CATALOGUE

SAE cavity cartridges

walvoil

FLUID POWER E|MOTION

Additional information
This catalogue shows the product in the most standard configurations.
Please contact our Sales Dpt. for more detailed information or special requests.

WARNING!
All specifications of this catalogue refer to the standard product at this date.
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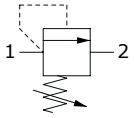
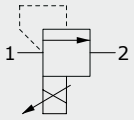
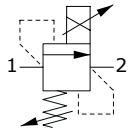
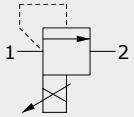
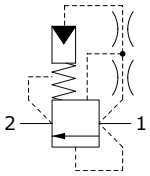
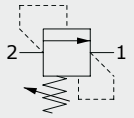
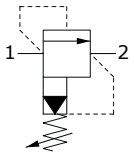
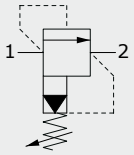
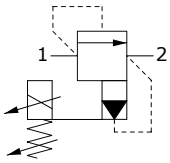
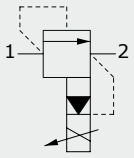
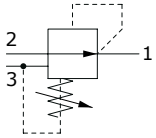
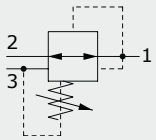
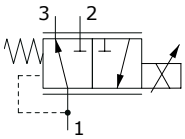
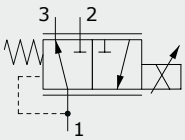
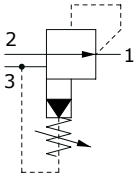
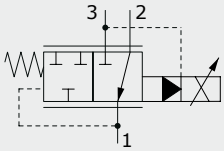
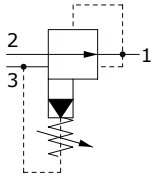
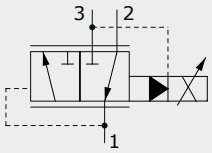
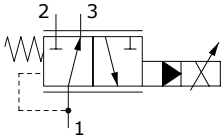
6th edition September 2015

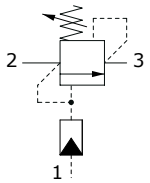
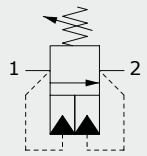
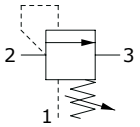
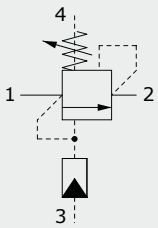
Pressure relief valve

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 ways									
	**MC..A**	poppet	direct	mechanic	100	*26*	350	*5100*	11
	MC10M	poppet	direct	mechanic	70	*18.5*	350	*5100*	15
	MC..R	poppet	direct	mechanic	50	*13.2*	350	*5100*	17
	**MC08Y**	poppet	direct	solenoid proportional	1	*0.3*	350	*5100*	19
	**MC10T** **MC10T HF type**	poppet	direct	solenoid proportional	3	*0.8*	350	*5100*	21
	**MC10X** **MC10X HF type**	poppet	direct	solenoid proportional	3.5	*0.9*	350	*5100*	25
	**MD..M**	poppet	direct	mechanic	100	*26.4*	350	*5100*	29
	**MG..A**	poppet	direct	mechanic	100	*26.4*	350	*5100*	35
	**MP..A**	spool	pilot	mechanic	100	*26.4*	350	*5100*	37
	**MP16M**	spool	pilot	mechanic	400	*105.67*	350	*5100*	41
	**MP..T**	spool	pilot	solenoid proportional	120	*31.7*	350	*5100*	43
	**MP..X**	spool	pilot	solenoid proportional	120	*31.7*	350	*5100*	47
	MP16Y	spool	pilot	solenoid proportional	150	*40*	350	*5100*	51

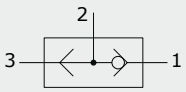
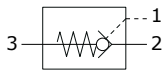
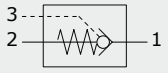
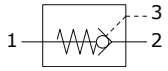
Pressure reducing valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
3 ways									
	**RB..A**	spool	direct	mechanic	30	*1.2*	line 1 = 150 line 2 = 350	*line 1 = 2200* *line 2 = 5100*	53
	**RD..A**	spool	direct	mechanic	30	*1.2*	line 1 = 150 line 2 = 350	*line 1 = 2200* *line 2 = 5100*	55
	**RD08W**	spool	direct	solenoid proportional	4	*1.05*	350	*5100*	57
	**RD08S** **RD08T**	spool	direct	solenoid proportional	12	*3.17*	210	*3050*	59
	**RM..A**	spool	pilot	mechanic	150	*40*	line 1 = 350 line 2 = 350	*line 1 = 5100* *line 2 = 5100*	63
	**RM..W**	spool	pilot	solenoid proportional	150	*40*	350	*5100*	67
	**RP..A**	spool	pilot	mechanic	150	*40*	line 1 = 210 line 2 = 350	*line 1 = 3050* *line 2 = 5100*	71
	**RP..W**	spool	pilot	solenoid proportional	150	*40*	350	*5100*	75
	**RP08X**	spool	pilot	solenoid proportional	15	*4*	350	*5100*	79

Sequence valve

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
3 ways									
	**SE..A**	spool	direct	mechanic	20	*5.3*	210	*3050*	81
2 ways									
	**SW..A**	spool	pilot	mechanic	180	*48*	350	*5100*	83
	**SP10A**	spool	pilot	mechanic	50	*13*	350	*5100*	85
4 ways									
	**SG12A**	poppet	direct	mechanic	50	*13*	300	*4350*	87

Pilot operated and check valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 ways									
	**UC..A**	poppet	dicrect	mechanic	100	*26*	350	*5100*	89
3 ways									
	**UT..A**	ball	/	mechanic	20	*5.3*	350	*5100*	91
	**BC..A**	poppet	dicrect	mechanic	100	*26*	350	*5100*	93
	**BC..B**	poppet	dicrect	mechanic	100	*26*	350	*5100*	93
	**BC..C**	poppet	dicrect	mechanic	60	*16*	350	*5100*	93

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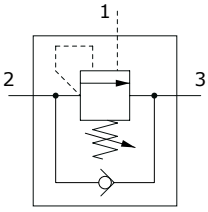
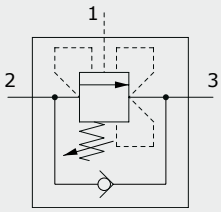
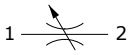
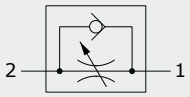
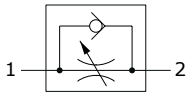
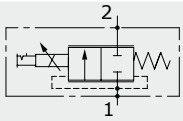
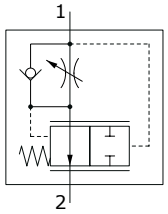
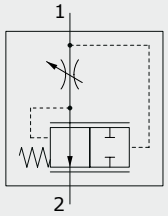
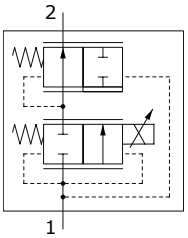
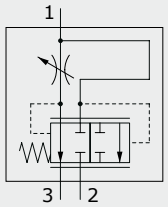
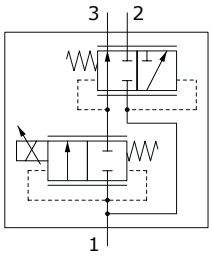
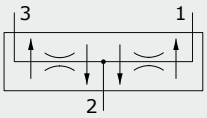
Counterbalance valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
3 ways									
	**CA..A**	poppet	/	mechanic	90	*23.8*	350	*5100*	97
	**CC..A**	poppet	/	mechanic	150	*40*	350	*5100*	101

Needle valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
3 ways									
	**NB..A**	poppet	/	mechanic	100	*26*	350	*5100*	105
	**NU..A**	poppet	/	mechanic	100	*26*	350	*5100*	107
	**NT..A**	poppet	/	mechanic	100	*26*	350	*5100*	109
	**EE10X**	spool	direct	solenoid proportional	40	*10.5*	300	*4350*	111

Flow regulator pressure compensated valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 ways									
	**PW..A**	spool	direct	mechanic	90	*24*	315	*4600*	113
	**PU..A**	spool	direct	mechanic	90	*24*	315	*4600*	117
	**PU..X**	spool	direct	solenoid proportional	90	*24*	315	*4600*	121
3 ways									
	**PP..A**	spool	direct	mechanic	90	*24*	350	*5100*	125
	**PP..X**	spool	direct	solenoid proportional	90	*24*	350	*5100*	129
	**PD**	spool	direct	mechanic	150	*40*	210	*3045*	133

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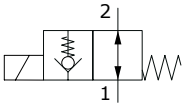
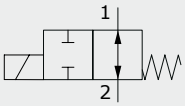
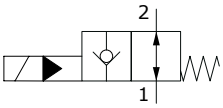
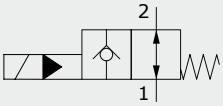
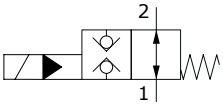
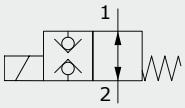
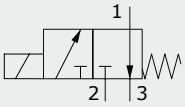
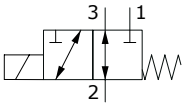
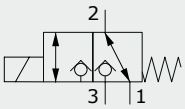
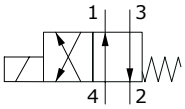
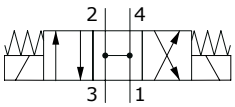
Directional solenoid valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 ways / 2 positions									
	**EA08**(1)	poppet	direct	solenoid	1	*0.6*	350	*5100*	135
	**EE..A**(1)	spool	direct	solenoid	40	*10.5*	210	*3050*	137
	**EC..M**(1)	poppet	pilot	solenoid	150	*40*	380	*5500*	141
	**EF..M**(1)	poppet	pilot	solenoid	150	*40*	380	*5500*	145
	**EH..M**(1)	poppet	pilot	solenoid	150	*40*	380	*5500*	149
	**EW...**	poppet	direct	solenoid	50	*13.2*	210	*3050*	153
	EW..M	poppet	direct	solenoid	40	*10.5*	350	*5100*	157
3 ways / 2 positions									
	**EJ08F**	spool	direct	solenoid	12	*3.2*	50	*725*	161
	EJ08G	spool	direct	solenoid	3	*0.8*	350	*5100*	163
	**EJ..M**(2)	spool	direct	solenoid	40	*10.5*	250	*3600*	165
	EJ12A(2)	spool	direct	solenoid	40	*10.5*	210	*3050*	171
	**EL...**	poppet	direct	solenoid	20	*5.3*	210	*3050*	175
4 ways / 2 positions									
	**ER..M**(2)	spool	direct	solenoid	60	*15.8*	250	*3600*	177
4 ways / 3 positions									
	**ET..M**(2)	spool	direct	solenoid	40	*10.5*	210	*3050*	183
	ET12A(2)	spool	direct	solenoid	40	*10.5*	210	*3050*	187

Note (1) the circuit shown are in normally open configuration; normally closed configuration is also available, see valves pages.
Note (2) the circuit shown are one type of available spools; for several types of spools see valves pages.

Accessories

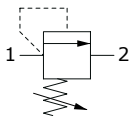
MC..A type
pressure relief valves - 2 ways

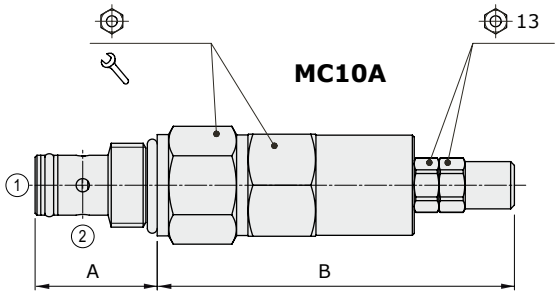
- Direct acting
- Poppet type
- From SAE08 to SAE12 cavities

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.



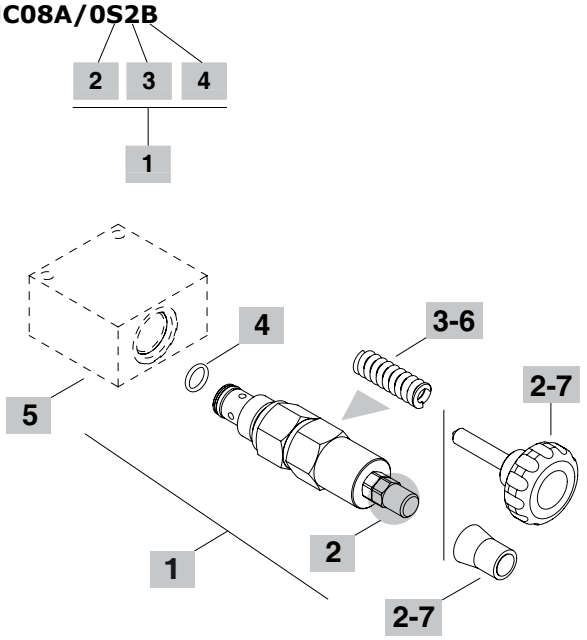


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
MC08A/0S	28	*1.10*	53.5	*2.11*	24	30	*22*
MC10A/0S	32.3	*1.27*	94.5	*3.72*	27	50	*37*
MC12A/0S	46	*1.81*	126.5	*4.98*	32	70	*52*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

MC08A/0S2B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
MC08A/0S2B	0MC08002000	Cartridge
SAE cavity 10/2		
MC10A/0S2B	0MC10002000	Cartridge
SAE cavity 12/2		
MC12A/0S2B	0MC12002001	Cartridge

2 Adjustments

TYPE	DESCRIPTION
S	With screw
V	With handwheel (part code: see point **7**)
X	Valve set with antitampering cap (part code: see point **7**)

3 Pressure range

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

TYPE DESCRIPTION

SAE cavity 8/2

1 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

2 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

3 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

1 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

2 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

3 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

1 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

2 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

3 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
B	**NBR (Buna)** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept.

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE 10/2-G 3/8	3CC1030C11	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

6 Springs

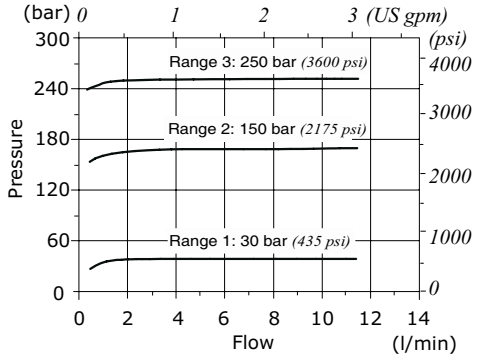
TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
1	3ML1092500	Pressure range **1**
2	3ML1092501	Pressure range **2**
3	3ML1092502	Pressure range **3**
SAE cavity 10/2		
1	3ML1144601	Pressure range **1**
2	3ML1144602	Pressure range **2**
3	3ML1144603	Pressure range **3**
SAE cavity 12/2		
1	3ML1166804	Pressure range **1**
2	3ML1146800	Pressure range **2**
3	3ML1166805	Pressure range **3**

7 Accessories

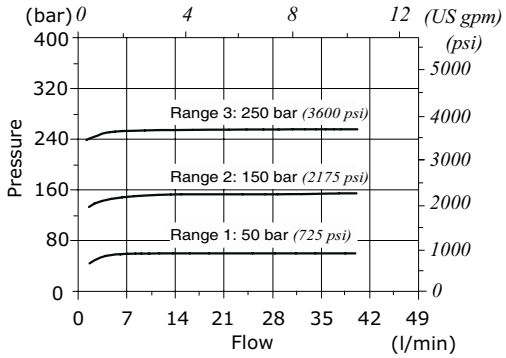
TYPE	CODE	DESCRIPTION
-	4VL2407100	Handwheel
-	4COP120420	Antitampering cap

Rating diagrams

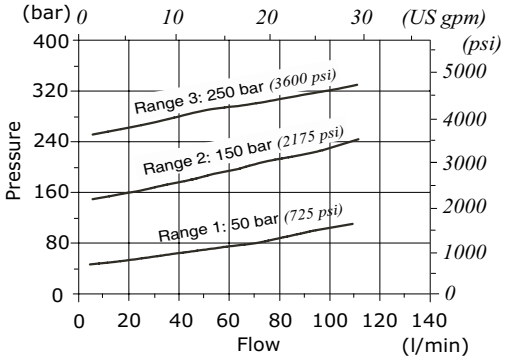
MC08A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



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)*



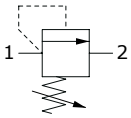
MC10M type
pressure relief valve - 2 ways

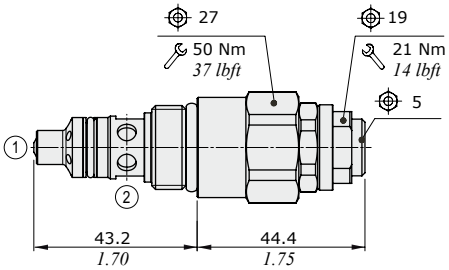
- Direct acting
- Poppet type

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

		MC10M
Nominal flow		70 l/min *(18.5 US gpm)*
Max. pressure		260 bar *(3770 psi)*
Oil leakage	80% of max. pressure setting	4 cm^3/min *(0.24 in^3/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 A
Weight		0.18 kg *(0.396 lb)*

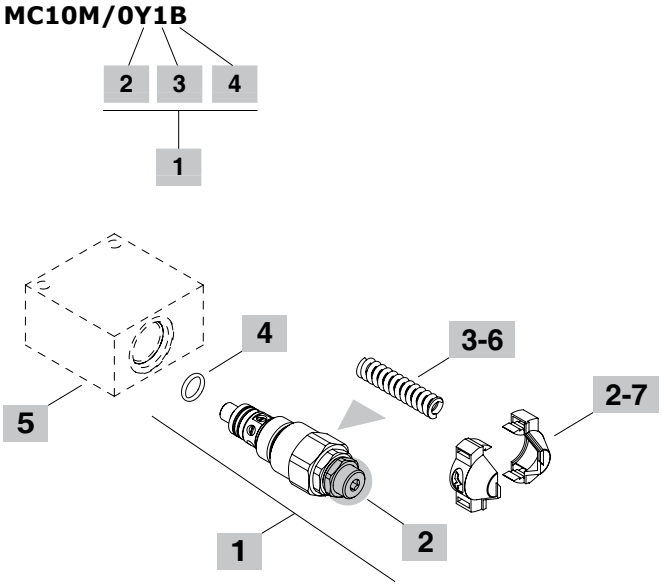
NOTE - For different conditions, please contact Walvoil Sales Dpt.





Ordering codes and description composition

MC10M/0Y1B



1 Cartridges

TYPE	CODE	DESCRIPTION
MC10M/0Y1B	0MC10002026	Pressure range **1**
MC10M/0Y2B	0MC10002027	Pressure range **2**
MC10M/0Y3B	0MC10002028	Pressure range **3**
MC10M/0Y4B	0MC10002029	Pressure range **4**

2 Adjustments

TYPE	DESCRIPTION
Y	With screw
X	Valve set with antitampering cap (part code: see point **7**)

3 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 10÷60 bar *(145÷870 psi);* Std. setting 50 bar *(725 psi)*
2	Pressure range 40÷110 bar *(580÷1595 psi);* Std. setting 80 bar *(1160 psi)*
3	Pressure range 110÷220 bar *(1595÷3190 psi);* Std. setting 175 bar *(2540 psi)*
4	Pressure range 200÷260 bar *(2900÷3770 psi);* Std. setting 220 bar *(3190 psi)*

4 Seals

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

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 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

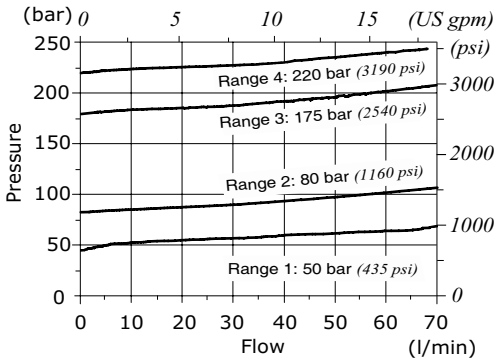
TYPE	CODE	DESCRIPTION
1	3ML1114500	Pressure range **1**
2	3ML1114502	Pressure range **2**
3	3ML1114501	Pressure range **3**
4	3ML1114503	Pressure range **4**

7 Accessories

TYPE	CODE	DESCRIPTION
-	4COP126301	Antitampering cap (x2)

Rating diagrams

MC10M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



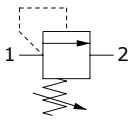
MC..R type
pressure relief valves - 2 ways

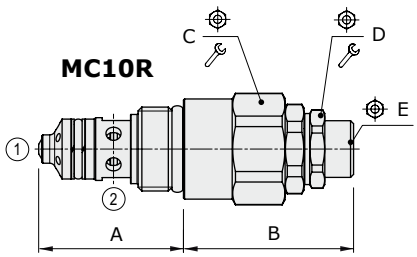
- Direct acting
- Poppet type
- From SAE08 to SAE10 cavities

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

		MC08R	MC09R	MC10R
Nominal flow		25 l/min *(6.6 US gpm)*	35 l/min *(9.2 US gpm)*	50 l/min *(13.2 US gpm)*
Max. pressure			350 bar *(5100 psi)*	
Oil leakage	80% of max. pressure setting		2 cm³/min *(0.122 in³/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 8/2 A	SAE 9/2 A	SAE 10/2 A
Weight		0.170 kg *(0.37 lb)*	0.230 kg *(0.51 lb)*	0.315 kg *(0.69 lb)*

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

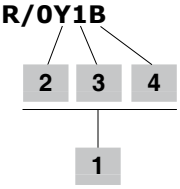


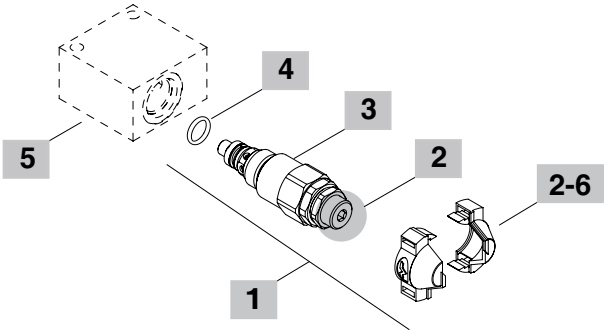


Valve type	A		B		C	D	E	C		D	
	mm	*in*	mm	*in*				Nm	*lbft*	Nm	*lbft*
MC08R	34	*1.34*	46.6	*1.83*	24	19	5	30	*22*	25	*18*
MC09R	33.8	*1.33*	46,6	*1.83*	24	19	5	42	*31*	25	*18*
MC10R	38.3	*1.50*	44.4	*1.75*	27	19	5	50	*37*	25	*18*

Ordering codes and description composition

MC08R/0Y1B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2 A		
MC08R/0Y1B	0MC08002050	Pressure range **1**
MC08R/0Y2B	0MC08002051	Pressure range **2**
MC08R/0Y3B	0MC08002052	Pressure range **3**
SAE cavity 09/2 A		
MC09R/0Y1B	0MC09002000	Pressure range **1**
MC09R/0Y2B	0MC09002001	Pressure range **2**
MC09R/0Y3B	0MC09002002	Pressure range **3**
SAE cavity 10/2 A		
MC10R/0Y1B	0MC10002023	Pressure range **1**
MC10R/0Y2B	0MC10002024	Pressure range **2**
MC10R/0Y3B	0MC10002025	Pressure range **3**

2 Adjustments

TYPE	DESCRIPTION
Y	With screw
X	Valve set with antitampering cap (part code: see point **6**)

3 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 10÷120 bar *(145÷1740 psi);* Std. setting 80 bar *(1160 psi)*
2	Pressure range 40÷200 bar *(580÷2900 psi);* Std. setting 175 bar *(2540 psi)*
3	Pressure range 200÷350 bar *(2900÷5100 psi);* Std. setting 250 bar *(3600 psi)*

4 Seals

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

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE 09/2-G 3/8	3CC0920C11	Aluminium body for cavity 09 valve, G 3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread

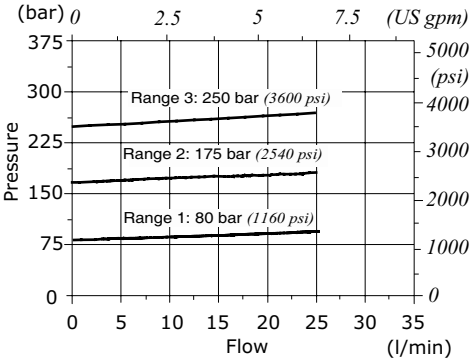
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

6 Accessories

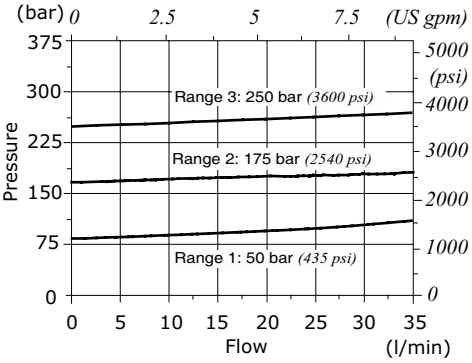
TYPE	CODE	DESCRIPTION
-	4COP126301	Antitampering cap (X2)

Rating diagrams

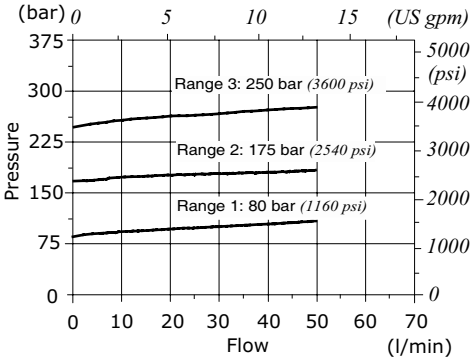
MC08R pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



MC09R pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



MC10R pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



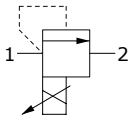
MC08Y type
pressure relief valve - 2 ways

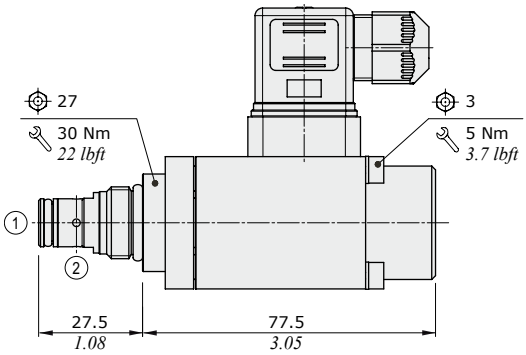
- Solenoid proportional type, direct acting
- Increasing pressure with increasing current (NO)
- Poppet type

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

		MC08Y
Nominal flow		0.5 l/min *(0.15 US gpm)*
Max. flow		1 l/min *(0.3 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage	80% of max. pressure setting	2 cm^3/min *(0.122 in^3/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 8/2
Coil type*		MP35
Nominal voltages		12 VDC - 24V DC
Power rating		11.2 W (12 VDC) - 11.4 W (24 VDC)
Max control current		12 V -> 1.1 A - 24 V -> 0.68 A
Dither frequency		150 Hz
Hysteresis		≤5%
Weight		0.55 kg *(1.212 lb)*

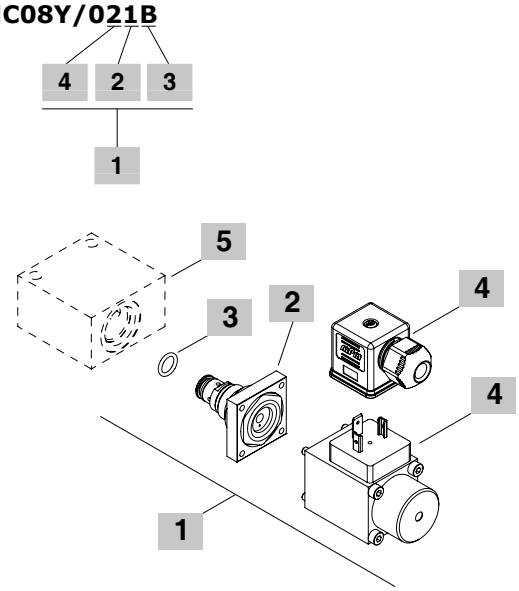
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.





Ordering codes and description composition

MC08Y/021B



1 Cartridges

TYPE	CODE	DESCRIPTION
MC08Y/021B	0MC08002013	Pressure range **1**, 12VDC
MC08Y/022B	0MC08002010	Pressure range **2**, 12VDC
MC08Y/023B	0MC08002011	Pressure range **3**, 12VDC
MC08Y/024B	0MC08002022	Pressure range **4**, 12VDC

2 Pressure range

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

3 Seals

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

4 Coils and connectors

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

For complete coils and connectors list see from page 190

5 Valve body

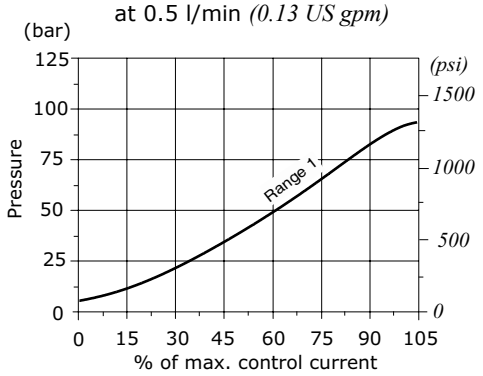
TYPE	CODE	DESCRIPTION
SAE 08/2-G 1/4	3CC0820B11	Aluminium body for cavity 08 valve, G 1/4 std thread

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

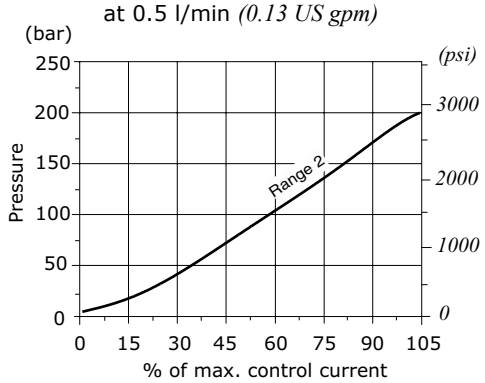
For steel bodies or different threading see from page 199

Rating diagrams

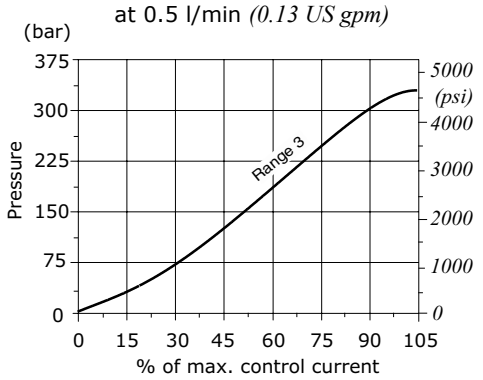
Pressure setting vs. % max. control current
at 0.5 l/min *(0.13 US gpm)*



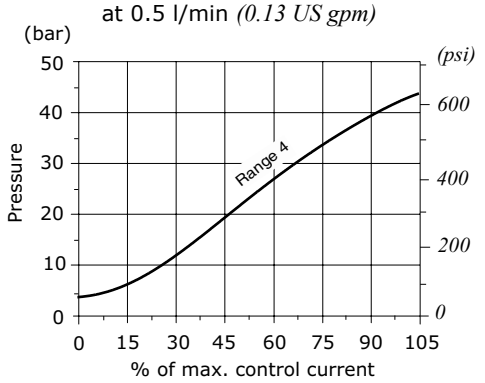
Pressure setting vs. % max. control current
at 0.5 l/min *(0.13 US gpm)*



Pressure setting vs. % max. control current
at 0.5 l/min *(0.13 US gpm)*



Pressure setting vs. % max. control current
at 0.5 l/min *(0.13 US gpm)*



MC10T - MC10T-HF type
pressure relief valve - 2 ways

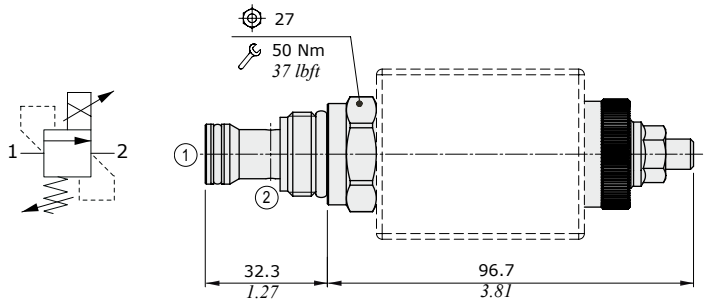
- Solenoid proportional type, direct acting
- Decreasing pressure with increasing current (NC)
- Poppet type

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

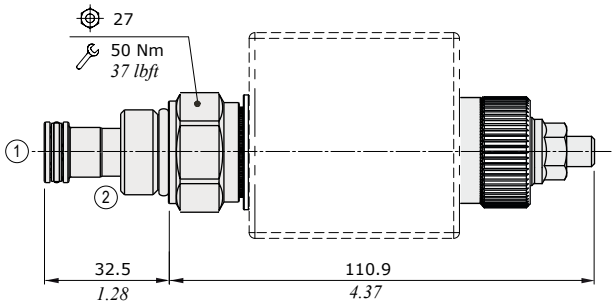
		MC10T	MC10T-HF
Max. flow		3 l/min *(0.79 US gpm)*	10 l/min *(2.64 US gpm)*
Max. pressure		350 bar *(5100 psi)*	250 bar *(3600 psi)*
Oil leakage	80% of max. pressure setting	0.25 cm³/min *(0.015 in³/min)*	0.50 cm³/min *(0.030 in³/min)*
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		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	
Coil type*		BH or BQP19	BQP19
Nominal voltages		12 VDC - 24VDC	
Power rating		20.4 W (BH) - 15 W (BQP19)	15 W
Max control current		1 2V -> 1.70 A - 24 V -> 0.85 A (BH) 12 V-> 1.25 A - 24 V -> 0.63 A (BQP19)	12 V -> 1.25 A - 24 V -> 0.63 A
Dither frequency		150 Hz	
Hysteresis		<5%	
Weight		0.54 kg *(1.19 lb)*	0.87 kg *(1.91 lb)*

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

MC10T

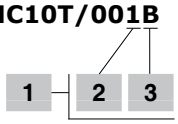


MC10T-HF

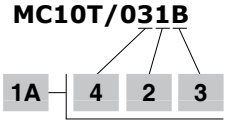


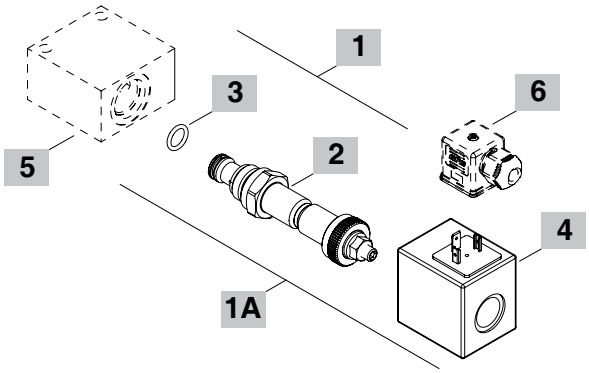
Ordering codes and description composition

MC10T/001B



MC10T/031B





1 Cartridges

TYPE	CODE	DESCRIPTION
MC10T/001B	0MC10002047	Pressure range **1**
MC10T/002B	0MC10002048	Pressure range **2**
MC10T/003B	0MC10002049	Pressure range **3**
MC10T-HF/003B	0MC10002068	Pressure range **3**

1A Complete cartridges with coil

TYPE	CODE	DESCRIPTION
MC10T/031B	0MC10002019	Pressure range **1**, 12VDC
MC10T/032B	0MC10002020	Pressure range **2**, 12VDC
MC10T/033B	0MC10002021	Pressure range **3**, 12VDC

2 Pressure range

TYPE	DESCRIPTION
MC10T	
1	Pressure range 15÷130 bar *(217÷1885 psi)*
2	Pressure range 15÷170 bar *(217÷2465 psi)*
3	Pressure range 15÷210 bar *(217÷3045 psi)*
MC10T-HF	
3	Pressure range 20÷225 bar *(290÷3260 psi)*

Note: for further pressure range contact Sales Dept.

3 Seals

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

4 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

Note: for HF version use only BQP19 coil
For complete coils list see from page 190

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 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

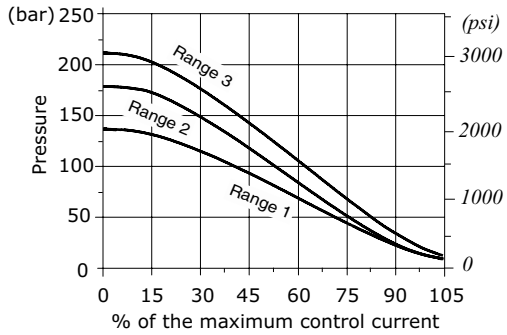
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

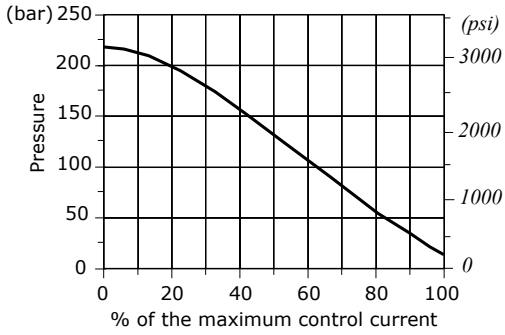
For complete connectors list see from page 190

Rating diagrams

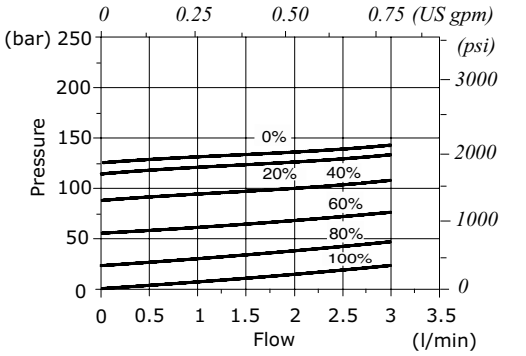
MC10T pressure setting vs. % max. control current
at 1 l/min *(0.26 US gpm)*



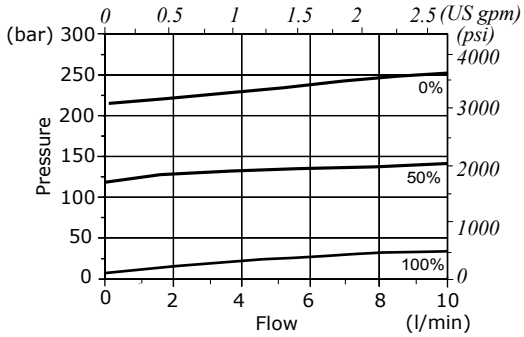
MC10T-HF pressure setting vs. % max. control current
at 2 l/min *(0.53 US gpm)*



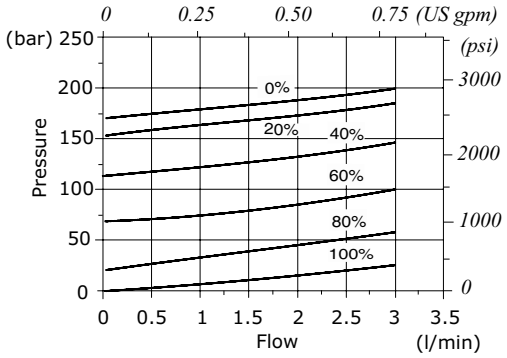
MC10T pressure vs. flow 1->2
for % of control current - Pressure range **1 -**



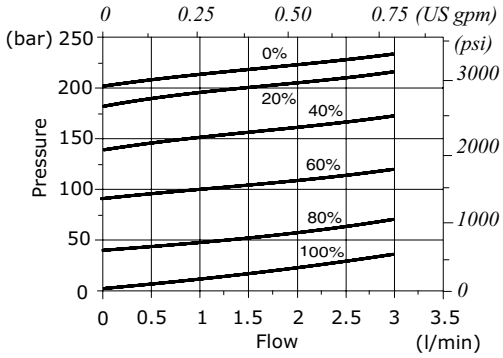
MC10T-HF pressure vs. flow 1->2
for % of control current



MC10T pressure vs. flow 1->2
for % of control current - Pressure range **2 -**



MC10T pressure vs. flow 1->2
for % of control current - Pressure range **3 -**



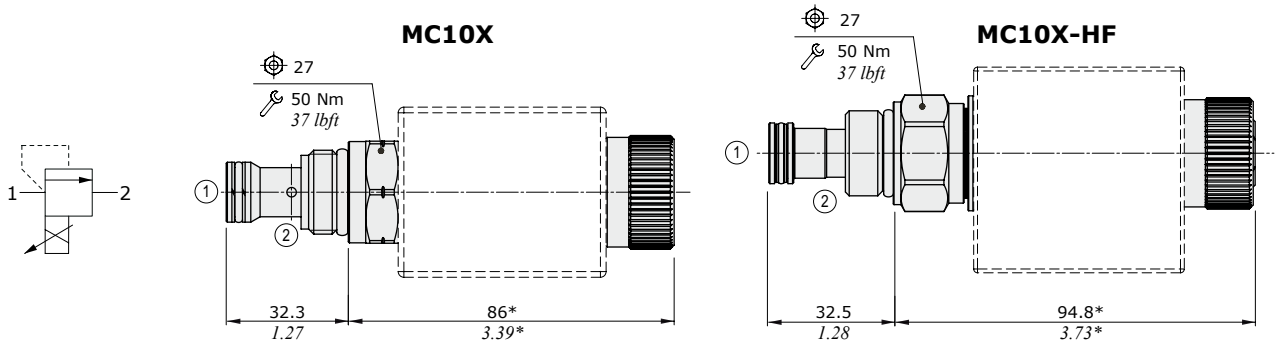
MC10X - MC10X-HF type
pressure relief valve - 2 ways

- Solenoid proportional type, direct acting
- Poppet type

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

		MC10X	MC10X-HF
Max. flow		3 l/min *(0.79 US gpm)*	10 l/min *(2.64 US gpm)*
Max. pressure		350 bar *(5100 psi)*	250 bar *(3600 psi)*
Oil leakage	80% of max. pressure setting	0.25 cm³/min *(0.015 in³/min)*	0.5 cm³/min *(0.030 in³/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	
Coil type*		BH or BQP19	BQP19
Nominal voltages		12 VDC - 24 VDC	
Power rating		20.4 W (BH) - 15 W (BQP19)	15 W
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)	12 V -> 1.25 A - 24 V -> 0.63 A
Dither frequency		150 Hz	
Hysteresis		<5%	
Weight		0.760 kg *(1.67 lb)*	0.863 kg *(1.90 lb)*

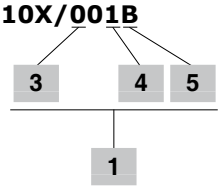
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.



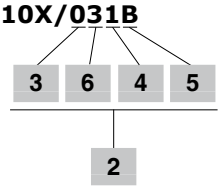
NOTE (*): dimension for configuration without override, for dimensions with different type of emergency see page 197.

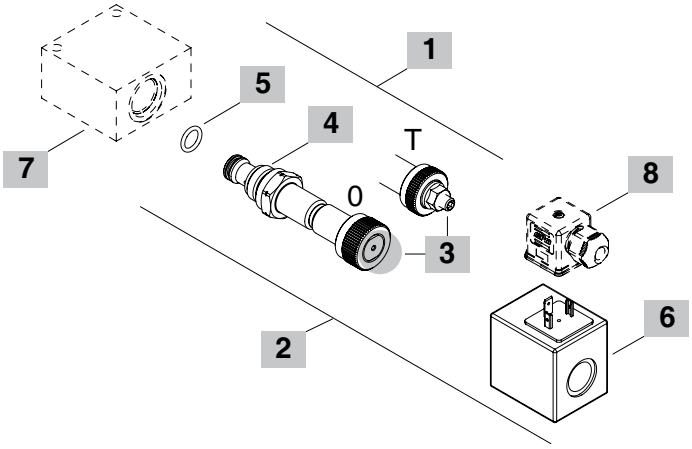
Ordering codes and description composition

MC10X/001B



MC10X/031B





1 Cartridges

TYPE	CODE	DESCRIPTION
MC10X/001B	0MC10002050	Pressure range **1**
MC10X/002B	0MC10002051	Pressure range **2**
MC10X/003B	0MC10002052	Pressure range **3**
MC10X-HF/003B	0MC10002064	Pressure range **3**
MC10X-HF/T03B	0MC10002063	Pressure range **3**

2 Complete cartridges with coil

TYPE	CODE	DESCRIPTION
Note: not for MC10X-HF		
MC10X/031B	0MC10002039	Pressure range **1**, 12VDC
MC10X/032B	0MC10002040	Pressure range **2**, 12VDC
MC10X/033B	0MC10002041	Pressure range **3**, 12VDC

3 Emergency

TYPE	DESCRIPTION
0	Without override
T	With screw

4 Pressure range

TYPE	DESCRIPTION
MC10X	
1	Pressure range 7÷120 bar *(102÷1740 psi)*
2	Pressure range 7÷170 bar *(102÷2450 psi)*
3	Pressure range 7÷210 bar *(102÷3050 psi)*
MC10X-HF	
3	Pressure range 3÷230 bar *(43÷3330 psi)*

Note: for further pressure range contact Sales Dept.

5 Seals

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

6 Coil

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

Note: for HF version use only BQP19 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

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

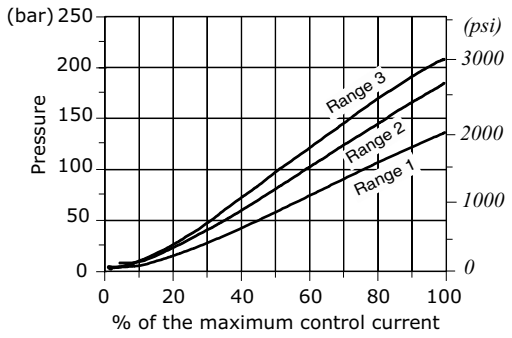
8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

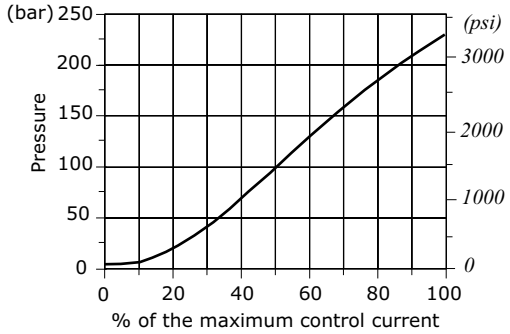
For complete connectors list see from page 190

Rating diagrams

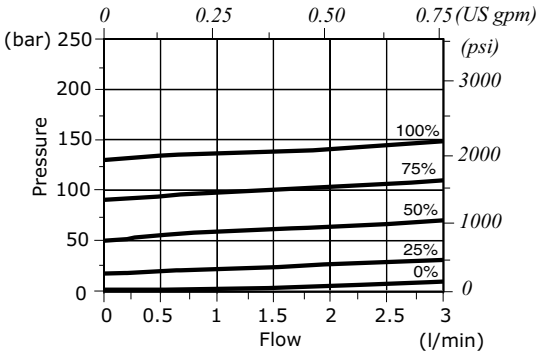
MC10X pressure setting vs. % max. control current
at 1 l/min *(0.26 US gpm)*



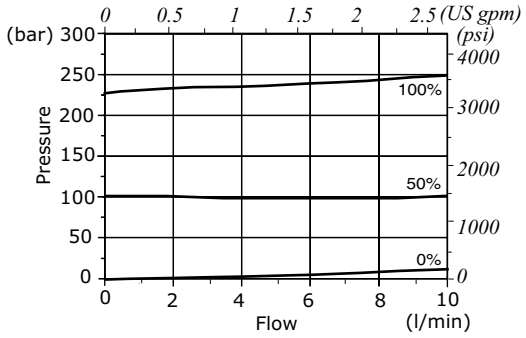
MC10X-HF pressure setting vs. % max. control current
at 2 l/min *(0.53 US gpm)*



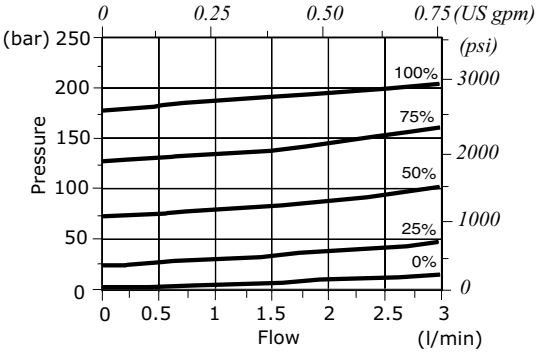
MC10X pressure vs. flow 1->2
for % of control current - Pressure range **1 -**



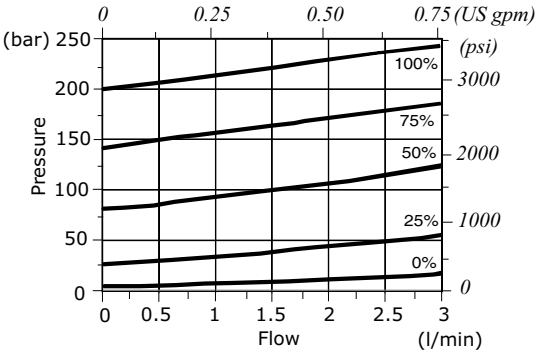
MC10X-HF pressure vs. flow 1->2
for % of control current



MC10X pressure vs. flow 1->2
for % of control current - Pressure range **2 -**



MC10X pressure vs. flow 1->2
for % of control current - Pressure range **3 -**



MD..M type

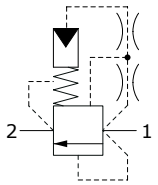
shockless pressure relief valve - 2 ways

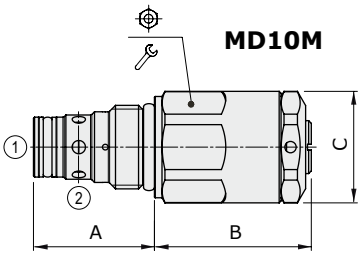
- Direct acting
- Poppet type
- From SAE10 to SAE12 cavities

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 cm³/min *(0.3 in³/min)*	5 cm³/min *(0.3 in³/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		0.200 kg *(0.44 lb)*	0.355 kg *(0.78 lb)*

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

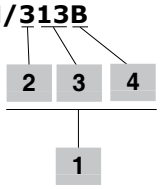


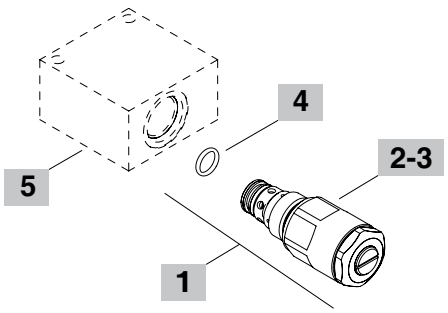


Valve type	A		B		C				
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*
MD10M	32	*1.25*	73.5	*2.89*	ø29.5	*ø1.16*	27	50	*37*
MD12M	46	*1.81*	92.5	*3.64*	ø35	*ø1.38*	32	80	*59*

Ordering codes and description composition

MD10M/313B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MD10M/313B	0MD10002027	Pressure range **13**
SAE cavity 12/2		
MD12M/513B	0MD12002004	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

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

4 Seals

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

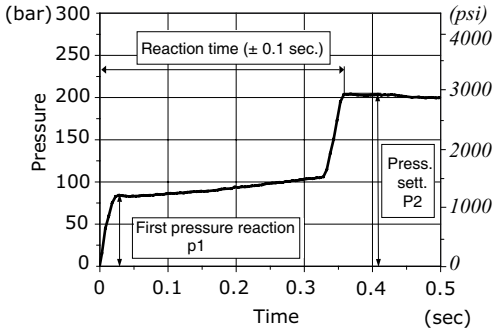
5 Valve body

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

Rating diagrams

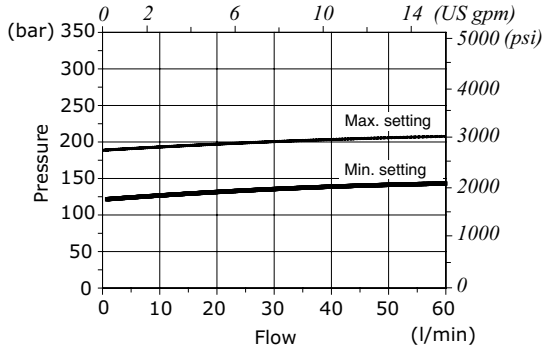
MD10M performance curve example with typical dimensions



Pressure ratio: $Rp = \frac{p2}{p1}$

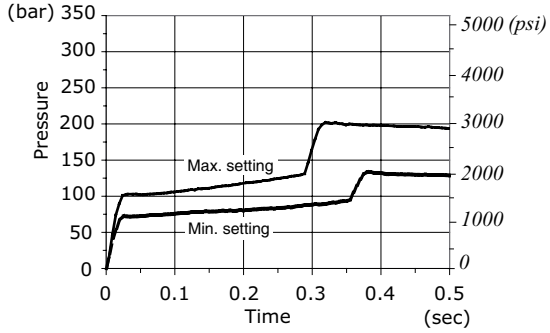
First pressure reaction: $p1 = \frac{p2}{Rp}$

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

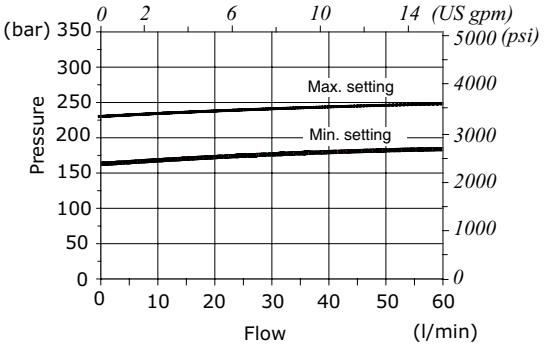


Pressure range 11
130÷200 bar
(1900÷2900 psi)
Pressure ratio 1.9
Q=60l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

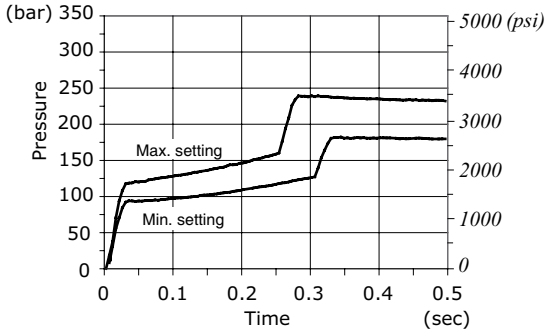


MD10M pressure vs. flow
at max. and min. setting

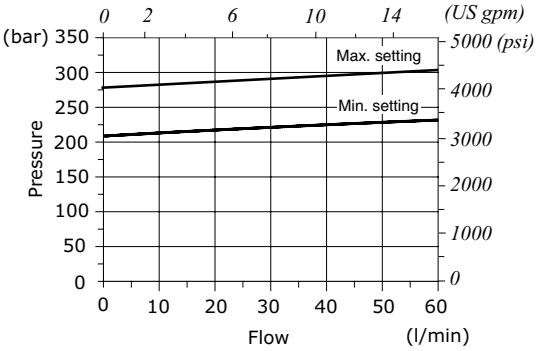


Pressure range 12
180÷240 bar
(2610÷3480 psi)
Pressure ratio 2.2
Q=60l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

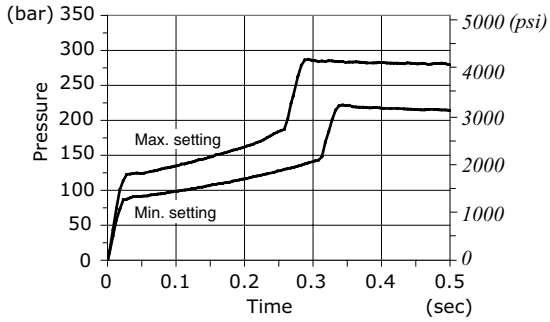


MD10M pressure vs. flow
at max. and min. setting



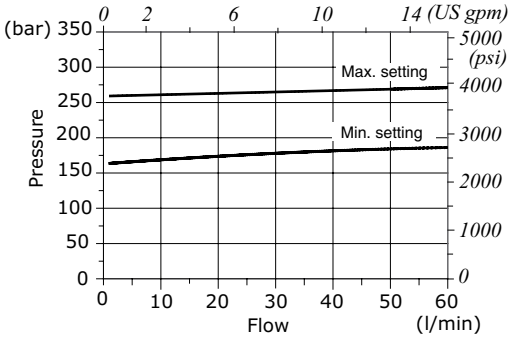
Pressure range 13
220÷290 bar
(3190÷4200 psi)
Setting 250 bar *(3625 psi)* at 25 l/min
(6.6 US gpm)
Pressure ratio 2.4
Q=60l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting



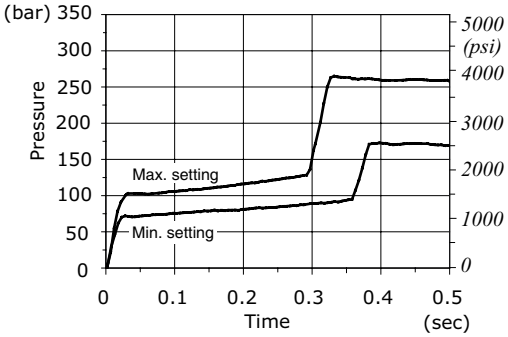
Rating diagrams

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

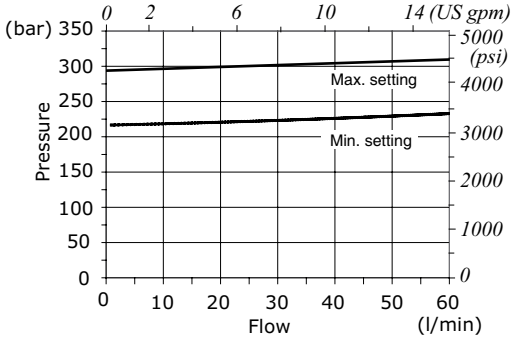


Pressure range 21
170÷270 bar
(2465÷3915 psi)
Pressure ratio 2.5
Q=60l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

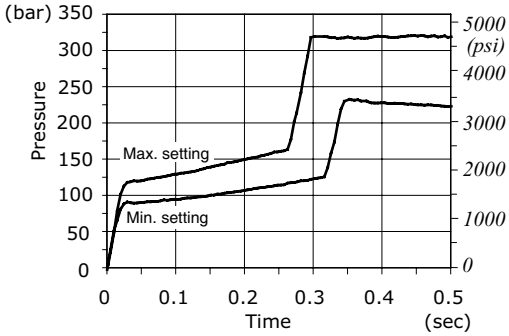


MD10M pressure vs. flow
at max. and min. setting



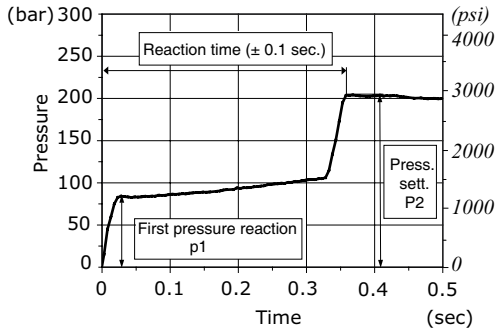
Pressure range 22
220÷290 bar
(3190÷4200 psi)
Pressure ratio 2.8
Q=60l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting



Rating diagrams

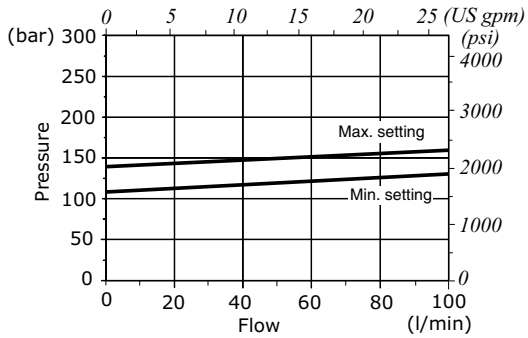
MD12M performance curve example with typical dimensions



Pressure ratio: $Rp = \frac{p2}{p1}$

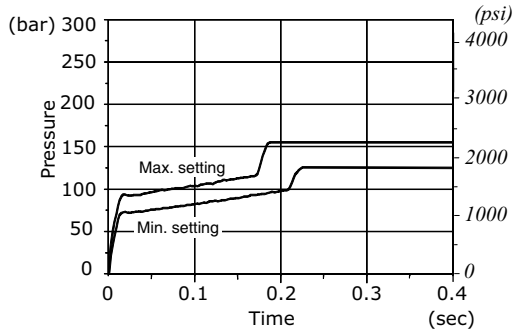
First pressure reaction: $p1 = \frac{p2}{Rp}$

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

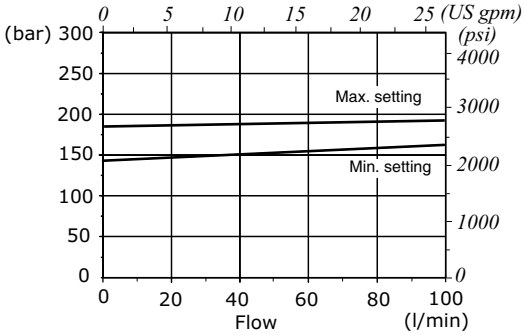


Pressure range 11
125÷155 bar
(1810÷2250 psi
Pressure ratio 1.7
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

