

SUMMARY PROCESS VALVES MULTIPLE FLUIDS



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DISTRIBUTORS

SUMMARY PROCESS VALVES MULTIPLE FLUIDS

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), stopper pneumatic valves (series PV-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.

* Products available soon

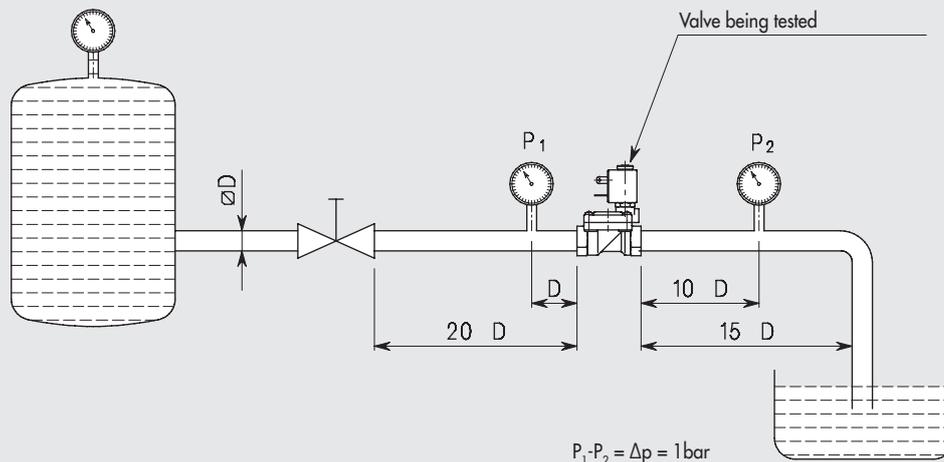


CALCULATING THE FLOW RATE

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 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 [ms] at 6 bar		Notes
	Opening (TRA)	Closing (TRR)	
2 and 3 ways direct acting NC	8	25	with liquids +50% ÷ +150% depending on the viscosity
2 and 3 ways direct acting NO	25	8	
Servoassisted NC			
3/8" - 1/2"	30	50	
3/4" - 1"	50	70	
Servoassisted NO			
3/8" - 1/2"	50	30	
3/4" - 1"	70	50	
Servoassisted 1 1/4" - 1 1/2" - 2"	Adjustable time		

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)

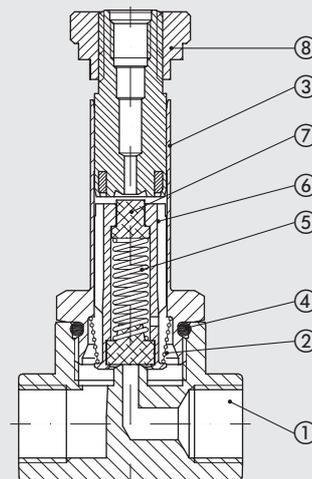
These solenoid valves can operate at a minimum pressure of 0 bar.



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: $-10 \div +15$			
Type of protection		IP 65 with connector			
Fluid temperature	$^{\circ}\text{C}$	$-10 \div +90$	$-10 \div +140$	$-10 \div +140$	$-10 \div +180$
Ambient temperature	$^{\circ}\text{C}$	with coil C.I.F: $-10 \div +55$; con with coil C.I.H: $-10 \div +80$			
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			
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

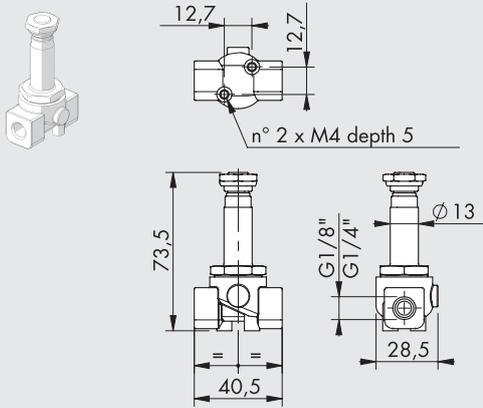
- ① BODY: brass or stainless steel
- ② SPRING: stainless steel
- ③ SLEEVE
- ④ GASKET
- ⑤ MOLLA: stainless steel
- ⑥ MOBILE CORE
- ⑦ GASKET
- ⑧ RING NUT FOR COIL FIXING



