



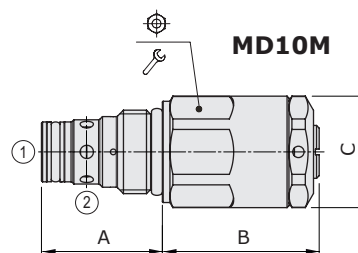
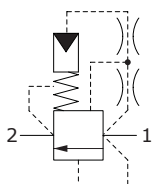
## MD..M type shockless pressure relief valve - 2 way

- Direct acting
- Poppet 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.

	MD10M	MD12M
Nominal flow	60 l/min (15.8 US gpm)	100 l/min (26.4 US gpm)
Max. pressure	350 bar (5100 psi)	
Oil leakage	at 80% of max. pressure setting	5 cm <sup>3</sup> /min (0.3 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	from -20°C (-4°F) to 80°C (176°F)
Environmental temp. for working conditions	from -20°C (-4°F) to 50°C (122°F)	
Cavity	SAE 10/2	SAE 12/2
Weight	0.200 kg (0.44 lb)	0.355 kg (0.78 lb)

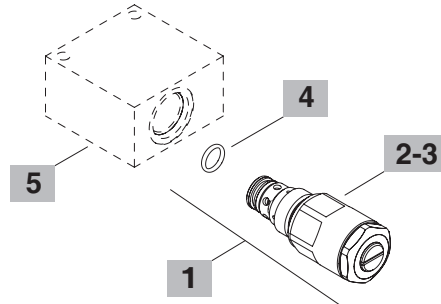
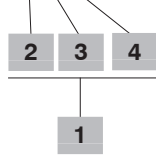
NOTE - For different conditions, please contact Walvoil Sales Dpt.



Valve type	A		B		C		⌀	Key	Nm	lbft
	mm	in	mm	in	mm	in				
MD10M	32	1.25	73.5	2.89	ø29.5	ø1.16	27	50	37	
MD12M	46	1.81	92.5	3.64	ø35	ø1.38	32	80	59	

Ordering codes and description composition

MD10M/313B



**1 Cartridges**

TYPE	CODE	DESCRIPTION
<b>SAE cavity 10/2</b>		
MD10M/313B	OMD10002027	Pressure range <b>13</b>
<b>SAE cavity 12/2</b>		
MD12M/513B	OMD12002004	Pressure range <b>13</b>

**2 Reaction time**

TYPE	DESCRIPTION
2	Reaction time 0.2 sec. (± 0.1 sec.)
3	Reaction time 0.3 sec. (± 0.1 sec.)
4	Reaction time 0.4 sec. (± 0.1 sec.)
5	Reaction time 0.5 sec. (± 0.1 sec.)
6	Reaction time 0.6 sec. (± 0.1 sec.)
7	Reaction time 0.7 sec. (± 0.1 sec.)

**3 Pressure range**

TYPE	DESCRIPTION
<b>SAE cavity 10/2</b>	
11	Pressure range 130÷200 bar (1900÷2900 psi). Pressure ratio 1.9
12	Pressure range 180÷240 bar (2610÷3480 psi). Pressure ratio 2.2
13	Pressure range 220÷290 bar (3190÷4200 psi), Setting 250 bar (3625 psi) at 25 l/min (6.6 US gpm). Pressure ratio 2.4
21	Pressure range 170÷270 bar (2465÷3915 psi). Pressure ratio 2.5
22	Pressure range 220÷290 bar (3190÷4200 psi). Pressure ratio 2.8
<b>SAE cavity 12/2</b>	
11	Pressure range 125÷155 bar (1810÷2250 psi). Pressure ratio 1.7
12	Pressure range 160÷190 bar (2320÷2760 psi). Pressure ratio 1.9
13	Pressure range 180÷240 bar (2610÷3480 psi), Setting 220 bar (3190 psi) at 60 l/min (16 US gpm). Pressure ratio 2.2
21	Pressure range 150÷185 bar (1900÷2685 psi). Pressure ratio 2
22	Pressure range 190÷235 bar (2760÷3400 psi). Pressure ratio 2.35
23	Pressure range 230÷275 bar (3335÷3990 psi). Pressure ratio 2.55