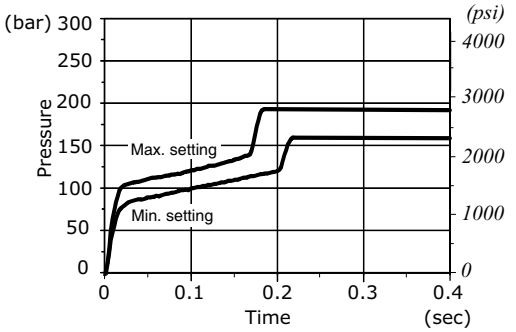


MD12M pressure vs. flow
at max. and min. setting

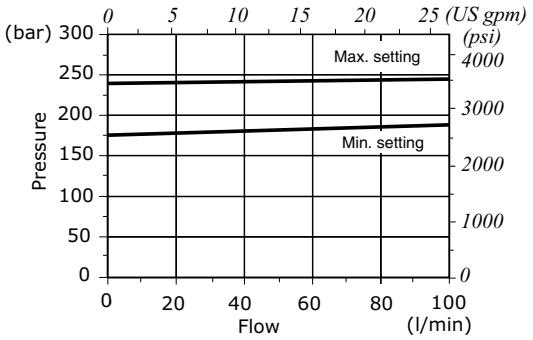


Pressure range 12
160÷190 bar
(2320÷2760 psi
Pressure ratio 1.9
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

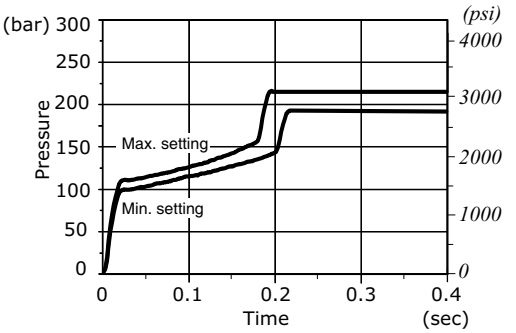


MD12M pressure vs. flow
at max. and min. setting



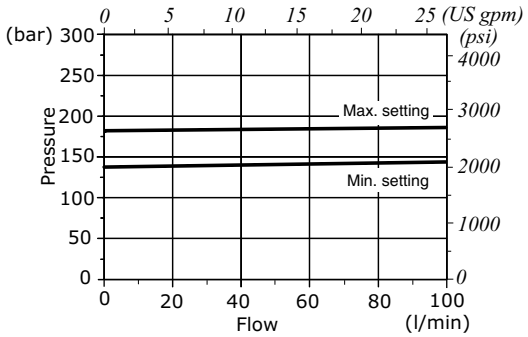
Pressure range 13
180÷220 bar
(2610÷3190 psi)
Setting 220 bar *(3190 psi)* at 60 l/min
(16 US gpm)
Pressure ratio 2.2
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting



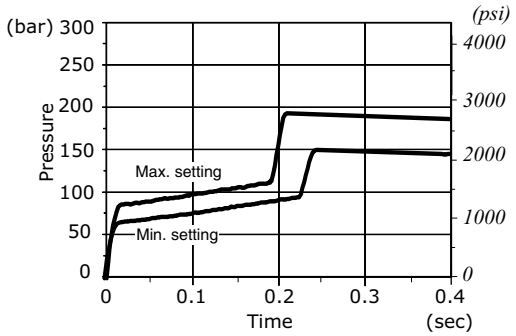
Rating diagrams

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

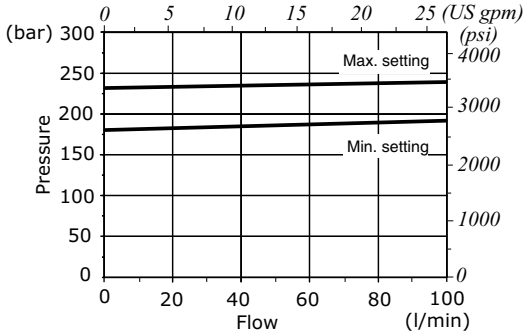


Pressure range 21
150÷185 bar
(1900÷2685 psi)
Pressure ratio 2
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

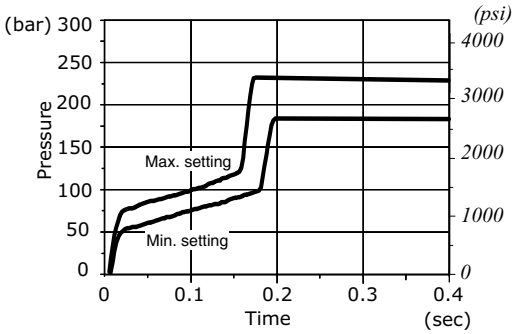


MD12M pressure vs. flow
at max. and min. setting

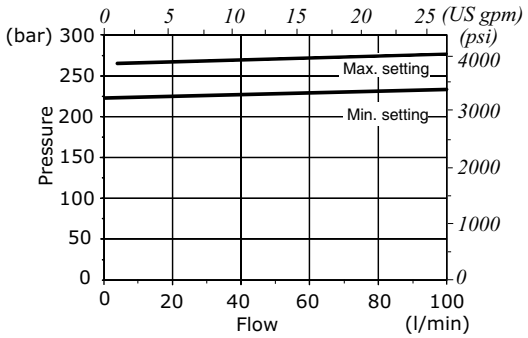


Pressure range 22
190÷235 bar
(2760÷3400 psi)
Pressure ratio 2.35
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

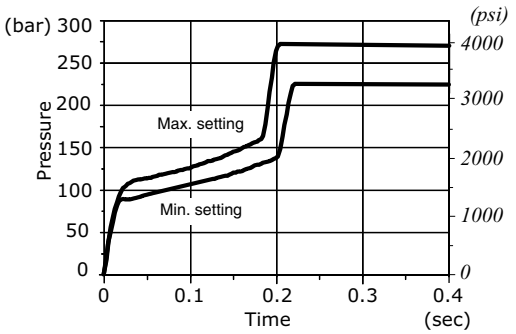


MD12M pressure vs. flow
at max. and min. setting



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



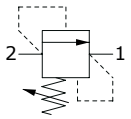
MG..A type
pressure relief valve - 2 ways

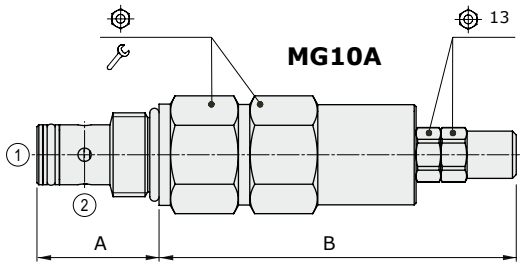
- Differential operated
- Poppet type

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

		MG10A	MG12A
Nominal flow		60 l/min *(15.8 US gpm)*	100 l/min *(26.4 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Oil leakage	80% of max. pressure setting	2 cm³/min *(0.122 in³/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		0.34 kg *(0.75 lb)*	0.87 kg *(1.92 lb)*

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



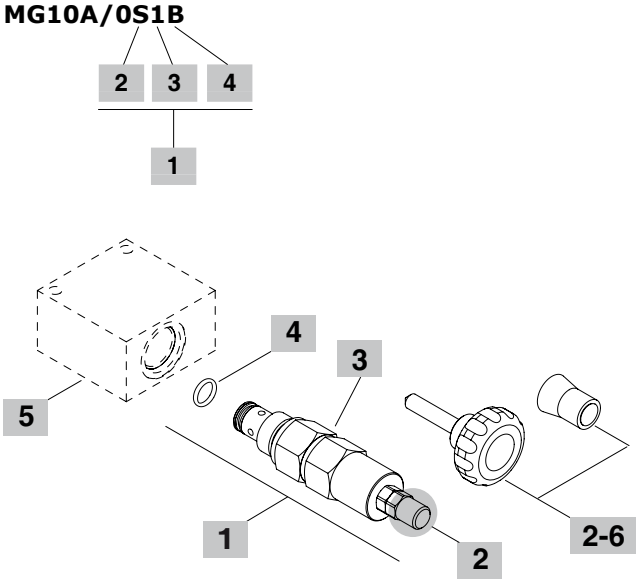


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
MG10A/0S	32.3	*1.27*	94.5	*3.72*	27	50	*37*
MG12A/0S	46	*1.81*	126.5	*4.98*	36	80	*59*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

MG10A/0S1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MG10A/0S1B	0MG10002009	Pressure range **1**
MG10A/0S2B	0MG10002002	Pressure range **2**
MG10A/0S3B	0MG10002003	Pressure range **3**
MG10A/0S4B	0MG10002001	Pressure range **4**
SAE cavity 12/2		
MG12A/0S1B	0MG12002000	Pressure range **1**
MG12A/0S2B	0MG12002001	Pressure range **2**
MG12A/0S3B	0MG12002002	Pressure range **3**

2 Adjustments

TYPE	DESCRIPTION
S	Screw with cap
V	With handwheel (part code: see point **6**)
X	Valve set with antitampering cap (part code: see point **6**)

3 Pressure range

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

TYPE	DESCRIPTION
1	For SAE cavity 10/2: pressure range 30÷100 bar *(435÷1450 psi);* Std. setting 80 bar *(1160 psi)* For SAE cavity 12/2: pressure range 20÷100 bar *(290÷1450 psi);* Std. setting 50 bar *(725 psi)*
2	Pressure range 50÷200 bar *(725÷2900 psi);* Std. setting150 bar *(2175 psi)*
3	Pressure range 150÷350 bar *(2175÷5100 psi);* Std. setting 250 bar *(3625 psi)*
4	Pressure range 5÷60 bar *(72.5÷870 psi);* Std. setting 30 bar *(435 psi),* only for SAE cavity 10/2

4 Seals

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

5 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

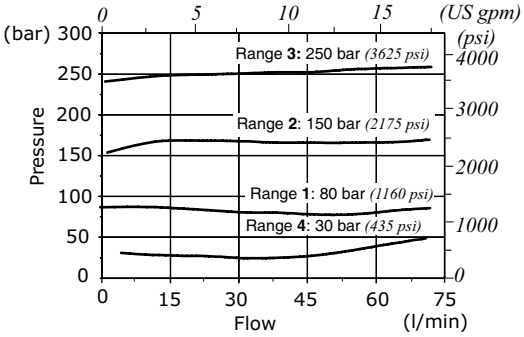
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

6 Accessories

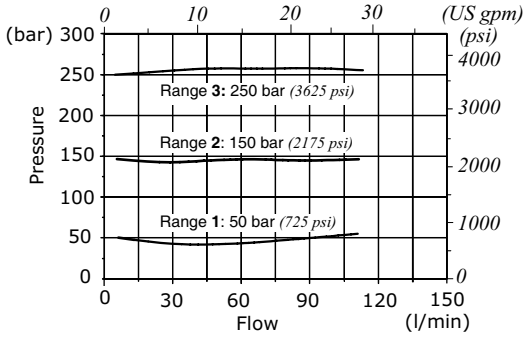
TYPE	CODE	DESCRIPTION
-	4VL2407100	Handwheel
-	4COP120420	Antitampering cap

Rating diagrams

MG10A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



MG12A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



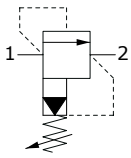
MP..A type
pressure relief valves - 2 ways

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

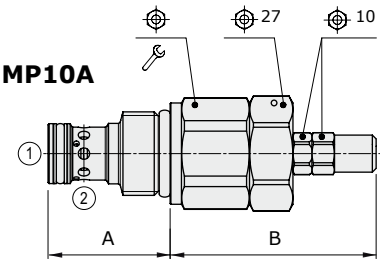
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		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 cm³/min *(1.525 in³/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.



MP10A

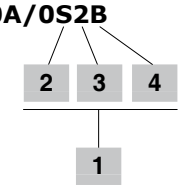


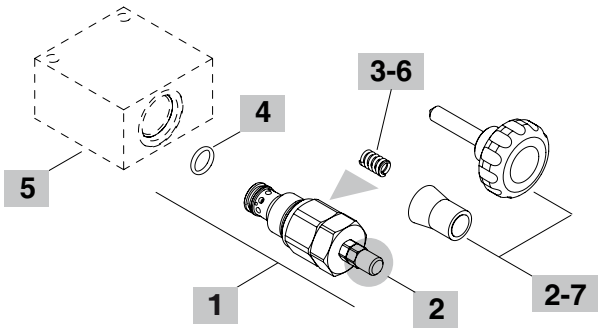
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
MP10A/0S	32.3	*1.27*	54.5	*2.15*	27	50	*37*
MP12A/0S	46	*1.81*	52.5	*2.07*	32	80	*59*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

MP10A/0S2B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10A/0S2B	0MP10002015	Pressure range **2**
SAE cavity 12/2		
MP12A/0S2B	0MP12002000	Pressure range **2**

2 Adjustments

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

3 Pressure range

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

4 Seals

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

5 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 3/8	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

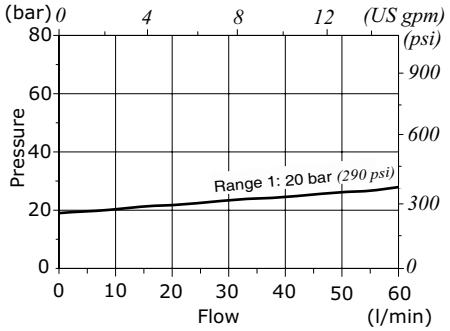
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1**
2	3ML1081401	Pressure range **2**
3	3ML1081402	Pressure range **3**

7 Accessories

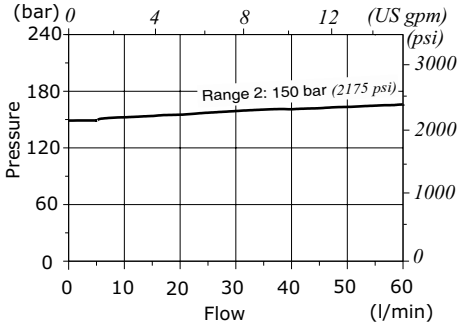
TYPE	CODE	DESCRIPTION
-	4VL2307007	Handwheel (for MP10A valve)
-	4VL2307001	Handwheel (for MP12A and MP16A valves)
-	4COP116420	Antitampering cap

Rating diagrams

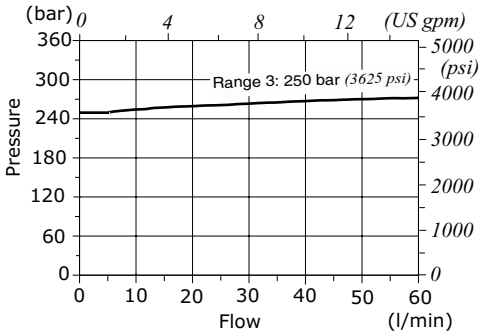
MP10A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



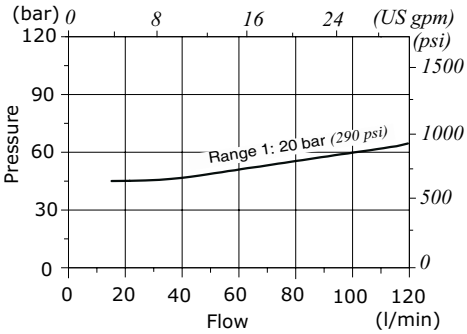
MP10A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



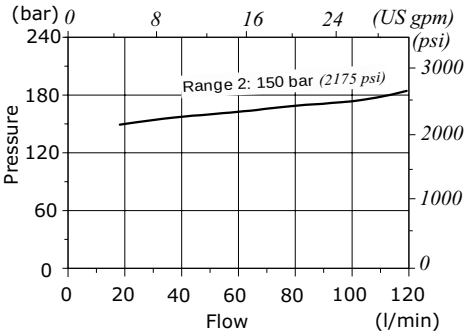
MP10A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



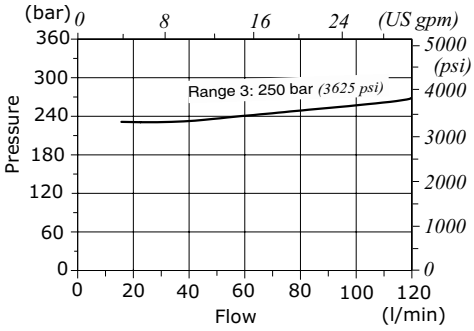
MP12A pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



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)*



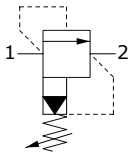
MP16M type
pressure relief valve - 2 ways

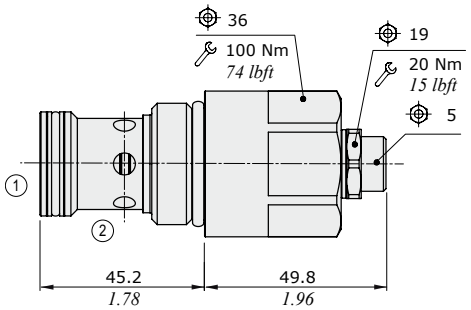
- Pilot operated
- Spool type
- SAE16 cavities

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

		MP16M
Nominal flow		400 l/min *(105.67 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage	80% of max. pressure setting	100 cm³/min *(6.102 in³/min)*
Fluid		mineral based oil
Viscosity		12-400 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 16/2
Weight		0.490 kg *(1.080 lb)*

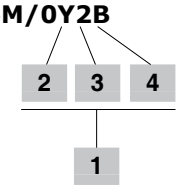
NOTE - For different conditions, please contact Walvoil Sales Dpt.

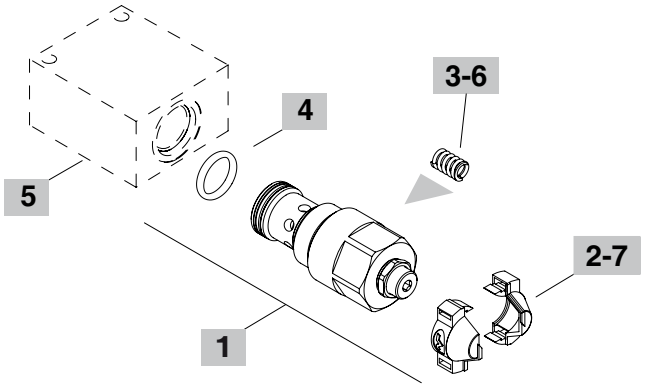




Ordering codes and description composition

MP16M/0Y2B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 16/2		
MP16M/0Y1B	0MP16002017	Pressure range **1**
MP16M/0Y2B	0MP16002013	Pressure range **2**
MP16M/0Y3B	0MP16002014	Pressure range **3**

2 Adjustments

TYPE	DESCRIPTION
Y	With screw
X	Valve set with antitampering cap (part code: see point **7**)

3 Pressure range

TYPE	DESCRIPTION
1	Pressure range 15÷50 bar *(217.5÷725 psi)*
2	Pressure range 50÷220 bar *(725÷3190 psi)*
3	Pressure range 150÷350 bar *(2175÷5100 psi)*

4 Seals

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

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 16/2-G 1	3CC1620F210	Steel body for cavity 16 valve, G 1 std thread

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

6 Springs

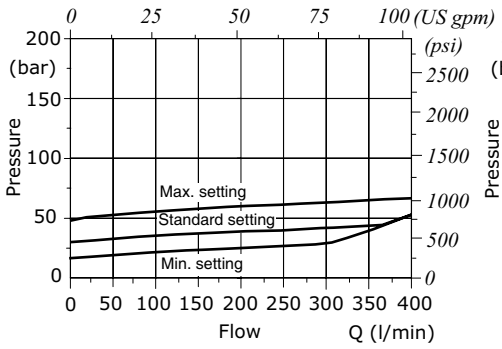
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1**
2	3ML1081401	Pressure range **2**
3	3ML1081402	Pressure range **3**

7 Accessories

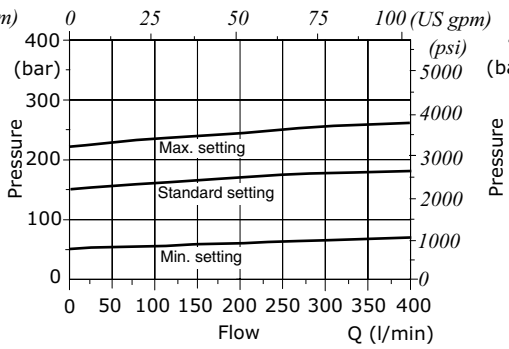
TYPE	CODE	DESCRIPTION
-	4COP126300	Antitampering cap (x2)

Rating diagrams

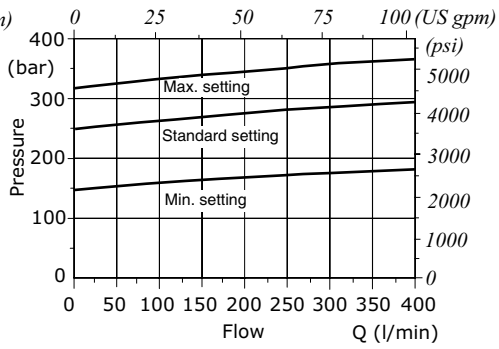
MP16M pressure vs. flow (range 1)
Std. setting at 5 l/min *(1.32 US gpm)*



MP16M pressure vs. flow (range 2)
Std. setting at 5 l/min *(1.32 US gpm)*



MP16M pressure vs. flow (range 3)
Std. setting at 5 l/min *(1.32 US gpm)*



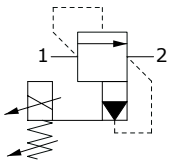
MP..T Type
pressure relief valves - 2 ways

- Solenoid proportional type, pilot operated
- Decreasing pressure with increasing current (NC)
- Spool type
- From SAE10 to SAE12 cavities

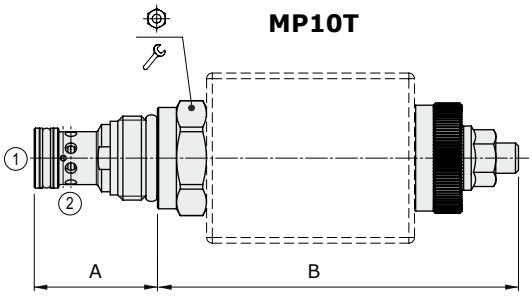
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		MP10T	MP12T
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 cm³/min *(9.15 in³/min)*	<180 cm³/min *(<10.1 in³/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		200 Hz	200 Hz
Hysteresis		<5%	
Weight		0.77 kg *(1.70 lb)*	0.92 kg *(2.03 lb)*

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



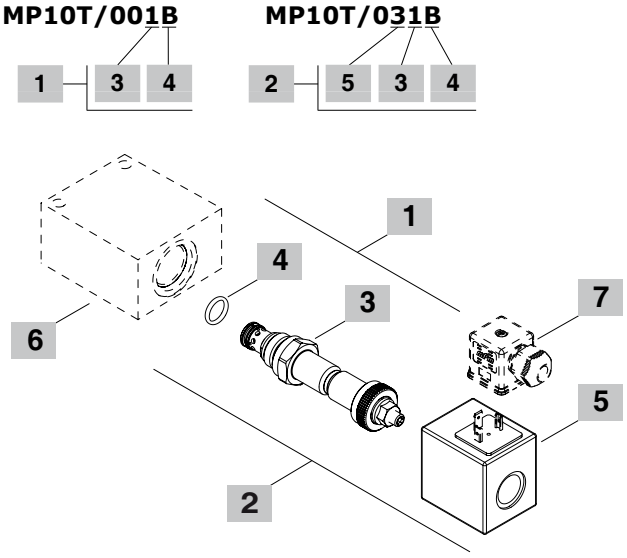
MP10T



Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
MP10T	32.6	*1.28*	96.5	*3.80*	27	50	*37*
MP12T	45	*1.81*	113	*4.45*	32	80	*59*

Ordering codes and description composition

MP10T/001B **MP10T/031B**



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10T/031B	0MP10002051	Pressure range **1**
MP10T/032B	0MP10002052	Pressure range **2**
MP10T/033B	0MP10002053	Pressure range **3**
SAE cavity 12/2		
MP12T/031B	0MP12002028	Pressure range **1**
MP12T/032B	0MP12002029	Pressure range **2**
MP12T/033B	0MP12002030	Pressure range **3**
MP12T/034B	0MP12002035	Pressure range **4**

2 Complete cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10T/031B	0MP10002035	Pressure range **1**, 12VDC
MP10T/032B	0MP10002036	Pressure range **2**, 12VDC
MP10T/033B	0MP10002037	Pressure range **3**, 12VDC
SAE cavity 12/2		
MP12T/031B	0MP12002020	Pressure range **1**, 12VDC
MP12T/032B	0MP12002021	Pressure range **2**, 12VDC
MP12T/033B	0MP12002022	Pressure range **3**, 12VDC
MP12T/034B	0MP12002027	Pressure range **4**, 12VDC

3 Pressure range

TYPE	DESCRIPTION
1	Pressure range 8÷130 bar *(116÷1900 psi)*
2	Pressure range 8÷180 bar *(116÷2600 psi)*
3	Pressure range 8÷240 bar *(116÷3500 psi)*
4	Pressure range 8÷300 bar *(116÷4350 psi)*

Note: for further pressure range contact Sales Dept.

4 Seals

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

5 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

6 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

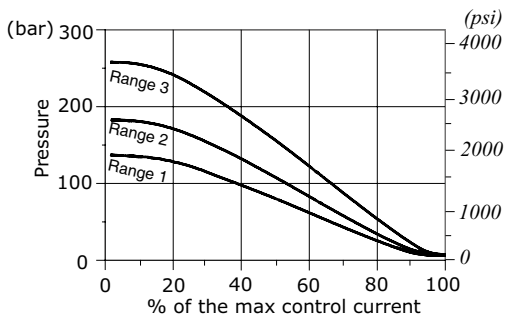
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

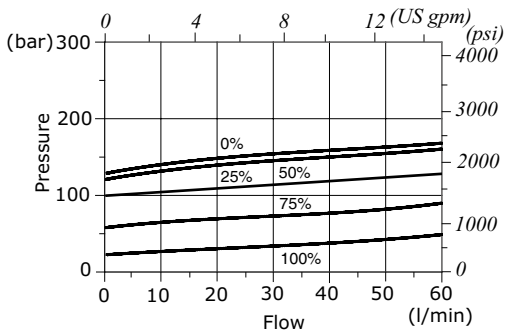
For complete connectors list see from page 190

Rating diagrams

MP10T pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*

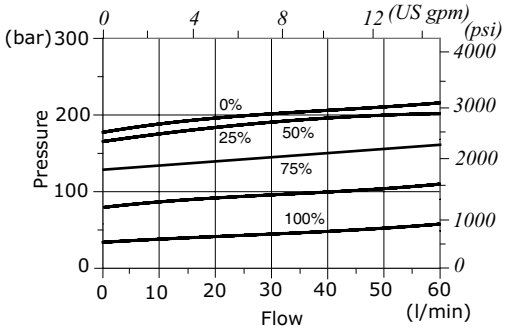


MP10T pressure vs. flow 1->2
for % of control current - Pressure range **1 -**

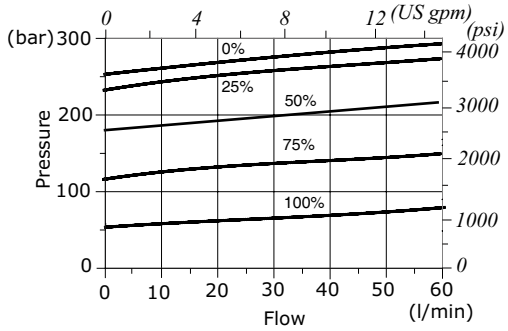


Rating diagrams

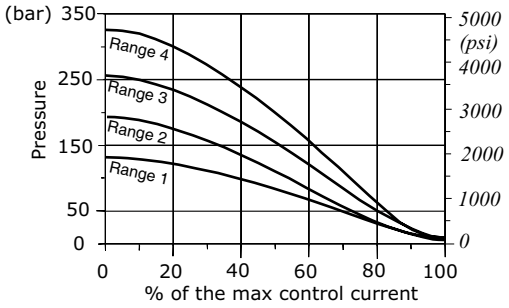
MP10T pressure vs. flow 1->2
for % of control current - Pressure range **2 -**



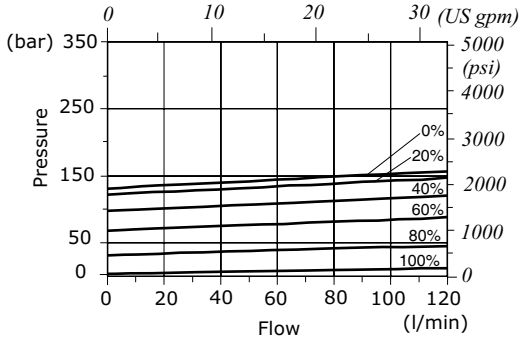
MP10T pressure vs. flow 1->2
for % of control current - Pressure range **3 -**



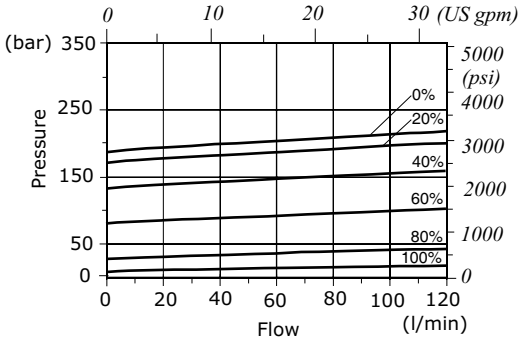
MP12T pressure setting vs. % max. control current
at 10 l/min *(2.6 US gpm)*



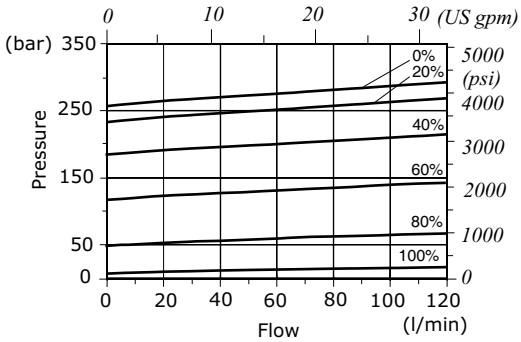
MP12T pressure vs. flow 1->2
for % of control current - Pressure range **1** -



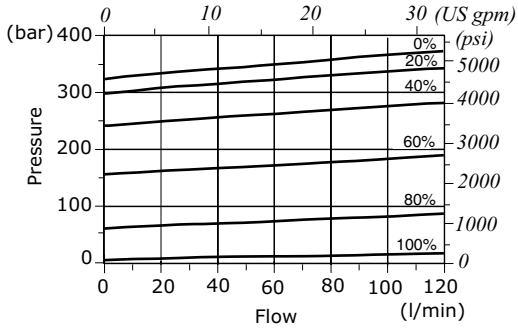
MP12T pressure vs. flow 1->2
for % of control current - Pressure range **2** -



MP12T pressure vs. flow 1->2
for % of control current - Pressure range **3** -



MP12T pressure vs. flow 1->2
for % of control current - Pressure range **4** -



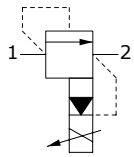
MP..X type
pressure relief valves - 2 ways

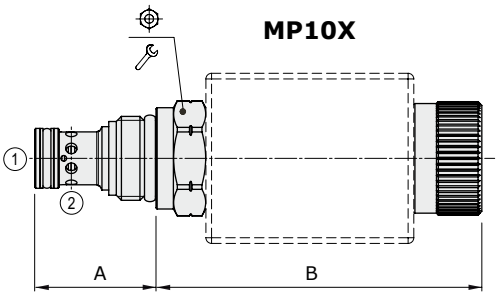
- Solenoid proportional type, pilot operated
- Increasing pressure with increasing current (NO)
- Spool type
- From SAE10 to SAE12 cavities

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 cm³/min *(9.15 in³/min)*	<180 cm³/min *(10.1 in³/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.



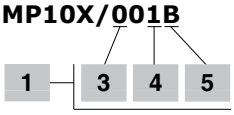


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
MP10X/0	32.3	*1.27*	86	*3.39*	27	50	*37*
MP12X/0	45	*1.81*	102	*4.02*	32	80	*59*

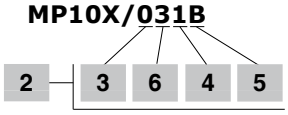
For dimensions with different type of emergency see page 197

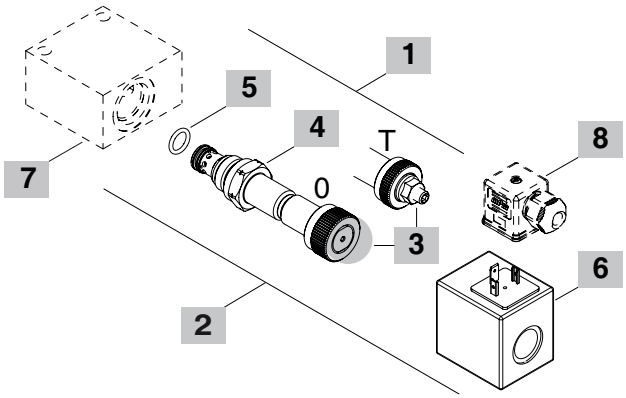
Ordering codes and description composition

MP10X/001B



MP10X/031B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10X/001B	0MP10002054	Pressure range **1**
MP10X/002B	0MP10002055	Pressure range **2**
MP10X/003B	0MP10002056	Pressure range **3**
MP10X/004B	0MP10002057	Pressure range **4**
SAE cavity 12/2		
MP12X/001B	0MP12002031	Pressure range **1**
MP12X/002B	0MP12002032	Pressure range **2**
MP12X/003B	0MP12002033	Pressure range **3**
MP12X/004B	0MP12002034	Pressure range **4**

2 Complete cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10X/031B	0MP10002044	Pressure range **1**, 12VDC
MP10X/032B	0MP10002045	Pressure range **2**, 12VDC
MP10X/033B	0MP10002046	Pressure range **3**, 12VDC
MP10X/034B	0MP10002047	Pressure range **4**, 12VDC
SAE cavity 12/2		
MP12X/031B	0MP12002023	Pressure range **1**, 12VDC
MP12X/032B	0MP12002024	Pressure range **2**, 12VDC
MP12X/033B	0MP12002025	Pressure range **3**, 12VDC
MP12X/034B	0MP12002026	Pressure range **4**, 12VDC

3 Emergency

TYPE	DESCRIPTION
O	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	**NBR (Buna)** o-ring seals, std configuration
V	**FPM (Viton)** 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

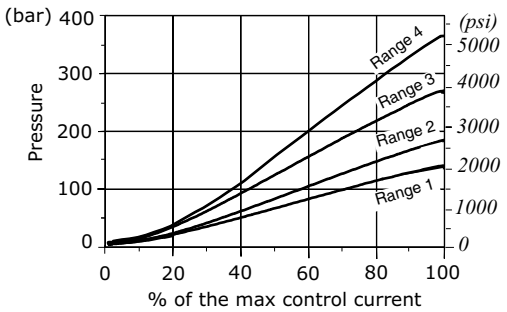
8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

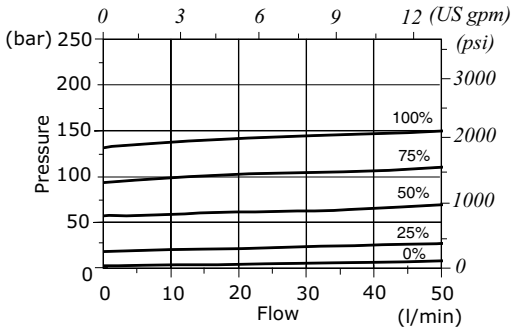
For complete connectors list see from page 190

Rating diagrams

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

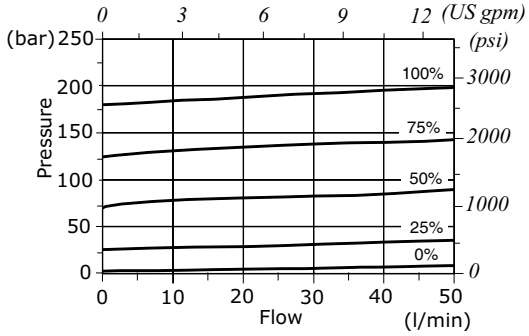


MP10X pressure vs. flow 1->2
for % of control current - Pressure range **1 -**

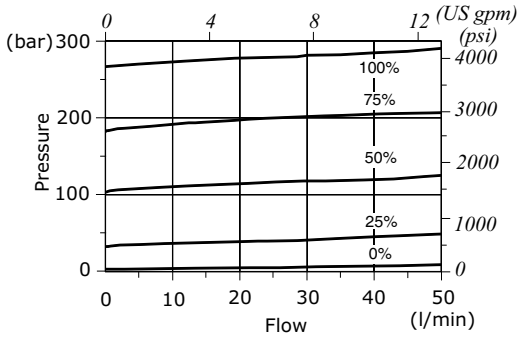


Rating diagrams

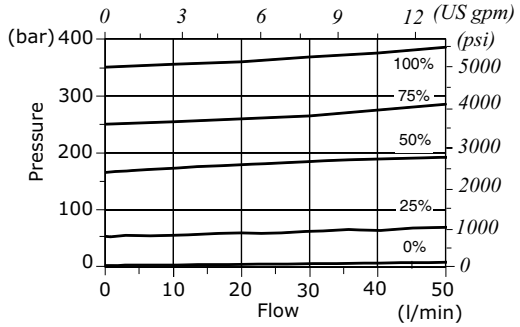
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **2** -



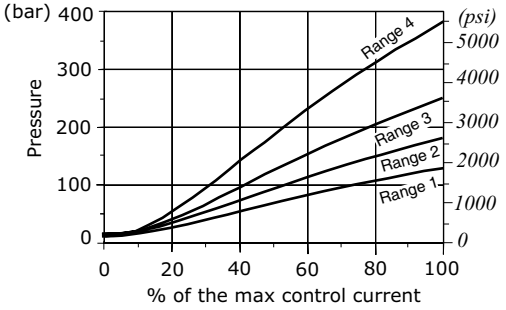
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **3** -



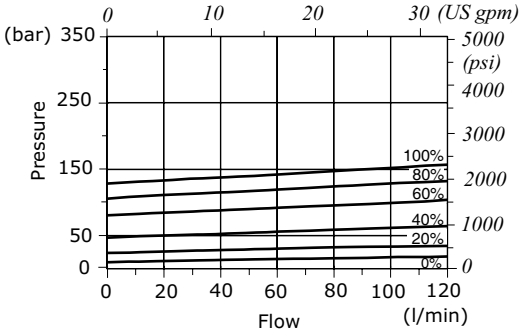
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **4** -



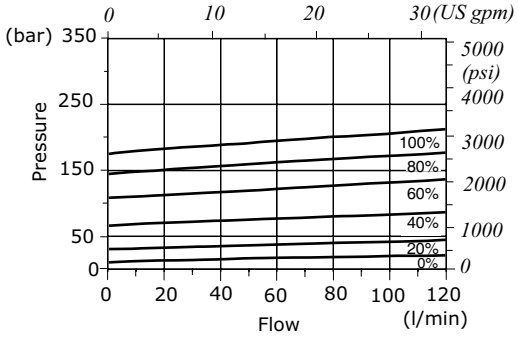
MP12X pressure setting vs. % max. control current
at 10 l/min *(2.64 US gpm)*



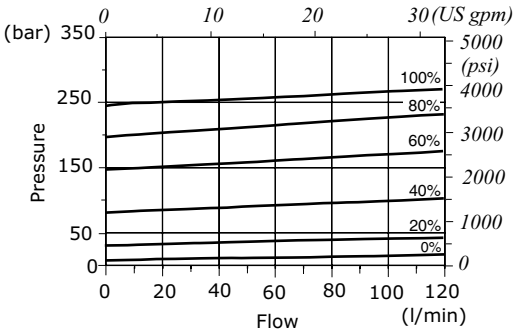
MP12X pressure vs. flow 1->2
for % of control current - Pressure range **1** -



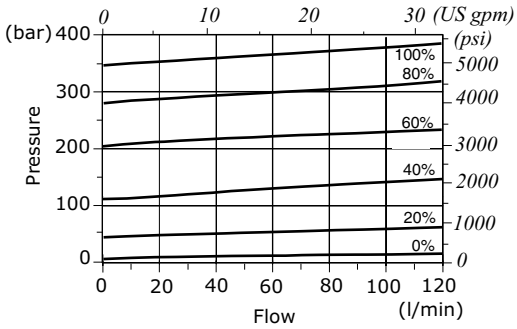
MP12X pressure vs. flow 1->2
for % of control current - Pressure range **2** -



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** -



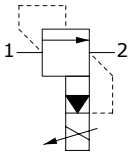
MP16Y type
pressure relief valve - 2 ways

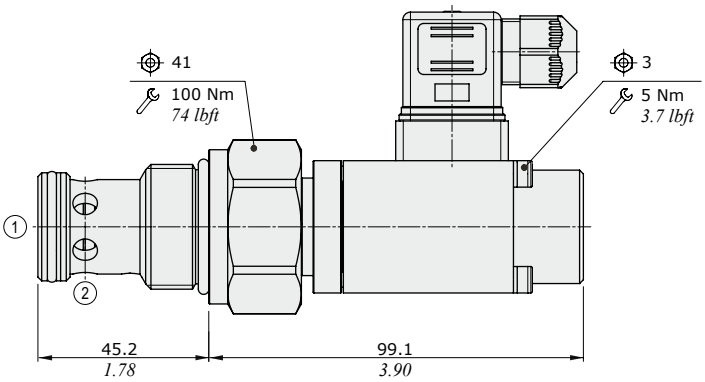
- Solenoid proportional type, pilot operated
- Increasing pressure with increasing current (NO)
- Spool type

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^3/min *(12.20 in^3/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)*

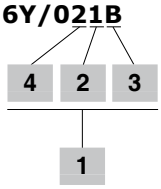
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.

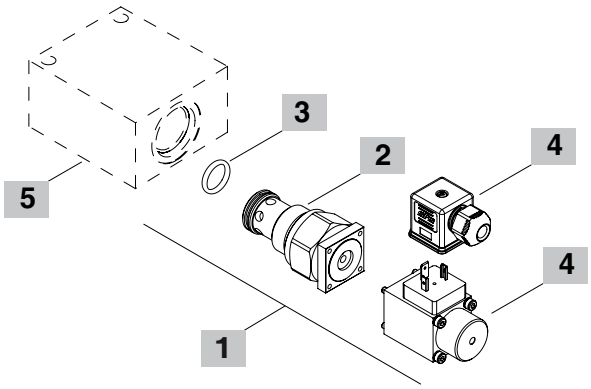




Ordering codes and description composition

MP16Y/021B





1 Cartridges

TYPE	CODE	DESCRIPTION
MP16Y/021B	0MP16002007	Pressure range **1**, 12VDC
MP16Y/022B	0MP16002002	Pressure range **2**, 12VDC
MP16Y/023B	0MP16002009	Pressure range **3**, 12VDC
MP16Y/024B	0MP16002011	Pressure range **4**, 12VDC

2 Pressure range

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

3 Seals

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

4 Coils and connectors

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

For complete coils and connectors list see from page 190

5 Valve body

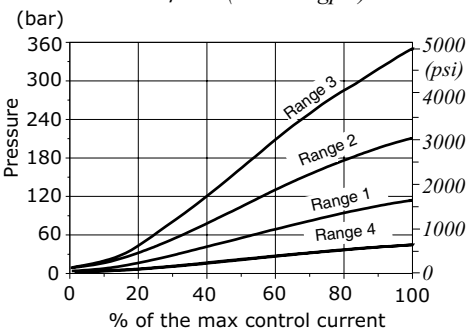
TYPE	CODE	DESCRIPTION
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

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

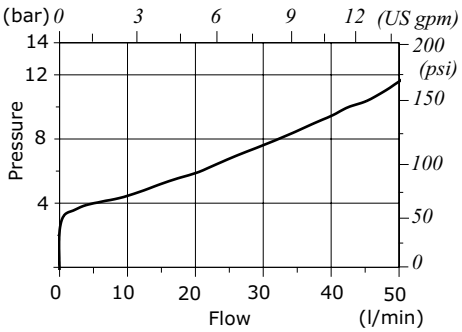
For steel bodies or different threading see from page 199

Rating diagrams

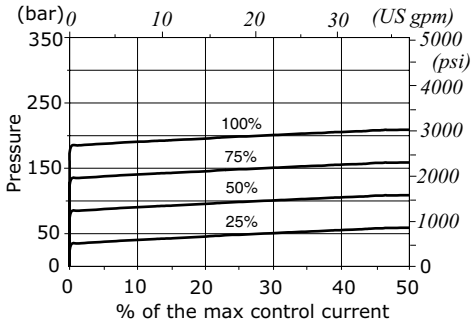
Pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



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



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



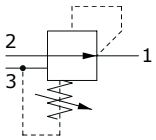
RB..A type
pressure reducing valves - 3 ways

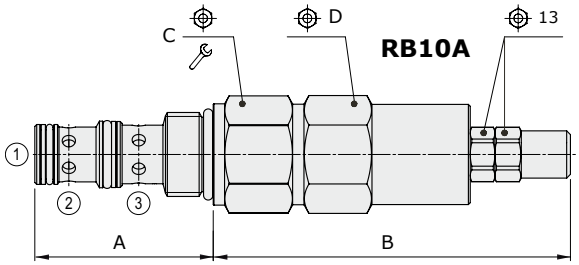
- Direct acting
- Without relieving
- Spool type
- From SAE08 to SAE10 cavities

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

		RB08A	RB10A
Nominal flow		8 l/min *(0.3 US gpm)*	30 l/min *(1.2 US gpm)*
Max. pressure		line 1=150 bar *(2175 psi)* line 2=350 bar *(5100 psi)*	
Oil leakage	at 100 bar *(1450 psi)*	10 cm³/min *(0.61 in³/mm)*	40 cm³/min *(2.44 in³/mm)*
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 8/3	SAE 10/3
Weight		0.240 kg *(0.53 lb)*	0.360 kg *(0.79 lb)*

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



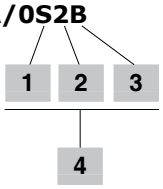


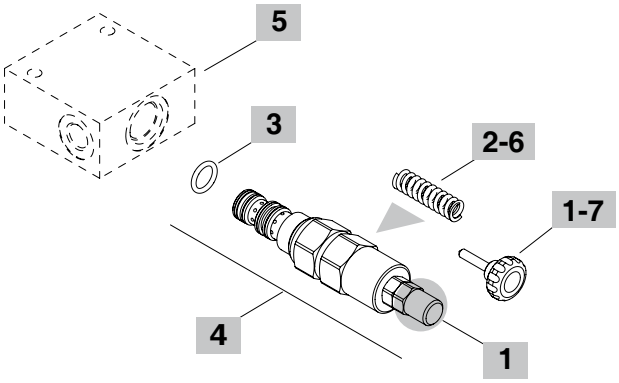
Valve type	A		B					
	mm	*in*	mm	*in*	C	D	Nm	*lbft*
RB08A/0S	40.8	*1.60*	79.5	*3.13*	24	24	30	*22*
RB10A/0S	47.2	*1.86*	94.5	*3.72*	27	27	50	*37*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

RB08A/0S2B





1 Adjustments

TYPE	DESCRIPTION
S	Screw
V	With handwheel see point **7**

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 5÷50 bar *(72.5÷725 psi);* Std. setting 30 bar *(435 psi)*
2	Pressure range 20÷100 bar *(290÷1450 psi);* Std. setting 50 bar *(725 psi)*
3	Pressure range 50÷150 bar *(725÷2175 psi);* Std. setting 100 bar *(1450 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
RB08A/0S2B	0RB08002000	Screw adjustment, pressure range **2**
SAE cavity 10/3		
RB10A/0S2B	0RB10002001	Screw adjustment, pressure range **2**

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 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

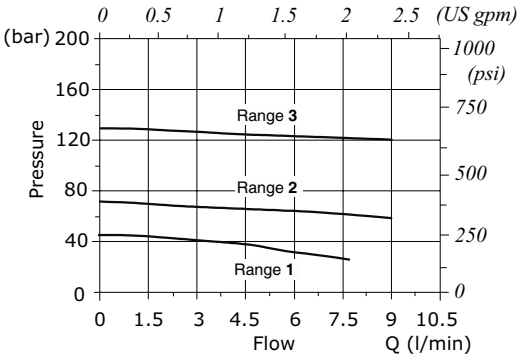
TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
1	3ML1103600	Pressure range **1**
2	3ML1103601	Pressure range **2**
3	3ML1104000	Pressure range **3**
SAE cavity 10/3		
1	3ML1144601	Pressure range **1**
2	3ML1144602	Pressure range **2**
3	3ML1144603	Pressure range **3**

7 Accessories

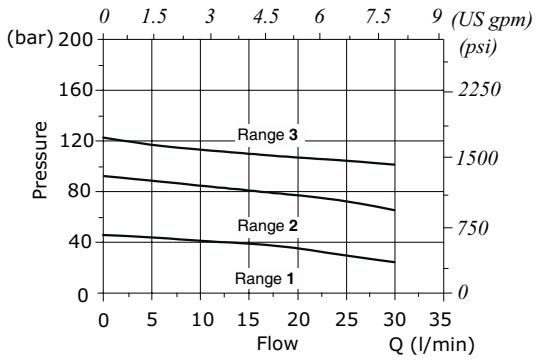
TYPE	CODE	DESCRIPTION
-	4VL2407100	handwheel

Rating diagrams

RB08A pressure reducing vs. flow 2->1



RB10A pressure reducing vs. flow 2->1



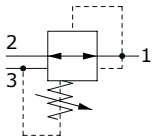
RD..A type
pressure reducing valves - 3 ways

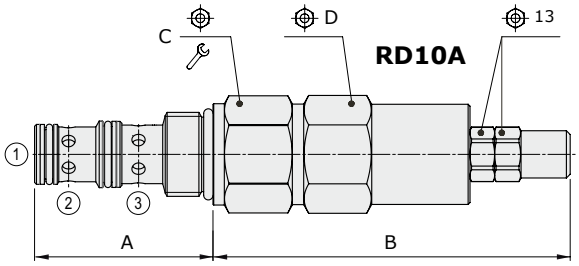
- Direct acting
- With relieving
- Spool type
- From SAE08 to SAE10 cavities

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

		RD08A	RD10A
Nominal flow		8 l/min *(0.3 US gpm)*	30 l/min *(1.2 US gpm)*
Max. pressure		line 1=150 bar *(2175 psi)* line 2=350 bar *(5100 psi)*	
Oil leakage	at 100 bar *(1450 psi)*	10 cm³/min *(0.61 in³/mm)*	40 cm³/min *(2.44 in³/mm)*
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 8/3	SAE 10/3
Weight		0.240 kg *(0.53 lb)*	0.360 kg *(0.79 lb)*

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



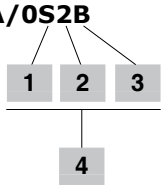


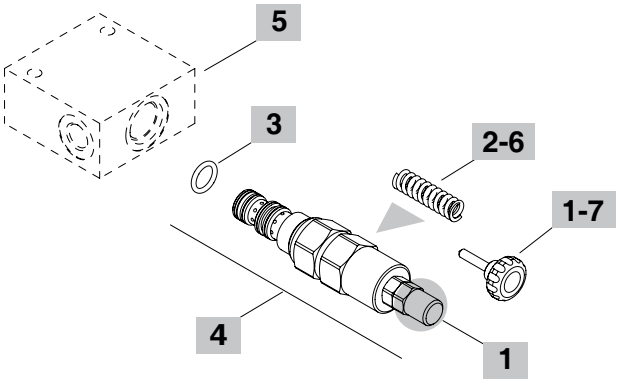
Valve type	A		B					
	mm	*in*	mm	*in*	C	D	Nm	*lbft*
RD08A/0S	40.8	*1.60*	79.5	*3.13*	24	24	30	*22*
RD10A/0S	47.2	*1.86*	94.5	*3.72*	27	27	50	*37*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

RD08A/0S2B





1 Adjustments

TYPE	DESCRIPTION
S	Screw
V	With handwheel see point **7**

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 5÷50 bar *(72.5÷725 psi);* Std. setting 30 bar *(435 psi)*
2	Pressure range 20÷100 bar *(290÷1450 psi);* Std. setting 50 bar *(725 psi)*
3	Pressure range 50÷150 bar *(725÷2175 psi);* Std. setting 100 bar *(1450 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
RD08A/0S2B	0RD08002005	Screw adjustment, pressure range **2**
SAE cavity 10/3		
RD10A/0S2B	0RD10002001	Screw adjustment, pressure range **2**

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

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

6 Springs

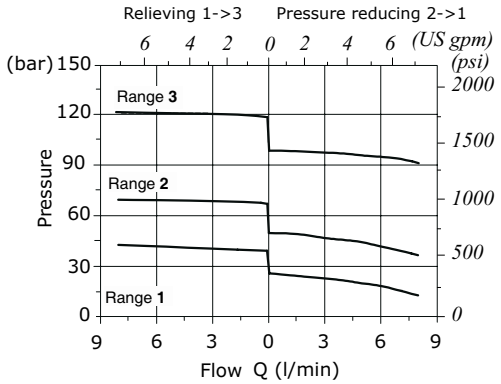
TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
1	3ML1103600	Pressure range **1**
2	3ML1103601	Pressure range **2**
3	3ML1104000	Pressure range **3**
SAE cavity 10/3		
1	3ML1144601	Pressure range **1**
2	3ML1144602	Pressure range **2**
3	3ML1144603	Pressure range **3**

7 Accessories

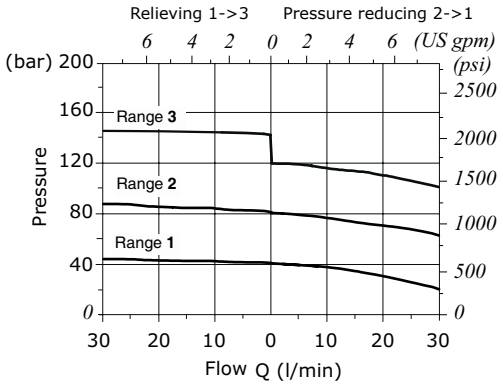
TYPE	CODE	DESCRIPTION
-	4VL2407100	handwheel

Rating diagrams

RD08A reducing/relieving pressure vs. flow



RD10A reducing/relieving pressure vs. flow



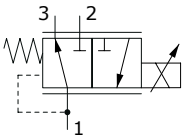
RD08W type
pressure reducing valve - 3 ways

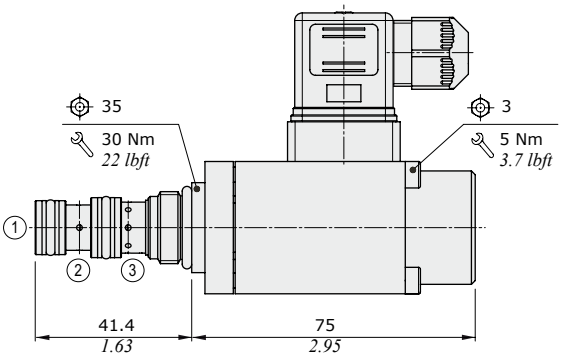
- Solenoid proportional type, direct acting
- With relieving (NO)
- Spool type

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

		RD08W
Nominal flow		4 l/min *(1.05 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage		-
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 8/3
Coil type*		MP35
Nominal voltages		12 VDC - 24 VDC
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		0.680 kg *(1.50 lb)*

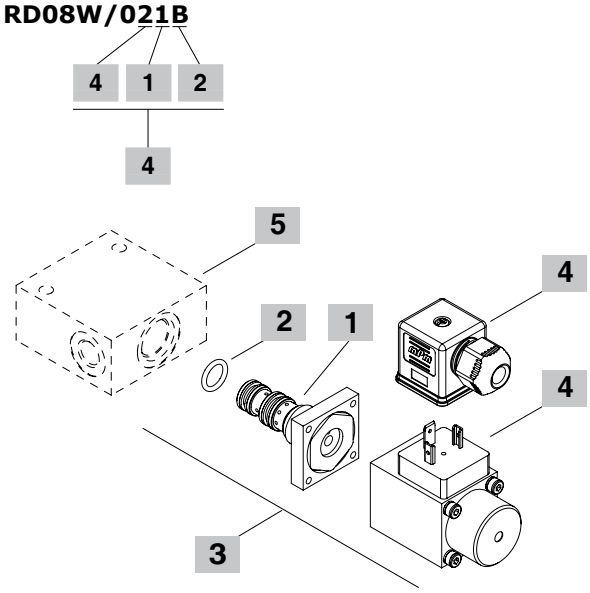
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.