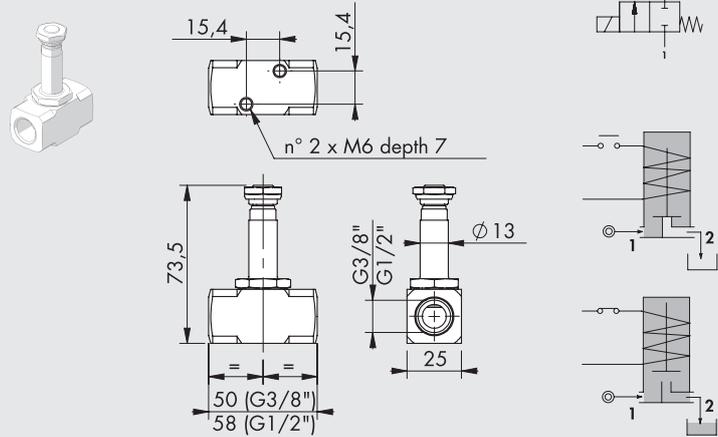
DIMENSIONS AND ORDERING CODES

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	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_910100001	1/8"	1.5	0.07	2	0 ÷ 30	0 ÷ 26	180
W_910100002	1/8"	2	0.1	2	0 ÷ 22	0 ÷ 20	180
W_910100010	1/4"	2.5	0.15	2	0 ÷ 16	0 ÷ 14	180
W_910100011	1/4"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	180
W_910100012	1/4"	4.5	0.41	2	0 ÷ 6.5	0 ÷ 3.5	180
W_910100013	1/4"	5.2	0.47	5	0 ÷ 10	0 ÷ 9	180
W_910100017	1/4"	6.4	0.64	5	0 ÷ 5	0 ÷ 4.5	180
W_910100020	3/8"	4	0.36	2	0 ÷ 8	0 ÷ 5	240
W_910100021	3/8"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	240
W_910100022	3/8"	4.5	0.41	2	0 ÷ 6.5	0 ÷ 3.5	240
W_910100030	1/2"	5.2	0.47	5	0 ÷ 10	0 ÷ 9	240
W_910100031	1/2"	6.4	0.64	5	0 ÷ 5	0 ÷ 4.5	240
W_910100032	1/2"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	240

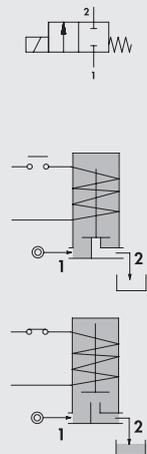
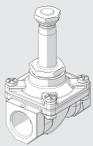
To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets
T for PTFE gaskets

* The maximum 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	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_910700001	1/2"	12	2.2	5	0 ÷ 0.8	0 ÷ 0.4	330
W_910700002	3/4"	18	4.5	5	0 ÷ 0.2	0 ÷ 0.12	630

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

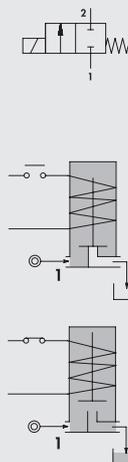
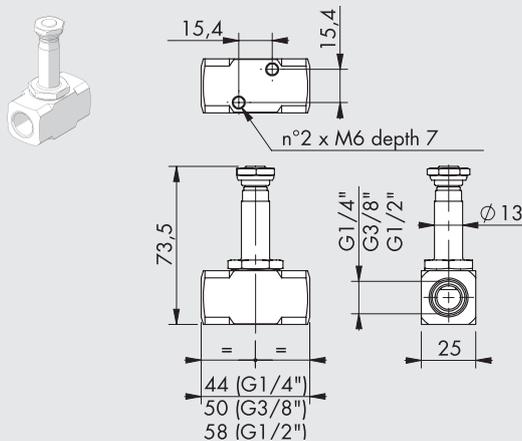
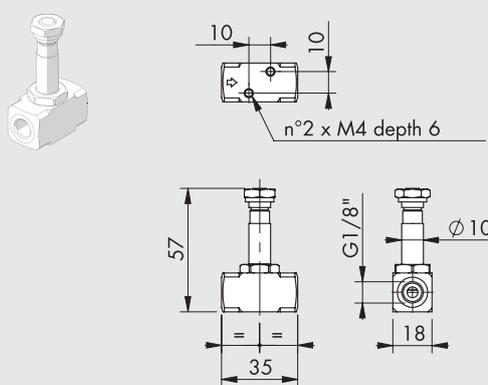
V for FKM/FPM gaskets

* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

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	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_910300001	1/8"	1.5	0.06	3	0 ÷ 16	0 ÷ 16	100
W_910300002	1/8"	2.5	0.14	3	0 ÷ 8	0 ÷ 5.5	100
W_910300003	1/8"	3.1	0.19	4	0 ÷ 8	0 ÷ 4	100
W_910300010	1/4"	2	0.1	2	0 ÷ 22	0 ÷ 20	240
W_910300011	1/4"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	240
W_910300020	3/8"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	240
W_910300021	3/8"	5.2	0.47	5	0 ÷ 10	0 ÷ 9	240
W_910300022	3/8"	6.4	0.64	5	0 ÷ 5	0 ÷ 4.5	240
W_910300030	1/2"	5.2	0.47	5	0 ÷ 10	0 ÷ 9	240
W_910300031	1/2"	6.4	0.64	5	0 ÷ 5	0 ÷ 4.5	240
W_910300032	1/2"	3.5	0.32	2	0 ÷ 10	0 ÷ 8	240

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

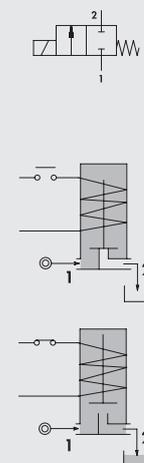
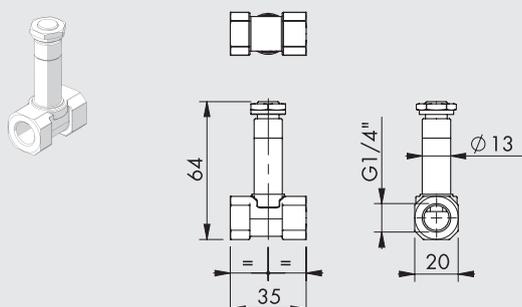
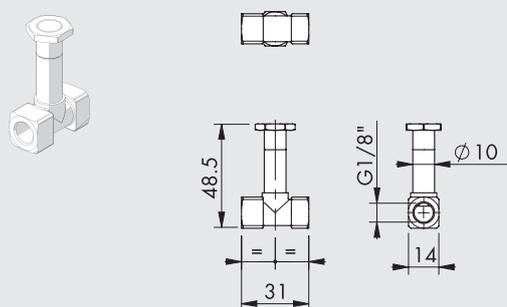
V for FKM/FPM gaskets
T for PTFE gaskets

* The maximum allowable pressure for steam is 6 bar with PTFE gaskets and 2.5 bar with EPDM gaskets

VERSION 2/2 NC, BRASS BODY WITH BUILT-IN SLEEVE, FKM/FPM GASKETS

G1/8"

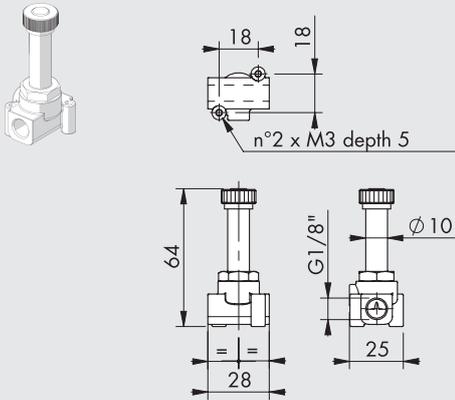
G1/4"



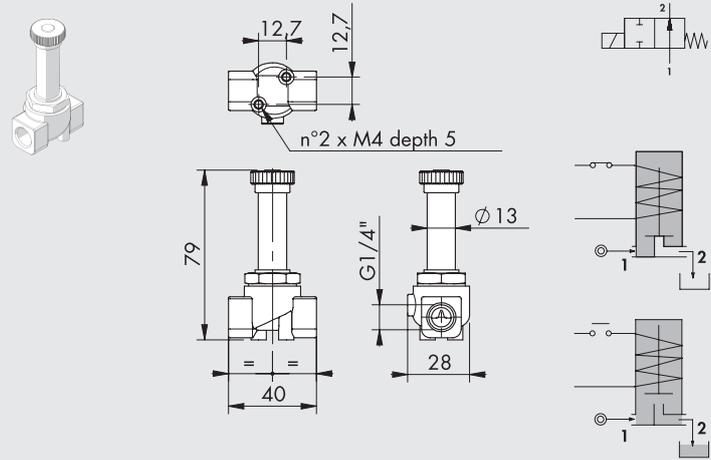
Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Operating pressure [bar]		Weight [g]
					AC	DC	
WV910500001	1/8"	1.5	0.06	3	0 ÷ 14	0 ÷ 3	40
WV910500002	1/4"	3	0.18	2	0 ÷ 14	0 ÷ 6	100
WV910500003	1/4"	4	0.26	2	0 ÷ 7	0 ÷ 3	100

