



MPR-LP



MPR-HP



MPR-DPL



MPR-DPH



MPSV-NO



MPSV-NC



MPR-OL



MPR-OH

PILOT VALVES FOR MFR MAIN VALVES

INSTRUCTIONS

The range of pilot valves consists of:

- Constant-pressure pilot valve, type MPR-LP and MPR-HP
- Differential-pressure pilot valve, type MPR-DPL and MPR-DPH
- Pressure-operated pilot valve with reference pressure connection, type MPR
- Solenoid pilot valve, type MPSV (NC)
- Solenoid pilot valve, type MPSV (NO)
- Housing, type SCVH for pilot valves, for mounting in external pilot lines
- Applicable to all common non flammable refrigerants including R717 and non corrosive gases/liquids dependent on sealing material compatibility.
- The pilot valves can be screwed direct into the main valve, thus avoiding the necessity of welding, soldering and separate pilot lines.
- The pilot valves can be mounted direct in a MFR main valve or be connected via an external pilot line and a SCVH housing.
- All pilot valves can be used on all sizes of main valves.
- Extremely accurate pressure and temperature control.
- Several pilot valves can be connected in series or in parallel to provide many functions in the same MFR main valve.

DESIGN

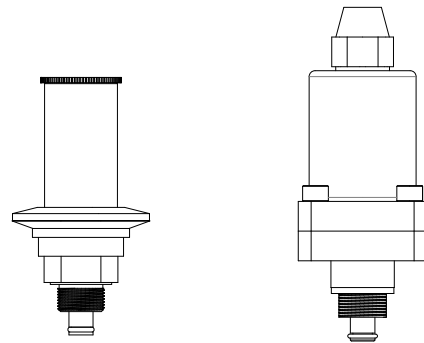
- Each pilot valve is designed to give the optimum control accuracy within the specific function range of the valve.
- Several pilot valves can be mounted in series and/or in parallel on a MFR main valve to give a very large number of functions. Mounted in a SCVH housing, the pilot valves can be used in external lines, either as independently operating valves or as external control valves for the MFR main valve.
- The pilot valves can be used for all sizes of MFR main valves.

TECHNICAL DATA

- **Refrigerants**
Applicable to all common non flammable refrigerants including R717 and non corrosive gases/liquids dependent on sealing material compatibility.
For further information please see installation instruction for MFR valves. Flammable hydrocarbons are not recommended.
- Temperature and pressure ranges are given separately for the specific pilot valve.

CONSTANT-PRESSURE PILOT VALVE, TYPE MPR-LP AND MPR-HP

- MPR is a constant-pressure pilot valve available in low-pressure and high-pressure versions.
- The pilot valve is used to maintain a constant pressure on the MFR main valve inlet side.
- The low-pressure version (LP) must not be subjected to pulsation.
- When a MPR is mounted in a SCVH housing, it can be used as a separate constant-pressure valve or a pressure relief valve (e.g. to prevent hydraulic overpressure in an entrapped liquid).



MPR-LP Low Pressure Version MPR-HP High Pressure Version

MWP: Maximum working pressure. The kv/Cv value is measured with the pilot valve mounted in a SCVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

When MPR-HP is used at a temperature lower than -50°C (-58F) the bolts must be replaced with stainless steel bolts (type 4, quality 80).

Technical data. SI units

Valve type	MWP	kv-value	Temperature range	Pressure range
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Low-pressure version

MPR-LP	17barg	0.40 m ³ /h	-50 to 120°C	0 barg to 7 barg
MPR-LP	17 bar g	0.40 m ³ /h	-50 to 120°C	-0.66 barg to 2 barg

High-pressure version

MPR-HP	28 barg	0.40 m ³ /h	-50 to 120°C	4 barg to 22 barg
MPR-HP	28 barg	0.40 m ³ /h	-50 to 120°C	4 barg to 28 barg
MPR-HP	28 barg	0.40 m ³ /h	-50 to 120°C	-0.66 barg to 7 barg

Technical data, US units

Valve type	MWP	kv-value	Temperature range	Pressure range
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Low-pressure version