Ordering codes and description composition

RD08W/021B



1 Pressure range

TYPE	DESCRIPTION
1	Pressure range 5÷25 bar *(72.5÷363 psi)*
2	Pressure range 0÷12 bar *(0÷174 psi)*

2 Seals

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

3 Cartridges

TYPE	CODE	DESCRIPTION
RD08W/021B	0RD08002001	Pressure range **1**, 12VDC

4 Coils and connectors

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

For complete coils and connectors list see from page 190

5 Valve body

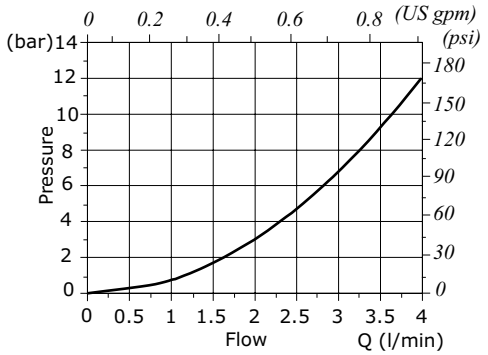
TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread

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

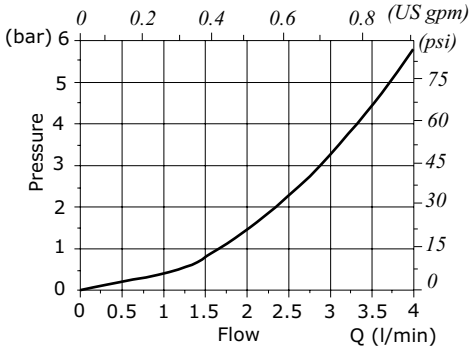
For steel bodies or different threading see from page 199

Rating diagrams

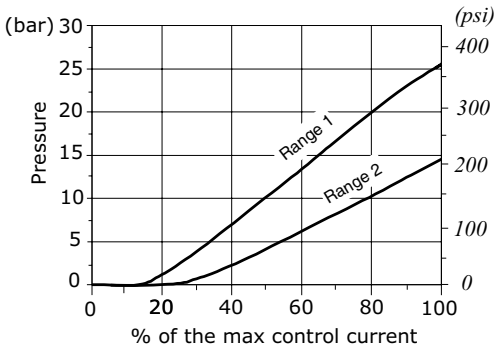
Pressure drop vs. flow 2->1
Pressure range **1**



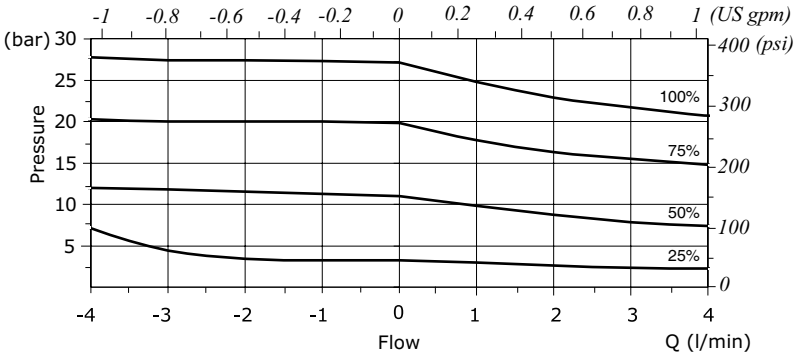
Pressure drop vs. flow 1->2
Pressure range **1**



Pressure reducing vs. control current



Reducing/relieving pressure vs. flow
for % of control current - Pressure range **1**
Relieving 1->3 Pressure reducing 2->1



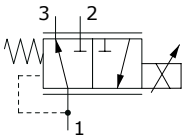
RD08S-RD08T type
pressure reducing valves - 3 ways

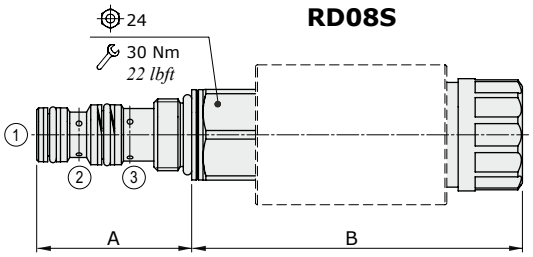
- Solenoid proportional type, direct acting
- With relieving (NO)
- Spool type

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

		RD08S	RD08T
Nominal flow		4 l/min *(1.05 US gpm)*	12 l/min *(3.17 US gpm)*
Max. pressure		210 bar *(3050 psi)*	
Oil leakage		-	-
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 8/3	SAE 8/3
Coil type*		MSM 19	
Nominal voltages		12 VDC - 24 VDC	
Power rating		21.6 W (12 VDC) - 22.5 W (24 VDC)	
Max control current		12 V -> 1.25 A - 24 V -> 0.68A	
Dither frequency		150 Hz	
Hysteresis		≤4%	
Weight		0.492 kg *(1.08 lb)*	1.140 kg *(0.79 lb)*

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

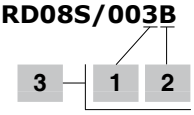




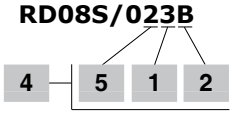
Valve type	A		B	
	mm	*in*	mm	*in*
RD08S	41	*1.61*	87.5	*1.27*
RD08T	41	*1.61*	97	*1.81*

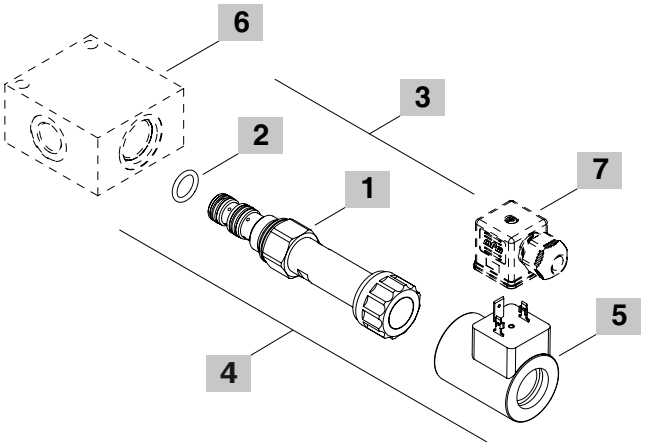
Ordering codes and description composition

RD08S/003B



RD08S/023B





1 Pressure range

TYPE	DESCRIPTION
1	Pressure range 5÷45 bar *(72.5÷652.5 psi)*
3	Pressure range 5÷35 bar *(72.5÷507.5 psi)*

2 Seals

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

3 Cartridges

TYPE	CODE	DESCRIPTION
RD08S/003B	0RD08002025	Pressure range **1**
RD08T/001B	0RD08002016	Pressure range **2**

4 Complete cartridges

TYPE	CODE	DESCRIPTION
RD08S/023B	0RD08002023	Pressure range **1**, 12VDC
RD08T/021B	0RD08002024	Pressure range **2**, 12VDC

5 Coils

TYPE	CODE	DESCRIPTION
2) MSM 19 12VDC	4SL5000128	12VDC-ISO4400 coil
4) MSM 19 24VDC	4SL5000247	24VDC-ISO4400 coil

For complete coils list see page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 8/3-G 3/8	3CC0830C11	Aluminium body for cavity 8 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

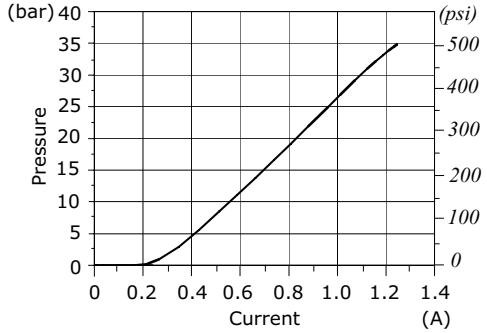
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

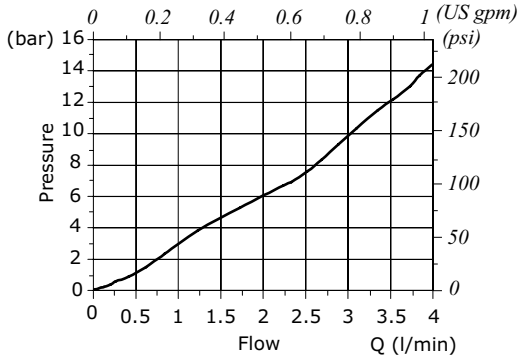
For complete connectors list see from page 190

Rating diagrams

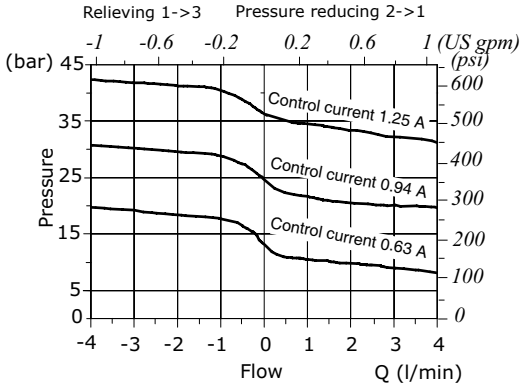
RD08S pressure reducing vs. control current
12 VDC power supply



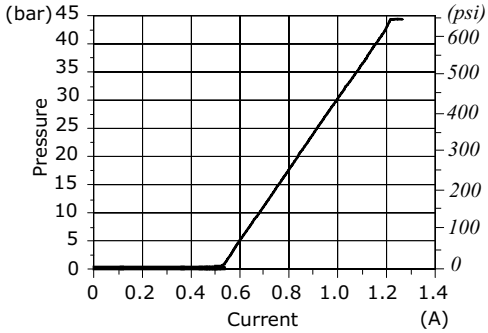
RD08S pressure drop vs. flow 2->1



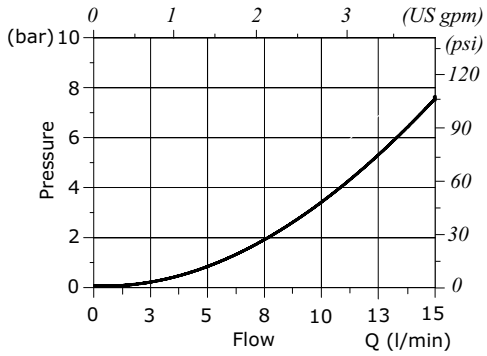
RD08S reducing/relieving pressure vs. flow
for % of control current



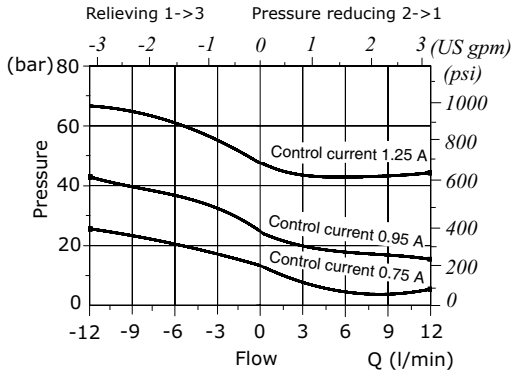
RD08T pressure reducing vs. control current
12 VDC power supply



RD08T pressure drop vs. flow 2->1



RD08T reducing/relieving pressure vs. flow
for % of control current



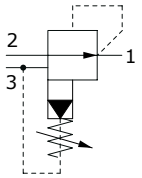
RM..A type
pressure reducing valves - 3 ways

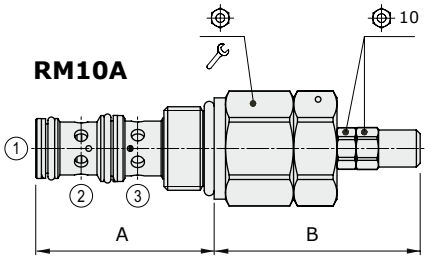
- Pilot operated
- Without relieving
- Spool type
- From SAE10 to SAE16 cavities

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

		RM10A	RM12A	RM16A
Nominal flow		50 l/min *(13 US gpm)*	100 l/min *(26 US gpm)*	150 l/min *(40 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*		from -20°C *(-4°F)* to 80°C *(176°F)*	
	with FPM seals		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 10/3	SAE 12/3	SAE 16/3
Weight		0.210 kg *(0.46 lb)*	0.340 kg *(0.75 lb)*	0.470 kg *(1.04 lb)*

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



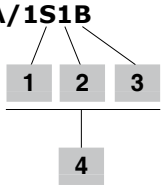


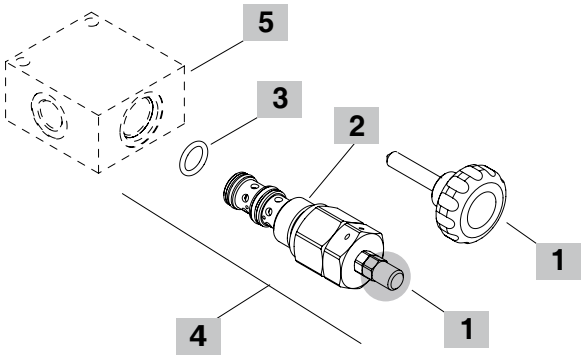
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
RM10A/1S	47.2	*1.86*	54.5	*2.15*	27	50	*37*
RM12A/0S	73.5	*2.89*	51.5	*2.03*	32	70	*52*
RM16A/0S	75	*2.95*	50.5	*1.99*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

RM10A/1S1B





1 Adjustments

TYPE	DESCRIPTION
S	Screw with cap
V	With handwheel

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 5÷80 bar *(72.5÷1160 psi);* *Std.* setting 50 bar *(725 psi)*
2	Pressure range 50÷220 bar *(725÷3190 psi);* *Std.* setting 150 bar *(2175 psi)*
3	**For SAE cavity 10/3:** pressure range 100÷350 bar *(1450÷5075 psi); Std.* setting 250 bar *(3625 psi)* **For SAE cavity 12/3 and 16/3:** pressure range 180÷350 bar *(2610÷5075 psi); Std.* setting 250 bar *(3625 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
RM10A/1S1B	0RM10002012	Pressure range **1**
RM10A/1S2B	0RM10002013	Pressure range **2**
RM10A/1S3B	0RM10002014	Pressure range **3**
SAE cavity 12/3		
RM12A/0S1B	0RM12002008	Pressure range **1**
RM12A/0S2B	0RM12002000	Pressure range **2**
RM12A/0S3B	0RM12002016	Pressure range **3**
SAE cavity 16/3		
RM16A/0S1B	0RM16002008	Pressure range **1**
RM16A/0S2B	0RM16002000	Pressure range **2**
RM16A/0S3B	0RM16002009	Pressure range **3**

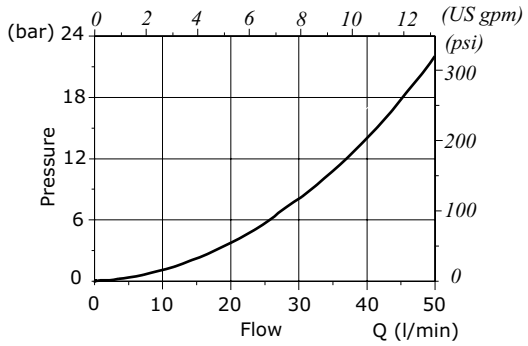
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

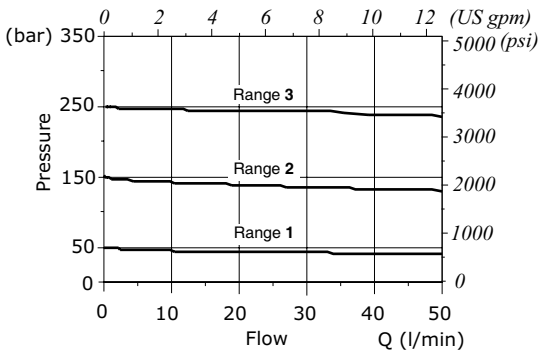
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

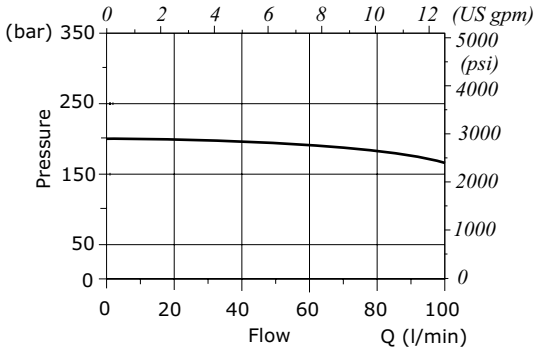
RM10A pressure drop vs. flow 2->1



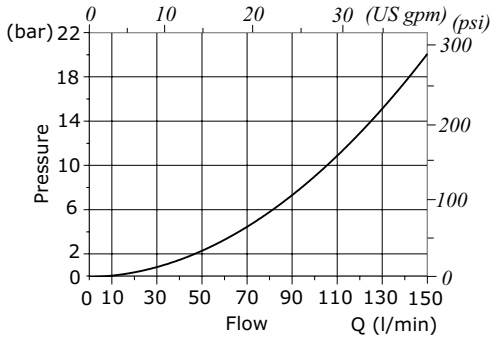
RM10A pressure reducing vs. flow 2->1



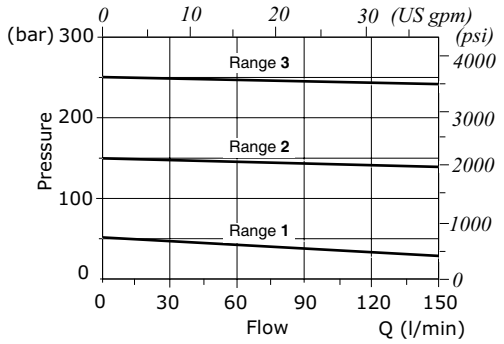
RM12A pressure reducing vs. flow 2->1



RM16A pressure drop vs. flow 2->1



RM16A pressure reducing vs. flow 2->1



RM..W type
pressure reducing valves - 3 ways

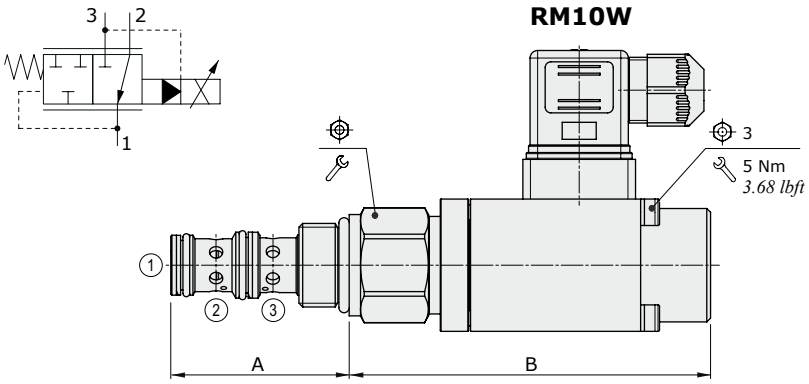
- Solenoid proportional type, pilot operated
- Without relieving
- Spool type
- From SAE10 to SAE16 cavities

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

		RM10W	RM12W	RM16W
Nominal flow		50 l/min *(13 US gpm)*	100 l/min *(26 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure			350 bar *(5100 psi)*	
Oil leakage			-	
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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 10/3	SAE 12/3	SAE 16/3
Coil type*			MP35	
Nominal voltages			12 VDC - 24 VDC	
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		0.680 kg *(1.50 lb)*	0.820 kg *(1.81 lb)*	0.930 kg *(2.05 lb)*

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

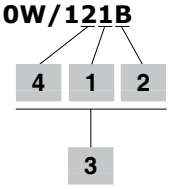
RM10W

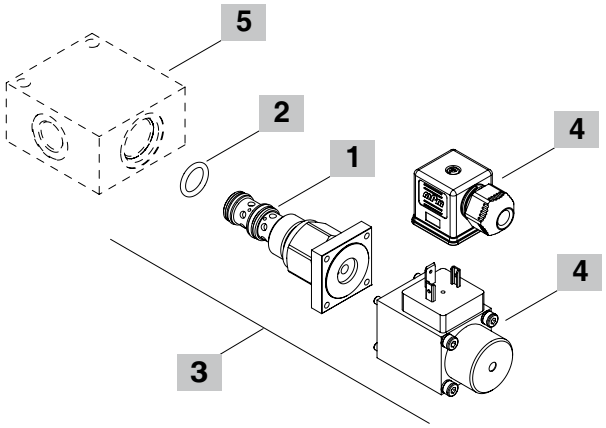


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
RM10W	47.2	*1.86*	95.6	*3.76*	27	50	*37*
RM12W	73.5	*2.89*	93.5	*3.68*	32	70	*52*
RM16W	75	*2.95*	92	*3.62*	41	100	*74*

Ordering codes and description composition

RM10W/121B





1 Pressure range

TYPE	DESCRIPTION
1	Pressure range 5÷50 bar *(72.5÷725 psi)*
2	Pressure range 50÷200 bar *(725÷2900 psi)*
3	Pressure range 80÷350 bar *(1160÷5100 psi)*
4	Pressure range 20÷100 bar *(290÷1450 psi)*
	Pressure range 10÷80 bar *(145÷1160 psi)* only for RM12W/024B

2 Seals

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

3 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
RM10W/121B	0RM10002015	Pressure range **1**, 12VDC
RM10W/122B	0RM10002016	Pressure range **2**, 12VDC
RM10W/123B	0RM10002017	Pressure range **3**, 12VDC
RM10W/124B	0RM10002018	Pressure range **4**, 12VDC
SAE cavity 12/3		
RM12W/021B	0RM12002003	Pressure range **1**, 12VDC
RM12W/022B	0RM12002005	Pressure range **2**, 12VDC
RM12W/024B	0RM12002001	Pressure range **4**, 12VDC
SAE cavity 16/3		
RM16W/021B	0RM16002004	Pressure range **1**, 12VDC
RM16W/022B	0RM16002005	Pressure range **2**, 12VDC
RM16W/023B	0RM16002006	Pressure range **3**, 12VDC
RM16W/024B	0RM16002001	Pressure range **4**, 12VDC

4 Coils and connectors

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

For complete coils and connectors list see from page 190

5 Valve body

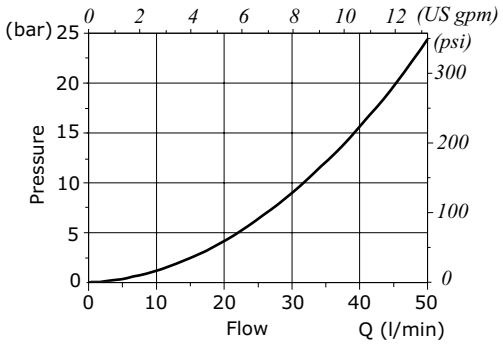
TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

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

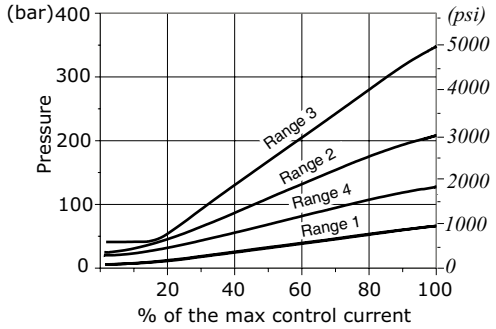
For steel bodies or different threading see from page 199

Rating diagrams

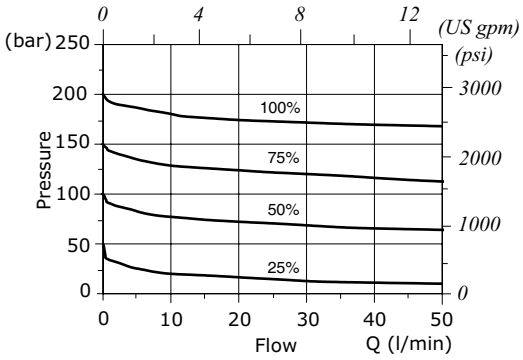
RM10W pressure drop vs. flow 2->1



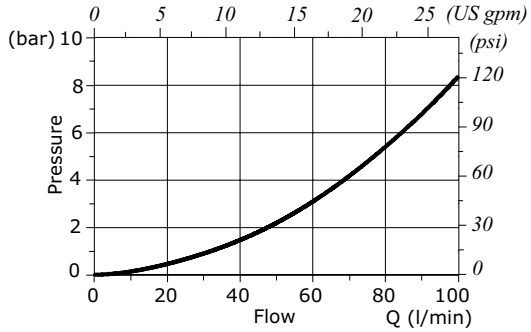
RM10W pressure reducing vs. control current



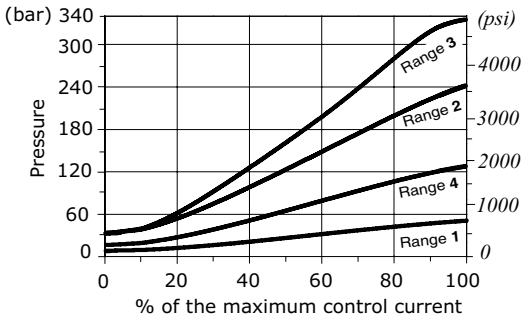
RM10W pressure reducing vs. flow
for % of control current - Pressure range **2 -**



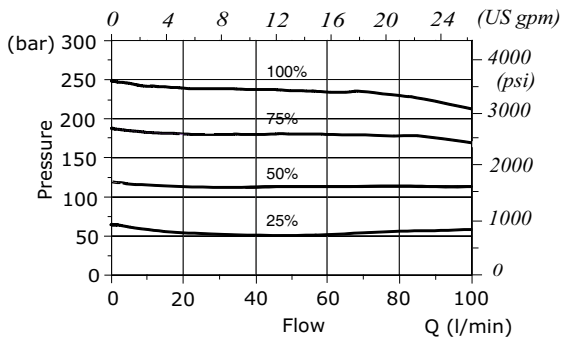
RM12W pressure drop vs. flow 2->1



RM12W pressure reducing vs. control current

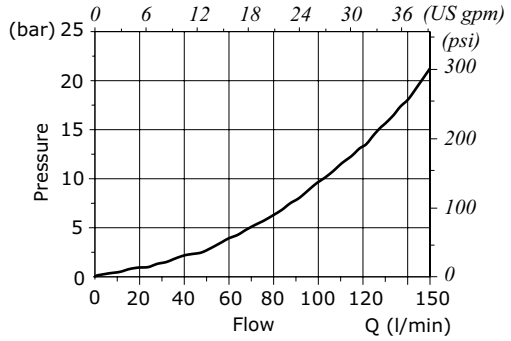


RM12W pressure reducing vs. flow
for % of control current - Pressure range **2 -**

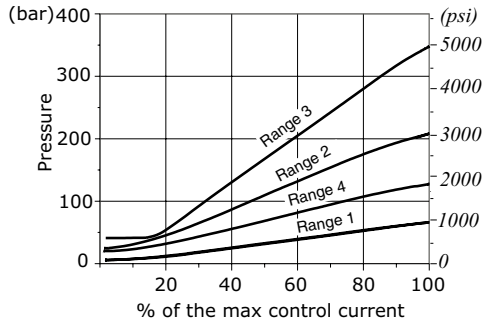


Rating diagrams

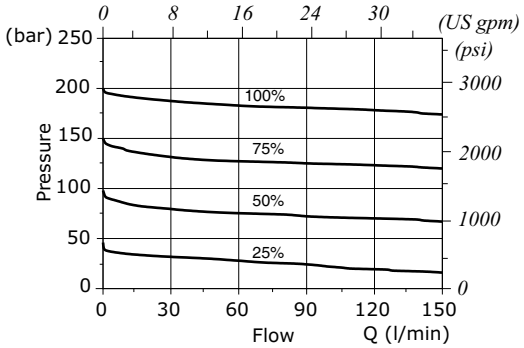
RM16W pressure vs. flow 2->1



RM16W pressure setting vs. % max. control current



RM16W pressure reducing vs. flow
for % of control current - Pressure range **2 -**



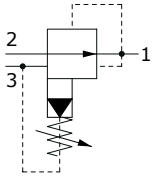
RP..A type
pressure reducing valves - 3 ways

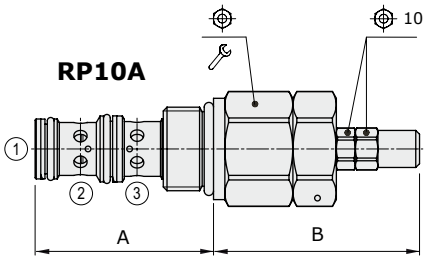
- Pilot operated
- With relieving
- Spool type
- From SAE10 to SAE16 cavities

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

		RP10A	RP12A	RP16A
Nominal flow		50 l/min *(7.9 US gpm)*	100 l/min *(26 US gpm)*	150 l/min *(40 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 10/3	SAE 12/3	SAE 16/3
Weight		0.210 kg *(0.46 lb)*	0.330 kg *(0.72 lb)*	0.420 kg *(0.92 lb)*

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



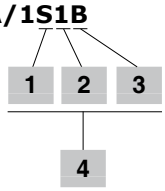


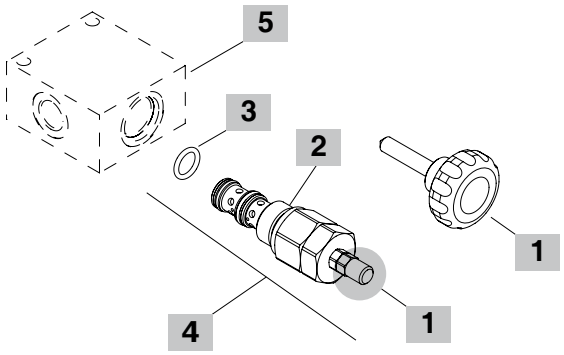
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
RP10A/1S	47.2	*1.86*	54.5	*2.15*	27	50	*37*
RP12A/0S	73.5	*2.89*	51.5	*2.03*	32	80	*59*
RP16A/0S	75	*2.95*	50.5	*1.99*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

RP10A/1S1B





1 Adjustments

TYPE	DESCRIPTION
S	Screw with cap
V	With handwheel

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 5÷80 bar *(72.5÷1160 psi);* Std. setting 50 bar *(725 psi)* at 5 l/min *(1.32 US gpm)*
2	Pressure range 50÷220 bar *(725÷3190 psi);* Std. setting 150 bar *(2175 psi)* at 5 l/min *(1.32 US gpm)*
3	**For SAE cavity 10/3:** pressure range 100÷350 bar *(1450÷5075 psi);* Std. setting 250 bar *(3625 psi)* **For SAE cavity 12/3 and 16/3:** pressure range 180÷350 bar *(2610÷5075 psi);* Std. setting 250 bar *(3625 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
RP10A/1S1B	0RP10002016	Pressure range **1**
RP10A/1S2B	0RP10002017	Pressure range **2**
RP10A/1S3B	0RP10002018	Pressure range **3**
SAE cavity 12/3		
RP12A/0S1B	0RP12002002	Pressure range **1**
RP12A/0S2B	0RP12002003	Pressure range **2**
RP12A/0S3B	0RP12002000	Pressure range **3**
SAE cavity 16/3		
RP16A/0S1B	0RP16002006	Pressure range **1**
RP16A/0S2B	0RP16002000	Pressure range **2**
RP16A/0S3B	0RP16002011	Pressure range **3**

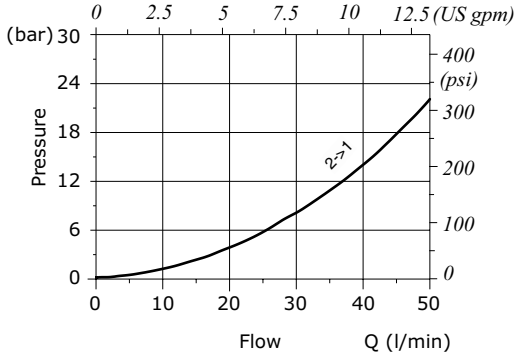
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

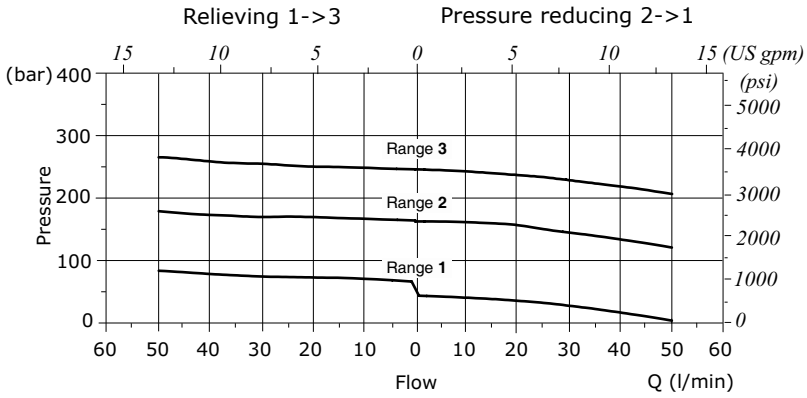
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

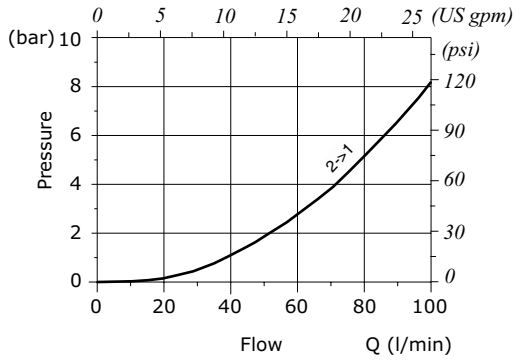
RP10A pressure drop vs. flow



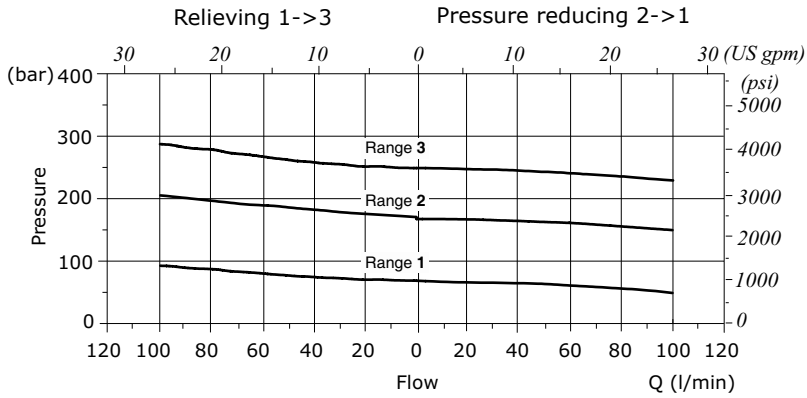
RP10A reducing/relieving pressure vs. flow



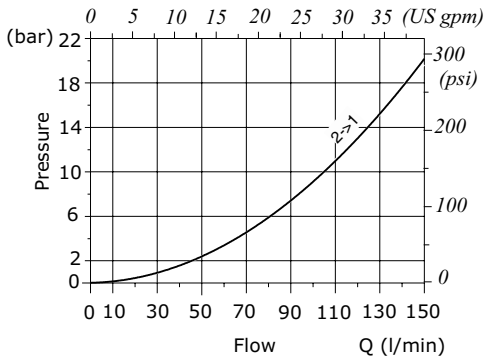
RP12A pressure drop vs. flow



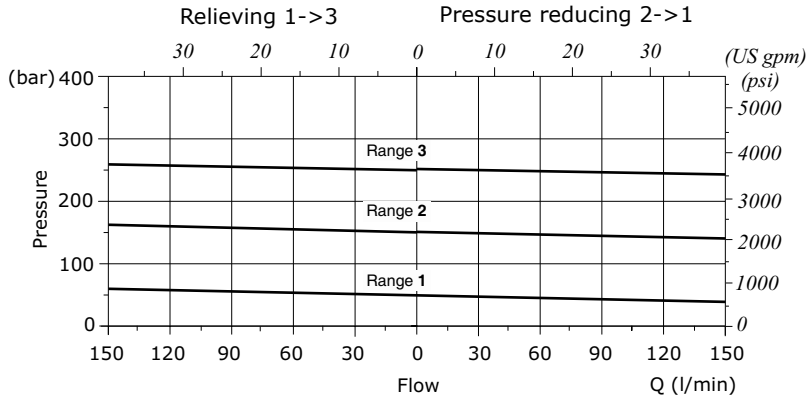
RP12A reducing/relieving pressure vs. flow



RP16A pressure drop vs. flow



RP16A reducing/relieving pressure vs. flow



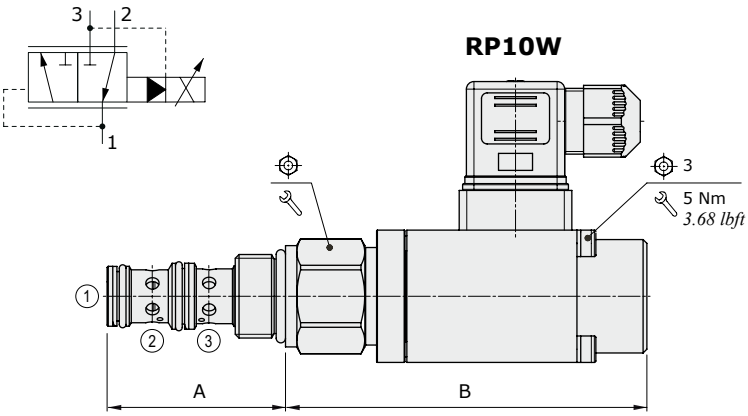
RP..W type
pressure reducing valves - 3 ways

- Solenoid proportional type, pilot operated
- With relieving
- Spool type
- From SAE10 to SAE16 cavities

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

		RP10W	RP12W	RP16W
Nominal flow		50 l/min *(13 US gpm)*	100 l/min *(26 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		350 bar *(5100 psi)* - in 3=210 bar *(3045 psi)*		
Oil leakage	-	-		
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 -20°C *(-4°F)* to 50°C *(122°F)*		
Cavity		SAE 10/3	SAE 12/3	SAE 16/3
Coil type*		MP35		
Nominal voltages		12 VDC - 24 VDC		
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		0.680 kg *(1.50 lb)*	0.820 kg *(1.81 lb)*	0.930 kg *(2.05 lb)*

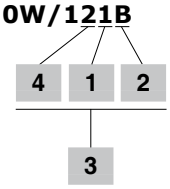
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.

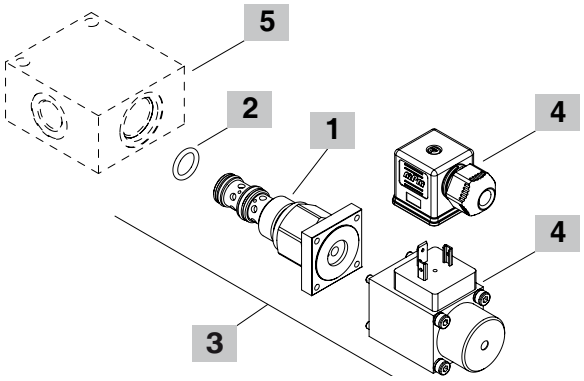


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
RP10W	47.2	*1.86*	95.6	*3.76*	27	50	*37*
RP12W	73.5	*2.89*	93.5	*3.68*	32	70	*52*
RP16W	75	*2.95*	92	*3.62*	41	100	*74*

Ordering codes and description composition

RP10W/121B





1 Pressure range

TYPE	DESCRIPTION
1	Pressure range 5÷50 bar *(72.5÷725 psi)*
2	Pressure range 50÷200 bar *(725÷2900 psi)*
3	Pressure range 80÷350 bar *(1160÷5075 psi)*
4	Pressure range 20÷100 bar *(290÷1450 psi)*
	Pressure range 10÷80 bar *(145÷1160 psi)* only for RP12W/024B

2 Seals

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

3 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
RP10W/121B	0RP10002020	Pressure range **1**, 12VDC
RP10W/122B	0RP10002021	Pressure range **2**, 12VDC
RP10W/123B	0RP10002022	Pressure range **3**, 12VDC
RP10W/124B	0RP10002023	Pressure range **4**, 12VDC
SAE cavity 12/3		
RP12W/021B	0RP12002007	Pressure range **1**, 12VDC
RP12W/022B	0RP12002009	Pressure range **2**, 12VDC
RP12W/024B	0RP12002005	Pressure range **3**, 12VDC
SAE cavity 16/3		
RP16W/021B	0RP16002004	Pressure range **1**, 12VDC
RP16W/022B	0RP16002008	Pressure range **2**, 12VDC
RP16W/023B	0RP16002009	Pressure range **3**, 12VDC
RP16W/024B	0RP16002001	Pressure range **4**, 12VDC

4 Coils and connectors

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

For complete coils and connectors list see from page 190

5 Valve body

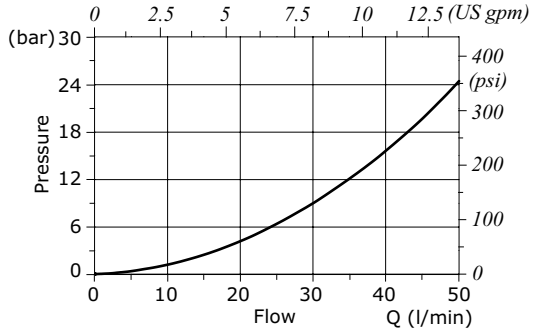
TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

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

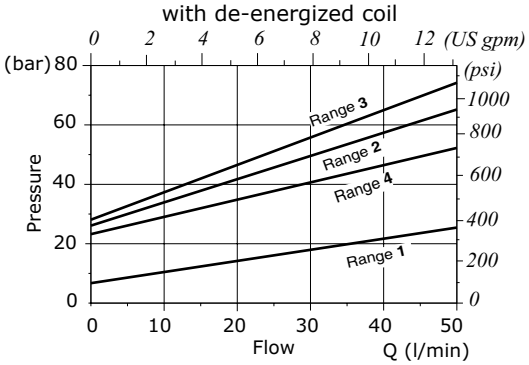
For steel bodies or different threading see from page 199

Rating diagrams

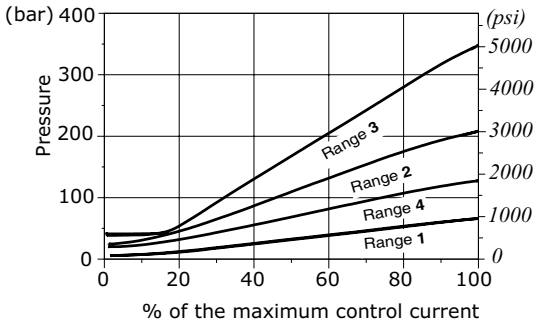
RP10W pressure drop vs. flow 2->1



RP10W pressure drop vs. flow 1->3
with de-energized coil

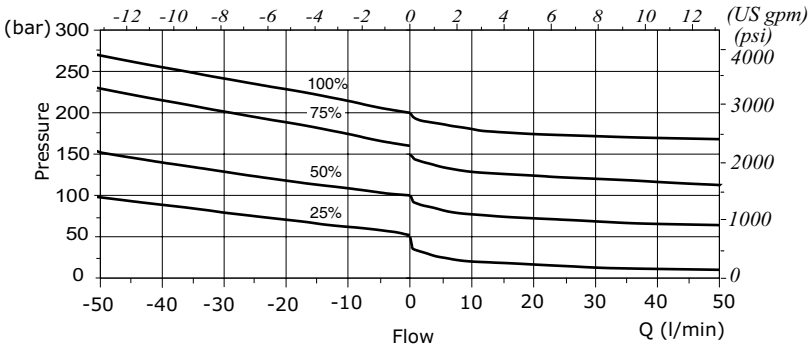


RP10W pressure reducing vs. control current

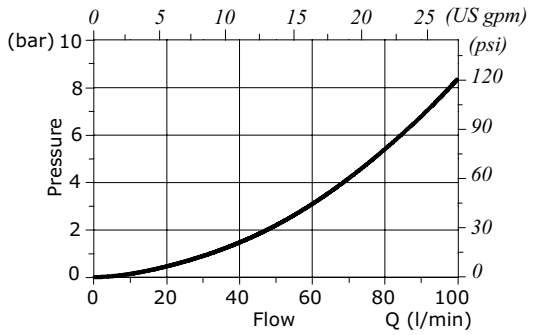


RP10W reducing/relieving pressure vs. flow
for % of control current - Pressure range **2**

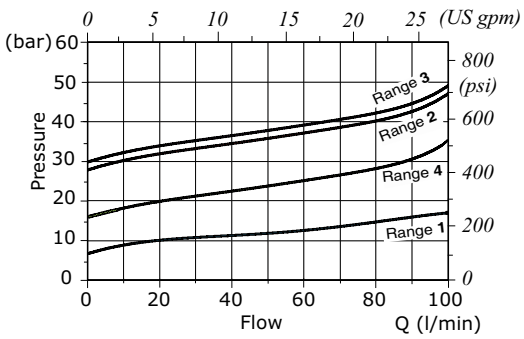
Relieving 1->3 Pressure reducing 2->1



RP12W pressure drop vs. flow 2->1

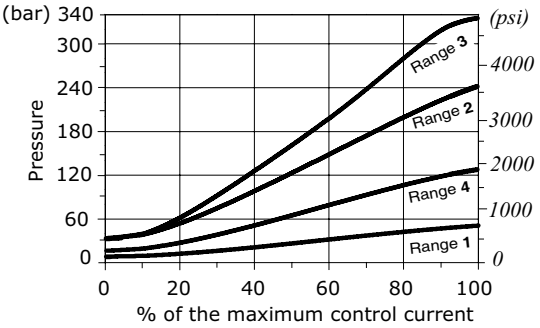


RP12W pressure drop vs. flow 1->3
with de-energized coil

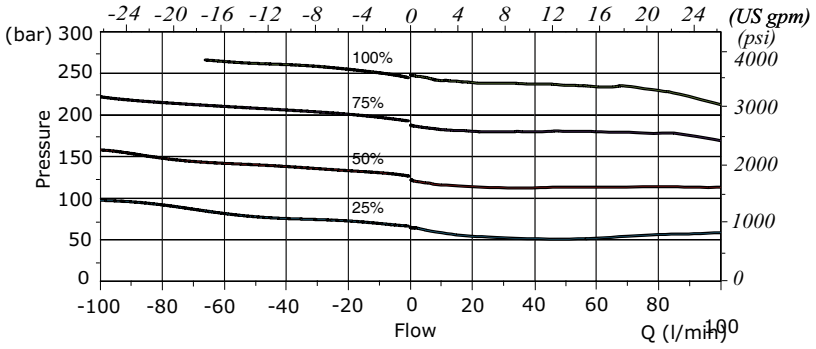


Rating diagrams

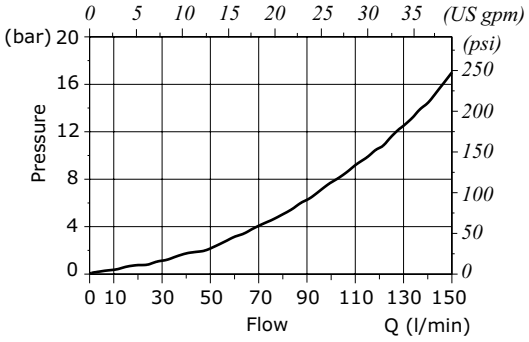
RP12W pressure reducing vs. control current



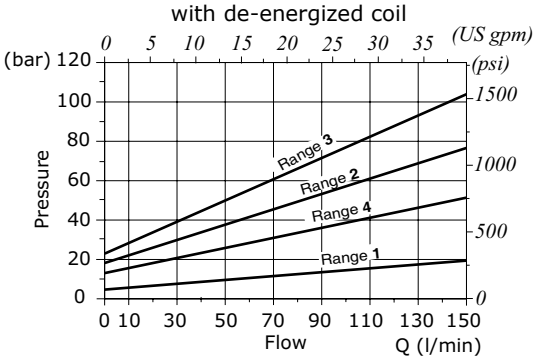
RP12W reducing/relieving pressure vs. flow
for % of control current - Pressure range **2 -**
Relieving 1->3 Pressure reducing 2->1



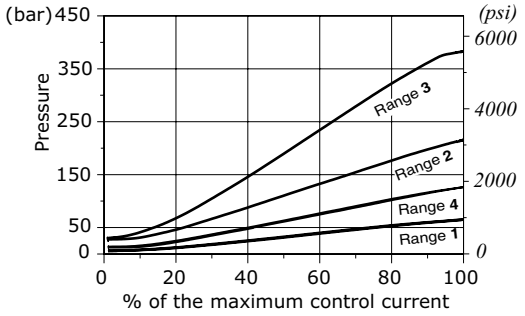
RP16W pressure drop vs. flow 2->1



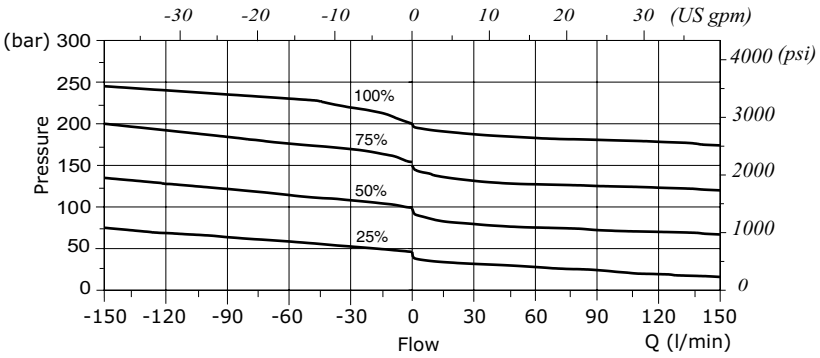
RP16W pressure drop vs. flow 1->3
with de-energized coil



RP16W pressure reducing vs. control current



RP16W reducing/relieving pressure vs. flow
for % of control current - Pressure range **2 -**
Relieving 1->3 Pressure reducing 2->1



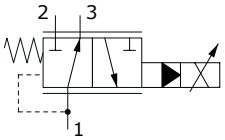
RP08X type
pressure reducing valves - 3 ways

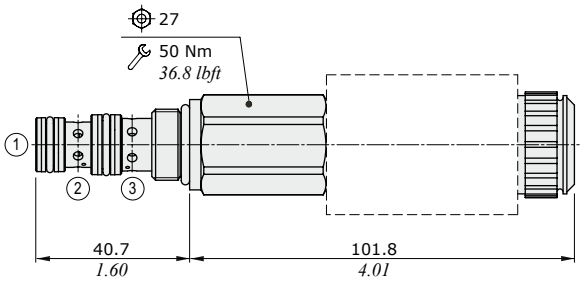
- Solenoid proportional type, pilot operated
- With relieving (NO)
- Spool type

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

		RP08X
Nominal flow		15 l/min *(4 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage		-
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 -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 8/3
Coil type*		BDP19
Nominal voltages		12 VDC - 24 VDC
Power rating		13 W (12 VDC) - 13.25 W (24 VDC)
Max control current		12 V -> 1.9 A - 24 V -> 0.9 A
Dither frequency		150 Hz
Hysteresis		≤4%
Weight		0.56 kg *(1.23 lb)*

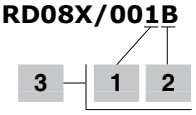
NOTE - For different conditions, please contact Walvoil Sales Dpt. - For coils further features see from page 190.



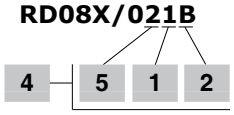


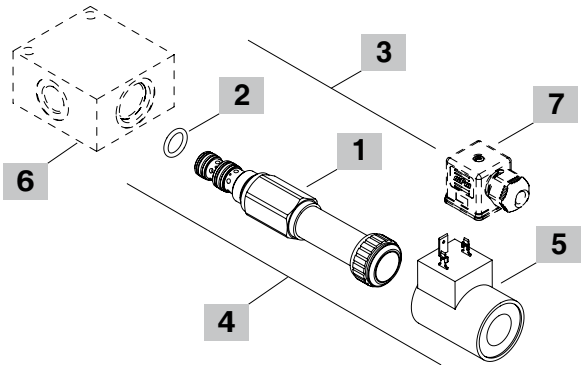
Ordering codes and description composition

RD08X/001B



RD08X/021B





1 Pressure range

TYPE	DESCRIPTION
1	Pressure range 10÷50 bar *(145÷725 psi)*
2	Pressure range 50÷200 bar *(725÷2900 psi)*
3	Pressure range 80÷350 bar *(1160÷5075 psi)*
4	Pressure range 20÷100 bar *(290÷1450 psi)*

2 Seals

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

3 Cartridges

TYPE	CODE	DESCRIPTION
RP08X/001B	0RP08002010	Pressure range **1**
RP08X/002B	0RP08002011	Pressure range **2**
RP08X/003B	0RP08002012	Pressure range **3**
RP08X/004B	0RP08002013	Pressure range **4**

4 Complete cartridges

TYPE	CODE	DESCRIPTION
RP08X/021B	0RP08002007	Pressure range **1**, 12VDC
RP08X/022B	0RP08002001	Pressure range **2**, 12VDC
RP08X/023B	0RP08002002	Pressure range **3**, 12VDC
RP08X/024B	0RP08002003	Pressure range **4**, 12VDC

5 Coils

TYPE	CODE	DESCRIPTION
2) BDP19 12VDC	4SL5000120	12VDC-ISO4400 coil
4) BDP19 24VDC	4SL5000240	24VDC-ISO4400 coil

For complete coils list see page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 8/3-G 3/8	3CC0830C11	Aluminium body for cavity 10 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

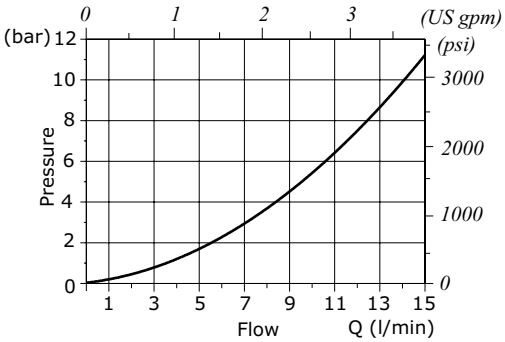
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

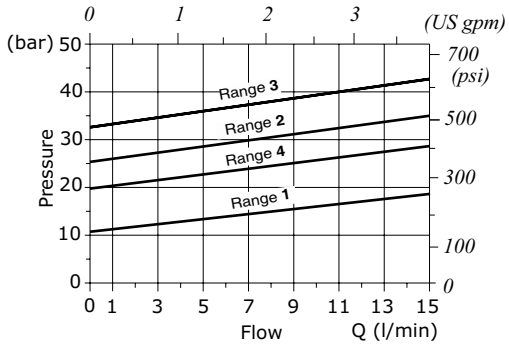
For complete connectors list see from page 190

Rating diagram

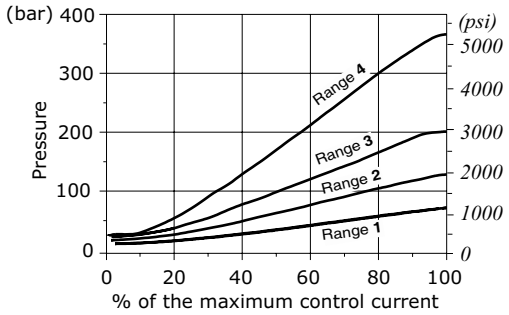
Pressure drop vs. flow 2->1
with de-energized coil



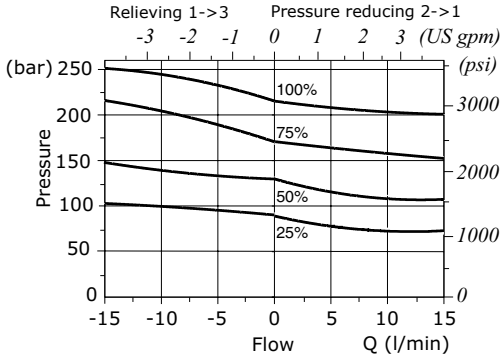
Pressure drop vs. flow 1->3



Pressure reducing vs. control current



Reducing/relieving pressure vs. flow
for % of control current - Pressure range **2**



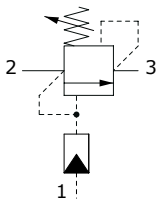
SE..A type
sequence valves - 3 ways

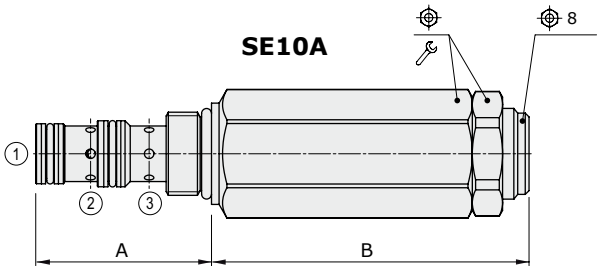
- Direct acting
- External pilot
- Poppet type
- From SAE08 to SAE10 cavities

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

		SE08A	SE10A
Nominal flow		5 l/min *(1.32 US gpm)*	20 l/min *(5.3 US gpm)*
Max. pressure		210 bar *(3050 psi)*	
Oil leakage	80% of max. pressure setting	0.25 cm³/min *(0.015 in3/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 8/3	SAE 10/3
Weight		0.28 kg *(0.62 lb)*	0.47 kg *(1.04 lb)*

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

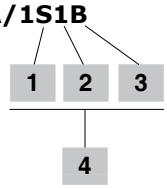


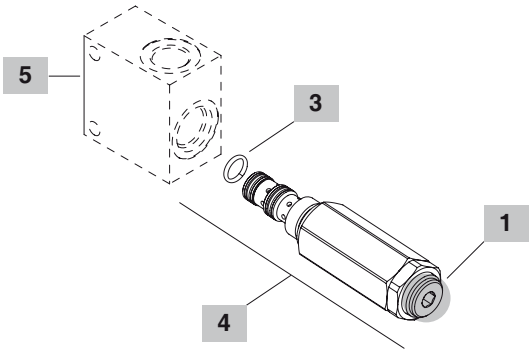


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
SE08A	41	*1.61*	69	*2.72*	27	30	*22*
SE10A	47	*1.85*	95	*3.74*	30	50	*37*

Ordering codes and description composition

SE08A/1S1B





1 Adjustments

TYPE	DESCRIPTION
S	Screw

2 Pressure settings

Standard setting is referred to at 1 l/min *(0.26 US gpm)* flow

TYPE	DESCRIPTION
1	Range 5÷50 bar *(72.5÷725 psi);* Std. setting 30 bar *(435 psi)*
2	Range 20÷100 bar *(290÷1450 psi);* Std. setting 50 bar *(725 psi)*
3	Range 50÷150 bar *(725÷2175 psi);* Std. setting 100 bar *(1450 psi)*
4	Range 100÷250 bar *(1450÷3600 psi);* Std. setting 180 bar *(2600 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
SE08A/1S1B	0SE08002003	With pressure range **1**
SE08A/1S2B	0SE08002002	With pressure range **2**
SE08A/1S3B	0SE08002001	With pressure range **3**
SE08A/1S4B	0SE08002000	With pressure range **4**
SAE cavity 10/3		
SE10A/1S1B	0SE10002001	With pressure range **1**
SE10A/1S2B	0SE10002002	With pressure range **2**
SE10A/1S3B	0SE10002000	With pressure range **3**
SE10A/1S4B	0SE10002003	With pressure range **4**

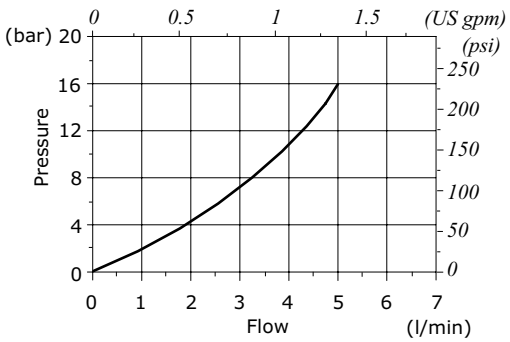
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

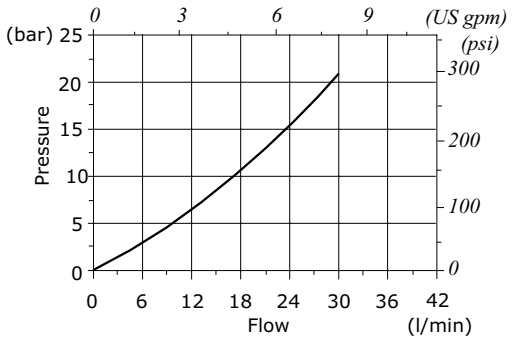
For steel bodies or different threading see from page 199

Rating diagrams

SE08A pressure drop vs. flow 2->3



SE10A pressure drop vs. flow 2->3



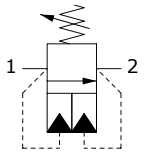
SW..A type
sequence valves - 2 ways

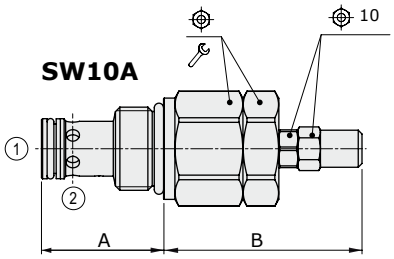
- Pressure release type
- Pilot operated
- Spool type
- From SAE10 to SAE16 cavities

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

		SW10A	SW12D	SW16A
Nominal flow		60 l/min *(16 US gpm)*	100 l/min *(26 US gpm)*	180 l/min *(48 US gpm)*
Max. pressure			350 bar *(5100 psi)*	
Oil leakage	80% of max. pressure setting	22 cm³/min *(1.34 in³/min)*	50 cm³/min *(3.05 in³/min)*	100 cm³/min *(6.1 in³/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	SAE 16/2
Weight		0.20 kg *(0.44 lb)*	0.30 kg *(0.66 lb)*	0.44 kg *(0.97 lb)*

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

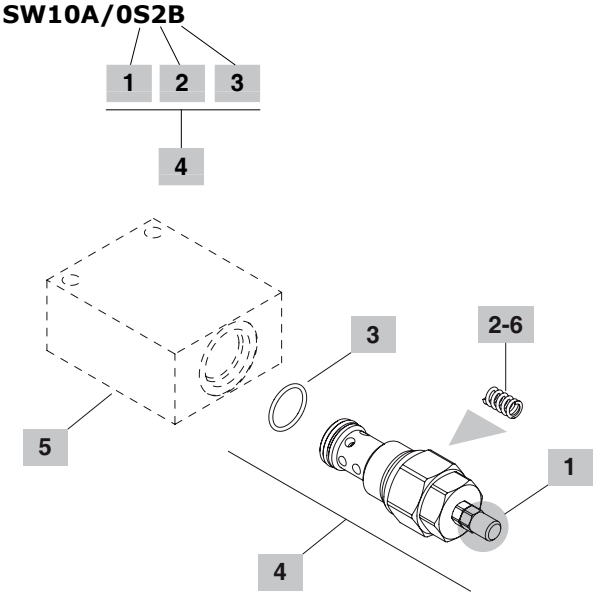




Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
SW10A	32.3	*1.27*	52.5	*2.07*	27	50	*37*
SW12D	46	*1.81*	52.5	*2.07*	32	80	*59*
SW16A	45.2	*1.78*	53	*2.09*	41	100	*74*

Ordering codes and description composition

SW10A/0S2B



1 Adjustments

TYPE	DESCRIPTION
S	Screw

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 10÷80 bar *(145÷1160 psi);* Std. setting 30 bar *(435 psi)*, pressure increase by steps of 10 bar *(145 psi)* per screw turn
2	Pressure range 50÷220 bar *(725÷3200 psi);* Std. setting 150 bar *(2200 psi)*, pressure increase by steps of 36 bar *(520 psi)* per screw turn
3	Pressure range 150÷350 bar *(2200÷5100 psi);* Std. setting 250 bar *(3600 psi)*, pressure increase by steps of 90 bar *(1300 psi)* per screw turn

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
SW10A/0S2B	0SW10002000	Pressure range **2**
SAE cavity 12/2		
SW12D/0S2B	0SW12002005	Pressure range **2**
SAE cavity 16/2		
SW16A/0S2B	0SW16002000	Pressure range **2**

5 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
SAE 16/2-G 3/4	3CC1020C11	Aluminium body for cavity 16 valve, G 3/4 std thread

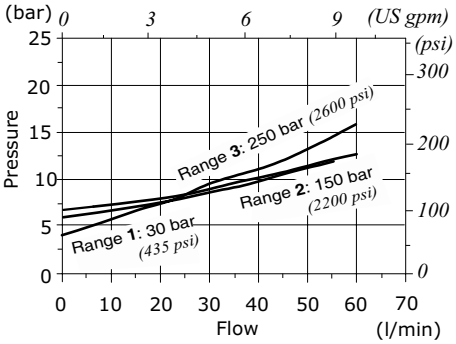
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

6 Springs

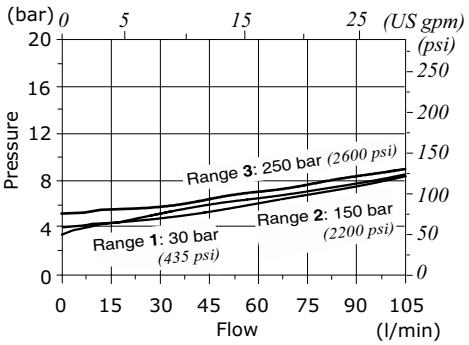
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1**
2	3ML1081401	Pressure range **2**
3	3ML1081402	Pressure range **3**

Rating diagrams

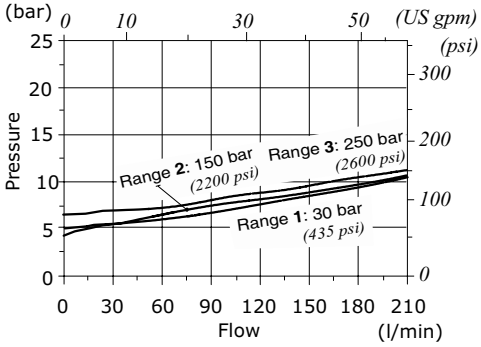
SW10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



SW12A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



SW16A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



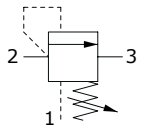
SP10A type
sequence valve - 3 ways

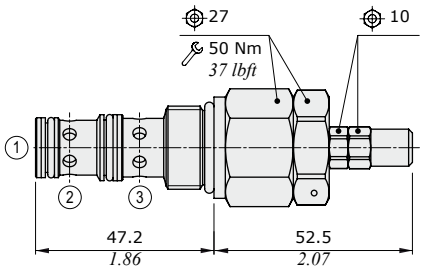
- Pilot operated
- Spool type
- Not affected by back pressure

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

		SP10A
Nominal flow		50 l/min *(13 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage	at 210 bar *(3050 psi)*	25 cm³/min *(1.52 in³/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 10/3
Weight		0.21 kg *(0.46 lb)*

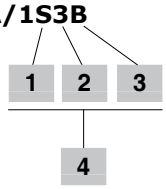
NOTE - For different conditions, please contact Walvoil Sales Dpt.

