



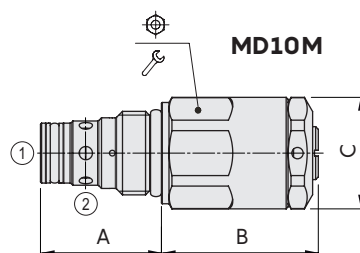
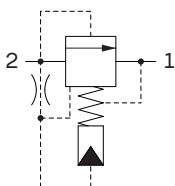
MD..M type shockless pressure relief valves – 2 way

- Direct acting
- Poppet type
- Damp valve
- Different reaction time available
- 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)	120 l/min (31.7 US gpm)
Max. pressure		350 bar (5100 psi)	
Oil leakage	at 80% of max. pressure setting	5 cm ³ /min (0.30 in ³ /min)	5 cm ³ /min (0.30 in ³ /min)
Fluid		mineral based or synthetic hydraulic fluid with lubricating properties	
Viscosity		10–200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C (-13°F) to 90°C (194°F) from -20°C (-4°F) to 110°C (230°F)	
Environmental temp. for working conditions		from -20°C (-4°F) to 60°C (140°F)	
Cavity		SAE 10/2	SAE 12/2
Weight		0.200 kg (0.44 lb)	0.355 kg (0.78 lb)

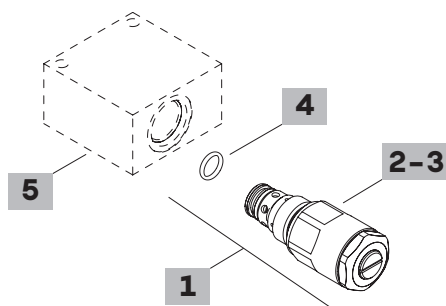
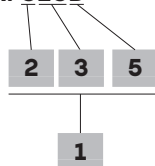
NOTE – For different conditions, please contact Walvoil Sales Dpt.



Valve type	A		B		C				
	mm	in	mm	in	mm	in		Nm	lbft
MD10M	32	1.25	41.5	1.63	Ø29.5	Ø1.16	27	50	37
MD12M	46	1.81	46.5	1.83	Ø35	Ø1.38	32	85	62.7

Ordering codes and description composition

MD10M/313B

**1 Cartridges**

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

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
SAE cavity 10/2	
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
SAE cavity 12/2	
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

4 Seals

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

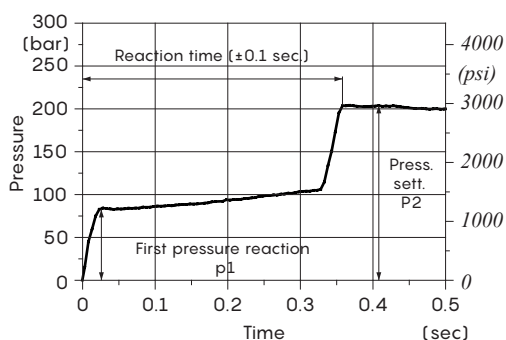
5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-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 208

Rating diagrams

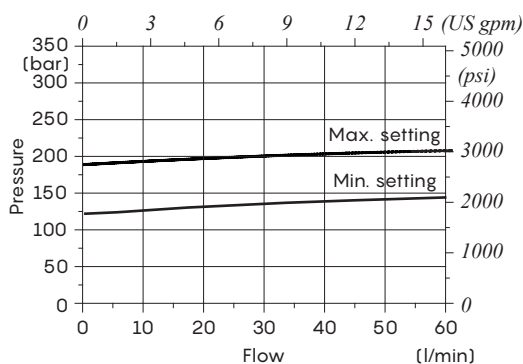
**MD10M performance curve example
with typical dimensions**



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

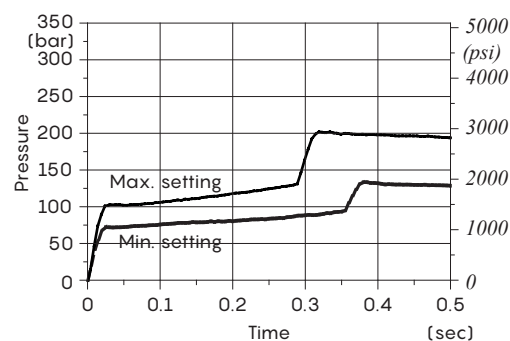
First pressure reaction: $p_1 = \frac{p_2}{R_p}$