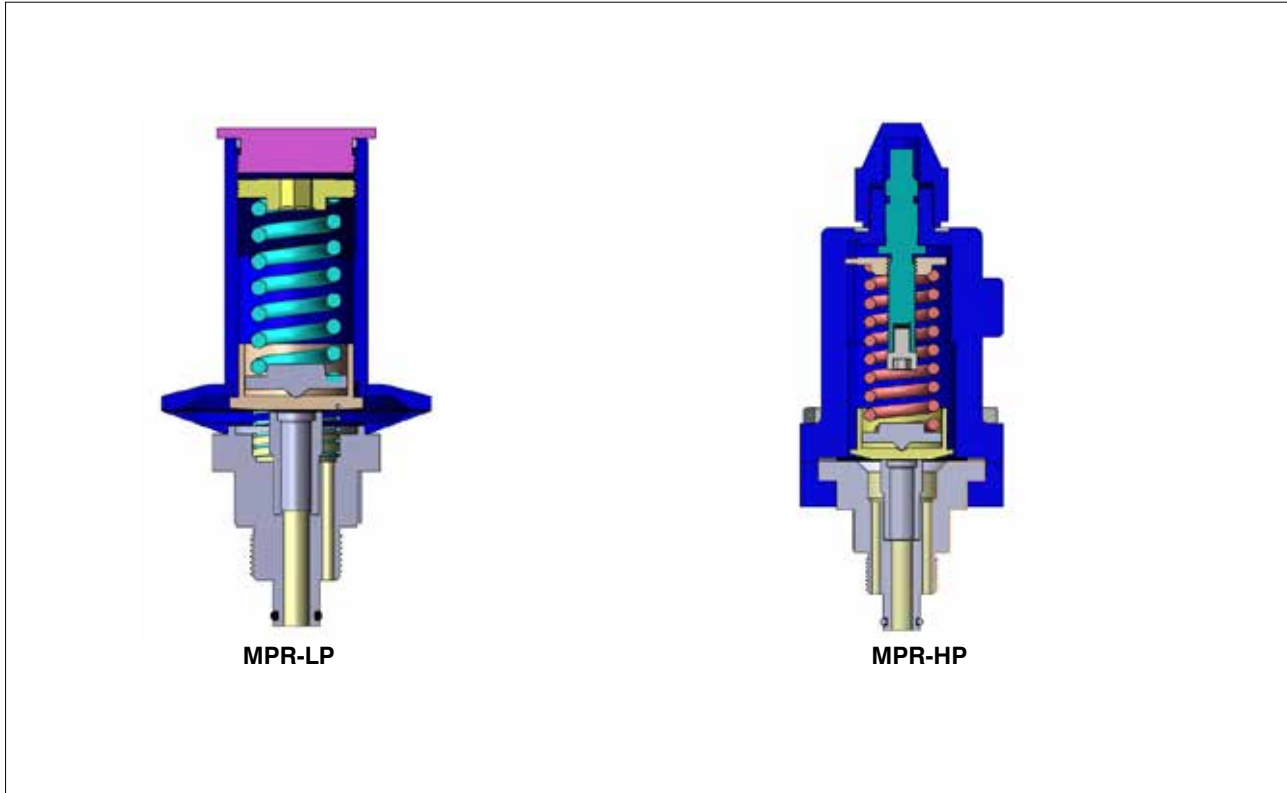
MPR-LP	247 psi g	0.46 USgal/min	-58 to 248°F	0 psi g to 102 psi g
MPR-LP	247 psi g	0.46 USgal/min	-58 to 248°F	1 9.5 in. Hg to 29 psi g

High-pressure version

MPR-HP	406 psi g	0.46 USgal/min	-58 to 248°F	58 psi g to 319 psi g
MPR-HP	406 psi g	0.46 USgal/min	-58 to 248°F	58 psi g to 406 psi g
MPR-HP	406 psi g	0.46 USgal/min	-58 to 248°F	19.5 in. Hg to 102 psi g

P-band for a valve system regulated by MPR and MFR: < 0.2 bar g (2.9 psi g)

Cut Section and Material Specification



MPR-LP

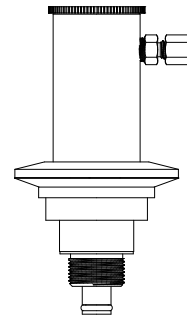
No	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Cloroprene (Neoprene)
4	Nut	Stainless steel
9	Ball socket	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Steel
12	Spring guide	Stainless steel
14	Orifice	Stainless steel
15	Base	Steel
17	Valve body	Steel
20	Setting spindle	Stainless steel
24	Spring	Steel