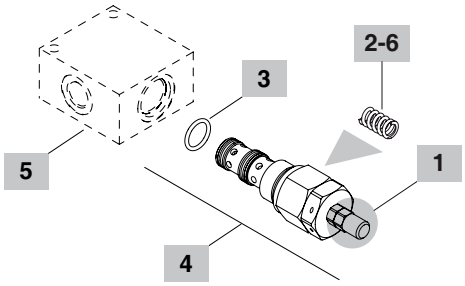




Ordering codes and description composition

SP10A/1S3B





1 Adjustments

TYPE	DESCRIPTION
S	Screw

2 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 10÷80 bar *(145÷1150 psi);* Std. setting 20 bar *(290 psi),* pressure increase by steps of 10 bar *(145 psi)* per screw turn
2	Pressure range 50÷220 bar *(725÷3200 psi);* Std. setting 150 bar *(2175 psi)*, pressure increase by steps of 46 bar *(660 psi)* per screw turn
3	Pressure range 150÷350 bar *(2200÷5100 psi);* Std. setting 250 bar *(3600 psi)*, pressure increase by steps of 110 bar *(1600 psi)* per screw turn

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
SP10A/1S3B	0SP10002001	Pressure range **3**

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

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

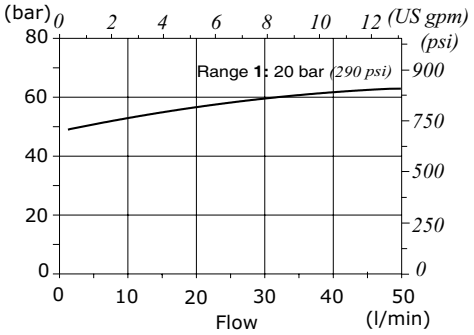
For steel bodies or different threading see from page 199

6 Springs

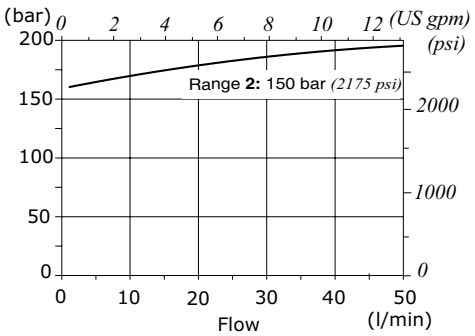
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1**
2	3ML1081401	Pressure range **2**
3	3ML1081402	Pressure range **3**

Rating diagrams

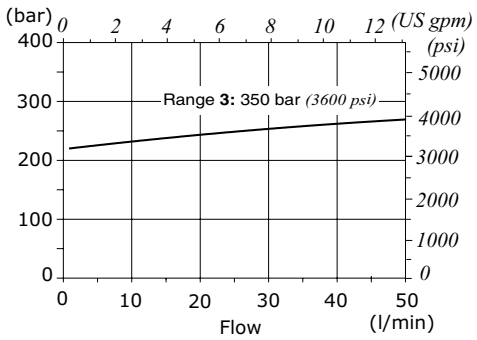
SP10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



SP10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



SP10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



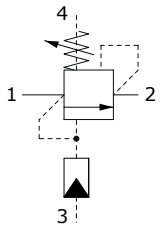
SG12A type
sequence valve - 4 ways

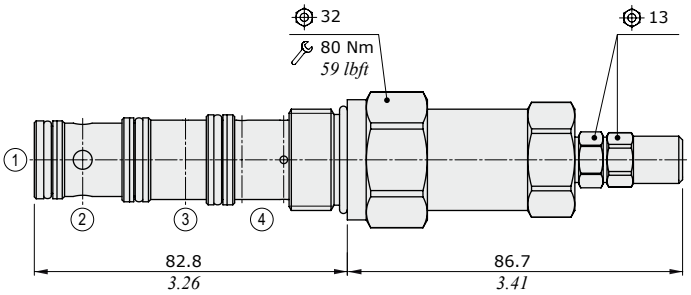
- Direct acting
- Poppet type
- External pilot and drain

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

		SG12A
Nominal flow		50 l/min *(13 US gpm)*
Max. pressure		300 bar *(4350 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 12/4
Weight		0.52 kg *(1.15 lb)*

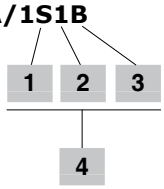
NOTE - For different conditions, please contact Walvoil Sales Dpt.

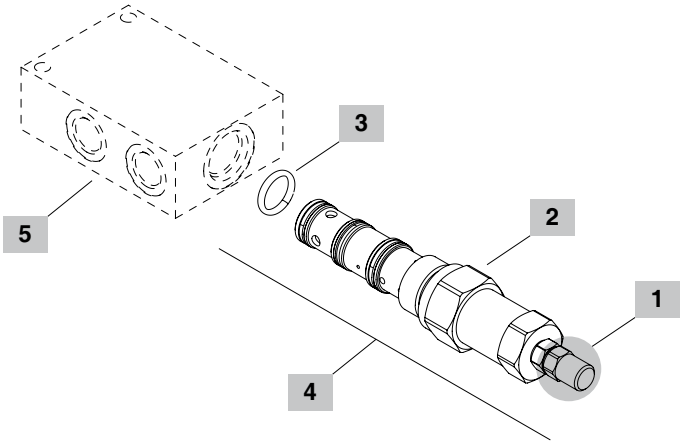




Ordering codes and description composition

SG12A/1S1B





1 Adjustments

TYPE	DESCRIPTION
S	Screw

2 Pressure settings

Standard setting is referred to at 1 l/min *(0.26 US gpm)* flow

TYPE	DESCRIPTION
1	Range 20÷100 bar *(290÷1450 psi);* Std. setting 50 bar *(725 psi)*
2	Range 50÷200 bar *(725÷2900 psi);* Std. setting 150 bar *(2200 psi)*
3	Range 100÷300 bar *(1450÷4350 psi);* Std. setting 250 bar *(3600 psi)*

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 12/4		
SG12A/1S1B	0SG12002000	Cartridge pres. sett. **1**
SG12A/1S2B	0SG12002002	Cartridge pres. sett. **2**
SG12A/1S3B	0SG12002001	Cartridge pres. sett. **3**

5 Valve body

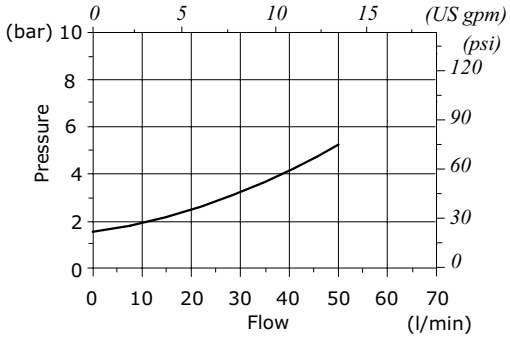
TYPE	CODE	DESCRIPTION
SAE 12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve, G 1/2 std thread

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

For steel bodies or different threading see from page 199

Rating diagrams

SG12A pressure drop vs. flow 1->2



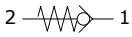
UC..A type
check valves - 2 ways

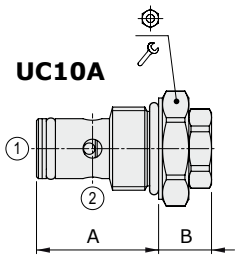
- Poppet type
- From SAE08 to SAE16 cavities

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

		UC08A	UC10A	UC12A	UC16A
Nominal flow		up to 20 l/min *(5.3 US gpm)*	up to 35 l/min *(9.2 US gpm)*	up to 50 l/min *(13 US gpm)*	up to 100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
Oil leakage	at 100 bar *(1450 psi)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/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 8/2	SAE 10/2	SAE 12/2	SAE 16/2
Weight		0.080 kg *(0.18 lb)*	0.090 kg *(0.20 lb)*	0.180 kg *(0.40 lb)*	0.370 kg *(0.81 lb)*

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

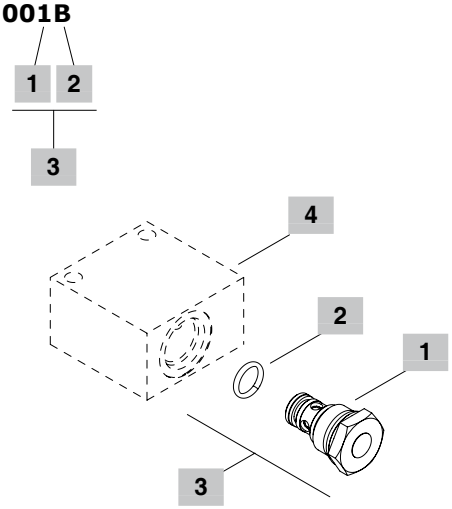




Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
UC08A	27.6	*1.09*	15.5	*0.61*	24	30	*22*
UC10A	32.3	*1.27*	12.5	*0.49*	27	50	*37*
UC12A	46	*1.81*	14	*0.55*	32	80	*59*
UC16A	45.2	*1.78*	25	*0.98*	41	100	*73*

Ordering codes and description composition

UC08A/001B



1 Opening pressure from 1 to 2

TYPE	DESCRIPTION
1	0.5 bar *(7.3 psi)*
2	2.5 bar *(36.2 psi)*
3	5 bar *(72.5 psi)*

2 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dpt.

3 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
UC08A/001B	0UC08002001	Opening pressure 0.5 bar *(7.3 psi)*
SAE cavity 10/2		
UC10A/001B	0UC10002000	Opening pressure 0.5 bar *(7.3 psi)*
SAE cavity 12/2		
UC12A/001B	0UC12002000	Opening pressure 0.5 bar *(7.3 psi)*
SAE cavity 16/2		
UC16A/001B	0UC16002001	Opening pressure 0.5 bar *(7.3 psi)*

4 Valve body

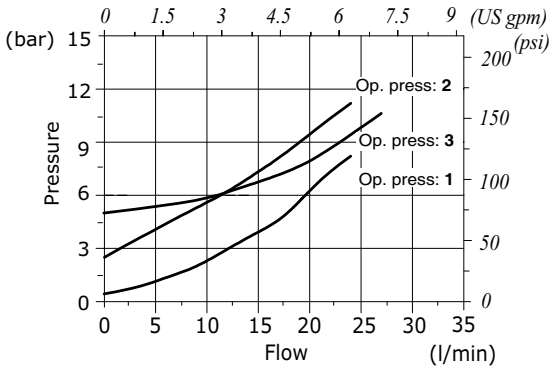
TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

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

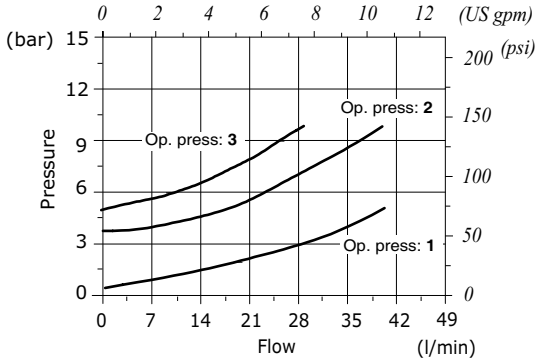
For steel bodies or different threading see from page 199

Rating diagrams

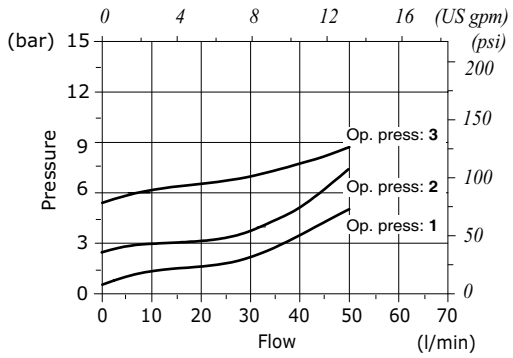
UC08A pressure drop vs flow



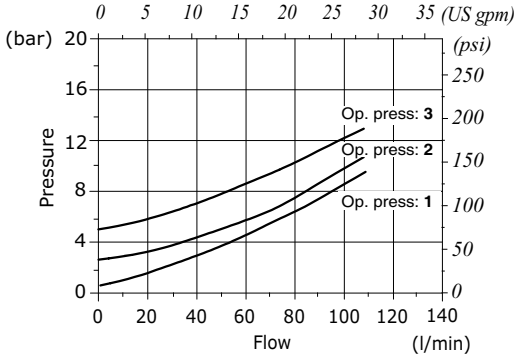
UC10A pressure drop vs flow



UC12A pressure drop vs flow



UC16A pressure drop vs flow



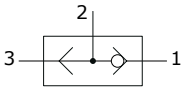
UT..A type
check valves - 3 ways

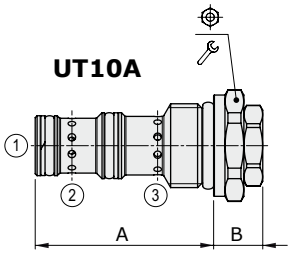
- Shuttle valve
- Poppet type
- From SAE08 to SAE10 cavities

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

		UT08A	UT10A
Nominal flow		15 l/min *(4 US gpm)*	up to 20 l/min *(5.3 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 8/3	SAE 10/3
Weight		0.080 kg *(0.18 lb)*	0.100 kg *(0.22 lb)*

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





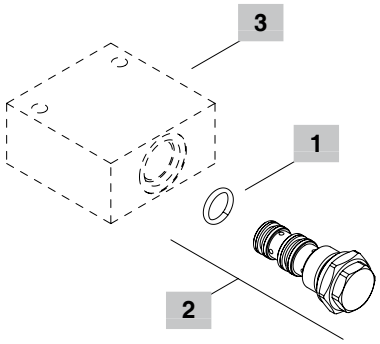
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
UT08A	40.8	*1.60*	12.5	*0.49*	24	30	*22*
UT10A	47.2	*1.86*	13	*0.51*	27	50	*36*

Ordering codes and description composition

UC08A/000B

1

2



1 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

2 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
UT08A/000B	0UT08002000	Valve assembly
SAE cavity 10/3		
UT10A/000B	0UT10002000	Valve assembly

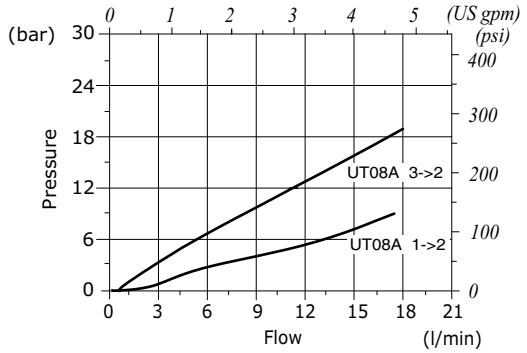
3 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 8 valve G1/4 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread

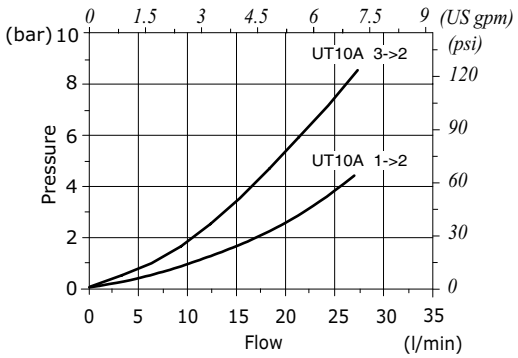
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

UT08A pressure drop vs flow



UT10A pressure drop vs flow



BC... type
pilot operated check valves - 3 ways

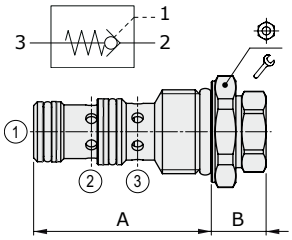
- Poppet type
- From SAE08 to SAE10 cavities

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

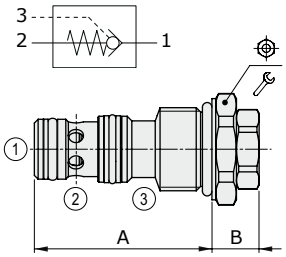
		BC08A	BC10A-B	BC10C	BC12A-B	BC16A-B
Nominal flow		15 l/min *(4 US gpm)*	30 l/min *(8 US gpm)*	60 l/min *(16 US gpm)*	50 l/min *(13 US gpm)*	100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*				
Oil leakage	at 100 bar *(1450 psi)*	0.25 cm³/min (5 drops) *(0.015 in³/min)*	0.25 cm³/min (5 drops) *(0.015 in³/min)*	0.25 cm³/min (5 drops) *(0.015 in³/min)*	0.25 cm³/min (5 drops) *(0.015 in³/min)*	0.25 cm³/min (5 drops) *(0.015 in³/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)*				
	with FPM seals	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 8/3	SAE 10/3	SAE 10/3	SAE 12/3	SAE 16/3
Weight		0.080 kg *(0.18 lb)*	0.100 kg *(0.22 lb)*	0.111 kg *(0.24 lb)*	0.230 kg *(0.51 lb)*	0.440 kg *(0.97 lb)*

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

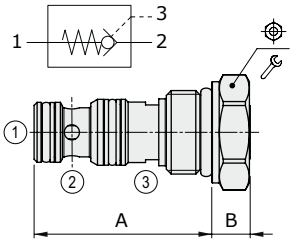
BC10A



BC10B



BC10C

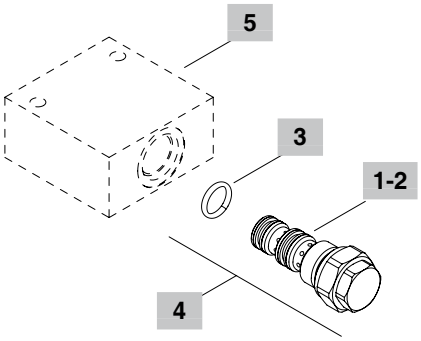


Valve type		A mm	A in	B mm	B in		Nm	lbft
BC..A	SAE 8/3	40.8	*1.61*	15.5	*0.61*	24	30	*22*
	SAE 10/3	47	*1.85*	11	*0.43*	27	50	*36*
	SAE 12/3	73.5	*2.89*	14	*0.55*	32	80	*59*
	SAE 16/3	75.4	*2.97*	25	*0.98*	41	100	*73*
BC..B	SAE 10/3	47	*1.85*	6.5	*0.25*	27	50	*36*
	SAE 12/3	73.5	*2.89*	14	*0.55*	32	80	*59*
	SAE 16/3	99	*3.90*	24	*0.94*	41	100	*73*
BC..C	SAE 10/3	47	*1.85*	10.2	*0.40*	27	50	*36*

Ordering codes and description composition

BC08A/3 0 1 B

1 2 3 4



1 Pilot ratio

TYPE	DESCRIPTION
For BC..A	
BC08A/**3**	1:2.5
BC10A/**3**	1:3
BC12A/**3**	1:3
BC16A/**3**	1:2.5
For BC..B	
BC10B/**3**	1:2
BC12B/**3**	1:3
BC16B/**3**	1:2.5
For BC..C	
BC10B/**3**	1:4

2 Opening pressure from 2 to 3

TYPE	DESCRIPTION
For BC..A from 2 to 3	
1	5 bar *(72.5 psi)* with sealed piston
2	2.5 bar *(36.2 psi)* without sealed piston
For BC..B from 1 to 2	
1	5 bar *(72.5 psi)* with sealed piston
For BC..C from 2 to 1	
1	5 bar *(72.5 psi)* with seal

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
BC08A/301B	0BC08002000	Pilot ratio 1:2.5
		Opening press. 2 to 3 = 5 bar *(72.5 psi)*
SAE cavity 10/3		
BC10A/301B	0BC10002001	Pilot ratio 1:3
		Opening press. 2 to 3 = 5 bar *(72.5 psi)*
BC10B/301B	0BC10002008	Pilot ratio 1:2
		Opening press. 1 to 2 = 5 bar *(72.5 psi)*
BC10C/401B	0BC10002011	Pilot ratio 1:4
		Opening press. 2 to 1 = 5 bar *(72.5 psi)*
SAE cavity 12/3		
BC12A/301B	0BC12002000	Pilot ratio 1:3
		Opening press. 2 to 3 = 5 bar *(72.5 psi)*
BC12B/301B	0BC12002005	Pilot ratio 1:3
		Opening press. 1 to 2 = 5 bar *(72.5 psi)*
SAE cavity 16/3		
BC16A/301B	0BC16002000	Pilot ratio 1:2.5
		Opening press. 2 to 3 = 5 bar *(72.5 psi)*
BC16B/301B	0BC16002004	Pilot ratio 1:2.5
		Opening press. 1 to 2 = 5 bar *(72.5 psi)*

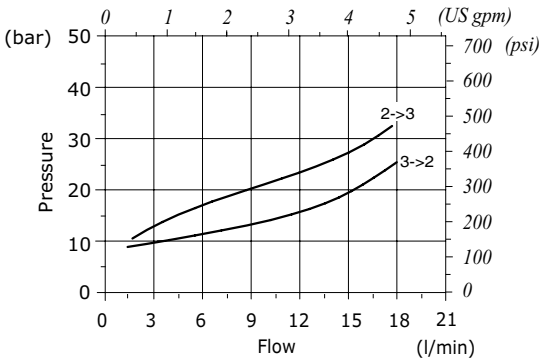
3 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 3/8	3CC0830C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/3-G 3/8	3CC1230D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/3-G 3/8	3CC1630E11	Aluminium body for cavity 16 valve G3/4 std thread

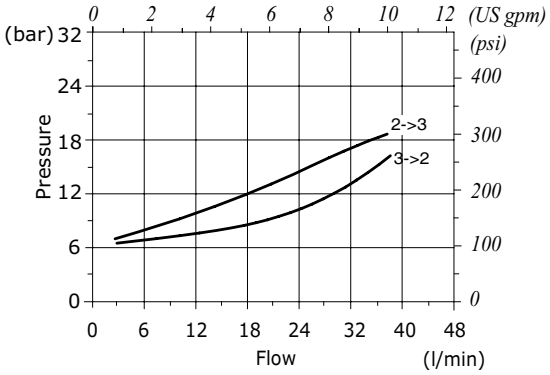
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

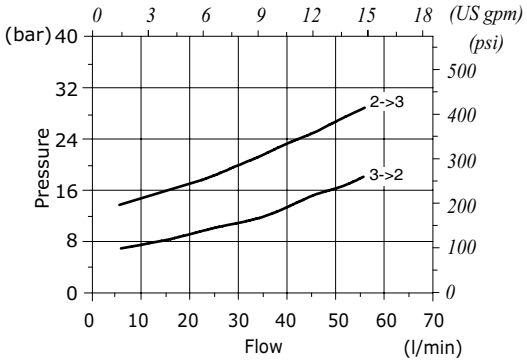
BC08A pressure drop vs flow



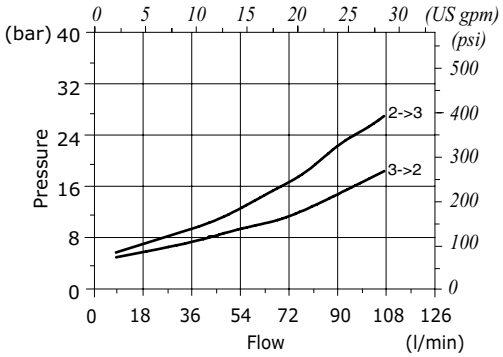
BC10A pressure drop vs flow



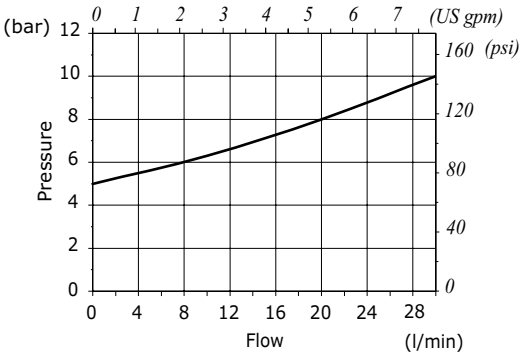
BC12A pressure drop vs flow



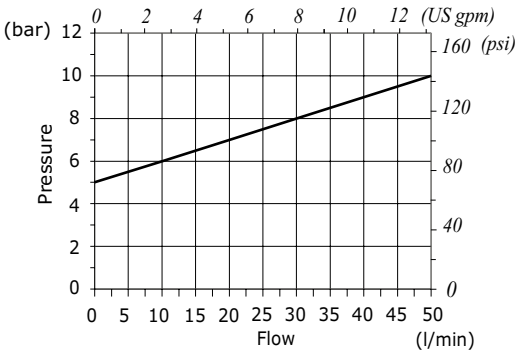
BC16A pressure drop vs flow



BC10B pressure drop vs flow

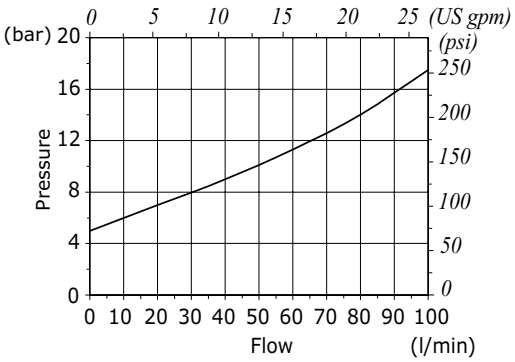


BC12B pressure drop vs flow

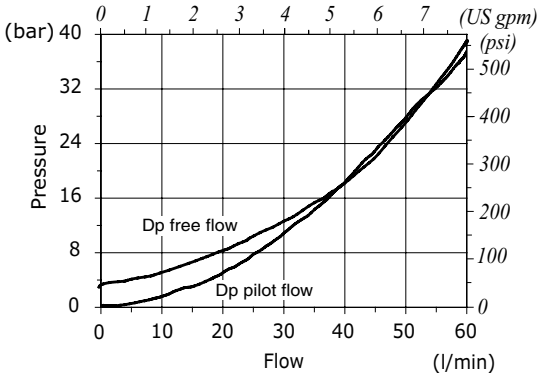


Rating diagrams

BC16B pressure drop vs flow



BC10C pressure drop vs flow



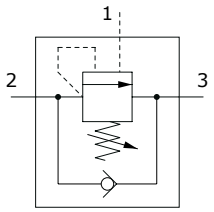
CA..A type
counterbalance valves - 3 ways

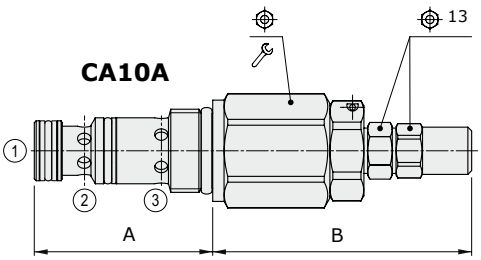
- For open center
- Line mounting
- From SAE10 to SAE16 cavities

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

		CA10A	CA12A	CA16A
Nominal flow		30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	90 l/min *(23.8 US gpm)*
Max. pressure		350 bar *(5100 psi)*		
Oil leakage	80% of max. pressure setting	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/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 10/3	SAE 12/3	SAE 16/3
Weight		0.280 kg *(0.62 lb)*	0.280 kg *(0.62 lb)*	0.670 kg *(1.48 lb)*

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

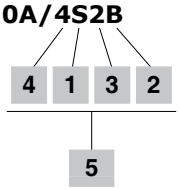


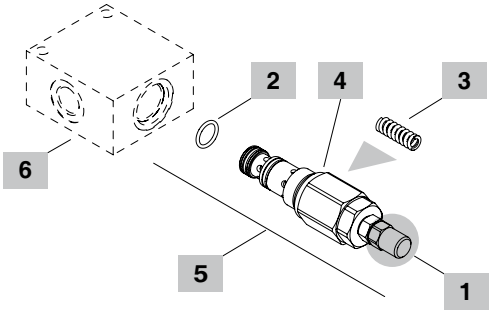


Valve type		A		B				
		mm	*in*	mm	*in*		Nm	*lbft*
CA10A/	4S	47.2	*1.86*	68.5	*2.70*	27	50	*37*
	4W	47.2	*1.86*	68.5	*2.70*	27	50	*37*
CA12A/	4S	73.5	*2.89*	62.5	*2.46*	32	80	*59*
	4W	73.5	*2.89*	62.5	*2.46*	32	80	*59*
CA16A/	4S	75	*2.95*	69.9	*2.74*	41	100	*74*
	4W	75	*2.95*	69.9	*2.74*	41	100	*74*

Ordering codes and description composition

CA10A/4S2B





1 Adjustments

TYPE	DESCRIPTION
S	Screw
W	Copped adjustment

2 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

3 Pressure range

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

TYPE	CODE	DESCRIPTION
For CA10A valve		
1	3ML1092502	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1092300	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1002800	Setting range 300-700 bar *(4350-10150 psi)*
For CA12A valve		
1	3ML1133201	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1133200	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1133500	Setting range 300-700 bar *(4350-10150 psi)*
For CA16A valve		
1	3ML1164000	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1164001	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1164002	Setting range 300-700 bar *(4350-10150 psi)*

4 Pilot ratio

TYPE	DESCRIPTION
4	1:4

5 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
CA10A/4S2B	0CA10002007	Screw type adjustment, pilot ratio 1:4 pressure range **2**
SAE cavity 12/3		
CA12A/4S2B	0CA12002000	Screw type adjustment, pilot ratio 1:4 pressure range **2**
SAE cavity 16/3		
CA16A/4S2B	0CA16002001	Screw type adjustment, pilot ratio 1:4 pressure range **2**

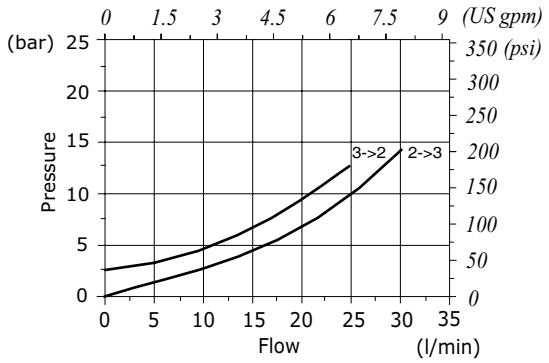
6 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve G3/4 std thread

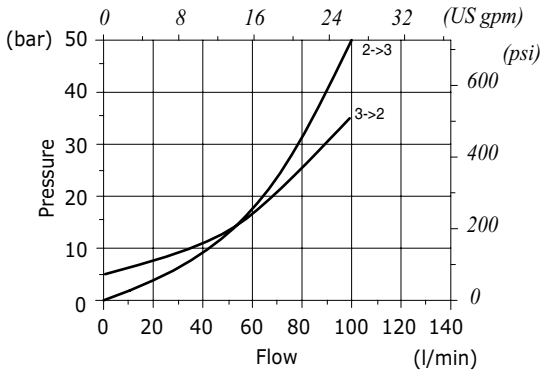
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

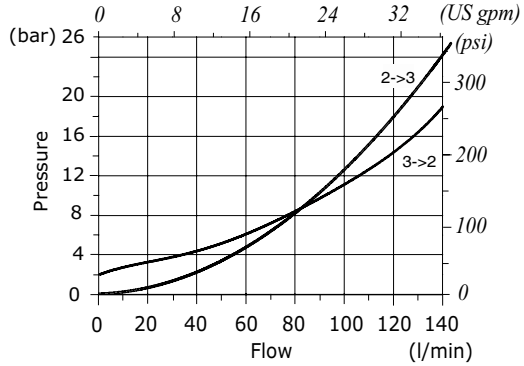
CA10A pressure drop vs flow



CA12A pressure drop vs flow



CA16A pressure drop vs flow



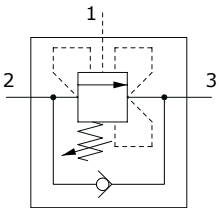
CC..A type
counterbalance valves - 3 ways

- For closed center
- Line mounting
- Non affected by back pressure
- From SAE10 to SAE20 cavities

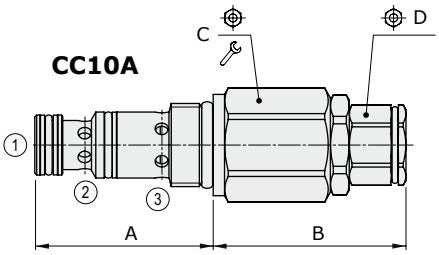
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		CC10A	CC12A	CC16A	CC20A
Nominal flow		30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	90 l/min *(24 US gpm)*	150 l/min *(39.6 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
Oil leakage	80% of max. pressure setting	0.25 cm^3/min *(0.015 in^3/min)*	0.25 cm^3/min *(0.015 in^3/min)*	0.25 cm^3/min *(0.015 in^3/min)*	0.25 cm^3/min *(0.015 in^3/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 10/3	SAE 12/3	SAE 16/3	SAE 20/3
Weight		0.280 kg *(0.62 lb)*	0.380 kg *(0.84 lb)*	0.720 kg *(1.59 lb)*	1.200 kg *(2.64 lb)*

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



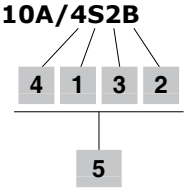
CC10A

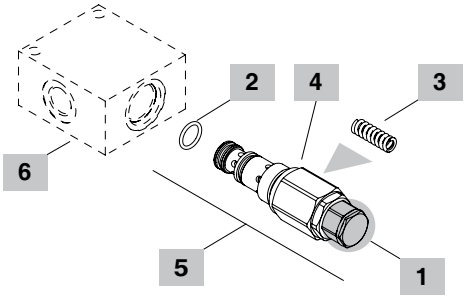


Valve type		A mm	A in	B mm	B in		C Nm	C lbft	D
CC10A/	4S	47.2	*1.86*	51	*2.01*	27	50	*37*	19
	W	47.2	*1.86*	51	*2.01*	27	50	*37*	19
CC12A/	4S	73.5	*2.89*	60	*2.36*	32	80	*59*	24
	4W	73.5	*2.89*	60	*2.36*	32	80	*59*	24
CC16A/	4S	75	*2.95*	69	*2.72*	41	100	*74*	27
	4W	75	*2.95*	69	*2.72*	41	100	*74*	27
CC20A/	4S	99.5	*3.92*	83.5	*3.29*	46	100	*74*	36
	4W	99.5	*3.92*	83.5	*3.29*	46	100	*74*	36

Ordering codes and description composition

CC10A/4S2B





1 Adjustments

TYPE	DESCRIPTION
S	Screw
W	Copped adjustment

2 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

3 Pressure setting springs

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

TYPE	CODE	DESCRIPTION
For CC10A valve		
1	3ML1092502	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1092300	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1002800	Setting range 300-700 bar *(4350-10150 psi)*
For CC12A valve		
1	3ML1133201	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1133200	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1133500	Setting range 300-700 bar *(4350-10150 psi)*
For CC16A valve		
1	3ML1164000	Setting range 50-220 bar *(725-3200 psi)*
2	3ML1164001	Setting range 180-350 bar *(2600-5100 psi)*
3	3ML1164002	Setting range 300-700 bar *(4350-10150 psi)*

4 Pilot ratio

TYPE	DESCRIPTION
4	1:4

5 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
CC10A/4S2B	0CC10002001	Screw type adjustment, pilo ratiio 1:4 pressure range **2**
SAE cavity 12/3		
CC12A/4S2B	0CC12002000	Screw type adjustment, pilo ratiio 1:4 pressure range **2**
SAE cavity 16/3		
CC16A/4S2B	0CC16002001	Screw type adjustment, pilo ratiio 1:4 pressure range **2**
SAE cavity 20/3		
CC20A/4S0B	0CC20002001	Screw type adjustment. Setting range 20-85 bar *(290-1230 psi)* and standard setting 50 bar *(725)* at 5 l/min *(1.3 US gpm)*
CC20A/4S1B	0CC20002000	Screw type adjustment. Pilot ratio 1:4 Setting range 50-220 bar *(725-3200 psi)* and standard setting 150 bar *(2170)* at 5 l/min *(1.3 US gpm)*
CC20A/4S2B	0CC20002002	Screw type adjustment. Pilot ratio 1:4 Setting range 100-300 bar *(1450-4350 psi)* and std. setting 150 bar *(2170)* at 5 l/min *(1.3 US gpm)*

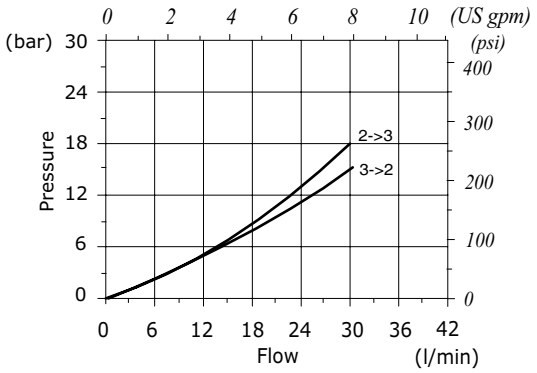
6 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve G3/4 std thread
SAE 20/3-G 1	3CC2030F21	Steel body for cavity 20 valve G1 std thread

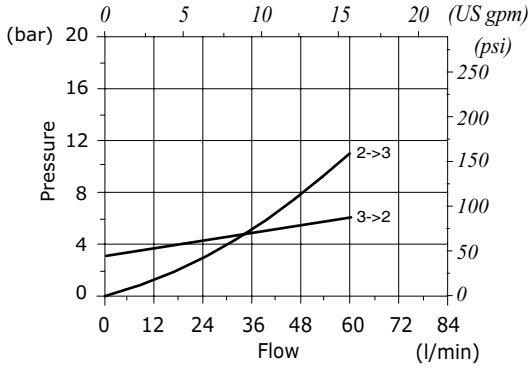
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

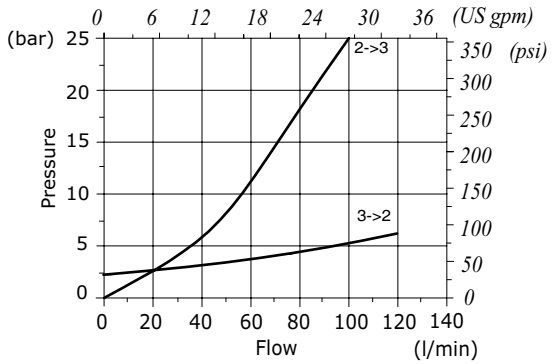
CC10A pressure drop vs flow



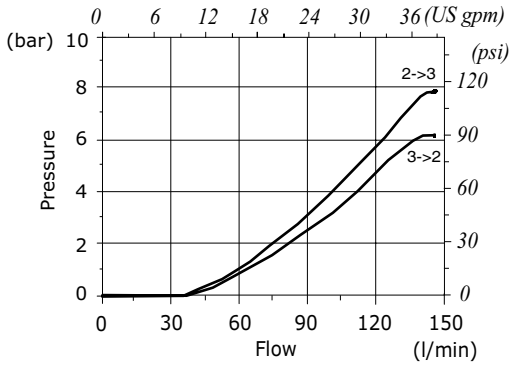
CC12A pressure drop vs flow



CC16A pressure drop vs flow



CC20A pressure drop vs flow



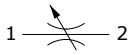
NB..A type
needle valves - 2 ways

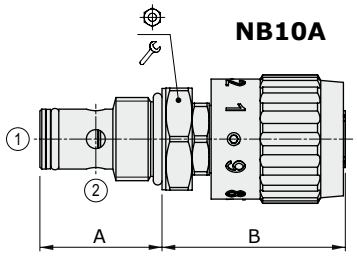
- Adjustable type
- From SAE08 to SAE16 cavities

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

		NB08A	NB10A	NB12A	NB16A
Nominal flow		15 l/min *(3.9 US gpm)*	30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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)*			
	with FPM seals	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	SAE 16/2
Weight		0.180 kg *(0.40 lb)*	0.200 kg *(0.44 lb)*	0.280 kg *(0.62 lb)*	0.500 kg *(1.10 lb)*

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



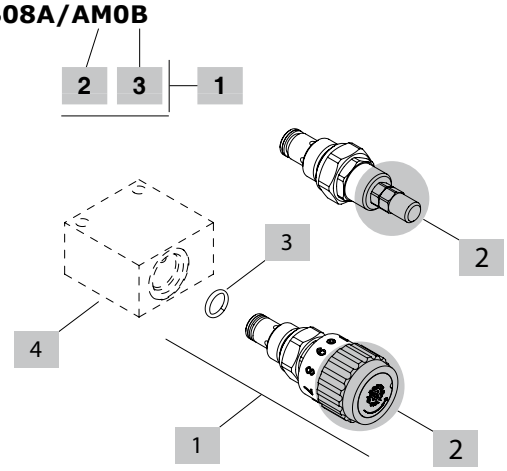


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
NB08A/AM	27.6	*1.09*	52	*2.05*	24	30	*22*
NB10A/AM	32.3	*1.27*	48	*1.89*	27	50	*36*
NB12A/AM	46	*1.81*	49.2	*1.94*	32	80	*59*
NB16A/AM	45.2	*1.79*	68.8	*2.71*	41	100	*73*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

NB08A/AM0B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
NB08A/AM0B	0NB08002000	Handknob adjustment
NB08A/AS0B	0NB08002001	Screw type adjustment
SAE cavity 10/2		
NB10A/AM0B	0NB10002003	Handknob adjustment
NB10A/AS0B	0NB10002001	Screw type adjustment
SAE cavity 12/2		
NB12A/AM0B	0NB12002002	Handknob adjustment
NB12A/AS0B	0NB12002001	Screw type adjustment
SAE cavity 16/2		
NB16A/AM0B	0NB16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

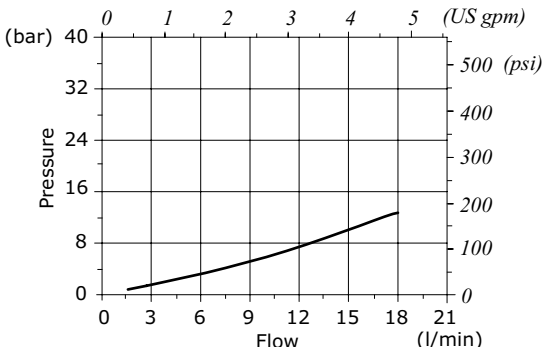
4 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

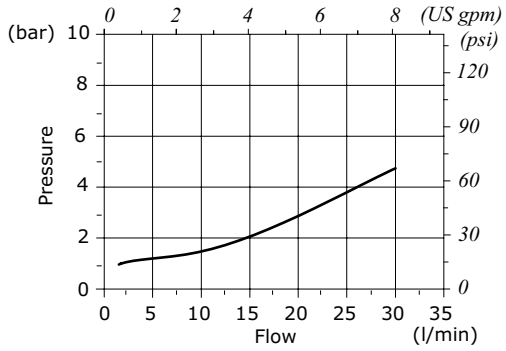
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

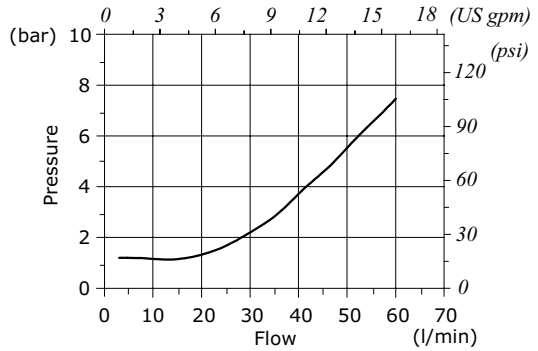
NB08A: pressure drop vs flow 1->2 - 2->1, fully open



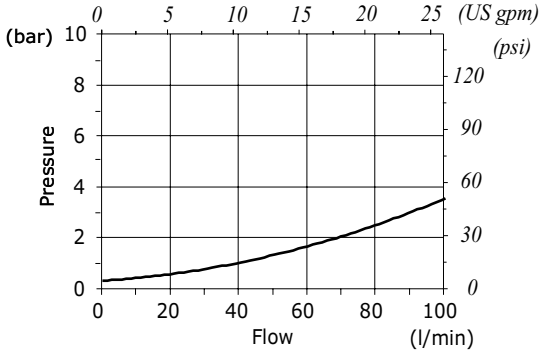
NB10A: pressure drop vs flow 1->2 - 2->1, fully open



NB12A: pressure drop vs flow 1->2 - 2->1, fully open



NB16A: pressure drop vs flow 1->2 - 2->1, fully open



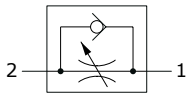
NU..A type
needle valves - 2 ways

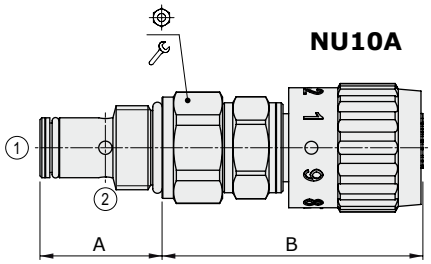
- Adjustable type
- Free return line
- From SAE08 to SAE16 cavities

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

		NU08A	NU10A	NU12A	NU16A
Nominal flow		15 l/min *(3.9 US gpm)*	30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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)*			
	with FPM seals	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	SAE 16/2
Weight		0.240 kg *(0.53 lb)*	0.290 kg *(0.64 lb)*	0.400 kg *(0.88 lb)*	0.550 kg *(1.21 lb)*

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



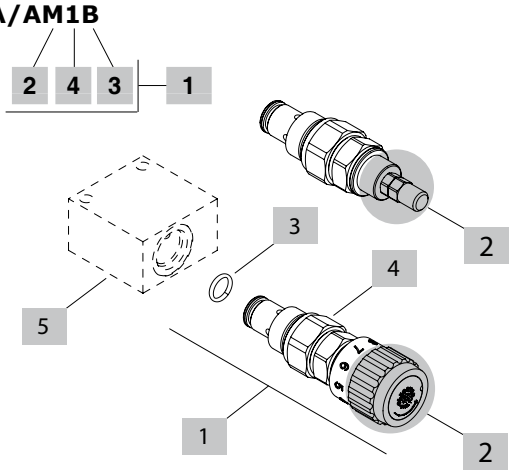


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
NU08A/AM	27.6	*1.09*	66.5	*2.62*	24	30	*22*
NU10A/AM	32.3	*1.27*	68	*2.68*	27	50	*36*
NU12A/AM	46	*1.81*	69	*2.72*	32	80	*59*
NU16A/AM	45.2	*1.79*	66.9	*2.63*	41	100	*73*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

NU08A/AM1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
NU08A/AM1B	0NU08002000	Handknob adjustment
NU08A/AS1B	0NU08002001	Screw type adjustment
SAE cavity 10/2		
NU10A/AM1B	0NU10002000	Handknob adjustment
NU10A/AS1B	0NU10002001	Screw type adjustment
SAE cavity 12/2		
NU12A/AM1B	0NU12002000	Handknob adjustment
NU12A/AS1B	0NU12002001	Screw type adjustment
SAE cavity 16/2		
NU16A/AM1B	0NU16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Opening pressure check valve from 1 to 2

TYPE	DESCRIPTION
1	0.5 bar *(7.3 psi)*

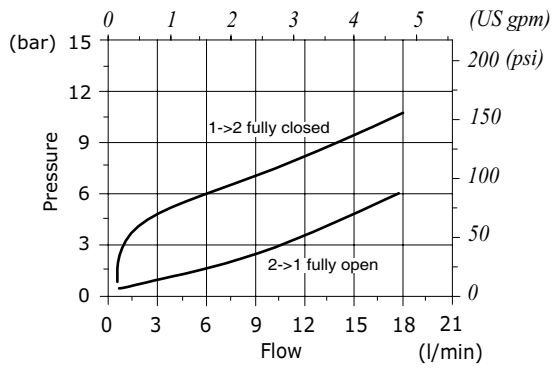
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

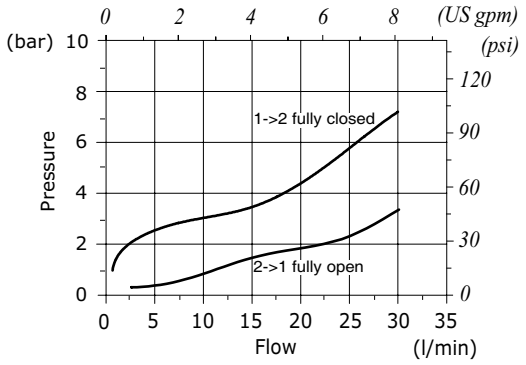
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

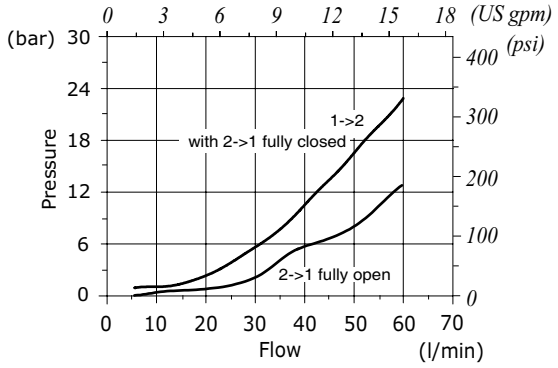
NU08A pressure drop vs flow



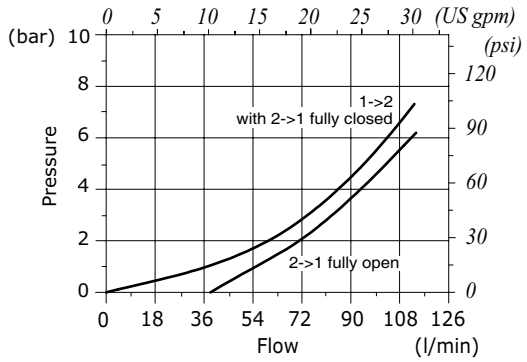
NU10A pressure drop vs flow



NU12A pressure drop vs flow



NU16A pressure drop vs flow



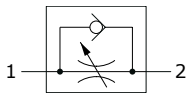
NT..A type
needle valves - 2 ways

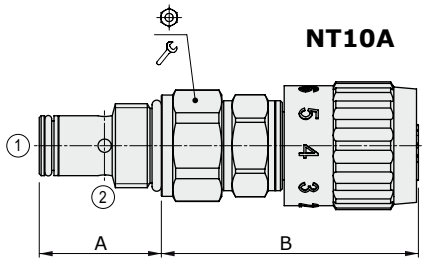
- Adjustable type
- With reverse free flow check
- From SAE08 to SAE16 cavities

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

		NT08A	NT10A	NT12A	NT16A
Nominal flow		15 l/min *(3.9 US gpm)*	30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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)*			
	with FPM seals	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	SAE 16/2
Weight		0.240 kg *(0.53 lb)*	0.290 kg *(0.64 lb)*	0.400 kg *(0.88 lb)*	0.550 kg *(1.21 lb)*

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



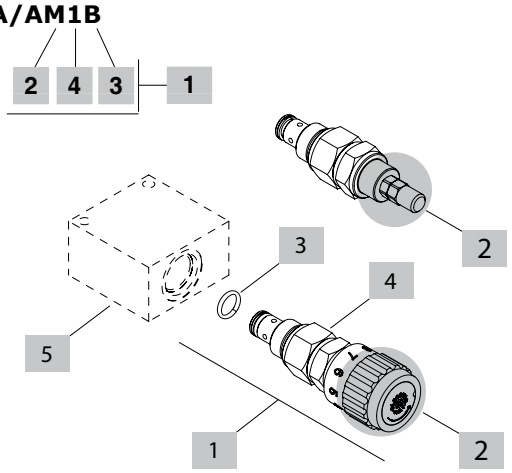


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
NT08A/AM	27.6	*1.09*	67.5	*2.66*	24	30	*22*
NT10A/AM	32.3	*1.27*	68	*2.68*	27	50	*36*
NT12A/AM	46	*1.81*	69	*2.72*	32	80	*59*
NT16A/AM	45.2	*1.79*	68.9	*2.71*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

NT08A/AM1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
NT08A/AM1B	0NT08002000	Handknob adjustment
NT08A/AS1B	0NT08002001	Screw type adjustment
SAE cavity 10/2		
NT10A/AM1B	0NT10002000	Handknob adjustment
NT10A/AS1B	0NT10002001	Screw type adjustment
SAE cavity 12/2		
NT12A/AM1B	0NT12002000	Handknob adjustment
NT12A/AS1B	0NT12002001	Screw type adjustment
SAE cavity 16/2		
NT16A/AM1B	0NT16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Opening pressure check valve from 1 to 2

TYPE	DESCRIPTION
1	0.5 bar *(7.3 psi)*

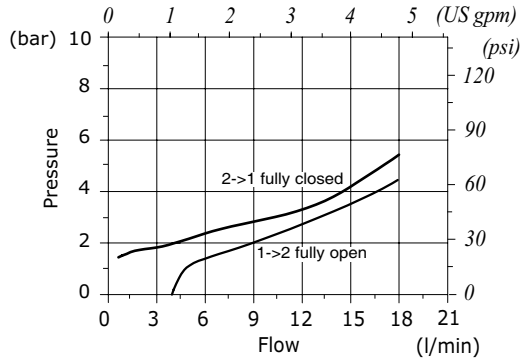
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

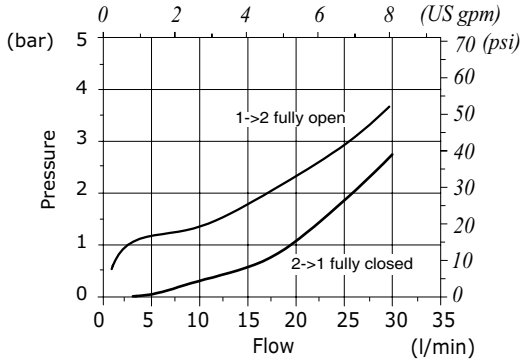
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

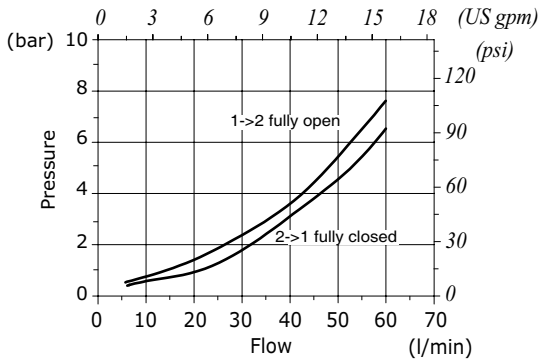
NT08A pressure drop vs flow



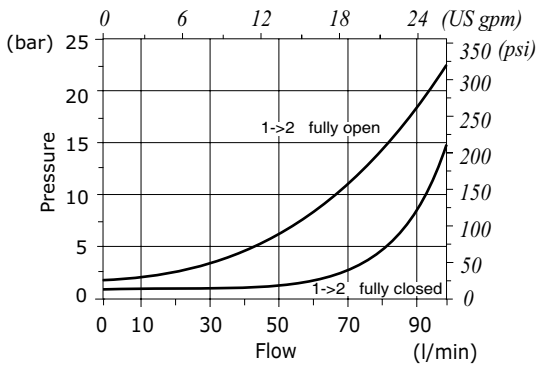
NT10A pressure drop vs flow



NT12A pressure drop vs flow



NT16A pressure drop vs flow



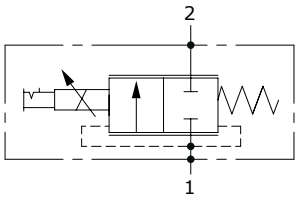
EE10X type
needle valves - 2 ways

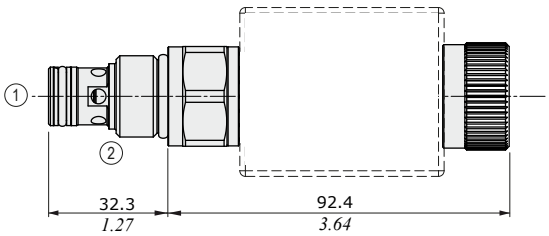
- Solenoid proportional type
- To be combined with an external compensator
- SAE10 cavity

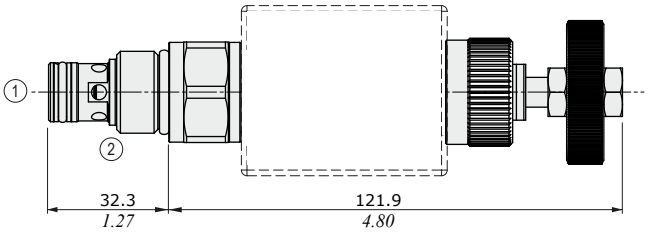
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		EE10X
Nominal flow		40 l/min *(10.6 US gpm)*
Max. pressure		300 bar *(4350 psi)*
Oil leakage	at 150 bar *(2175 psi)*	150 cm³/min *(9.1 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 10/2
Coil type*		BQP19 or BH
Nominal voltages		12 VDC - 24 VDC ± 10%
Power rating		22,8 W (12 VDC) - 22,5 W (24 VDC)
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		150 Hz
Weight		0.3 kg *(0.66 lb)*

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



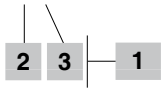


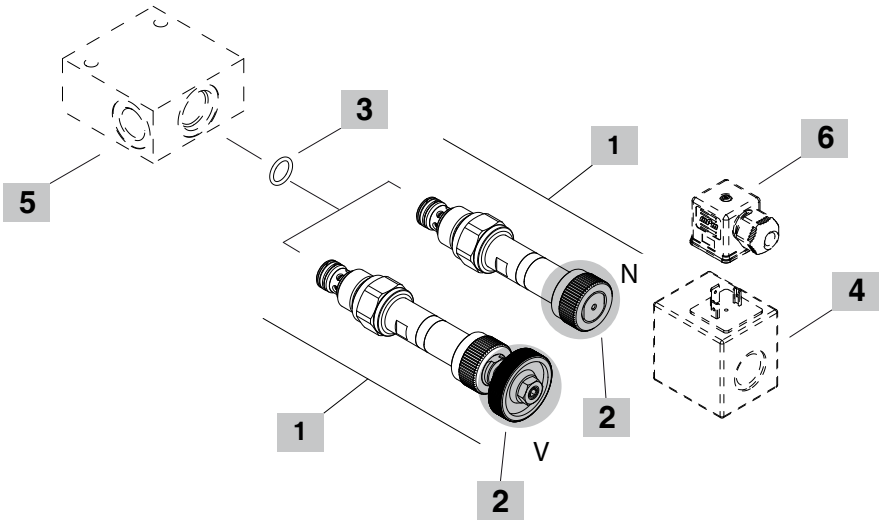


Handknob version

Ordering codes and description composition

EE10X/22NB





1 Cartridges

TYPE	CODE	DESCRIPTION
EE10X/22NB	0EE10002009	Without emergency
EE10X/22VB	0EE10002008	Handknob emergency

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
V	Handknob emergency

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Coils

TYPE	CODE	DESCRIPTION
BQP19 12VDC	4SL5000126	Coil 12VDC-ISO4400

For complete coils list see from page 190
It is possible also combine coils BH

5 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread

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

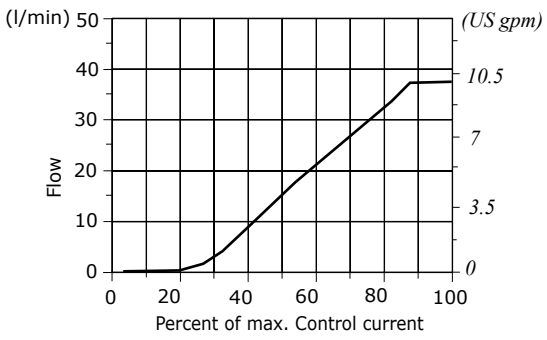
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

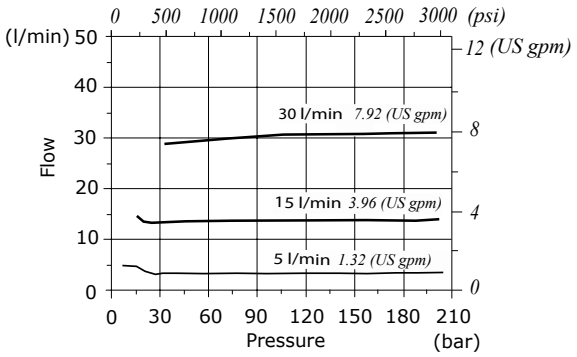
For complete connectors list see from page 190

Rating diagrams

***Flow regulating vs. % max. control current**



***Pressure/compensation 1->2**



**The diagrams have been realized with the cartridge combined with a 10 bar (145 psi) compensator*

PW..A type

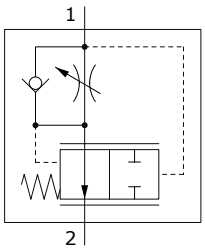
flow control pressure compensated valves - 2 ways

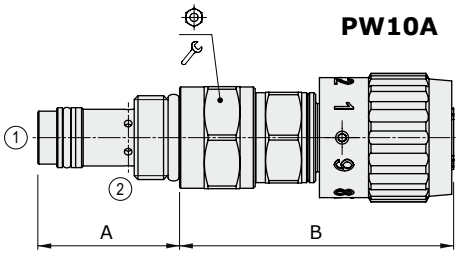
- With reverse free flow check
- From SAE08 to SAE16 cavities

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

		PW08A	PW10A	PW12A	PW16A
Nominal flow		10 l/min *(2.6 US gpm)*	30 l/min *(7.9 US gpm)*	50 l/min *(13 US gpm)*	90 l/min *(24 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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)*			
	with FPM seals	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 A	SAE 10/2 A	SAE 12/2 A	SAE 16/2 A
Weight		0.22 kg *(0.48 lb)*	0.30 kg *(2.20 lb)*	0.72 kg *(1.58 lb)*	0.98 kg *(2.16 lb)*

