



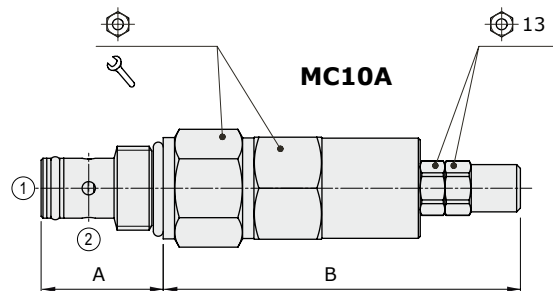
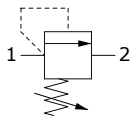
## MC..A type pressure relief valves - 2 ways

- Direct acting
- Poppet type
- From SAE08 to SAE12 cavities

Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C (104°F) temperature.

	MC08A	MC10A	MC12A
Nominal flow	10 l/min (2.6 US gpm)	40 l/min (10.5 US gpm)	100 l/min (26.4 US gpm)
Max. pressure	350 bar (5100 psi)		
Oil leakage	-		
Fluid	mineral based oil		
Viscosity	10-200 cSt		
Max level of contamination	20/18/14 ISO4406		
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)	
Environmental temp. for working conditions	from -20°C (-4°F) to 50°C (122°F)		
Cavity	SAE 8/2	SAE 10/2	SAE 12/2
Weight	0.19 kg (0.41 lb)	0.33 kg (0.72 lb)	0.86 kg (1.89 lb)

NOTE - For different conditions, please contact Walvoil Sales Dpt.

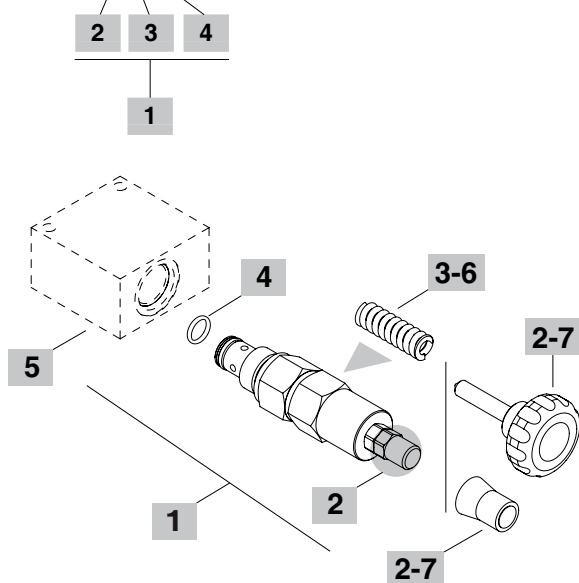


Valve type	A		B		⌀	⌘	Nm	lbft
	mm	in	mm	in				
MC08A/OS	28	1.10	53.5	2.11	24	30	22	
MC10A/OS	32.3	1.27	94.5	3.72	27	50	37	
MC12A/OS	46	1.81	126.5	4.98	32	70	52	

For dimensions with different type of adjustment see page 196

### Ordering codes and description composition

#### MC08A/OS2B



#### 1 Cartridges

TYPE	CODE	DESCRIPTION
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##### SAE cavity 8/2

MC08A/OS2B	0MC08002000	Cartridge
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##### SAE cavity 10/2

MC10A/OS2B	0MC10002000	Cartridge
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##### SAE cavity 12/2

MC12A/OS2B	0MC12002001	Cartridge
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#### 2 Adjustments

TYPE	DESCRIPTION
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<b>S</b>	With screw
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<b>V</b>	With handwheel (part code: see point <b>7</b> )
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<b>X</b>	Valve set with antitampering cap (part code: see point <b>7</b> )
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#### 3 Pressure range

Standard setting is referred to 5 l/min (1.32 US gpm) flow

TYPE	DESCRIPTION
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##### SAE cavity 8/2

- |          |   |
|----------|---|
| <b>1</b> | Range 5÷50 bar (72.5÷725 psi); Std. setting 30 bar (435 psi) pressure increase by steps of 11,5 bar (167 psi) per screw turn      |
| <b>2</b> | Range 50÷200 bar (725÷2900 psi); Std. setting 150 bar (2175 psi) increase by steps of 31,5 bar (457 psi) per screw turn           |
| <b>3</b> | Range 150÷350 bar (2175÷5075 psi); Std. setting 250 bar (3600 psi) pressure increase by steps of 74 bar (1070 psi) per screw turn |