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

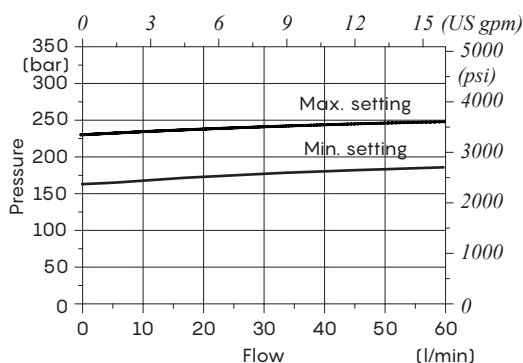


Pressure range 11
130÷200 bar
(1900÷2900 psi)
Pressure ratio 1.9
Q=60 l/min
(15.8 US gpm)

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

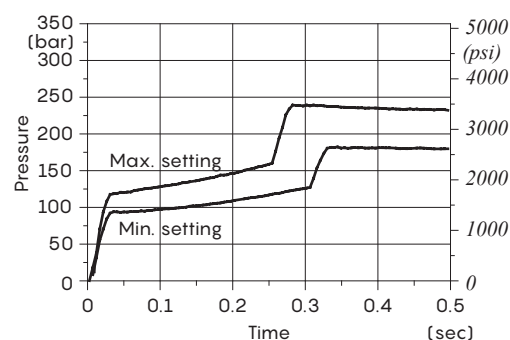


**MD10M pressure vs. flow
at max. and min. setting**

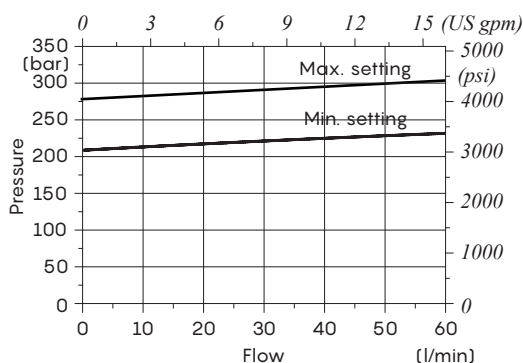


Pressure range 12
180÷240 bar
(2610÷3480 psi)
Pressure ratio 2.2
Q=60 l/min
(15.8 US gpm)

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

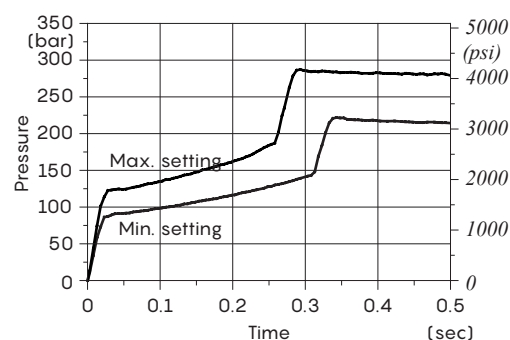


**MD10M pressure vs. flow
at max. and min. setting**



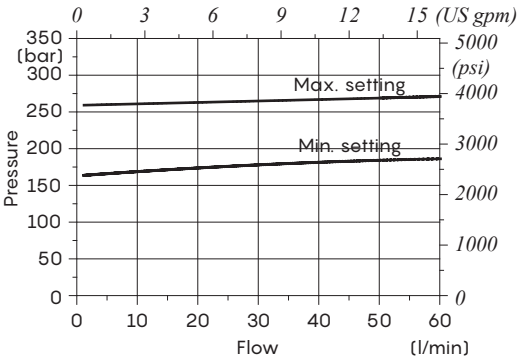
Pressure range 13
220÷290 bar
(3190÷4200 psi)
Setting 250 bar (3625 psi) at 25 l/min
(6.6 US gpm)
Pressure ratio 2.4
Q=60 l/min
(15.8 US gpm)

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



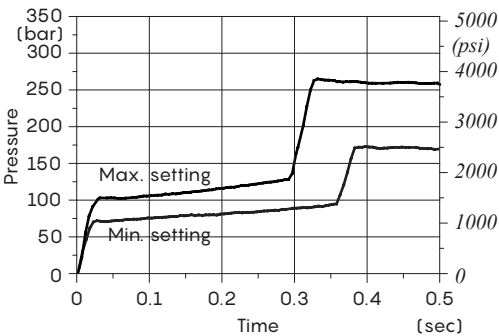
Rating diagrams

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

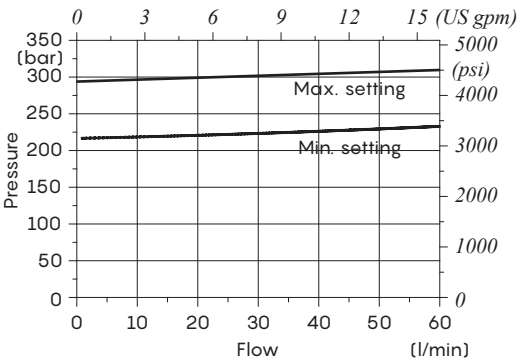


Pressure range
21
170÷270 bar
(2465÷3915 psi)
Pressure ratio 2.5
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