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	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_910800003	1/8"	2	0.09	3	0 ÷ 8	0 ÷ 8	80
W_910800004	1/8"	2.5	0.14	3	0 ÷ 4.5	0 ÷ 4.5	80
W_910800008	1/4"	2.5	0.15	2	0 ÷ 12	-	180
W_910800009	1/4"	3.5	0.32	2	0 ÷ 7	-	180
W_910800010	1/4"	4.5	0.41	2	0 ÷ 4.5	-	180
W_910800011	1/4"	5.2	0.47	2	0 ÷ 3	-	180
W_910810009	1/4"	3.5	0.32	2	-	0 ÷ 4	180
W_910810010	1/4"	4.5	0.41	2	-	0 ÷ 3	180
W_910810011	1/4"	5.2	0.47	2	-	0 ÷ 2.2	180

To complete the code enter:

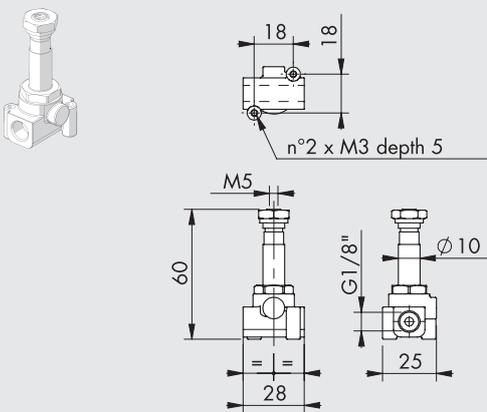
O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

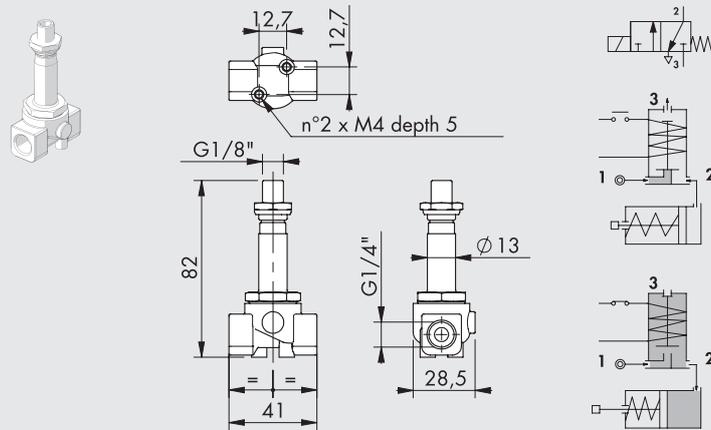
* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

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	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_911000002	1/8"	1.5	0.06	3	0 ÷ 10	0 ÷ 10	60
W_911000003	1/8"	2	0.09	3	0 ÷ 6	0 ÷ 6	60
W_911000004	1/4"	1.5	0.07	2	0 ÷ 20	0 ÷ 20	200
W_911000005	1/4"	2	0.11	2	0 ÷ 13	0 ÷ 13	200
W_911000006	1/4"	2.5	0.16	2	0 ÷ 10	0 ÷ 10	200

To complete the code enter:

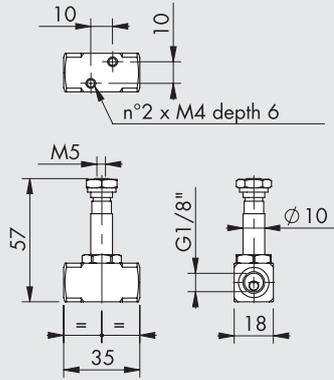
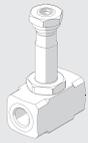
O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

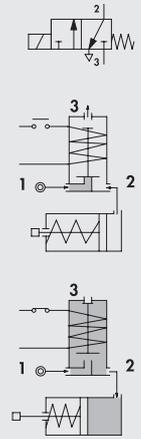
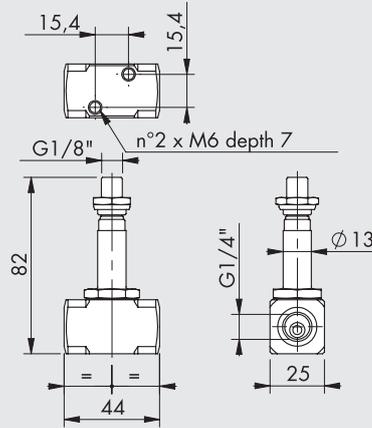
* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