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



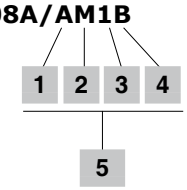


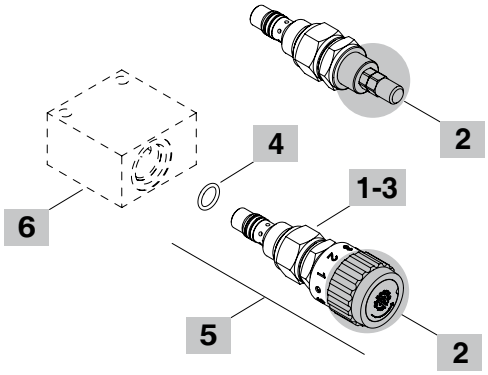
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
PW08A/AM	36.6	*1.44*	64.5	*2.54*	24	30	*22*
PW10A/AM	37.5	*1.48*	71.9	*2.83*	27	50	*36*
PW12A/AM	58.5	*2.30*	64.5	*2.54*	32	80	*59*
PW16A/AM	68	*2.68*	86	*3.39*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

PW08A/AM1B





1 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

3 Pressure drop from 2 to 1

TYPE	DESCRIPTION
1	0.5 bar *(7.3 psi)*

4 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

5 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
PW08A/AM1B	0PW08002000	Handknob adjustment
PW08A/AS1B	0PW08002003	Screw type adjustment
SAE cavity 10/2		
PW10A/AM1B	0PW10002000	Handknob adjustment
PW10A/AS1B	0PW10002001	Screw type adjustment
SAE cavity 12/2		
PW12A/AM1B	0PW12002000	Handknob adjustment
PW12A/AS1B	0PW12002001	Screw type adjustment
SAE cavity 16/2		
PW16A/AM1B	0PW16002000	Handknob adjustment
PW16A/AS1B	0PW16002001	Screw type adjustment

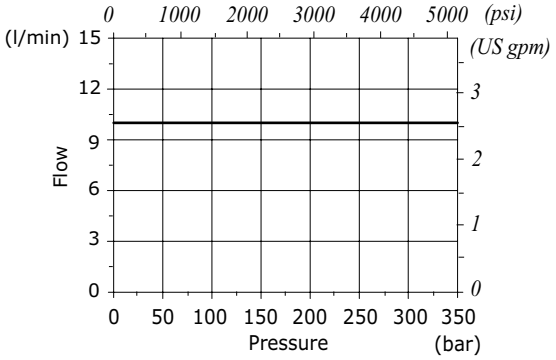
6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

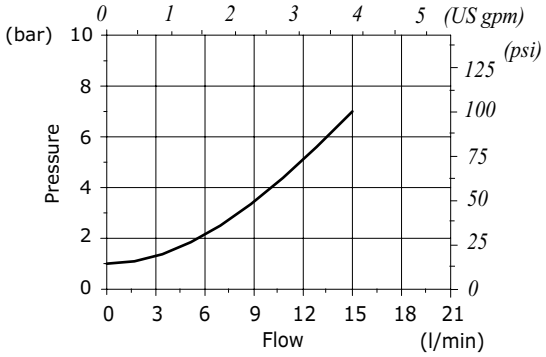
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

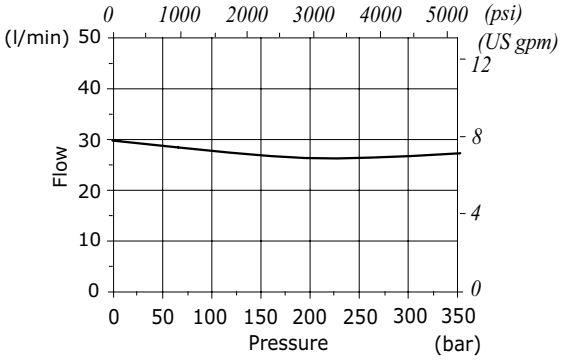
PW08A
pressure compensation diagram 1→2



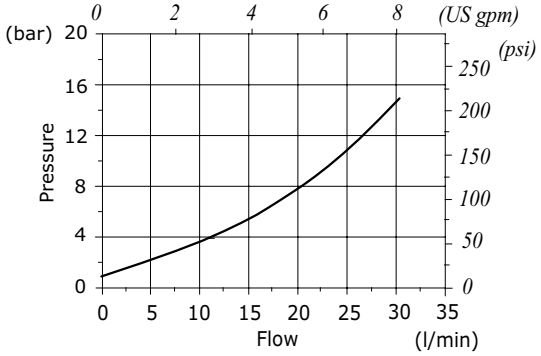
PW08A
pressure drop vs flow 2→1



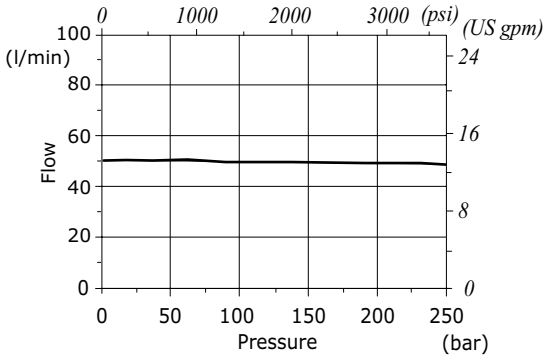
PW10A
pressure compensation diagram 1→2



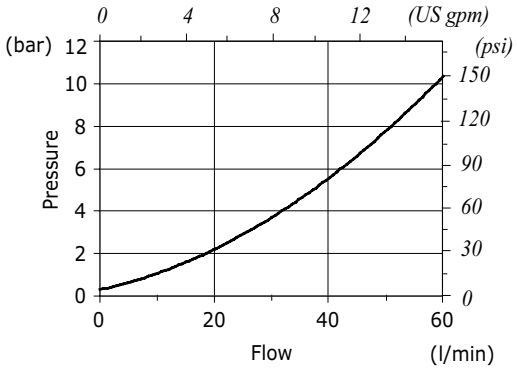
PW10A
pressure drop vs flow 2→1



PW12A
pressure compensation diagram 1→2

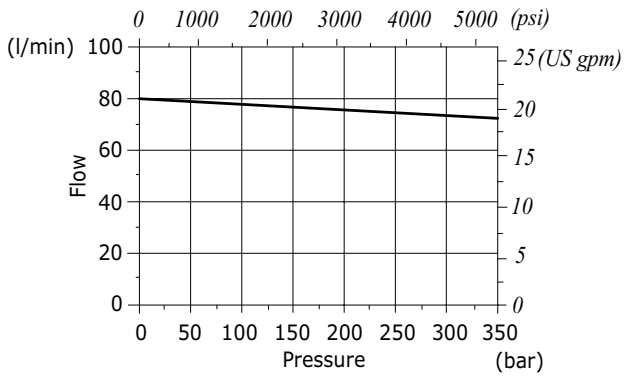


PW12A
pressure drop vs flow 2→1

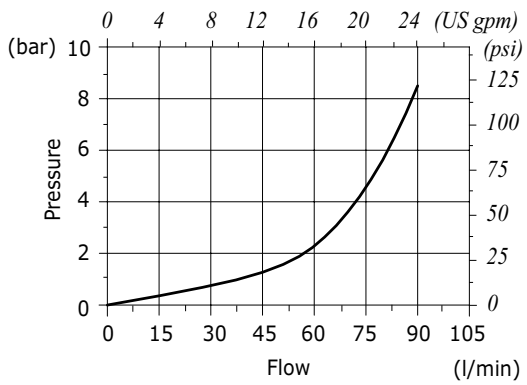


Rating diagrams

PW16A
pressure compensation diagram 1→2



PW16A
pressure drop vs flow 2→1



PU..A type

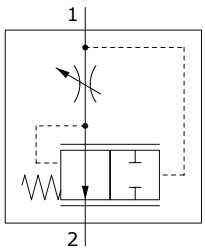
flow control pressure compensated valves - 2 ways

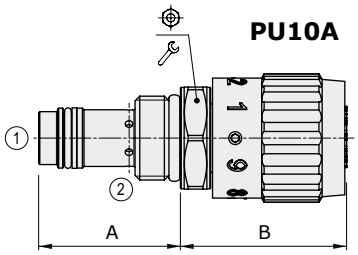
- Line mounting
- From SAE08 to SAE16 cavities

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

		PU08A	PU10A	PU12A	PU16A
Nominal flow		15 l/min *(3.9 US gpm)*	30 l/min *(7.9 US gpm)*	50 l/min *(13 US gpm)*	90 l/min *(24 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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)*			
	with FPM seals	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 A	SAE 10/2 A	SAE 12/2 A	SAE 16/2 A
Weight		0.18 kg *(0.40 lb)*	0.20 kg *(0.44 lb)*	0.30 kg *(0.66 lb)*	0.55 kg *(1.21 lb)*

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



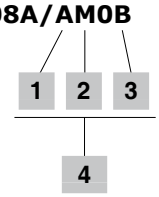


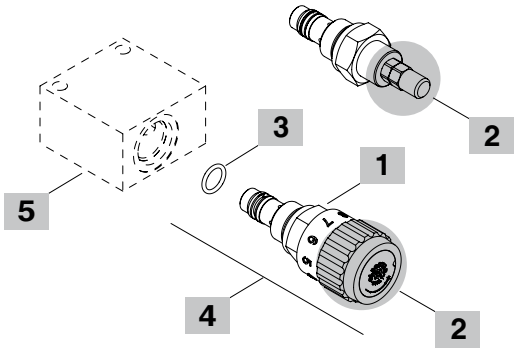
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
PU08A/AM	33.6	*1.32*	48.5	*1.91*	24	30	*22*
PU10A/AM	37.5	*1.48*	43	*1.69*	27	50	*36*
PU12A/AM	58.5	*2.30*	44	*1.73*	32	80	*59*
PU16A/AM	68	*2.68*	52	*2.05*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

PU08A/AM0B





1 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
PU08A/AM0B	0PU08002000	Handknob adjustment
PU08A/AS0B	0PU08002003	Screw type adjustment
SAE cavity 10/2		
PU10A/AM0B	0PU10002001	Handknob adjustment
PU10A/AS0B	0PU10002000	Screw type adjustment
SAE cavity 12/2		
PU12A/AM0B	0PU12002000	Handknob adjustment
PU12A/AS0B	0PU12002003	Screw type adjustment
SAE cavity 16/2		
PU16A/AM0B	0PU16002000	Handknob adjustment
PU16A/AS0B	0PU16002007	Screw type adjustment

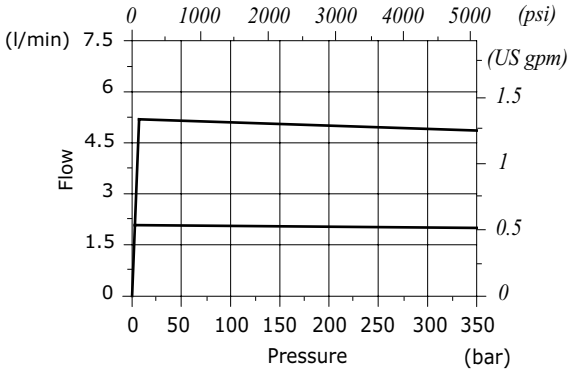
5 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

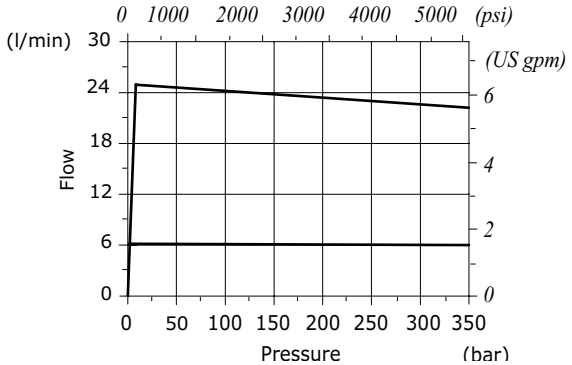
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

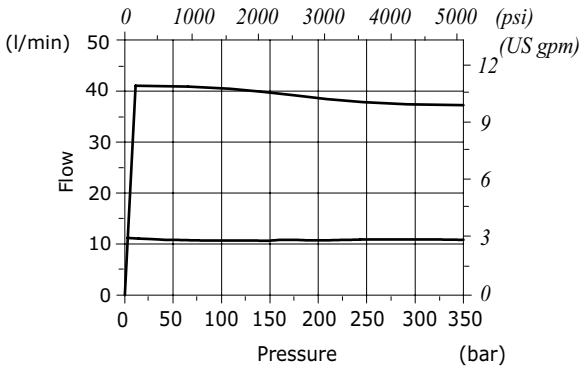
PU08A
pressure compensation diagram 1→2



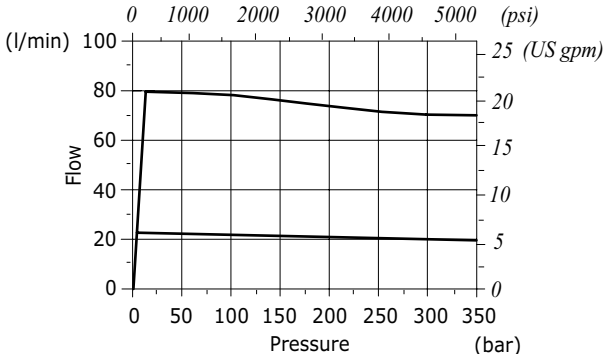
PU10A
pressure compensation diagram 1→2



PU12A
pressure compensation diagram 1→2



PU16A
pressure compensation diagram 1→2



PU..X type

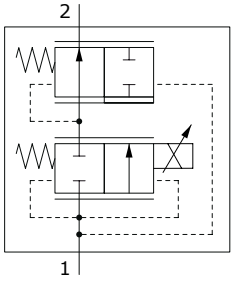
flow control pressure compensated valves - 2 ways

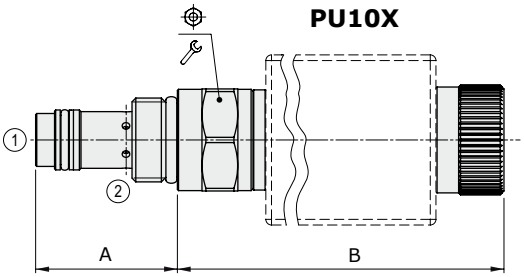
- Solenoid proportional type
- From SAE08 to SAE16 cavities

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

		PU08X	PU10X	PU12X	PU16X
Nominal flow		10 l/min *(2.6 US gpm)*	30 l/min *(7.9 US gpm)*	50 l/min *(13.2 US gpm)*	90 l/min *(23.8 US gpm)*
Max. pressure		315 bar *(4600 psi)*			
Oil leakage	at 210 bar *3050 psi*	80 cm³/min *(8.9 in³/min)*	150 cm³/min *(9.2 in³/min)*	250 cm³/min *(15.3 in³/min)*	400 cm³/min *(24.4 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*			
Cavity		SAE 8/2 A	SAE 10/2 A	SAE 12/2 A	SAE 16/2 A
Coil type*		BH or BQP19			
Nominal voltages		12 VDC - 24V DC ± 10%			
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		150 Hz			
Hysteresis		8%			
Weight		0.34 kg *(0.75 lb)*	0.39 kg *(0.86 lb)*	0.51 kg *(1.12 lb)*	0.90 kg *(1.98 lb)*

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



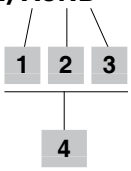


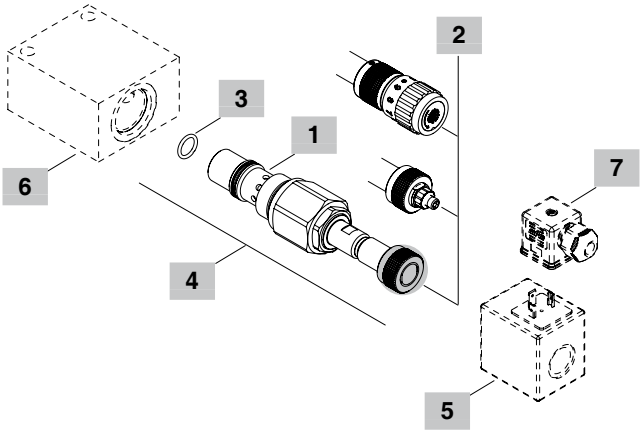
Valve type	A mm	A in	B mm	B in		Nm	lbft
PU08X/A0N	36.6	*1.44*	94	*3.70*	24	30	*22*
PU10X/A0N	37.5	*1.48*	96.4	*3.79*	27	50	*37*
PU12X/A0N	58.5	*2.30*	97.4	*3.83*	32	75	*55*
PU16X/A0N	68	*2.68*	121.4	*4.78*	41	95	*70*

For dimensions with different type of emergency see page 197

Ordering codes and description composition

PU08X/A0NB





1 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type
V	Handknob

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
PU08X/A0NB	0PU08002012	Without emergency
PU08X/A0TB	0PU08002013	Screw type emergency
PU08X/A0VB	0PU08002014	Handknob emergency
SAE cavity 10/2		
PU10X/A0NB	0PU10002020	Without emergency
PU10X/A0TB	0PU10002021	Screw type emergency
PU10X/A0VB	0PU10002022	Handknob emergency
SAE cavity 12/2		
PU12X/A0NB	0PU12002007	Without emergency
PU12X/A0TB	0PU12002008	Screw type emergency
PU12X/A0VB	0PU12002009	Handknob emergency
SAE cavity 16/2		
PU16X/A0NB	0PU16002010	Without emergency
PU16X/A0TB	0PU16002011	Screw type emergency
PU16X/A0VB	0PU16002012	Handknob emergency

5 Coils

TYPE	CODE	DESCRIPTION
BQP19 12VDC	4SL5000126	12VDC-ISO4400 coil
BH 12VDC	4SLD001200	12VDC-ISO4400 coill

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve G3/4 std thread

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

For steel bodies or different threading see from page 199

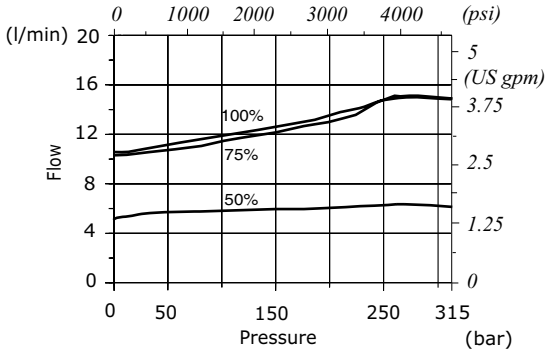
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

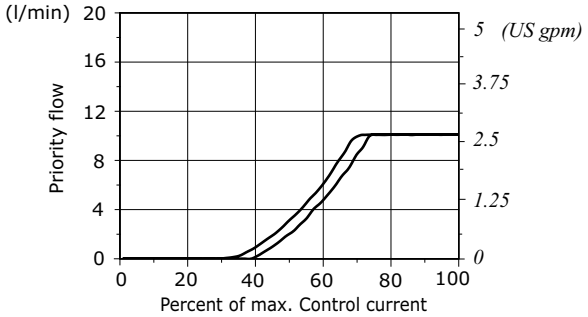
For complete connectors list see from page 190

Rating diagrams

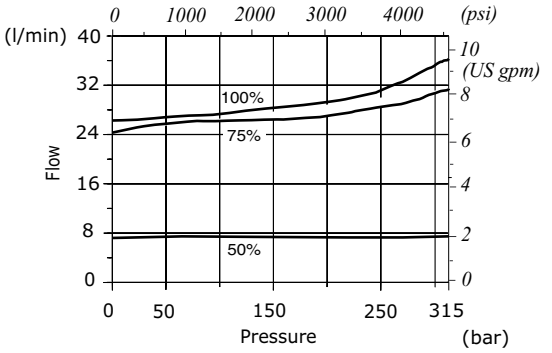
PU08X: pressure compensation diagram 1→2
for % of control current



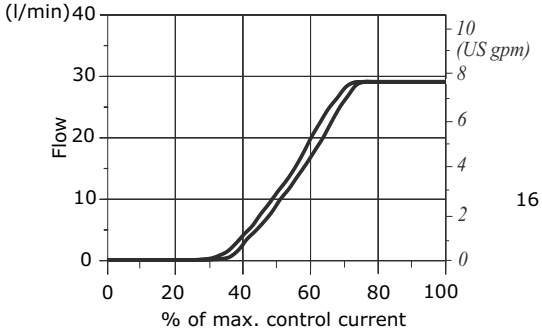
PU08X
flow regulating vs. % max. control current



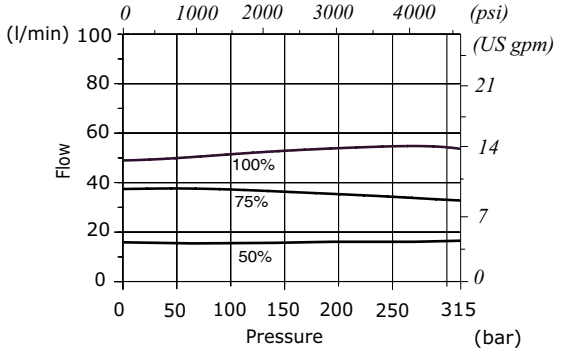
PU10X: pressure compensation diagram 1→2
for % of control current



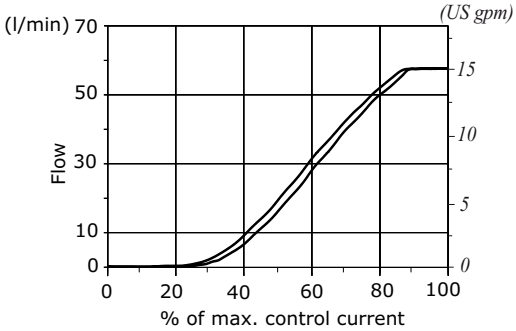
PU10X
flow regulating vs. % max. control current



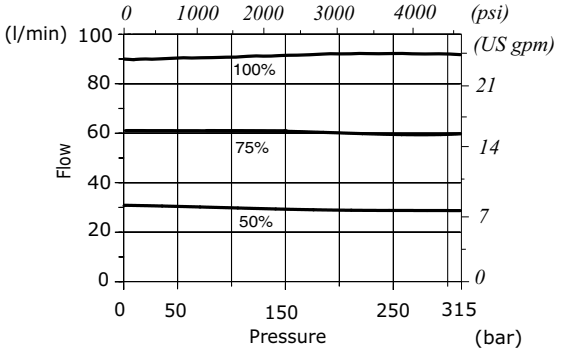
PU12X: pressure compensation diagram 1→2
for % of control current



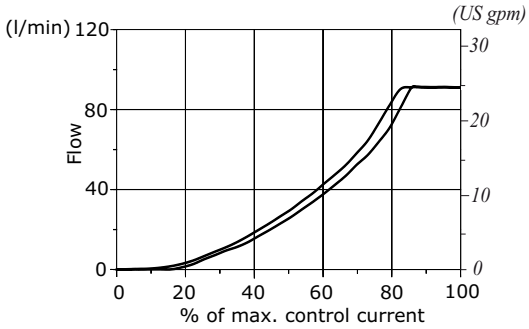
PU12X
flow regulating vs. % max. control current



PU16X: pressure compensation diagram 1→2
for % of control current



PU16X
flow regulating vs. % max. control current



PP..A type

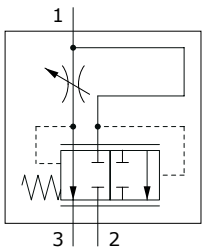
flow control pressure compensated valves - 3 ways

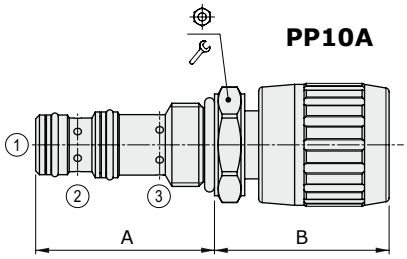
- With exceeding flow to pressure
- From SAE08 to SAE16 cavities

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

		PP08A	PP10A	PP12A	PP16A
Nominal flow	Q1max= Q3max=	20 l/min *(5.2 US gpm)* 15 l/min *(4 US gpm)*	50 l/min *(13.2 US gpm)* 30 l/min *(7.9 US gpm)*	90 l/min *(23.8 US gpm)* 50 l/min *(13 US gpm)*	150 l/min *(39.6 US gpm)* 90 l/min *(24 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
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 8/3	SAE 10/3	SAE 12/3	SAE 16/3
Weight		0.15 kg *(0.33 lb)*	0.20 kg *(0.44 lb)*	0.42 kg *(0.92 lb)*	0.57 kg *(1.26 lb)*

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



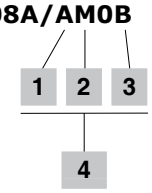


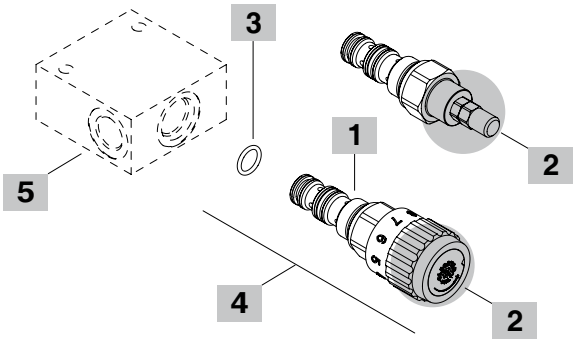
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
PP08A/AM	41.1	*1.62*	49.5	*1.95*	24	30	*22*
PP10A/AM	47.2	*1.86*	44	*1.73*	27	50	*37*
PP12A/AM	73.5	*2.89*	45	*1.77*	32	80	*59*
PP16A/AM	75	*2.95*	52	*1.93*	41	100	*74*

For dimensions with different type of adjustment see page 196

Ordering codes and description composition

PP08A/AM0B





1 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
PP08A/AM0B	0PP08002000	Handknob adjustment
PP08A/AS0B	0PP08002004	Screw type adjustment
SAE cavity 10/3		
PP10A/AM0B	0PP10002000	Handknob adjustment
PP10A/AS0B	0PP10002005	Screw type adjustment
SAE cavity 12/3		
PP12A/AM0B	0PP12002000	Handknob adjustment
PP12A/AS0B	0PP12002004	Screw type adjustment
SAE cavity 16/3		
PP16A/AM0B	0PP16002001	Handknob adjustment
PP16A/AS0B	0PP16002006	Screw type adjustment

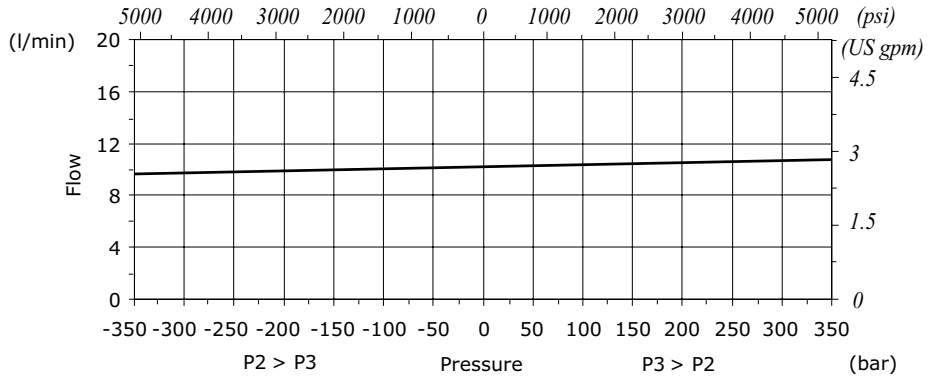
6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 3/8	3CC0830C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve G3/4 std thread

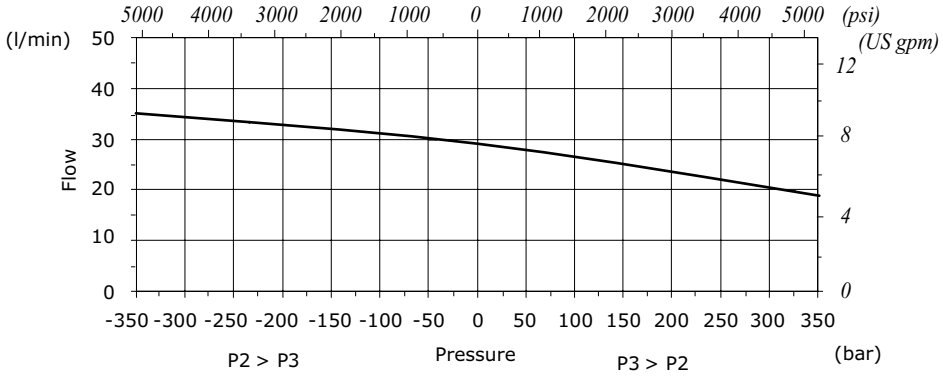
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

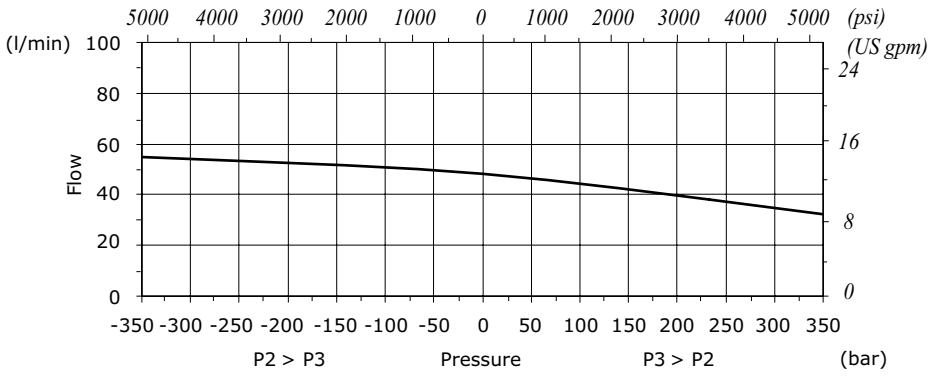
PP08A
compensation diagram in 3 - changing the Δp between 2 and 3



PP10A
compensation diagram in 3 - changing the Δp between 2 and 3

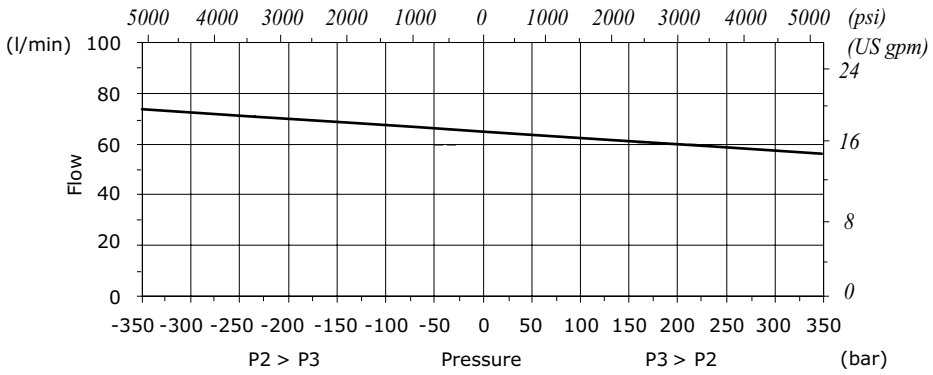


PP12A
compensation diagram in 3 - changing the Δp between 2 and 3



Rating diagrams

PP16A
compensation diagram in 3 - changing the Δp between 2 and 3



PP..X type

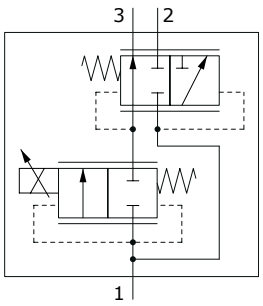
flow control pressure compensated valves - 3 ways

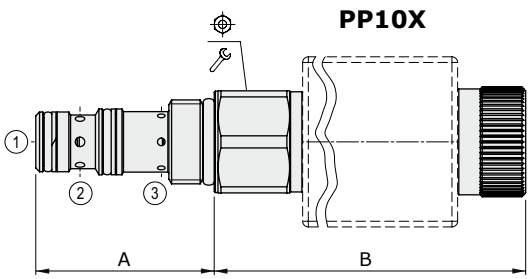
- Solenoid proportional type
- With exceeding flow to pressure
- From SAE08 to SAE16 cavities

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

		PP08X	PP10X	PP12X	PP16X
Nominal flow	Q1max= Q3max=	20 l/min *(5.2 US gpm)* 15 l/min *(3.9 US gpm)*	50 l/min *(13.2 US gpm)* 30 l/min *(8 US gpm)*	90 l/min *(23.8 US gpm)* 60 l/min *(16 US gpm)*	150 l/min *(39.6 US gpm)* 90 l/min *(23.8 US gpm)*
Max. pressure		315 bar *(4560 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	80 cm³/min *(4.9 in³/min)*	150 cm³/min *(9.2 in³/min)*	250 cm³/min *(15.3 in³/min)*	400 cm³/min *(24.4 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*			
Cavity		SAE 8/3	SAE 10/3	SAE 12/3	SAE 16/3
Coil type*		BQP19 or BH			
Nominal voltages		12 VDC - 24 VDC ± 10%			
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		150 Hz			
Hysteresis		8%			
Weight		0.44 kg *(0.97 lb)*	0.49 kg *(1.08 lb)*	0.61 kg *(1.34 lb)*	1 kg *(2.20 lb)*

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



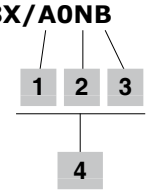


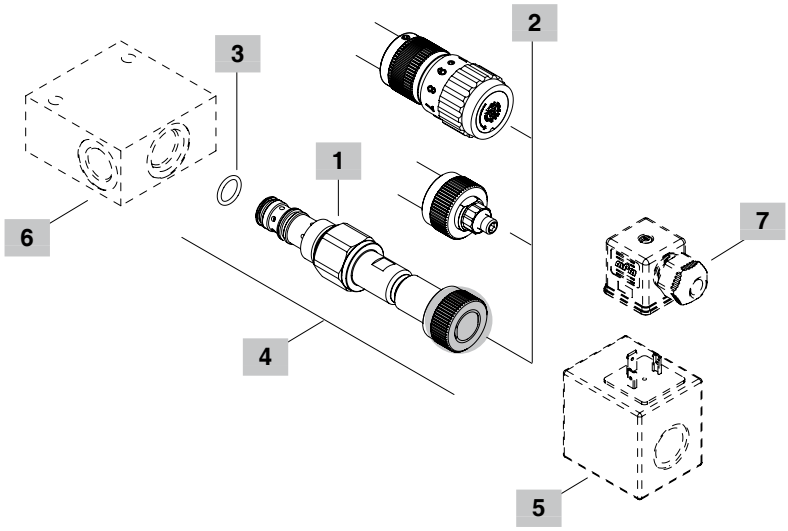
Valve type	A mm	A in	B mm	B in		Nm	lbft
PP08X/A0N	40.8	*1.60*	94	*3.70*	24	30	*22*
PP10X/A0N	47.2	*1.86*	96.4	*3.79*	27	50	*37*
PP12X/A0N	73.5	*2.89*	97.4	*3.83*	32	75	*55*
PP16X/A0N	75.1	*2.95*	121.4	*4.78*	41	95	*70*

For dimensions with different type of emergency see page 197

Ordering codes and description composition

PP08X/A0NB





1 Pressure drop from 1 to 3

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type
V	Handknob

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
PP08X/A0NB	0PP08002014	Without emergency
PP08X/A0TB	0PP08002015	Screw type emergency
PP08X/A0VB	0PP08002016	Handknob emergency
SAE cavity 10/3		
PP10X/A0NB	0PP10002031	Without emergency
PP10X/A0TB	0PP10002033	Screw type emergency
PP10X/A0VB	0PP10002035	Handknob emergency
SAE cavity 12/3		
PP12X/A0NB	0PP12002037	Without emergency
PP12X/A0TB	0PP12002039	Screw type emergency
PP12X/A0VB	0PP12002041	Handknob emergency
SAE cavity 16/3		
PP16X/A0NB	0PP16002013	Without emergency
PP16X/A0TB	0PP16002015	Screw type emergency
PP16X/A0VB	0PP16002014	Handknob emergency

5 Coils

TYPE	CODE	DESCRIPTION
BQP19 12VDC	4SL5000126	12VDC-ISO4400 coil
BH 12VDC	4SLD001200	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 3/8	3CC0830C11	Aluminium body for cavity 8 valve G3/8 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve G3/4 std thread

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

For steel bodies or different threading see from page 199

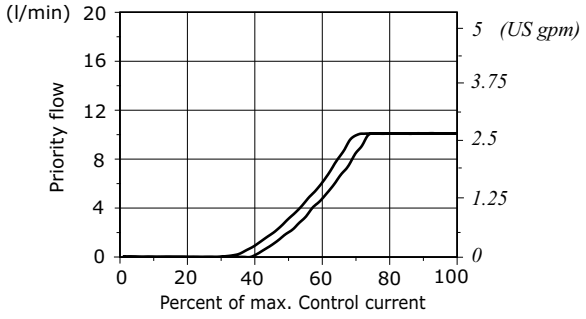
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

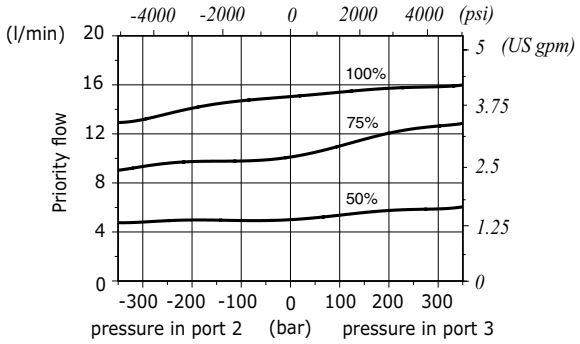
For complete connectors list see from page 190

Rating diagrams

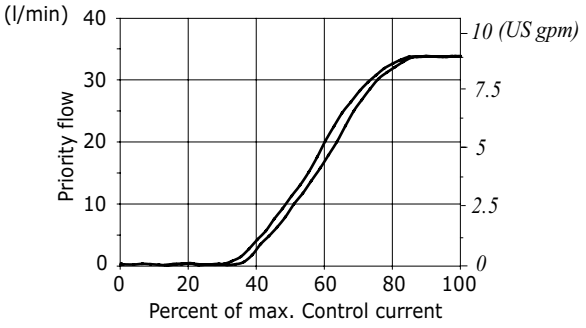
PP08X
flow regulating vs. % max. control current
Q_{in} = priority flow +30%



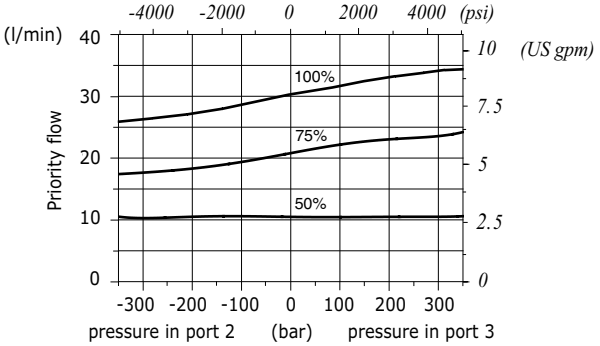
PP08X
pressure compensation diagram 2→3
for % of control current



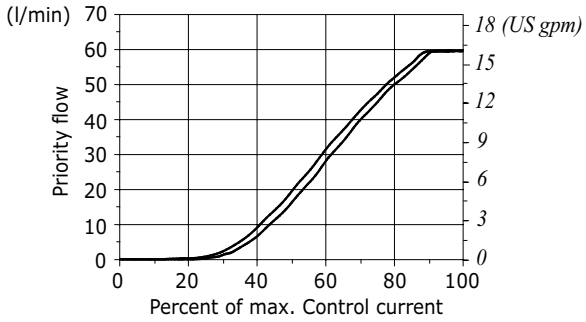
PP10X
flow regulating vs. % max. control current
Q_{in} = priority flow +5%



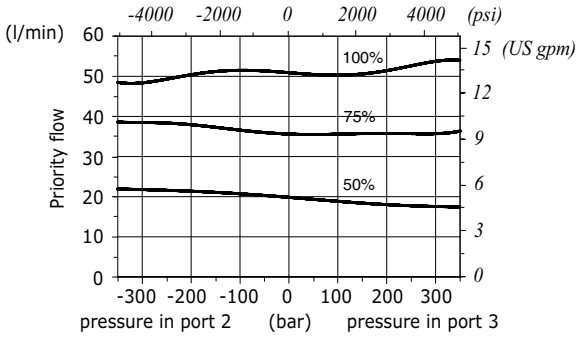
PP10X
pressure compensation diagram 2→3
for % of control current



PP12X
flow regulating vs. % max. control current
Q_{in} = priority flow +15%

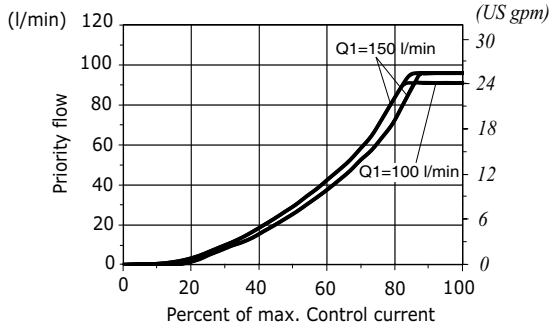


PP12X
pressure compensation diagram 2→3
for % of control current

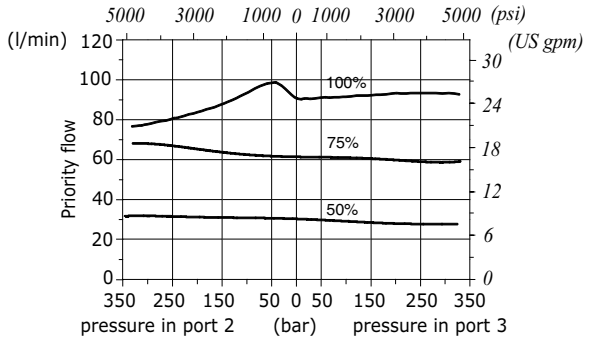


Rating diagrams

PP16X
flow regulating vs. % max. control current
Q_{in}= priority flow +10%



PP16X
pressure compensation diagram 2→3
for % of control current - with Q1=100 l/min



PD... type

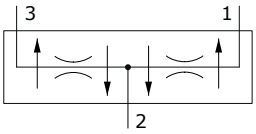
flow control pressure compensated valves - 3 ways

- Flow divider-combiners
- From SAE10 to SAE16 cavities

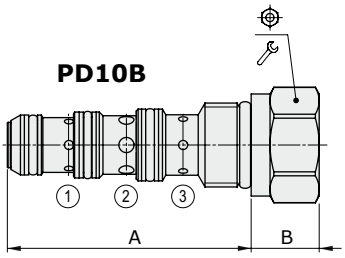
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		PD10B/110B	PD10B/120B	PD10B/130B	PD10B/140B	PD10B/150B	PD12B/100B	PD16C/110B
Flow range		4-12 l/min *(1-3 US gpm)*	12-20 l/min *(3-5 US gpm)*	20-28 l/min *(5-7 US gpm)*	28-36 l/min *(7-9 US gpm)*	36-44 l/min *(9-12 US gpm)*	40-75 l/min *(10-20 US gpm)*	75-150 l/min *(20-40 US gpm)*
Max. pressure		210 bar *(3045 psi)*						
Maximum division error		± 5% of the oil flow in 1 or 3 and 120 bar *-1750 psi-* pressure difference between 1 and 3. (Division rate 50%÷50%)						
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)*						
	with FPM seals	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 10/4	SAE 10/4	SAE 10/4	SAE 10/4	SAE 10/4	SAE 12/4	SAE 16/4
Weight		0.20 kg *(0.44 lb)*	0.20 kg *(0.44 lb)*	0.20 kg *(0.44 lb)*	0.20 kg *(0.44 lb)*	0.20 kg *(0.44 lb)*	0.30 kg *(0.66 lb)*	0.55 kg *(1.21 lb)*

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



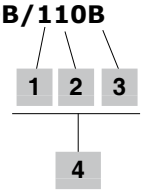
PD10B

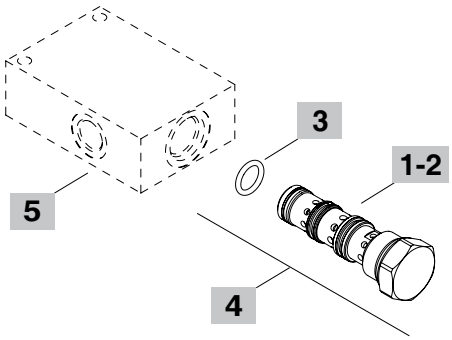


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
PD10B	64.5	*2.54*	18	*0.71*	27	50	*37*
PD12B	83	*3.27*	12	*0.47*	32	80	*59*
PD16C	104	*4.09*	17	*0.69*	41	100	*74*

Ordering codes and description composition

PD10B/110B





1 Dividing-Combining ratio

TYPE	DESCRIPTION
1	50÷50

2 Flow range

TYPE	DESCRIPTION
1	4÷12 l/min *(1-3 US gpm)*
2	12÷20 l/min *(3-5 US gpm)*
3	20÷28 l/min *(5-7 US gpm)*
4	28÷36 l/min *(7-9 US gpm)*
5	36÷44 l/min *(9-12 US gpm)*

3 Seals

TYPE	DESCRIPTION
B	**NBR (Buna)** Std configuration without addition
V	For valve with **FPM (Viton)** o-ring seals, contact Sales Dept.

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/4		
PD10B/110B	0PD10002004	Flow range **1**
PD10B/120B	0PD10002005	Flow range **2**
PD10B/130B	0PD10002006	Flow range **3**
PD10B/140B	0PD10002007	Flow range **4**
PD10B/150B	0PD10002008	Flow range **5**
SAE cavity 12/4		
PD12B/100B	0PD12002001	Range 40÷75 l/min *(10-20 US gpm)*
SAE cavity 16/4		
PD16C/100B	0PD16002003	Range 75÷150 l/min *(20-40 US gpm)*

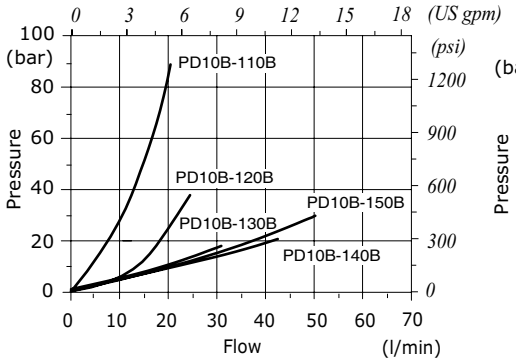
6 Valve body

TYPE	CODE	DESCRIPTION
SAE 10/4-G 3/8	3CC1040C11	Aluminium body for cavity 10 valve G3/8 std thread
SAE 12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve G1/2 std thread
SAE 16/4-G 3/4	3CC1640E11	Aluminium body for cavity 16 valve G3/4 std thread

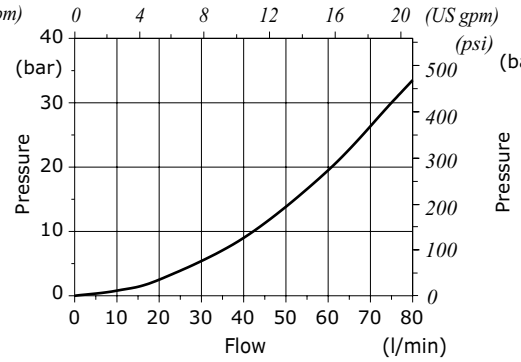
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 199

Rating diagrams

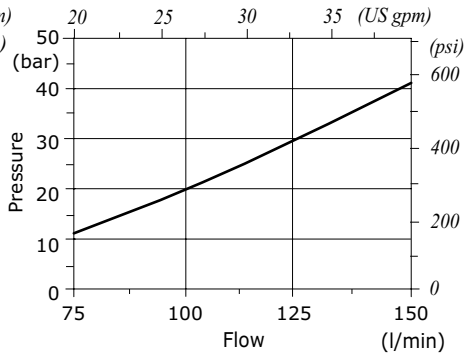
PD10B
pressure drop vs flow
form 2->1/3 and from 1/3->2



PD12B
pressure drop vs flow
from 2->1/3 and from 1/3->2



PD16C
pressure drop vs flow
from 2->1/3 and from 1/3->2



EA08 type
directional solenoid valve - 2 ways / 2 positions

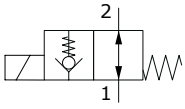
- Direct acting
- Poppet type
- Normally open and closed configurations

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

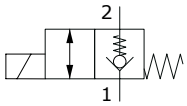
		EA08A	EA08B
Nominal flow		1 l/min *(0.26 US gpm)*	1 l/min *(0.26 US gpm)*
Max. pressure		210 bar *(3050 psi)*	350 bar *(5100 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm^3/min *(0.015 in^3/min)*	
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid 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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/2	
Coil type*		BE	BT
Nominal voltages		12 VDC - 24 VDC ± 10%	12 VDC - 24 VDC ± 10%
Power rating		18.7 W (12 VDC) 18.6 W (24 VDC)	21 W (12-24 VDC)
Weight		0.130 kg *(0.28 lb)*	0.130 kg *(0.28 lb)*

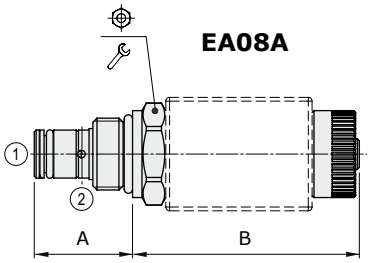
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration



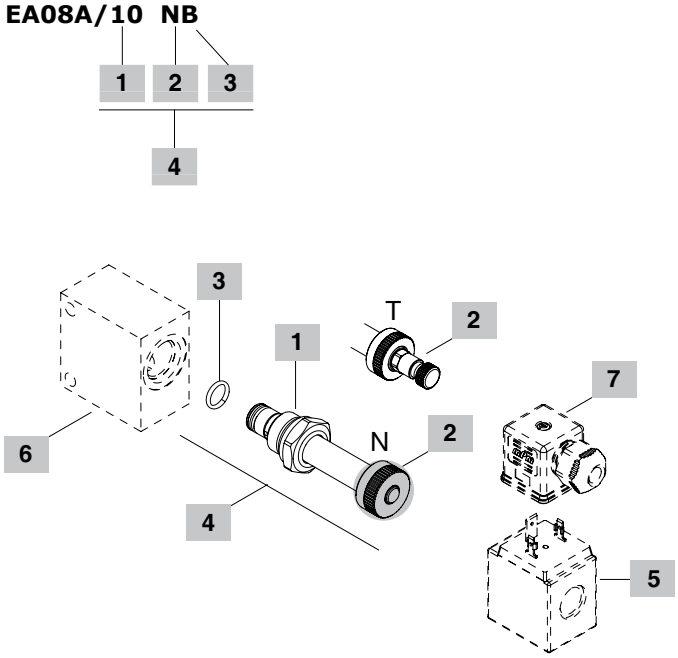


Valve type		A mm	A in	B mm	B in		Nm	lbft
EA08A/	10NB	27.5	*1.08*	60	*2.36*	24	30	*22*
	20NB	27.5	*1.08*	59	*2.32*	24	30	*22*
EA08B/	10NB	27.5	*1.08*	70.9	*2.79*	24	30	*22*
	20NB	27.5	*1.08*	65.5	*2.58*	24	30	*22*

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EA08A/10 NB



1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type

Note: for configurations with different emergency contact Sales Dept.

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EA08A/10NB	0EA08002001	Normally open configuration (N.O.) without emergency
EA08B/10NB	0EA08002003	(N.O.) without emergency
EA08A/10TB	0EA08002007	(N.O.) screw type emergency
EA08B/10TB	0EA08002005	(N.O.) screw type emergency
EA08A/20NB	0EA08002000	Normally closed configuration (N.C.) without emergency
EA08B/20NB	0EA08002002	(N.C.) without emergency
EA08A/20TB	0EA08002009	(N.C.) screw type emergency
EA08B/20TB	0EA08002004	(N.C.) screw type emergency

5 Coils

TYPE	CODE	DESCRIPTION
BE 12VDC	4SL1000120	12VDC-ISO4400 coil for EA08A
BT 12VDC	4SL3000120	12VDC-ISO4400 coil for EA08B

For complete coils list see page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 8/2-G 1/4	3CC0820B11	Aluminium body for cavity 08 valve, G1/4 std thread

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

For steel bodies or different threading see from page 199

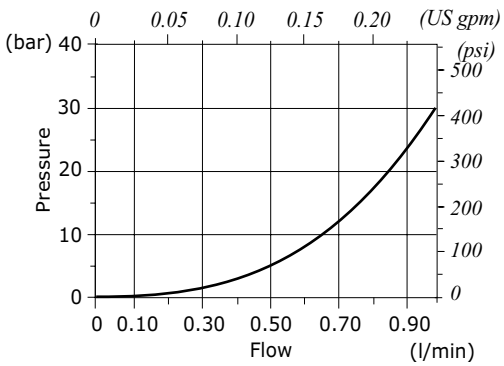
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

For complete connectors list see page 190

Rating diagrams

Pressure drop vs. flow



EE..A type
directional solenoid valves - 2 ways / 2 positions

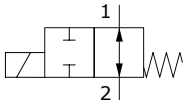
- Direct acting
- Spool type
- Normally open and closed configurations
- From SAE08 to SAE12 cavities

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

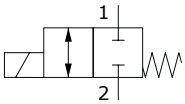
		EE08A	EE10A	EE12A
Nominal flow		8 l/min *(2.11 US gpm)*	30 l/min *(7.9 US gpm)*	40 l/min *(10.5 US gpm)*
Max. pressure			210 bar *(3050 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	30 cm³/min *(1.83 in³/min)*	55 cm³/min *(3.35 in³/min)*	75 cm³/min *(4.58 in³/min)*
Fluid			mineral based oil	
Viscosity			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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/2	SAE 10/2	SAE 12/2
Coil type*		BER	BIN 19	BIN 22
Nominal voltages			12 VDC - 24 VDC ± 10%	
Power rating		22.8 W (12 VDC) 22.5 W (24 VDC)	29 W (12 VDC) 31 W (24 VDC)	32.6 W (12 VDC) 31 W (24 VDC)
Weight		0.18 kg *(0.40 lb)*	0.28 kg *(0.64 lb)*	0.44 kg *(0.97 lb)*

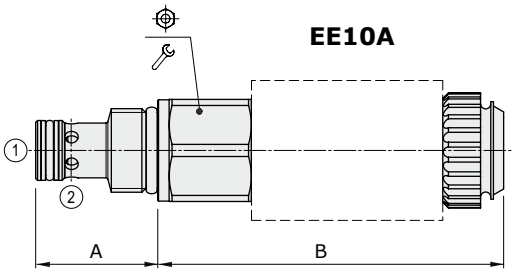
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration

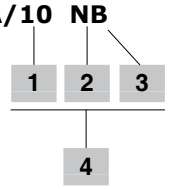


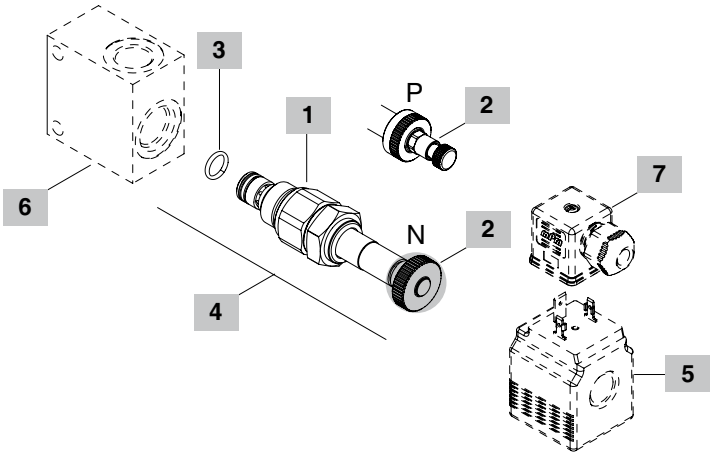


Valve type		A mm	A in	B mm	B in		Nm	lbft
EE08A/	10NB	27.6	1.09	76	2.99	24	30	22
	20NB	27.6	1.09	76	2.99	24	30	22
EE10A/	10PB	32.3	1.27	90.3	3.56	27	50	37
	20PB	32.3	1.27	90.3	3.56	27	50	37
EE12A/	10PB	46	1.81	102	4.02	32	80	59
	20PB	46	1.81	90.3	3.56	32	80	59

Ordering codes and description composition

EE08A/10 NB





1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency only for 8/2
P	Push button type only for 10/2 and 12/2

Note: for configurations with different emergency contact Sales Dept.

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EE08A/10NB	0EE08002001	Normally open configuration (N.O.) without emergency
EE08A/20NB	0EE08002000	Normally closed configuration (N.C.) without emergency
SAE cavity 10/2		
EE10A/10PB	0EE10002003	Normally open configuration (N.O.) with push-button emergency
EE10A/20PB	0EE10002002	Normally closed configuration (N.C.) with push-button emergency
SAE cavity 12/2		
EE12A/10PB	0EE12002005	Normally open configuration (N.O.) with push-button emergency
EE12A/20PB	0EE12002004	Normally closed configuration (N.C.) with push-button emergency

5 Coils

TYPE	CODE	DESCRIPTION
BER 12 VDC	4SLE001200	12VDC-ISO4400 coil for EE08A
BIN 19 VDC	4SL6000121	12VDC-ISO4400 coil for EE10A
BIN 22 VDC	4SL6000128	12VDC-ISO4400 coil for EE12A

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G1/2 std thread

For steel bodies or different threading see from page 199

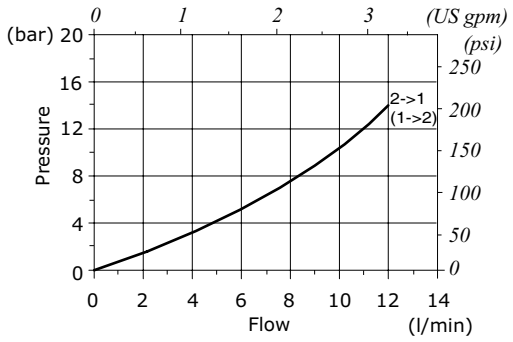
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

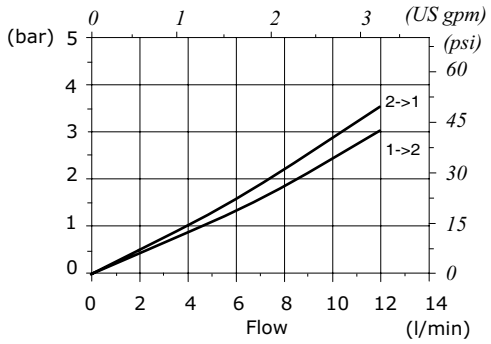
For complete connectors list see from page 190

Rating diagrams

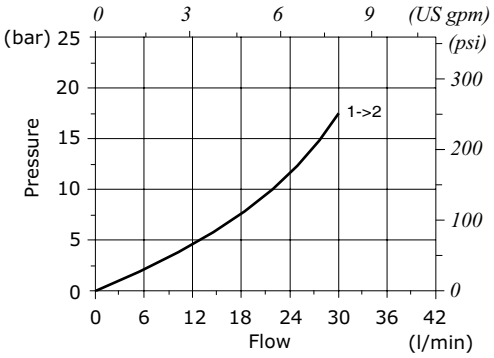
EE08A pressure drop vs. flow
- Spool 1 -



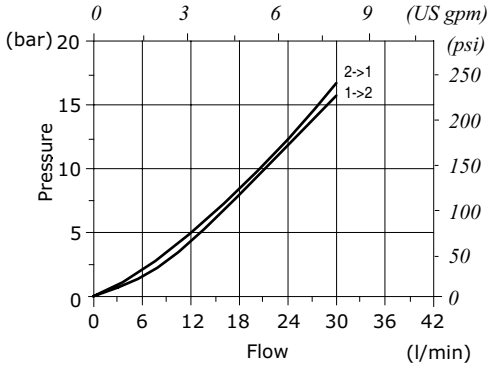
EE08A pressure drop vs. flow
- Spool 2 -



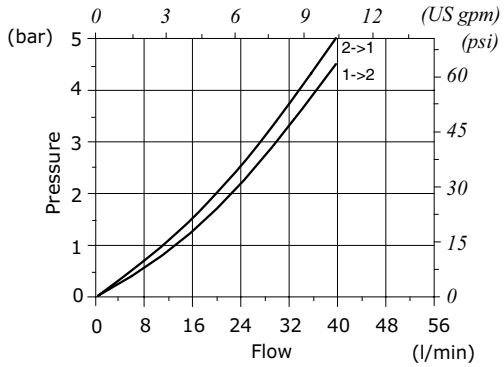
EE10A pressure drop vs. flow
- Spool 1 -



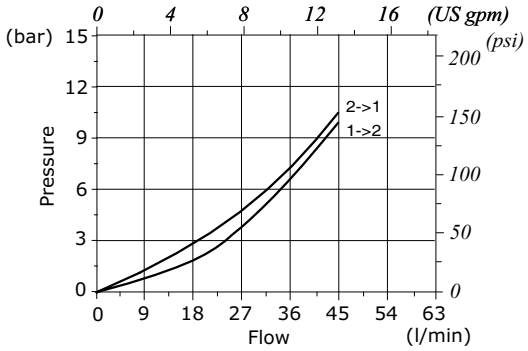
EE10A pressure drop vs. flow
- Spool 2 -



EE12A pressure drop vs. flow
- Spool 1 -



EE12A pressure drop vs. flow
- Spool 2 -



EC..M type
directional solenoid valves - 2 ways / 2 positions

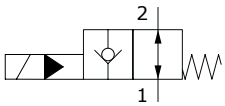
- Pilot operated
- Poppet type
- Oil leakage free from port 2 to port 1
- Normally open and closed configurations
- From SAE08 to SAE16 cavities

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

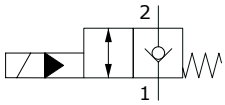
		EC08M	EC10M	EC12M	EC16M
Nominal flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*			
Cavity		SAE 8/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12 VDC - 24 VDC ± 10%			
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)			
Weight		0.135 kg *(0.30 lb)*	0.170 kg *(0.37 lb)*	0.230 kg *(0.51 lb)*	0.315 kg *(0.69 lb)*

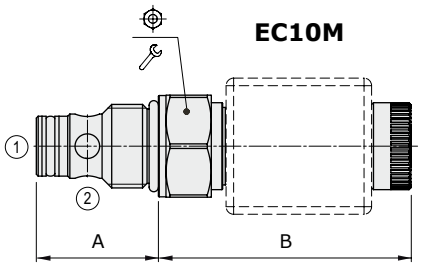
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration



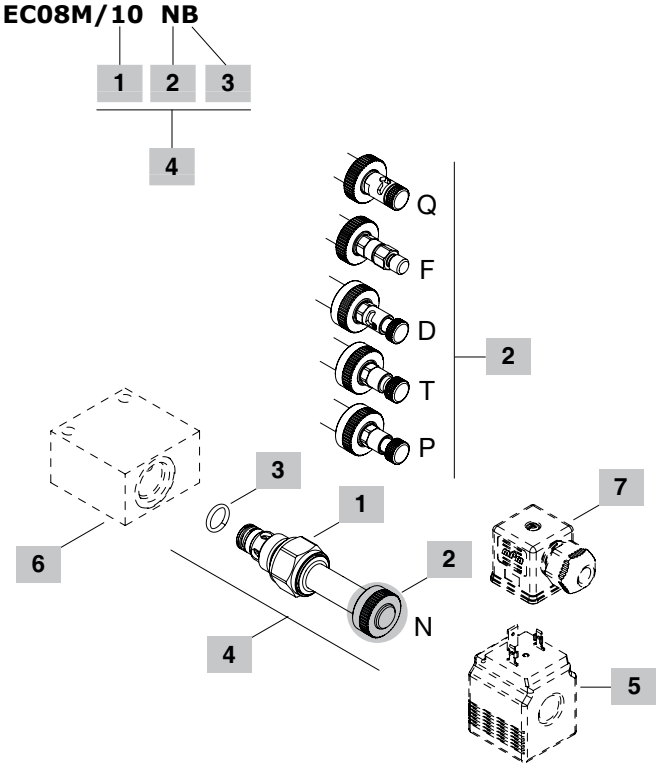


Valve type		A mm	A in	B mm	B in		Nm	lbft
EC08M/	10NB	67.2	2.64	28	1.10	24	30	22
	20NB	63.3	2.49	28	1.10	24	30	22
EC10M/	10NB	66.9	2.63	32.3	1.27	27	50	37
	20NB	63	2.48	32.3	1.27	27	50	37
EC12M/	10NB	61.1	2.40	45	1.77	32	80	59
	20NB	57.2	2.25	45	1.77	32	80	59
EC16M/	10NB	61.2	2.41	46	1.81	38	80	59
	20NB	57.3	2.26	46	1.81	38	80	59

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EC08M/10 NB



1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type (N.O.)
T	Screw type
D	Push type with detent (N.O.)
F	Pull button type (N.C.)
Q	Pull type with detent (N.C.)

