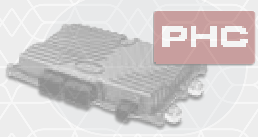
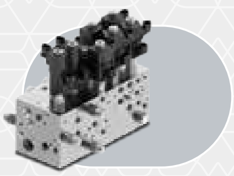
SAE
Cavity cartridges





COMPACT HYDRAULICS

Index

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

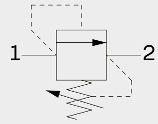
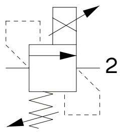
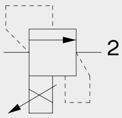
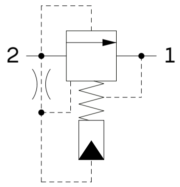
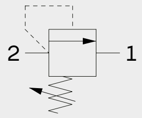
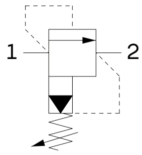
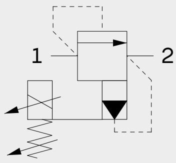
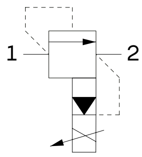
WARNING!
All specifications of this catalogue refer to the standard product at this date.
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN INCORRECT USE OF THE PRODUCT.

2nd edition April 2025

Pressure control valves

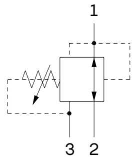
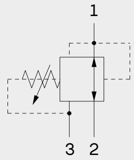
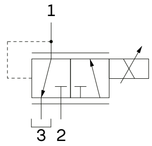
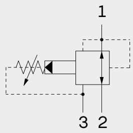
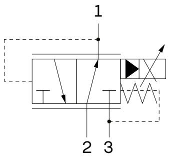
Pressure relief valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 way									
	**MC10MV**	poppet	direct	mechanic	70	*18.5*	260	*3770*	11
	MC..R	poppet	direct	mechanic	60	*15.8*	350	*5100*	15
	**MC10T** **MC10T HF type**	poppet	direct	proportional solenoid	10	*2.6*	350	*5100*	17
	**MC10X** **MC10X HF type**	poppet	direct	proportional solenoid	10	*2.6*	350	*5100*	21
	**MD..M**	poppet	direct	mechanic	120	*31.7*	350	*5100*	25
	**MG..A**	poppet	differential	mechanic	100	*26.4*	350	*5100*	31
	**MP..M**	spool	pilot	mechanic	400	*105,7*	350	*5100*	33
	**MP..T**	spool	pilot	proportional solenoid	200	*52.8*	350	*5100*	37
	**MP..X**	spool	pilot	proportional solenoid	200	*52.8*	350	*5100*	41

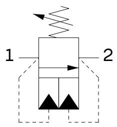
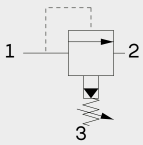
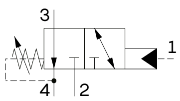
Index

Pressure control valves

Pressure reducing valves

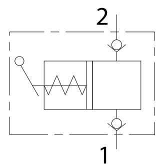
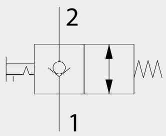
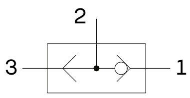
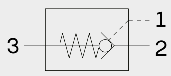
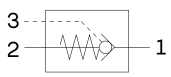
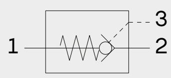
Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
3 way									
	**RD08L**	spool	direct with relieving	mechanic	15	*3.96*	Port 2=350 Port 3=30	*Port 2=5100* *Port 3=435*	45
	**RD08LH**	spool	direct with relieving	mechanic	30	*7.9*	Port 2=350 Port 3=30	*Port 2=5100* *Port 3=435*	49
	**RD08TX**	spool	direct with relieving	proportional solenoid	12	*3.17*	Port 2=210 Port 3=30	*Port 2=3045* *Port 3=435*	53
	**RP..M**	spool	pilot with relieving	mechanic	70	*18.5*	Port 2=350 Port 3=30	*Port 2=5100* *Port 3=435*	57
	**RP..X**	spool	pilot with relieving	proportional solenoid	70	*18.5*	Port 2=350 Port 3=50	*Port 2=5100* *Port 3=725*	61

Sequence valves

Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 way									
	**SW..A**	spool	pilot	mechanic	180	*48*	350	*5100*	67
3 way									
	**SP10A**	spool	pilot	mechanic	50	*13*	350	*5100*	69
4 way									
	**SN..L(1)**	spool	direct	mechanic	50	*13*	350	*5100*	71

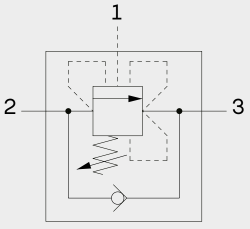
NOTE (1) the circuit shown are in normally open configuration; normally closed configuration is also available, see valves pages.

Motion control valves

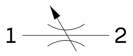
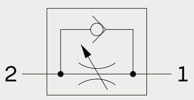
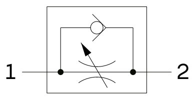
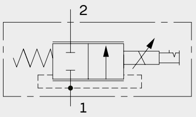
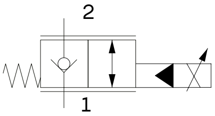
Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
Check valves									
2 way									
	**UC..A**	poppet	direct	mechanic	100	*26*	350	*5100*	75
	**UM08M**	-	direct	manual	1 in^3/ stroke	-	Port 1=50 Port 2=210	*Port 1=725* *Port2=3045*	77
	**UV10M**	poppet	direct	manual	60	*15.8*	320	*4650*	79
Shuttle valves									
3 way									
	**UT..A**	ball	direct	mechanic	20	*5.3*	350	*5100*	81
Pilot operated check valves									
3 way									
	**BC..A**	poppet	direct	mechanic	100	*26*	350	*5100*	83
	**BC..B**	poppet	direct	mechanic	100	*26*	350	*5100*	83
	**BC..C**	poppet	direct	mechanic	60	*16*	350	*5100*	83

Index

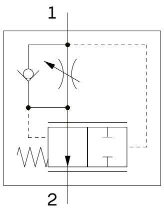
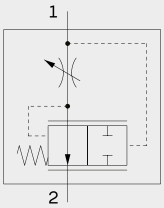
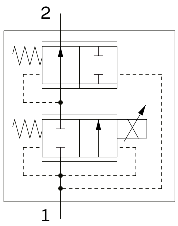
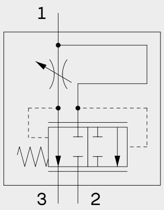
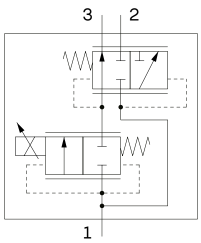
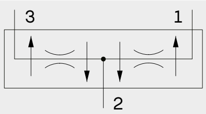
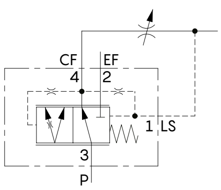
Pressure control valves

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 way									
	**CC..A**	poppet	/	mechanic	150	*40*	350	*5100*	87

Flow control valves

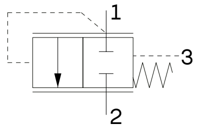
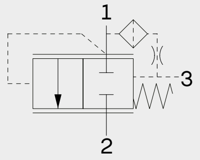
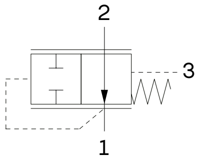
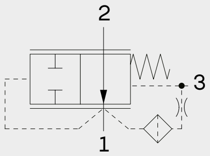
Needle valves									
Hydraulic diagram	**Valve**	**Execution**	**Operation**	**Control type**	**Max. flow up to**		**Max. press. up to**		**Page**
					l/min	*US gpm*	bar	*psi*	
2 way									
	**NB..A**	poppet	/	mechanic	100	*26*	350	*5100*	91
	**NU..A**	poppet	/	mechanic	100	*26*	350	*5100*	93
	**NT..A**	poppet	/	mechanic	100	*26*	350	*5100*	95
	**EE..X**	spool	direct	proportional solenoid	60	*16*	315	*4600*	97
	**EC..T**	poppet	pilot	proportional solenoid	97	*25.6*	350	*5100*	101

Flow control valves

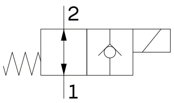
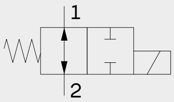
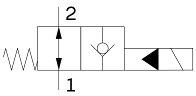
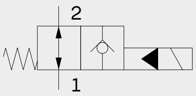
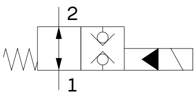
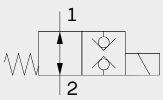
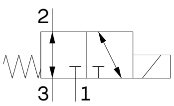
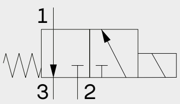
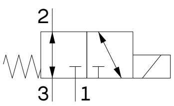
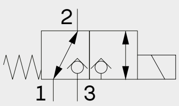
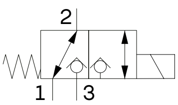
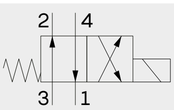
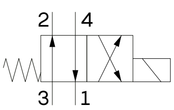
Flow control pressure compensated valves									
Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 way									
	**PW..A**	spool	direct	mechanic	90	*24*	315	*4600*	105
	**PU..A**	spool	direct	mechanic	90	*24*	315	*4600*	109
	**PU..X**	spool	direct	proportional solenoid	90	*24*	315	*4600*	113
3 way									
	**PP..A**	spool	direct	mechanic	Port 1=150 Port 3=90	*Port 1=39.6* *Port 3=24*	350	*5100*	117
	**PP..X**	spool	direct	proportional solenoid	Port 1=150 Port 3=90	*Port 1=39.6* *Port 3=24*	315	*4600*	121
	**PD**	spool	direct	mechanic	150	*40*	210	*3045*	125
4 way									
	**PL..M**	spool	pilot	mechanic	Port 3=160 port 4=140	*Port 3=42.2* *Port 4=36.9*	350	*5100*	127

Index

Logic valves

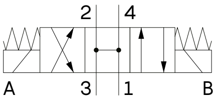
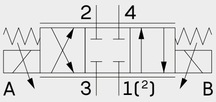
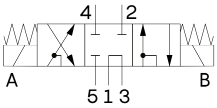
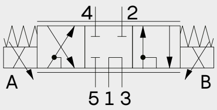
Logic element									
Hydraulic diagram	**Valve**	**Execution**	**Operation**	**Control type**	**Max. flow up to**		**Max. press. up to**		**Page**
					l/min	*US gpm*	bar	*psi*	
	**LA..QA**	spool	pilot to close	/	190	*50.2*	350	*5100*	131
	**LB..QA**	spool	venting to open	/	190	*50.2*	350	*5100*	133
	**LC..QA**	spool	venting to close	/	190	*50.2*	350	*5100*	135
	**LD..QA**	spool	pilot to open	/	190	*50.2*	350	*5100*	137

Directional control valves

Solenoid directional control valves									
Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
2 way / 2 positions									
	**EB08M**	poppet	direct	on-off solenoid	2	*0.53*	350	*5100*	139
	**EE..M[1]**	spool	direct	on-off solenoid	40	*10.5*	250	*3600*	141
	**EC..M[1]**	poppet	pilot	on-off solenoid	150	*40*	380	*5500*	145
	**EF..M[1]**	poppet	pilot	on-off solenoid	150	*40*	380	*5500*	149
	**EH..M[1]**	poppet	pilot	on-off solenoid	150	*40*	380	*5500*	153
	**EW..M[1]**	poppet	direct	on-off solenoid	40	*10.5*	350	*5100*	157
3 way / 2 positions									
	**EJ08MF[2]**	spool	direct	on-off solenoid	10	*2.6*	70	*1050*	161
	**EJ08G**	spool	direct	on-off solenoid	3	*0.8*	350	*5100*	165
	**EJ..M[2]**	spool	direct	on-off solenoid	60	*15.8*	250	*3600*	167
	**EL08B**	poppet	direct	on-off solenoid	10	*2.6*	250	*3600*	173
	**EL10C**	poppet	direct	on-off solenoid	20	*5.3*	210	*3050*	175
4 way / 2 positions									
	**ER..L[2]**	spool	direct	on-off solenoid	40	*10.5*	250	*3600*	177
	**ER12M[2]**	spool	direct	on-off solenoid	60	*15.8*	Port 1=250 Port 2-3-4 =320	*Port 1=3600 Port 2-3-4 =4600*	181

Index

Directional control valves

Solenoid directional control valves									
Hydraulic diagram	Valve	Execution	Operation	Control type	Max. flow up to		Max. press. up to		Page
					l/min	*US gpm*	bar	*psi*	
4 way / 3 positions									
	**ET..L(2)**	spool	direct	on-off solenoid	40	*10.5*	250	*3600*	185
	**ET..X(2)**	spool	direct	proportional solenoid	23	*6.1*	250	*3600*	189
5 way / 3 positions									
	**EK10L(2)**	spool	direct	on-off solenoid	20	*5.3*	250	*3600*	193
	**EK10X(2)**	spool	direct	proportional solenoid	23	*6.1*	250	*3600*	197

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

Coils and connectors

Adjustments

Valve bodies

Cavity tools and taps

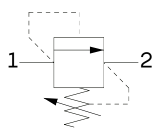
MC10MV type
pressure relief valves - 2 way

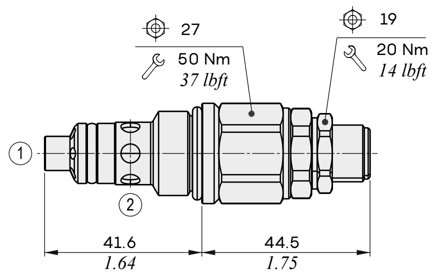
- Direct acting
- Poppet type
- Mechanical control with screw adjustment
- Prepared for antitampering cap
- Different springs available to vary pressure range
- The backpressure values on line 2 must be added to valve nominal setting

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

		MC10MV
Nominal flow		70 l/min *(18.5 US gpm)*
Max. pressure		260 bar *(3770 psi)*
Oil leakage	at 80% of max. pressure setting	0.25 cm³/min *(0.015 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/2 A
Weight		0.18 kg *(0.396 lb)*

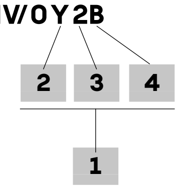
NOTE - For different conditions, please contact Walvoil Sales Dpt.

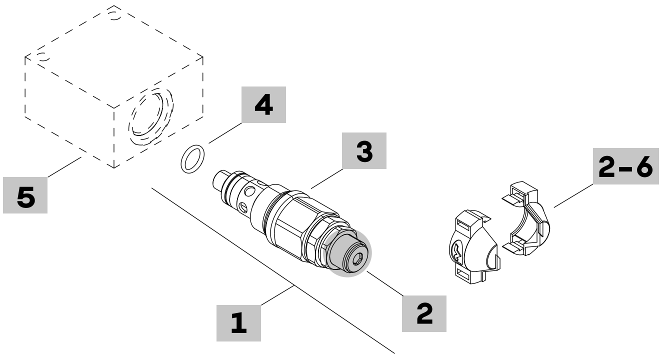




Ordering codes and description composition

MC10MV/0Y2B





1 Cartridges

TYPE	CODE	DESCRIPTION
MC10MV/0Y1B	0MC100020A03	Pressure range **1**
MC10MV/0Y2B	0MC100020A04	Pressure range **2**
MC10MV/0Y3B	0MC100020A05	Pressure range **3**
MC10MV/0Y4B	0MC100020A06	Pressure range **4**

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 5÷75 bar *(72.5÷1100 psi)*; Std. setting 50 bar *(725 psi)*
2	Pressure range 76÷125 bar *(1100÷1800 psi)*; Std. setting 80 bar *(1160 psi)*
3	Pressure range 126÷220 bar *(1800÷3190 psi)*; Std. setting 175 bar *(2540 psi)*
4	Pressure range 215÷260 bar *(3120÷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
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread

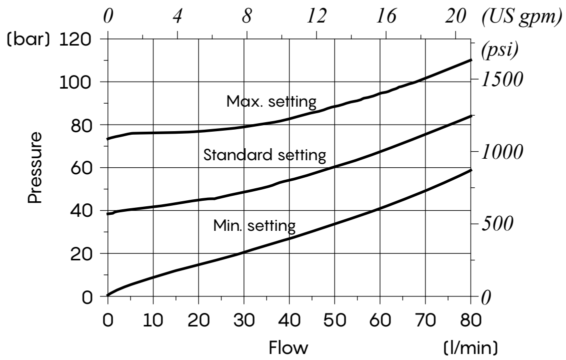
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

6 Accessories

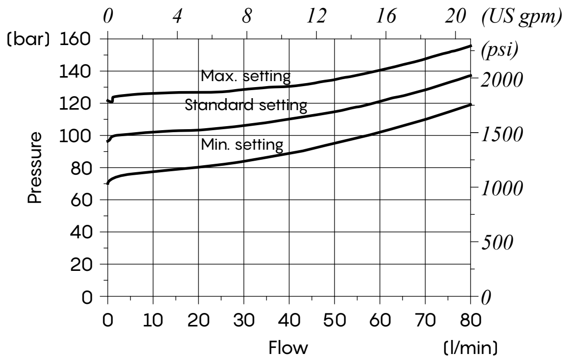
TYPE	CODE	DESCRIPTION
-	4COP126301	Antitampering cap (x2)

Rating diagrams

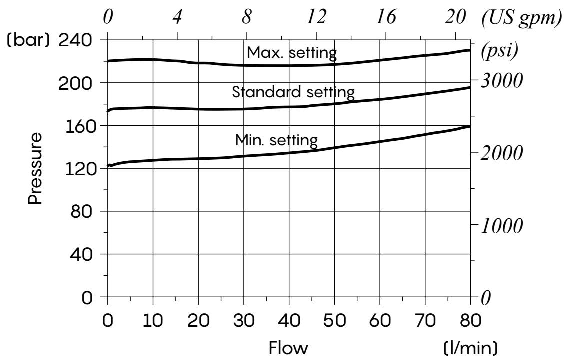
MC10MV pressure vs. flow
Pressure range 1



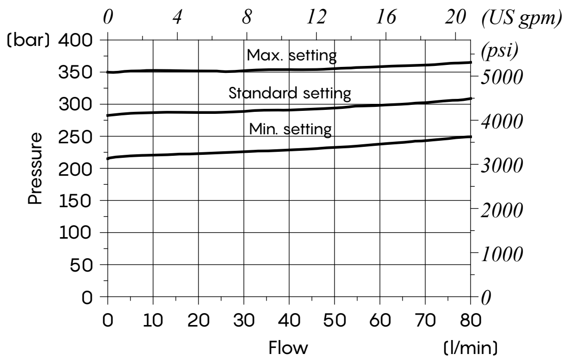
MC10MV pressure vs. flow
Pressure range 2



MC10MV pressure vs. flow
Pressure range 3



MC10MV pressure vs. flow
Pressure range 4



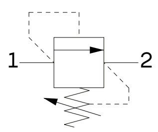
MC..R type
pressure relief valves - 2 way

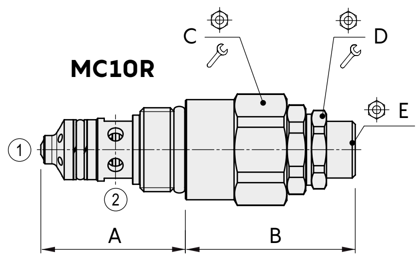
- Direct acting
- Poppet type
- Mechanical control with screw adjustment
- Prepared for antitampering cap
- Different springs available to vary pressure range
- The backpressure values on line 2 must be added to valve nominal setting
- From SAE08 to SAE10 cavities

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)*	60 l/min *(15.8 US gpm)*
Max. pressure		350 bar *(5100 psi)*		
Oil leakage	at 80% of max. pressure setting	2 cm³/min *(0.122 in³/min)*		
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		20/18/14 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 08/2 A	SAE 09/2 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.