Note: supplied valves are set at the requested pressure and sealed

**4 Seals**

TYPE	DESCRIPTION
B	NBR (Buna) o-ring seals, std configuration

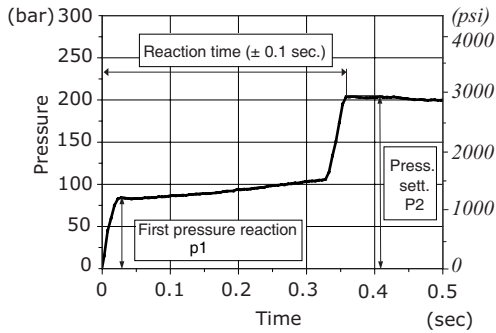
**5 Valve body**

TYPE	CODE	DESCRIPTION
SAE 10/2-SAE8	3CC1020K11	Aluminium body for cavity 10 valve, SAE8 std thread
SAE 12/2-SAE10	3CC1220L11	Aluminium body for cavity 12 valve, SAE10 std thread

Note: aluminium body can stand up to 210 bar (3050 psi)  
For steel bodies or different threading see from page 215

**Rating diagrams**

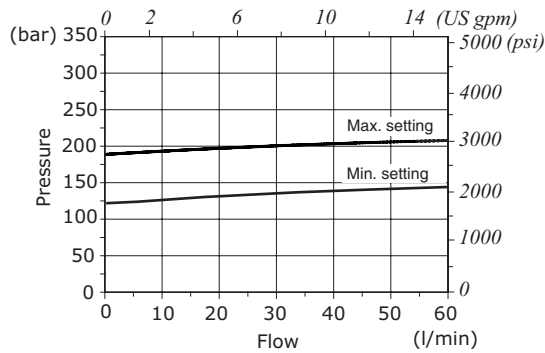
**MD10M performance curve example with typical dimensions**



Pressure ratio:  $R_p = \frac{p_2}{p_1}$

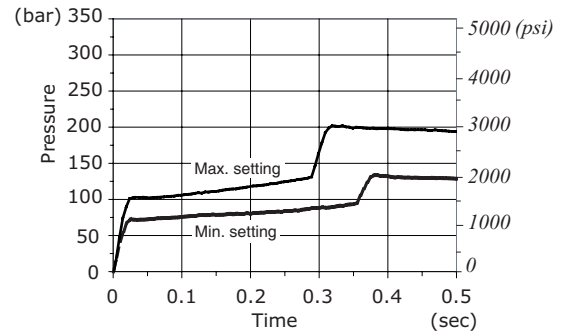
First pressure reaction:  $p_1 = \frac{p_2}{R_p}$

