Series F300

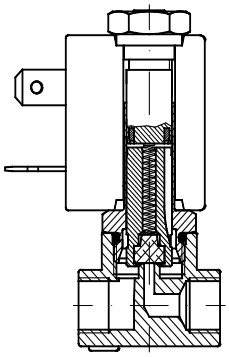
General

F300 series includes a vast range of solenoid valves in brass and stainless steel designed to control air, water, steam and all fluids that are compatible with the materials used for bodies and seals. The solenoid valves are 2 or 3-way, normally closed, normally open, general service, direct acting or servo-assisted, with connections available in NPT & BSP threads from G1/8" up to G3", with a working pressure range from vacuum to 100 bar. Solenoid valves are available with coils that conform to CESI 03 ATEX 344 certification for explosive environments. Our technical office ensures the highest standard of skill and understanding for the widest variety of applications, ensuring that the best possible solutions are found.

Version manifactured

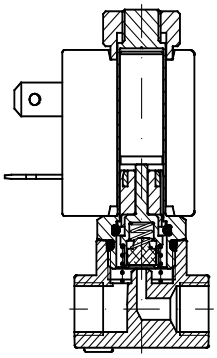
Solenoid valves direct action 2-way: 2-way solenoid valves have an input connection and an output connection machined in the valve body, the orifice being intercepted by the poppet moved by the core tube.

They can be **normally closed (2/2 N.C.)**, in this case the fluid is intercepted by the poppet at rest, with electricity applied, the input orifice is opened and the media reaches the intended use.



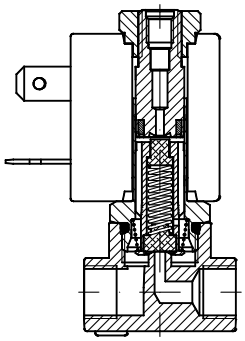
They can be **normally open (2/2 N.O.)**, in this case at rest the orifice remains open without electricity applied, the media reaches the intended use. When electricity is applied the input orifice closes.

Performance in both cases depends solely on the magnetic field produced by the solenoid coil. The solenoid valves can also work at zero pressure.



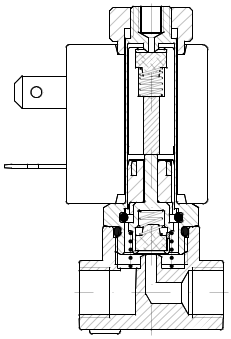
Solenoid valves direct action 3-way: 3-way solenoid valves have an input and an output connection in the valve body and an exhaust connection fitted in the stem of the core tube. The input and exhaust orifices are intercepted directly by the poppet fitted within the core tube.

They can be **normally closed (3/2 N.C.)** and in this case, at rest, the incoming fluid is intercepted by the poppet and output port in connected to the exhaust port. Applying electrical power, the input orifice is opened and feed is supplied to the output. Exhaust is closed.



They can be **normally open (3/2 N.O.)** and in this case, at rest, the input orifice is open without electricity applied, the media reaches the intended use. Exhaust is closed.
Applying power, the input orifice closes and the output discharges through the exhaust port.

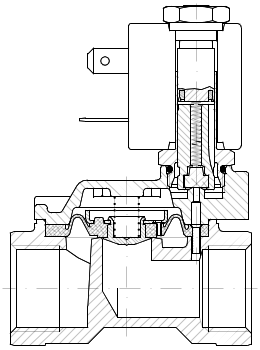
Performance in both cases depends solely on the magnetic field produced by the solenoid coil.
The solenoid valves can also work at zero pressure.



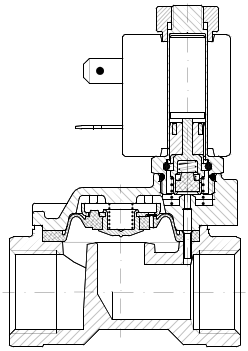
Servo-assisted solenoid valves

Large-sized passage orifices increase the value of the static pressure which has to be overcome by the magnetic field produced by the coil.
These solenoid valves are used to control high-pressure values with large diameter bores.
In these models, the fluid helps in the opening or closing of the main poppet.