#### SAE cavity 10/2

- |          |   |
|----------|---|
| <b>1</b> | Range 20÷100 bar (290÷1450 psi); Std. setting 50 bar (725 psi) pressure increase by steps of 7 bar (101 psi) per screw turn       |
| <b>2</b> | Range 50÷200 bar (725÷2900 psi); Std. setting 150 bar (2175 psi) pressure increase by steps of 24 bar (348 psi) per screw turn    |
| <b>3</b> | Range 150÷350 bar (725÷1450 psi); Std. setting 250 bar (3600 psi), pressure increase by steps of 72 bar (1040 psi) per screw turn |

#### SAE cavity 12/2

- |          |   |
|----------|---|
| <b>1</b> | Range 20÷100 bar (290÷1450 psi); Std. setting 50 bar (725 psi), pressure increase by steps of 5,7 bar (83 psi) per screw turn     |
| <b>2</b> | Range 50÷200 bar (725÷2900 psi); Std. setting 150 bar (2175 psi), pressure increase by steps of 26,5 bar (348 psi) per screw turn |
| <b>3</b> | Range 150÷350 bar (725÷1450 psi); Std. setting 250 bar (3600 psi), pressure increase by steps of 35 bar (508 psi) per screw turn  |

#### 4 Seals

TYPE	DESCRIPTION
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<b>B</b>	<b>NBR (Buna)</b> o-ring seals, std configuration
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<b>V</b>	<b>FPM (Viton)</b> o-ring seals, contact Sales Dept.
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#### 5 Valve body

TYPE	CODE	DESCRIPTION
<b>SAE 08/2-G 3/8</b>	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
<b>SAE 10/2-G 3/8</b>	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
<b>SAE 12/2-G 1/2</b>	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar (3050 psi)

For steel bodies or different threading see from page 199

#### 6 Springs

TYPE	CODE	DESCRIPTION
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##### SAE cavity 8/2

<b>1</b>	3ML1092500	Pressure range <b>1</b>
<b>2</b>	3ML1092501	Pressure range <b>2</b>
<b>3</b>	3ML1092502	Pressure range <b>3</b>

##### SAE cavity 10/2

<b>1</b>	3ML1144601	Pressure range <b>1</b>
<b>2</b>	3ML1144602	Pressure range <b>2</b>
<b>3</b>	3ML1144603	Pressure range <b>3</b>

##### SAE cavity 12/2

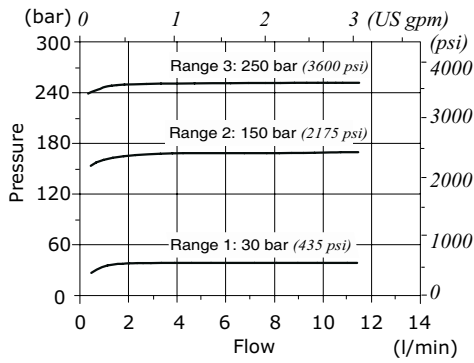
<b>1</b>	3ML1166804	Pressure range <b>1</b>
<b>2</b>	3ML1146800	Pressure range <b>2</b>
<b>3</b>	3ML1166805	Pressure range <b>3</b>

#### 7 Accessories

TYPE	CODE	DESCRIPTION
-	4VL2407100	Handwheel
-	4COP120420	Antitampering cap

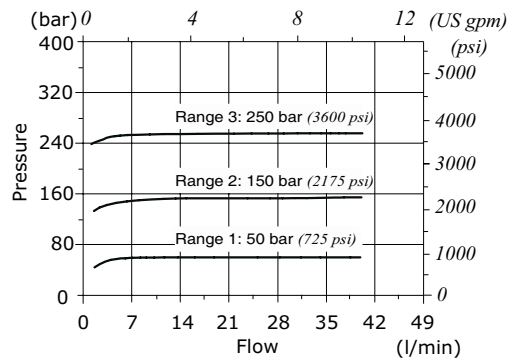
**MC08A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



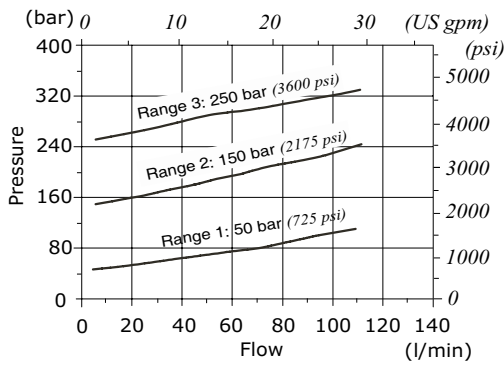
**MC10A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