**MD10M pressure vs. flow at max. and min. setting**

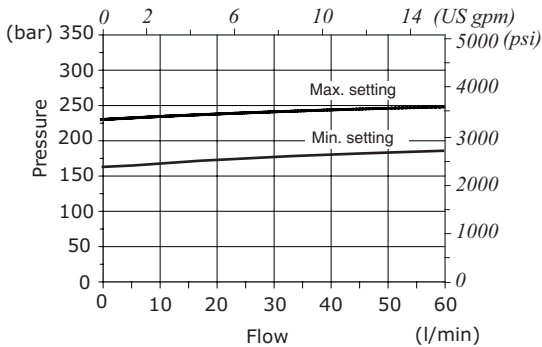


**Pressure range 11**  
130 ÷ 200 bar  
(1900 ÷ 2900 psi)  
Pressure ratio 1.9  
Q=60l/min  
(15.8 US gpm)

**MD10M performance curve at max. and min. setting**

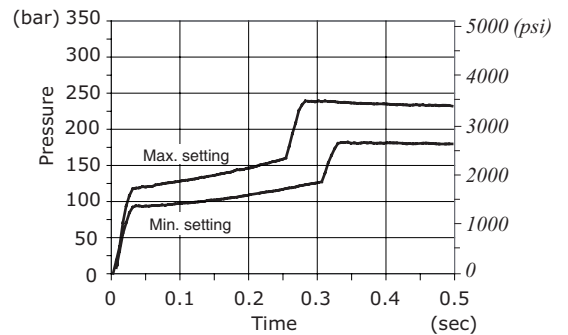


**MD10M pressure vs. flow at max. and min. setting**

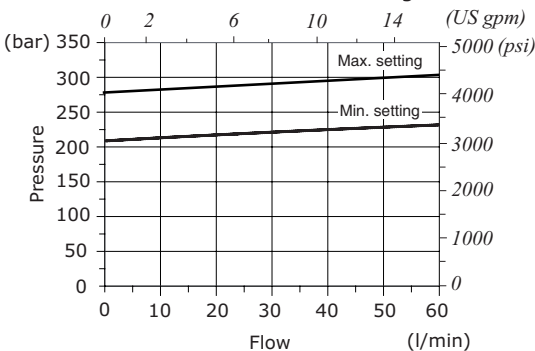


**Pressure range 12**  
180 ÷ 240 bar  
(2610 ÷ 3480 psi)  
Pressure ratio 2.2  
Q=60l/min  
(15.8 US gpm)

**MD10M performance curve at max. and min. setting**

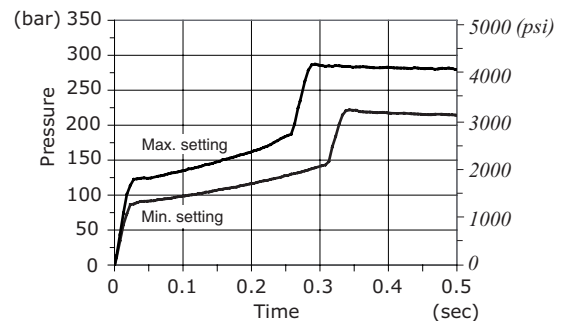


**MD10M pressure vs. flow at max. and min. setting**



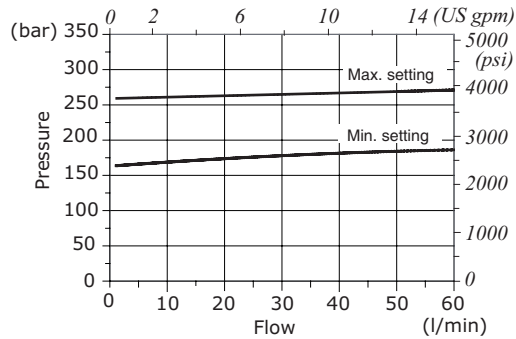
**Pressure range 13**  
220 ÷ 290 bar  
(3190 ÷ 4200 psi)  
Setting 250 bar (3625 psi) at 25 l/min  
(6.6 US gpm)  
Pressure ratio 2.4  
Q=60l/min  
(15.8 US gpm)

**MD10M performance curve at max. and min. setting**



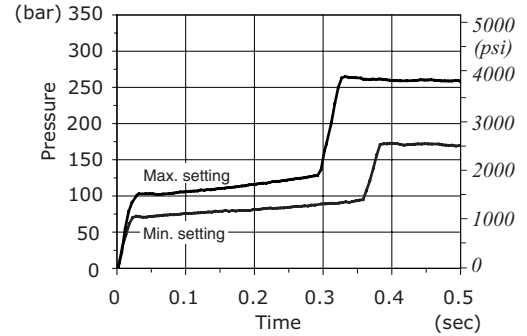
Rating diagrams

**MD10M pressure vs. flow**  
at max. and min. setting

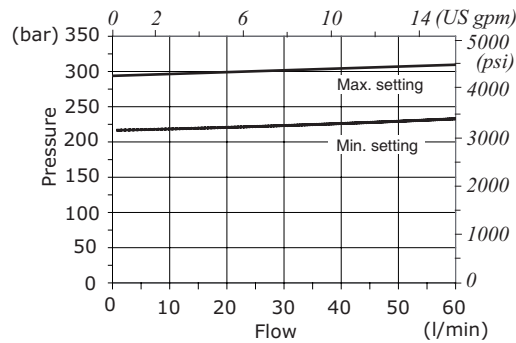


**Pressure range**  
**21**  
170÷270 bar  
(2465÷3915 psi)  
Pressure ratio 2.5  
Q=60l/min  
(15.8 US gpm)

**MD10M performance curve**  
at max. and min. setting

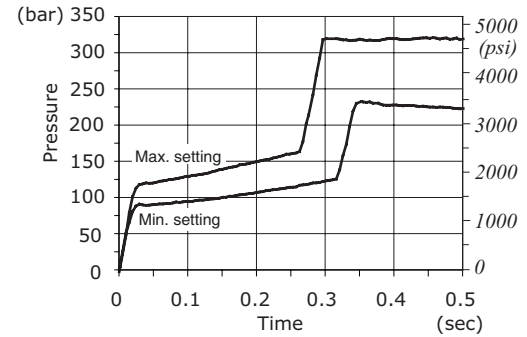


**MD10M pressure vs. flow**  
at max. and min. setting



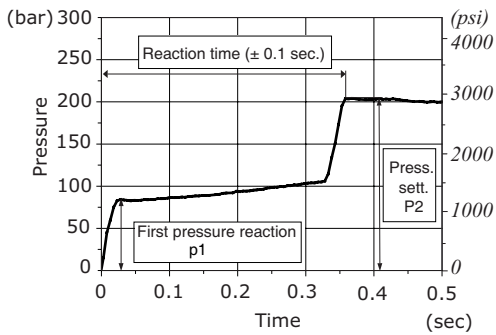
**Pressure range**  
**22**  
220÷290 bar  
(3190÷4200 psi)  
Pressure ratio 2.8  
Q=60l/min  
(15.8 US gpm)