They can be **normally closed (2/2 N.C.)** and have an input and a utilisation connection machined into the valve body and at rest the fluid is intercepted by the main poppet, which can be either diaphragm or a piston. In this condition, the fluid acts on both faces of the main plunger though a pinhole contributing to closure of the poppet.
Applying electrical power, the secondary, or pilot, orifice opens leading to the exhaust of the fluid, which acts to close the main poppet.
Greater force is thus applied when opening, the poppet is raised from the orifice and allows the media to flows to the output.
In these versions, performance does not depend solely on the magnetic field produced by the coil; a minimum input pressure is also needed so as to move the diaphragm or the piston overcoming its rigidity and to keep it raised from the main orifice (Δp minimum performance).



They can be **normally open (2/2 N.O.)** and have an input and output connection machined into the valve body, and at rest the core tube communicates with output, a minimum-pressure difference between the feed and the output causes the main poppet to rise, leading to it opening. Applying electrical power, the secondary orifice closes and equilibrium between the pressure on the two faces of the main poppet is reinstated, and so it returns to its closed position on the main orifice.
In this version a minimum working pressure is also needed.



Sealing materials

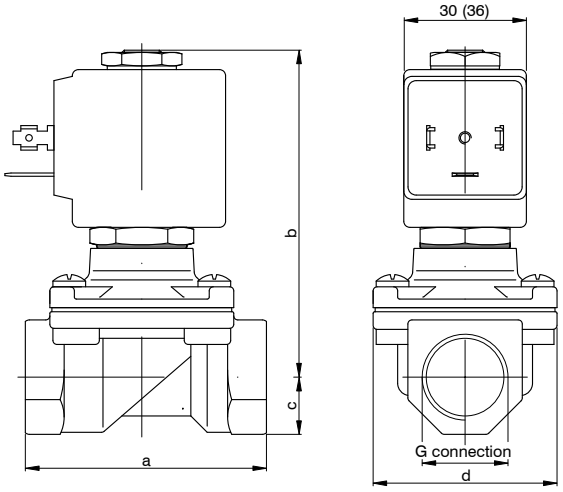
Designation	Trade names	General characteristics	Field of use
FPM (Fluorocarbon)	VITON TECNOFLON FLUOREL	A synthetic hexa-fluoropropylene-based elastomer. Excellent resistance to high temperatures. Excellent resistance to ozone, oxygen, mineral oils, synthetic hydraulic fluids, fuels, hydrocarbons and many chemical products. Not specific for superheated steam.	For general use up to 140 °C

Resistance to fluids

The table below serves to general information relating to the compatibility between FPM (fluorocarbon) and a number of neutral fluids. Where there are corrosive fluids, in order to establish compatibility, it is important to be aware of all the data relating to use: temperature, concentration and composition of the fluid.

Fluid	
Ethyl acetate	Not compatible
Acetylene	Compatible
Vinegar	Not compatible
Acetone	Not compatible
Calcareous water	Compatible
Hot water <75 °C	Compatible
Hot water and steam <140 °C	Not compatible
Water with glycol	Compatible
Deionised water	Compatible
Demineralised water	Compatible
Hydrogen peroxide	Compatible
Soapy water	Compatible
Carbon dioxide (liquid)	Not compatible
Dry carbon dioxide (gas)	Compatible
Argon	Compatible
Nitrogen	Compatible
Petrol/Gasoline	Compatible
Benzol	Not compatible
Butane	Compatible
Chloroform	Not compatible
Ethyl Chloride	Compatible
Methyl chloride	Not compatible
Helium	Compatible
Heptane	Compatible
Hexane	Compatible
Ethane	Compatible
Ethanol	Not compatible
Formaldehyde	Compatible
Freon	Not compatible
Natural gas	Compatible
Diesel oil	Compatible
Glycerine	Compatible
Ethylene glycol	Compatible
Hydrogen	Compatible
Isobutane	Compatible
Isopentane	Compatible
Methane	Compatible
Methanol	Not compatible
Calcium monoxide	Compatible
Neon	Compatible
Nitrobenzene	Not compatible
Mineral oil	Compatible
Oxygen	Compatible
Pentane-n	Compatible
Propanol-n	Compatible
Propane-n	Compatible
Carbon sulphide	Not compatible
Toluene	Compatible
Dry trichloroethylene	Compatible
Xylene	Compatible