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EC08M/10NB	0EC08002031	Normally open (N.O.) without emergency
EC08M/10PB	0EC08002033	(N.O.) push button emergency
EC08M/10TB	0EC08002034	(N.O.) screw type emergency
EC08M/10DB	0EC08002035	(N.O.) push type with detent emergency
EC08M/20NB	0EC08002032	Normally closed configuration (N.C.) without emergency
EC08M/20FB	0EC08002036	(N.C.) pull button emergency
EC08M/20TB	0EC08002037	(N.C.) screw type emergency
EC08M/20QB	0EC08002038	(N.C.) pull type with detent emergency
SAE cavity 10/2		
EC10M/10NB	0EC10002012	Normally open configuration (N.O.) without emergency
EC10M/10PB	0EC10002014	(N.O.) push button emergency
EC10M/10TB	0EC10002015	(N.O.) screw type emergency
EC10M/10DB	0EC10002016	(N.O.) push type with detent emergency
EC10M/20NB	0EC10002013	Normally closed configuration (N.C.) without emergency
EC10M/20FB	0EC10002017	(N.C.) pull button emergency
EC10M/20TB	0EC10002018	(N.C.) screw type emergency
EC10M/20QB	0EC10002019	(N.C.) pull type with detent emergency
SAE cavity 12/2		
EC12M/10NB	0EC12002007	Normally open configuration (N.O.) without emergency
EC12M/10PB	0EC12002009	(N.O.) push button emergency
EC12M/10TB	0EC12002010	(N.O.) screw type emergency
EC12M/10DB	0EC12002011	(N.O.) push type with detent emergency
EC12M/20NB	0EC12002008	Normally closed configuration (N.C.) without emergency
EC12M/20FB	0EC12002012	(N.C.) pull button emergency
EC12M/20TB	0EC12002013	(N.C.) screw type emergency
EC12M/20QB	0EC12002014	(N.C.) pull type with detent emergency
SAE cavity 16/2		
EC16M/10NB	0EC16002020	Normally open configuration (N.O.) without emergency
EC16M/10PB	0EC16002022	(N.O.) push button emergency
EC16M/10TB	0EC16002023	(N.O.) screw type emergency
EC16M/10DB	0EC16002024	(N.O.) push type with detent emergency
EC16M/20NB	0EC16002021	Normally closed configuration (N.C.) without emergency
EC16M/20FB	0EC16002025	(N.C.) pull button emergency
EC16M/20TB	0EC16002026	(N.C.) screw type emergency
EC16M/20QB	0EC16002027	(N.C.) pull type with detent emergency

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G3/4 std thread

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

For steel bodies or different threading see from page 199

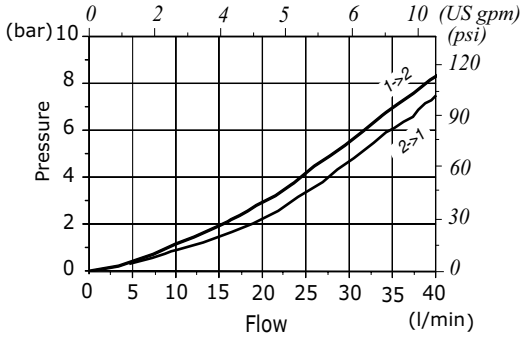
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

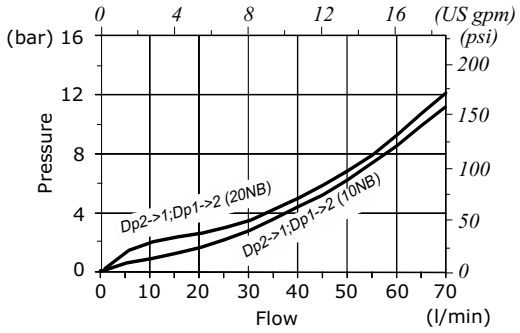
For complete connectors list see from page 190

Rating diagrams

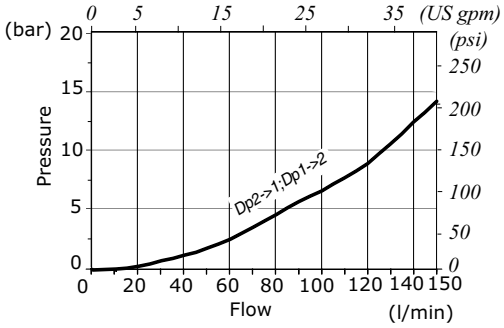
EC08M/10NB - EC08M/20N
pressure drop vs. flow



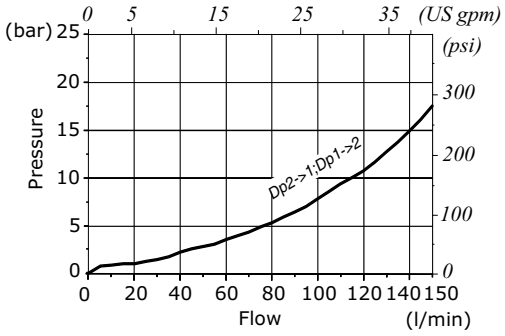
EC10M/10NB - EC10M/20NB
pressure drop vs. flow



EC12M/10NB - EC16M/10NB
pressure drop vs. flow



EC12M/20NB - EC16M/20NB
pressure drop vs. flow



EF..M type
directional solenoid valves - 2 ways / 2 positions

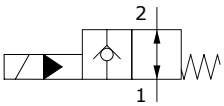
- Pilot operated
- Poppet type
- Oil leakage free from port 1 to port 2
- Normally open and closed configurations
- From SAE08 to SAE16 cavities

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

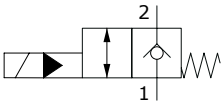
		EF08M	EF10M	EF12M	EF16M
Nominal flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	0.50 cm³/min *(0.030 in³/min)*	0.50 cm³/min *(0.030 in³/min)*	0.50 cm³/min *(0.030 in³/min)*	0.50 cm³/min *(0.030 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*			
Cavity		SAE 8/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12 VDC - 24 VDC ± 10%			
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)			
Weight		0.135 kg *(0.30 lb)*	0.170 kg *(0.37 lb)*	0.230 kg *(0.51 lb)*	0.315 kg *(0.69 lb)*

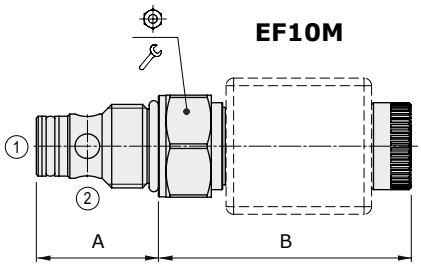
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration



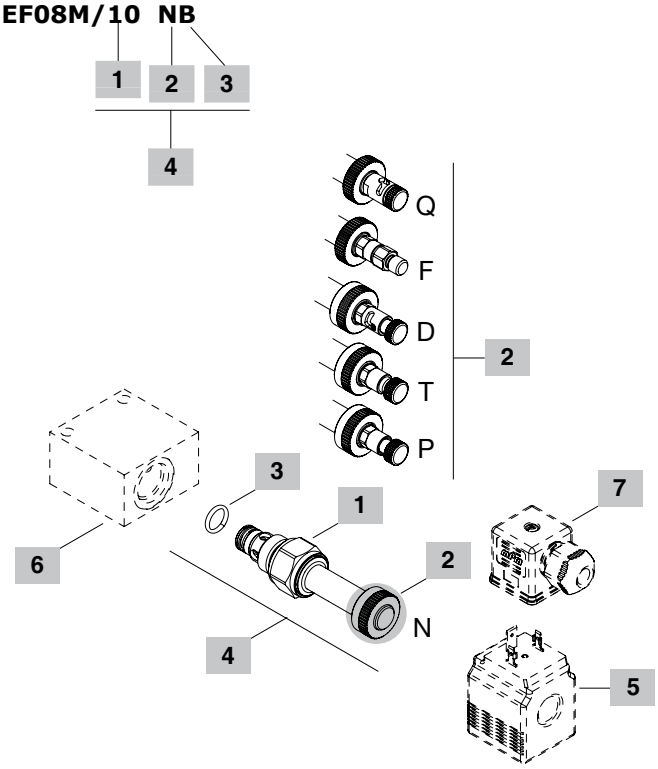


Valve type		A mm	A in	B mm	B in		Nm	lbft
EF08M/	10NB	67.2	2.64	28	1.10	24	30	22
	20NB	63.3	2.49	28	1.10	24	30	22
EF10M/	10NB	66.9	2.63	32.3	1.27	27	50	37
	20NB	63	2.48	32.3	1.27	27	50	37
EF12M/	10NB	61.1	2.40	45	1.77	32	80	59
	20NB	57.2	2.25	45	1.77	32	80	59
EF16M/	10NB	61.2	2.40	46	1.81	38	80	59
	20NB	57.3	2.26	46	1.81	38	80	59

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EF08M/10 NB



1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type (N.O.)
T	Screw type
D	Push type with detent (N.O.)
F	Pull button type (N.C.)
Q	Pull type with detent (N.C.)

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EF08M/10NB	0EF08002000	Normally open configuration (N.O.) without emergency
EF08M/10PB	0EF08002002	(N.O.) push button emergency
EF08M/10TB	0EF08002003	(N.O.) screw type emergency
EF08M/10DB	0EF08002004	(N.O.) push type with detent emergency
EF08M/20NB	0EF08002001	Normally closed configuration (N.C.) without emergency
EF08M/20FB	0EF08002005	(N.C.) pull button emergency
EF08M/20TB	0EF08002006	(N.C.) screw type emergency
EF08M/ 20QB	0EF08002007	(N.C.) pull type with detent emergency
SAE cavity 10/2		
EF10M/10NB	0EF10002000	Normally open configuration (N.O.) without emergency
EF10M/10PB	0EF10002002	(N.O.) push button emergency
EF10M/10TB	0EF10002003	(N.O.) screw type emergency
EF10M/10DB	0EF10002004	(N.O.) push type with detent emergency
EF10M/20NB	0EF10002001	Normally closed configuration (N.C.) without emergency
EF10M/20FB	0EF10002005	(N.C.) pull button emergency
EF10M/20TB	0EF10002006	(N.C.) screw type emergency
EF10M/20QB	0EF10002007	(N.C.) pull type with detent emergency
SAE cavity 12/2		
EF12M/10NB	0EF12002000	Normally open configuration (N.O.) without emergency
EF12M/10PB	0EF12002002	(N.O.) push button emergency
EF12M/10TB	0EF12002003	(N.O.) screw type emergency
EF12M/10DB	0EF12002004	(N.O.) push type with detent emergency
EF12M/20NB	0EF12002001	Normally closed configuration (N.C.) without emergency
EF12M/20FB	0EF12002005	(N.C.) pull button emergency
EF12M/20TB	0EF12002006	(N.C.) screw type emergency
EF12M/20QB	0EF12002007	(N.C.) pull type with detent emergency
SAE cavity 16/2		
EF16M/10NB	0EF16002000	Normally open configuration (N.O.) without emergency
EF16M/10PB	0EF16002002	(N.O.) push button emergency
EF16M/10TB	0EF16002003	(N.O.) screw type emergency
EF16M/10DB	0EF16002004	(N.O.) push type with detent emergency
EF16M/20NB	0EF16002001	Normally closed configuration (N.C.) without emergency
EF16M/20FB	0EF16002005	(N.C.) pull button emergency
EF16M/20TB	0EF16002006	(N.C.) screw type emergency
EF16M/20QB	0EF16002007	(N.C.) pull type with detent emergency

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
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
SAE 16/2-G 3/4	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

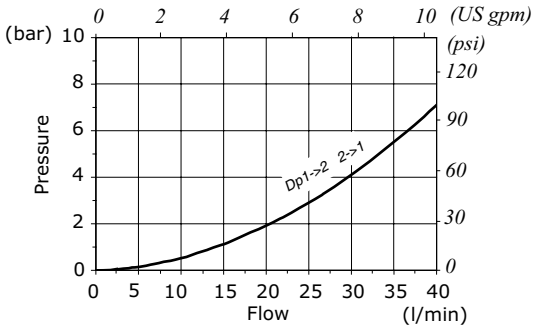
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

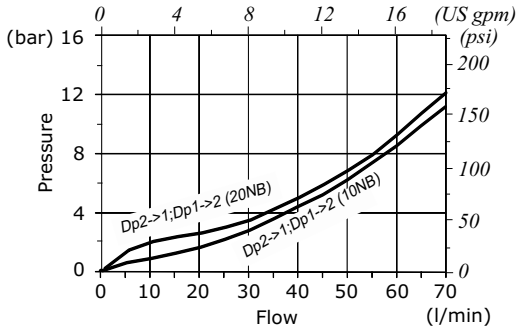
For complete connectors list see from page 190

Rating diagrams

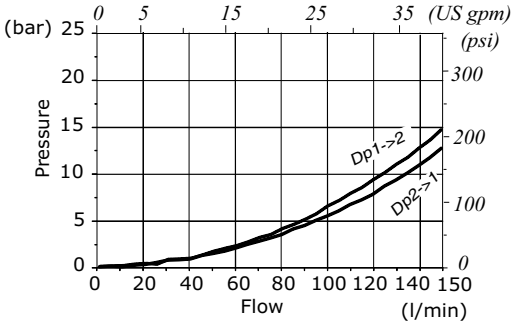
EF08M/10NB - EF08M/20NB
pressure drop vs. flow



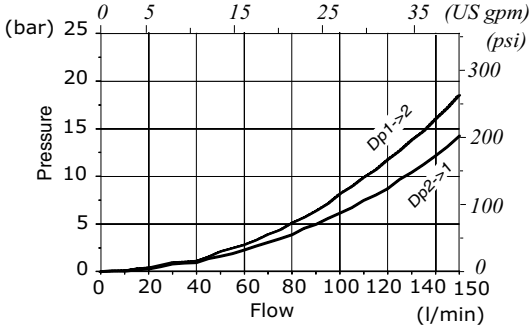
EF10M/10NB - EF10M/20NB
pressure drop vs. flow



EF12M/10NB - EF16M/10NB
pressure drop vs. flow



EF12M/20NB - EF16M/20NB
pressure drop vs. flow



EH..M type
directional solenoid valves - 2 ways / 2 positions

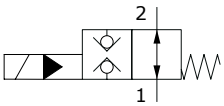
- Pilot operated
- Poppet type
- With check in both directions
- Normally open and closed configurations
- From SAE08 to SAE16 cavities

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

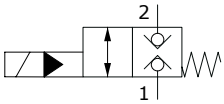
		EH08M	EH10M	EH12M	EH16M
Nominal flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*	380 bar *(5500 psi)*	350 bar *(5100 psi)*	380 bar *(5500 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.50 cm³/min *(0.030 in³/min)*	0.50 cm³/min *(0.030 in³/min)*	1 cm³/min *(0.061 in³/min)*	1 cm³/min *(0.061 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*			
Cavity		SAE 8/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12 VDC - 24 VDC ± 10%			
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)			
Weight		0.135 kg *(0.30 lb)*	0.170 kg *(0.37 lb)*	0.230 kg *(0.51 lb)*	0.315 kg *(0.69 lb)*

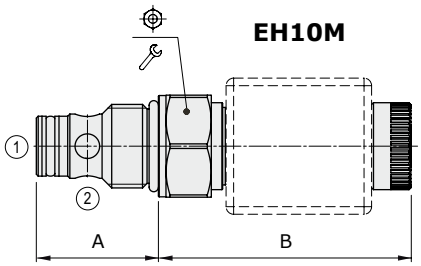
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration



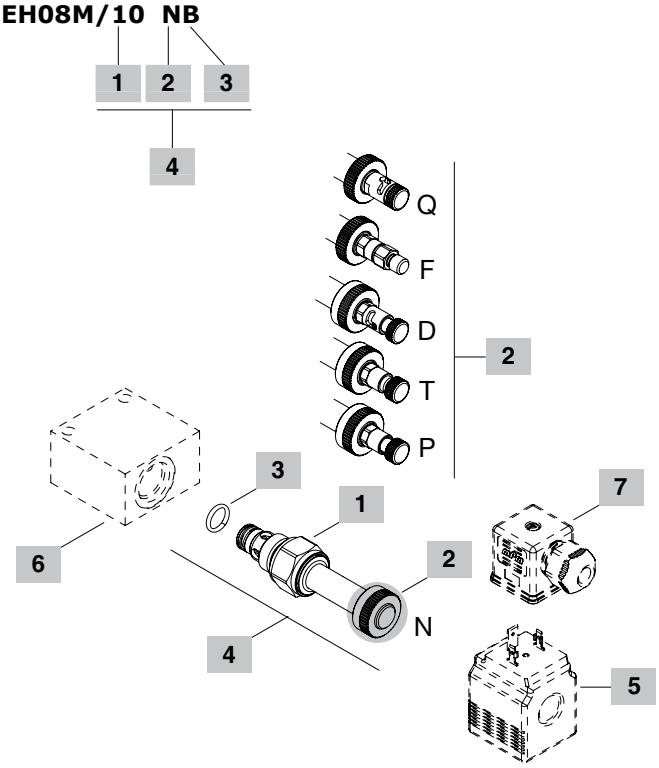


Valve type		A mm	A in	B mm	B in		Nm	lbft
EH08M/	10NB	67.2	2.64	28	1.10	24	30	22
	20NB	63.3	2.49	28	1.10	24	30	22
EH10M/	10NB	66.9	2.63	32.3	1.27	27	50	37
	20NB	63	2.48	32.3	1.27	27	50	37
EH12M/	10NB	61.1	2.40	45	1.77	32	80	59
	20NB	57.2	2.25	45	1.77	32	80	59
EH16M/	10NB	61.2	2.40	46	1.81	38	80	59
	20NB	57.3	2.26	46	1.81	38	80	59

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EH08M/10 NB



1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type (N.O.)
T	Screw type
D	Push type with detent (N.O.)
F	Pull button type (N.C.)
Q	Pull type with detent (N.C.)

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EH08M/10NB	0EH08002000	Normally open configuration (N.O.) without emergency
EH08M/10PB	0EH08002002	(N.O.) push button emergency
EH08M/10TB	0EH08002003	(N.O.) screw type emergency
EH08M/10DB	0EH08002004	(N.O.) push type with detent emergency
EH08M/20NB	0EH08002001	Normally closed configuration (N.C.) without emergency
EH08M/20FB	0EH08002005	(N.C.) pull button emergency
EH08M/20TB	0EH08002006	(N.C.) screw type emergency
EH08M/ 20QB	0EH08002007	(N.C.) pull type with detent emergency
SAE cavity 10/2		
EH10M/10NB	0EH10002000	Normally open configuration (N.O.) without emergency
EH10M/10PB	0EH10002002	(N.O.) push button emergency
EH10M/10TB	0EH10002003	(N.O.) screw type emergency
EH10M/10DB	0EH10002004	(N.O.) push type with detent emergency
EH10M/20NB	0EH10002001	Normally closed configuration (N.C.) without emergency
EH10M/20FB	0EH10002005	(N.C.) pull button emergency
EH10M/20TB	0EH10002006	(N.C.) screw type emergency
EH10M/20QB	0EH10002007	(N.C.) pull type with detent emergency
SAE cavity 12/2		
EH12M/10NB	0EH12002000	Normally open configuration (N.O.) without emergency
EH12M/10PB	0EH12002002	(N.O.) push button emergency
EH12M/10TB	0EH12002003	(N.O.) screw type emergency
EH12M/10DB	0EH12002004	(N.O.) push type with detent emergency
EH12M/20NB	0EH12002001	Normally closed configuration (N.C.) without emergency
EH12M/20FB	0EH12002005	(N.C.) pull button emergency
EH12M/20TB	0EH12002006	(N.C.) screw type emergency
EH12M/20QB	0EH12002007	(N.C.) pull type with detent emergency
SAE cavity 16/2		
EH16M/10NB	0EH16002000	Normally open configuration (N.O.) without emergency
EH16M/10PB	0EH16002002	(N.O.) push button emergency
EH16M/10TB	0EH16002003	(N.O.) screw type emergency
EH16M/10DB	0EH16002004	(N.O.) push type with detent emergency
EH16M/20NB	0EH16002001	Normally closed configuration (N.C.) without emergency
EH16M/20FB	0EH16002005	(N.C.) pull button emergency
EH16M/20TB	0EH16002006	(N.C.) screw type emergency
EH16M/20QB	0EH16002007	(N.C.) pull type with detent emergency

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G3/4 std thread

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

For steel bodies or different threading see from page 199

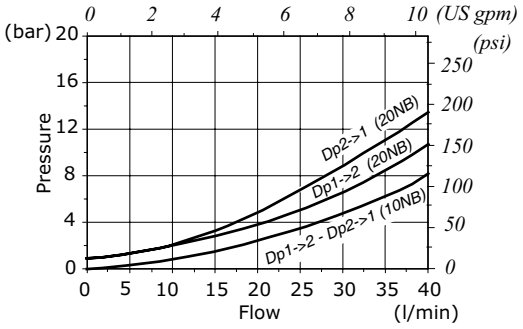
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

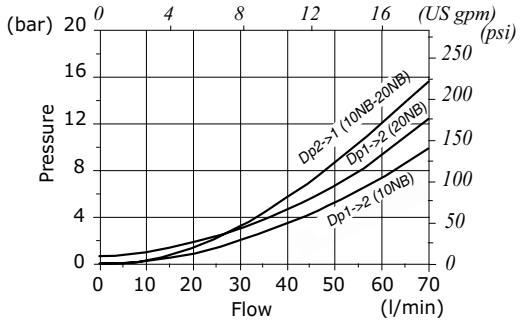
For complete connectors list see from page 190

Rating diagrams

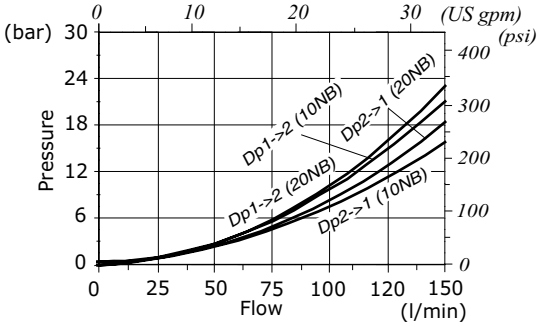
EH08M/10NB - EH08M/20NB
pressure drop vs. flow



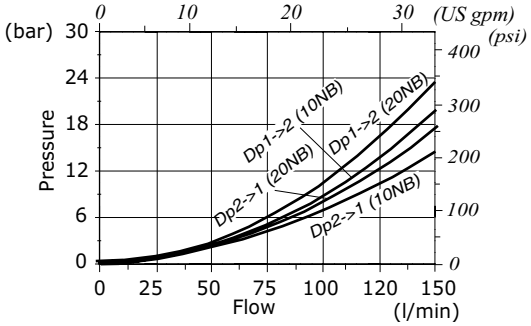
EH10M/10NB - EH10M/20NB
pressure drop vs. flow



EH12M/10NB - EH12M/20NB
pressure drop vs. flow



EH16M/10NB - EH16M/20NB
pressure drop vs. flow



EW... type
directional solenoid valves - 2 ways / 2 positions

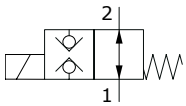
- Direct acting
- Poppet type
- Normally open and closed configurations
- With check in both directions
- From SAE08 to SAE12 cavities

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

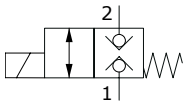
		EW08A	EW10A-EW10B	EW12B-EW12C
Nominal flow		10 l/min *(2.64 US gpm)*	25-30 l/min *(6.6 - 7.9 US gpm)*	50 l/min *(13.2 US gpm)*
Max. pressure			210 bar *(3050 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*
Fluid			mineral based oil	
Viscosity			10-200 cSt	
Max level of contamin.			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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/2	SAE 10/2	SAE 12/2
Coil type*		BT	BIN 19	BIN 22
Nominal voltages			12 VDC - 24 VDC ± 10%	
Power rating		21 W	29 W (12 VDC) - 31 W (24 VDC)	32.6 W (12 VDC) - 31 W (24 VDC)
Weight		0.16 kg *(0.35 lb)*	0.25 kg *(0.55 lb)*	0.44 kg *(0.97 lb)*

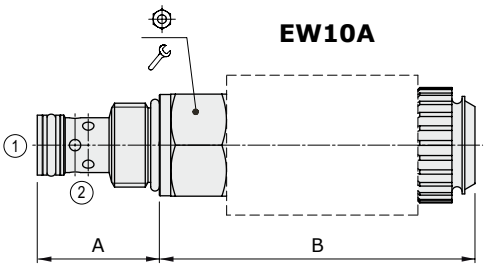
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration



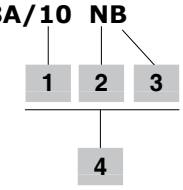


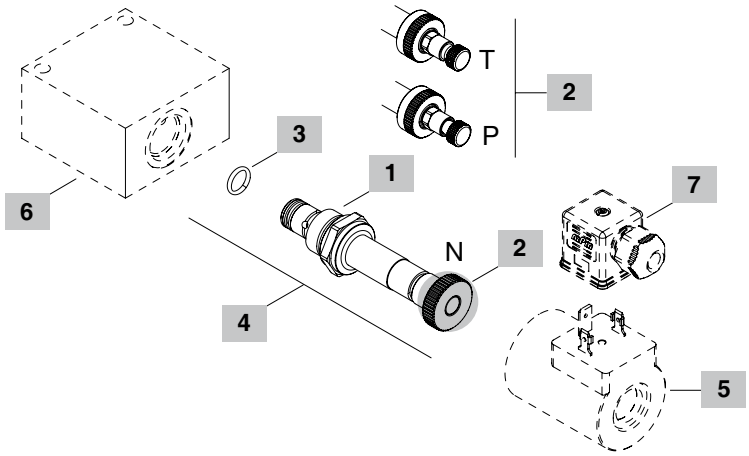
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
EW08A/10NB	28.5	*1.12*	65.7	*2.59*	24	30	*22*
EW08A/20NB	28.5	*1.12*	70.9	*2.79*	24	30	*22*
EW10A/20PB	32.3	*1.27*	83.3	*3.28*	27	50	*37*
EW10B/10NB	32.3	*1.27*	99.8	*3.93*	27	50	*37*
EW12C/20PB	46	*1.81*	98.7	*3.89*	32	80	*59*
EW12B/10NB	46	*1.81*	102.8	*4.05*	32	80	*59*

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EW08A/10 NB





1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type
P	Push button type (N.C.)

Note: emergency type depends on cavity type. See chapter 4 for availability.

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EW08A/10NB	0EW08002001	Normally open configuration (N.O.) without emergency
EW08A/10TB	0EW08002003	Normally open configuration (N.O.) with screw type emergency
EW08A/20NB	0EW08002006	Normally closed configuration (N.C.) Without emergency
EW08A/20PB	0EW08002004	Normally closed configuration (N.C.) with push button emergency
E**W08A/20TB**	0EW08002002	Normally open configuration (N.C.) with screw type emergency
SAE cavity 10/2		
EW10B/10NB	0EW10002004	Normally open configuration (N.O.) without emergency
EW10A/20PB	0EW10002002	Normally closed configuration (N.C.) with push button emergency
SAE cavity 12/2		
EW12B/10NB	0EW12002005	Normally open configuration (N.O.) without emergency
EW12C/20PB	0EW12002003	Normally closed configuration (N.C.) with push button emergency

5 Coils

TYPE	CODE	DESCRIPTION
BT 12VDC	4SL3000120	12VDC-ISO4400 coil for EW08A
BIN 19 VDC	4SL6000121	12VDC-ISO4400 coil for EW10A-EW10B
BIN 22 VDC	4SL6000128	12VDC-ISO4400 coil for EW12A-EW12C

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G1/2 std thread

For steel bodies or different threading see from page 199

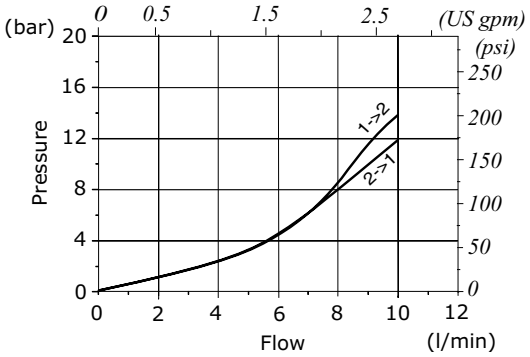
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

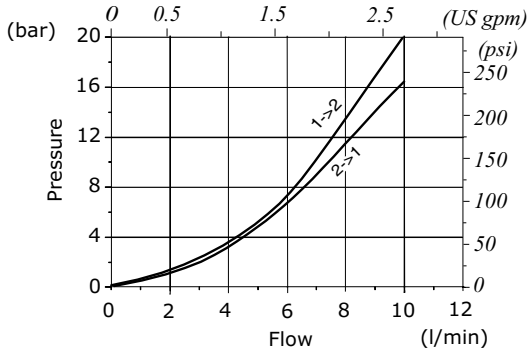
For complete connectors list see from page 190

Rating diagrams

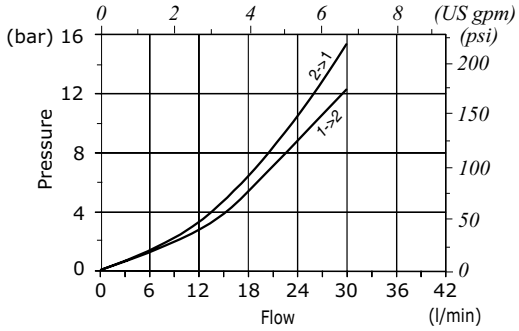
EW08A pressure drop vs. flow
- Spool 1 -



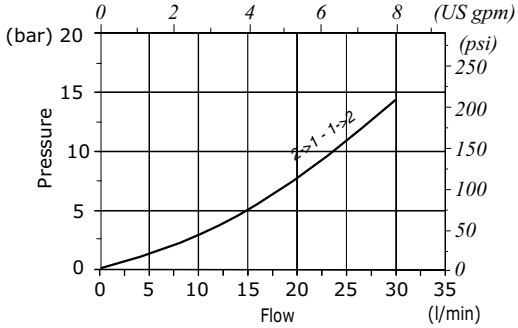
EW08A pressure drop vs. flow
- Spool 2 -



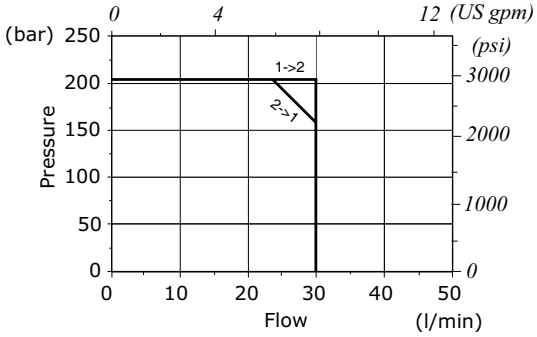
EW10A pressure drop vs. flow
- Spool 2 -



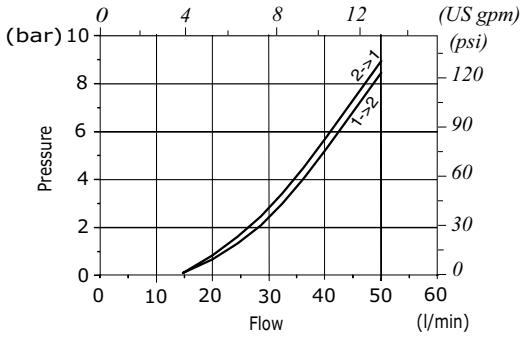
EW10B pressure drop vs. flow
- Spool 1 -



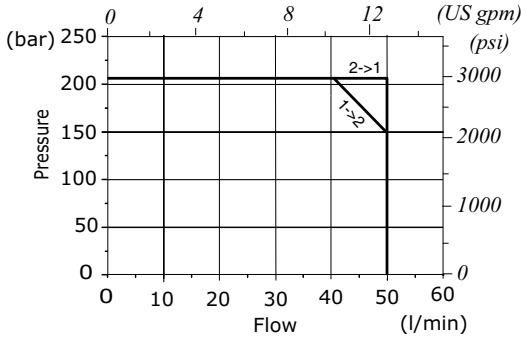
EW10B performance limit
- Spool 1 -



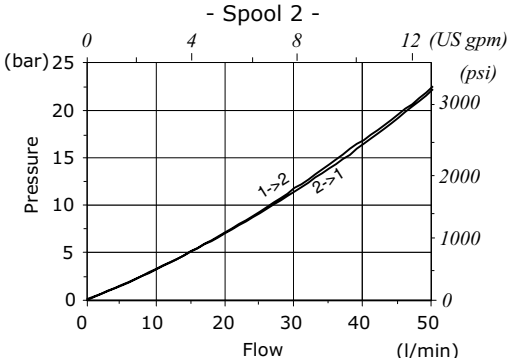
EW12A pressure drop vs. flow
- Spool 1 -



EW12A performance limit
- Spool 1 -



EW12C pressure drop vs. flow
- Spool 2 -



EW..M type
directional solenoid valves - 2 ways / 2 positions

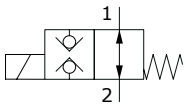
- Direct acting
- Poppet type
- Normally open and closed configurations
- With check in both directions
- From SAE08 to SAE10 cavities

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

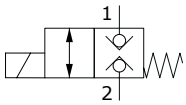
		EW08M	EW10M
Nominal flow		20 l/min *(5.28 US gpm)*	40 l/min *(10.6 US gpm)*
Max. pressure		250 bar *(3600 psi)*	350 bar *(5075 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/2	SAE 10/2
Coil type*		BER	BH
Nominal voltages		12 VDC - 24 VDC ± 10%	
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)	33 W
Weight		0.15 kg *(0.33 lb)*	0.30 kg *(0.66 lb)*

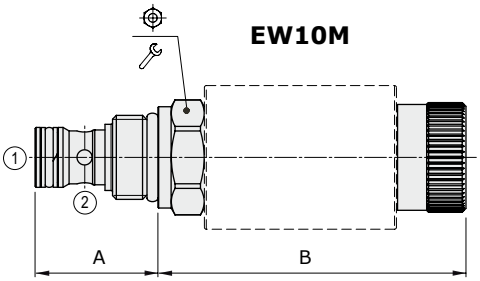
*NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 190.*

Normally open configuration



Normally closed configuration

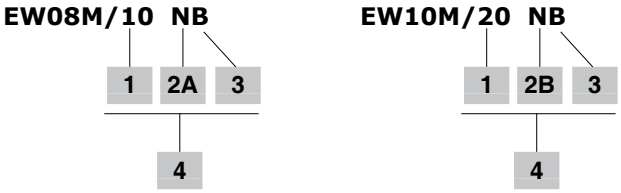


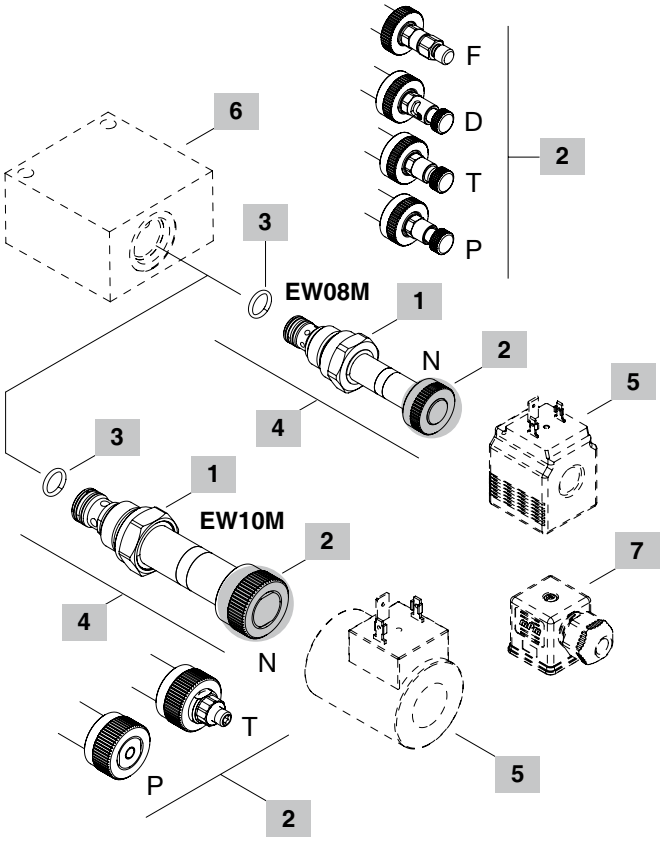


Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
EW08M/10NB	28	*1.10*	60.2	*2.37*	24	30	*22*
EW08M/20NB	28	*1.10*	62.5	*2.46*	24	30	*22*
EW10M/20NB	32.5	*1.28*	81.3	*3.20*	27	50	*37*

For dimensions with different type of emergency see page 197

Ordering codes and description composition





1 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type (N.C.)
T	Screw type (N.C. - N.O. for EW08M / N.C. for EW10M)
D	Push type with detent (N.C.)
F	Pull button type (N.O.)

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/2		
EW08M/10NB	0EW08002014	Normally open configuration (N.O.) without emergency
EW08M/10FB	0EW08002015	(N.O.) pull button emergency
EW08M/10TB	0EW08002016	(N.O.) screw type emergency
EW08M/20NB	0EW08002018	Normally closed configuration (N.C.) without emergency
EW08M/20PB	0EW08002019	(N.C.) push button emergency
EW08M/20TB	0EW08002020	(N.C.) screw type emergency
EW08M/20DB	0EW08002021	(N.C.) push type with detent emergency
SAE cavity 10/2		
EW10M/20NB	0EW10002008	Normally closed configuration (N.C.) without emergency
EW10M/20TB	0EW10002009	(N.C.) screw type emergency
EW10M/20PB	0EW10002010	(N.C.) push button emergency

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil for EW08M
BH 12VDC	4SLD001200	12VDC-ISO4400 coil for EW10M

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G3/8 std thread

For steel bodies or different threading see from page 199

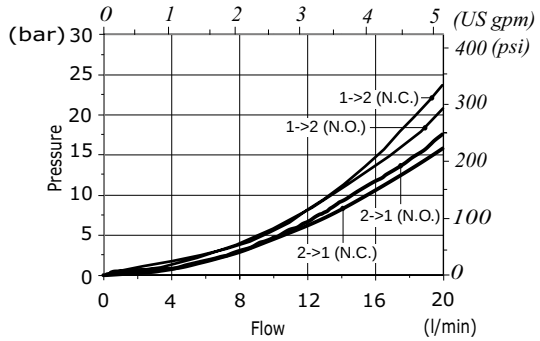
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

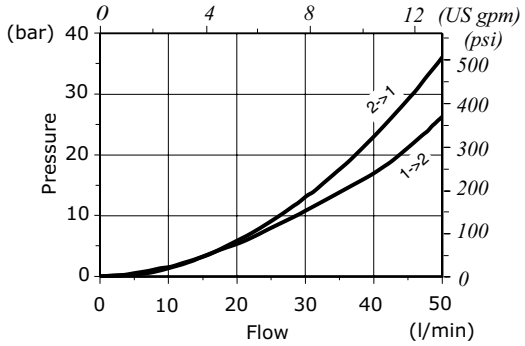
For complete connectors list see from page 190

Rating diagrams

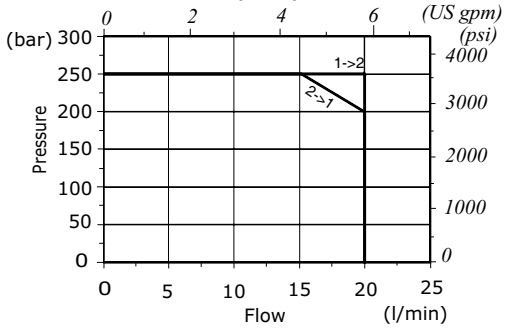
EW08M pressure drop vs. flow



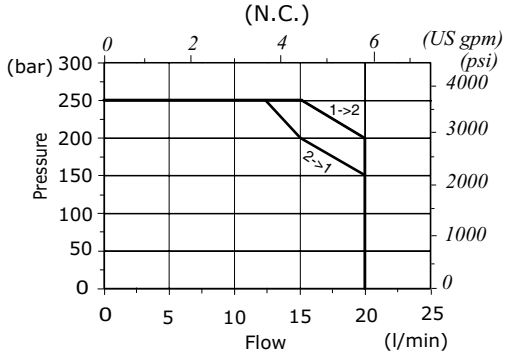
EW10M pressure drop vs. flow
(N.C.)



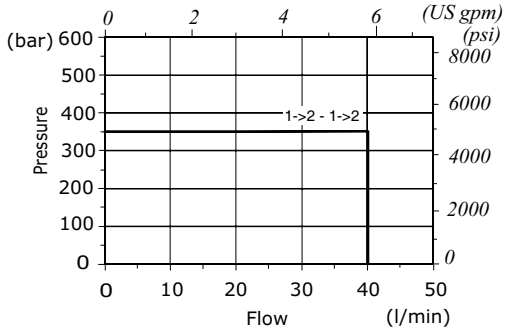
EW08M performance limit
(N.O.)



EW08M performance limit
(N.C.)



EW10M performance limit
(N.C.)



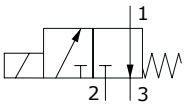
EJ08F type
directional solenoid valve - 3 ways / 2 positions

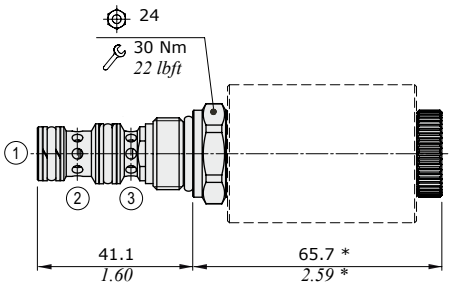
- Direct acting
- Spool type
- Suitable for low pressure: 50 bar *(725 psi)*

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

		EJ08F
Nominal flow		12 l/min *(3.17 US gpm)*
Max. pressure		50 bar *(725 psi)*
Oil leakage	at 50 bar *(725 psi)*	5 cm^3/min *(0.30 in^3/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 -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 8/3
Coil type*		BT
Nominal voltages		12 VDC - 24 VDC ± 10%
Power rating		21 W
Weight		0.175 kg *(0.38 lb)*

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

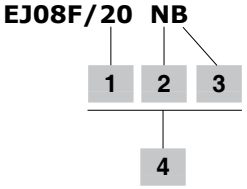


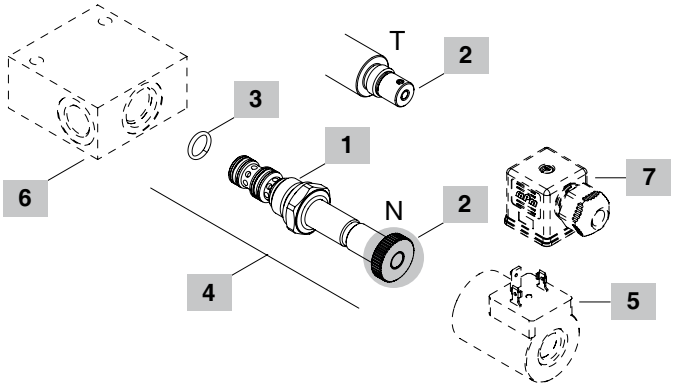


NOTE (*): dimension for configuration **EJ08F/20NB**, for dimensions with different type of emergency see page 197.

Ordering codes and description composition

EJ08F/20 NB





1 Spool

TYPE	DESCRIPTION
2	Spool 2

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
EJ08F/20NB	0EJ08002029	Without emergency
EJ08F/20TB	0EJ08002043	Screw type emergency

5 Coils

TYPE	CODE	DESCRIPTION
BT 12VDC	4SL3000120	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G3/8 std thread

For steel bodies or different threading see from page 199

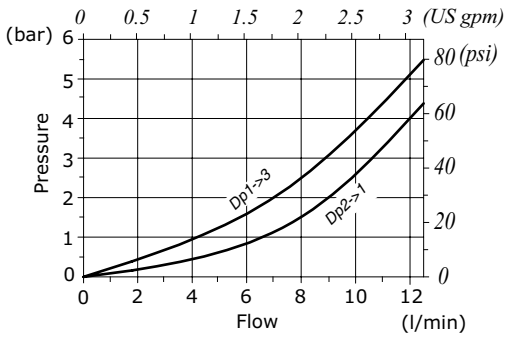
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

For complete connectors list see from page 190

Rating diagrams

Pressure drop vs. flow



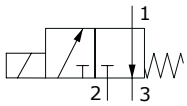
EJ08G type
directional solenoid valve - 3 ways / 2 positions

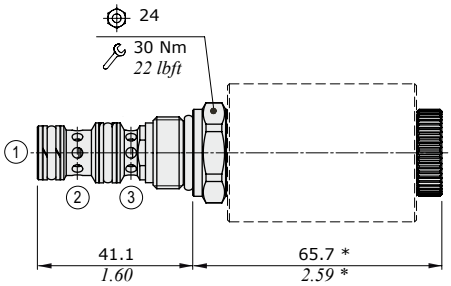
- Direct acting
- Spool type
- Suitable for high pressure: 350 bar *(5100 psi)*

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

		EJ08G
Nominal flow		3 l/min *(0.80 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage	at 210 bar *(3050 psi)*	10 cm^3/min *(0.61 in^3/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 -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 8/3
Coil type*		BT
Nominal voltages		12 VDC - 24 VDC ± 10%
Power rating		21 W
Weight		0.134 kg *(0.29 lb)*

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

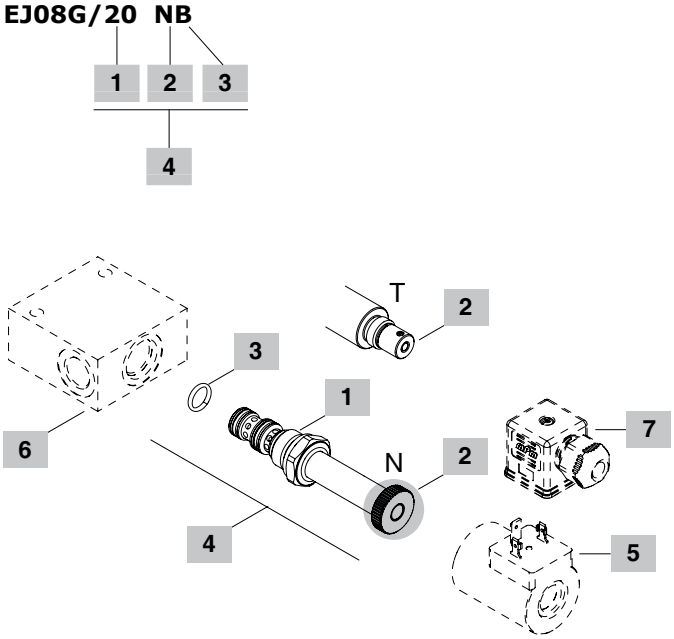




NOTE (*): dimension for configuration **EJ08G/20NB**, for dimensions with different type of emergency see page 197.

Ordering codes and description composition

EJ08G/20 NB



1 Spool

TYPE	DESCRIPTION
2	Spool 2

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
EJ08G/20NB	0EJ08002035	Without emergency
EJ08G/20TB	0EJ08002042	Screw type emergency

5 Coils

TYPE	CODE	DESCRIPTION
BT 12VDC	4SL3000120	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G1/4 std thread

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

For steel bodies or different threading see from page 199

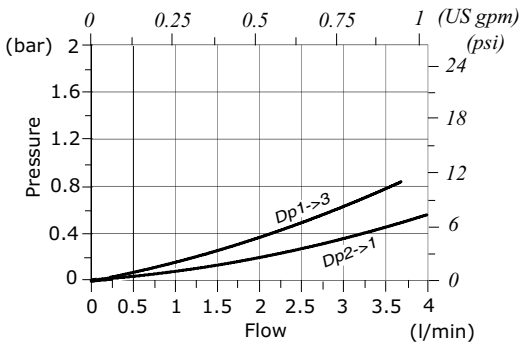
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

For complete connectors list see from page 190

Rating diagrams

Pressure drop vs. flow



EJ..M type
directional solenoid valve - 3 ways / 2 positions

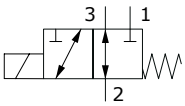
- Direct acting
- Spool type
- From SAE08 to SAE10 cavities

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

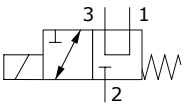
		EJ08M	EJ10M
Nominal flow		25 l/min *(6.6 US gpm)*	40 l/min *(10.5 US gpm)*
Max. pressure		250 bar *(3600 psi)*	250 bar *(3600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/3	SAE 10/3
Coils type*		BER	BC16
Nominal voltages		12 VDC - 24 VDC ± 10%	12 VDC - 24 VDC ± 10%
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)	26.1 W (12 VDC) - 25.9 W (24 VDC)
Weight		0.125 kg *(0.27 lb)*	0.300 kg *(0.661 lb)*

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

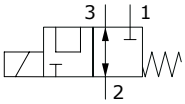
Spool 1



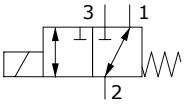
Spool 2



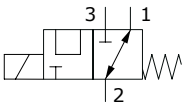
Spool 3 (only EJ08M)



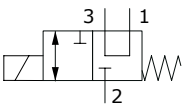
Spool 4

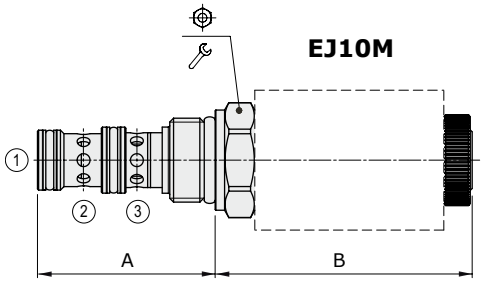


Spool 5



Spool 6 (only EJ10M)





Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
EJ08M/10NB	41.1	*1.62*	56.1	*2.21*	24	30	*22*
EJ10M/10NB	47	*1.85*	68	*2.68*	27	50	*37*

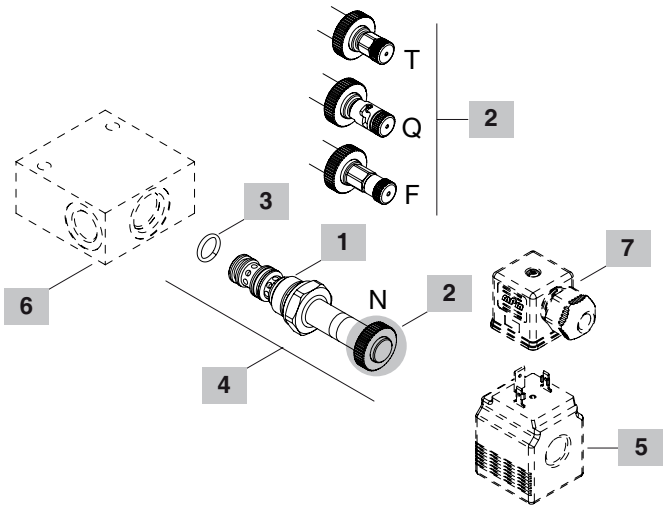
For dimensions with different type of emergency see page 197

Ordering codes and description composition

EJ08M/10 NB

1 2 3

4



1 Spool

TYPE	DESCRIPTION
1	Spool 1
2	Spool 2
3	Spool 3
4	Spool 4
5	Spool 5
6	Spool 6

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
F	Pull button type
Q	Pull type with detent
T	Screw type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
EJ08M/10NB	0EJ08002030	Without emergency, spool 1
EJ08M/20NB	0EJ08002031	Without emergency, spool 2
EJ08M/30NB	0EJ08002032	Without emergency, spool 3
EJ08M/40NB	0EJ08002033	Without emergency, spool 4
EJ08M/50NB	0EJ08002033	Without emergency, spool 5
SAE cavity 10/3		
EJ10M/10NB	0EJ10002018	Without emergency, spool 1
EJ10M/20NB	0EJ10002019	Without emergency, spool 2
EJ10M/40NB	0EJ10002021	Without emergency, spool 3
EJ10M/50NB	0EJ10002022	Without emergency, spool 4
EJ10M/60NB	0EJ10002023	Without emergency, spool 5

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil for EJ08M
BC 12VDC	4SL8000120	12VDC-ISO4400 coil for EJ10M

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G3/8 std thread

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

For steel bodies or different threading see from page 199

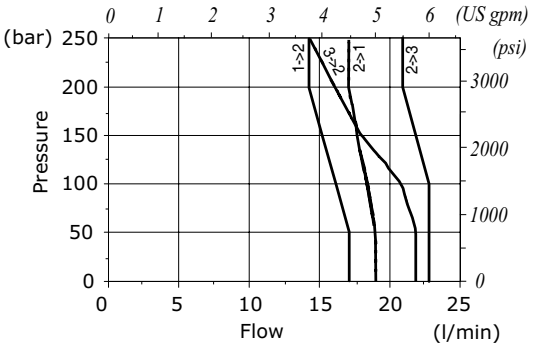
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

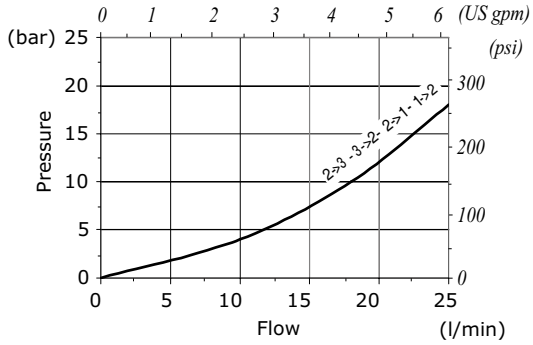
For complete connectors list see from page 190

Rating diagrams

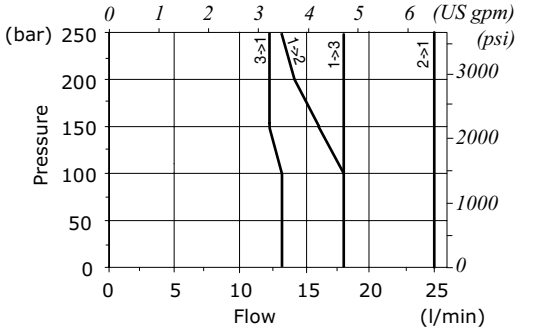
EJ08M performance limit
- Spool 1 -



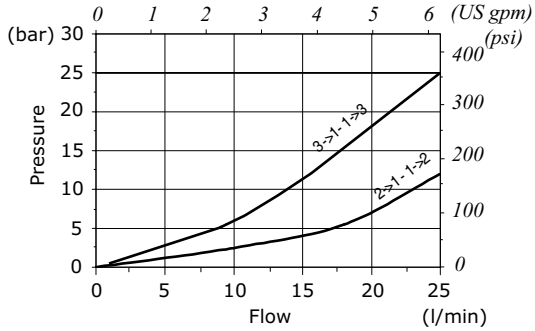
EJ08M pressure drop vs. flow
- Spool 1 -



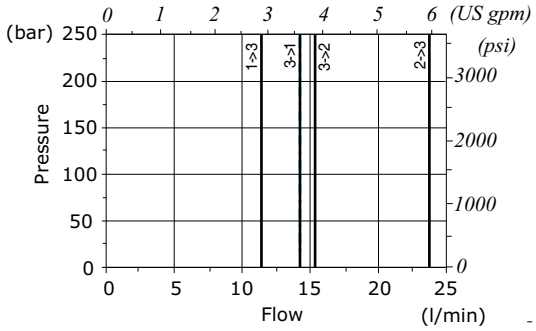
EJ08M performance limit
- Spool 2 -



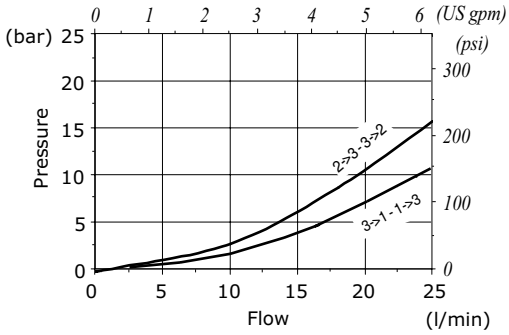
EJ08M pressure drop vs. flow
- Spool 2 -



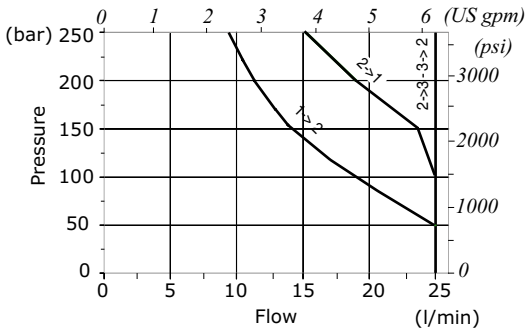
EJ08M performance limit
- Spool 3 -



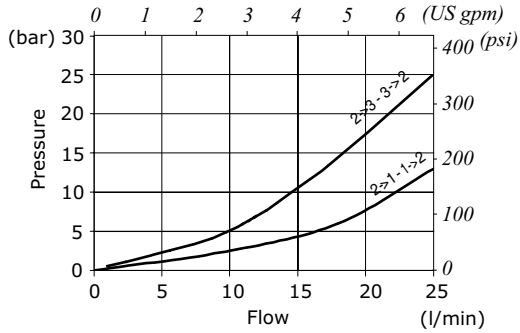
EJ08M pressure drop vs. flow
- Spool 3 -