**MC12A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)





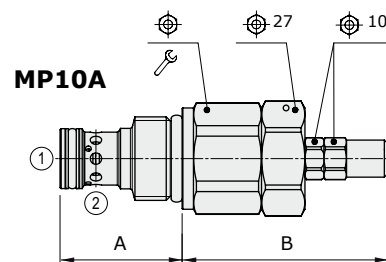
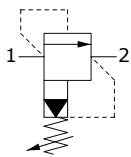
## MP..A type pressure relief valves - 2 ways

- Pilot operated
- Spool type
- From SAE10 to SAE12 cavities

Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C (104°F) temperature.

	MP10A	MP12A
Nominal flow	60 l/min (16 US gpm)	100 l/min (26.4 US gpm)
Max. pressure	350 bar (5100 psi)	
Oil leakage	80% of max. pressure setting	25 cm <sup>3</sup> /min (1.525 in <sup>3</sup> /min)
Fluid	mineral based oil	
Viscosity	10-200 cSt	
Max level of contamination	20/18/14 ISO4406	
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)
Environmental temp. for working conditions	from -20°C (-4°F) to 50°C (122°F)	
Cavity	SAE 10/2	SAE 12/2
Weight	0.190 kg (0.42 lb)	0.300 kg (0.661 lb)

NOTE - For different conditions, please contact Walvoil Sales Dpt.

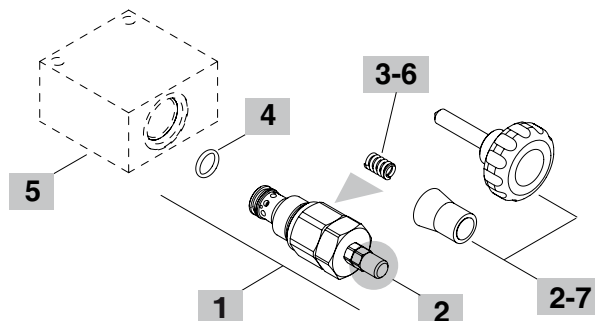
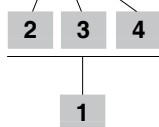


Valve type	A		B		⌀	⌘
	mm	in	mm	in		
MP10A/OS	32.3	1.27	54.5	2.15	27	50 37
MP12A/OS	46	1.81	52.5	2.07	32	80 59

For dimensions with different type of adjustment see page 196

### Ordering codes and description composition

#### MP10A/0S2B



#### 1 Cartridges

TYPE	CODE	DESCRIPTION
<b>SAE cavity 10/2</b>		
<b>MP10A/0S2B</b>	OMP10002015	Pressure range 2
<b>SAE cavity 12/2</b>		
<b>MP12A/0S2B</b>	OMP12002000	Pressure range 2

#### 2 Adjustments

TYPE	DESCRIPTION
<b>S</b>	Screw with cap
<b>V</b>	With handwheel (part code: see point 7)
<b>X</b>	Valve set with antitampering cap (part code: see point 7)

#### 3 Pressure range

TYPE	DESCRIPTION
<b>1</b>	Pressure range 5÷50 bar (72.5÷725 psi)
<b>2</b>	Pressure range 50÷220 bar (725÷3190 psi)
<b>3</b>	Pressure range 150÷350 bar (2175÷5100 psi)

#### 4 Seals

TYPE	DESCRIPTION
<b>B</b>	<b>NBR (Buna)</b> o-ring seals, std configuration
<b>V</b>	<b>FPM (Viton)</b> o-ring seals, contact Sales Dept.

#### 5 Valve body

TYPE	CODE	DESCRIPTION
<b>SAE 10/2-G 3/8</b>	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
<b>SAE 12/2-G 3/8</b>	3CC1220D11	Aluminium body for cavity 12 valve, G 3/8 std thread

Note: aluminium body can stand up to 210 bar (3050 psi)  
For steel bodies or different threading see from page 199

#### 6 Springs

TYPE	CODE	DESCRIPTION
<b>1</b>	3ML1081400	Pressure range 1
<b>2</b>	3ML1081401	Pressure range 2
<b>3</b>	3ML1081402	Pressure range 3

