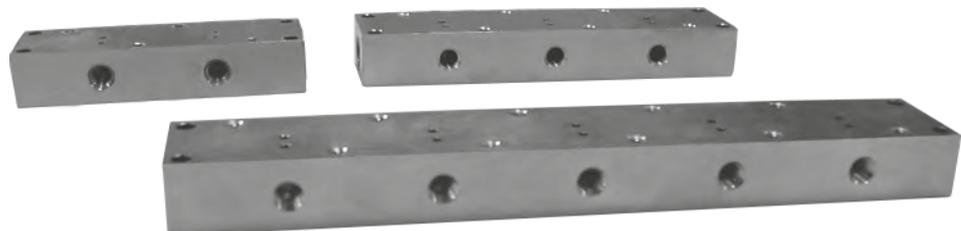


Multiple integral bases for series mounting

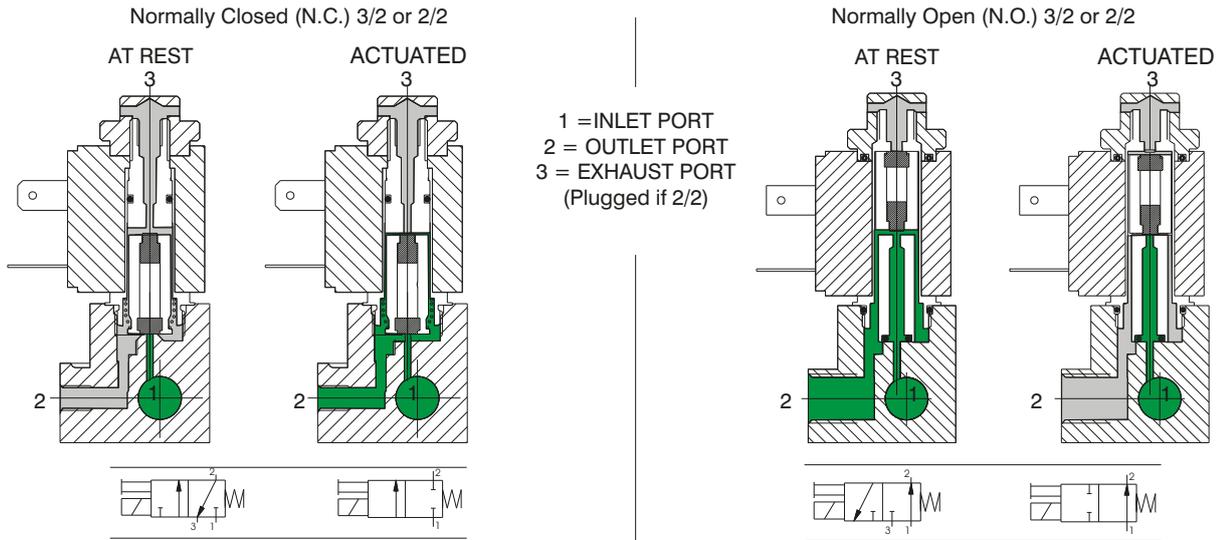


Ordering code

305.08.02 2 positions
305.08.03 3 positions
305.08.04 4 positions
305.08.05 5 positions



Functional schematic



Construction characteristics

Electrical parts: Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts: Nickel plated brass tube nitrile (NBR) stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickered brass manual override, Technopolymer coil lock nut, zinc steel mounting screws. Electrical connectors are standard.

Technical characteristics

Pneumatic	Working pressure	0 - 10 bar	
	Orifice size	1,3 mm	(1,1 mm for 2 W)
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	50°C	
	Maximum flow rate at 6 bar with $\eta_p = 1$	53 NI/min	(35 NI/min. for 2 W)
	Cycles/minute	700	
	Fluids	Air-Vacuum-Inert gases	
	Lubrication	Non needed	
	Life	40 to 50 million cycles	
	Electrical	Power consumption holding - D.C	5 W
Power consumption holding - A.C		8 VA	(6 VA) low consumption
Operating voltage tolerance		$\pm 10\%$	
Response time opening *		8 ms	
Response time closing *		6 ms	
Insulation of the copper wire		H	
Insulation of the coil		F	
Connector protection		IP 65	
Cable protection		DIN 43650 INDUSTRIAL FORM	

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the mechanical part is not mounted to avoid destruction of the coil.