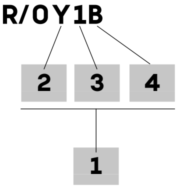


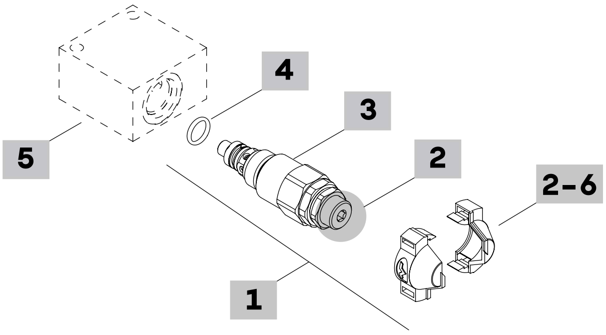


Valve type	A		B		C			D			E
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
MC08R	34	*1.34*	46.6	*1.83*	24	30	*22*	19	20	*15*	5
MC09R	33.8	*1.33*	46.6	*1.83*	24	42	*31*	19	20	*15*	5
MC10R	38.3	*1.50*	44.4	*1.75*	27	50	*37*	19	20	*15*	5

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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE09/2-G 3/8	3CC0920C11	Aluminium body for cavity 09 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread

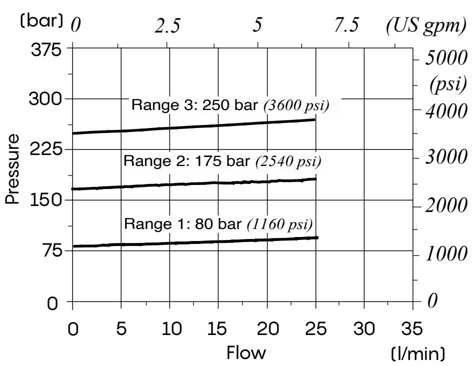
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

6 Accessories

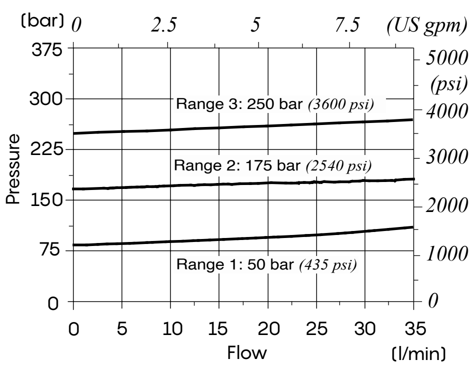
TYPE	CODE	DESCRIPTION
-	4COP126301	Antitampering cap (x2)

Rating diagrams

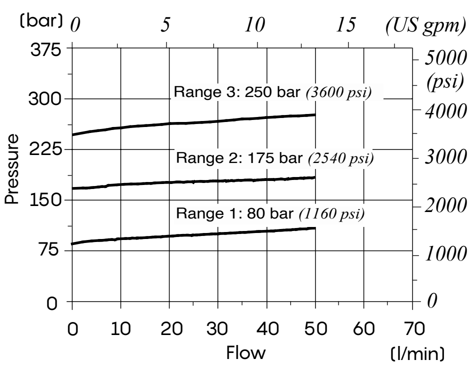
MC08R pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



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)*



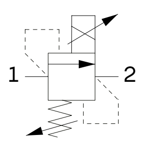
MC10T - MC10T-HF type pressure relief valves - 2 way

- Solenoid proportional type, direct acting
- Poppet type
- Decreasing pressure with increasing current (N.C)
- System of purging of air
- Applications for low flow rates (max. 10 l/min - *2.64 US gpm*)

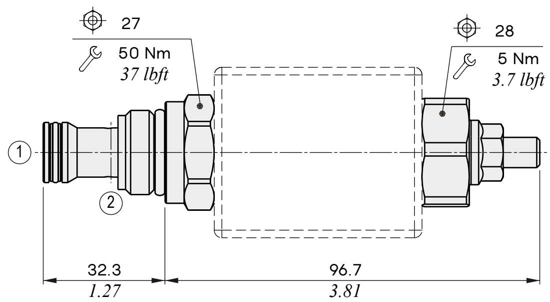
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		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	at 80% of max. pressure setting	0.25 cm^3/min *(0.015 in^3/min)*	0.50 cm^3/min *(0.030 in^3/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	
Coil type*		BH or BQP19	BQP19
Nominal voltages		12VDC - 24VDC	
Power rating		33 W (BH) - 15 W (BQP19)	15 W
Max. control current		12V->1.70 A - 24V->0.85 (BH) 12V->1.25 A - 24V->0.63 A (BQP19)	12V->1.25 A - 24V->0.63 A
Dither frequency		150 Hz	
Hysteresis		<5%	
Weight		0.54 kg *(1.19 lb)*	0.87 kg *(1.91 lb)*

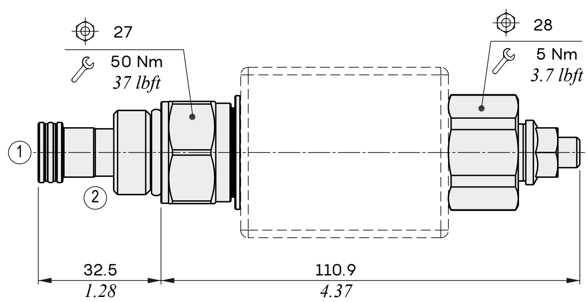
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.



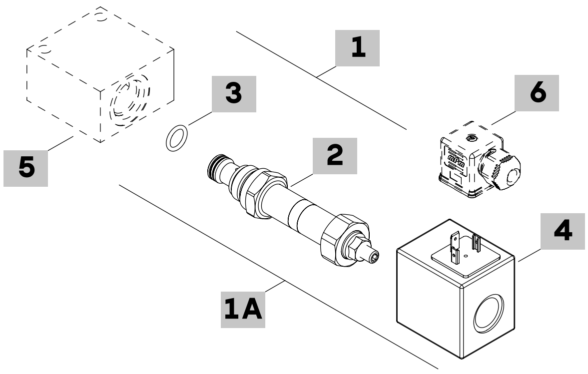
MC10T



MC10T-HF



Ordering codes and description composition



1 Cartridges

TYPE	CODE	DESCRIPTION
MC10T/001B	0MC10002047	Pressure range **1**
MC10T/002B	0MC10002048	Pressure range **2**
MC10T/003B	0MC10002049	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
MC10T-HF/033B	0MC10002070	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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

4 Coils

TYPE	CODE	DESCRIPTION
2) BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
3) BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil
4) BH 24VDC	4SLD002400A	24VDC-ISO4400 coil
5) BQP19 24VDC	4SL5000245A	24VDC-ISO4400 coil

Note: for HF version use only BQP19 coil
For complete coils list see from page 201

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-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 208

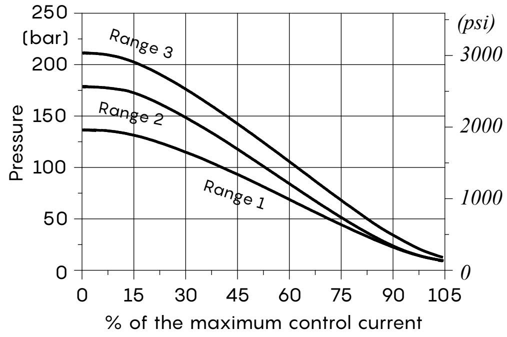
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

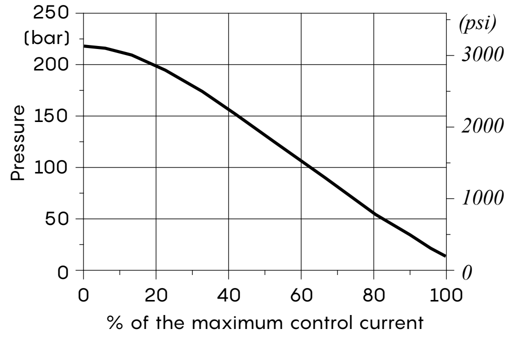
For complete connectors list see from page 201

Rating diagrams

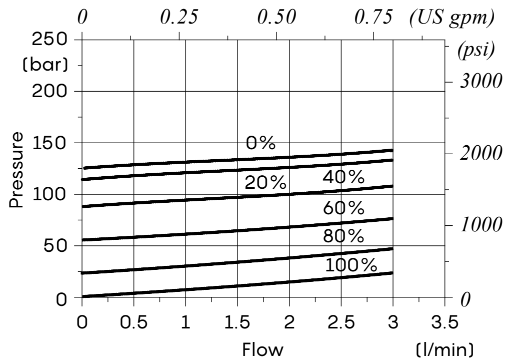
MC10T pressure setting vs. % max. control current
at 1 l/min *(0.26 US gpm)*



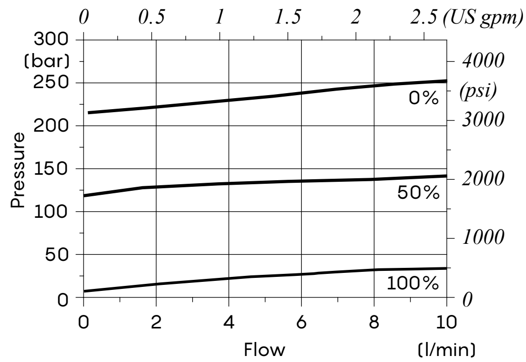
MC10T-HF pressure setting vs. % max. control current
at 2 l/min *(0.53 US gpm)*



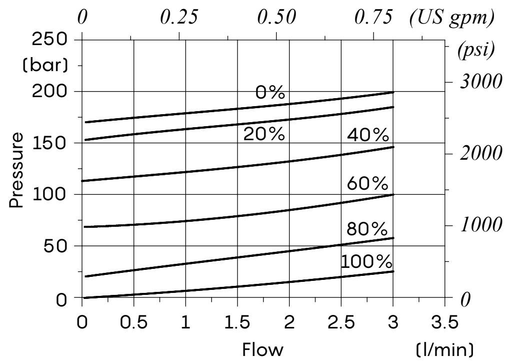
MC10T pressure vs. flow 1->2
for % of control current - Pressure range **1**



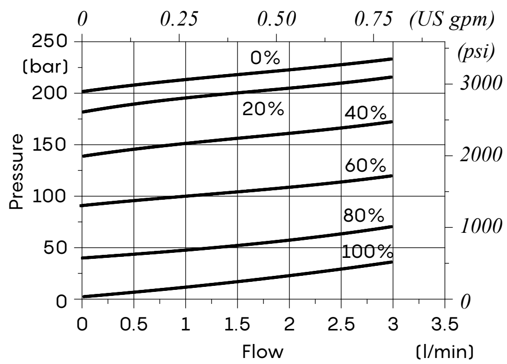
MC10T-HF pressure vs. flow 1->2
for % of control current



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**



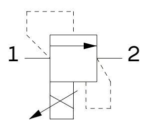
MC10X - MC10X-HF type pressure relief valves - 2 way

- Solenoid proportional type, direct acting
- Poppet type
- Decreasing pressure with increasing current (N.C)
- System of purging of air
- Applications for low flow rates (max. 10 l/min - *2.64 US gpm*)

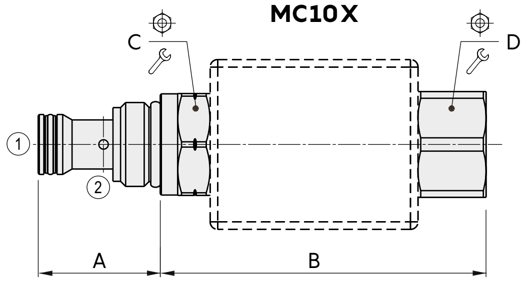
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		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	at 80% of max. pressure setting	0.25 cm³/min *(0.015 in³/min)*	0.50 cm³/min *(0.030 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	
Coil type*		BH or BQP19	BQP19
Nominal voltages		12VDC - 24VDC	
Power rating		33 W (BH) - 15 W (BQP19)	15 W
Max. control current		12V->1.70 A - 24V->0.85 (BH) 12V->1.25 A - 24V->0.63 A (BQP19)	12V->1.25 A - 24V->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 201.

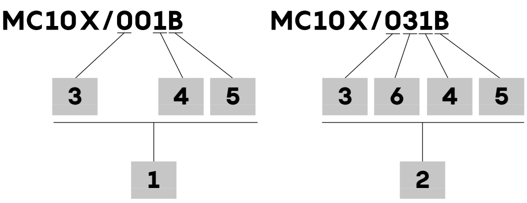


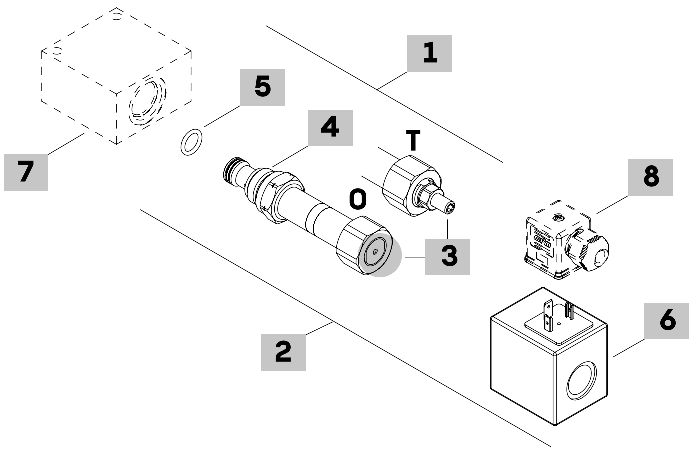
MC10X



Valve type	A		B N / 0 without emergency		B T screw		C			D		
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
MC10X	32.3	*1.27*	86.2	*3.39*	-	-	27	50	*37*	28	5	*3.7*
MC10X-HF	32.5	*1.28*	94.5	*3.72*	116.5	*4.59*	27	50	*37*	28	5	*3.7*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
MC10X/001B	0MC10002050	Pressure range **1**
MC10X/002B	0MC10002051	Pressure range **2**
MC10X/003B	0MC10002052	Pressure range **3**

2 Complete cartridges with coil

TYPE	CODE	DESCRIPTION
MC10X/031B	0MC10002039	Pressure range **1**, 12VDC
MC10X/032B	0MC10002040	Pressure range **2**, 12VDC
MC10X/033B	0MC10002041	Pressure range **3**, 12VDC
MC10X-HF/033B	0MC10002064	Pressure range **3**, 12VDC
MC10X-HF/T33B	0MC10002089	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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

6 Coils

TYPE	CODE	DESCRIPTION
2) BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
3) BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil
4) BH 24VDC	4SLD002400A	24VDC-ISO4400 coil
5) BQP19 24VDC	4SL5000245A	24VDC-ISO4400 coil

Note: for HF version use only BQP19 coil
For complete coils list see from page 201

7 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-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 208

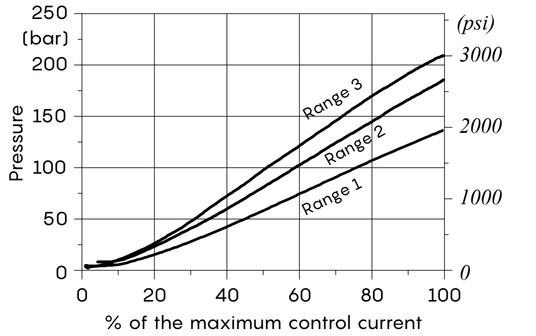
8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

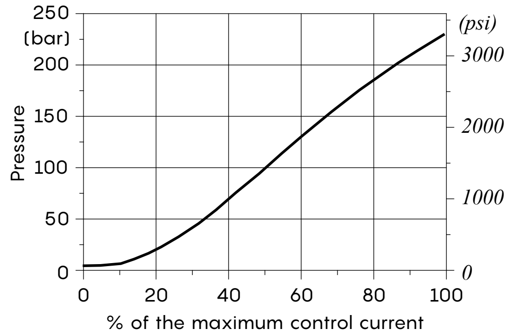
For complete connectors list see from page 201

Rating diagrams

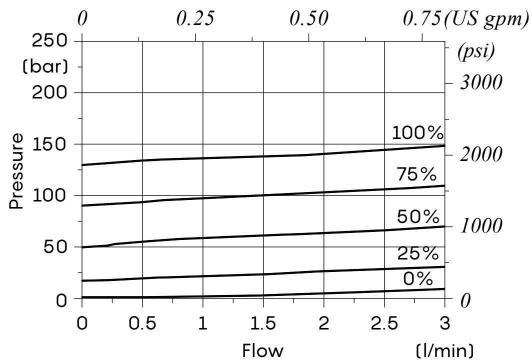
MC10X pressure setting vs. % max. control current
at 1 l/min *(0.26 US gpm)*



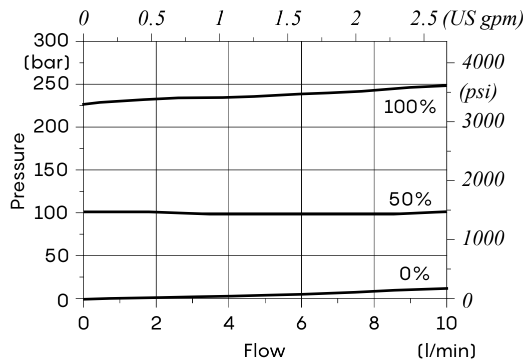
MC10X-HF pressure setting vs. % max. control current
at 2 l/min *(0.53 US gpm)*



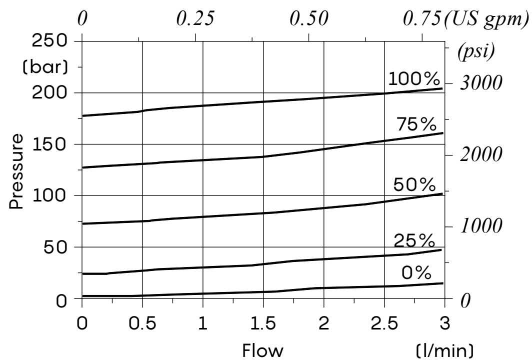
MC10X pressure vs. flow 1->2
for % of control current - Pressure range **1**



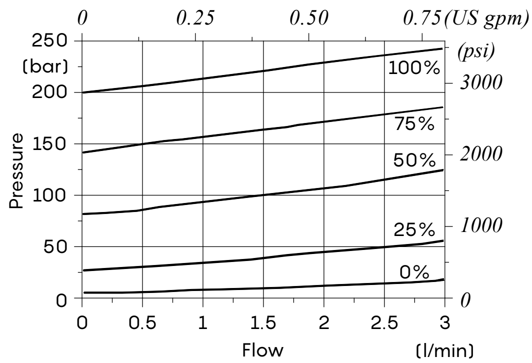
MC10X-HF pressure vs. flow 1->2
for % of control current



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**



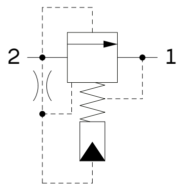
MD..M type
shockless pressure relief valves - 2 way

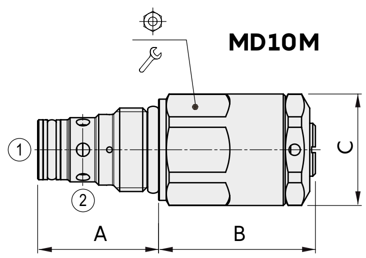
- Direct acting
- Poppet type
- Damp valve
- Different reaction time available
- From SAE10 to SAE12 cavities

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

		MD10M	MD12M
Nominal flow		60 l/min *(15.8 US gpm)*	120 l/min *(31.7 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Oil leakage	at 80% of max. pressure setting	5 cm³/min *(0.30 in³/min)*	5 cm³/min *(0.30 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	SAE 12/2
Weight		0.200 kg *(0.44 lb)*	0.355 kg *(0.78 lb)*

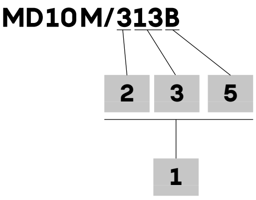
NOTE - For different conditions, please contact Walvoil Sales Dpt.