F3108 - 2-way solenoid valve N.C. brass body and cover, with G connection (ISO 228) - 3/8" ... 1"



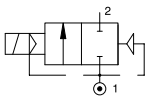
The data in brackets refer to the MK Series coil

CODE "V"= FPM seals	G connection (ISO 228) ©= Connection				Orifice (mm)	KV (m^3/h)	Differential pressure (bar)			Power consumption			Ⓑ= Solenoid coil		Temperature range (°C)
	C	D	E	F			Min	Max AC	Max DC	AC Inrush (VA)	AC Holding (VA)	DC (W)	Series	Size	
F3108©V12Ⓑ	3/8"		/		12	2	0	10	/	20	15	/	MG/AC	30	-10 ... +140
F3108©V12Ⓑ	/	1/2"	/		12	2,2		10	/						
F3108©V12Ⓑ	3/8"		/		12	2		12	10	40	30	27	MK (AC/DC)	36	
F3108©V12Ⓑ	/	1/2"	/		12	2,2		12	10						
F3108©V18Ⓑ	/		3/4"	/	18	4,5		9	/	40	30	/			
F3108©V25Ⓑ	/			1"	25	8,5		7	/						
F3108©V18CⒷ	/		3/4"	/	18	4,5		/	9	/	/	27	MK/DC		
F3108©V25CⒷ	/			1"	25	8,5		/	8						

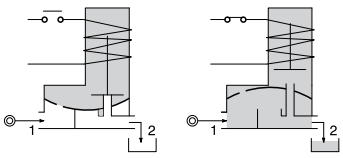
G connection		3/8"	1/2"	3/4"	1"
a		59	59	79	96
b		83	83	90	101
c		14	14	18	20
d		45	45	55	72
Weight (g)	MG	520	490	/	/
	MK	600	570	810	1220

N.B. For use with steam maximum admitted pressure PS is 2,5 bar (relative pressure).
Example: F3108©V12Ⓑ => F3108CV12MG5:
2-way solenoid valve normally closed, with assisted-lift diaphragm with G connection (ISO 228) 3/8", FPM seals, 12 mm orifice, solenoid coil 24 VDC (MG5, size 30 for more information, please refer to the section "*Solenoid coils - Series F300*").

Pneumatic symbol



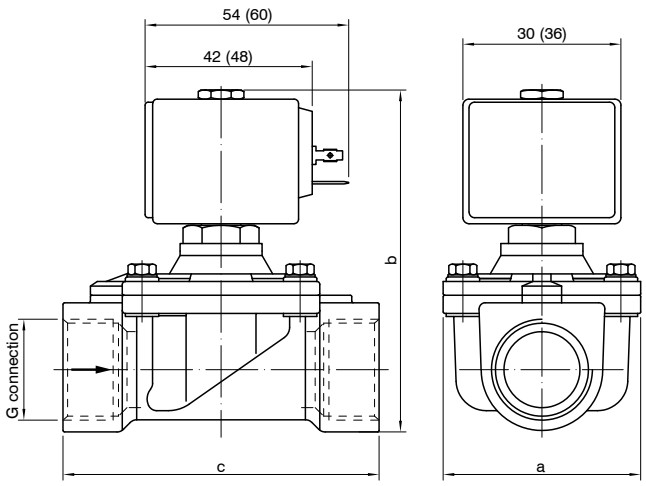
Diagram



Construction characteristics
- Brass body and cover - AISI 303 stainless steel guide tube - AISI 430FR stainless steel mobile and fixed core - AISI 302 stainless steel springs - FPM sealing assemblies **OPTIONS (on request):** - Chemical nickel plating - c UL us certified solenoid coils