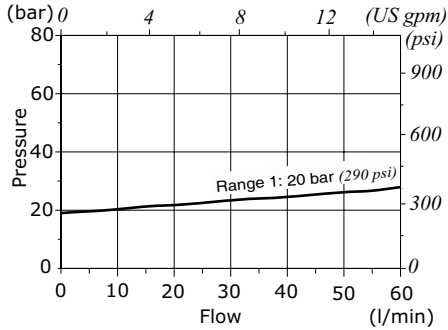
#### 7 Accessories

TYPE	CODE	DESCRIPTION
-	4VL2307007	Handwheel (for MP10A valve)
-	4VL2307001	Handwheel (for MP12A and MP16A valves)
-	4COP116420	Antitampering cap

Rating diagrams

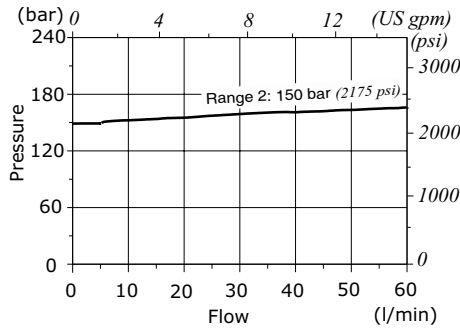
**MP10A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



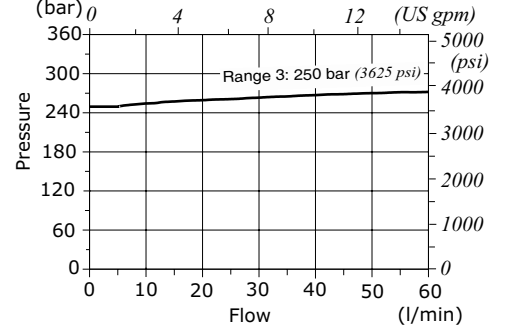
**MP10A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



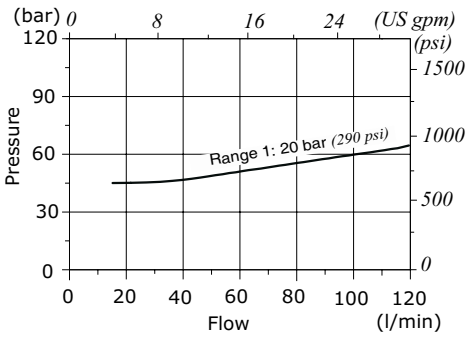
**MP10A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



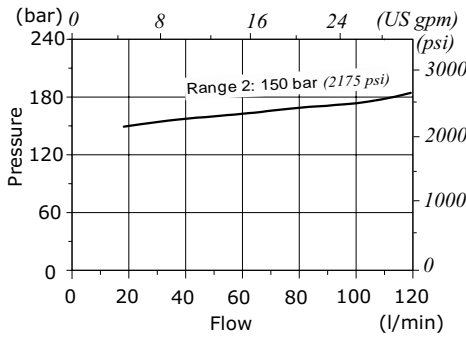
**MP12A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



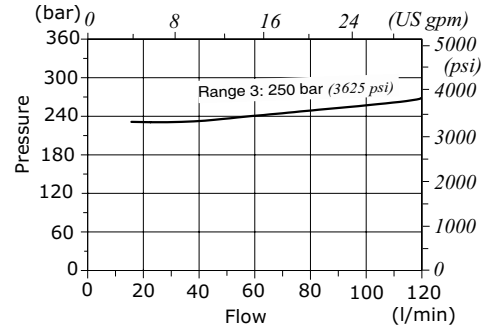
**MP12A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)



**MP12A pressure vs. flow**

Std. setting at 5 l/min (1.32 US gpm)





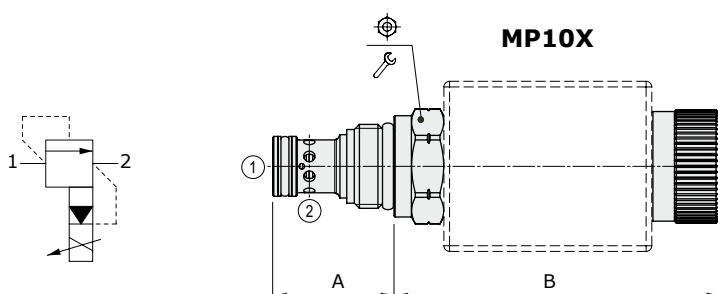
## MP..X type pressure relief valves - 2 ways

- Solenoid proportional type, pilot operated
- Increasing pressure with increasing current (NO)
- Spool type
- From SAE10 to SAE12 cavities

Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C (104°F) temperature.