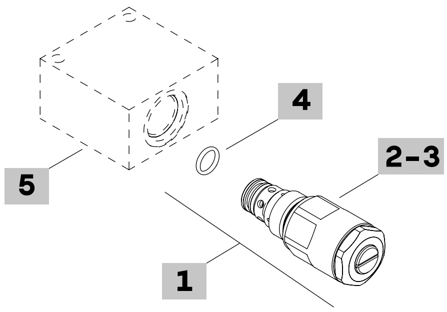




Valve type	A		B		C				
	mm	*in*	mm	*in*	mm	*in*	⌖	Nm	*lbft*
MD10M	32	*1.25*	41.5	*1.63*	Ø29.5	*ø1.16*	27	50	*37*
MD12M	46	*1.81*	46.5	*1.83*	Ø35	*ø1.38*	32	85	*62.7*

Ordering codes and description composition





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

4 Seals

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

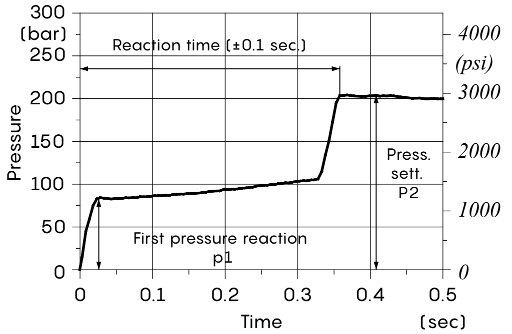
5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

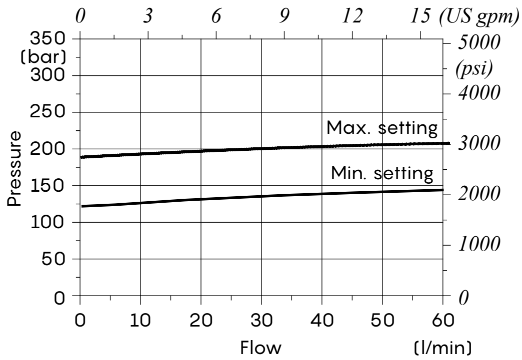
MD10M performance curve example with typical dimensions



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

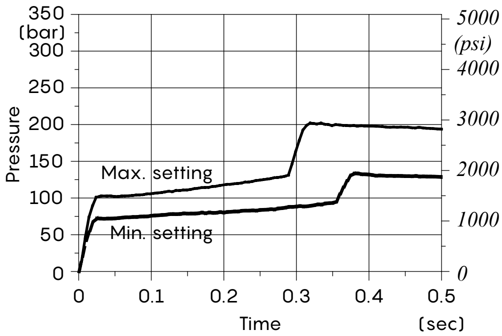
First pressure reaction: $p1 = \dfrac{p2}{Rp}$

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

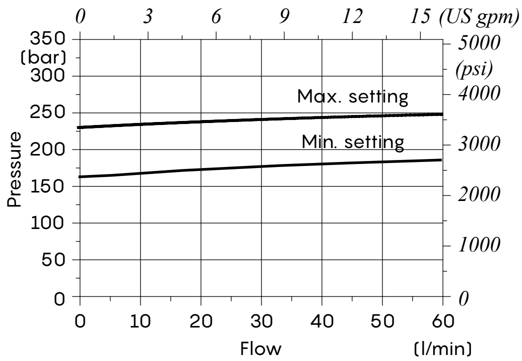


Pressure range 11
130÷200 bar
(1900÷2900 psi)
Pressure ratio 1.9
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

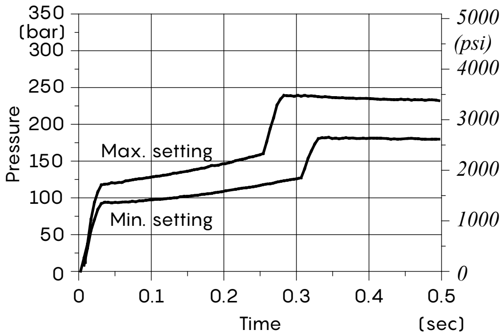


MD10M pressure vs. flow
at max. and min. setting

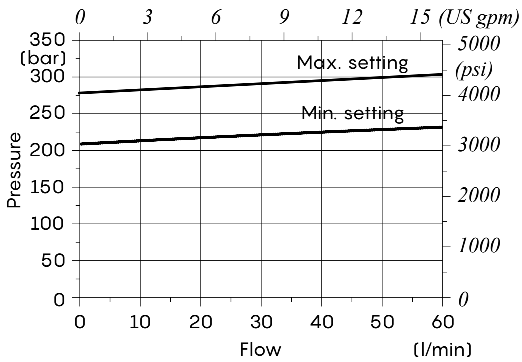


Pressure range 12
180÷240 bar
(2610÷3480 psi)
Pressure ratio 2.2
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

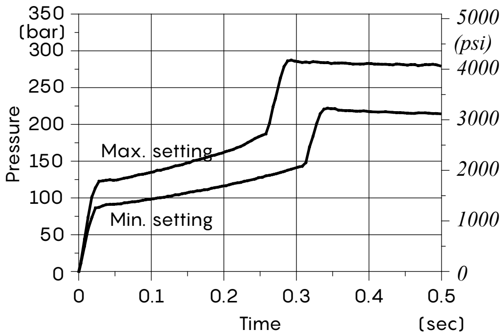


MD10M pressure vs. flow
at max. and min. setting



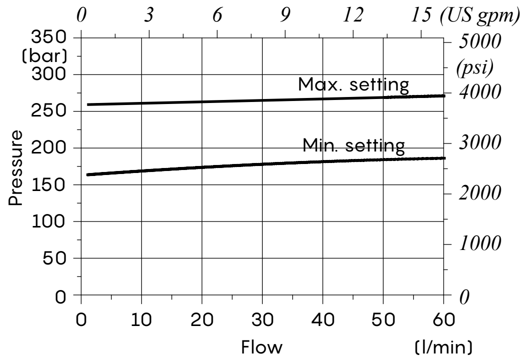
Pressure range 13
220÷290 bar
(3190÷4200 psi)
Setting 250 bar *(3625 psi)* at 25 l/min
(6.6 US gpm)
Pressure ratio 2.4
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting



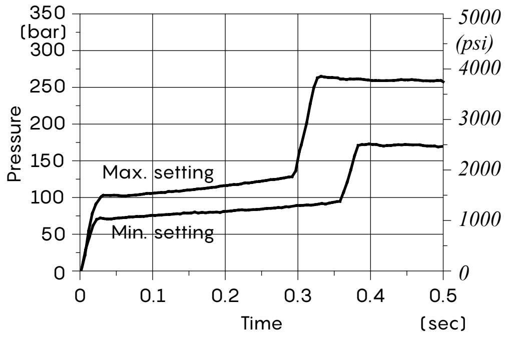
Rating diagrams

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

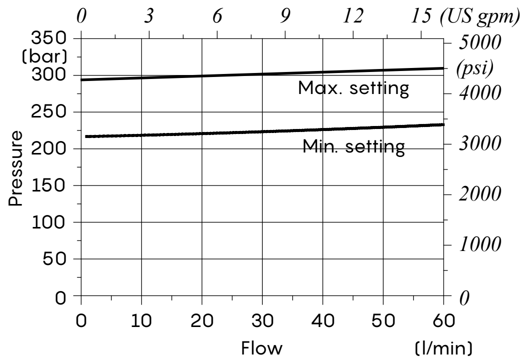


Pressure range 21
170÷270 bar
(2465÷3915 psi)
Pressure ratio 2.5
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting

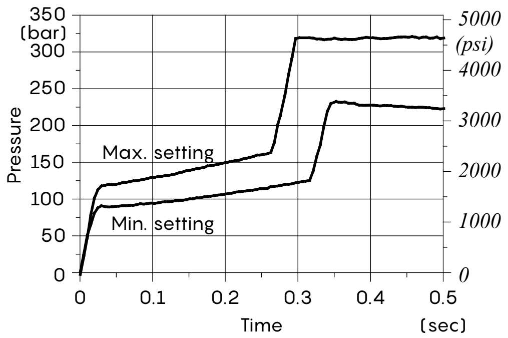


MD10M pressure vs. flow
at max. and min. setting



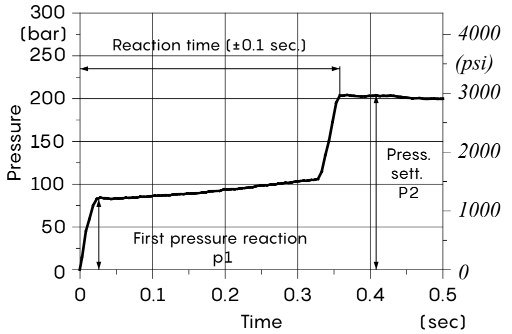
Pressure range 22
220÷290 bar
(3190÷4200)
Pressure ratio 2.8
Q=60 l/min
(15.8 US gpm)

MD10M performance curve
at max. and min. setting



Rating diagrams

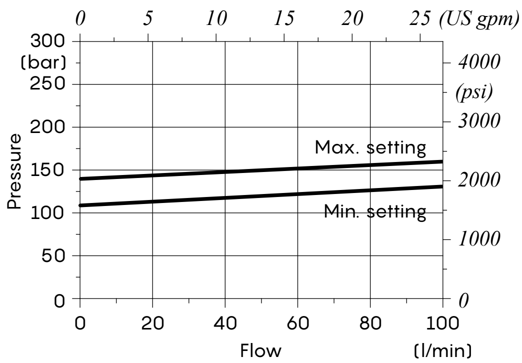
MD12M performance curve example with typical dimensions



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

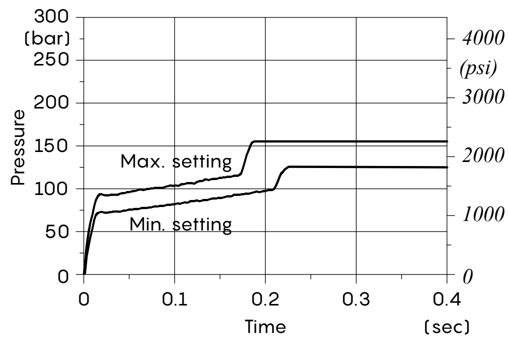
First pressure reaction: $p1 = \frac{p2}{Rp}$

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

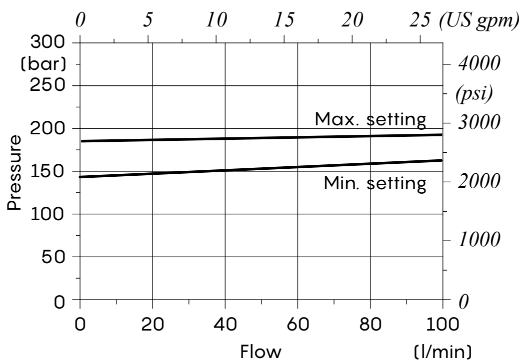


Pressure range 11
125÷155 bar
(1810÷2250 psi)
Pressure ratio 1.7
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

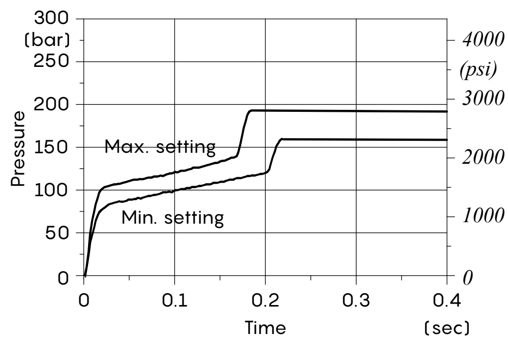


MD12M pressure vs. flow
at max. and min. setting

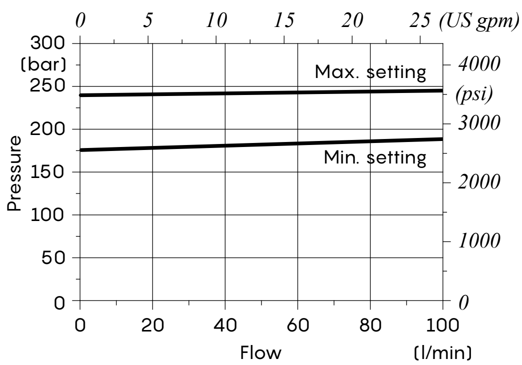


Pressure range 12
160÷190 bar
(2320÷2760 psi)
Pressure ratio 1.9
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

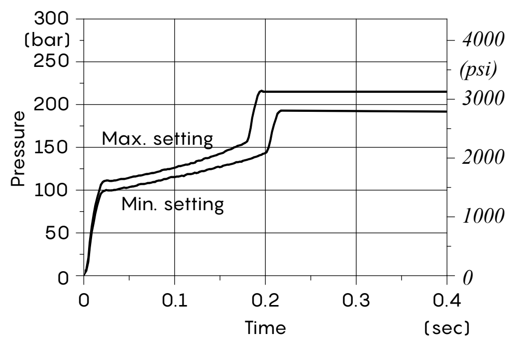


MD12M pressure vs. flow
at max. and min. setting



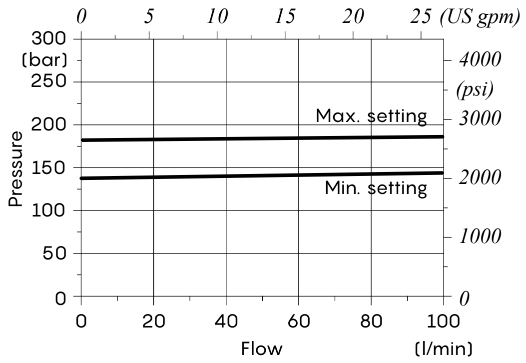
Pressure range 13
180÷220 bar
(2610÷3190 psi)
Setting 220 bar *(3190 psi)* at 60 l/min
(16 US gpm)
Pressure ratio 2.2
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting



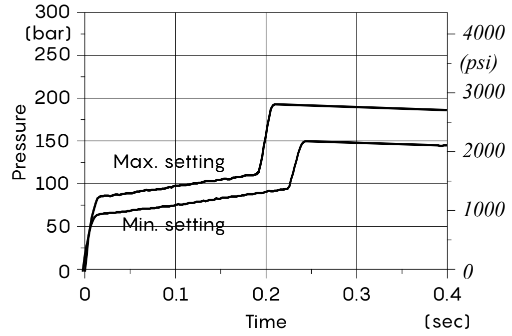
Rating diagrams

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

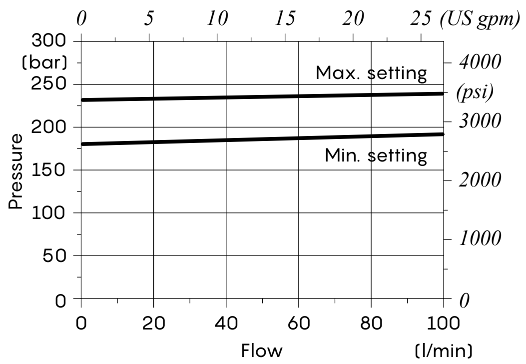


Pressure range
21
150÷185 bar
(1900÷2685 psi)
Pressure ratio 2
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

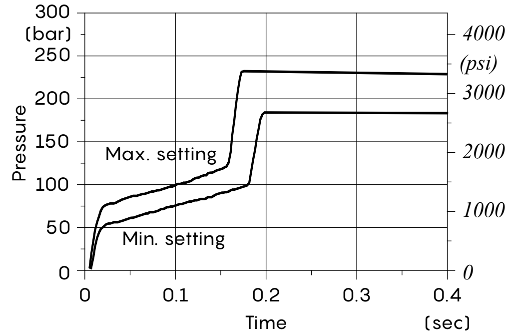


MD12M pressure vs. flow
at max. and min. setting

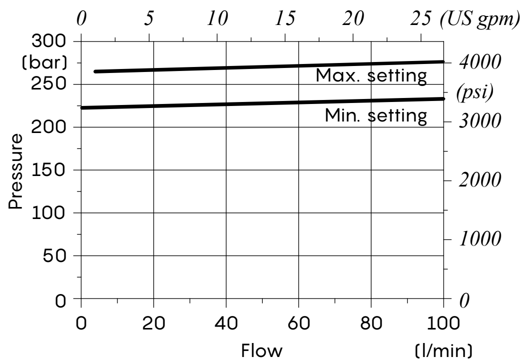


Pressure range
22
190÷235 bar
(2760÷3400)
Pressure ratio 2.35
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

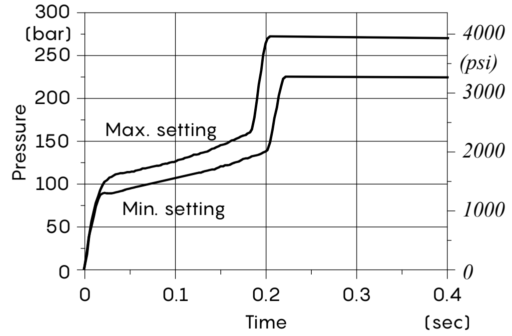


MD12M pressure vs. flow
at max. and min. setting



Pressure range
23
230÷275 bar
(3335÷3990)
Pressure ratio 2.55
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting



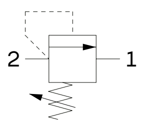
MG..A type
pressure relief valves - 2 way

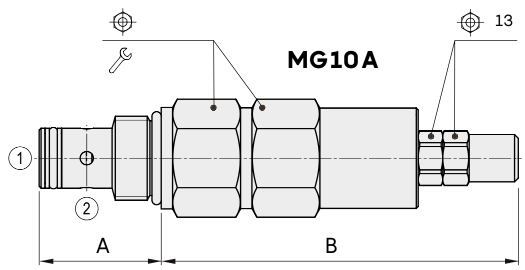
- Differential operated
- Poppet type
- Available with different types of adjustments
- The backpressure values on line 1 must be added to valve nominal setting
- Prepared for antitampering cap
- From SAE10 to SAE12 cavities

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	at 80% of max. pressure setting	2 cm³/min *(0.122 in³/min)*	
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	SAE 12/2
Weight		0.34 kg *(0.75 lb)*	0.87 kg *(1.92 lb)*

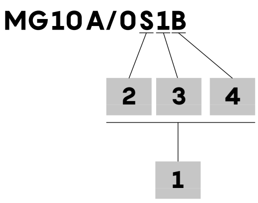
NOTE - For different conditions, please contact Walvoil Sales Dpt.