MPR-HP

No	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Non-asbestos
4	Nut	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Stainless steel
12	Spring guide	Stainless steel
13	Flange	Steel
14	Orifice	Stainless steel
15	Base	Stainless steel
17	Valve body	SG Iron
18	Cover bolt	Steel
20	Setting spindle	Stainless steel
21	Screw (M6 x 10)	Steel
22	Cover gasket	Non-asbestos
24	Spring	Steel
28	Spring	Steel

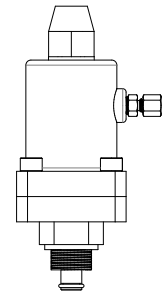
Constant-pressure pilot valve, Type MPR-DPL and MPR-DPH

- MPR is a differential-pressure pilot valve available in low-pressure and high-pressure versions. The pilot valve is used to maintain a constant differential pressure between the MFR valve reference pressure connection and the PM main valve inlet pressure.
- MPR incorporates a diaphragm so that the reference pressure and the refrigerant in the valve are physically separated. The pilot valve can therefore also be used as a pneumatic control valve either to control a MFR main valve or as a separate pneumatic valve mounted in a SCVH housing.



MPR-DPL

Low-pressure version



MPR-DPH

High-pressure version

MWP: Maximum working pressure. The kv/Cv value is measured with the pilot valve mounted in a SCVH housing for external pilot lines. The value can vary slightly, depending on the setting value.

When MPR-DPH is used at a temperature lower than -50°C (-58°F) the bolts must be replaced with stainless steel bolts (type 4, quality 80).

Technical data. SI units

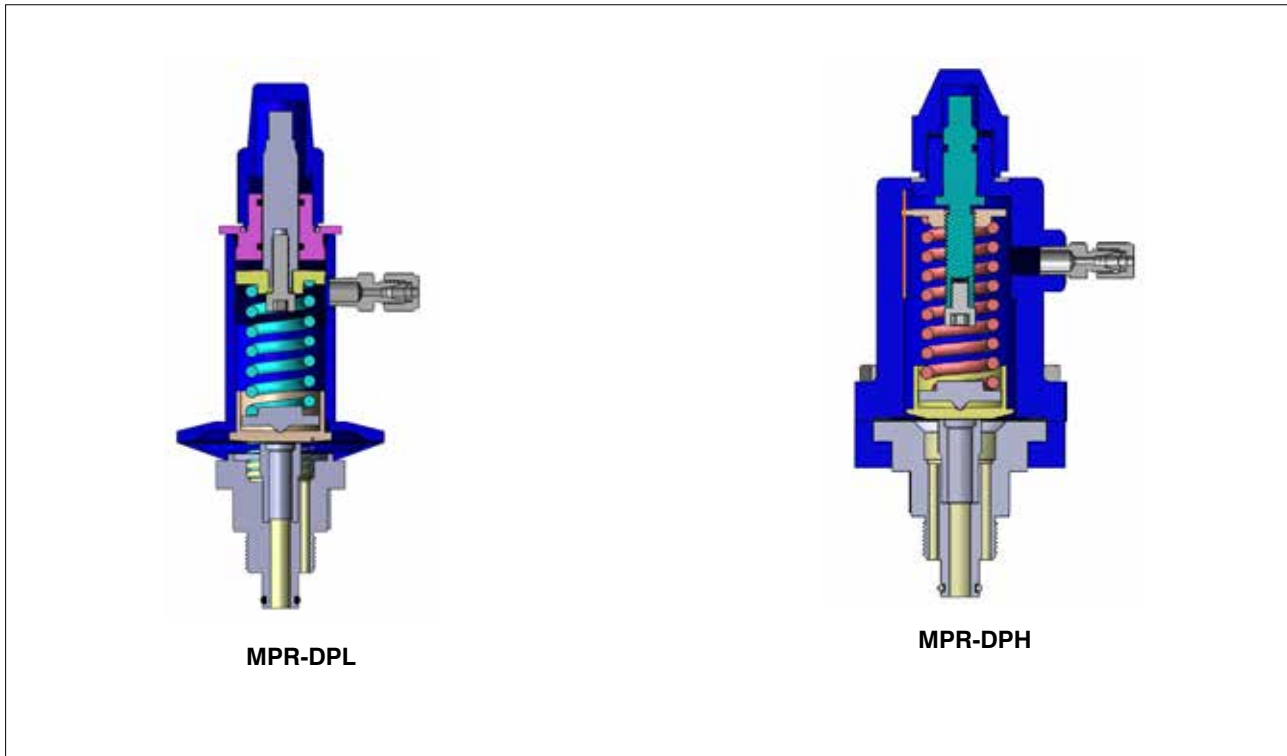
Valve type	MWP	k_v -value	Temperature range	Pressure range (Δp)
Low-pressure version				
MPR (LP)	17 barg	0.40 m ³ /h	-50 to 120°C	$\Delta p = 0$ to 7 bar g
High-pressure version				
MPR-DPH	28 bar g	0.40 m ³ /h	-50to120°C	$\Delta p = 0$ to 7 bar g
MPR-DPH	28 bar g	0.40 m ³ /h	-50to120°C	$\Delta p = 4$ to 22 bar g