Technical characteristics	
Maximum admitted pressure(bar)	25
Maximum fluid viscosity (mm^2/s)	25cSt
Ambient temperature: with class F solenoid coil (°C)	-10 ... +55
Ambient temperature: with class H solenoid coil (°C)	-10 ... +80
Mounting position	Preferably with solenoid coil upwards

F3168 - 2-way solenoid valve N.C. brass body and cover, with G connection (ISO 228) - 3/8" ... 1" 1/2



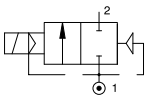
The data in brackets refer to the MK Series coil

CODE "V"= FPM seals	G connection (ISO 228) C= Connection						Orifice (mm)	KV (m^3/h)	Differential pressure (bar)			Power consumption	B= Solenoid coil		Temperature range (°C)
	C	D	E	F	G	H			Min	Max AC	Max DC	(W)	Series	Size	
F3168CV11B	3/8"				/		11	1,2	0	14	5	10	MG	30	-10 ... +140
										/	14	27	MK	36	
F3168CV16B	/	1/2"			/		16	2,4		14	2,5	10	MG	30	
										/	14	27	MK	36	
F3168CV16B	/		3/4"		/		16	2,4		14	2,5	10	MG	30	
										/	14	27	MK	36	
F3168CV20HB	/		3/4"		/		20	7,2		16	5	10	MG	30	
										/	16	27	MK	36	
F3168CV25B	/			1"	/		25	7,2		8	/	10	MG	30	
										14	1,5	14	MK	36	
										/	6	27	MK	36	
F3168CV25HB	/			1"	/		25	8,4		16	5	10	MG	30	
										/	16	27	MK	36	
F3168CV35B	/				1" 1/4	/	35	16,2		16	/	10	MG	30	
										/	6	14	MK	36	
										/	16	27	MK	36	
F3168CV40B	/					1" 1/2	40	16,8		16	/	10	MG	30	
										/	6	14	MK	36	
										/	16	27	MK	36	

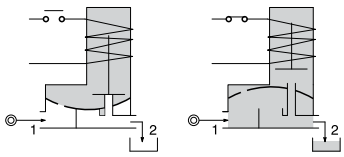
G connection	3/8"	1/2"	3/4"	3/4" (H)	1"	1" (H)	1" 1/4	1" 1/2
a	50	50	50	65	65	65	94	94
b	89	100	100	103	112	110	130	130
c	56	70	70	104	104	104	128	128

N.B. For use with steam maximum admitted pressure PS is 2,5 bar (relative pressure).
Example: F3168CV11B => F3168CV11MG5:
2-way solenoid valve normally closed, with assisted-lift diaphragm with G connection (ISO 228) 3/8", FPM seals, 11 mm orifice, solenoid coil 24 VDC (MG5, size 30 for more information, please refer to the section "*Solenoid coils - Series F300*").