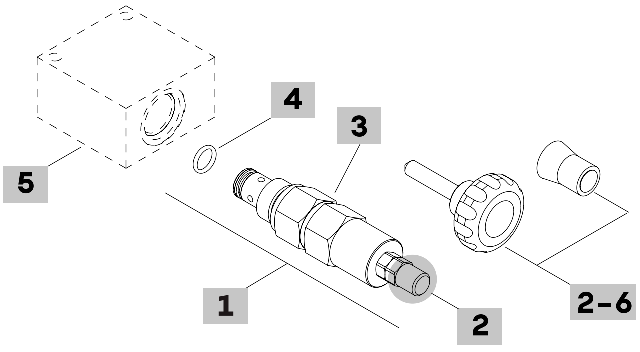




Valve type	A		B		⌖	🔧	
	mm	*in*	mm	*in*		Nm	*lbft*
MG10A/0S	32.3	*1.27*	94.5	*3.72*	27	50	*37*
MG12A/0S	46	*1.81*	126.5	*4.98*	36	80	*59*

Ordering codes and description composition





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. setting 150 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)+PTFE** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

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**

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

2 Adjustments

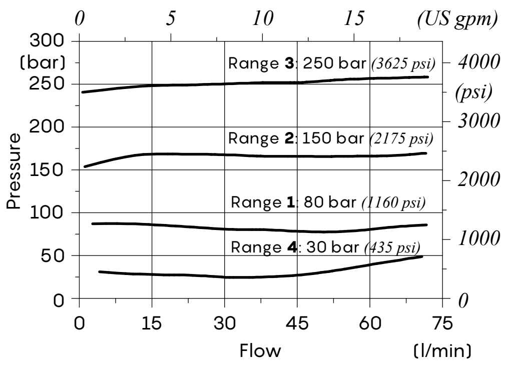
TYPE	DESCRIPTION
S	Screw with cap
V	With handwheel (part code: see point **6**)
X	Valve set with antitampering cap (part code: see point **6**)

6 Accessories

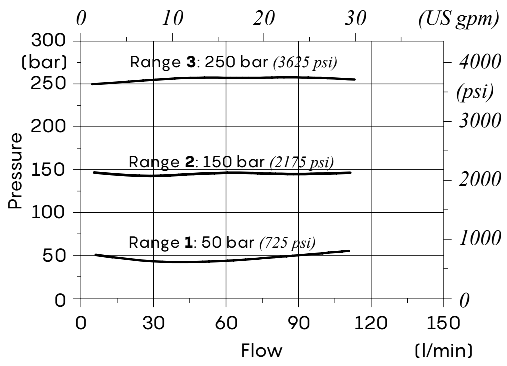
TYPE	CODE	DESCRIPTION
-	4VL2407100	Handwheel
-	4COP120420	Antitampering cap

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)*



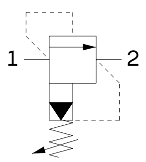
MP..M type
pressure relief valves - 2 way

- Pilot operated
- Spool type
- Mechanical control with screw adjustments
- Different springs available to vary pressure range
- The backpressure values on line 2 must be added to valve nominal setting

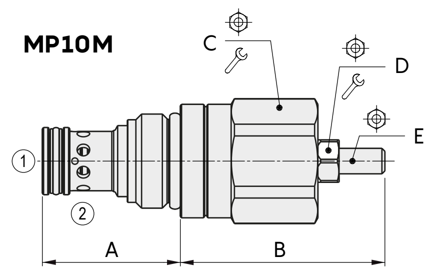
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		MP10M	MP12M	MP16M
Nominal flow		120 l/min *(31.7 US gpm)*	200 l/min *(52.8 US gpm)*	400 l/min *(105.67 US gpm)*
Max. pressure		Port 1= 350 bar *(5100 psi)* Port 2= 30 bar *(435 psi)*		350 bar *(5100 psi)*
Oil leakage	at 80% of max. pressure setting	25 cm³/min *(1.525 in³/min)*		100 cm³/min *(6.102 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		12-400 cSt
Max level of contamination		18/16/13 ISO4406		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 10/2	SAE 12/2	SAE 16/2
Weight		0.190 kg *(0.42 lb)*	0.300 kg *(0.66 lb)*	0.490 kg *(1.080 lb)*

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

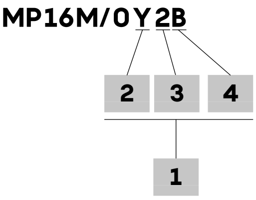


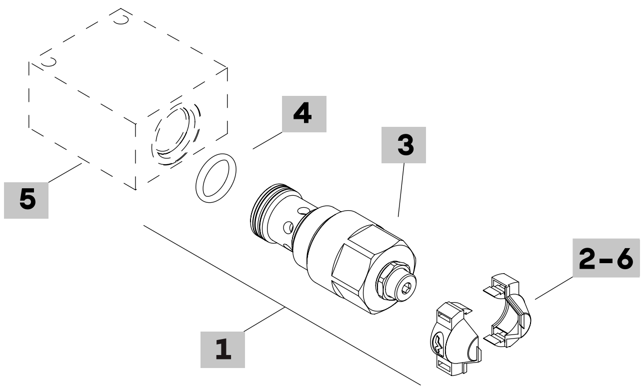
MP10M



Valve type	A		B		C			D			E
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
MP10M	32.6	*1.28*	48.3	*1.90*	27	50	*37*	10	6.6	*4.9*	3
MP12M	45	*1.77*	46.9	*1.85*	32	80	*59*	10	6.6	*4.9*	3
MP16M	45.2	*1.78*	49.8	*1.96*	36	100	*74*	19	20	*15*	5

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10M/0G1B	0MP10002091	Pressure range **1**
MP10M/0G2B	0MP100020A00	Pressure range **2**
MP10M/0G3B	0MP10002093	Pressure range **3**
SAE cavity 12/2		
MP12M/0G1B	0MP12002046	Pressure range **1**
MP12M/0G2B	0MP12002047	Pressure range **2**
MP12M/0G3B	0MP12002048	Pressure range **3**
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
G/Y	With screw
X	Valve set with antitampering cap (part code: see point **6**)

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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

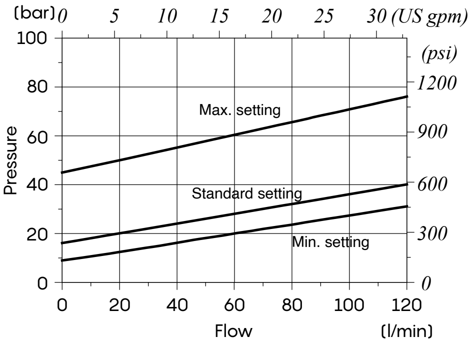
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

6 Accessories

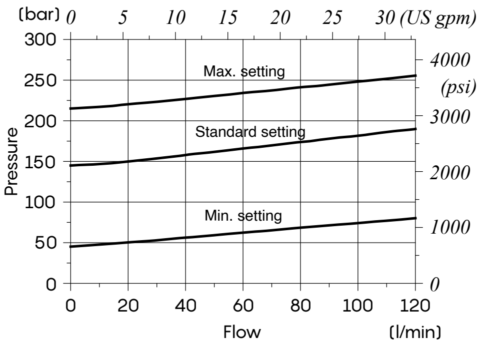
TYPE	CODE	DESCRIPTION
-	4COP116420	Cap (for MP10M / MP12M)
-	4COP126300	Antitampering cap (x2) (for MP16M)

Rating diagrams

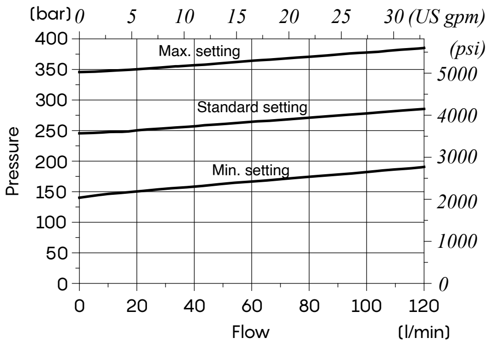
MP10M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



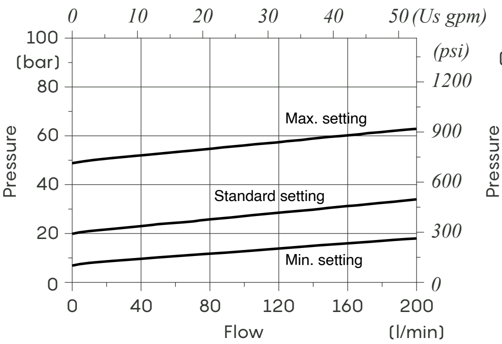
MP10M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



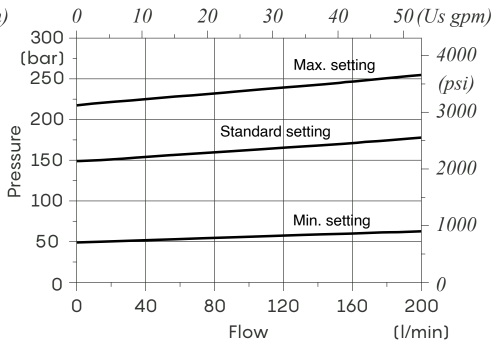
MP10M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



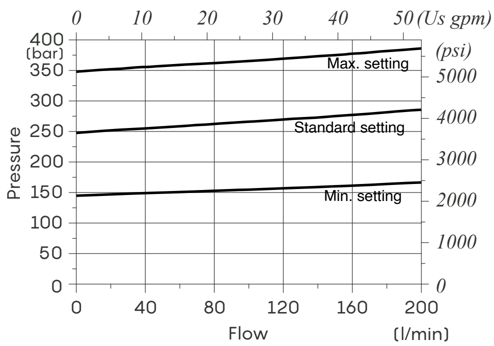
MP12M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



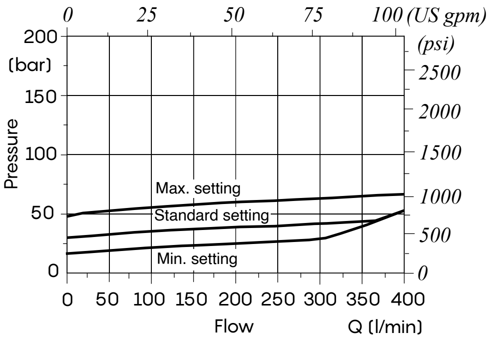
MP12M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



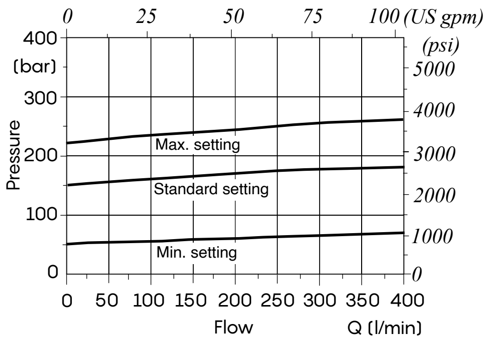
MP12M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



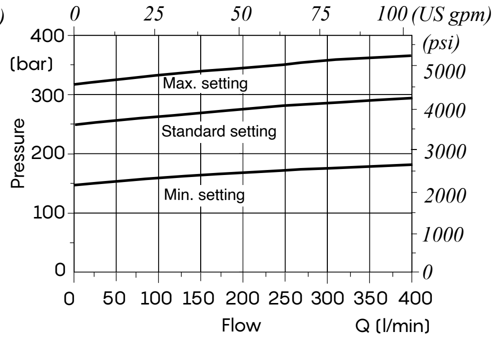
MP16M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*

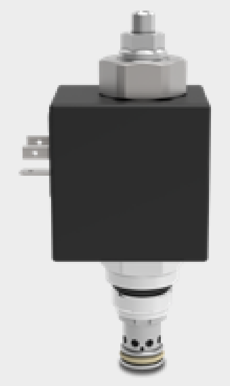


MP16M pressure vs. flow
Std. setting at 5 l/min *(1.32 US gpm)*



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





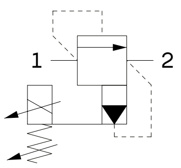
MP..T type
pressure relief valves - 2 way

- Solenoid proportional type, direct acting
- Spool type
- Decreasing pressure with increasing current (N.C)
- Applications for high flow rates (max. 200 l/min - *52.8 US gpm*)
- System of purging of air
- From SAE10 to SAE12 cavities

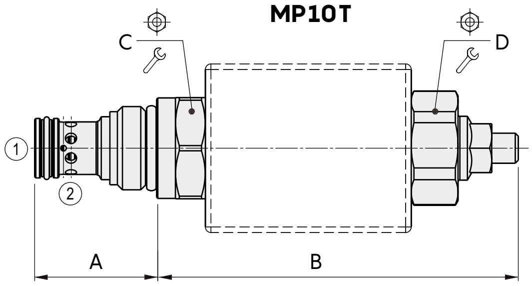
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		MP10T	MP12T
Nominal flow		120 l/min *(31.7 US gpm)*	200 l/min *(52.8 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Oil leakage	at 80% of max. pressure setting	<150 cm³/min *(9.15 in³/min)*	<200 cm³/min *(<12.2 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	SAE 12/2
Coil type*		BH or BQP19	
Nominal voltages		12VDC - 24VDC	
Power rating		33 W (BH) - 15 W (BQP19)	
Max. control current		12V->1.70 A - 24V->0.85 (BH) 12V->1.25 A - 24V->0.63 A (BQP19)	
Dither frequency		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 201.



MP10T



Valve type	A		B		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
MP10T	32.6	*1.28*	100	*3.94*	27	50	*37*	28	5	*3.7*
MP12T	45	*1.81*	115	*4.53*	32	85	*62.7*	28	5	*3.7*

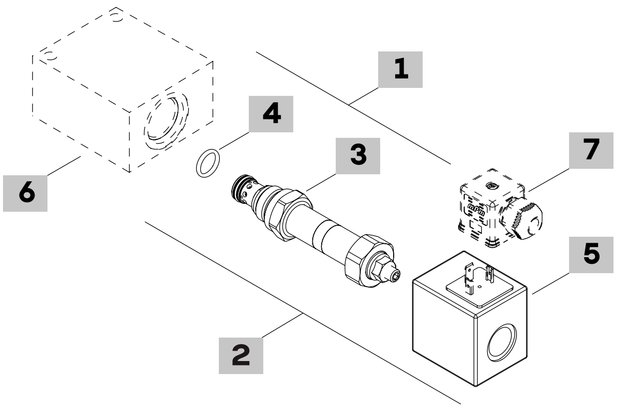
Ordering codes and description composition

MP10T/001B

1 – 3 4

MP10T/031B

2 – 5 3 4



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MP10T/001B	0MP10002051	Pressure range **1**
MP10T/002B	0MP10002052	Pressure range **2**
MP10T/003B	0MP10002053	Pressure range **3**
MP10T/004B	0MP100020A02	Pressure range **4**
SAE cavity 12/2		
MP12T/001B	0MP12002028	Pressure range **1**
MP12T/002B	0MP12002029	Pressure range **2**
MP12T/003B	0MP12002030	Pressure range **3**
MP12T/004B	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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

5 Coils

TYPE	CODE	DESCRIPTION
2) BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
3) BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil
4) BH 24VDC	4SLD002400A	24VDC-ISO4400 coil
5) BQP19 24VDC	4SL5000245A	24VDC-ISO4400 coil

For complete coils list see from page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

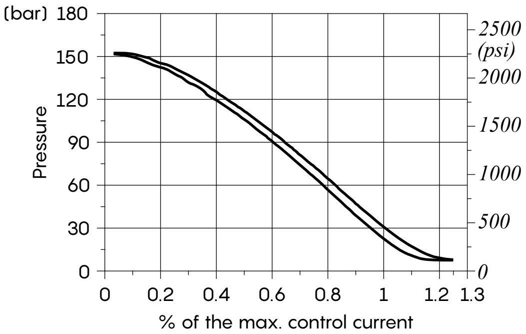
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

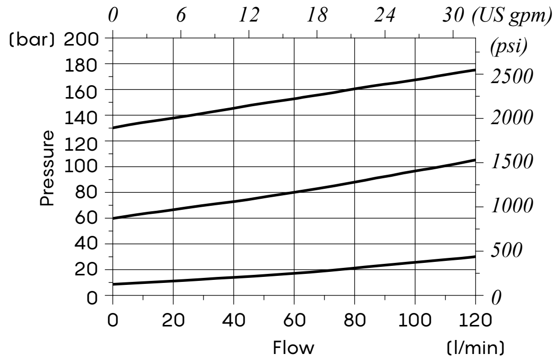
For complete connectors list see from page 201