The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

**Mechanical actuator for Normally Closed (N.C.)
Miniature solenoid valve**

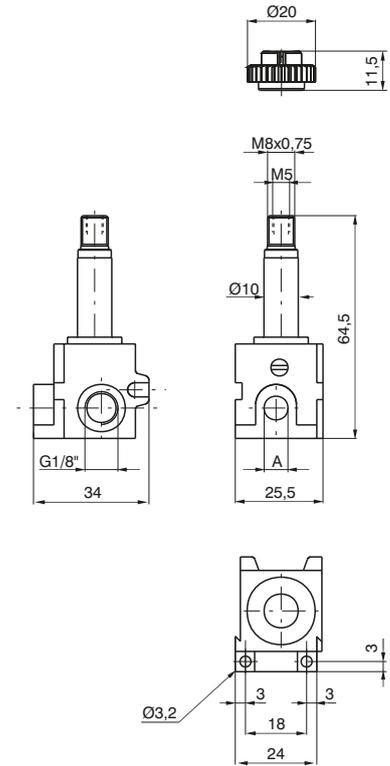
Normally Closed (N.C.)

Ordering code

- 305.M1 A = G 1/8"
- 355.M1 A = M5
- 345.M1 A = Push in fitting for 4 mm tube

- 305.M1/9 A = G 1/8"
- 355.M1/9 A = M5
- 345.M1/9 A = Push in fitting for 4 mm tube

2 W
24 DC

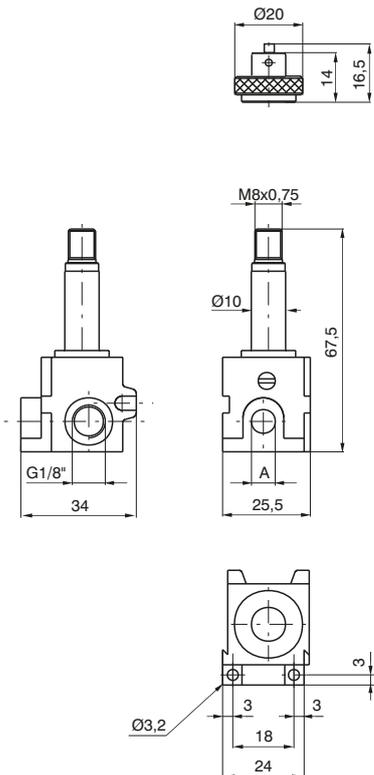


Weight 95 gr.

Normally Open (N.O.)

Ordering code

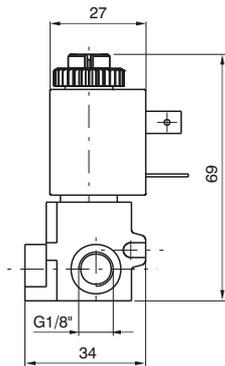
- 305.M1/1 A = G 1/8"
- 355.M1/1 A = M 5
- 345.M1/1 A = Push in fitting for 4 mm tube



Weight 106 gr.

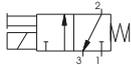
1
AIR DISTRIBUTION

Miniature solenoid valve

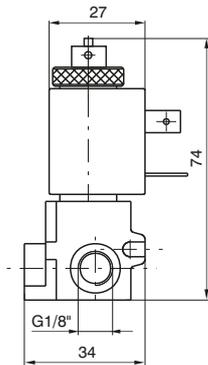


Normally Closed (N.C.)

Weight 149 gr.

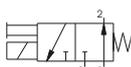


Ordering code			Available voltage miniature solenoid	
G 1/8"	M5	TUBE Ø4 mm		
305.M4	355.M4	345.M4	12 D.C.	Direct current
305.M5	355.M5	345.M5	24 D.C.	
305.M6	355.M6	345.M6	48 D.C.	
305.M9	355.M9	345.M9	24 D.C. (2 Watt)	
305.M17	355.M17	345.M17	24/50	Alternating current 50 Hz
305.M21	355.M21	345.M21	48/50	
305.M22	355.M22	345.M22	110/50	
305.M24	355.M24	345.M24	230/50	
305.M37	355.M37	345.M37	24/60	Alternating current 60 Hz
305.M39	355.M39	345.M39	110/60	
305.M41	355.M41	345.M41	230/60	
305.M56	355.M56	345.M56	24/50-60	Alternating current 50/60 Hz
305.M57	355.M57	345.M57	110/50-60	
305.M58	355.M58	345.M58	230/50-60	
305.M66	355.M66	345.M66	24/50-60	Alternating current low consumption 50/60 Hz
305.M67	355.M67	345.M67	110/50-60	
305.M68	355.M68	345.M68	230/50-60	



Normally Open (N.O.)