		MP10X	MP12X
Max. flow		60 l/min (16 US gpm)	120 l/min (31.7 US gpm)
Max. pressure		350 bar (5100 psi)	
Oil leakage	at 80% of max. pressure setting	<150 cm <sup>3</sup> /min (9.15 in <sup>3</sup> /min)	<180 cm <sup>3</sup> /min (10.1 in <sup>3</sup> /min)
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)	
Environmental temp. for working conditions		from -40°C (-40°F) to 100°C (212°F)	
Cavity		SAE 10/2	SAE 12/2
Coil type*		BH or BQP19	
Nominal voltages		12 VDC - 24 VDC	
Power rating		20.4 W (BH) - 15 W (BQP19)	
Max control current		12 V -> 1.70 A - 24 V -> 0.85 A (BH) 12 V -> 1.25 A - 24 V -> 0.63 A (BQP19)	
Dither frequency		180 Hz	180 Hz
Hysteresis		<5%	
Weight		0.76 kg (1.67 lb)	0.88 kg (1.94 lb)

NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.

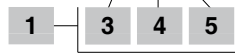


Valve type	A		B		⌀	⌘	Nm	lbft
	mm	in	mm	in				
MP10X/0	32.3	1.27	86	3.39	27	50	37	
MP12X/0	45	1.81	102	4.02	32	80	59	

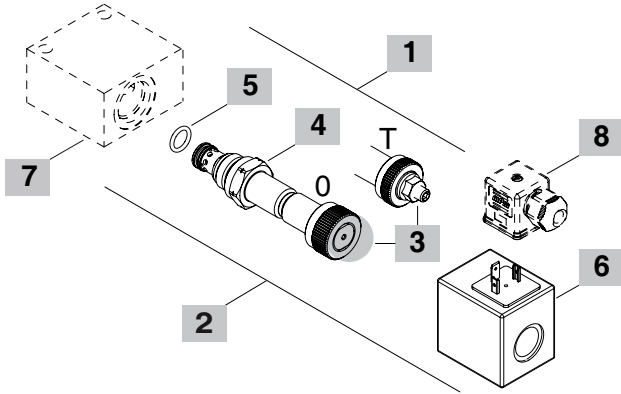
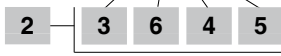
For dimensions with different type of emergency see page 197

## Ordering codes and description composition

### MP10X/001B



### MP10X/031B



### 1 Cartridges

TYPE	CODE	DESCRIPTION
<b>SAE cavity 10/2</b>		
MP10X/001B	OMP10002054	Pressure range 1
MP10X/002B	OMP10002055	Pressure range 2
MP10X/003B	OMP10002056	Pressure range 3
MP10X/004B	OMP10002057	Pressure range 4
<b>SAE cavity 12/2</b>		
MP12X/001B	OMP12002031	Pressure range 1
MP12X/002B	OMP12002032	Pressure range 2
MP12X/003B	OMP12002033	Pressure range 3
MP12X/004B	OMP12002034	Pressure range 4

### 2 Complete cartridges

TYPE	CODE	DESCRIPTION
<b>SAE cavity 10/2</b>		
MP10X/031B	OMP10002044	Pressure range 1, 12VDC
MP10X/032B	OMP10002045	Pressure range 2, 12VDC
MP10X/033B	OMP10002046	Pressure range 3, 12VDC
MP10X/034B	OMP10002047	Pressure range 4, 12VDC

### SAE cavity 12/2

MP12X/031B	OMP12002023	Pressure range 1, 12VDC
MP12X/032B	OMP12002024	Pressure range 2, 12VDC
MP12X/033B	OMP12002025	Pressure range 3, 12VDC
MP12X/034B	OMP12002026	Pressure range 4, 12VDC

### 3 Emergency

TYPE	DESCRIPTION
0	Without override
T	With screw

### 4 Pressure range

TYPE	DESCRIPTION
1	Pressure range 10÷120 bar (145÷1740 psi)
2	Pressure range 10÷160 bar (145÷2320 psi)
3	Pressure range 10÷230 bar (145÷3335 psi)
4	Pressure range 10÷350 bar (145÷5100 psi)

Note: for further pressure range contact Sales Dept.

### 5 Seals

TYPE	DESCRIPTION
B	<b>NBR (Buna)</b> o-ring seals, std configuration
V	<b>FPM (Viton)</b> o-ring seals, contact Sales Dept.