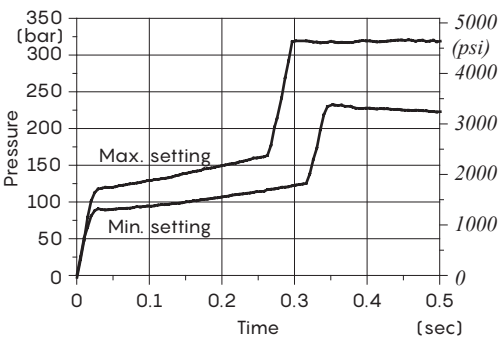


MD10M pressure vs. flow
at max. and min. setting



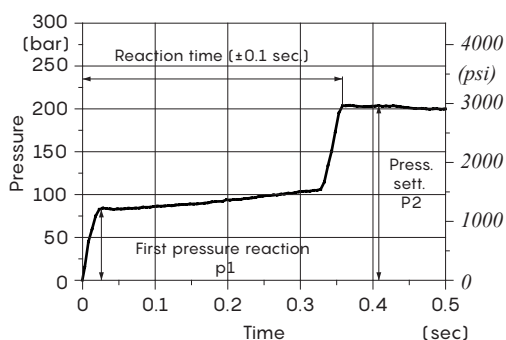
Pressure range
22
220÷290 bar
(3190÷4200)
Pressure ratio 2.8
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting



Rating diagrams

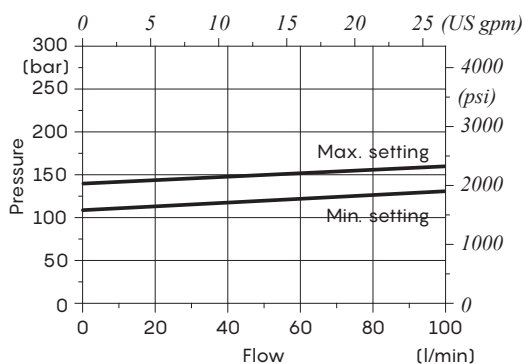
**MD12M performance curve example
with typical dimensions**



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

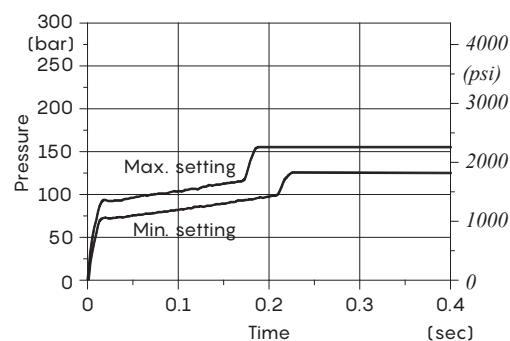
First pressure reaction: $p_1 = \frac{p_2}{R_p}$

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

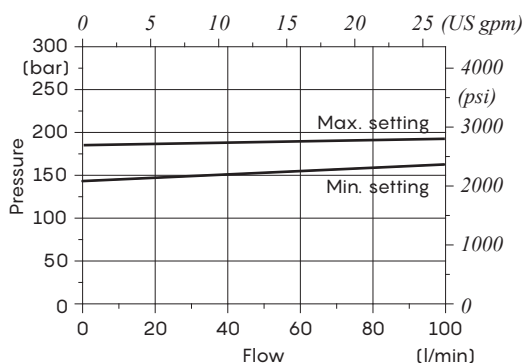


Pressure range 11
125-155 bar
(1810-2250 psi)
Pressure ratio 1.7
Q=100 l/min
(26.4 US gpm)

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

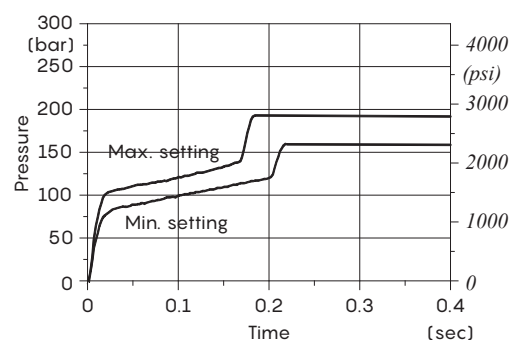


**MD12M pressure vs. flow
at max. and min. setting**

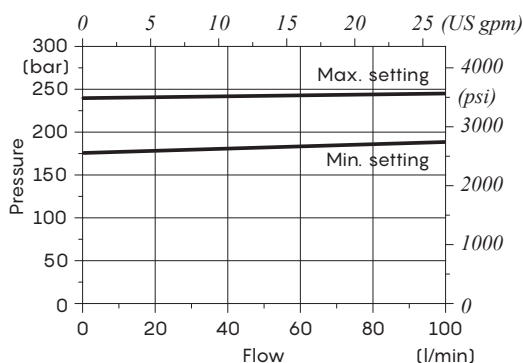


Pressure range 12
160-190 bar
(2320-2760 psi)
Pressure ratio 1.9
Q=100 l/min
(26.4 US gpm)