Technical data. US units

Valve type	MWP	k_v -value	Temperature range	Pressure range (Δp)
Low-pressure version				
MPR-DPL	247 psi	0.46 USgal/min	-58 to 248° F	$\Delta p = 0$ to 102 psi g
High-pressure version				
MPR-DPH	406 psi	0.46 USgal/min	-58 to 248° F	$\Delta p = 0$ to 102 psi g
MPR-DPH	406 psi	0.46 USgal/min	-58 to 248° F	$\Delta p = 0$ to 319 psi g

P-band for a valve system regulated by SCVPP and MFR : <0.2 bar g (2.9 psi g).

Cut Section and Material Specifications



MPR-DPL

No	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Cloroprene (Neoprene)
4	Nut	Stainless steel
6	Nipple	Steel
7	Union nut	Steel
8	Seal	Aluminium
9	Ball socket	Stainless steel
10	Diaphragm	Stainless steel
11	Thrust pad	Steel
12	Spring guide	Stainless steel
14	Orifice	Stainless steel
15	Base	Steel
17	Valve body	Steel
20	Setting spindle	Stainless steel
24	Spring	Steel
28	Spring	Steel

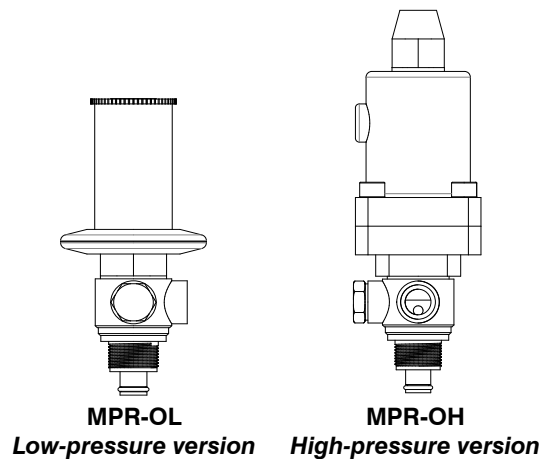
MPR-DPH

No	Part	Material
A1	O-ring	Cloroprene (Neoprene)
A2	Seal	Non-asbestos
1	Protective cap	Steel
3	Seal	Non-asbestos
4	Nut	Stainless steel
6	Nipple	Steel
7	Union nut	Steel
8	Seal	Aluminium
10	Diaphragm	Stainless steel
11	Thrust pad	Stainless steel
12	Spring guide	Stainless steel
13	Flange	Steel
14	Orifice	Stainless steel
15	Base	Stainless steel
17	Valve body	SG. Iron
18	Cover bolt	Steel (8.8)
20	Setting spindle	Stainless steel
21	Screw (M6 x 10)	Steel
22	Cover gasket	Non-asbestos
24	Spring	Steel
28	Spring	Steel

PRESSURE-OPERATED PILOT VALVE WITH REFERENCE PRESSURE CONNECTION, TYPE MPR-OL and MPR-OH

MPR is a pressure-operated pilot valve with a connection that can be used to obtain an indication of the system reference pressure. MPR valves are used:

- together with a MFR main valve to regulate capacity using hot gas bypass;
- together with a MFR main valve to regulate max. suction pressure, e.g. as a compressor crankcase pressure regulator;
- together with a MFR main valve as a pressure limiter, e.g. for hot gas defrost of hot gas lines.



The maximum working pressure (MWP) refers to the high-pressure side of the valve (28 bar); the reference pressure (17 bar) refers to the low-pressure side of the system. The reference pressure must be connected to the low-pressure side of the system.