EJ08M performance limit
- Spool 4 -

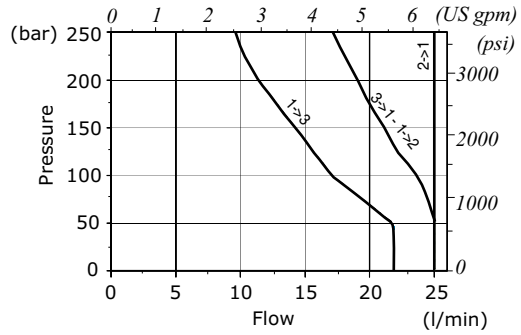


EJ08M pressure drop vs. flow
- Spool 4 -

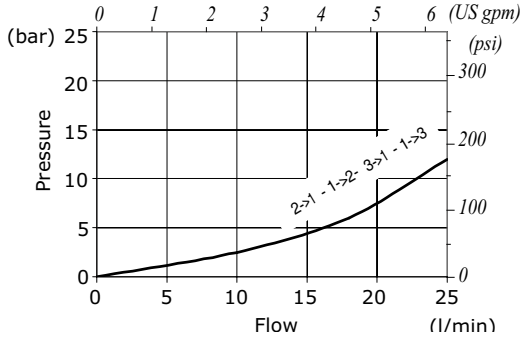


Rating diagrams

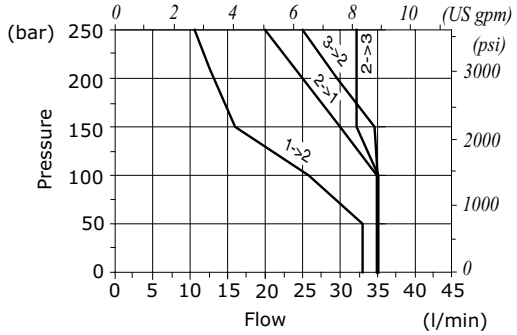
EJ08M performance limit
- Spool 5 -



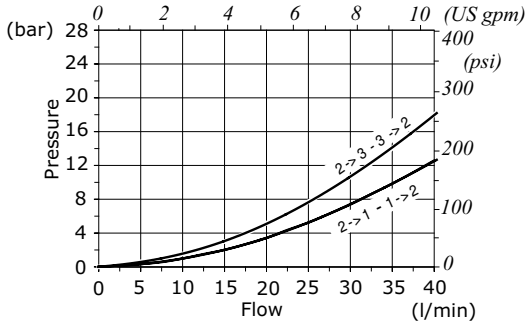
EJ08M pressure drop vs. flow
- Spool 5 -



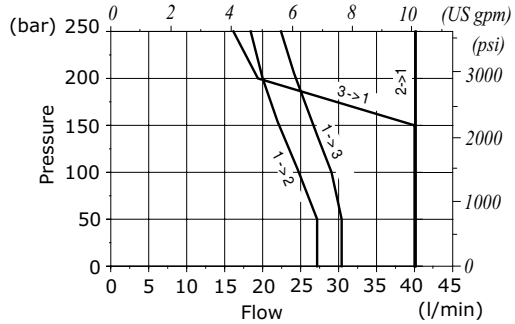
EJ10M performance limit
- Spool 1 -



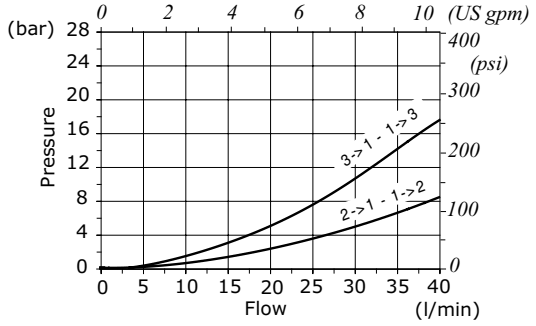
EJ10Mp pressure drop vs. flow
- Spool 1 -



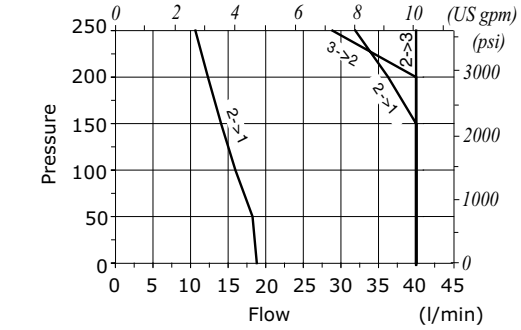
EJ10M performance limit
- Spool 2 -



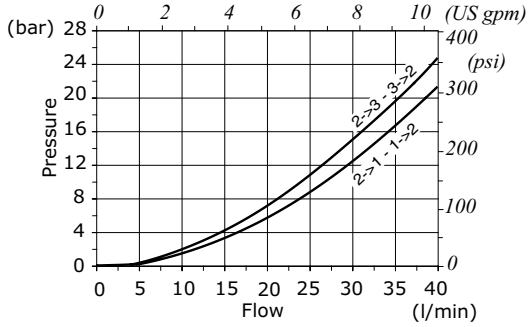
EJ10M pressure drop vs. flow
- Spool 2 -



EJ10M performance limit
- Spool 4 -

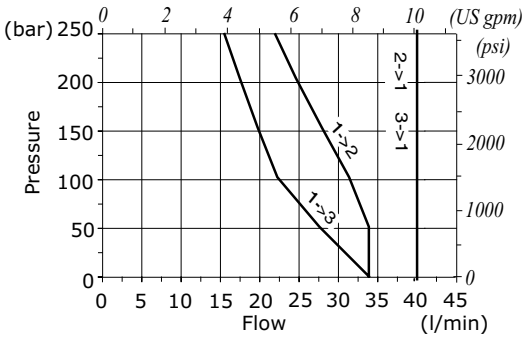


EJ10M pressure drop vs. flow
- Spool 4 -

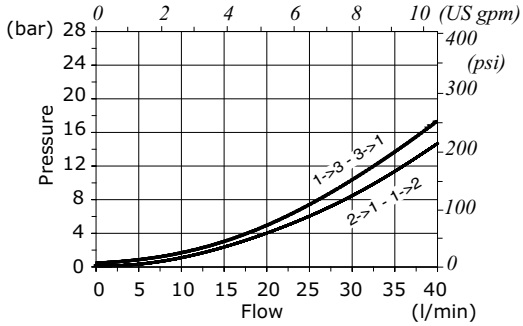


Rating diagrams

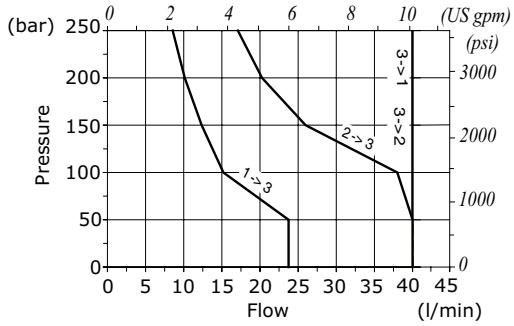
EJ10M performance limit
- Spool 5 -



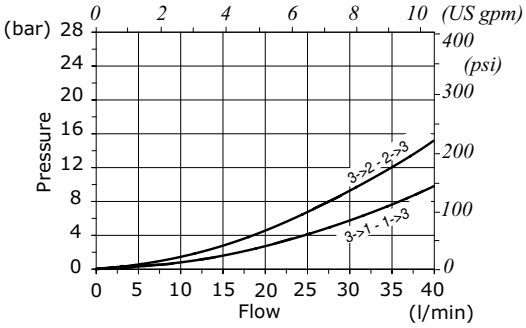
EJ10M pressure drop vs. flow
- Spool 5 -



EJ10M performance limit
- Spool 6 -



EJ10M pressure drop vs. flow
- Spool 6 -



EJ12A type
directional solenoid valve - 3 ways / 2 positions

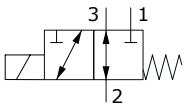
- Direct acting
- Spool type

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

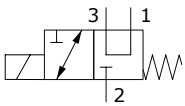
		EJ12A
Nominal flow		40 l/min *(10.5 US gpm)*
Max. pressure		210 bar *(3050 psi)*
Oil leakage	at 210 bar *(3050 psi)*	120 cm³/min *(7.32 in³/min)*
Fluid		mineral based oil
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	*with NBR seals* *with FPM seals*	from -20°C *(-4°F)* to 80°C *(176°F)* from -20°C *(-4°F)* to 100°C *(212°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 12/3
Coil type*		BIN 22
Nominal voltages		12 VDC - 24 VDC ± 10%
Power rating		32.6 W (12 VDC) - 31 W (24 VDC)
Weight		0.500 kg *(1.10 lb)*

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

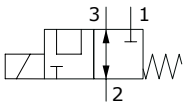
Spool 1

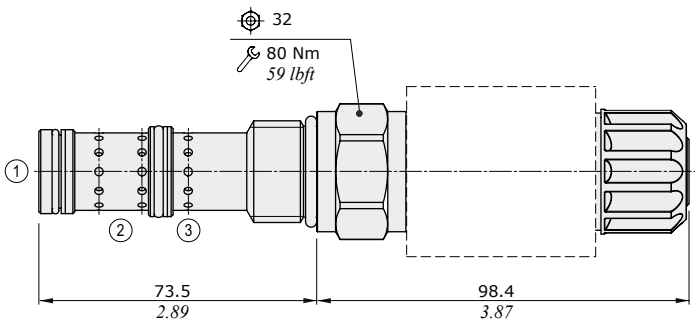


Spool 2



Spool 4



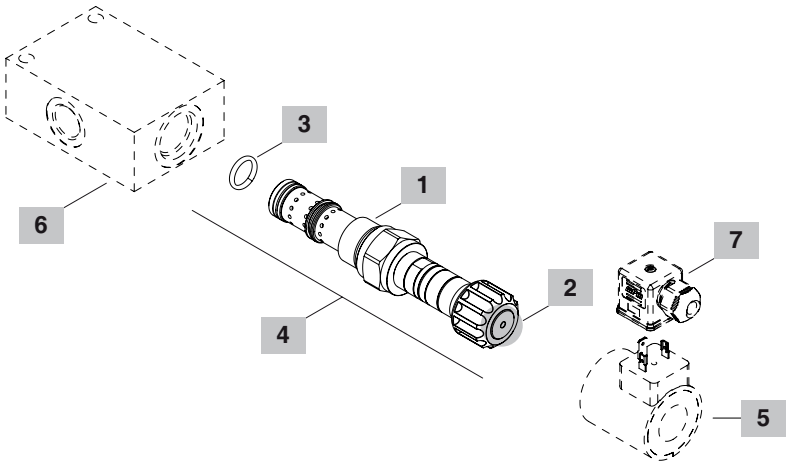


Ordering codes and description composition

EJ12A/10 PB

1 2 3

4



1 Spool

TYPE	DESCRIPTION
1	Spool 1
2	Spool 2
4	Spool 4

2 Emergency

TYPE	DESCRIPTION
P	Push button type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 12/3		
EJ12A/10PB	0EJ12002005	Push button emergency, spool 1
EJ12A/20PB	0EJ12002006	Push button emergency, spool 2
EJ12A/40PB	0EJ12002008	Push button emergency, spool 4

5 Coils

TYPE	CODE	DESCRIPTION
BIN22 12VDC	4SL6000128	12VDC-ISO4400 Coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G1/2 std thread

For steel bodies or different threading see from page 199

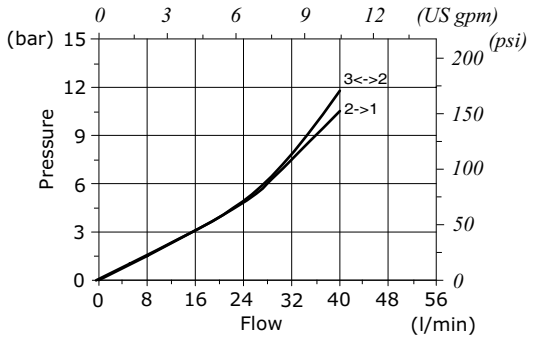
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

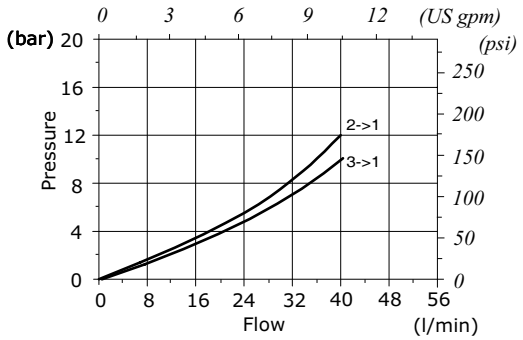
For complete connectors list see from page 190

Rating diagrams

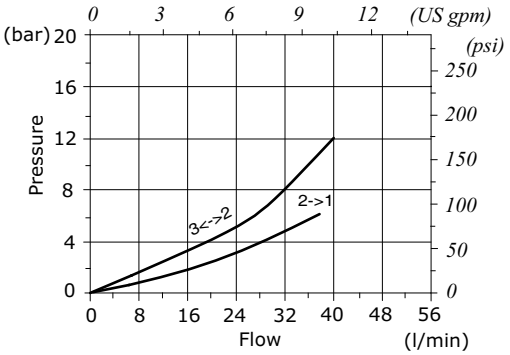
Pressure drop vs. flow
- Spool 1 -



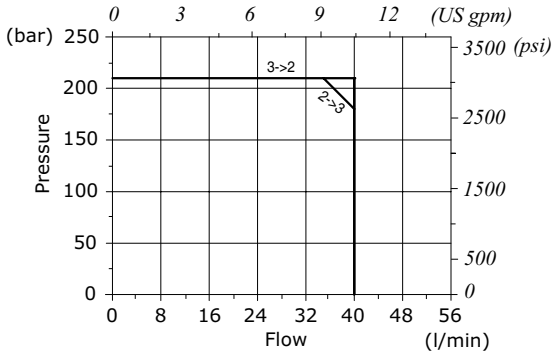
Pressure drop vs. flow
- Spool 2 -



Pressure drop vs. flow
- Spool 4 -



Performance limit
- Spool 4 -



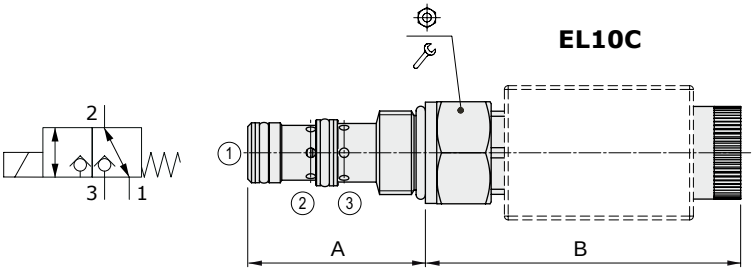
EL... type
directional solenoid valve - 3 ways / 2 positions

- Direct acting
- Poppet type
- From SAE08 to SAE10 cavities

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

		EL08A	EL10C
Nominal flow		10 l/min *(2.64 US gpm)*	20 l/min *(5.28 US gpm)*
Max. pressure		210 bar *(3050 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/3	SAE 10/3
Coil type*		BC	BQ16
Nominal voltages		12 VDC - 24 VDC ± 10%	12 VDC ± 10%
Power rating		26.1 W (12 VDC) 25.9 W (24 VDC)	30 W
Weight		0.23 kg *(0.50 lb)*	0.27 kg *(0.59 lb)*

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

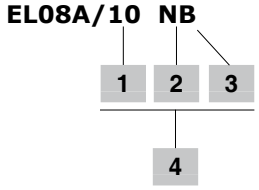


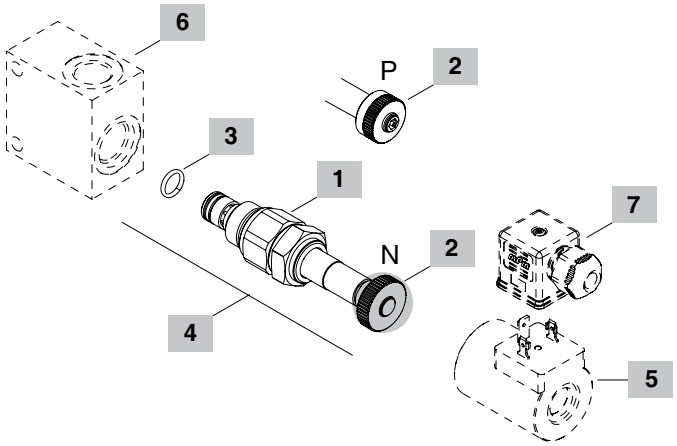
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
EL08A/10NB	41,2	*1.62*	94.9	*3.74*	24	30	*22*
EL10C/10NB	46	*1.81*	86.7	*3.41*	27	50	*37*

For dimensions with different type of emergency see page 197

Ordering codes and description composition

EL08A/10 NB





1 Spool

TYPE	DESCRIPTION
1	Spool 1

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type

Note: for 10/2 cavity only **N** type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/3		
EL08A/10NB	0EL08002001	Without emergency
EL08A/10PB	0EL08002000	With push-button emergency
SAE cavity 10/3		
EL10C/10NB	0EL10002008	Without emergency

5 Coils

TYPE	CODE	DESCRIPTION
BC 12 VDC	4SL8000120	12VDC-ISO4400 coil for EL08A
BQ16 12VDC	4SL8000121	12VDC-ISO4400 coil for EL10C

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread
SAE 10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

For steel bodies or different threading see from page 199

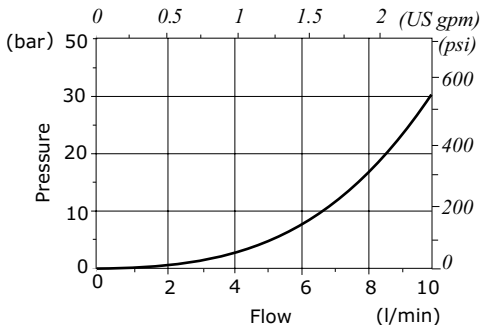
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

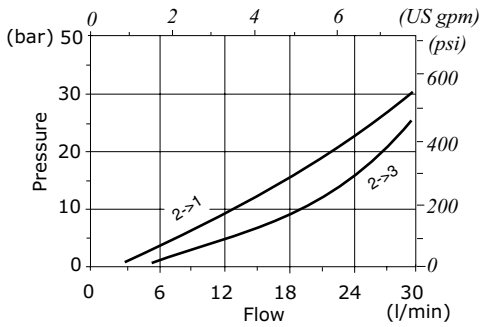
For complete connectors list see from page 190

Rating diagrams

Pressure drop vs. flow EL08A



Pressure drop vs. flow EL10C



ER..M type
directional solenoid valve - 4 ways / 2 positions

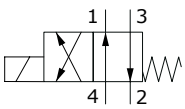
- Direct acting
- Spool type
- From SAE08 to SAE12 cavities

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

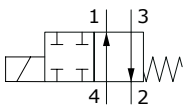
		ER08M	ER10M	ER12M
Nominal flow		20 l/min *(5.3 US gpm)*	40 l/min *(10.5 US gpm)*	60 l/min *(15.8 US gpm)*
Max. pressure	port 1	210 bar *(3050 psi)*		250 bar *(3600 psi)*
	port 2,3,4	210 bar *(3050 psi)*		320 bar *(4600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*	200 cm³/min *(12.20 in³/min)*
Fluid		mineral based oil		
Viscosity		10-200 cSt		
Max level of contamination		18/16/13 ISO4406		
Fluid temperature	*with NBR seals*	from -20°C *(-4°F)* to 80°C *(176°F)*		
	with FPM seals	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 8/4	SAE 10/4	SAE 12/4
Coils type*		BER	BC	BH
Nominal voltages		12 VDC - 24 VDC ± 10%	12 VDC - 24 VDC ± 10%	12 VDC - 24 VDC ± 10%
Power rating		22.8 W (12 VDC) 22.5 W (24 VDC)	26.1 W (12 VDC) 25.9 W (24 VDC)	33 W (12/24 VDC)
Weight		0.20 kg *(0.44 lb)*	0.50 kg *(1.10 lb)*	0.73 kg *(1.61 lb)*

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

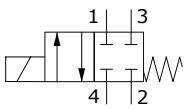
Spool 1



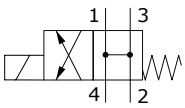
Spool 2



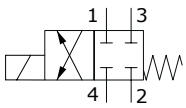
Spool 3



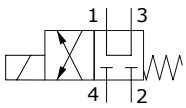
Spool 4



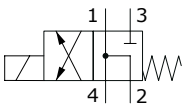
Spool 5



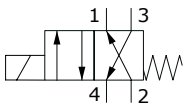
Spool 6

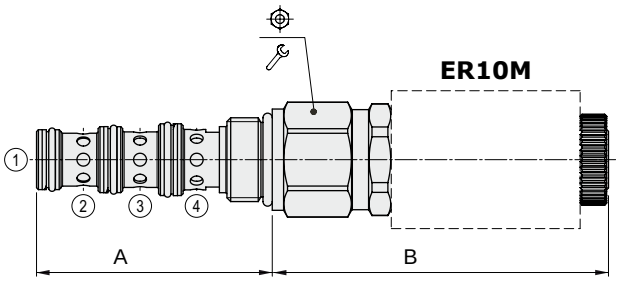


Spool 7



Spool 8





Valve type	A		B				
	mm	in	mm	in		Nm	lbft
ER08M/..NB	53.6	2.11	75	2.95	24	30	22
ER10M/..NB	62.4	2.46	89	3.50	27	50	37
ER12M/..NB	81.4	3.20	85.5	3.37	32	85	63

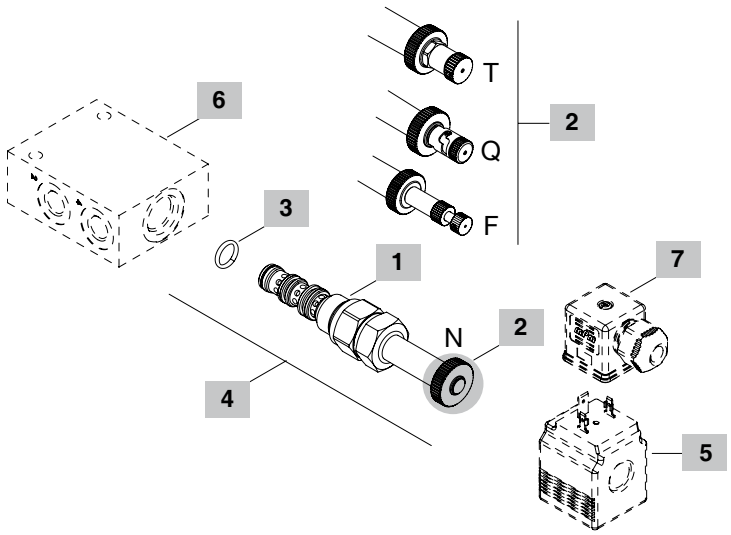
For dimensions with different type of emergency see page 197

Ordering codes and description composition

ER08M/10 NB

1 2 3

4



1 Spool

TYPE	DESCRIPTION
1	Spool 1
2	Spool 2
3	Spool 3
4	Spool 4
5	Spool 5
6	Spool 6
7	Spool 7
8	Spool 8

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
F	Pull button type
Q	Pull type with detent
T	Screw type

3 Seals

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

Note (*): for ER12M, NBR and polyurethane D-ring

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/4		
ER08M/10NB	0ER08002016	Without emergency, spool 1
ER08M/20NB	0ER08002017	Without emergency, spool 2
ER08M/30NB	0ER08002018	Without emergency, spool 3
ER08M/40NB	0ER08002019	Without emergency, spool 4
ER08M/50NB	0ER08002020	Without emergency, spool 5
ER08M/60NB	0ER08002021	Without emergency, spool 6
ER08M/70NB	0ER08002022	Without emergency, spool 7
ER08M/80NB	0ER08002023	Without emergency, spool 8
SAE cavity 10/4		
ER10M/10NB	0ER10002023	Without emergency, spool 1
ER10M/20NB	0ER10002024	Without emergency, spool 2
ER10M/30NB	0ER10002025	Without emergency, spool 3
ER10M/40NB	0ER10002026	Without emergency, spool 4
ER10M/50NB	0ER10002027	Without emergency, spool 5
ER10M/60NB	0ER10002028	Without emergency, spool 6
ER10M/70NB	0ER10002029	Without emergency, spool 7
ER10M/80NB	0ER10002030	Without emergency, spool 8
SAE cavity 12/4		
ER12M/10NB	0ER12002021	Without emergency, spool 1
ER12M/20NB	0ER12002023	Without emergency, spool 2
ER12M/50NB	0ER12002024	Without emergency, spool 5
ER12M/80NB	0ER12002022	Without emergency, spool 8

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC-ISO4400	4SLE001200	12VDC-ISO4400 coil for ER08M
BC 12VDC-ISO4400	4SL8000120	12VDC-ISO4400 coil for ER10M
BH 12VDC-ISO4400	4SLD001200	12VDC-ISO4400 coil for ER12M

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/4-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G3/8 std thread
SAE 12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve, G1/2 thread

For steel bodies or different threading see from page 199

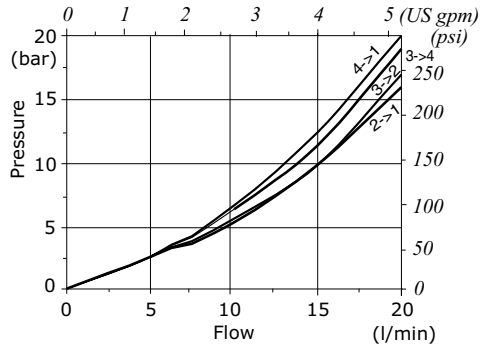
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

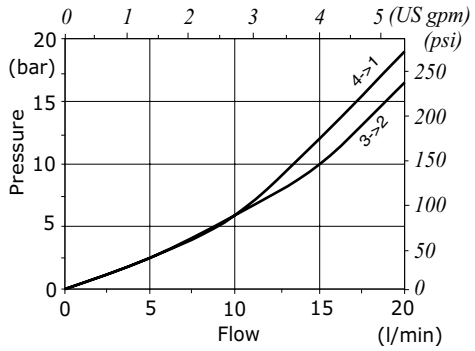
For complete connectors list see from page 190

Rating diagrams

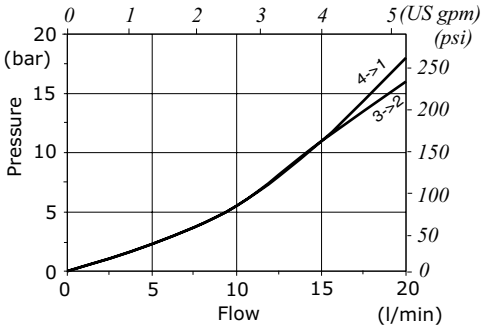
ER08M pressure drop vs. flow
- Spool 1 -



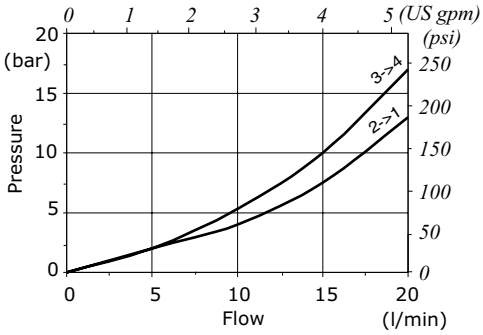
ER08M pressure drop vs. flow
- Spool 2 -



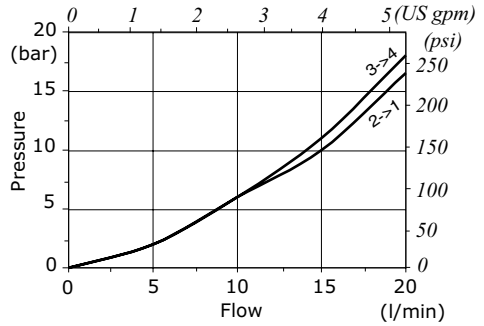
ER08M pressure drop vs. flow
- Spool 3 -



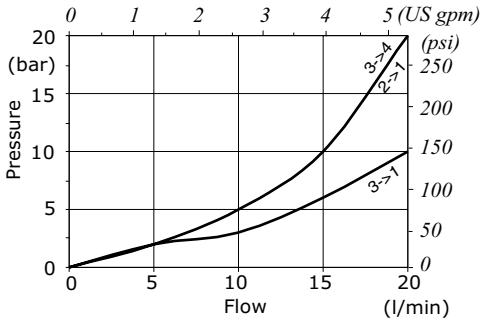
ER08M pressure drop vs. flow
- Spool 4 -



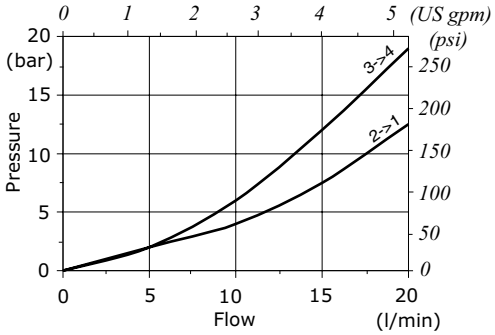
ER08M pressure drop vs. flow
- Spool 5 -



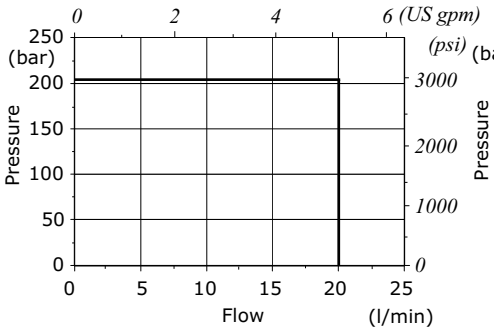
ER08M pressure drop vs. flow
- Spool 6 -



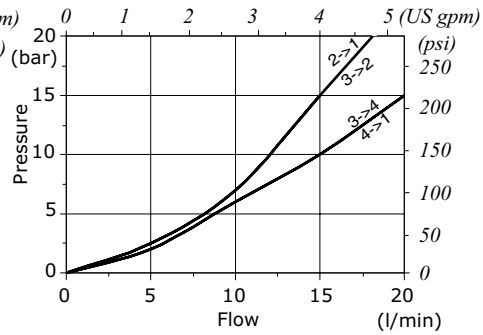
ER08M pressure drop vs. flow
- Spool 7 -



ER08M performance limit

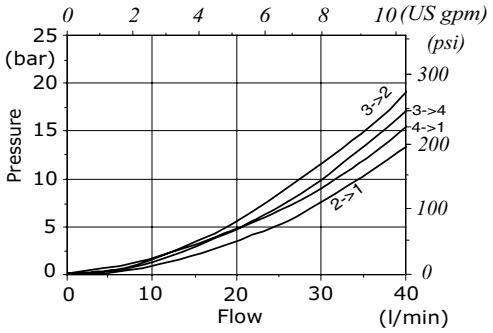


ER08M pressure drop vs. flow
- Spool 8 -

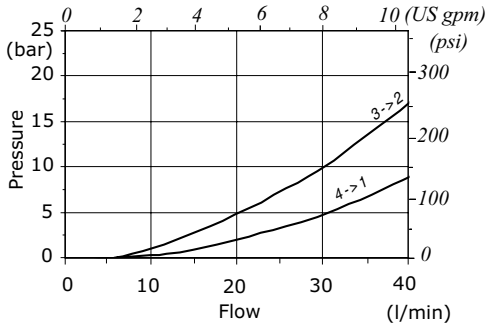


Rating diagrams

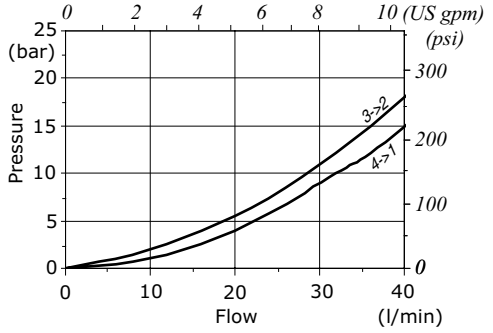
ER10M pressure drop vs. flow
- Spool 1 -



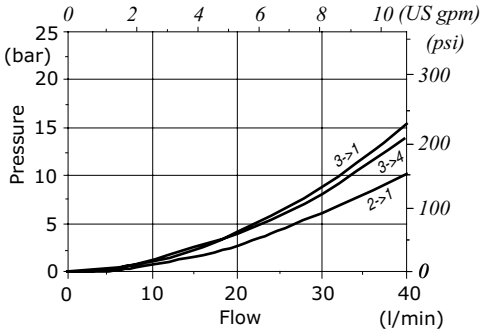
ER10M pressure drop vs. flow
- Spool 2 -



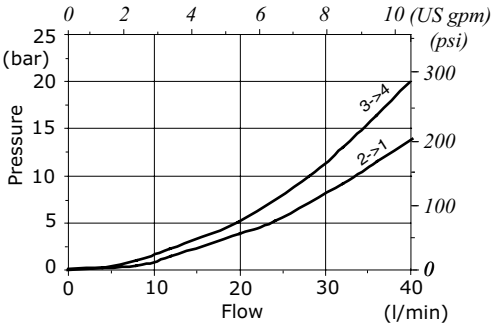
ER10M pressure drop vs. flow
- Spool 3 -



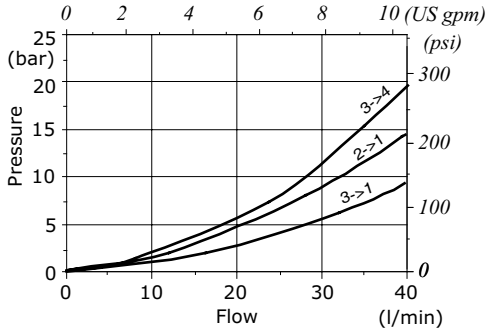
ER10M pressure drop vs. flow
- Spool 4 -



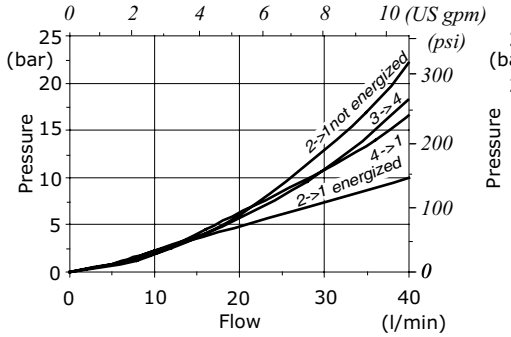
ER10M pressure drop vs. flow
- Spool 5 -



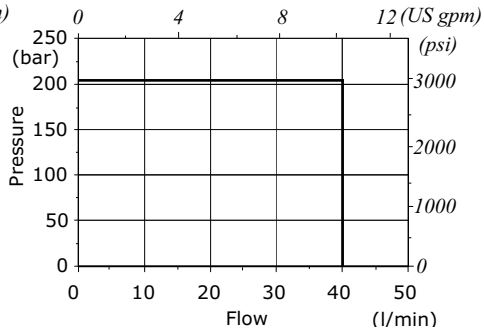
ER10M pressure drop vs. flow
- Spool 6 -



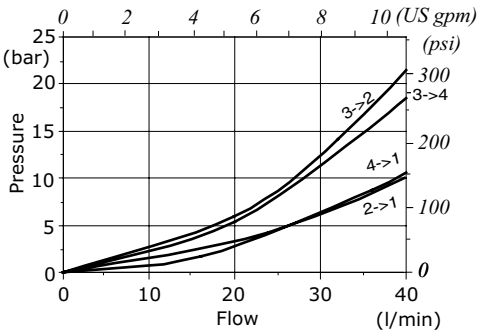
ER10M pressure drop vs. flow
- Spool 7 -



ER10M performance limit

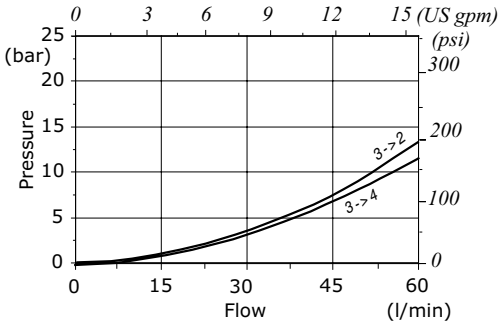


ER10M pressure drop vs. flow
- Spool 8 -

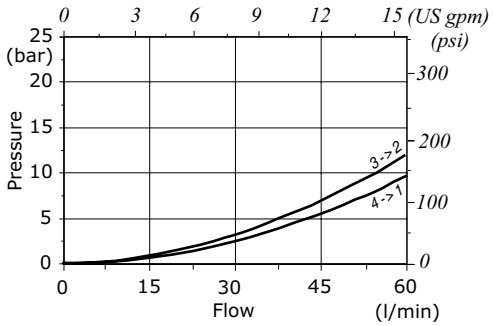


Rating diagrams

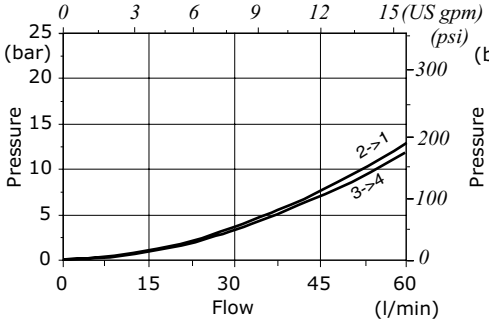
ER12M pressure drop vs. flow
- Spool 1 -



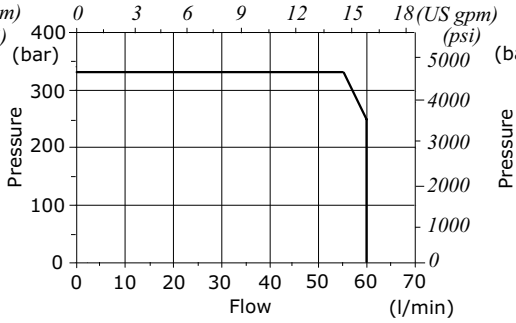
ER12M pressure drop vs. flow
- Spool 2 -



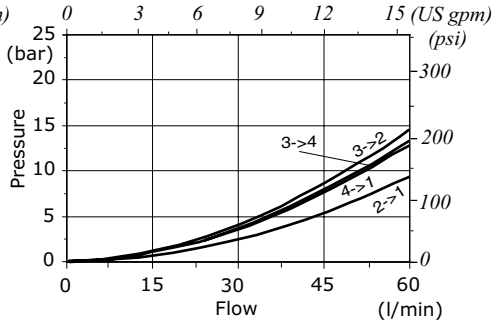
ER12M pressure drop vs. flow
- Spool 5 -

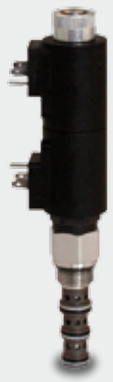


ER12M performance limit



ER12M pressure drop vs. flow
- Spool 8 -





ET..M type
directional solenoid valve - 4 ways / 3 positions

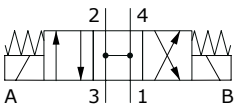
- Direct acting
- Spool type
- From SAE08 to SAE10 cavities

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

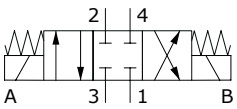
		ET08M	ET10M
Nominal flow		18 l/min *(4.7 US gpm)*	40 l/min *(10.5 US gpm)*
Max. pressure		210 bar *(3050 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid 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 -20°C *(-4°F)* to 50°C *(122°F)*	
Cavity		SAE 8/4	SAE 10/4
Coils type*		BER	BC
Nominal voltages		12 VDC - 24 VDC ± 10%	12 VDC - 24 VDC ± 10%
Power rating		22.8 W (12 VDC) - 22.5 W (24 VDC)	26.1 W (12 VDC) - 25.9 W (24 VDC)
Weight		0.25 kg *(0.44 lb)*	0.45 kg *(1.10 lb)*

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

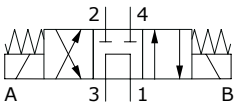
Spool 1



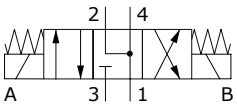
Spool 2



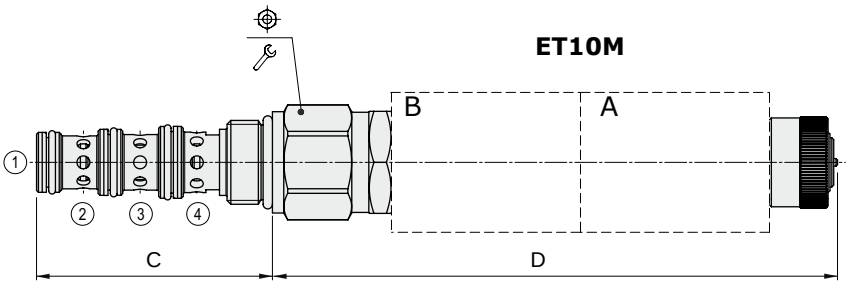
Spool 3



Spool4



ET10M



Valve type	C		D				
	mm	*in*	mm	*in*		Nm	*lbft*
ET08M/..NB	53.6	*2.11*	120	*4.72*	24	30	*22*
ET10M/..NB	62.4	*2.46*	148.5	*5.85*	27	50	*37*

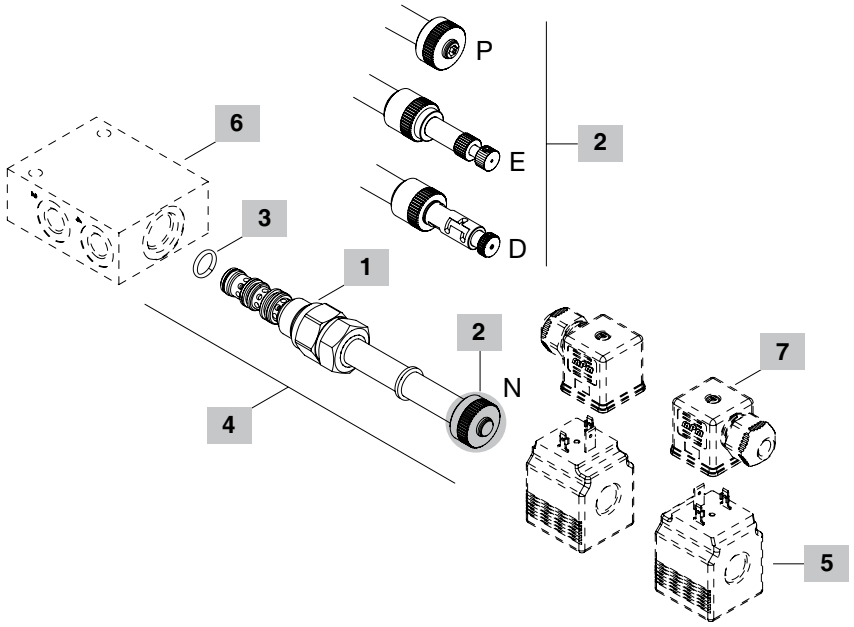
For dimensions with different type of emergency see page 197

Ordering codes and description composition

ET08M/10 NB

1 2 3

4



1 Spool

TYPE	DESCRIPTION
1	Spool 1
2	Spool 2
3	Spool 3
4	Spool 4

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
E	Pull/push-button type
D	Detent push/pull type
P	Push-button type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 8/4		
ET08M/10NB	0ET08002017	Without emergency, spool 1
ET08M/20NB	0ET08002019	Without emergency, spool 2
ET08M/30NB	0ET08002020	Without emergency, spool 3
ET08M/40NB	0ER08002018	Without emergency, spool 4
SAE cavity 10/4		
ET10M/10NB	0ET10002023	Without emergency, spool 1
ET10M/20NB	0ET10002024	Without emergency, spool 2
ET10M/30NB	0ET10002025	Without emergency, spool 3
ET10M/40NB	0ET10002026	Without emergency, spool 4

5 Coils

TYPE	CODE	DESCRIPTION
BER 12VDC	4SLE001200	12VDC-ISO4400 coil for ET08M
BC 12VDC	4SL8000120	12VDC-ISO4400 coil for ET10M

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE 10/4-G 3/8	3CC1040C11	Aluminium body for cavity 10 valve, G 3/8 std thread

For steel bodies or different threading see from page 199

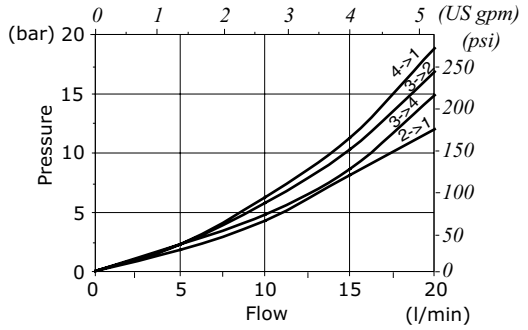
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

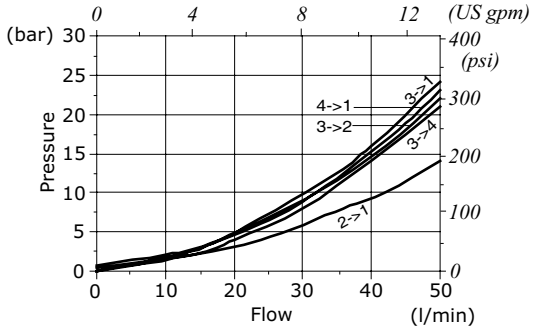
For complete connectors list see from page 190

Rating diagrams

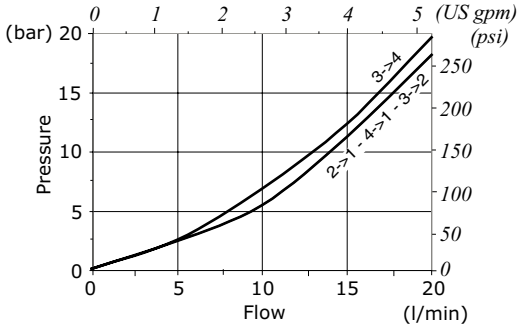
ET08M pressure drop vs. flow
- Spool 1 -



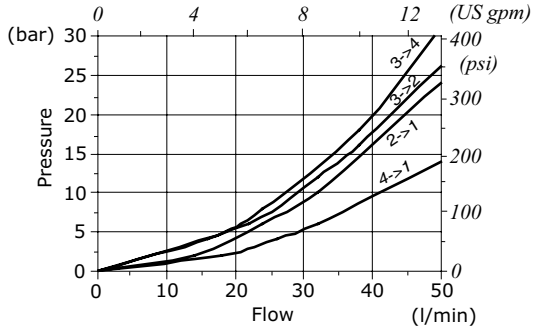
ET10M pressure drop vs. flow
- Spool 1 -



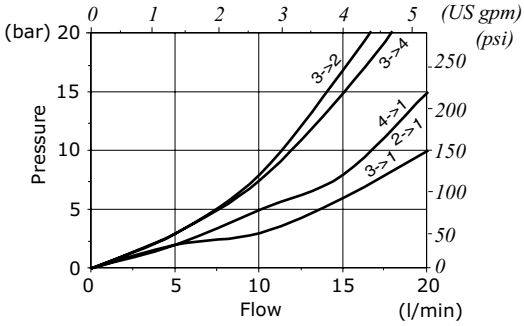
ET08M pressure drop vs. flow
- Spool 2 -



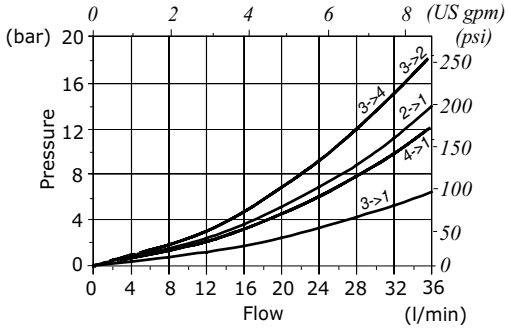
ET10M pressure drop vs. flow
- Spool 2 -



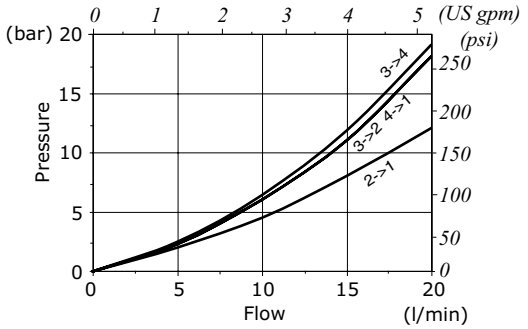
ET08M pressure drop vs. flow
- Spool 3 -



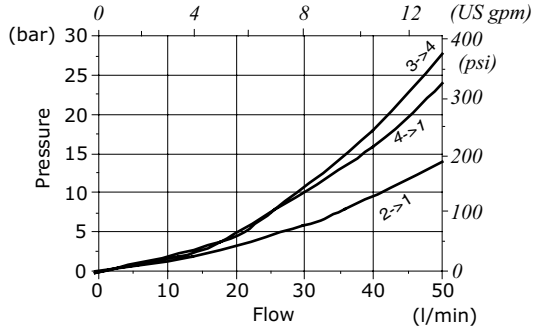
ET10M pressure drop vs. flow
- Spool 3 -



ET08M pressure drop vs. flow
- Spool 4 -



ET10M pressure drop vs. flow
- Spool 4 -



ET12A type
directional solenoid valve - 4 ways / 3 positions

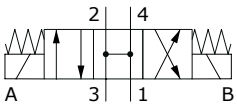
- Direct acting
- Spool type

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

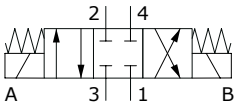
		ET12A
Nominal flow		40 l/min *(10.5 US gpm)*
Max. pressure		210 bar *(3050 psi)*
Oil leakage	at 210 bar *(3050 psi)*	120 cm³/min *(7.32 in³/min)*
Fluid		mineral based oil
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	*with NBR seals* *with FPM seals*	from -20°C *(-4°F)* to 80°C *(176°F)* from -20°C *(-4°F)* to 100°C *(212°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 50°C *(122°F)*
Cavity		SAE 12/4
Coil type*		BIN 22
Nominal voltages		12 VDC - 24 VDC ± 10%
Power rating		32.6 W (12 VDC) - 31 W (24 VDC)
Weight		0.720 kg *(1.59 lb)*

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

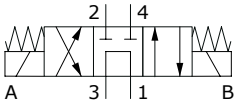
Spool 1



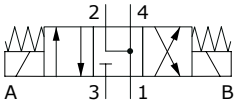
Spool 2

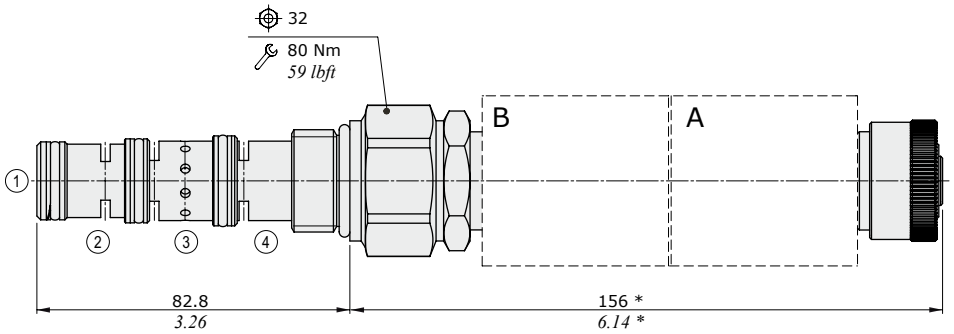


Spool 3



Spool4





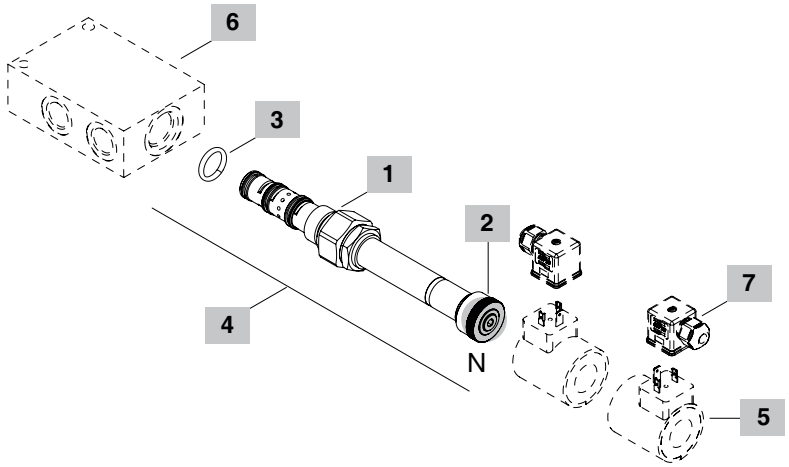
NOTE (*) : dimensions for configuration **ET12A/10NB**, for dimensions with different type of emergency see page 197.

Ordering codes and description composition

ET12A/10 NB

1 2 3

4



1 Spool

TYPE	DESCRIPTION
1	Spool 1
2	Spool 2
3	Spool 3
4	Spool 4

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button type

3 Seals

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

4 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 12/4		
ET12A/10NB	0ET12002012	Without emergency, spool 1
ET12A/10PB	0ET12002013	Push-button emergency, spool 1
ET12A/20NB	0ET12002009	Without emergency, spool 2
ET12A/20PB	0ET12002014	Push-button emergency, spool 2
ET12A/30NB	0ET12002010	Without emergency, spool 3
ET12A/30PB	0ET12002015	Push-button emergency, spool 3
ET12A/40NB	0ET12002011	Without emergency, spool 4
ET12A/40PB	0ET12002016	Push-button emergency, spool 4

5 Coils

TYPE	CODE	DESCRIPTION
BIN22 12VDC	4SL6000128	12VDC-ISO4400 coil

For complete coils list see from page 190

6 Valve body

TYPE	CODE	DESCRIPTION
SAE 12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve, G1/2 std thread

For steel bodies or different threading see from page 199

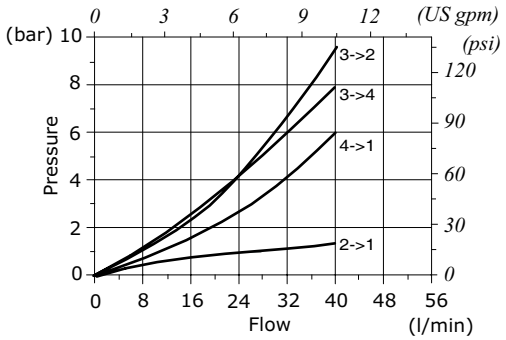
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

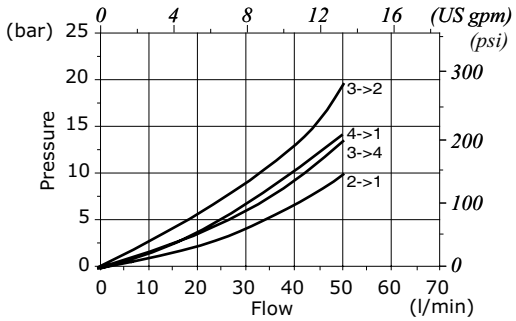
For complete connectors list see from page 190

Rating diagrams

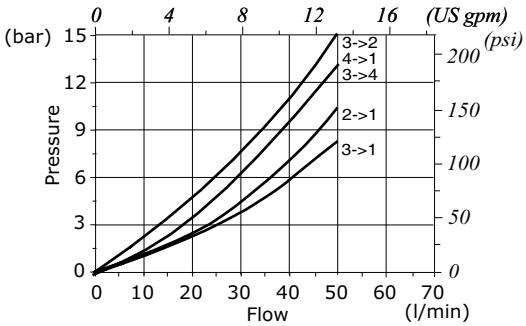
ET12A pressure drop vs. flow
- Spool 1 -



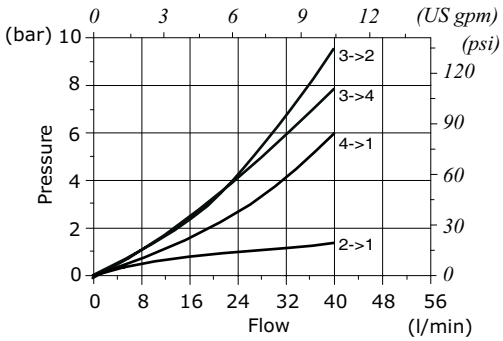
ET12A pressure drop vs. flow
- Spool 2 -



ET12A pressure drop vs. flow
- Spool 3 -



ET12A pressure drop vs. flow
- Spool 4 -



Types and ordering codes

Valve type	Coil	Voltage	Connector					
			ISO4400	Deutsch DT	AMP JPT	Packard Weather-pack	Packard Metri-pack	Flying leads
Directional solenoid valves								
EA08A	**BE**	**12 VDC**	4SL1000120	4SL1000123(6) 4SL1000140(3-6) 4SL1000124(2)	-	-	-	4SL1000122
		24 VDC	4SL1000240 4SL1030240(1)	4SL1002401(6)	-	-	-	-
		110 VDC	4SL1011100 4SL1031100(1)	-	-	-	-	-
		220 VDC	4SL1012200 4SL1032200(1)	-	-	-	-	-
EA08B **EW08A** **EJ08F** **EJ08G**	**BT**	**10 VDC**	4SL3000100	-	-	-	-	-
		12 VDC	4SL3000120 4SL3000126(4)	4SL3000130(6) 4SL3000134(3-6) 4SL3000128(2)	4SL3000122(5) 4SL3001200(3-5)	4SL3000124(2)	4SL3000127(2)	4SL300012C
		24 VDC	4SL3000240 4SL3030240(1)	4SL3000249(6) 4SL300024C(3-6)	4SL3000248(5)	-	-	4SL3000246
		26 VDC	4SL3000260	-	-	-	-	-
		48 VDC	4SL3000480 4SL3030480(1)	-	-	-	-	-
		110 VDC	4SL3001100 4SL3031100(1)	-	-	-	-	-
		220 VDC	4SL3002200 4SL3032200(1)	-	-	-	-	
EW10M	**BH**	**12 VDC**	4SLD001200	4SLD001201(6)	4SLD001202(5)	-	-	4SLD001203
		24 VDC	4SLD002400	4SLD002401(6)	4SLD002402(5)	-	-	4SLD002403
EE08A **EC..M** **EF..M** **EJ08M** **ER08M** **ET08M**	**BER**	**10 VDC**	4SLE001000	-	-	-	-	-
		12 VDC	4SLE001200 4SLE001217 (3)	4SLE001201(5) 4SLE001209(3-5) 4SLE001202(6) 4SLE001216(3-6) 4SLE001206(2)	4SLE001203(5) 4SLE001211(3-5)	4SLE001210(2)	4SLE001214(2)	4SLE001207
		24 VDC	4SLE002400 4SLE002408(3) 4SLE302400(1)	4SLE002401(5) 4SLE002407(3-5) 4SLE002402(6)	4SLE002403(5)	-	-	4SLE002404
		48 VDC	4SLE004800 4SLE304800(1)	-	-	-	-	-
		110 VDC	4SLE011000 4SLE311000(1)	-	-	-	-	-
		220 VDC	4SLE022000 4SLE322000(1)	-	-	-	-	-
EE10A **EW10A** **EW10B**	**BIN19**	**10.5 VDC**	4SL6000100					
		12 VDC	4SL6000121	-	-	-	-	-
		24 VDC	4SL6000240	-	-	-	-	-
EE12A **EW12A** **EW12C** **EJ12A** **ET12A**	**BIN22**	**12 VDC**	4SL6000128	-	-	-	-	-
		24 VDC	4SL6000245	-	-	-	-	-
EJ10M **EL08A** **ER10M** **ET10M**	**BC**	**10.5 VDC**	4SL8000110					
		12 VDC	4SL8000120	4SL800012B(6)	4SL8000127(5) 4SL8000130(5-3)	-	-	4SL800012A
		24 VDC	4SL8000240 4SL8030240(1)	4SL8000243(6)	4SL8000241(5)	-	-	4SL8000242
		26 VDC	4SL8000260	-	-	-	-	-
		48 VDC	4SL8030480(1)	-	-	-	-	-
		110 VDC	4SL8031100(1)	-	-	-	-	-
		220 VDC	4SL8032200(1)	-	-	-	-	-
EL10C	**BQ16**	**12 VDC**	4SL8000121	4SL8000128(5)	-	-	4SL8000124(2)	4SL8000125
		24 VDC	4SL8002400	4SL8000245(5)	-	-	-	-

Types and ordering codes

Valve type	Coil	Voltage	Connector					
			ISO4400	Deutsch DT	AMP JPT	Packard Weather-pack	Packard Metri-pack	Flying leads
Pressure relief valves - Pressure reducing valves - Flow control pressure compensated valves								
MC08Y MP16Y RD08W RM..W RP..W	**MP35**	**12 VDC**	4SL4000120	-	-	-	-	-
		24 VDC	4SL4000240	-	-	-	-	-
MC10X MP..T MP..X PP..X PU..X	**BQP19**	**12 VDC**	4SL5000126	4SL5000125(6)	4SL5000129(5)	-	-	-
		24 VDC	4SL5000245	4SL5000244(6)	4SL5000248(5)	-	-	-
	BH	**12 VDC**	4SLD001200	4SLD001201(6)	4SLD001202(5)	-	-	4SLD001203
		24 VDC	4SLD002400	4SLD002401(6)	4SLD002402(5)	-	-	4SLD002403
RD08S RD08T	**MSM19**	**12 VDC**	4SL5000128	-	-	-	5SL5000122(2)	4SL5000122
		24 VDC	4SL5000247	-	-	-	5SL5000243(2)	4SL5000243
RP08X	**BDP19**	**12 VDC**	4SL5000120	-	-	-	-	-
		24 VDC	4SL5000240	-	-	-	-	-
Connettori di accoppiamento (con raddrizzatore vedere tabella seguente)			4CN1009995	5CON140031	5CON003	5CON001	5CON017	-

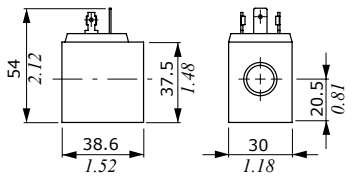
Notes: (1) supply with AC and use only with rectifier connector - (2) with flying leads - (3) with bidirectional diode - (5) with unidirectional diode (5) integrated perpendicular type - (6) integrated parallel type

Voltage	ISO 4400 mating connector with rectifier			
	BT type coil	**BE** type coil	**BER** type coil	**BC** type coil
24 VDC	4CN3010240	4CN1010240	4CN1010240	4CN3010240
48 VDC	4CN3010480	4CN1010480	4CN1010480	4CN3010480
110 VDC	4CN3011100	4CN1011100	4CN1011100	4CN3011100
220 VDC	4CN3012200	4CN1012200	4CN1012200	4CN3012200