**MD10M performance curve**  
at max. and min. setting



**Rating diagrams**

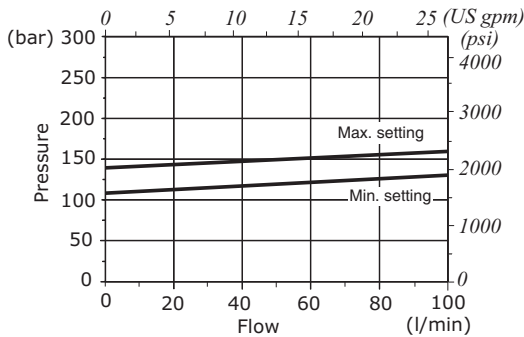
**MD12M performance curve example with typical dimensions**



Pressure ratio:  $R_p = \frac{p_2}{p_1}$

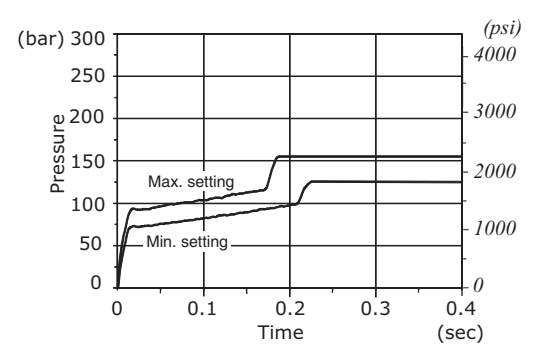
First pressure reaction:  $p_1 = \frac{p_2}{R_p}$

**MD12M pressure vs. flow at max. and min. setting**

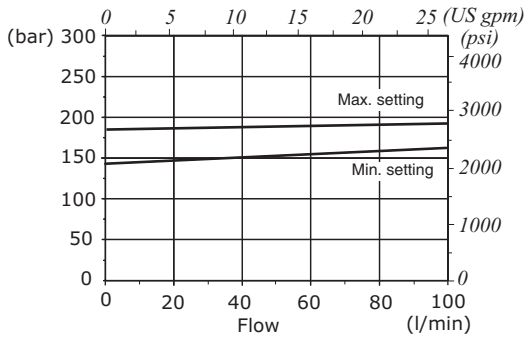


**Pressure range 11**  
125 ÷ 155 bar  
(1810 ÷ 2250 psi)  
Pressure ratio 1.7  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve at max. and min. setting**

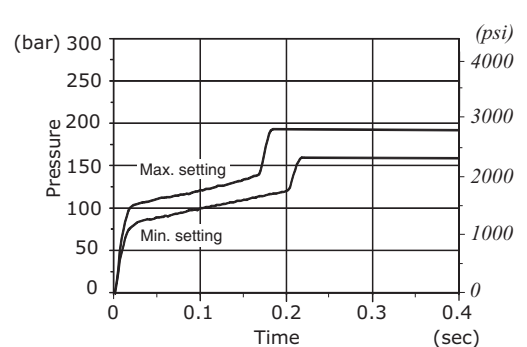


**MD12M pressure vs. flow at max. and min. setting**

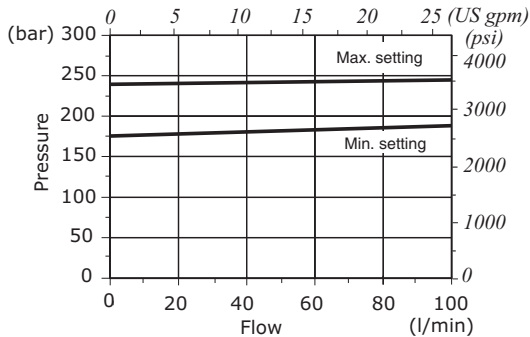


**Pressure range 12**  
160 ÷ 190 bar  
(2320 ÷ 2760 psi)  
Pressure ratio 1.9  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve at max. and min. setting**