Weight 165 gr.

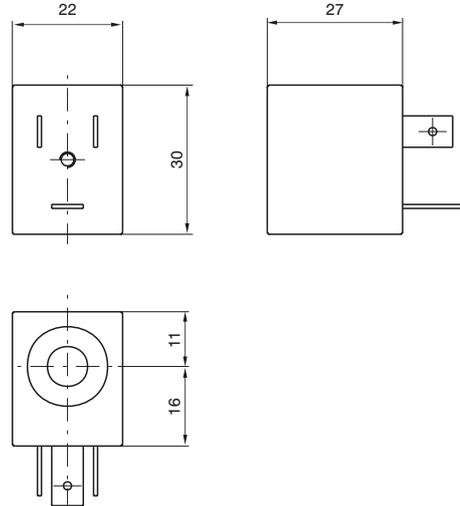


Ordering code			Available voltages miniature solenoid	
G 1/8"	M5	TUBE Ø4 mm		
305.M10/1	355.M10/1	345.M10/1	24 D.C. (8 Watt)	Direct current
305.M17/1	355.M17/1	345.M17/1	24/50	Alternating current 50 Hz
305.M21/1	355.M21/1	345.M21/1	48/50	
305.M22/1	355.M22/1	345.M22/1	110/50	
305.M24/1	355.M24/1	345.M24/1	230/50	
305.M37/1	355.M37/1	345.M37/1	24/60	Alternating current 60 Hz
305.M39/1	355.M39/1	345.M39/1	110/60	
305.M41/1	355.M41/1	345.M41/1	230/60	
305.M56/1	355.M56/1	345.M56/1	24/50-60	Alternating current 50/60 Hz
305.M57/1	355.M57/1	345.M57/1	110/50-60	
305.M58/1	355.M58/1	345.M58/1	230/50-60	

Coil



Weight 54 gr.



1
AIR DISTRIBUTION

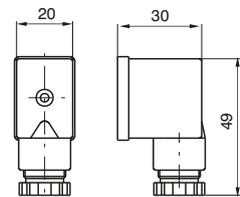
Ordering code		Available voltages Coil
N.C.	N.O.	
MB4 MB5 MB6 MB9	MB10/1	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) 24 D.C. (8 Watt) Direct current
MB17 MB21 MB22 MB24	MB17/1 MB21/1 MB22/1 MB24/1	24/50 48/50 110/50 230/50 Alternating current 50 Hz
MB37 MB39 MB41	MB37/1 MB39/1 MB41/1	24/60 110/60 230/60 Alternating current 60 Hz
MB56 MB57 MB58	MB56/1 MB57/1 MB58/1	24/50-60 110/50-60 230/50-60 Alternating current 50/60 Hz
MB66 MB67 MB68	/	24/50-60 110/50-60 230/50-60 Alternating current (low consumption) 50/60 Hz

Electrical connector

Ordering code

305.11.00 Normal

305.11.0 L with Led
 1 = 24 V D.C. / A.C.
 2 = 110 V 50/60 Hz
 3 = 230 V 50/60 Hz



Weight 19 gr.

BISTABLE

General

The most interesting aspects of this bi-stable miniature solenoid valve operating with D.C. only, is that it can be commuted with a simple electric impulse and stay commuted till an inverted polarity impulse deactivates it. It means that the valve is not automatically deactivated if current fail as happens with normal solenoid valves.