Pneumatic symbol



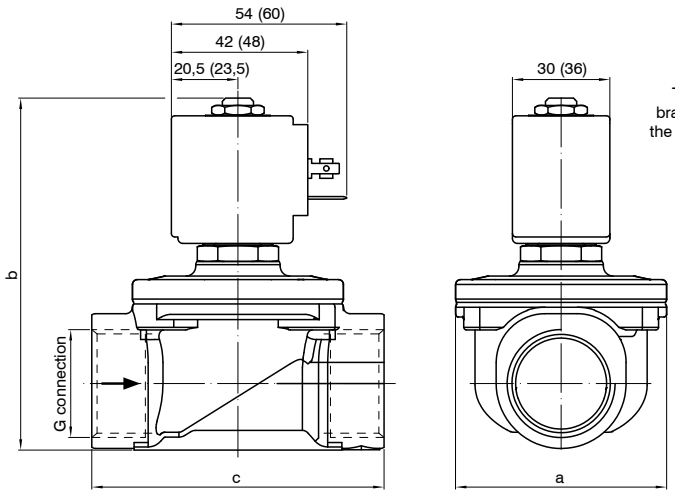
Diagram



Construction characteristics
- Brass body and cover - AISI 303 stainless steel guide tube - AISI 430FR stainless steel mobile and fixed core - AISI 302 stainless steel springs - FPM sealing assemblies (NBR on request)
OPTIONS (on request): - NPT connections - ATEX Ex d explosion protection solenoid coil - For use with oxygen - c UL us certified solenoid coils

Technical characteristics	
Maximum admitted pressure (bar)	16
Maximum fluid viscosity (mm^2/s)	25cSt
Ambient temperature: with class F solenoid coil (°C)	-10 ... +55
Ambient temperature: with class H solenoid coil (°C)	-10 ... +80
Mounting position	Preferably with solenoid coil upwards

F3178 - 2-way solenoid valve N.C. stainless steel body and cover, with G connection (ISO 228) - 3/8" ... 1" 1/2



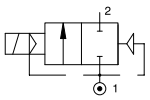
The data in brackets refer to the MK Series coil

CODE "V"= FPM seals	G connection (ISO 228) ©= Connection						Orifice (mm)	KV (m^3/h)	Differential pressure (bar)			Power consumption	®= Solenoid coil		Temperature range (°C)
	C	D	E	F	G	H			Min	Max AC	Max DC	(W)	Series	Size	
F3178©V15®	3/8"				/		15	2,4	0	14	6	10	MG	30	-10 ... +140
										/	14	27	MK	36	
F3178©V16®	/	1/2"			/		16	3		14	6	10	MG	30	
										/	14	27	MK	36	
F3178©V20®	/		3/4"		/		20	3,6		14	6	10	MG	30	
										/	14	27	MK	36	
F3178©V25®	/			1"	/		25	8,4		14	3	10	MG	30	
										/	8	14	MK	36	
										/	14	27	MK	36	
F3178©V35®	/				1" 1/4	/	35	18		8	/	10	MG	30	
										14	2	14	MK	36	
										/	7	27	MK	36	
F3178©V40®	/					1" 1/2	40	19,2		8	/	10	MG	30	
										14	2	14	MK	36	
										/	7	27	MK	36	

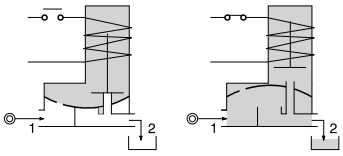
G connection	3/8"	1/2"	3/4"	1"	1" 1/4	1" 1/2
a	52	52	58	65	94	94
b	92	92	100	109	126	126
c	68	68	75	90	128	128

N.B. For use with steam maximum admitted pressure PS is 2,5 bar (relative pressure).
Example: F3178©V15® => F3178CV15MG5:
2-way solenoid valve normally closed, with assisted-lift diaphragm with G connection (ISO 228) 3/8", FPM seals, 15 mm orifice, solenoid coil 24 VDC (MG5, size 30 for more information, please refer to the section "*Solenoid coils - Series F300*").