VERSION 3/2 NC, STAINLESS STEEL VALVE BODY

G1/8"



G1/4"



DISTRIBUTORS

SOLENOID VALVES, SERIES EV-FLUID, DIRECT ACTING

Code	Threaded port	Air hole Ø [mm]	Kv factor [m³/h]	Type of coil	Operating pressure [bar] *		Weight [g]
					AC	DC	
W_911200002	1/8"	1.5	0.06	3	0 ÷ 10	0 ÷ 10	100
W_911200003	1/8"	2	0.09	3	0 ÷ 6	0 ÷ 6	100
W_911200005	1/4"	2	0.11	2	0 ÷ 20	0 ÷ 15	240
W_911200006	1/4"	2.5	0.16	2	0 ÷ 20	0 ÷ 15	240

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

NOTES

SOLENOID VALVES, SERIES EV-FLUID, SERVO-ASSISTED ACTION

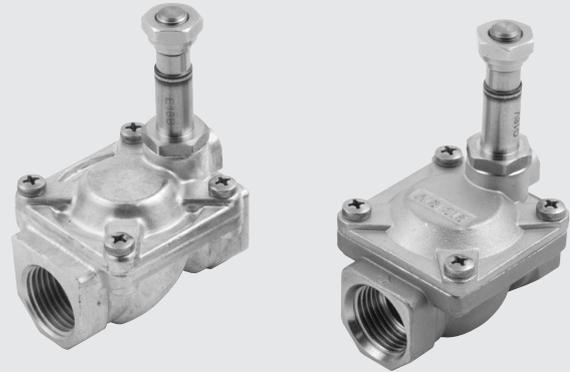
Le valvole ad azionamento assistito serie EV-FLUID vengono utilizzate quando si necessita un'apertura di passaggio di grandi dimensioni, senza comunque rinunciare alla pressione. Anzi, in questo tipo di valvole la pressione del fluido aiuta a mantenere chiusa la guarnizione.

Nella versione 2/2 NC, quando la bobina è diseccitata, la guarnizione collegata alla membrana mantiene chiuso il passaggio del fluido tra l'ingresso e l'uscita. La chiusura della membrana è assistita dalla pressione del fluido che, attraverso un piccolo foro, riempie la camera posta sopra la membrana.

Quando la bobina viene eccitata, l'elettropilota mette in scarico la camera superiore e la membrana si apre, consentendo il passaggio del fluido attraverso l'orifizio superiore.

Nella versione 2/2 NO, quando la bobina è diseccitata, il passaggio del fluido tra l'ingresso e l'uscita è aperto e la camera posta al di sopra della membrana è vuota. Eccitando la bobina, l'elettropilota consente al fluido di fluire nella camera superiore alla membrana, permettendo in tal modo la chiusura dell'orifizio per mezzo della guarnizione collegata alla membrana.

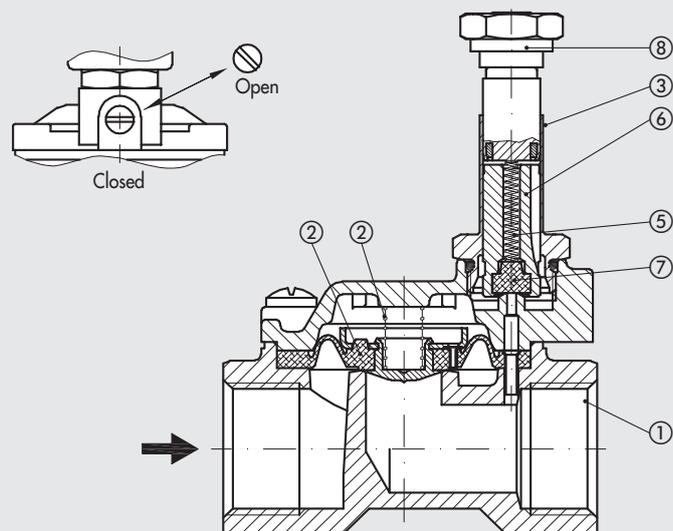
Sono disponibili le funzioni 2/2 NC e 2/2 NO, corpo in ottone con guarnizioni in NBR; FKM/FPM o EPDM, oppure corpo inox con guarnizioni in FKM/FPM. In generale, queste elettrovalvole hanno una pressione minima di funzionamento superiore a 0 bar.