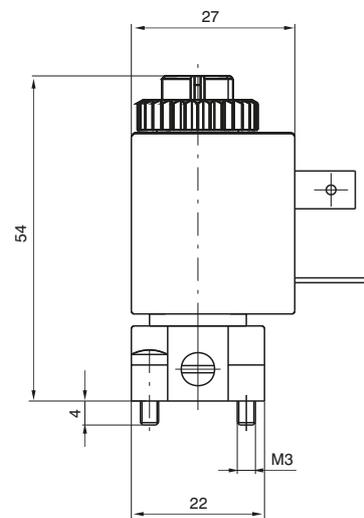
The applications differ but are all based on above mentioned feature.

The internal construction is relatively special. The fix plunger is equipped with a permanent magnet that hold or release the mobile plunger according to the magnetic field generated by the coil.

A specific coil is used for this application and it cannot be replaced by the standard ones.

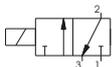
Ordering code is **MBB5**.

Miniature solenoid valve for distributors and bases



Ordering code

M5/B



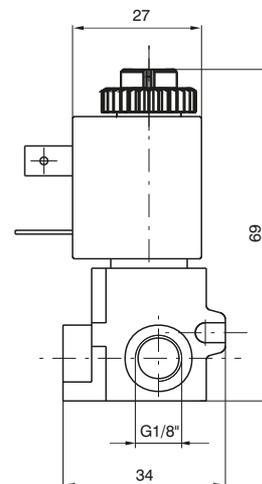
Miniature solenoid valve with inseries mounting base

Ordering code

305.M5/B = G 1/8"

355.M5/B = M5

345.M5/B = Fitting for 4 mm tube

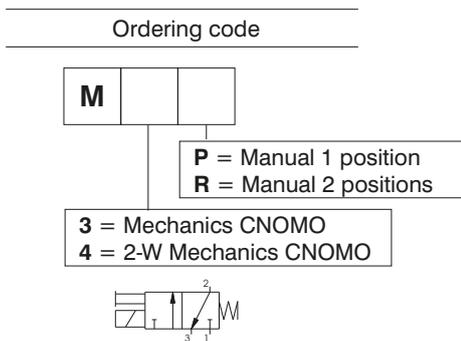


Electric pilot CNOMO (coil not included)

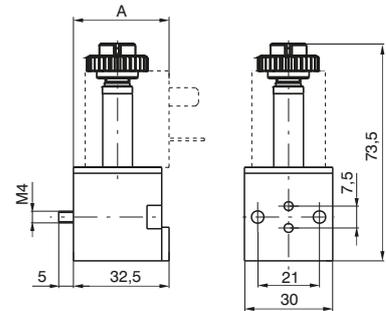
Mechanics with base for solenoid to be used where an electric pilot system is required.

May be used on all sizes and is standardized as an interface on the distributor.

The base is fitted with a manual control which is pulse actuated, without check, or with two stable positions, actuated by means of a screwdriver (pressing down and turning clockwise by 90°). Two different types of solenoids can be mounted on the stem, one in conformity with ISO standard size 30x38 and ISO 4400 (DIN 43650) electrical connection, and a compact one size 22x27, having the same performance but at lower price. The technical characteristics of the latter are described in the catalogue, series 300, and refer to MB solenoids. The base is fitted with screws (M4x30) for fastening to the distributor.



Weight 49 gr.



A = 33 (with MB solenoid)

A = 38 (with MC solenoid)

General characteristics

Structural	Body	Thermoplastic polyester	
	Stem	Nickel-plated brass	
	Cores	AISI 430F stainless steel	
	Springs	AISI 302 stainless steel	
	Shutters	FPM	
	Other seals	NBR	
	Manual control	Nickel-plated brass	
Pneumatic	Fluid	Air, Neutral gases	
	Working pressure	0-10 bar	
	Fluid ambient temperature	-5°C - +50°C	
	Flow rate at 6 bar with Δp 1 bar	53 NI/min	(20 NI/min for 2 W)
	Nominal flow cross section	1,3 mm	(0,9 mm for 2 W)
Electric	Power consumption (inrush) - A.C.	13 VA	
	Power consumption holding - D.C.	4 W	(2 W)
	Power consumption holding - A.C.	8,5 VA	
	Operating voltage tolerance	±10%	
	Response time opening *	13 ms	
	Response time closing *	5 ms	
	Insulation of the copper wire	H	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 "A" FORM	