### 6 Coils

TYPE	CODE	DESCRIPTION
2) BH 12VDC	4SLD001200	12VDC-ISO4400 coil
3) BQP19 12VDC	4SL5000126	12VDC-ISO4400 coil
4) BH 24VDC	4SLD002400	24VDC-ISO4400 coil
5) BQP19 24VDC	4SL5000245	24VDC-ISO4400 coil

For complete coils list see from page 190

### 7 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar (3050 psi)  
For steel bodies or different threading see from page 199

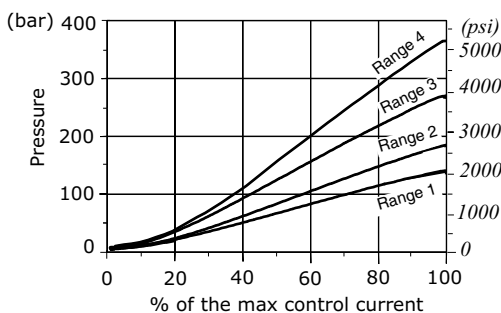
### 8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

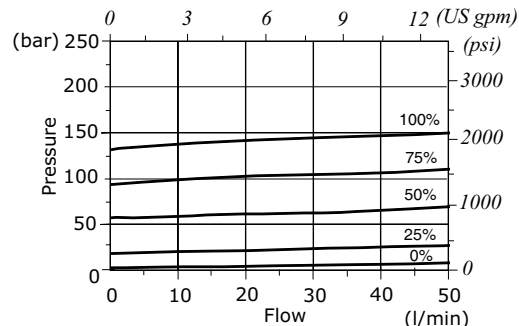
For complete connectors list see from page 190

## Rating diagrams

MP10X pressure setting vs. % max. control current  
at 5 l/min (1.32 US gpm)



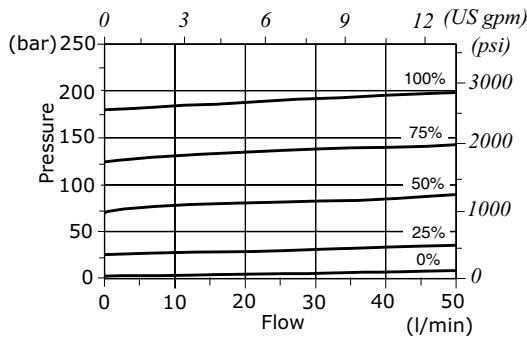
MP10X pressure vs. flow 1->2  
for % of control current - Pressure range 1 -





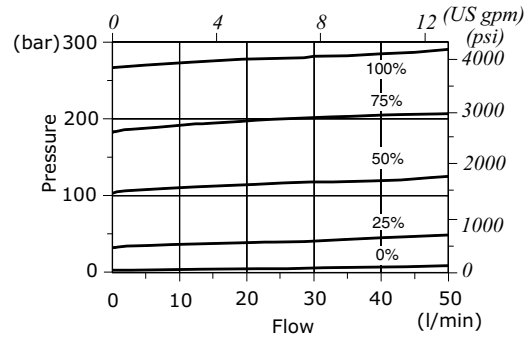
**MP10X pressure vs. flow 1->2**

for % of control current - Pressure range 2 -



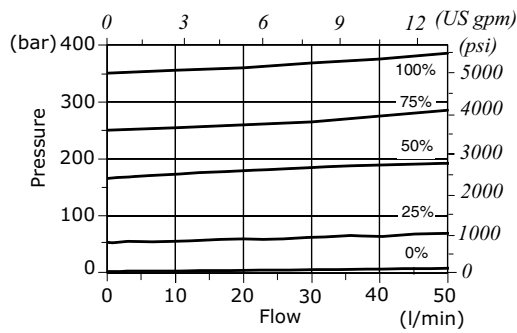
**MP10X pressure vs. flow 1->2**

for % of control current - Pressure range 3 -



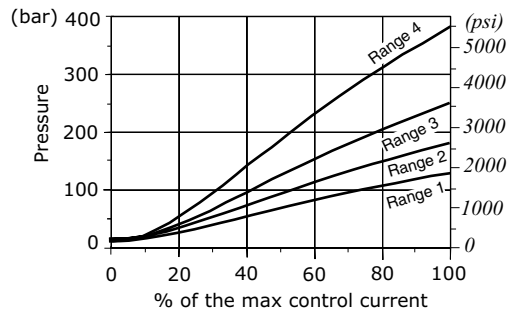
**MP10X pressure vs. flow 1->2**

for % of control current - Pressure range 4 -



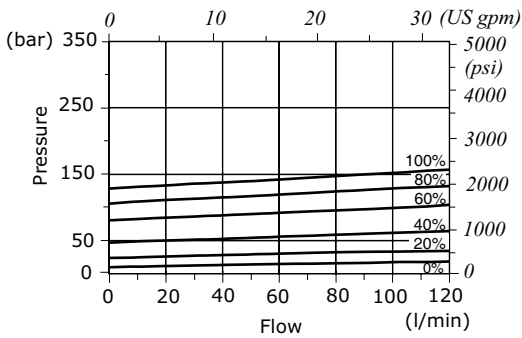
**MP12X pressure setting vs. % max. control current**