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: $-10 \div +15$		
Type of protection		IP 65 with connector		
Fluid temperature	$^{\circ}\text{C}$	$-10 \div +90$	$-10 \div +140$	$-10 \div +140$
Ambient temperature	$^{\circ}\text{C}$	with coil C.I.F: $-10 \div +55$; con with coil C.I.H: $-10 \div +80$		
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		
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.

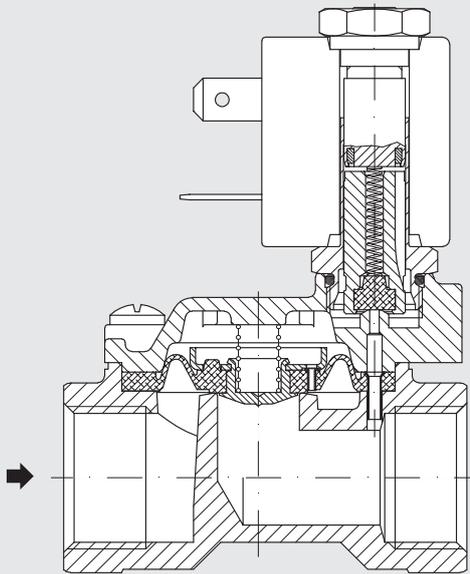
This generates increased force in the lower part of the main actuator, which acts on the opening, the poppet is raised from the orifice and the air supply is entirely connected to the user port.

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).

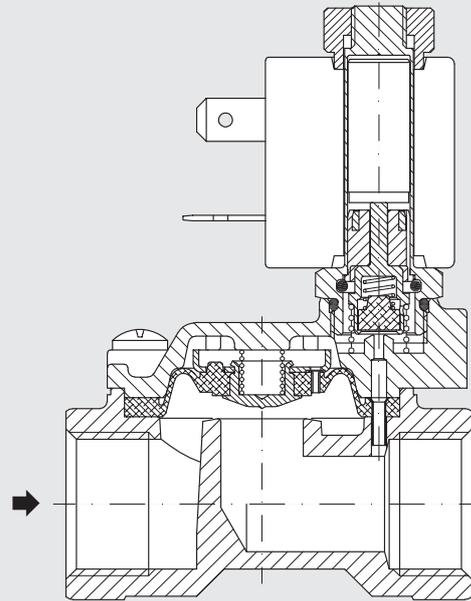
Normally open version (2/2 NO): with an inlet port and a user port in the valve body; when the secondary poppet is not energized, it communicates with the user port; a minimum pressure difference between the air supply and the user port allows the main poppet to open. When connected to an electric supply, 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)

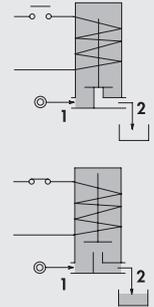
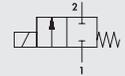
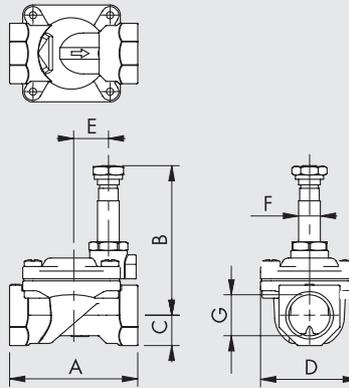
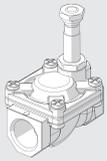


NORMALLY OPEN (NO)



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 [m ³ /h]	Type of coil	Operating pressure [bar] *		Weight [g]
											AC	DC	
W_910200001	1/4"	49	65	11	32	16	10	10	1.5	3	0.15 ÷ 15	0.15 ÷ 15	180
W_910200002	3/8"	49	65	11	32	16	10	10	1.7	3	0.15 ÷ 15	0.15 ÷ 15	190
W_910200003	3/8"	59	70	14	45	16	10	12	2.2	3	0.15 ÷ 15	0.15 ÷ 15	370
W_910200004	1/2"	59	70	14	45	16	10	12	2.5	3	0.15 ÷ 15	0.15 ÷ 15	340
W_910200005	3/4"	79	76	18	55	16	10	18	5.5	3	0.15 ÷ 13	0.15 ÷ 13	600
W_910200006	1"	96	85	20	72	16	10	25	10.2	3	0.15 ÷ 10	0.15 ÷ 10	1000
W_910200007	1-1/4"	142	105	28	102	21	13	37	18	2	0.15 ÷ 10	0.15 ÷ 10	2880
W_910200008	1-1/2"	142	105	28	102	21	13	37	21	2	0.15 ÷ 10	0.15 ÷ 10	2730
W_910200009	2"	158	115	35	119	21	13	50	36	2	0.15 ÷ 10	0.15 ÷ 10	4180