Rating diagrams

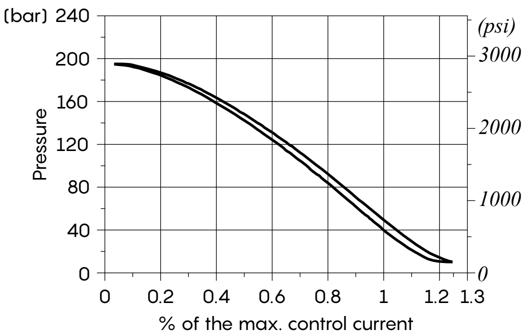
MP10T pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



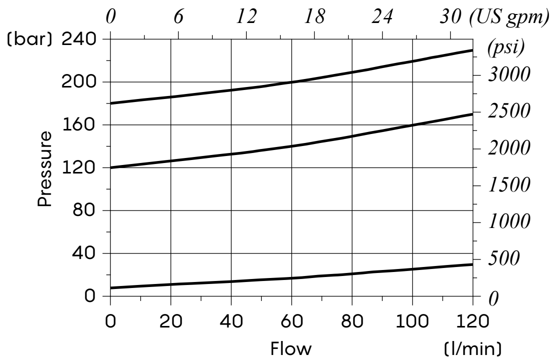
MP10T pressure vs. flow 1->2
for % of control current - Pressure range **1**



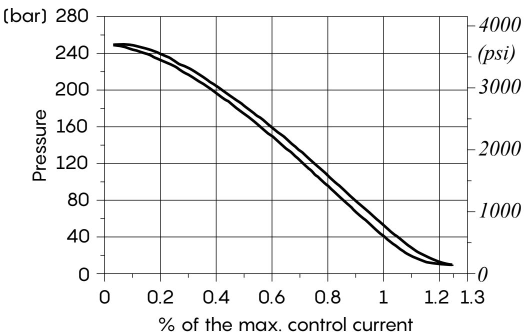
MP10T pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



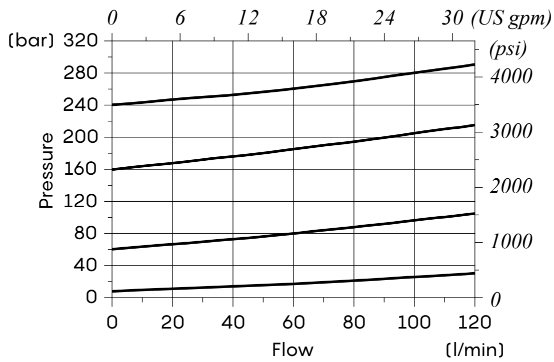
MP10T pressure vs. flow 1->2
for % of control current - Pressure range **2**



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

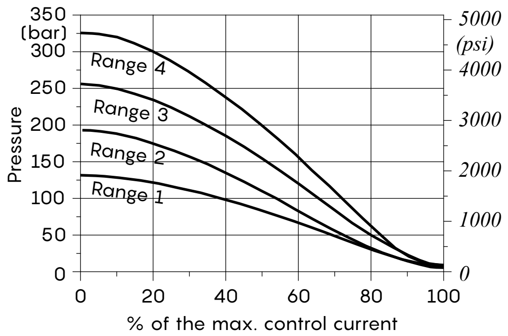


MP10T pressure vs. flow 1->2
for % of control current - Pressure range **3**

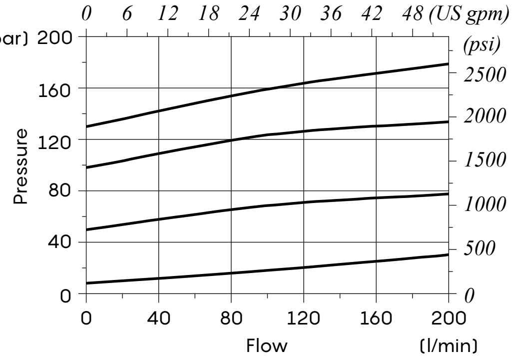


Rating diagrams

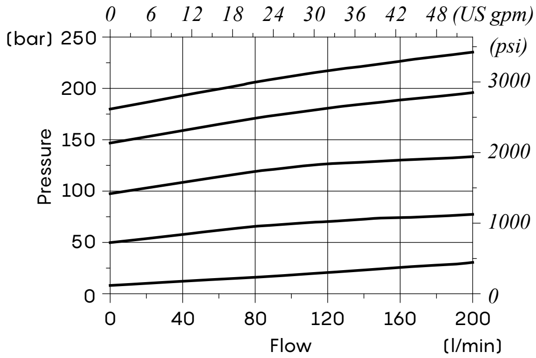
MP12T pressure setting vs. % max. control current
at 10 l/min *(2.6 US gpm)*



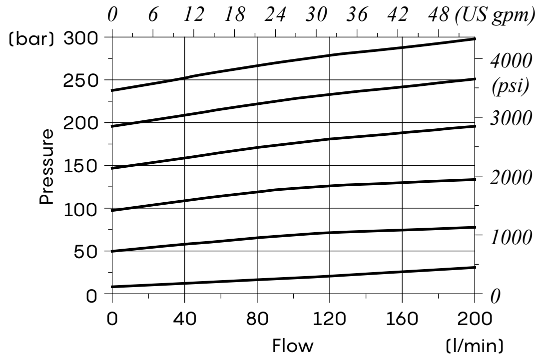
MP12T pressure vs. flow 1->2
for % of control current - Pressure range **1**



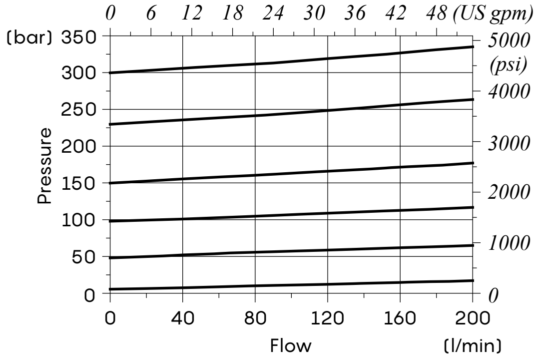
MP12T pressure vs. flow 1->2
for % of control current - Pressure range **2**

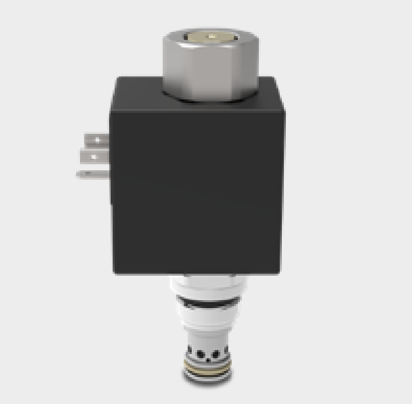


MP12T pressure vs. flow 1->2
for % of control current - Pressure range **3**



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





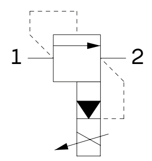
MP..X type
pressure relief valves - 2 way

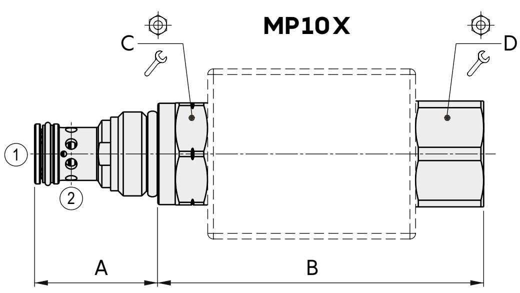
- Solenoid proportional type, pilot operated
- Spool type
- Increasing pressure with increasing current (N.O)
- Applications for high flow rates (max. 200 l/min - *52.8 US gpm*)
- System of purging of air
- From SAE10 to SAE12 cavities

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

		MP10X	MP12X
Max. flow		120 l/min *(31.7 US gpm)*	200 l/min *(52.8 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Oil leakage	at 80% of max. pressure setting	<150 cm³/min *(9.15 in³/min)*	<200 cm³/min *(12.2 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	SAE 12/2
Coil type*		BH or BQP19	
Nominal voltages		12VDC - 24VDC	
Power rating		33 W (BH) - 15 W (BQP19)	
Max. control current		12V->1.70 A - 24V->0.85 (BH) 12V->1.25 A - 24V->0.63 A (BQP19)	
Dither frequency		150-200 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 201.





Valve type	A		B N/O without emergency		B T screw		C			D		
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
MP10X	32.6	*1.28*	86	*3.38*	104.2	*4.10*	27	50	*37*	28	5	*3.7*
MP12X	45	*1.77*	103	*4.05*	118.3	*4.66*	32	85	*62.7*	28	5	*3.7*

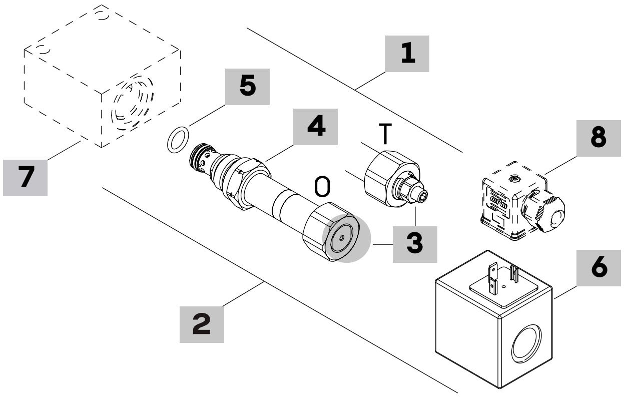
Ordering codes and description composition

MP10X/001B

1 - 3 4 5

MP10X/031B

2 - 3 6 4 5



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)+Polyurethane** o-ring seals, std configuration
V	**FPM (Viton)** o-ring seals, contact Sales Dept

6 Coils

TYPE	CODE	DESCRIPTION
2) BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
3) BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil
4) BH 24VDC	4SLD002400A	24VDC-ISO4400 coil
5) BQP19 24VDC	4SL5000245A	24VDC-ISO4400 coil

For complete coils list see from page 201

7 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

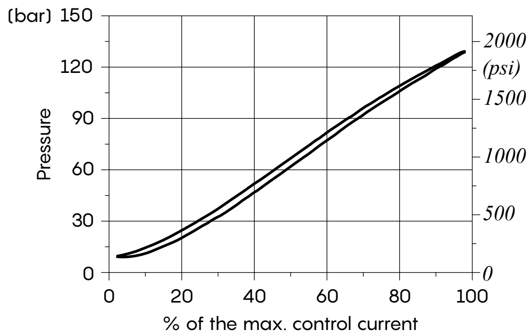
8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

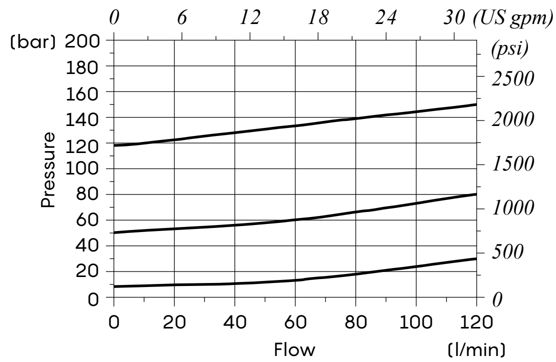
For complete connectors list see from page 201

Rating diagrams

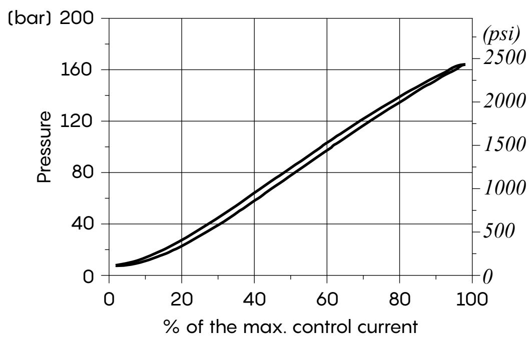
MP10X pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



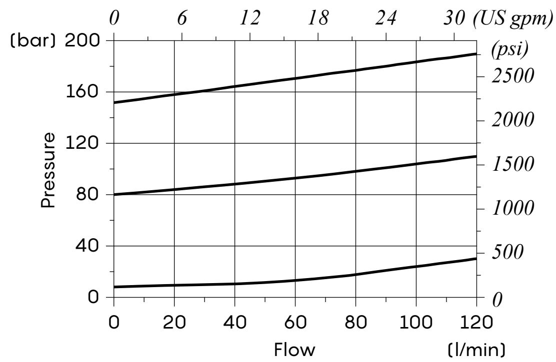
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **1**



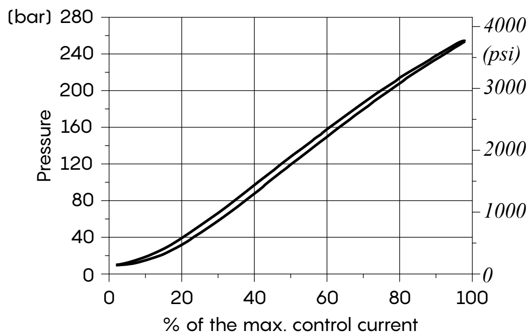
MP10X pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



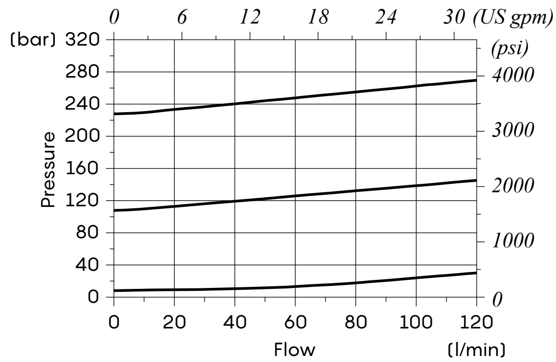
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **2**



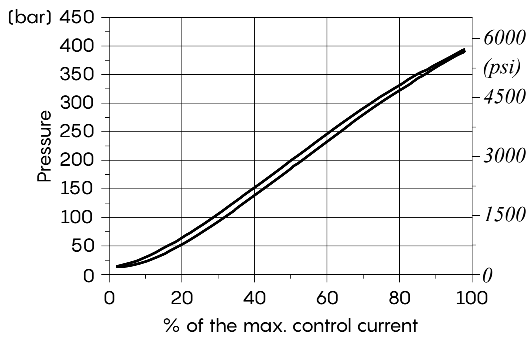
MP10X pressure setting vs. % max. control current
at 5 l/min *(1.32 US gpm)*



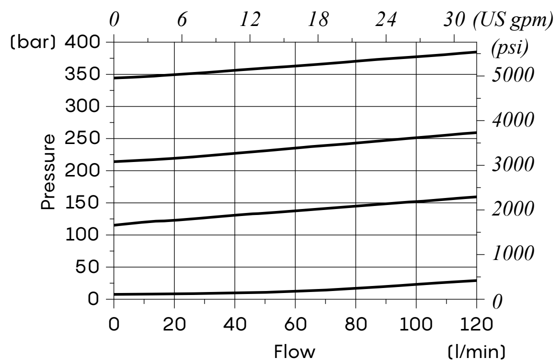
MP10X pressure vs. flow 1->2
for % of control current - Pressure range **3**



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

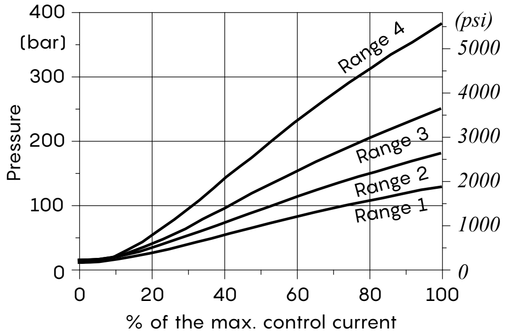


MP10X pressure vs. flow 1->2
for % of control current - Pressure range **4**

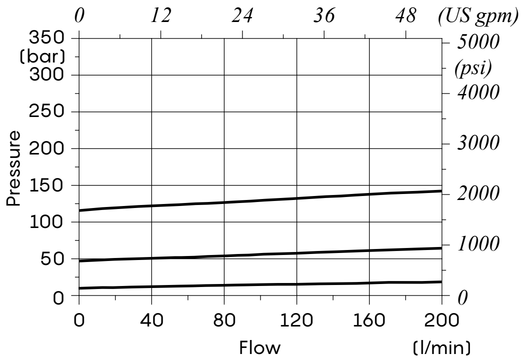


Rating diagrams

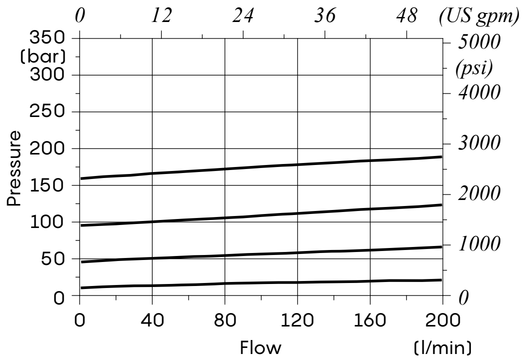
MP12X pressure setting vs. % max. control current
at 10 l/min *(2.64 US gpm)*



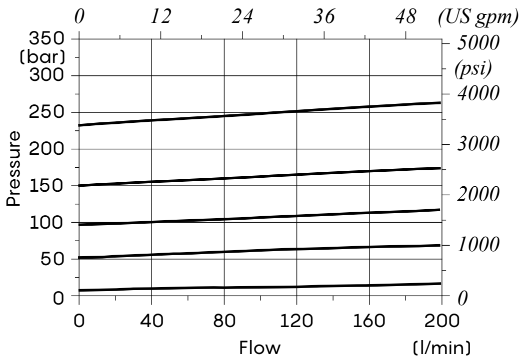
MP12X pressure vs. flow 1->2
for % of control current - Pressure range **1**



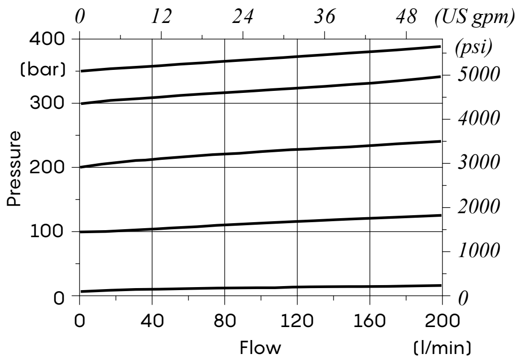
MP12X pressure setting vs. flow 1->2
for % of control current - Pressure range **2**



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**



RD08L type
pressure reducing valves - 3 way

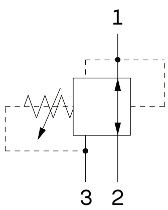
- Direct acting damped with relieving
- Spool type
- Mechanical control with screw adjustment
- Different springs available to vary pressure range (from 10 to 150 bar - *145 to 2175 psi*)
- Applications for high flow rates (max. 350 bar - *5100 psi*) and low flow rates (15 l/min - *4 US gpm*)
- Available with or without filter (mesh-type 90 microns)
- The backpressure values on line 3 must be added to valve nominal setting

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

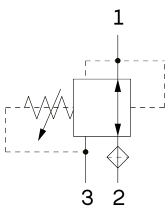
Nominal flow		15 l/min *(4 US gpm)*
Max. pressure		Port 2 = 350 bar *(5100 psi)* Port 3 = 30 bar *(435 psi)*
Oil leakage		-
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 08/3
Weight		0.250 kg *(0.55 lb)*

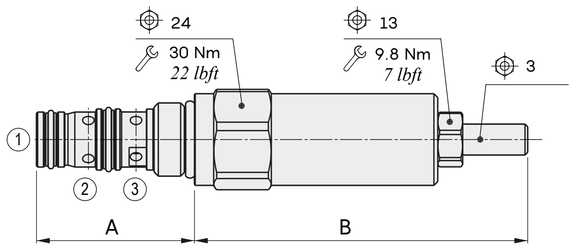
NOTE - For different conditions, please contact Walvoil Sales Dpt.