at 10 l/min (2.64 US gpm)



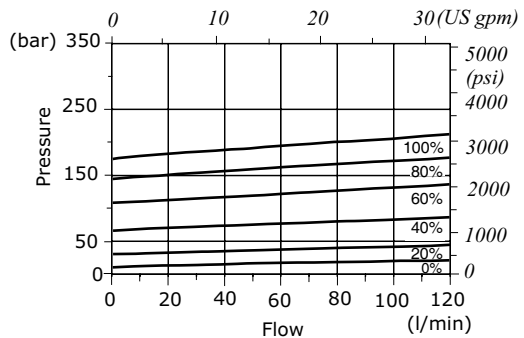
**MP12X pressure vs. flow 1->2**

for % of control current - Pressure range 1 -



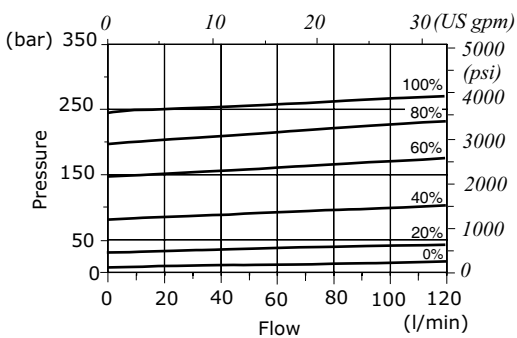
**MP12X pressure vs. flow 1->2**

for % of control current - Pressure range 2 -



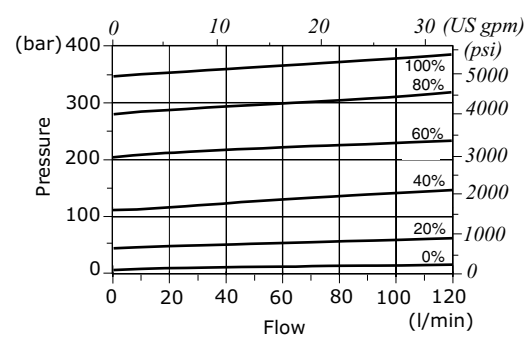
**MP12X pressure vs. flow 1->2**

for % of control current - Pressure range 3 -



**MP12X pressure vs. flow 1->2**

for % of control current - Pressure range 4 -





## MP16Y type pressure relief valve - 2 ways

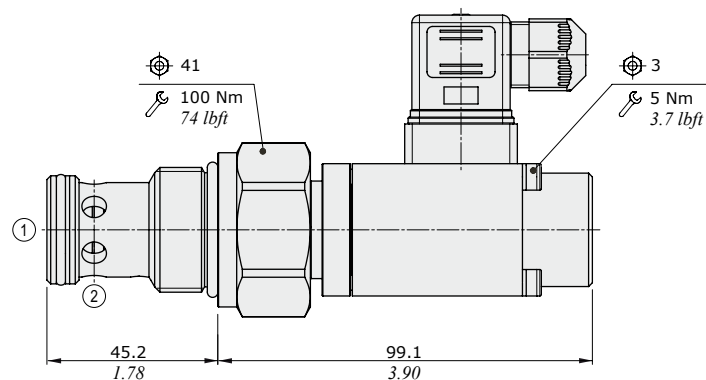
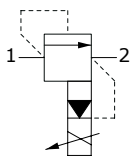
- Solenoid proportional type, pilot operated
- Increasing pressure with increasing current (NO)
- Spool type

Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C (104°F) temperature.