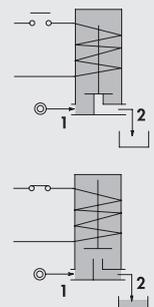
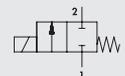
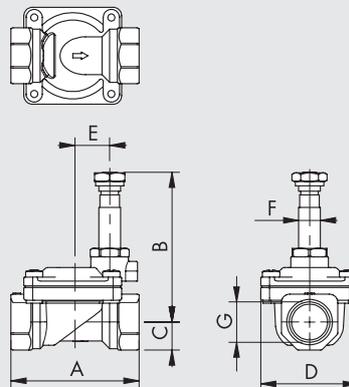
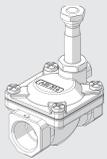
To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

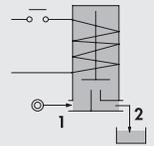
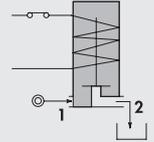
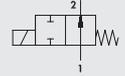
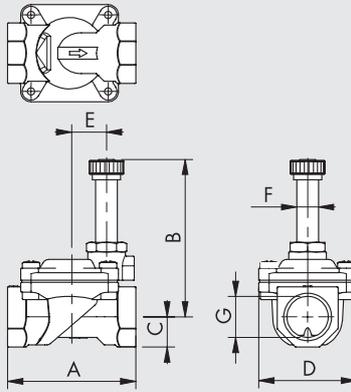
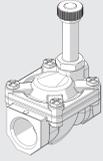
* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

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 [m ³ /h]	Type of coil	Operating pressure [bar]		Weight [g]
											AC	DC	
WV910400001	3/8"	59	70	11	45	16	10	12	2.2	3	0.15 ÷ 15	0.15 ÷ 15	250
WV910400002	1/2"	59	70	13	45	16	10	12	2.5	3	0.15 ÷ 15	0.15 ÷ 15	270
WV910400003	3/4"	79	76	18	55	16	10	18	5.5	3	0.15 ÷ 13	0.15 ÷ 13	500
WV910400004	1"	96	85	20	72	16	10	25	10.2	3	0.15 ÷ 10	0.15 ÷ 10	900

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	Operating pressure [bar] *		Weight [g]
											AC	DC	
W_910900001	1/4"	49	65	11	32	16	10	10	1.5	3	0.15 ÷ 15	0.15 ÷ 15	180
W_910900003	3/8"	59	73	14	45	16	10	12	1.7	3	0.15 ÷ 15	0.15 ÷ 15	370
W_910900004	1/2"	59	73	14	45	16	10	12	2.5	3	0.15 ÷ 15	0.15 ÷ 15	340
W_910900005	3/4"	79	76	18	55	16	10	18	5.5	3	0.15 ÷ 13	0.15 ÷ 13	600
W_910900006	1"	96	85	20	72	16	10	25	10.2	3	0.15 ÷ 10	0.15 ÷ 10	1000

To complete the code enter:

O for NBR gaskets
E for EPDM gaskets

V for FKM/FPM gaskets

* The maximum allowable pressure for steam is 2.5 bar with EPDM gaskets

NOTES

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SOLENOID VALVES, SERIES EV-FLUID, MIXED ACTION

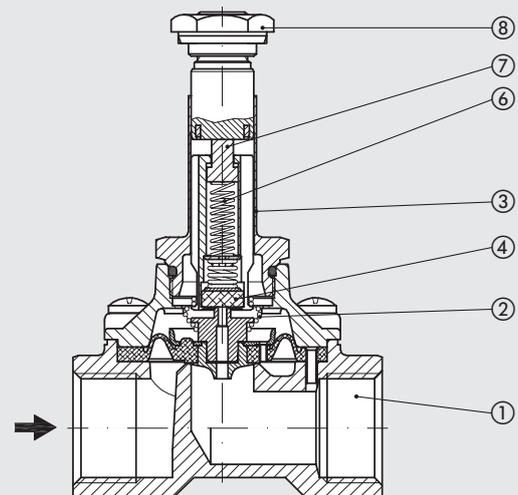
In this type of solenoid valve, the moving core is connected to the diaphragm and it directly intercepts the secondary orifice.
The same coil-actuated moving core drags the diaphragm that opens or closes the main orifice.
These two combined actions allow these two models to operate at a zero pressure.
These valves are available with 2/2 NC function, brass body and FKM/FPM or NBR gaskets.