The kv/Cv value is measured with the pilot valve mounted in a SCVH housing for external pilot lines. The value can vary slightly depending on the setting value.

Technical data. SI units

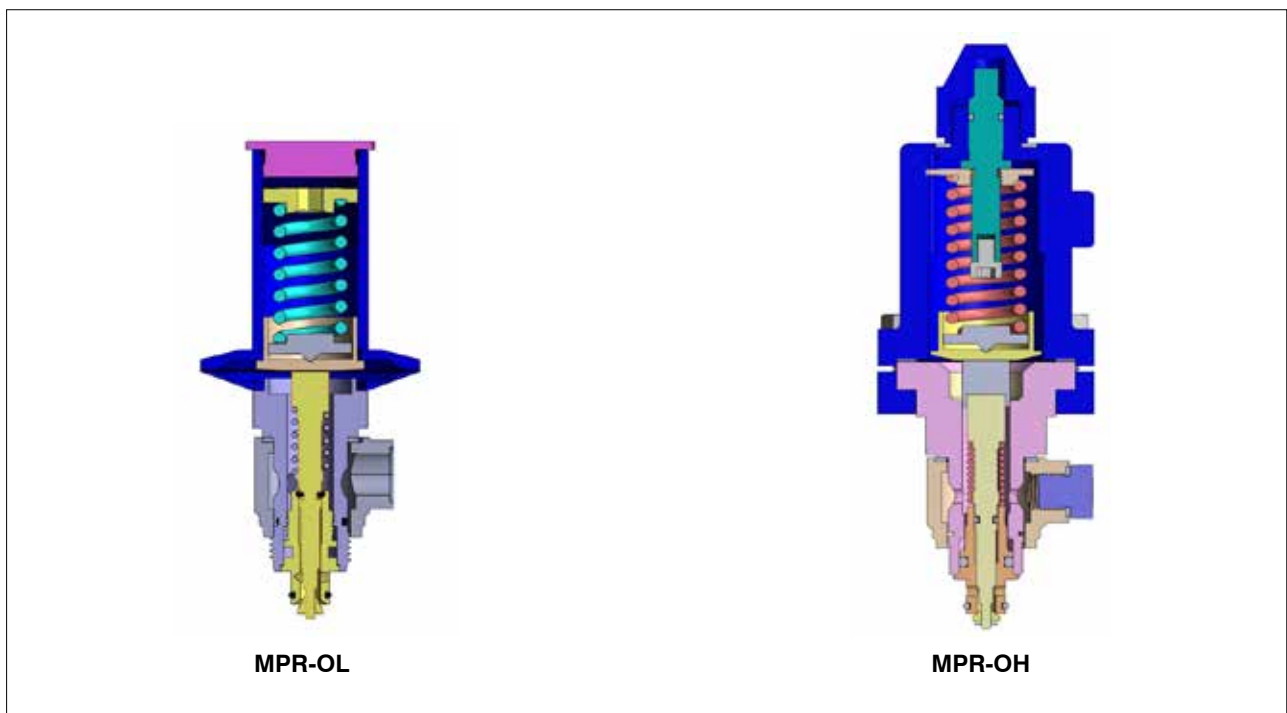
Valve type	MWP	k_v -value	Temperature range	Pressure range (Δp)
MPR	28/17 bar g	0.20 m ³ /h	-50 to 120°C	-0.45 bar g to 7 bar g

Technical data. US units

Valve type	MWP	C_v -value	Temperature range	Pressure range (Δp)
MPR	406/247 psig	0.23 Usgal/min	-58 to 248°F	13.3 in Hg to 102 psig

P-band for a valve system regulated by MPR and MFR / MFR: <0.2 bar g (4.4 psi g).

Cut Section and Material Specification



MPR

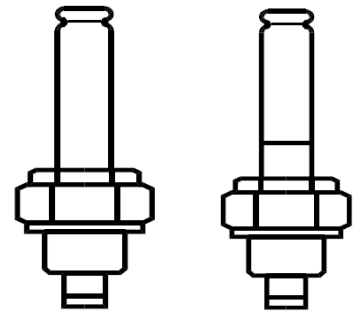
No	Part	Material
43	Seal	Aluminium
44	Blanking plug for pressure gauge connection	Stainless steel
A2	Seal	Non-asbestos
A1	O-ring	Cloroprene (Neoprene)
103	Banjo fitting	Steel
104	O-ring	Cloroprene (Neoprene)
105	Protective cap	Steel
106	O-ring	Cloroprene (Neoprene)
107	Signal connection	
108	Pilot orifice	Stainless steel
109	Connection	steel banjo fitting 103
110	Diaphragm	Stainless steel
111	Spring	Steel
112	Setting spindle	Stainless steel
17	Valve body	Stainless steel