Configuration without filter



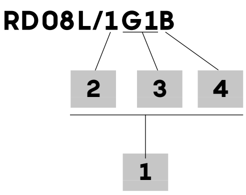
Configuration with filter

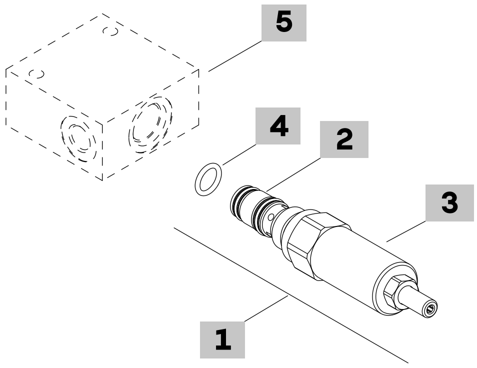




Valve type		A		B	
		mm	*in*	mm	*in*
RD08L/	G1B	41.1	*1.62*	86.7	*3.41*
	G2B	41.1	*1.62*	86.7	*3.41*
	G3B	41.1	*1.62*	81.6	*3.21*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
RD08L/0G1B	0RD08002038	Pressure range **G1**, without filter
RD08L/1G1B	0RD08002037	Pressure range **G1**, with filter
RD08L/0G2B	0RD08002033	Pressure range **G2**, without filter
RD08L/1G2B	0RD08002039	Pressure range **G2**, with filter
RD08L/0G3B	0RD08002034	Pressure range **G3**, without filter
RD08L/1G3B	0RD08002040	Pressure range **G3**, with filter

2 Filter

TYPE	DESCRIPTION
0	Without filter
1	Mesh filter: 90 micron

3 Pressure range

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

TYPE	DESCRIPTION
G1	Pressure range 10÷50 bar *(145÷725 psi)*; Std. setting 30 bar *(435 psi)*
G2	Pressure range 40÷100 bar *(580÷1450 psi)*; Std. setting 50 bar *(725 psi)*
G3	Pressure range 70÷150 bar *(1015÷2175 psi)*; Std. setting 100 bar *(1450 psi)*

4 Seals

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

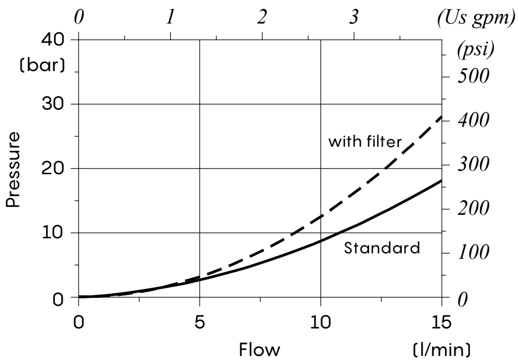
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread

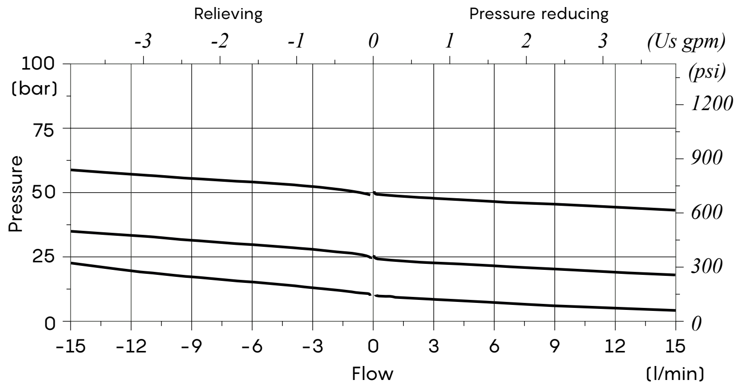
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

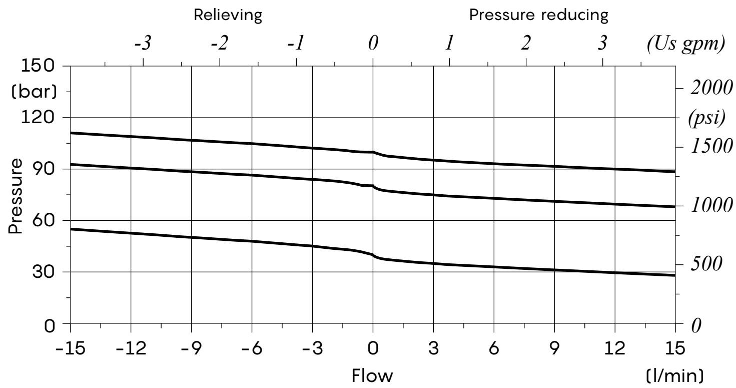
Pressure vs. flow 2->1



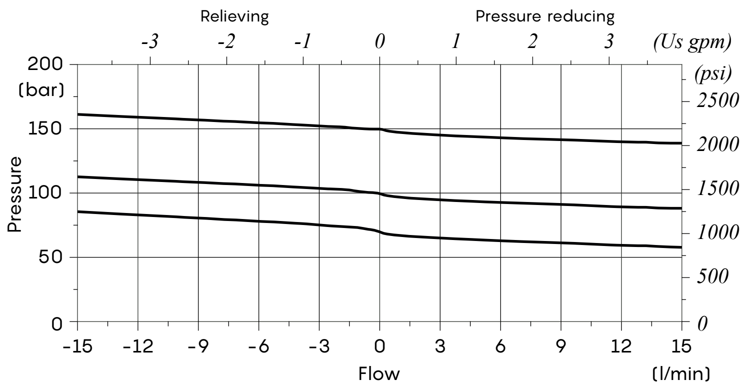
G1 pressure range
reducing/relieving pressure vs. flow



G2 pressure range
reducing/relieving pressure vs. flow



G3 pressure range
reducing/relieving pressure vs. flow



RD08LH type
pressure reducing valves - 3 way

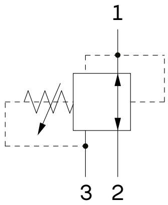
- Direct acting damped with relieving
- Spool type
- Mechanical control with screw adjustment
- Different springs available to vary pressure range (from 10 to 150 bar - *145 to 2175 psi*)
- Applications for high flow rates (max. 350 bar - *5100 psi*) and high flow rates (30 l/min - *7.9 US gpm*)
- Available with or without filter (mesh-type 90 microns)
- The backpressure values on line 3 must be added to valve nominal setting

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

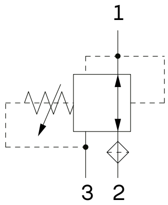
Nominal flow		30 l/min *(7.9 US gpm)*
Max. pressure		Port 2 = 350 bar *(5100 psi)* Port 3 = 30 bar *(435 psi)*
Oil leakage		-
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 08/3
Weight		0.250 kg *(0.55 lb)*

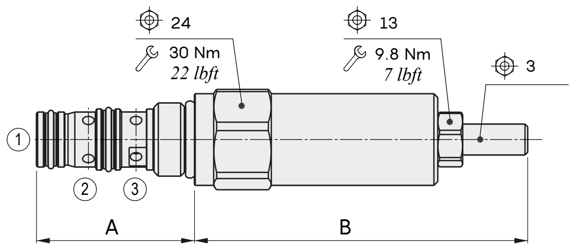
NOTE - For different conditions, please contact Walvoil Sales Dpt.

Configuration without filter



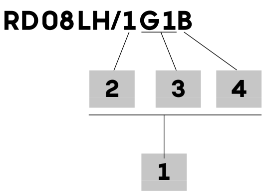
Configuration with filter

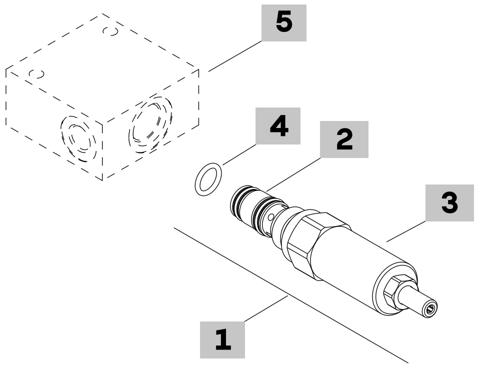




Valve type		A		B	
		mm	*in*	mm	*in*
	G1B	41.1	*1.62*	86.7	*3.41*
RD08LH/	G2B	41.1	*1.62*	86.7	*3.41*
	G3B	41.1	*1.62*	81.6	*3.21*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
RD08LH/0G1B	0RD08002053	Pressure range **G1**, without filter
RD08LH/1G1B	0RD08002054	Pressure range **G1**, with filter
RD08LH/0G2B	0RD08002055	Pressure range **G2**, without filter
RD08LH/1G2B	0RD08002056	Pressure range **G2**, with filter
RD08LH/0G3B	0RD08002057	Pressure range **G3**, without filter
RD08LH/1G3B	0RD08002058	Pressure range **G3**, with filter

2 Filter

TYPE	DESCRIPTION
0	Without filter
1	Mesh filter: 90 micron

3 Pressure range

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

TYPE	DESCRIPTION
G1	Pressure range 10÷50 bar *(145÷725 psi)*; Std. setting 30 bar *(435 psi)*
G2	Pressure range 40÷100 bar *(580÷1450 psi)*; Std. setting 50 bar *(725 psi)*
G3	Pressure range 70÷150 bar *(1015÷2175 psi)*; Std. setting 100 bar *(1450 psi)*

4 Seals

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

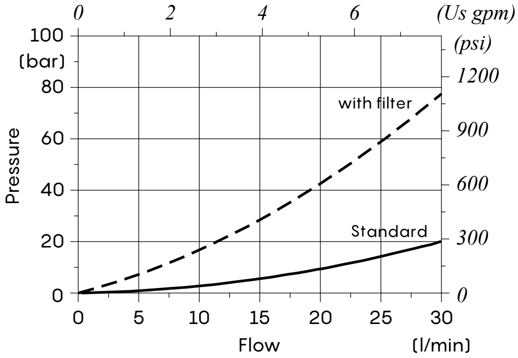
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread

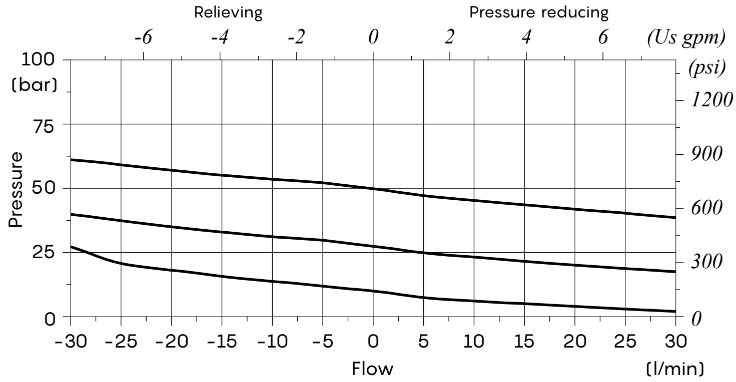
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

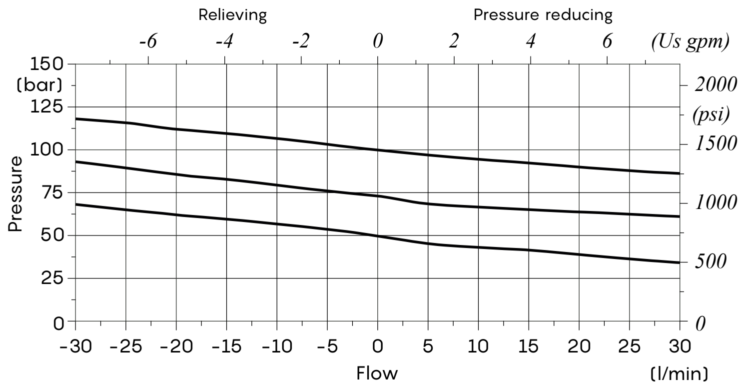
Pressure vs. flow 2->1



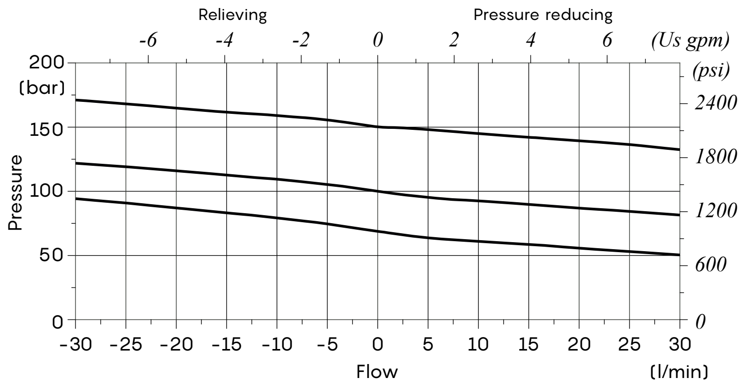
G1 pressure range
reducing/relieving pressure vs. flow



G2 pressure range
reducing/relieving pressure vs. flow



G3 pressure range
reducing/relieving pressure vs. flow



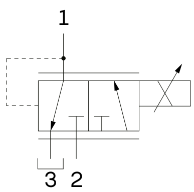
RD08TX type
pressure reducing valves - 3 way

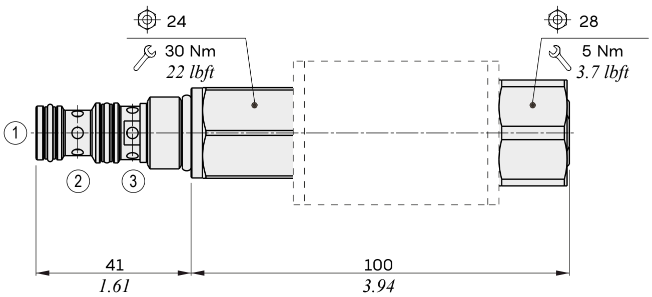
- Direct acting with relieving
- Spool type
- Control with proportional solenoid
- System of purging of air
- Applications for high flow rates (max. 210 bar - *3050 psi*)
- The backpressure values on line 3 must be added to valve nominal setting

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

Nominal flow		12 l/min *(3.17 US gpm)*
Max. pressure		Port 2 = 210 bar *(3050 psi)* Port 3 = 30 bar *(435 psi)*
Oil leakage		-
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		12-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 08/3
Coil type*		BH
Nominal voltages		12 VDC - 24 VDC
Max. control current		12 V -> 1.7 A - 24 V -> 0.85 A
Dither frequency		150-200 Hz
Weight		0.350 kg *(0.77 lb)*

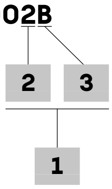
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

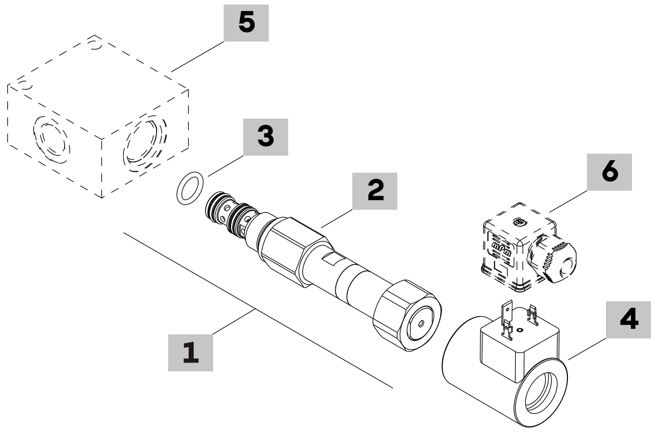




Ordering codes and description composition

RD08TX/002B





1 Cartridges

TYPE	CODE	DESCRIPTION
RD08TX/001B	0RD08002041	Pressure range **1**
RD08TX/002B	0RD08002042	Pressure range **2**

2 Pressure range

TYPE	DESCRIPTION
1	Pressure range 0÷45 bar *(0÷652.5 psi)*;
2	Pressure range 0÷35 bar *(0÷507.5 psi)*;

3 Seals

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

4 Coils

TYPE	CODE	DESCRIPTION
BH 24VDC	4SLD002400A	24VDC-ISO4400 coil

For complete coils list see from page 201

5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 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 210

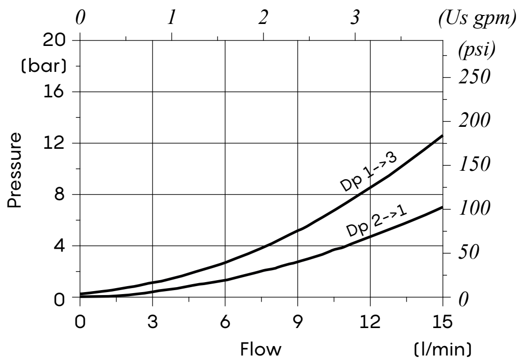
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

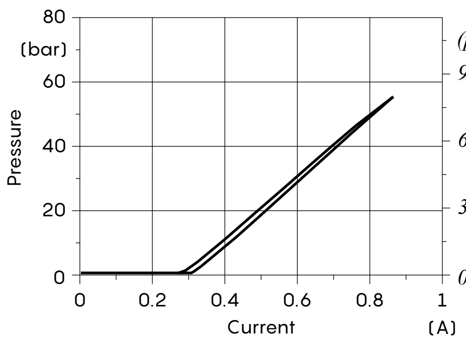
For complete connectors list see from page 201