### MP16Y

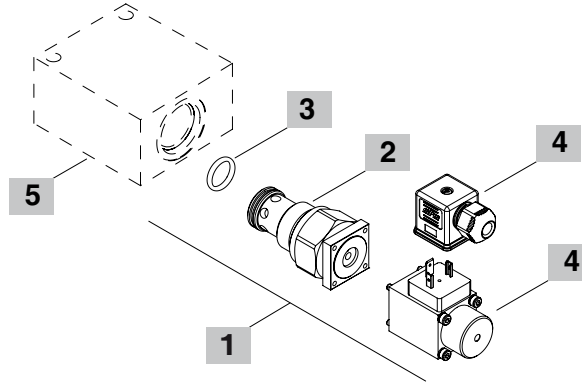
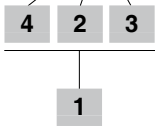
Nominal flow		5 l/min (1.32 US gpm)
Max. flow		150 l/min (40 US gpm)
Max. pressure		Line 1=350 bar (5100 psi); Line 2=210 bar (3045 psi)
Oil leakage	80% of max. pressure setting	200 cm <sup>3</sup> /min (12.20 in <sup>3</sup> /min)
Fluid		mineral based oil
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)
Environmental temp. for working conditions		from -40°C (-40°F) to 100°C (212°F)
Cavity		SAE 16/2
Coil type*		MP35
Nominal voltages		12 VDC - 24VDC
Power rating		11.2 W (12 VDC) - 11.4 W (24 VDC)
Max control current		12 V -> 1.25 A - 24 V -> 0.68 A
Dither frequency		150 Hz
Hysteresis		≤4%
Weight		0.96 kg (2.11 lb)

NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.



## Ordering codes and description composition

### MP16Y/021B



#### 1 Cartridges

TYPE	CODE	DESCRIPTION
<b>MP16Y/021B</b>	OMP16002007	Pressure range <b>1</b> , 12VDC
<b>MP16Y/022B</b>	OMP16002002	Pressure range <b>2</b> , 12VDC
<b>MP16Y/023B</b>	OMP16002009	Pressure range <b>3</b> , 12VDC
<b>MP16Y/024B</b>	OMP16002011	Pressure range <b>4</b> , 12VDC

#### 2 Pressure range

TYPE	DESCRIPTION
<b>1</b>	Pressure range 10÷100 bar (145÷1450 psi)
<b>2</b>	Pressure range 50÷200 bar (725÷2900 psi)
<b>3</b>	Pressure range 80÷350 bar (1160÷5100 psi)
<b>4</b>	Pressure range 5÷40 bar (72.5÷580 psi)

#### 3 Seals

TYPE	DESCRIPTION
<b>B</b>	<b>NBR (Buna)</b> o-ring seals, std configuration
<b>V</b>	<b>FPM (Viton)</b> o-ring seals, contact Sales Dept.

#### 4 Coils and connectors

TYPE	CODE	DESCRIPTION
<b>2) MP35 12VDC</b>	5SL4000120	12VDC-ISO4400 coil
<b>ISO4400</b>	4CN1009995	Connector
<b>4) MP35 24VDC</b>	4SL4000240	24VDC-ISO4400 coil
<b>ISO4400</b>	4CN1009995	Connector

For complete coils and connectors list see from page 190

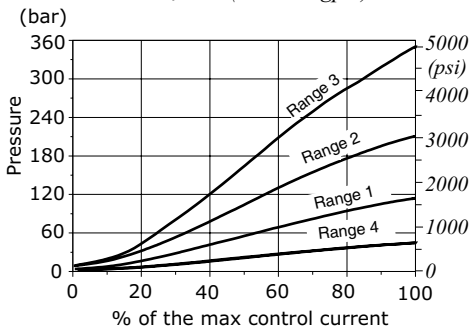
#### 5 Valve body

TYPE	CODE	DESCRIPTION
<b>SAE 16/2-G 3/4</b>	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

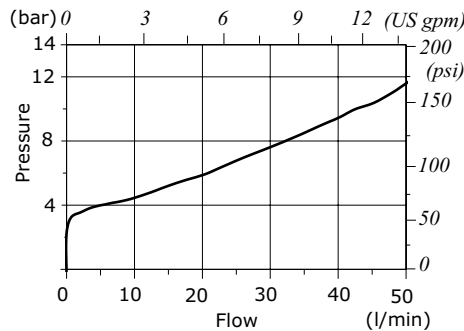
Note: aluminium body can stand up to 210 bar (3050 psi)  
For steel bodies or different threading see from page 199

## Rating diagrams

**Pressure setting vs. % max. control current**  
at 5 l/min (1.32 US gpm)



**Pressure vs. flow 1->2**  
with de-energized coil



**Pressure vs. flow 1->2**  
for % of control current - Pressure range 2 -