Pneumatic symbol



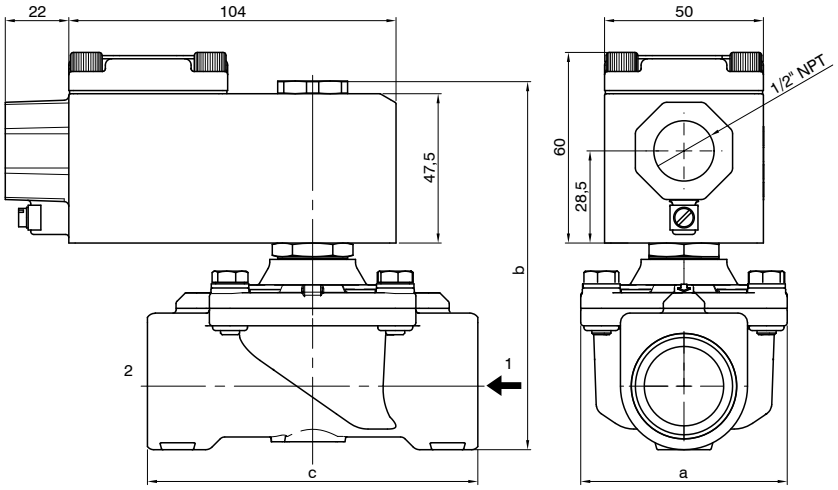
Diagram



Construction characteristics
- AISI 316 stainless steel body and cover - AISI 316 stainless steel guide tube - AISI 430FR stainless steel mobile and fixed core - AISI 302 stainless steel springs - Silver advance ring - FPM sealing assemblies (NBR on request) **OPTIONS (on request):** - NPT connections - ATEX Ex d explosion protection solenoid coil - For use with oxygen - c UL us certified solenoid coils

Technical characteristics	
Maximum admitted pressure (bar)	16
Maximum fluid viscosity (mm^2/s)	25cSt
Ambient temperature: with class F solenoid coil (°C)	-10 ... +55
Ambient temperature: with class H solenoid coil (°C)	-10 ... +80
Mounting position	Preferably with solenoid coil upwards

FX3168 - 2-way solenoid valve N.C. brass body, with G connection (ISO 228) with certified housing: Ex d IIC T6 or T5 or T4 Gb - 3/8" ... 1"

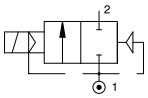


CODE "V"= FPM seals	G connection (ISO 228) ❶= Connection				Orifice (mm)	KV (m^3/h)	Differential pressure (bar)			Power consumption	❷= Solenoid coil	Temperature range (°C)
	C	D	E	F			Min	Max AC	Max DC	(W)		
FX3168❶V11❷	3/8"		/		11	1,2	0	5	5	8	A6B= 24 Volt (AC 50-60 Hz) A6E= 220/230 Volt (AC 50-60 Hz) A60= 12 Volt (DC) A61= 24 Volt (DC)	-10 ... +80
FX3168❶V16❷	/	1/2"	/		16	2,4		5	5			
FX3168❶V16❷	/		3/4"	/	16	2,4		5	5			
FX3168❶V20H❷	/		3/4"	/	20	7,2		5	5			
FX3168❶V25H❷	/			1"	25	8,4		5	5			

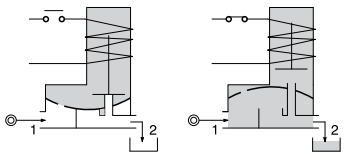
G connection	3/8"	1/2"	3/4"	3/4" (H)	1" (H)
a	50	50	50	65	65
b	95	106	106	109	116
c	56	70	70	104	104

Example: FX3168❶V11❷ => FX3168CV11A60:
2-way solenoid valve normally closed, with assisted-lift diaphragm with certified housing: Ex d IIC T6 or T5 or T4 Gb, with G connection (ISO 228) 3/8", FPM seals, 11 mm orifice, solenoid coil 12 VDC (A60).