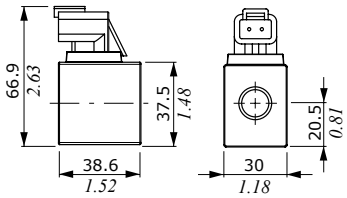
Dimensional data and features

BE type

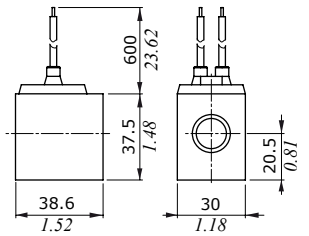
ISO4400 connector



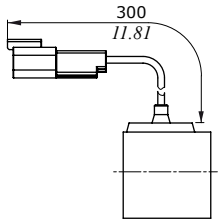
DEUTSCH DT04 connector



Flying leads



Flying leads with DEUTSCH DT04 connector



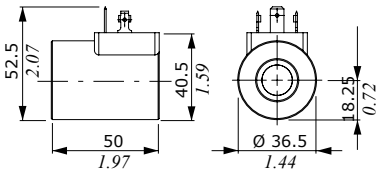
Features

Nominal voltage tolerance : ±10%
Power rating . . . . . : 18.7 W - 12 VDC
: 18.6 W - 24 VDC
: 17.3 W - 110 VDC
: 15.7 W - 220 VDC
: 18.3 W - 24 RAC
: 16 W - 110 RAC
: 16 W- 220 RAC
Max. operating current . . : 1.56 A - 12 VDC
: 0.77 A - 24 VDC
: 0.157 A - 110 VDC
: 0.08 A - 220 VDC
: 0.85 A - 24 RAC
: 0.16 A - 110 RAC
: 0.08 A - 220 RAC
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
Insertion . . . . . : 100%

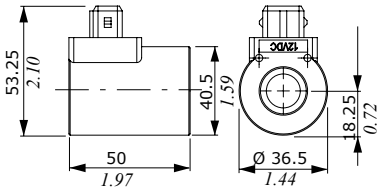
Dimensional data and features

BT type

ISO4400 connector

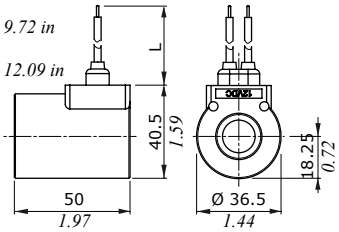


AMP JPT connector

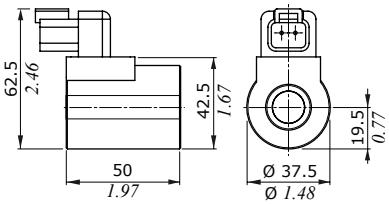


Dimension L:
12 VDC =
247 mm / *9.72 in*
24 VDC =
307 mm / *12.09 in*

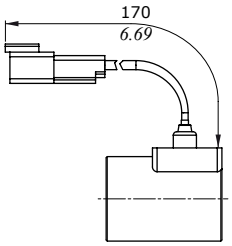
Flying leads



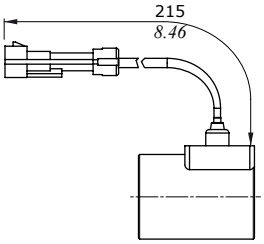
DEUTSCH DT04 connector



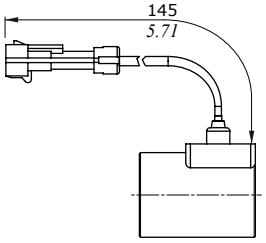
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector



Flying leads with PACKARD METRI-PACK connector

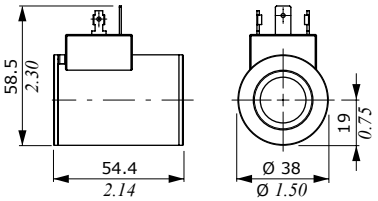


Features

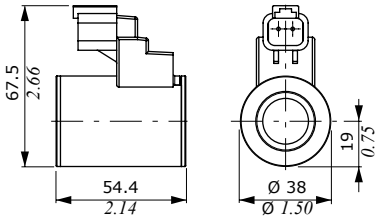
Nominal voltage tolerance : ±10%
Power rating . . . . . : 19 W - 10 VDC
: 21 W - 12/24/26 VDC
: 20.3 W - 48 VDC
: 17.3 W - 110 VDC
: 17.7 W - 220 VDC
: 19.9 W - 24 RAC
: 20.7 W - 48 RAC
: 20 W - 110 / 220 RAC
Max. operating current . . : 1.9 A - 10 VDC
: 1.77 A - 12 VDC
: 0.89 A - 24VDC
: 0.84 A - 26 VDC
: 0.43 A - 48 VDC
: 0.16 A - 110 VDC
: 0.08 A - 220 VDC
: 0.93 A - 24 RAC
: 0.47 A - 48 RAC
: 0.18 A - 110 RAC
: 0.09 A - 220 RAC
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion . . . . . : 100%

BH type

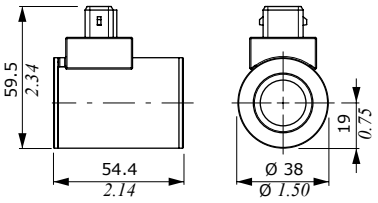
ISO4400 connector



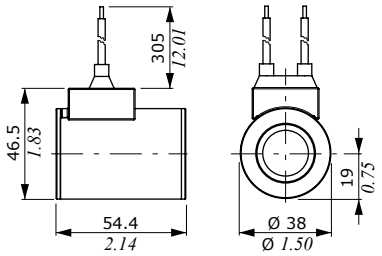
DEUTSCH DT04 connector



AMP JPT connector



Flying leads



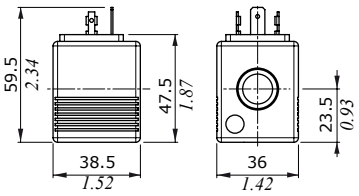
Features

Nominal voltage tolerance . : ±10%
Power rating . . . . . : 33 W - 12/24 VDC
Max. oper. current (on/off). : 2.75 A - 12 VDC
: 1.38 A - 24 VDC
Max. prop. control current . : 1.7 A - 12 VDC
: 0.85 A - 24 VDC
Coil insulance . . . . . : Class H
(180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K -Deutsch DT
: IP65 - AMP JPT
Insertion . . . . . : 100%

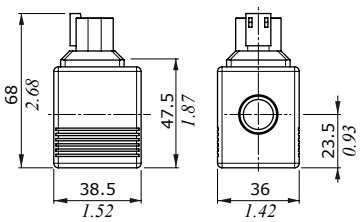
Dimensional data and features

BER type

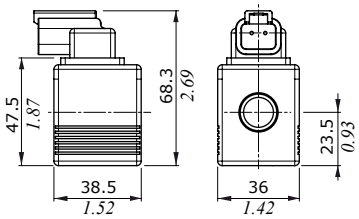
ISO4400 connector



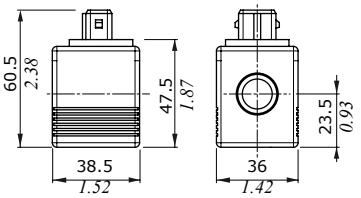
DEUTSCH DT04 connector
(perpendicular type)



DEUTSCH DT04 connector
(parallel type)



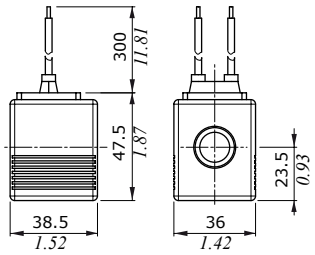
AMP JPT connector



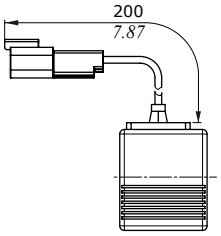
Features

Nominal voltage tolerance : ±10%
Power rating . . . . . : 19.2 W - 10/12/24/48/ 110/220 VDC
: 19 W - 24/110/220 RAC
: 19.2 W - 48 RAC
Max. operating current . . : 1.9 A - 10 VDC
: 1.61 A - 12 VDC
: 0.80 A - 24 VDC
: 0.40 A - 48 VDC
: 0.17 A - 110 VDC
: 0.09 A - 220 VDC
: 0.89 A - 24 RAC
: 0.45 A - 48 RAC
: 0.19 A - 110 RAC
: 0.09 A - 220 RAC
Coil insulance . . . . . : Class H (180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion . . . . . : 100%

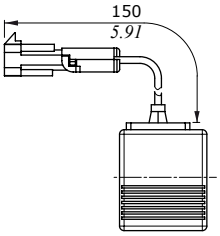
With flying leads



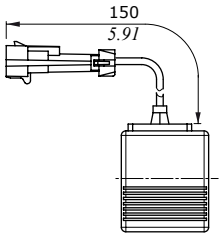
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector

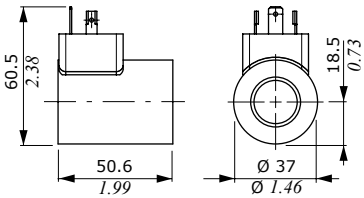


Flying leads with PACKARD METRI-PACK connector



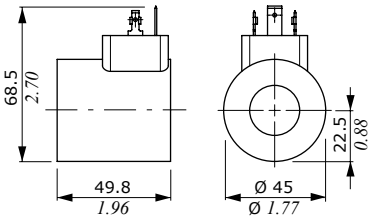
BIN19 type

ISO4400 connector



BIN22 type

ISO4400 connector



Features

Nominal voltage tolerance : ±10%
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
Insertion . . . . . : 100%

BIN19

Power rating . . . . . : 26 W - 10.5 VDC
: 29 W - 12 VDC
: 31 W - 24 VDC
Max. operating current . . : 2.48 A - 10.5 VDC
: 2.41 A - 12 VDC
: 1.29 A - 24 VDC

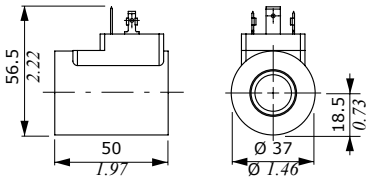
BIN22

Power rating . . . . . : 32.6 W - 12 VDC
: 31 W - 24 VDC
Max. operating current . . : 2.72 A - 12 VDC
: 1.29 A - 24 VDC

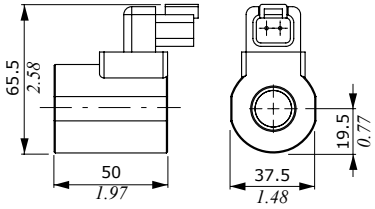
Dimensional data and features

BC type

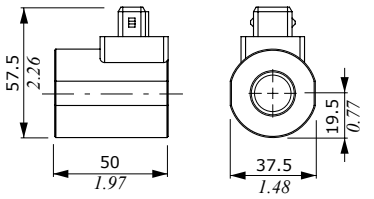
ISO4400 connector



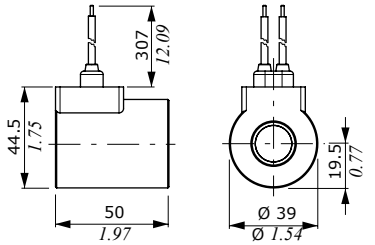
DEUTSCH DT04 connector



AMP JPT connector



Flying leads

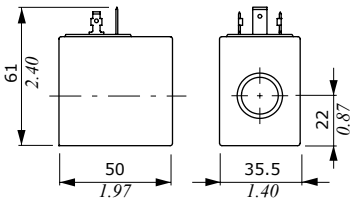


Features

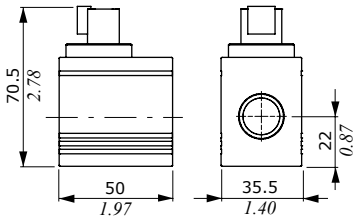
Nominal voltage tolerance : ±10%
Power rating . . . . . : 26.9 W - 10.5 VDC
: 26.2 W - 12 VDC
: 25.9 W - 24 VDC
: 24 W - 26 VDC
: 26 W - 24/48/110/220 RAC
Max. operating current . . : 2.6 A - 10.5 VDC
: 2.19 A - 12 VDC
: 1.08 A - 24 VDC
: 0.92 A - 26 VDC
: 1.2 A - 24 RAC
: 0.6 A - 48 RAC
: 0.3 A - 110 RAC
: 0.15 A - 220 RAC
Coil insulance . . . . . : Class H (180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP65 - AMP JPT
: IP69K - Deutsch DT
Insertion . . . . . : 100%

BQ16 type

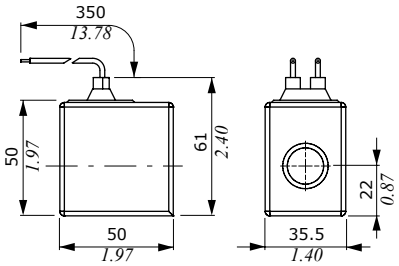
ISO4400 connector



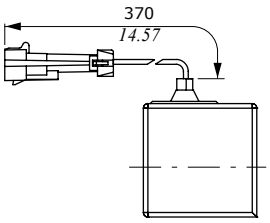
DEUTSCH DT04 connector



Flying leads



Flying leads with
PACKARD METRI-PACK connector

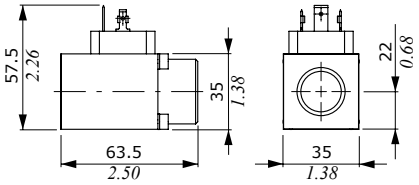


Features

Nominal voltage tolerance : ±10%
Power rating . . . . . : 30 W - 12/24 VDC
Max. operating current . . : 2.5 A - 12 VDC
: 1.25 A - 24 VDC
Coil insulance . . . . . : Class H (180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP67 - Metri-pack
Insertion . . . . . : 100%

MP35 type

ISO4400 connector



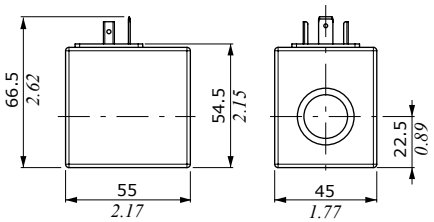
Features

Nominal voltage tolerance : ±10%
Power rating . . . . . : 11.2 W - 12 VDC
: 11.4 W - 24 VDC
Max. prop. control current : 1.25 A - 12 VDC
: 0.68 A - 24 VDC
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
Insertion . . . . . : 100%

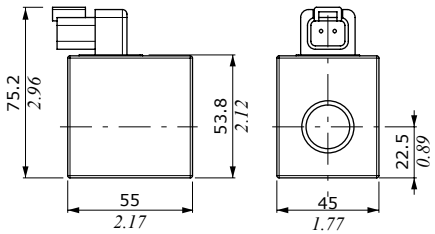
Dimensional data and features

BQP19 type

ISO4400 connector



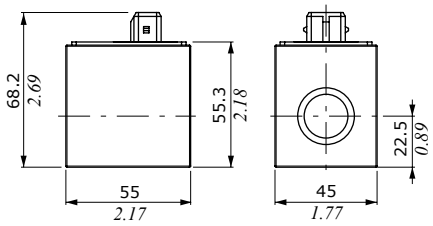
DEUTSCH DT04 connector



Features

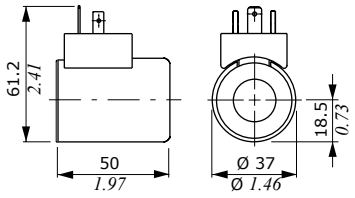
Nominal voltage tolerance : ±10%
Power rating . . . . . : 15 W - 12/24 VDC
Max. prop. control current : 1.25 A - 12 VDC
: 0.63 A - 24 VDC
Coil insulance . . . . . : Class H (180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
Insertion . . . . . : 100%

AMP JPT connector

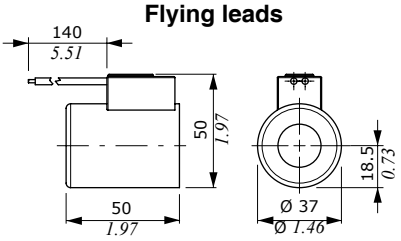


MSM19 type

ISO4400 connector



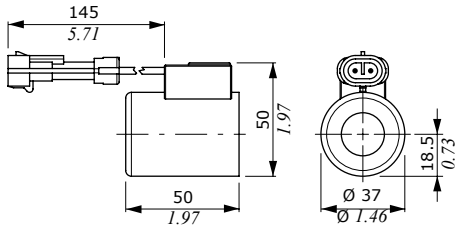
Flying leads



Features

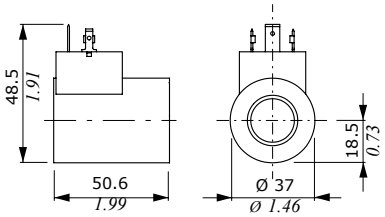
Nominal voltage tolerance : ±10%
Max. prop. control current : 1.8 A - 12 VDC
: 0.9 A - 24 VDC
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP67 - Metri-Pack
Insertion . . . . . : 100%

Flying leads with PACKARD METRI-PACK connector



BDP19 type

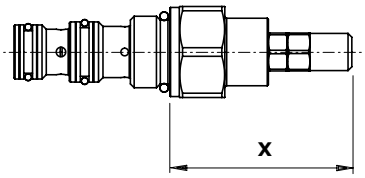
ISO4400 connector



Features

Nominal voltage tolerance : ±10%
Power rating . . . . . : 13 W - 12 VDC
: 13.25 W - 24 VDC
Max. prop. control current : 1.9 A - 12 VDC
: 0.91 A - 24 VDC
Coil insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
Insertion . . . . . : 100%

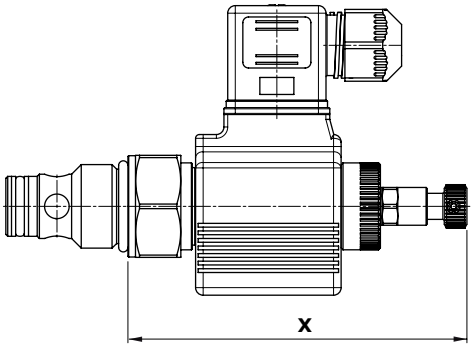
Types and dimensions



Valve type	Cavity	Dimension "X" M Handknob mm	in	S screw mm	in	V handwheel mm	in
MC..A	08/2	-	-	53.5	2.11	77	3.03
	10/2	-	-	94.5	3.72	118	4.65
	12/2	-	-	126.5	4.98	150	5.91
MG..A	10/2	-	-	94.5	3.72	118	4.65
	12/2	-	-	126.5	4.98	150	5.91
MP..A	10/2	-	-	54.5	2.15	77.5	3.05
	12/2	-	-	52.5	2.07	75.5	2.97
RB..A	08/3	-	-	79.5	3.13	103	4.05
	10/3	-	-	94.5	3.72	118	4.65
RD..A	08/3	-	-	79.5	3.13	103	4.05
	10/3	-	-	94.5	3.72	118	4.65
RM..A	10/3	-	-	54.5	2.15	66	2.60
	12/3	-	-	51.5	2.03	63	2.48
	16/3	-	-	50.5	1.99	62	2.44
RP..A	10/3	-	-	54.5	2.15	66	2.60
	12/3	-	-	51.5	2.03	63	2.48
	16/3	-	-	50.5	1.99	62	2.44
NB..A	08/2	52	2.05	49.5	1.95	-	-
	10/2	48	1.89	46.5	1.83	-	-
	12/2	49.2	1.94	46.3	1.82	-	-
	16/2	68.8	2.71	-	-	-	-

Valve type	Cavity	Dimension "X" M Handknob mm	in	S screw mm	in	V handwheel mm	in
NT..A	08/2	67.5	2.66	64.5	2.54	-	-
	10/2	68	2.68	65	2.56	-	-
	12/2	69	2.72	66	2.60	-	-
	16/2	68.9	2.71	-	-	-	-
NU..A	08/2	66.5	2.62	64.5	2.54	-	-
	10/2	68	2.68	65	2.56	-	-
	12/2	69	2.72	66	2.60	-	-
	16/2	66.9	2.63	-	-	-	-
PU..A	08/2	49.5	1.95	46.5	1.83	-	-
	10/2	44	1.73	41	1.61	-	-
	12/2	45	1.77	42	1.65	-	-
	16/2	52	2.05	49	1.93	-	-
PW..A	08/2	64.5	2.54	62	2.44	-	-
	10/2	71.9	2.83	69.4	2.73	-	-
	12/2	64.5	2.54	62	2.44	-	-
	16/2	68	2.68	65.5	2.58	-	-
PP..A	08/3	49.5	1.95	46.5	1.83	-	-
	10/3	44	1.73	41	1.61	-	-
	12/3	45	1.77	42	1.65	-	-
	16/3	52	2.05	49	1.93	-	-

Types and dimensions



Valve type		Dimension "X"															
		N / 0 without emergency		T screw type		P push button		D push type with detent		F pull button		Q pull type with detent		E with pull/ push-button		V handknob	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
MC10X		86	3.39	105	4.13	-	-	-	-	-	-	-	-	-	-	-	-
MC10X-HF		94.8	3.73	94.5	3.72	-	-	-	-	-	-	-	-	-	-	-	-
MP10X		86	3.39	105	4.13	-	-	-	-	-	-	-	-	-	-	-	-
MP12X		102	4.02	121	4.76	-	-	-	-	-	-	-	-	-	-	-	-
PU08X		94	3.70	108	4.25	-	-	-	-	-	-	-	-	-	-	142	5.59
PU10X		96.4	3.79	110.4	4.35	-	-	-	-	-	-	-	-	-	-	144.4	5.68
PU12X		97.4	3.83	111.4	4.50	-	-	-	-	-	-	-	-	-	-	145.4	5.72
PU16X		121.4	4.78	135.4	5.33	-	-	-	-	-	-	-	-	-	-	169.4	6.67
PP08X		94	3.70	108	4.25	-	-	-	-	-	-	-	-	-	-	142	5.59
PP10X		96.4	3.79	110.4	4.35	-	-	-	-	-	-	-	-	-	-	144.1	5.67
PP12X		97.4	3.83	111.4	4.39	-	-	-	-	-	-	-	-	-	-	145.1	5.71
PP16X		121.4	4.78	135.4	5.33	-	-	-	-	-	-	-	-	-	-	169.4	6.67
EA08A	NO	60	2.36	79.3	3.12	-	-	-	-	-	-	-	-	-	-	-	-
	NC	59	2.32	79	3.11	-	-	-	-	-	-	-	-	-	-	-	-
EA08B	NO	70.9	2.79	90.3	3.55	-	-	-	-	-	-	-	-	-	-	-	-
	NC	65.5	2.58	90.5	3.56	-	-	-	-	-	-	-	-	-	-	-	-
EC08M EF08M EH08M	NO	67.2	2.64	90.1	3.55	90.1	3.55	92.8	3.65	-	-	-	-	-	-	-	-
	NC	63.3	2.49	77.8	3.06	-	-	-	-	91.3	3.59	83.8	3.30	-	-	-	-
EC10M EF10M EH10M	NO	66.9	2.63	89.8	3.54	89.8	3.54	92.5	3.64	-	-	-	-	-	-	-	-
	NC	63	2.48	77.5	3.05	-	-	-	-	91	3.58	83.5	3.29	-	-	-	-
EC12M EF12M EH12M	NO	61.1	2.40	84	3.31	84	3.31	86.8	3.42	-	-	-	-	-	-	-	-
	NC	57.2	2.25	71.7	-	-	-	-	-	85.2	3.35	77.7	3.06	-	-	-	-
EC16M EF16M EH16M	NO	61.2	2.41	84.1	3.31	84.1	3.31	86.9	3.42	-	-	-	-	-	-	-	-
	NC	57.3	2.26	71.8	-	-	-	-	-	85.3	3.36	77.8	3.06	-	-	-	-

Types and dimensions

Valve type		Dimension "X"															
		N / 0 without emergency		T screw type		P push button		D push type with detent		F pull button		Q pull type with detent		E with pull/ push-button		V handknob	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
EW08A	NO	65.7	2.59	73.5	2.89	-	-	-	-	-	-	-	-	-	-	-	-
	NC	70.9	2.79	90.3	3.56	87.2	3.43	-	-	-	-	-	-	-	-	-	-
EW10A	NC	-	-	-	-	83.3	3.28	-	-	-	-	-	-	-	-	-	-
EW10B	NO	99.8	3.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12B	NO	102.8	4.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12C	NC	-	-	-	-	98.7	3.89	-	-	-	-	-	-	-	-	-	-
EW08M	NO	60.1	2.37	77	3.03	-	-	-	-	88.1	3.47	81	3.19	-	-	-	-
	NC	62.5	2.46	85.4	3.36	85.4	3.36	88.1	3.47	-	-	-	-	-	-	-	-
EW10M	NC	81.3	3.20	95.3	3.75	104.2	4.10	106.3	4.19	-	-	-	-	-	-	-	-
EJ08F		65.7	2.59	73.5	2.89	-	-	-	-	-	-	-	-	-	-	-	-
EJ08G		65.7	2.59	73.5	2.89	-	-	-	-	-	-	-	-	-	-	-	-
EJ08M		56.1	2.21	70.6	2.78	-	-	-	-	84.1	3.31	77	3.03	-	-	-	-
EJ10M		68	2.68	82.5	3.25	-	-	-	-	96	3.78	88.9	3.50	-	-	-	-
EL08A		94.9	3.74	-	-	96	3.78	-	-	-	-	-	-	-	-	-	-
EL10C		86.7	3.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ER08M		75	2.95	100	3.94	-	-	-	-	115.5	4.55	95.8	3.77	-	-	-	-
ER10M		89	3.50	110.5	4.35	-	-	-	-	129.5	5.10	110	4.33	-	-	-	-
ET08M		120	4.72	-	-	121	4.76	165	6.50	-	-	-	-	165.6	6.52	-	-
ET10M		148.5	5.85	-	-	149.5	5.89	190.9	7.52	-	-	-	-	191.5	7.54	-	-
ET12A		156	6.14	-	-	156	6.14	-	-	-	-	-	-	-	-	-	-

Dimensions and ordering codes

Description composition

3/CC/- □ □ /20/ □-□ -1

Cavity

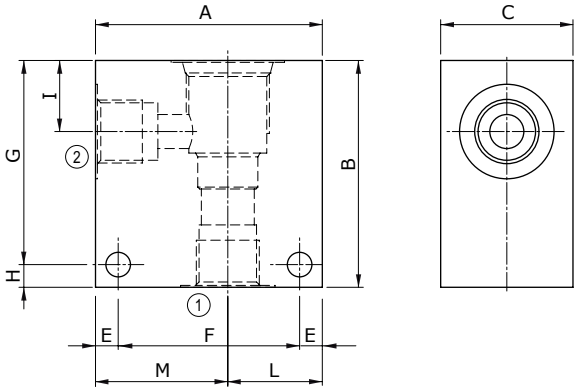
08
10
12
16

Ports

B) G 1/4
C) G 3/8
D) G 1/2
E) G 3/4
F) G 1
J) SAE6
K) SAE8
L) SAE10
M) SAE12
N) SAE16

Materials

1) Aluminium
2) Steel



Material	Max. pressure	
	bar	*psi*
Alluminium	210	*3050*
Steel	350	*5100*

Cavity	Ports		Dimensions											Ordering code	
			A	B	C	E	F	G	H	I	L	M	Z	Aluminium	Steel
SAE 08/2	G 1/4	mm	50	50	30	6	38	44	6	14.8	20	30	6.5	3CC0820B11	3CC0820B21
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.26*		
	G 3/8	mm	50	50	30	6	38	44	6	14,8	20	30	6.5	3CC0820C11	3CC0820C21
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.26*		
	G 1/2	mm	60	60	35	6	48	54	6	18	25	35	6.5	3CC0820D11	/
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.16*	*0.24*	*0.71*	*0.98*	*1.38*	*0.26*		
	SAE6	mm	50	50	30	6	38	44	6	14.8	20	30	6.5	3CC0820J11	3CC0820J21
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.25*		
	SAE8	mm	60	60	30	6	48	54	6	14	25	35	6.5	3CC0820K11	3CC0820K21
		in	*2.36*	*2.36*	*1.18*	*0.24*	*1.89*	*2.16*	*0.24*	*0.55*	*0.98*	*1.38*	*0.25*		
SAE 10/2	G 1/4	mm	60	60	35	6	48	54	6	18.8	25	35	6.5	3CC1020B11	3CC1020B21
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.26*		
	G 3/8	mm	60	60	35	6	48	54	6	18.8	25	35	6.5	3CC1020C11	3CC1020C21
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.26*		
	G 1/2	mm	60	60	35	6	48	54	6	18.8	25	35	6.5	3CC1020D11	3CC1020D21
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.26*		
	SAE8	mm	60	70	35	6	48	64	6	18.8	25	35	6.5	3CC1020J11	3CC1020J21
		in	*2.36*	*2.75*	*1.38*	*0.24*	*1.89*	*2.52*	*0.24*	*0.74*	*0.98*	*1.38*	*0.26*		
	SAE10	mm	70	70	35	6	58	64	6	18.5	35	35	6.5	3CC1020K11	3CC1020K21
		in	*2.75*	*2.75*	*1.38*	*0.24*	*2.28*	*2.52*	*0.24*	*0.73*	*1.38*	*1.38*	*0.26*		
	SAE12	mm	70	70	40	8	54	62	8	22	30	40	8.5	3CC1020L11	3CC1020L21
		in	*2.75*	*2.75*	*1.57*	*0.31*	*2.12*	*2.44*	*0.31*	*0.87*	*1.18*	*1.57*	*0.33*		

Dimensions and ordering codes

Cavity	Ports		Dimensions											Ordering code	
			A	B	C	E	F	G	H	I	L	M	Z	Aluminium	Steel
SAE 12/2	G 1/2	mm	70	80	40	8	54	72	8	25	30	40	8.5	3CC1220D11	3CC1220D21
		in	2.75	3.15	1.57	0.31	2.12	2.83	0.31	0.98	1.18	1.57	0.33		
	G 3/4	mm	70	90	40	8	54	82	8	25	30	40	8.5	3CC1220E11	3CC1220E21
		in	2.75	3.54	1.57	0.31	2.12	3.23	0.31	0.98	1.18	1.57	0.33		
	SAE10	mm	70	85	40	8	54	77	8	25	30	40	8.5	3CC1220L11	3CC1220L21
		in	2.75	3.35	1.57	0.31	2.12	3.03	0.31	0.98	1.18	1.57	0.33		
	SAE12	mm	70	85	40	8	54	77	8	25	30	40	8.5	3CC1220M11	3CC1220M21
		in	2.75	3.35	1.57	0.31	2.12	3.03	0.31	0.98	1.18	1.57	0.33		
SAE 16/2	G 1/2	mm	80	90	50	10	60	80	10	25	35	45	10.5	3CC1620D11	3CC1620D21
		in	3.15	3.54	1.97	0.39	2.36	3.15	0.39	0.98	1.38	1.77	0.41		
	G 3/4	mm	80	90	50	10	60	80	10	25	35	45	10.5	3CC1620E11	3CC1620E21
		in	3.15	3.54	1.97	0.39	2.36	3.15	0.39	0.98	1.38	1.77	0.41		
	G 1	mm	85	100	60	10	65	90	10	23.5	40	45	10.5	3CC1620F11	3CC1620F210
		in	3.35	3.94	2.36	0.39	2.56	3.54	0.39	0.92	1.57	1.77	0.41		
	SAE12	mm	80	90	50	10	60	80	10	25	35	45	10.5	3CC1620M11	3CC1620M21
		in	3.15	3.54	1.97	0.39	2.36	3.15	0.39	0.98	1.38	1.77	0.41		
	SAE16	mm	80	100	50	10	60	90	10	25	35	45	10.5	3CC1620N11	3CC1620N21
		in	3.15	3.94	1.97	0.39	2.36	3.54	0.39	0.98	1.38	1.77	0.41		

Dimensions and ordering codes

Description composition

3/CC/- □ □ /30/ □-□ -1

Cavity

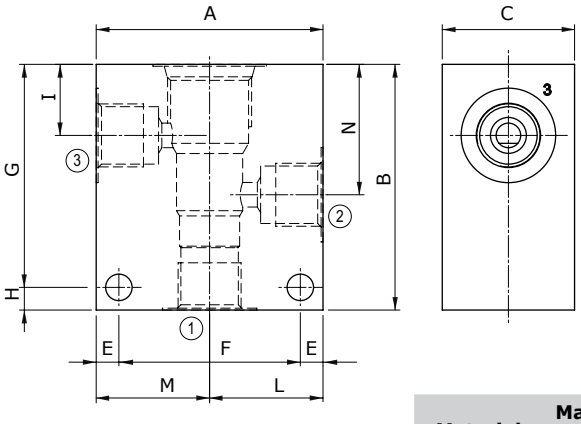
08
10
12
16

Ports

B) G 1/4
C) G 3/8
D) G 1/2
E) G 3/4
F) G 1
J) SAE6
K) SAE8
L) SAE10
M) SAE12
N) SAE16

Materials

1) Aluminium
2) Steel



Material	Max. pressure	
	bar	*psi*
Alluminium	210	*3050*
Steel	350	*5100*

Cavity	Ports		Dimensions												Ordering code	
			A	B	C	E	F	G	H	I	L	M	N	Z	Aluminium	Steel
SAE 8/3	G 1/4	mm	60	60	30	7	46	48	12	14.8	30	30	29.1	6.5	3CC0830B11	3CC0830B21
		in	*2.36*	*2.36*	*1.18*	*0.27*	*1.81*	*1.89*	*0.47*	*0.58*	*1.18*	*1.18*	*1.14*	*0.25*		
	G 3/8	mm	60	60	30	7	46	48	12	14.5	30	30	29.1	6.5	3CC0830C11	3CC0830C21
		in	*2.36*	*2.36*	*1.18*	*0.27*	*1.81*	*1.89*	*0.47*	*0.57*	*1.18*	*1.18*	*1.14*	*0.25*		
	G 1/2	mm	70	65	35	7	56	53	12	14.5	35	35	29.1	6.5	3CC0830D11	/
		in	*2.75*	*2.56*	*1.38*	*0.27*	*2.20*	*2.09*	*0.47*	*0.57*	*1.38*	*1.38*	*1.14*	*0.25*		
	SAE6	mm	60	60	30	7	46	48	12	14.5	30	30	29.1	6.5	3CC0830J11	3CC0830J21
		in	*2.36*	*2.36*	*1.18*	*0.27*	*1.81*	*1.89*	*0.47*	*0.57*	*1.18*	*1.18*	*1.14*	*0.25*		
	SAE8	mm	60	60	30	7	46	48	12	15	30	30	29	6.5	3CC0830K11	3CC0830K11
		in	*2.36*	*2.36*	*1.18*	*0.27*	*1.81*	*1.89*	*0.47*	*0.59*	*1.18*	*1.18*	*1.14*	*0.25*		
SAE 10/3	G 1/4	mm	60	65	35	6	48	59	6	18	30	30	34.5	7	3CC1030B11	3CC1030B21
		in	*2.36*	*2.56*	*1.38*	*0.24*	*1.89*	*2.32*	*0.24*	*0.70*	*1.18*	*1.18*	*1.36*	*0.27*		
	G 3/8	mm	60	65	35	6	48	59	6	18.8	30	30	34.5	7	3CC1030C11	3CC1030C21
		in	*2.36*	*2.56*	*1.38*	*0.24*	*1.89*	*2.32*	*0.24*	*0.74*	*1.18*	*1.18*	*1.36*	*0.27*		
	G 1/2	mm	65	70	35	6	53	64	6	18.8	32.5	32.5	34.5	7	3CC1030D11	3CC1030D21
		in	*2.56*	*2.75*	*1.38*	*0.24*	*2.09*	*2.52*	*0.24*	*0.74*	*1.28*	*1.28*	*1.36*	*0.27*		
	SAE6	mm	65	70	35	6	53	64	6	18.8	32.5	32.5	34.5	7	3CC1030J11	3CC1030J21
		in	*2.56*	*2.75*	*1.38*	*0.24*	*2.09*	*2.52*	*0.24*	*0.74*	*1.28*	*1.28*	*1.36*	*0.27*		
	SAE8	mm	65	70	35	6	53	64	6	18.8	32.5	32.5	34.5	7	3CC1030K11	3CC1030K21
		in	*2.56*	*2.75*	*1.38*	*0.24*	*2.09*	*2.52*	*0.24*	*0.74*	*1.28*	*1.28*	*1.36*	*0.27*		
	SAE10	mm	65	70	35	6	53	64	6	18	31.5	33.5	34.5	7	3CC1030L11	3CC1030L21
		in	*2.56*	*2.75*	*1.38*	*0.24*	*2.09*	*2.52*	*0.24*	*0.70*	*1.24*	*1.32*	*1.36*	*0.27*		

Dimensions and ordering codes

Cavity	Ports		Dimensions												Ordering code	
			A	B	C	E	F	G	H	I	L	M	N	Z	Aluminium	Steel
SAE 12/3	G 1/2	mm	70	100	40	8	54	92	8	25	35	35	53.5	8.5	3CC1230D11	3CC1230D21
		in	2.75	3.94	1.57	0.31	2.12	3.6	0.31	0.98	1.38	1.38	2.10	0.33		
	G 3/4	mm	90	100	50	10	70	90	10	25.1	45	45	53.5	10.5	3CC1230E11	3CC1230E21
		in	3.54	3.94	1.97	0.39	2.75	3.54	0.39	0.99	1.77	1.77	2.11	0.41		
	SAE10	mm	80	100	40	8	64	92	8	25	40	40	53.5	8.5	3CC1230L11	3CC1230L21
		in	3.15	3.94	1.57	0.31	2.52	3.6	0.31	0.98	1.57	1.57	2.11	0.33		
	SAE12	mm	80	100	45	8	64	92	8	25	40	40	53.5	8.5	3CC1230M11	3CC1230M21
		in	3.15	3.94	1.77	0.31	2.52	3.6	0.31	0.98	1.57	1.57	2.11	0.33		
SAE16/3	G 1/2	mm	90	100	50	10	70	90	10	25	45	45	53.5	10.5	3CC1630D11	3CC1630D21
		in	3.54	3.94	1.97	0.39	2.75	3.54	0.39	0.98	1.77	1.77	2.11	0.41		
	G 3/4	mm	90	100	50	10	70	90	10	25.1	45	45	53.5	10.5	3CC1630E11	3CC1630E21
		in	3.54	3.94	1.97	0.39	2.75	3.54	0.39	0.99	1.77	1.77	2.11	0.41		
	G 1	mm	90	105	50	10	70	95	10	25	46	44	53.5	10.5	3CC1630F11	3CC1630F21
		in	3.54	4.13	1.97	0.39	2.75	3.74	0.39	0.98	1.81	1.73	2.11	0.41		
	SAE12	mm	90	105	50	10	70	95	10	25.1	45	45	53.5	10.5	3CC1630M11	3CC1630M21
		in	3.54	4.13	1.97	0.39	2.75	3.74	0.39	0.99	1.77	1.77	2.11	0.41		
	SAE16	mm	90	105	50	10	70	95	10	25.1	45	45	53.5	10.5	3CC1630N11	3CC1630N21
		in	3.54	4.13	1.97	0.39	2.75	3.74	0.39	0.99	1.77	1.77	2.11	0.41		

Dimensions and ordering codes

Description composition

3/CC/- □ □ /40/ □-□ -1

Cavity

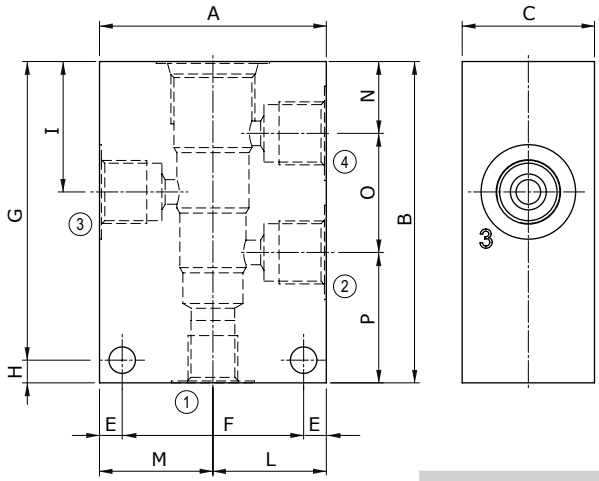
08
10
12
16

Ports

B) G 1/4
C) G 3/8
D) G 1/2
E) G 3/4
F) G 1
J) SAE6
K) SAE8
L) SAE10
M) SAE12
N) SAE16

Materials

1) Aluminium
2) Steel



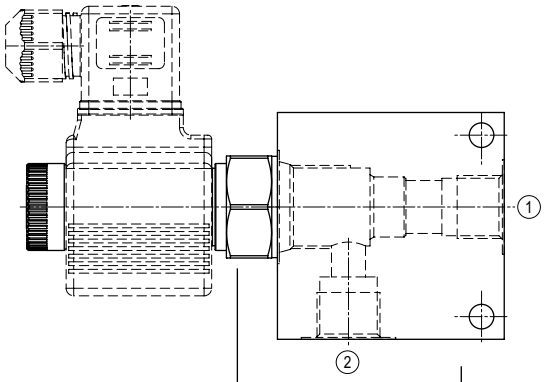
Material	Max. pressure bar	Max. pressure *psi*
Alluminium	210	*3050*
Steel	350	*5100*

Cavity	Ports		Dimensions A	B	C	E	F	G	H	I	L	M	N	O	P	Z	Ordering code Aluminium	Steel
SAE 8/4	G 1/4	**mm**	60	75	30	7	46	63	12	29.1	30	30	14.8	29.1	31.1	6.5	3CC0840B11	3CC0840B21
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.58*	*1.14*	*1.22*	*0.25*		
	G 3/8	**mm**	60	75	30	7	46	63	12	29.1	30	30	14.8	28.6	31.6	6.5	3CC0840C11	3CC0840C21
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.58*	*1.13*	*1.24*	*0.25*		
	SAE6	**mm**	60	75	30	7	46	63	12	29.1	30	30	14.8	29.1	31.1	6.5	3CC0840J11	3CC0840J21
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.58*	*1.14*	*1.22*	*0.25*		
	SAE8	**mm**	60	75	30	7	46	63	12	29	30	30	15	28.5	31.5	6.5	3CC0840K11	3CC0840K21
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.59*	*1.12*	*1.24*	*0.25*		
SAE 10/4	G 1/4	**mm**	60	85	35	6	48	79	6	34.5	30	30	19	31.5	34.5	7	3CC1040B11	3CC1040B21
		in	*2.36*	*3.35*	*1.38*	*0.24*	*1.89*	*3.11*	*0.24*	*1.36*	*1.18*	*1.18*	0.75	1.24	*1.36*	*0.27*		
	G 3/8	**mm**	60	85	35	6	48	79	6	34.5	30	30	18.8	31.7	34.5	7	3CC1040C11	3CC1040C21
		in	*2.36*	*3.35*	*1.38*	*0.24*	*1.89*	*3.11*	*0.24*	*1.36*	*1.18*	*1.18*	*0.74*	*1.25*	*1.36*	*0.27*		
	G 1/2	**mm**	70	85	35	6	58	79	6	34.5	35	35	18.8	31.7	34.5	7	3CC1040D11	3CC1040D21
		in	*2.75*	*3.35*	*1.38*	*0.24*	*2.28*	*3.11*	*0.24*	*1.36*	*1.38*	*1.38*	*0.74*	*1.25*	*1.36*	*0.27*		
	SAE6	**mm**	60	85	35	6	48	79	6	34.5	30	30	18.8	31.7	34.5	7	3CC1040J11	3CC1040J21
		in	*2.36*	*3.35*	*1.38*	*0.24*	*1.89*	*3.11*	*0.24*	*1.36*	*1.18*	*1.18*	*0.74*	*1.25*	*1.36*	*0.27*		
	SAE8	**mm**	70	85	35	6	58	79	6	34.5	35	35	18.8	31.7	34.5	7	3CC1040K11	3CC1040K21
		in	*2.75*	*3.35*	*1.38*	*0.24*	*2.28*	*3.11*	*0.24*	*1.36*	*1.38*	*1.38*	*0.74*	*1.25*	*1.36*	*0.27*		
	SAE10	**mm**	70	85	35	6	58	79	6	34.5	35	35	19	31.5	34.5	7	3CC1040L11	3CC1040L11
		in	*2.75*	*3.35*	*1.38*	*0.24*	*2.28*	*3.11*	*0.24*	*1.36*	*1.38*	*1.38*	*0.75*	*1.24*	*1.36*	*0.27*		

Dimensions and ordering codes

Cavity	Ports		Dimensions														Ordering code	
			A	B	C	E	F	G	H	I	L	M	N	O	P	Z	Aluminium	Steel
SAE 12/4	G 3/8	mm	80	115	40	8	64	107	8	44	40	40	22	44.5	48.5	8.5	3CC1240C11	3CC1240C21
		in	3.15	4.53	1.57	0.31	2.52	4.21	0.31	1.73	1.57	1.57	0.87	1.75	1.9	0.33		
	G 1/2	mm	80	115	40	8	64	107	8	44	40	40	22	44.5	48.5	8.5	3CC1240D11	3CC1240D21
		in	3.15	4.53	1.57	0.31	2.52	4.21	0.31	1.73	1.57	1.57	0.87	1.75	1.9	0.33		
	SAE10	mm	80	115	40	8	64	107	8	44	40	40	22	44.5	48.5	8.5	3CC1240L11	3CC1240L21
		in	3.15	4.53	1.57	0.31	2.52	4.21	0.31	1.73	1.57	1.57	0.87	1.75	1.9	0.33		
SAE 16/4	G 3/4	mm	100	130	50	10	80	120	10	53.5	50	50	25.1	56.9	48	10.5	3CC1640E11	3CC1640E21
		in	3.94	5.12	1.97	0.39	3.15	4.72	0.39	2.11	1.97	1.97	0.99	2.24	1.89	0.41		
	SAE16	mm	100	130	50	10	80	120	10	53.5	50	50	25.1	56.9	48	10.5	3CC1640N11	3CC1640N21
		in	3.94	5.12	1.97	0.39	3.15	4.72	0.39	2.11	1.97	1.97	0.99	2.24	1.89	0.41		

How to order valves with body



Cartridge description

EC 10 M/10NB

Cavity

08
10
12
16

Body description

C 1 1

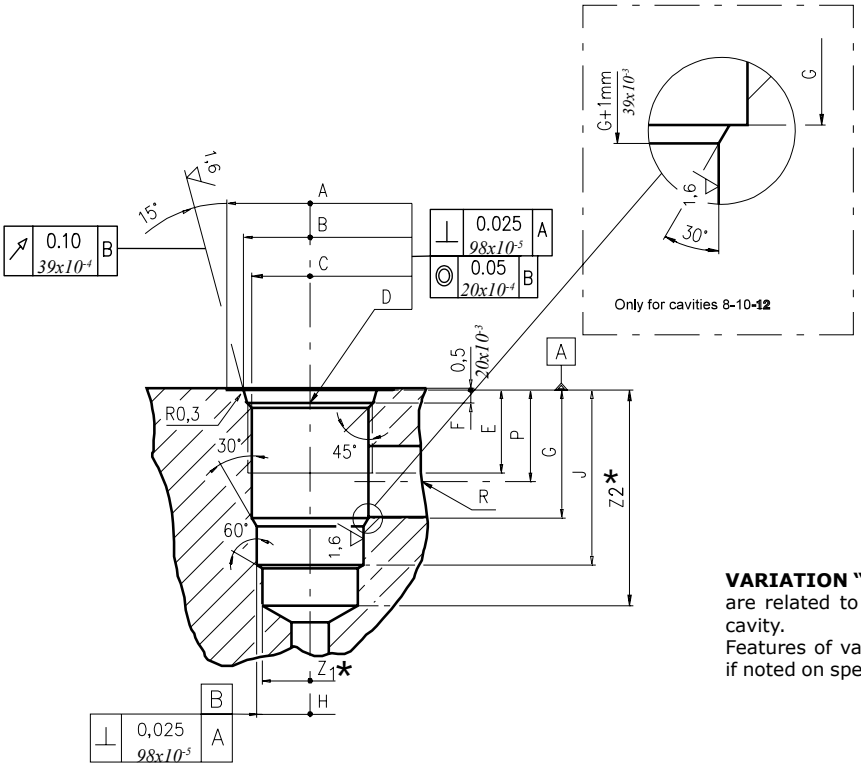
Ports

B) G 1/4
C) G 3/8
D) G 1/2
E) G 3/4
F) G 1
J) SAE6
K) SAE8
L) SAE10
M) SAE12
N) SAE16

Materials

1) Aluminium
2) Steel

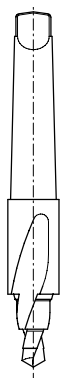
Dimensions



VARIATION "A": the dimensions with "*" are related to the variation "A" of 2 ways cavity.
Features of variation "A" are required only if noted on specific product catalogue page.

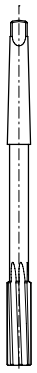
Cavity		A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	J	K ±0.02	L	M ±0.02	N	P	R ØMAX	S	T ØMAX	U	V ØMAX	X ØMAX	Z1* ØMIN	Z2* MIN
08/2 08/2 A	mm	27	20.66	17.42	3/4-16 UNF	12.50	2.50	18.20	12.72	29.50	-	-	-	-	14.00	8.00	-	-	-	-	-	12.00	39
	in	1.06	0.81	0.68		0.49	0.10	0.72	0.50	1.16					0.55	0.31						0.47	1.53
10/2 10/2 A	mm	30	24.00	20.62	7/8-14 UNF	16.00	2.80	24.00	15.90	33.50	-	-	-	-	18.30	11.00	-	-	-	-	-	14.50	40
	in	1.18	0.94	0.81		0.63	0.11	0.94	0.62	1.32					0.72	0.43						0.57	1.57
12/2 12/2 A	mm	38	29.23	24.73	1 1/16-12 UNF	19.00	3.50	34.15	22.25	46.80	-	-	-	-	24.50	19.00	-	-	-	-	-	21.50	60
	in	1.50	1.15	0.97		0.75	0.14	1.34	0.87	1.84					0.96	0.75						0.85	2.36
16/2 16/2 A	mm	45	35.60	31.34	1 5/16-12 UNF	22.00	3.50	34.00	28.62	47.00	-	-	-	-	24.50	19.00	-	-	-	-	-	25.50	70
	in	1.77	1.40	1.23		0.87	0.14	1.34	1.13	1.85					0.96	0.75						1,00	2.75

Rougher tool



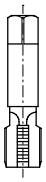
Cavity	Code number
08/2	3UT00053190
10/2	3UT00056610
12/2	3UT00054090
16/2	3UT00054510

Finisher tool



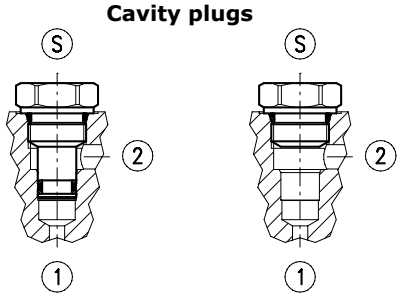
Cavity	Code number
08/2	3UT06A1270N
10/2	3UT00054580
12/2	3UT00054670
16/2	3UT00054520

Tap



Cavity	Code number
08/2	3UT03416UNF
10/2	3UT07814UNF
12/2	3UT0111612UN
16/2	3UT0151612UN

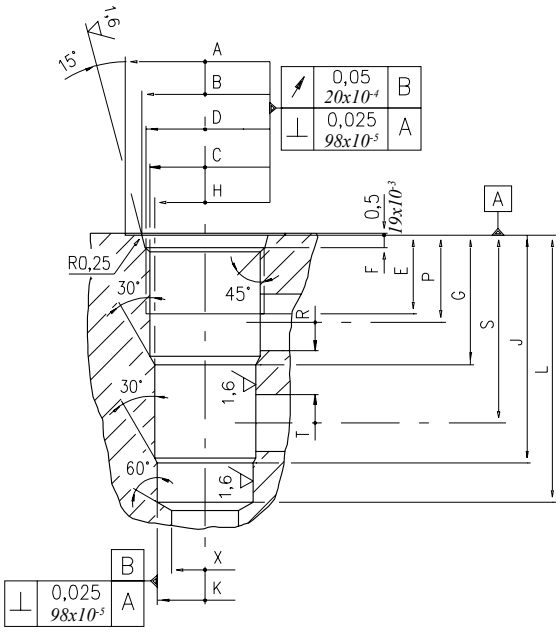
Cavity plugs



Cavity	Code number	①	②	Ⓢ
08/2	3XTP3533700	X	X	X
	3XTP1531900	0	0	X
10/2	3XTP3544200	X	X	X
	3XTP1542300	0	0	X
12/2	3XTP3555400	X	X	X
	3XTP1552900	0	0	X
16/2	3XTP3575500	X	X	X
	3XTP1572900	0	0	X

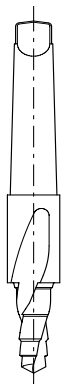
X=Closed 0=Open

Dimensions



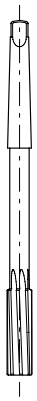
Cavity		A	B ±0,05	C ±0,05	D	E	F	G	H ±0,02	J	K ±0,02	L	M ±0,02	N	P	R øMAX	S	T øMAX	U	V øMAX	X øMAX
08/3	mm	27	20,66	17,42	3/4 -16 UNF	12,50	2,50	19,10	15,90	33,30	14,30	43,30	-	-	14,30	5,50	28,60	5,50	-	-	12,50
	in	1.06	0.81	0.68		0.49	0.10	0.75	0.62	1.31	0.56	1.70			0.56	0.22	1.12	0.22			0.49
10/3	mm	30	24,00	20,62	7/8 -14 UNF	16,00	2,80	23,10	17,50	39,60	15,90	47,60	-	-	18,30	6,50	34,00	6,50	-	-	14,00
	in	1.18	0.94	0.81		0.63	0.11	0.94	0.69	1.56	0.62	1.87			0.72	0.25	1.34	0.25			0.55
12/3	mm	38	29,23	24,73	1 1/16 -12 UNF	19,00	3,56	36,60	23,82	63,50	22,25	75,40	-	-	24,50	16,00	53,00	16,00	-	-	19,00
	in	1.50	1.15	0.97		0.75	0.14	1.44	0.94	2.5	0.88	2.97			0.96	0.63	2.09	0.63			0.75
16/3	mm	45	35,60	28,62	1 5/16 -12 UNF	22,00	3,50	36,50	28,62	64,30	27.02	75,30	-	-	24,50	16,00	53,00	16,00	-	-	19,00
	in	1.77	1.40	1.13		0.87	0.14	1.44	1.13	2.53	1.06	2.96			0.96	0.63	2.09	0.63			0.75
20/3	mm	58	43,60	36,55	1 5/8 -12 UNF	21,00	3,50	46,00	36,55	87,60	33.37	100	-	-	31	25,40	71,5	25,40	-	-	30,00
	in	2.28	1.71	1.44		0.83	0.14	1.81	1.04	3.45	1.31	3.93			1.22	1	2.81	1			1.18

Rougher tool



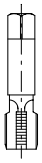
Cavity	Code number
08/3	3UT00052190
10/3	3UT00054170
12/3	3UT00054290
16/3	3UT00054470

Finisher tool



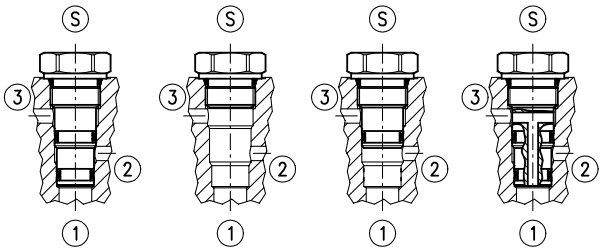
Cavity	Code number
08/3	3UT00052740
10/3	3UT00054180
12/3	3UT00054300
16/3	3UT00054480

Tap



Cavity	Code number
08/3	3UT03416UNF
10/3	3UT07814UNF
12/3	3UT0111612UN
16/3	3UT0151612UN

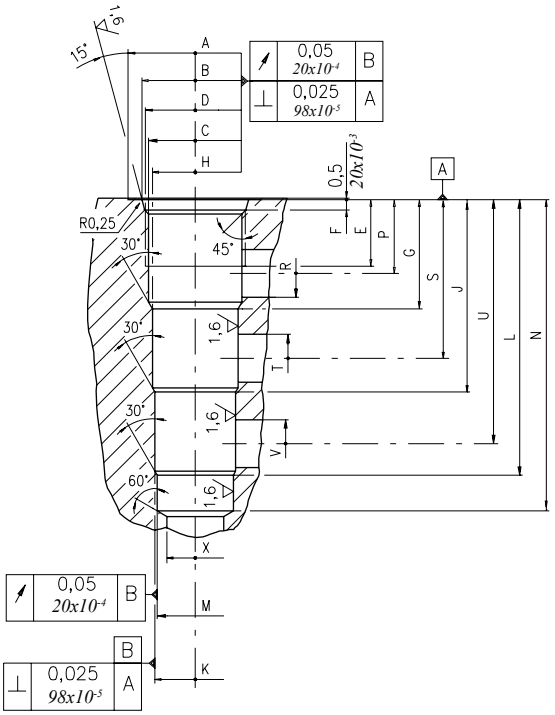
Cavity plugs



Cavity	Code number	1	2	3	S
08/3	3XTP3535100	X	X	X	X
	4TP5531500	0	0	0	X
	3XTP3534000	0	0	X	X
	3XTP3534800	0	X	0	X
10/3	3XTP3545700	X	X	X	X
	3XTP1542300	0	0	0	X
	3XTP3545701	0	X	0	X
12/3	3XTP3558200	X	X	X	X
	3XTP1552900	0	0	0	X
	3XTP35558201	0	X	0	X
16/3	3XTP3578400	X	X	X	X
	3XTP1572900	0	0	0	X

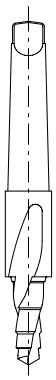
X=Closed 0=Open

Dimensions



Cavity		A	B ±0,05	C ±0,05	D	E	F	G	H ±0,02	J	K ±0,02	L	M ±0,02	N	P	R øMAX	S	T øMAX	U	V øMAX	X øMAX
08/4	**mm**	28,00	20,66	17,42	3/4-16 UNF	12,50	2,50	19,10	15,90	33,30	14,30	47,60	12,72	57,60	14,30	5,50	28,60	5,50	42,90	5,50	11,00
	in	*1.10*	*0.81*	*0.68*		*0.49*	*0.10*	*0.75*	*0.62*	*1.31*	*0.56*	*1.87*	*0.50*	*2.27*	*0.56*	*0.22*	*1.12*	*0.22*	*1.69*	*0.22*	*0.43*
10/4	**mm**	30	24,00	20,62	7/8-14 UNF	16,00	2,80	23,60	19,08	39,60	17,50	55,40	15,90	63,50	18,30	6,50	34,00	6,50	50,00	6,50	14,00
	in	*1.18*	*0.94*	*0.81*		*0.63*	*0.11*	*0.93*	*0.75*	*1.56*	*0.69*	*2.18*	*0.62*	*2.50*	*0.72*	*0.26*	*1.34*	*0.25*	*1.97*	*0.25*	*0.55*
12/4	**mm**	38	29,23	24,73	1 1/16-12 UNF	19,00	3,56	29,50	23,82	51,50	22,25	73,60	20,65	83,33	21,50	11,00	43,50	11,00	66,00	11,00	19,00
	in	*1.50*	*1.15*	*0.97*		*0.75*	*0.14*	*1.16*	*0.94*	*2.03*	*0.87*	*2.90*	*0.81*	*3.28*	*0.85*	*0.43*	*1.71*	*0.43*	*2.60*	*0.43*	*0.75*
16/4	**mm**	45	35,60	31,34	1 5/16-12 UNF	22,00	3,50	36,50	28,62	64,30	27,02	92,07	25,45	104,00	24,60	16,00	53,00	16,00	81,50	16,00	19,00
	in	*1.77*	*1.40*	*1.23*		*0.87*	*0.14*	*1.44*	*1.13*	*2.53*	*1.06*	*3.62*	*1.00*	*4.09*	*0.97*	*0.63*	*2.09*	*0.63*	*3.21*	*0.63*	*0.75*

Rougher tool



Cavity	Code number
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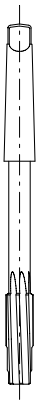
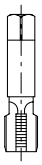
10/4	3UT00054250
12/4	3UT00054410
16/4	3UT00054820

Finisher



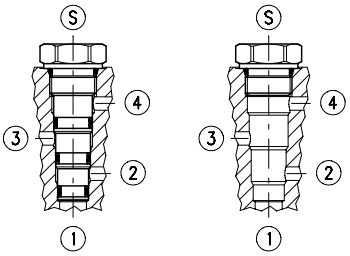
Cavity	Code number
08/4	3UT00052020
10/4	3UT00054260
12/4	3UT00054420
16/4	3UT00054830

Tap



Cavity	Code number
08/4	3UT03416UNF
10/4	3UT07814UNF
12/4	3UT111612UN
16/4	3UT0151612UN

Cavity plugs



Cavity	Code number	1	2	3	4	S
08/4	3XTP3536500	X	X	X	X	X
	4TP5531500	0	0	0	0	X
10/4	3XTP3548301	X	X	X	X	X
	3XTP1542300	0	0	0	0	X
12/4	3XTP3559300	X	X	X	X	X
	3XTP1552900	0	0	0	0	X
16/4	3XTP357B300	X	X	X	X	X
	3XTP1572900	0	0	0	0	X

X=Closed 0=Open

Notes

6th edition September 2015

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