Rating diagrams

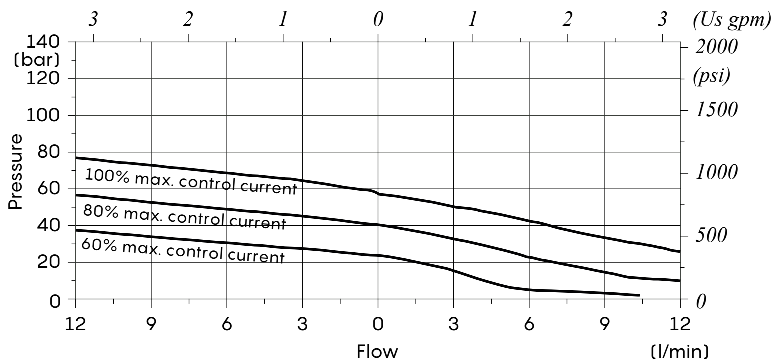
Pressure drop



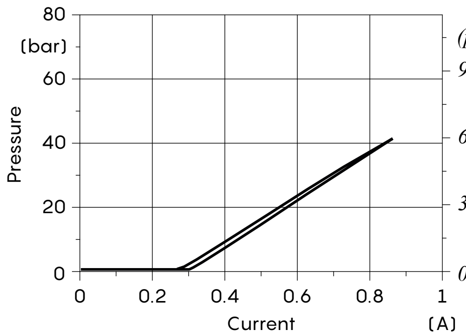
Pressure range 1
Reduced Pressure vs Control Current



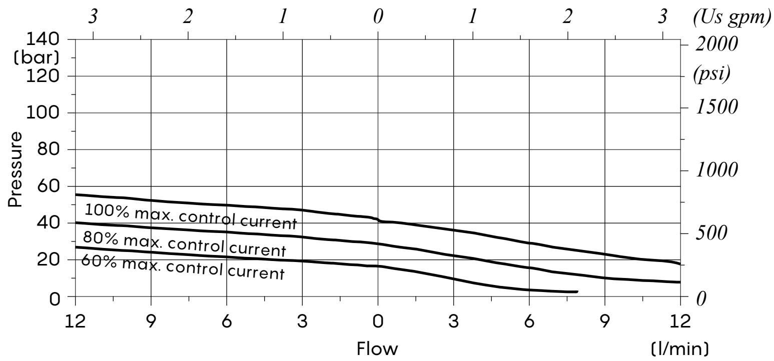
Pressure range 1
reducing/relieving pressure vs Flow rate



Pressure range 2
Reduced Pressure vs Control Current



Pressure range 2
reducing/relieving pressure vs Flow rate



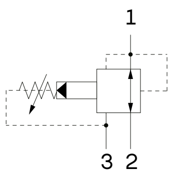
RP..M type
pressure reducing valves - 3 way

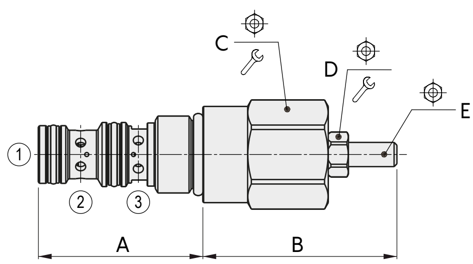
- Piloted acting with relieving
- Spool type
- Mechanical control with screw adjustments
- Available in fixed or adjustable version (range from 5 to 350 bar - *72.5 to 5100 psi*)
- Applications for high flow rates (max. 350 bar - *5100 psi*)
- The backpressure values on line 3 must be added to valve nominal setting
- From SAE08 to SAE10 cavities

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

		RP08M	RP10M
Nominal flow		50 l/min *(13 US gpm)*	70 l/min *(18.5 US gpm)*
Max. pressure		Port 2= 350 bar *(5100 psi)* Port 3= 30 bar *(435 psi)*	
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		12-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 08/3	SAE 10/3
Weight		0.160 kg *(0.35 lb)*	0.200 kg *(0.44 lb)*

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

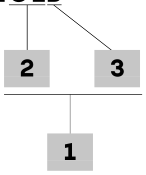


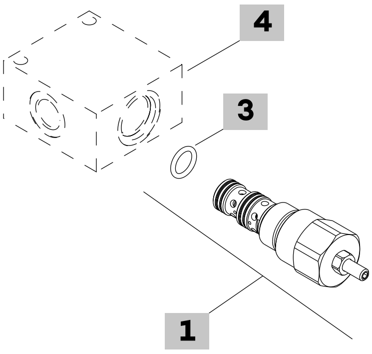


Valve type	A		B		C			D			E
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
RP08M	40.8	*1.61*	48.1	*1.89*	24	30	*22*	10	6.6	*4.9*	3
RP10M	47.2	*1.86*	46.3	*1.82*	27	50	*37*	10	6.6	*4.9*	3

Ordering codes and description composition

RP10M/1G1B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
RP08M/1G1B	0RP08002019	Pressure range **1**
RP08M/1G2B	0RP08002020	Pressure range **2**
RP08M/1G3B	0RP08002021	Pressure range **3**
SAE cavity 10/3		
RP10M/1G1B	0RP10002038	Pressure range **1**
RP10M/1G2B	0RP10002039	Pressure range **2**
RP10M/1G3B	0RP10002034	Pressure range **3**

2 Pressure range

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

TYPE	DESCRIPTION
G1	Pressure range 5÷80 bar *(72.5÷1160 psi)*; Std. setting 50 bar *(725 psi)*
G2	Pressure range 20÷200 bar *(290÷2900 psi)*; Std. setting 150 bar *(2175 psi)*
G3	Pressure range 90÷350 bar *(1305÷5075 psi)*; Std. setting 250 bar *(3625 psi)*

3 Seals

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

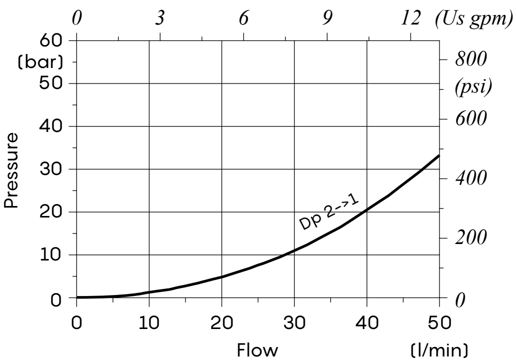
4 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

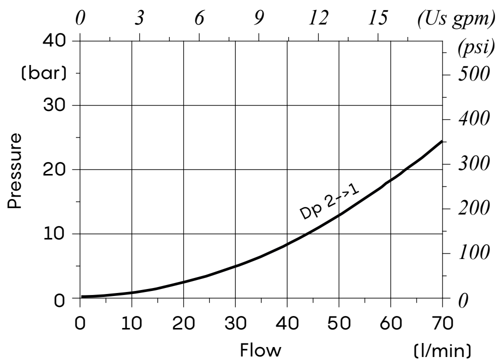
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

RP08M pressure drop



RP10M pressure drop



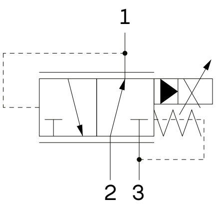
RP..X type
pressure reducing valves - 3 way

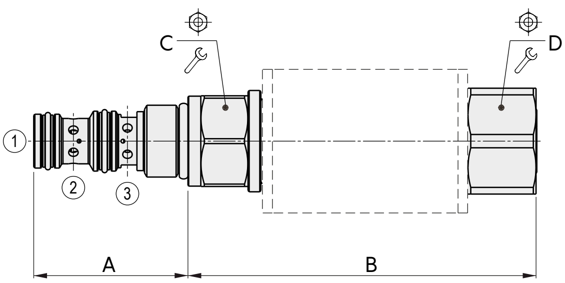
- Piloted acting with relieving
- Spool type
- Control with proportional solenoid
- External zinc-plated and corrosion-proof components
- Excellent stability throughout the range
- Suitable for applications where high flow rates and low pressure drop are required
- From SAE08 to SAE12 cavities

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

		RP08X	RP10X	RP12X
Nominal flow		50 l/min *(13 US gpm)*	70 l/min *(18.5 US gpm)*	70 l/min *(18.5 US gpm)*
Max. pressure		Port 2= 350 bar *(5100 psi)* Port 3= 30 bar *(435 psi)*		Port 2= 350 bar *(5100 psi)* Port 3= 50 bar *(725 psi)*
Oil leakage		-		
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		12-200 cSt		
Max level of contamination		18/16/13 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 08/3	SAE 10/3	SAE 12/2
Coil type*		BQP19/BH		
Nominal voltages		12 VDC - 24 VDC		
Power rating		15 W (BQP19) - 33 W (BH)		
Max. control current		12V->1.25 A - 24V->0.63 A (BQP19) 12V->1.7 A- 24V->0.85 A (BH)		
Dither frequency		150-200 Hz		
Hysteresis		-	-	-
Weight		0.44 kg *(0.97 lb)*	0.49 kg *(1.08 lb)*	0.61 kg *(1.34 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.



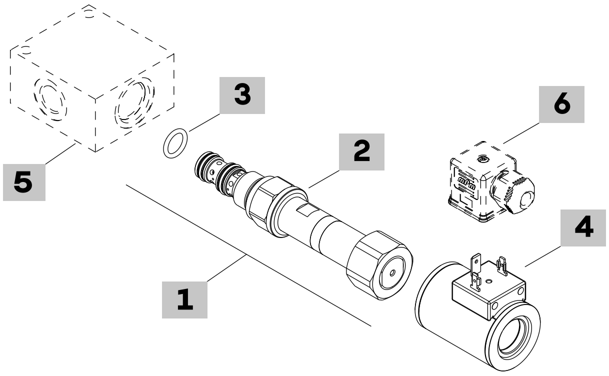


Valve type	A		B		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
RP08X	40.8	*1.61*	92.3	*3.63*	24	30	*22*	28	5	*3.7*
RP10X	47.2	*1.86*	90.5	*3.56*	27	50	*37*	28	5	*3.7*
RP12X	73.5	*2.89*	93	*3.66*	32	80	*59*	28	5	*3.7*

Ordering codes and description composition

RP08X/001B

1 | 2 | 3



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
RP08X/001B	0RP080002016	Pressure range **1**
RP08X/002B	0RP080002015	Pressure range **2**
RP08X/003B	0RP080002017	Pressure range **3**
RP08X/004B	0RP080002018	Pressure range **4**
SAE cavity 10/3		
RP10X/001B	0RP10002035	Pressure range **1**
RP10X/002B	0RP10002033	Pressure range **2**
RP10X/003B	0RP10002036	Pressure range **3**
RP10X/004B	0RP10002037	Pressure range **4**
SAE cavity 12/3		
RP12X/001B	0RP12002019	Pressure range **1**
RP12X/002B	0RP12002020	Pressure range **2**
RP12X/003B	0RP12002021	Pressure range **3**
RP12X/004B	0RP12002022	Pressure range **4**

2 Pressure range

TYPE	DESCRIPTION
1	Pressure range 10÷50 bar *(145÷725 psi)*;
2	Pressure range 10÷170 bar *(145÷2465 psi)*;
3	Pressure range 90÷350 bar *(1300÷5075 psi)*;
4	Pressure range 10÷90 bar *(145÷1300 psi)*;

3 Seals

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

4 Coils

TYPE	CODE	DESCRIPTION
BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil

For complete coils list see from page 201

5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	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 210

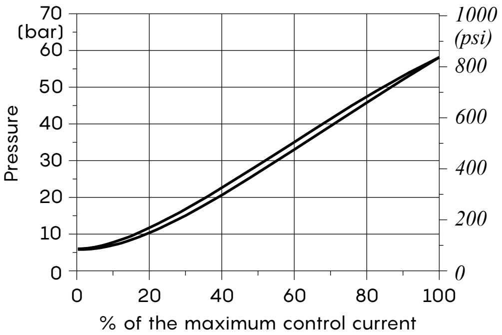
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

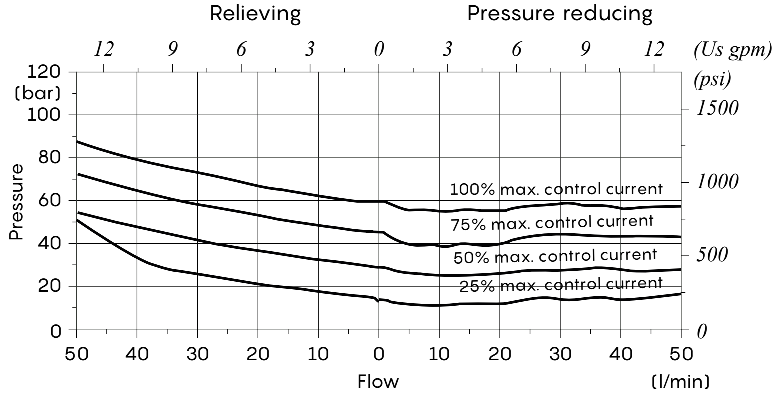
For complete connectors list see from page 201

Rating diagrams

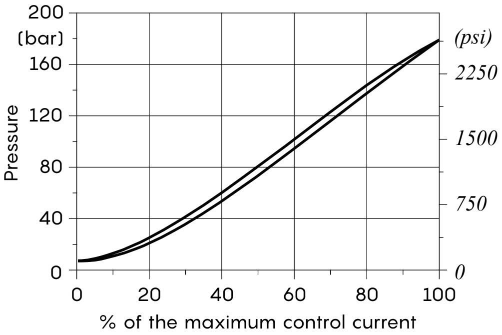
Pressure reducing vs. control current
RP08X/001B



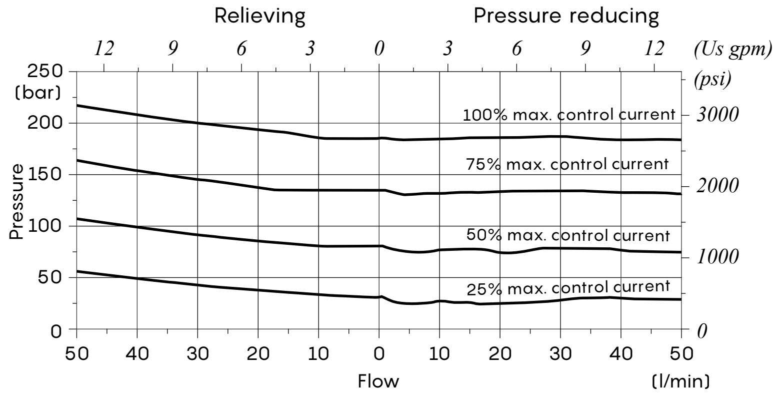
Reducing/relieving pressure vs. flow
RP08X/001B



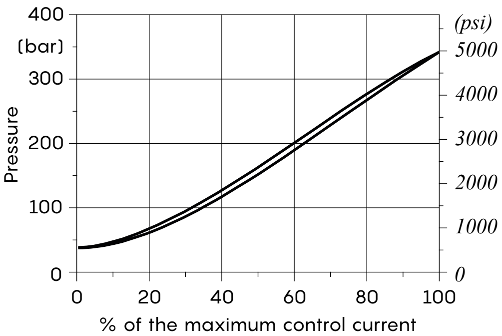
Pressure reducing vs. control current
RP08X/002B



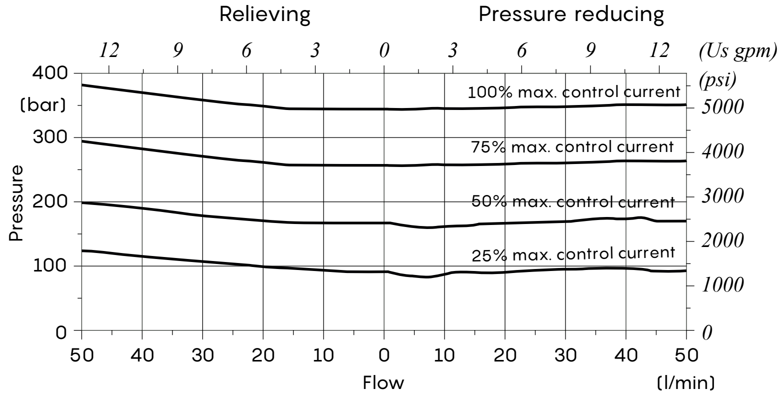
Reducing/relieving pressure vs. flow
RP08X/002B



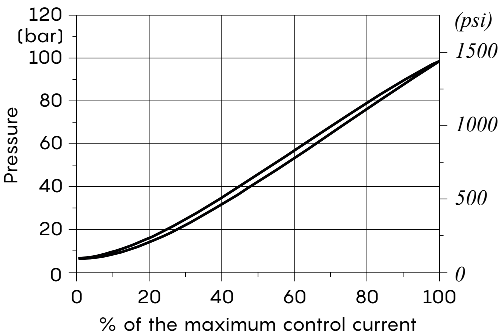
Pressure reducing vs. control current
RP08X/003B



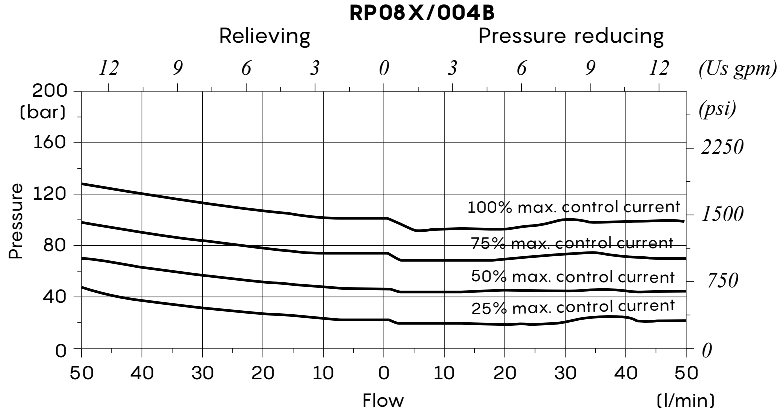
Reducing/relieving pressure vs. flow
RP08X/003B