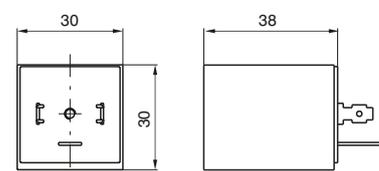
(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Coil

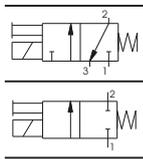
Ordering code	Available voltages
	Coil
MC5	24 D.C.
MC9	24 D.C. (2 Watt)
MC56	24/50-60 Hz
MC57	110/50-60 Hz
MC58	230/50-60 Hz



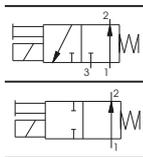
Weight 110 gr.



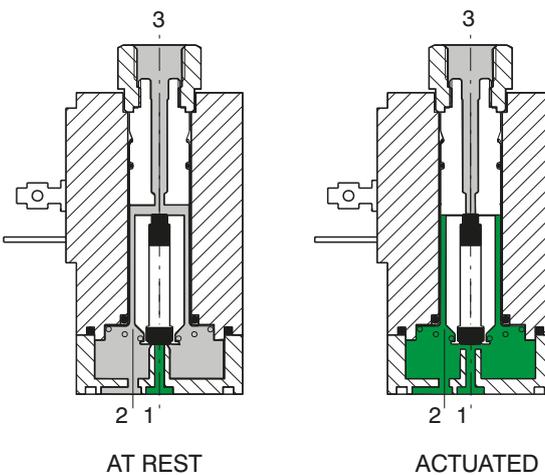
Functional schematic



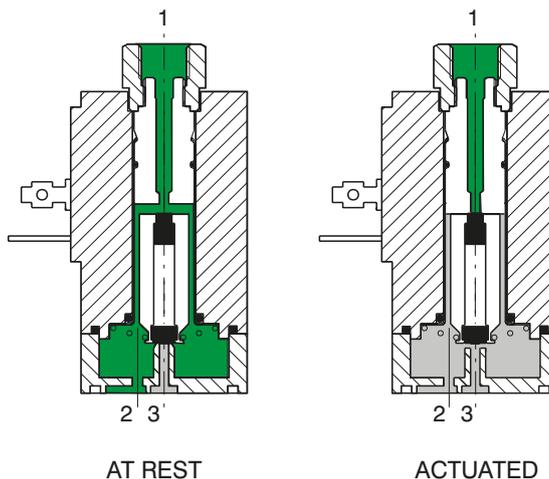
- 1 = INLET PORT
- 2 = OUTLET PORT
- 3 = EXHAUST PORT
(Plugged if 2/2)



Normally Closed (N.C.) 3/2 or 2/2



Normally Open (N.O.) 3/2 or 2/2



Construction characteristics

Electrical parts:

Solenoids: the solenoid consists of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts:

Stainless steel tube and plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nitrile (NBR) seal nicked brass manual override, nickel steel coil lock nut, zinc steel mounting screws. To be usable, the solenoids have to be attached either to a base or directly to the distributor's operators by means of connectors G 1/8". Electrical connectors are standard. These solenoid are available in all voltages and frequencies used in the world. The following are the technical characteristics of the solenoid.

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Technical characteristics

Pneumatic	Working pressure	0 - 10 bar
	Orifice size	1,8 mm
	Maximum fluid temperature	50°C
	Maximum ambient temperature	50°C
	Maximum flow rate at 6 bar with $\Delta p = 1$	80 NI/min
	Cycles/minute	700
	Fluids	Air-Vacuum-Inert gases
	Lubrication	Not required
	Life	40 to 50 millions
Electric	Power consumption (inrush) - D.C.	-
	Power consumption (inrush) - A.C.	19,5 VA
	Power consumption holding - D.C.	8,2 W
	Power consumption holding - A.C.	9 VA
	Operating voltage tolerance	$\pm 10\%$
	Response time opening *	15 ms
	Response time closing *	30 ms
	Insulation of the copper wire	H
	Insulation of the coil	F
	Connector protection	IP 65
	Cable protection	DIN 43650 "A" FORM

(*): "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

Special care should be taken that no dirt is accumulated between the working surface of fixed cores 3 and the plunger 2 which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the mechanical part is not mounted to avoid destruction of the coil.