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

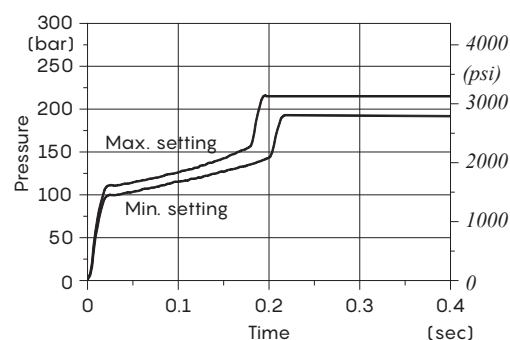


**MD12M pressure vs. flow
at max. and min. setting**



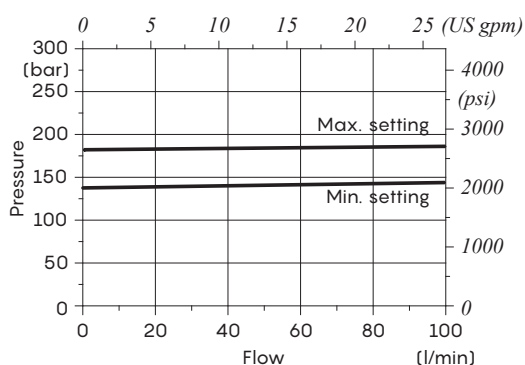
Pressure range 13
180-220 bar
(2610-3190 psi)
Setting 220 bar (3190 psi) at 60 l/min
(16 US gpm)
Pressure ratio 2.2
Q=100 l/min
(26.4 US gpm)

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



Rating diagrams

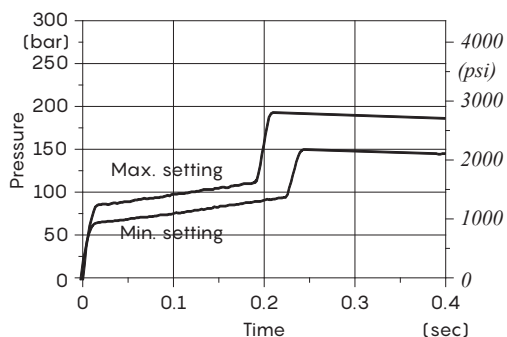
MD12M pressure vs. flow
at max. and min. setting



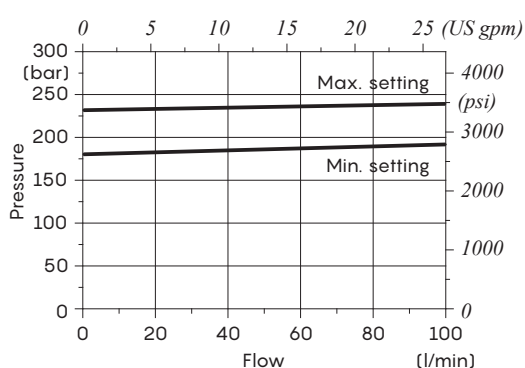
Pressure range 21

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



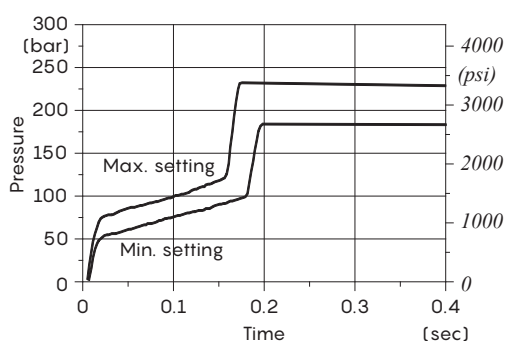
MD12M pressure vs. flow
at max. and min. setting



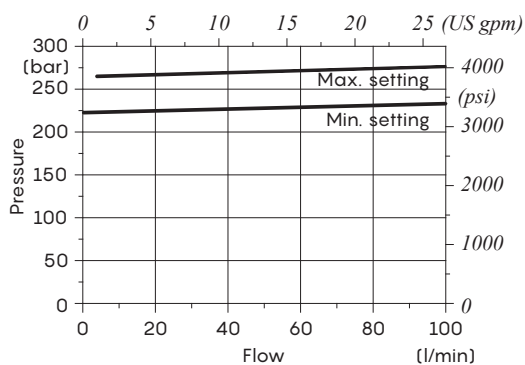
Pressure range 22

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