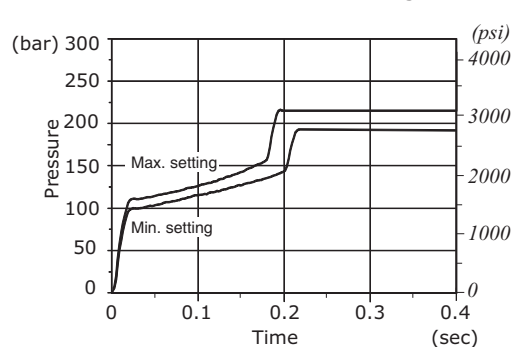


**MD12M pressure vs. flow at max. and min. setting**



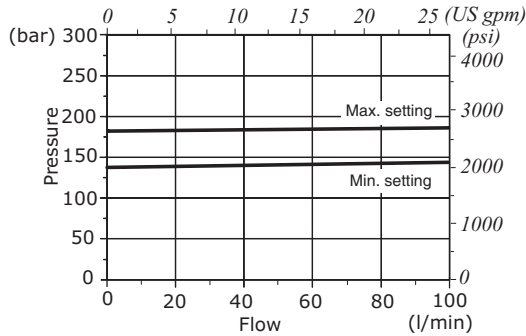
**Pressure range 13**  
180 ÷ 220 bar  
(2610 ÷ 3190 psi)  
Setting 220 bar (3190 psi) at 60 l/min  
(16 US gpm)  
Pressure ratio 2.2  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve at max. and min. setting**



Rating diagrams

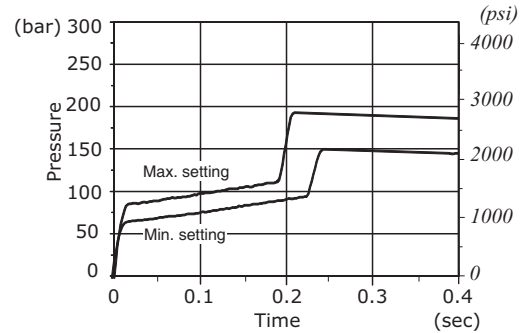
**MD12M pressure vs. flow**  
at max. and min. setting



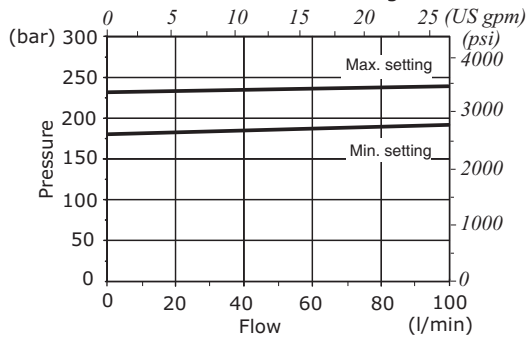
**Pressure range 21**

150 ÷ 185 bar  
(1900 ÷ 2685 psi)  
Pressure ratio 2  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve**  
at max. and min. setting



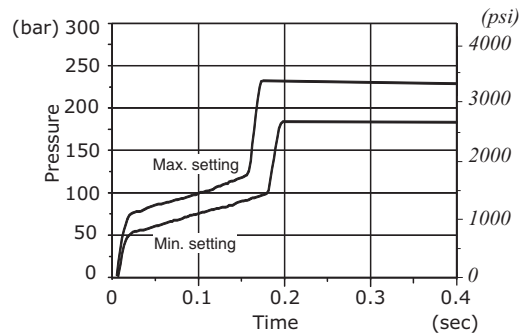
**MD12M pressure vs. flow**  
at max. and min. setting



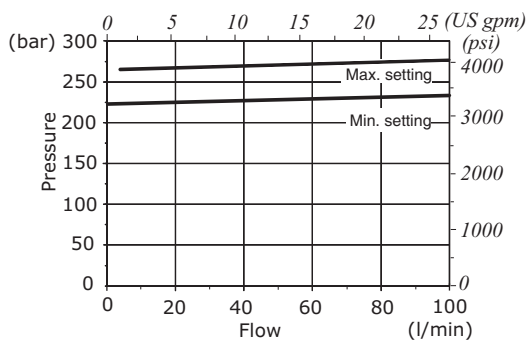
**Pressure range 22**

190 ÷ 235 bar  
(2760 ÷ 3400 psi)  
Pressure ratio 2.35  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve**  
at max. and min. setting



**MD12M pressure vs. flow**  
at max. and min. setting



**Pressure range 23**

230 ÷ 275 bar  
(3335 ÷ 3990 psi)  
Pressure ratio 2.55  
Q=100 l/min  
(26.4 US gpm)

**MD12M performance curve**  
at max. and min. setting