SOLENOID PILOT VALVE, TYPE MPSV (NC)

SOLENOID PILOT VALVE, TYPE MPSV (NO)

MPSV is a solenoid pilot valve for use when on/ off operation of the MFR main valve is required. MPSV valves are intended for use with Manik solenoid valve coils ("Coils for solenoid valves", datasheet). Together with SCVH, an MPSV can also be used as an independent solenoid valve.

Design and function



MWP: Maximum working pressure. The k_v / C_v value is measured with the pilot valve mounted in a SCVH housing for external pilot lines.

MOPD: Maximum opening differential pressure with a 17.5 W a.c. coil.

MCPD: Maximum closing differential pressure with a 17.5 W a.c. coil.

Technical data. SI units

Valve type	MWP	k_v -value		Pressure range
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Normally Closed

MPSV(NC)	35 bar g	0.37 m ³ /h		MOPD: 21 bar g
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Normally Open

MPSV(NO)	35 bar g	0.12 m ³ /h		MCPD: 21 bar g
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Technical data. US units

Valve type	MWP	C_v -value		Pressure range
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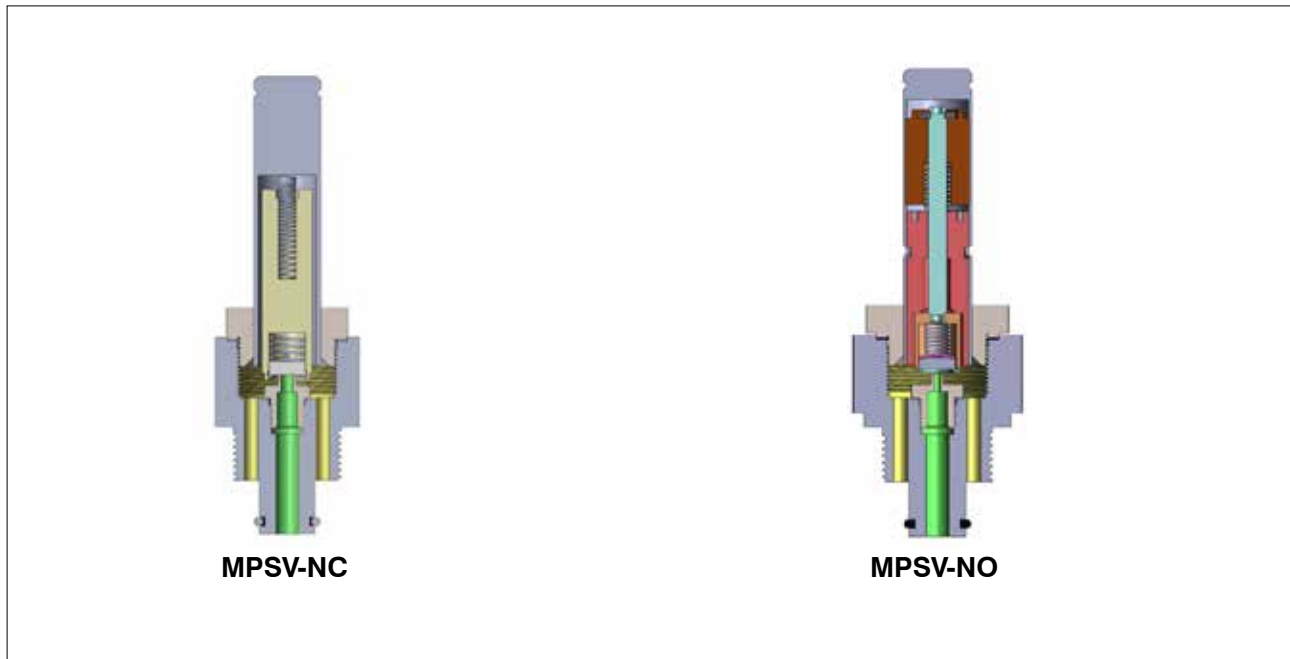
Normally Closed

MPSV(NC)	508 bar g	0.43 Usgal/min		MOPD: 21 bar g
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Normally Open