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: $-10 \div +15$
Type of protection		IP 65 with connector
Fluid temperature	$^{\circ}\text{C}$	$-10 \div +90$
Ambient temperature	$^{\circ}\text{C}$	with coil C.I.H: $-10 \div +80$
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
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



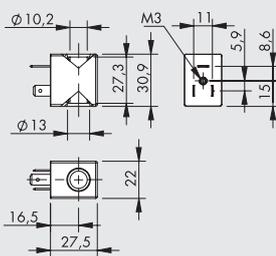
COILS AND CONNECTORS FOR EV-FLUID SERIES SOLENOID VALVES

**METAL
WORK**[®]
P N E U M A T I C

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

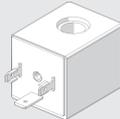
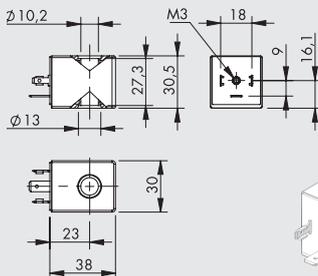


- Voltage tolerance: -10% ÷ + 15% AC version / ± 10% DC version
- Degree of protection: IP65 EN60529 with connector

- 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	F
W0911100002	Coil 22 Ø10 Type 3, 6.5W 24VDC	24VDC	6.5W	F
W0911100003	Coil 22 Ø10 Type 3, 8VA 24V 50/60Hz	24V 50/60Hz	8VA	F
W0911100004	Coil 22 Ø10 Type 3, 8VA 110V 50/60Hz	110V 50/60Hz	8VA	F
W0911100005	Coil 22 Ø10 Type 3, 8VA 220V 50/60Hz	220V 50/60Hz	8VA	F

COILS SIDE 30 mm TYPE 4

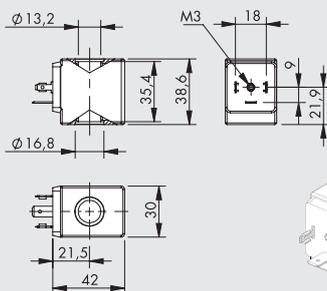


- Voltage tolerance: -10% ÷ + 15% AC version / ± 10% DC version
- Degree of protection: IP65 EN60529 with connector

- Duty Cycle: 100%
- Connector: DIN 43650 B

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

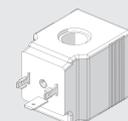
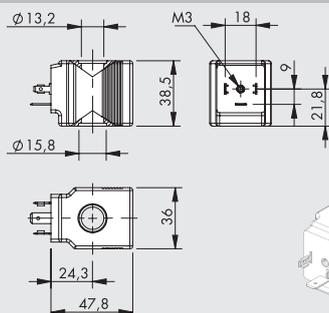


- Voltage tolerance: -10% ÷ + 15% AC version / ± 10% DC version
- Degree of protection: IP65 EN60529 with connector

- Duty Cycle: 100%
- Connector: DIN 43650 B

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

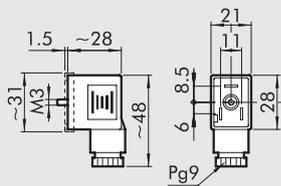


- Voltage tolerance: -10% ÷ + 15% AC version / ± 10% DC version
- Degree of protection: IP65 EN60529 with connector

- Duty Cycle: 100%
- Connector: DIN 43650 B

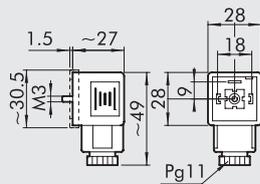
Code	Abbrev.	Nominal voltage	Absorption	Index of protection
W0911100016	Coil 36 Ø13 Type 5, 27W 12VDC	12VDC	27W	H
W0911100017	Coil 36 Ø13 Type 5, 27W 24VDC	24VDC	27W	H
W0911100018	Coil 36 Ø13 Type 5, 30VA 24V 50/60Hz	24V 50/60Hz	30VA	H
W0911100019	Coil 36 Ø13 Type 5, 30VA 110V 50/60Hz	110V 50/60Hz	30VA	H
W0911100020	Coil 36 Ø13 Type 5, 30VA 220V 50/60Hz	220V 50/60Hz	30VA	H

CONNECTOR FOR COILS SIDE 22 mm 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 ON SIDE 30 mm 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



NOTES

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