Pneumatic symbol



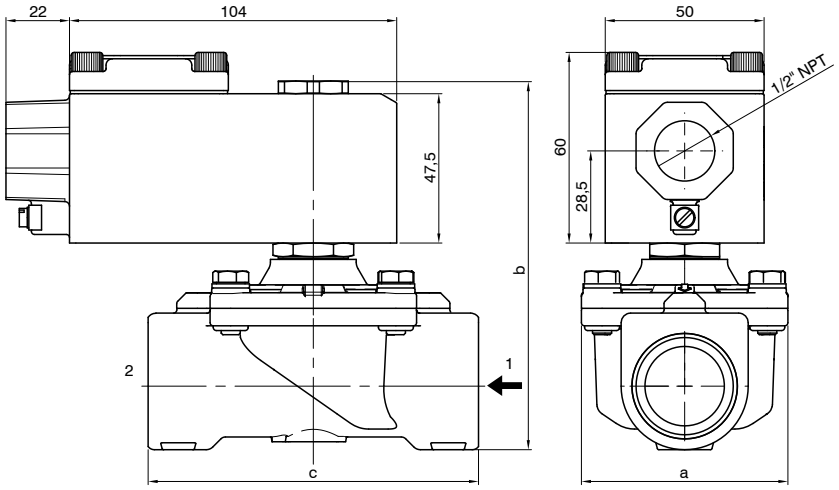
Diagram



Construction characteristics
- Brass body - Red light alloy housing - 1/2" NPT electrical connection (M20x1,5 on request) - FPM sealing assemblies

Technical characteristics	
Maximum admitted pressure (bar)	16
Minimum differential pressure (bar)	0
Maximum fluid viscosity (mm^2/s)	25cSt
Ambient temperature (°C)	-40 ... +60
Mounting position	Vertical with solenoid coil upwards

FX3178 - 2-way solenoid valve N.C. stainless steel body, with G connection (ISO 228) with certified housing: Ex d IIC T6 or T5 or T4 Gb - 3/8" ... 1"

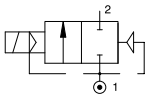


CODE "V"= FPM seals	G connection (ISO 228) ⓒ= Connection				Orifice (mm)	KV (m^3/h)	Differential pressure (bar)			Power consumption	ⓑ= Solenoid coil	Temperature range (°C)
	C	D	E	F			Min	Max AC	Max DC	(W)		
FX3178ⓒV15ⓑ	3/8"	/			15	2,4	0	6	6	8	A6B= 24 Volt (AC 50-60 Hz) A6E= 220/230 Volt (AC 50-60 Hz) A60= 12 Volt (DC) A61= 24 Volt (DC)	-10 ... +80
FX3178ⓒV16ⓑ	/	1/2"	/		16	3		6	6			
FX3178ⓒV20ⓑ	/		3/4"	/	20	3,6		6	6			
FX3178ⓒV25ⓑ	/			1"	25	8,4		3	3			

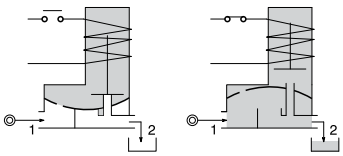
G connection	3/8"	1/2"	3/4"	1"
a	52	52	58	65
b	98	98	106	115
c	68	68	75	90

Example: FX3178ⓒV15ⓑ => FX3178CV15A60:
2-way solenoid valve normally closed, with assisted-lift diaphragm with certified housing: Ex d IIC T6 or T5 or T4 Gb, with G connection (ISO 228) 3/8", FPM seals, 15 mm orifice, solenoid coil 12 VDC (A60).

Pneumatic symbol



Diagram



Construction characteristics
- AISI 316 stainless steel body - Red light alloy housing - 1/2" NPT electrical connection (M20x1,5 on request) - FPM sealing assemblies **OPTIONS (on request):** - Solenoid coil with stainless steel housing

Technical characteristics	
Maximum admitted pressure (bar)	16
Minimum differential pressure (bar)	0
Maximum fluid viscosity (mm^2/s)	25cSt
Ambient temperature (°C)	-40 ... +60
Mounting position	Vertical with solenoid coil upwards