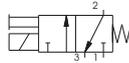
The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Solenoid valve S and S/1

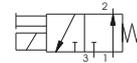


Weight 220 gr.

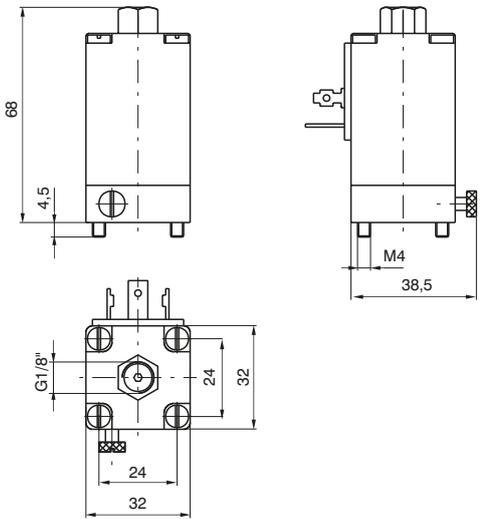
Normally Closed
(N.C.) - S



Normally Open
(N.O.) - S/1



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AIR DISTRIBUTION



Ordering code		Available voltages Coil	
S 2 S 4 S 5 S 6	S 2/1 S 4/1 S 5/1 S 6/1	6 D.C. 12 D.C. 24 D.C. 48 D.C.	Direct current
S 16 S 17 S 19 S 20 S 21 S 22 S 23 S 24	S 16/1 S 17/1 S 19/1 S 20/1 S 21/1 S 22/1 S 23/1 S 24/1	12/50 24/50 32/50 42/50 48/50 110/50 115/50 230/50	Alternating current 50 Hz
S 36 S 37 S 38 S 39 S 40 S 41	S 36/1 S 37/1 S 38/1 S 39/1 S 40/1 S 41/1	12/60 24/60 48/60 110/60 115/60 230/60	Alternating current 60 Hz
S 56 S 57 S 58	S 56/1 S 57/1 S 58/1	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz

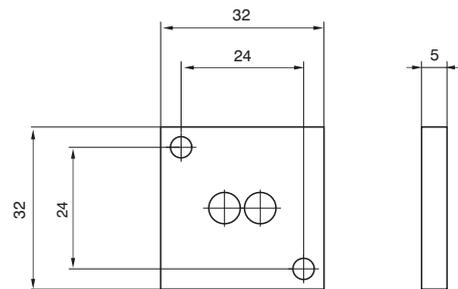
Closing plate

Ordering code

300.12.00



Weight 14 gr.



External feeding base

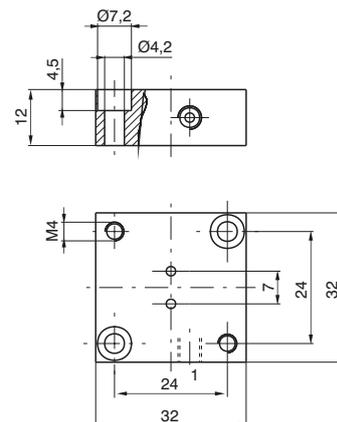
To be used with electrodistributeur to get a different piloting pressure from the line one.

Ordering code

300.10.05



Weight 35 gr.



General

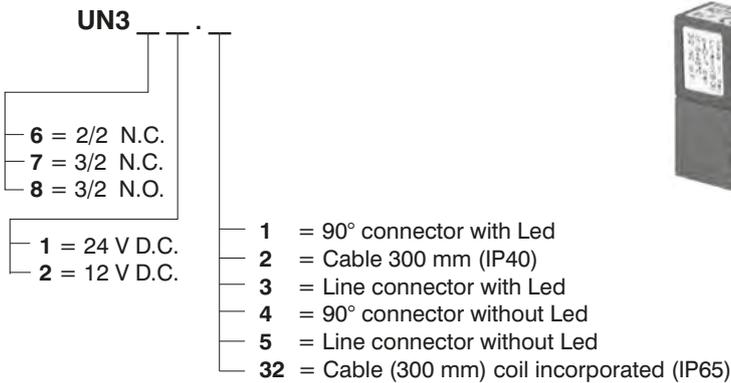
The series **us** homologated solenoid valves (valid for USA and Canada file n. E206325-VAIU2, VAIU8) are different from the standard ones for microsolenoid made with an injected RYNITE embedded copper wire (they are included in class "F" insulation).