MPSV(NO)	508 bar g	0.14 Usgal/min		MCPD: 305 bar g
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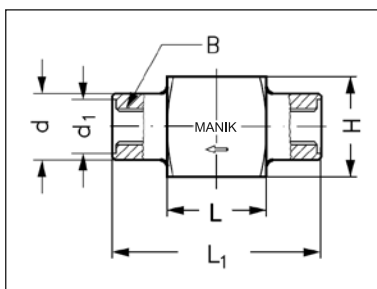
Cut Section and Material Specifications



MPSV

No	Part	Material
1	Coil	
2	Armature	Stainless steel
3	Armature tube	Stainless steel
A2	Seal	Non-asbestos
A1	O-ring	Cloroprene (Neoprene)
6	Seal	Aluminium
7	Spacing ring	
8	Nut	
9	Lock button	
10	Valve body	Steel
11	Valve seat	Teflon (PTFE)

Housing for pilot valves, type SCVH, for mounting in external pilot lines

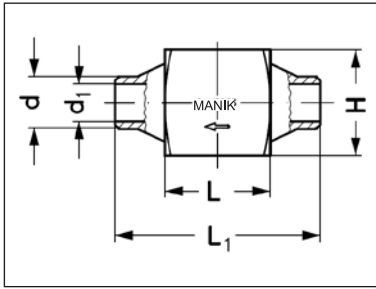


DN	d	d ₁	H	L	L ₁	B	Standard	Material	Code No.
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Internal pipe thread

6	mm	24	19.5	36	36	76	1/4 in	ANSI B1.20.1	DIN 9SMnPb 28	M027F1159
	in.	0.94	0.77	1.42	1.42	2.99	NPT		W no. 1.0718	

DN	d	d ₁	H	L	L ₁	B	Standard	Material	Code No.
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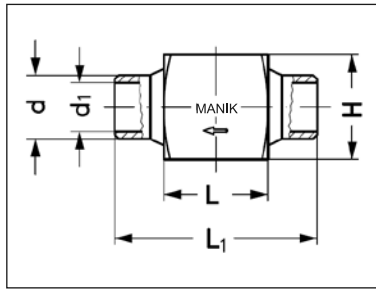


DN		d	d ₁	H	L	L ₁	B	Standard	Material	Code No.
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3/8 in. butt weld

10	mm	18	12.7	36	36	70		Weld connection	DIN CK 15.	M027F1047
	in.	0.71	0.5	1.42	1.42	2.76		DIN 2559 - 22	W no. 1.1141	

Weight : 0.4 kg. (0.9 lb.)

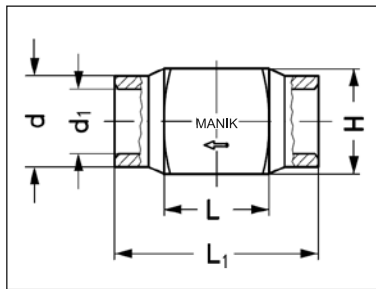


DN		d	d ₁	H	L	L ₁	B	Standard	Material	Best Nr.
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1/2 in. butt weld

15	mm	22	17	36	36	70		Weld connection	DIN CK 15.	M027F1090
	in.	0.87	0.67	1.42	1.42	2.76		DIN 2559 - 22	W no. 1.1141	

Weight : 0.4 kg. (0.9 lb.)



DN		d	d ₁	H	L	L ₁	B	Standard	Material	Best Nr.
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1/2 in. socket weld

15	mm	31	22	36	36	70		DIN 3259 - T2	DIN CK 15.	M027F1091
	in.	1.22	0.87	1.42	1.42	2.76		ASME B.16. 113M	W no. 1.1141	

Weight : 0.4 kg. (0.9 lb.)

ORDERING INFORMATION

MODEL NO.	Weight (kg)
MPSV NO : Solenoid Valve with coil	0.5
MPSV NC : Solenoid Valve with coil	0.5
MPR LP : (0 to 7 bar / -0.66 to 7 bar)	0.7
MPR HP : (4 to 28 bar)	1.8
MPR HP : (4 to 22 bar)	1.8
MPR DPH : 4 to 22 bar	1.8
MPR DPL : 0 to 7 bar	0.7
MPR OL : Low pressure : 0 to 7 bar	1.2
MPR OH : High pressure : 4 to 22 bar	2
SCVH : Valve Body	0.6