Refer to standard versions as for as other details and accessories to be used with solenoid valves.

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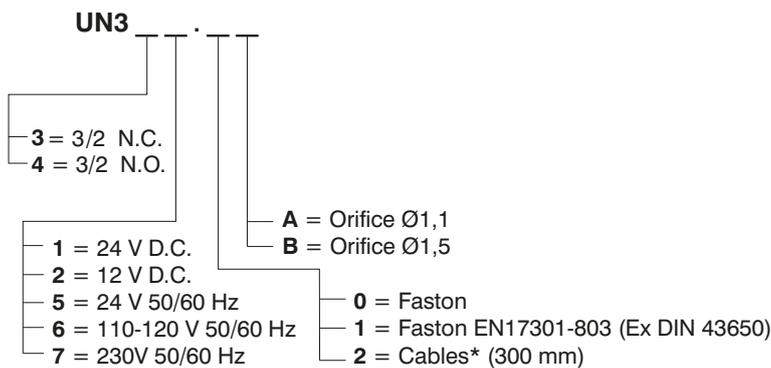
Miniature solenoid valve 10mm

Ordering code



Miniature solenoid valve 15mm

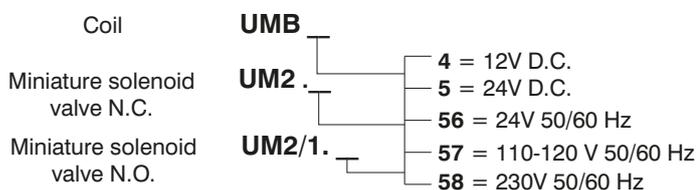
Ordering code



* On request and for large quantity only (only 24 V D.C. 2,3 W)

Miniature solenoid valve 22mm

Ordering code



Miniature solenoid valve 22mm for series mounting

Ordering code

- Coil N.C. **UMB**
 - 4 = 12 V D.C.
 - 5 = 24 V D.C.
 - 56 = 24 V 50/60 Hz
 - 57 = 110-120 V 50/60 Hz
 - 58 = 230 V 50/60 Hz

- Coil N.O. **UMB** /1
 - 10 = 24 V D.C. 8W
 - 56 = 24 V 50/60 Hz
 - 57 = 110-120 V 50/60 Hz
 - 58 = 230 V 50/60 Hz

- Solenoid valve N.C. **U3** **5.M**
 - 0 = G1/8"
 - 5 = M5
 - 4 = fitting for 4mm tube
 - 4 = 12 V D.C.
 - 5 = 24 V D.C.
 - 56 = 24 V 50/60 Hz
 - 57 = 110-120 V 50/60 Hz
 - 58 = 230 V 50/60 Hz

- Solenoid valve N.O. **U3** **5.M** /1
 - 0 = G1/8"
 - 5 = M5
 - 4 = fitting for 4mm tube
 - 10 = 24 V D.C. 8W
 - 56 = 24 V 50/60 Hz
 - 57 = 110-120 V 50/60 Hz
 - 58 = 230 V 50/60 Hz



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Bi-stable miniature solenoid valve 22mm

Ordering code

- Coil **UMBB5**
- Miniature solenoid valve for distributors and bases (N.C.) **UM5/B**
- Miniature solenoid valve with inseries mounting base (N.C.) **U3** **5.M5/B**
 - 0 = G1/8"
 - 5 = M5
 - 4 = fitting for 4mm tube



Solenoid valve 30 mm (for mechanics M3 and M4)

Ordering code

- UMC5** = 24 V D.C.
- UMC56** = 24 V 50/60 Hz
- UMC57** = 110 ÷ 120 V 50/60 Hz
- UMC58** = 230 V 50/60 Hz



Solenoid valve 32 mm

Ordering code

- Solenoid valve N.C. **US**
- Solenoid valve N.O. **US** /1
 - 4 = 12 V D.C.
 - 5 = 24 V D.C.
 - 56 = 24 V 50/60 Hz
 - 57 = 110-120 V 50/60 Hz
 - 58 = 230 V 50/60 Hz