Pressure reducing vs. control current
RP08X/004B

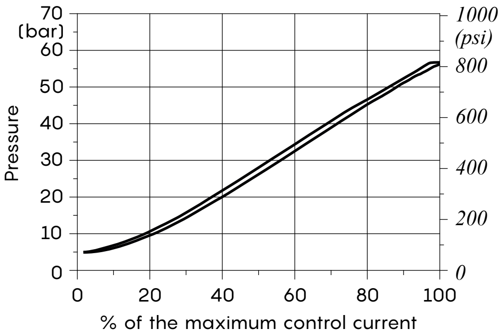


Reducing/relieving pressure vs. flow
RP08X/004B

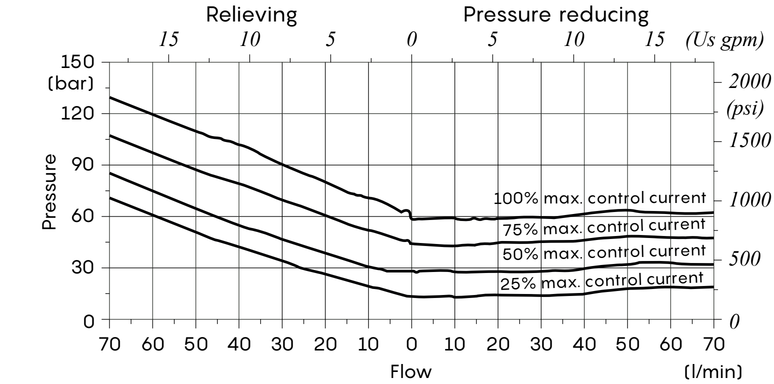


Rating diagrams

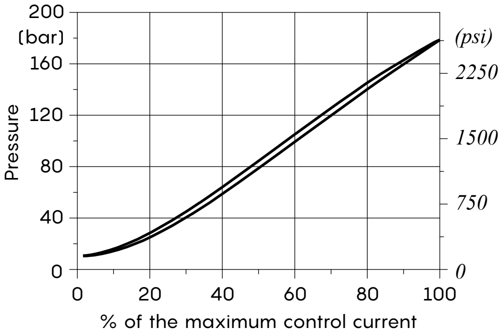
Pressure reducing vs. control current
RP10X/001B



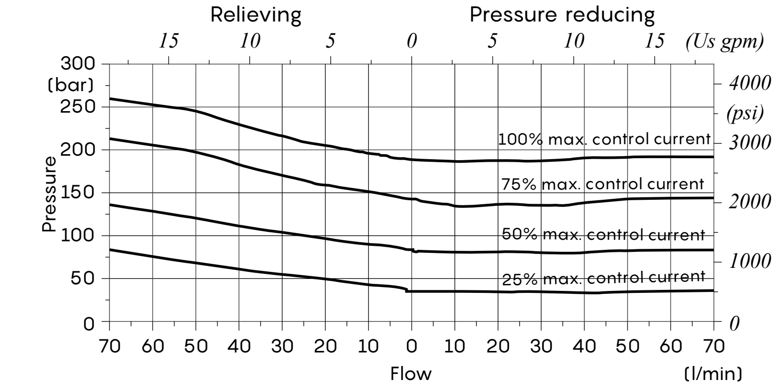
Reducing/relieving pressure vs. flow
RP10X/001B



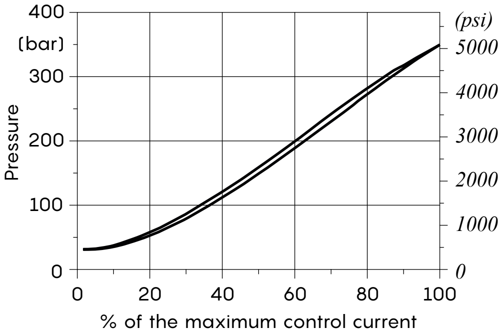
Pressure reducing vs. control current
RP10X/002B



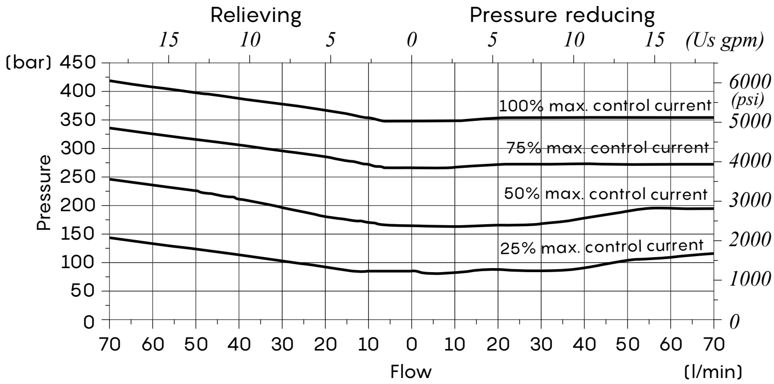
Reducing/relieving pressure vs. flow
RP10X/002B



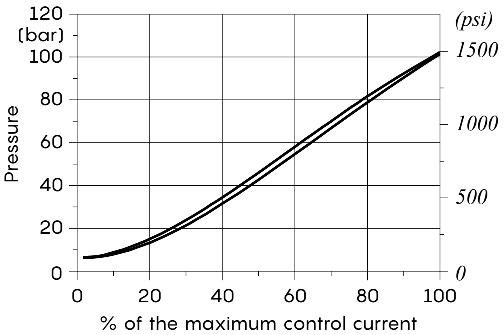
Pressure reducing vs. control current
RP10X/003B



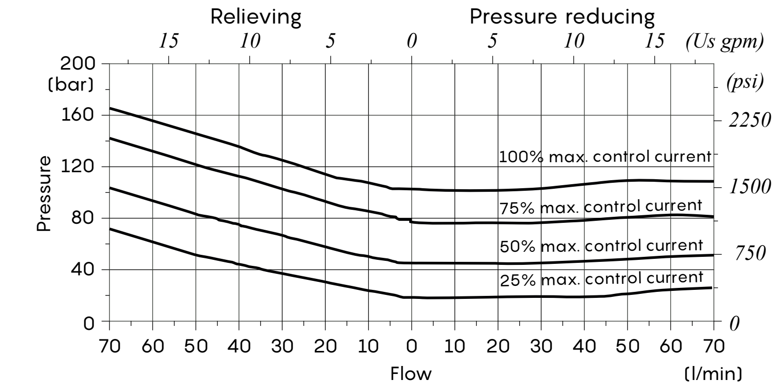
Reducing/relieving pressure vs. flow
RP10X/003B



Pressure reducing vs. control current
RP10X/004B

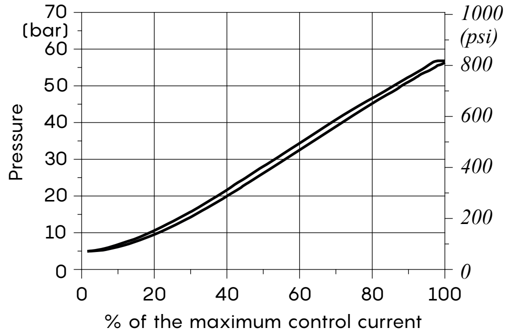


Reducing/relieving pressure vs. flow
RP10X/004B

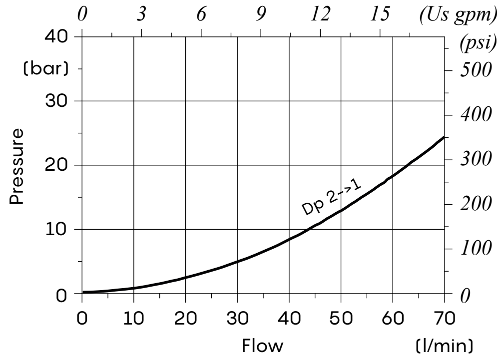


Rating diagrams

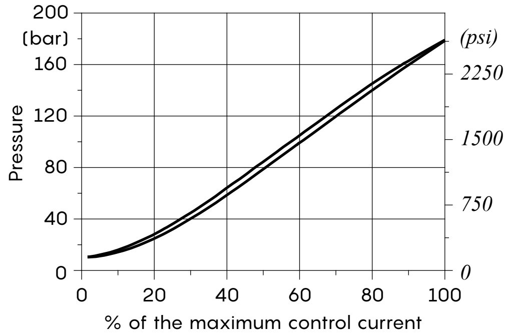
Pressure reducing vs. control current
RP12X/001B



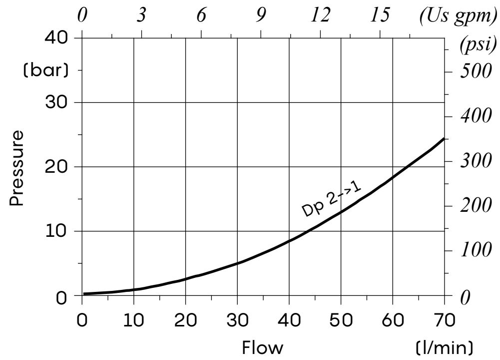
Reducing/relieving pressure vs. flow
RP12X/001B



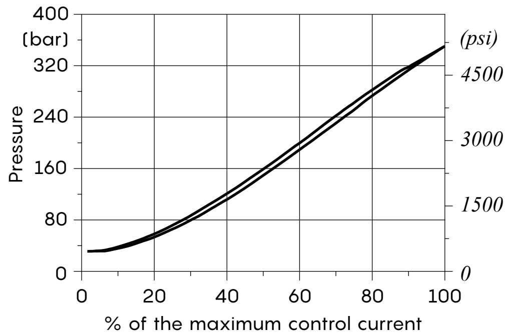
Pressure reducing vs. control current
RP12X/002B



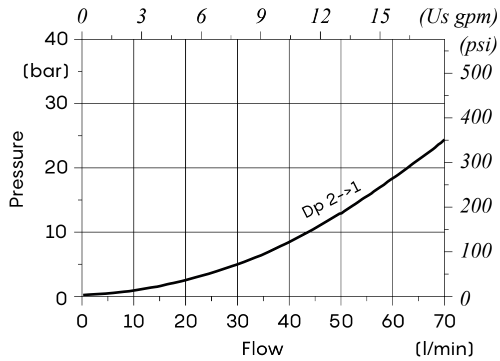
Reducing/relieving pressure vs. flow
RP12X/002B



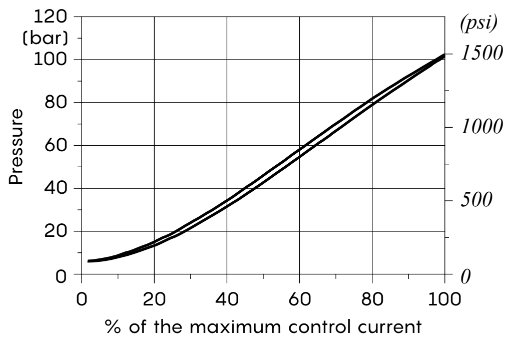
Pressure reducing vs. control current
RP12X/003B



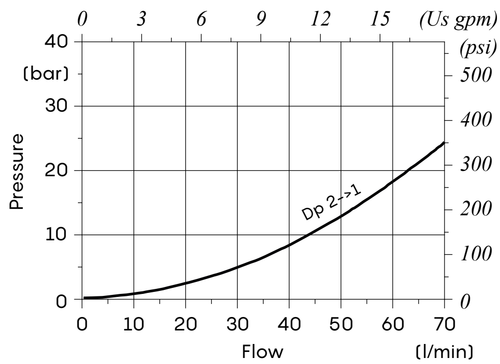
Reducing/relieving pressure vs. flow
RP12X/003B



Pressure reducing vs. control current
RP12X/004B



Reducing/relieving pressure vs. flow
RP12X/004B



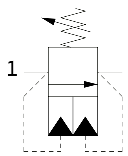
SW..A type
sequence valves - 2 way

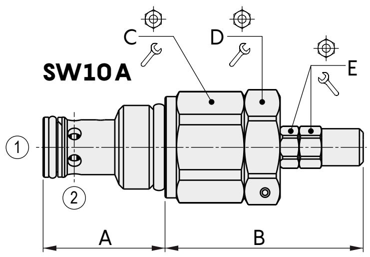
- Piloted acting
- Spool type
- Valves with kickdown operation
- Mechanical control with screw adjustment
- Different springs available to vary pressure range
- From SAE10 to SAE16 cavities

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	at 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 or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		20/18/14 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 10/2	SAE 12/2	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.

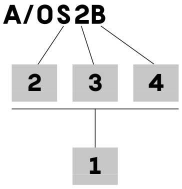


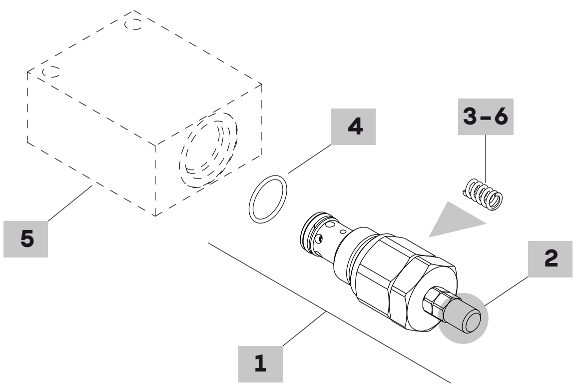


Valve type	A		B		C			D			E		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*		Nm	*lbft*
SW10A	32.3	*1.27*	52.5	*2.07*	27	50	*37*	27	50	*37*	10	6.6	*4.87*
SW12D	46	*1.81*	54.5	*2.15*	32	80	*59*	27	50	*37*	10	6.6	*4.87*
SW16A	45.2	*1.78*	58	*2.28*	41	100	*74*	27	50	*37*	10	6.6	*4.87*

Ordering codes and description composition

SW10A/0S2B





1 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**

2 Adjustments

TYPE	DESCRIPTION
S	Screw

3 Pressure range

Standard setting is referred to 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) for screw turrn
2	Pressure range 50÷220 bar *(725÷3200 psi)*; Std. setting 150 bar *(2200 psi)*, pressure increase by steps of 36 bar (520 psi) for screw turrn
3	Pressure range 150÷350 bar *(2200÷5100 psi)*; Std. setting 250 bar *(3600 psi)*, pressure increase by steps of 90 bar (1300 psi) for screw turrn

4 Seals

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

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

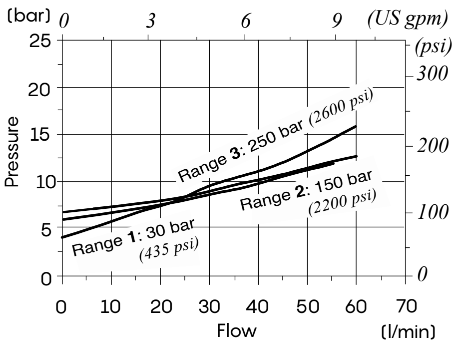
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

6 Springs

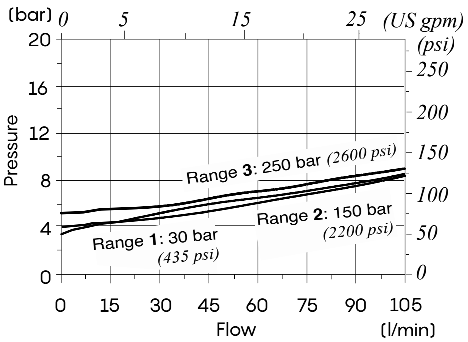
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1** - white band
2	3ML1081401	Pressure range **2** - no band
3	3ML1081402	Pressure range **3** - red band

Rating diagrams

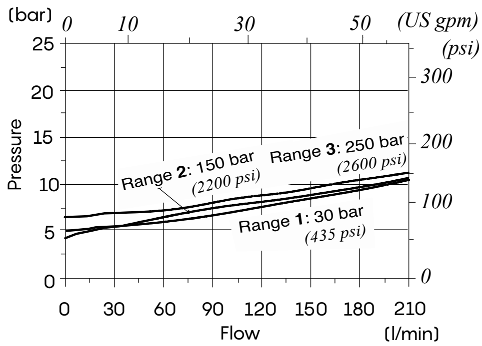
SW10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



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)*



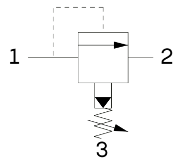
SP10A type
sequence valves - 3 way

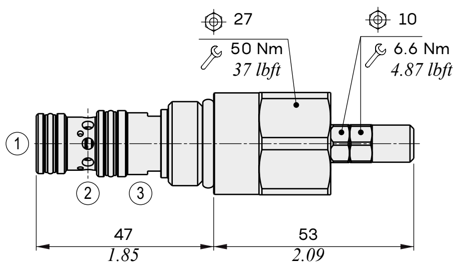
- Piloted acting
- Spool type
- Not affected by back pressure on port 2
- Mechanical control with screw adjustment
- Different springs available to vary pressure range

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 or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/3
Weight		0.21 kg *(0.46 lb)*

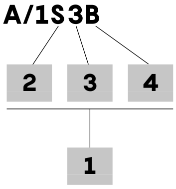
NOTE - For different conditions, please contact Walvoil Sales Dpt.

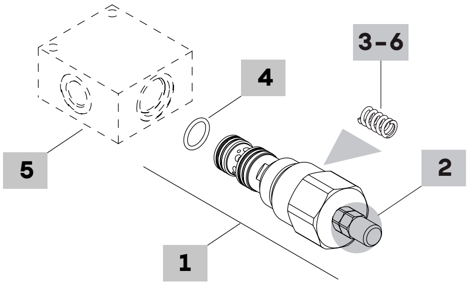




Ordering codes and description composition

SP10A/1S3B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
SP10A/1S1B	0SP10002002	Pressure range **1**
SP10A/1S2B	0SP10002004	Pressure range **2**
SP10A/1S3B	0SP10002003	Pressure range **3**

2 Adjustments

TYPE	DESCRIPTION
S	Screw

3 Pressure range

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

TYPE	DESCRIPTION
1	Pressure range 10÷80 bar *(145÷1160 psi)*; Std. setting 20 bar *(290 psi)*, pressure increase by steps of 10 bar (145 psi) for screw turrn
2	Pressure range 50÷220 bar *(725÷3200 psi)*; Std. setting 150 bar *(2200 psi)*, pressure increase by steps of 46 bar (660 psi) for screw turrn
3	Pressure range 150÷350 bar *(2200÷5100 psi)*; Std. setting 250 bar *(3600 psi)*, pressure increase by steps of 110 bar (1600 psi) for screw turrn

4 Seals

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

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

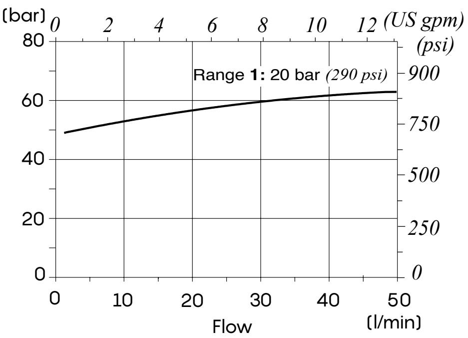
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

6 Springs

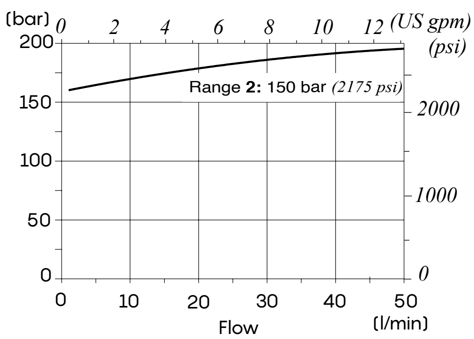
TYPE	CODE	DESCRIPTION
1	3ML1081400	Pressure range **1** - white band
2	3ML1081401	Pressure range **1** - no band
3	3ML1081402	Pressure range **1** - red band

Rating diagrams

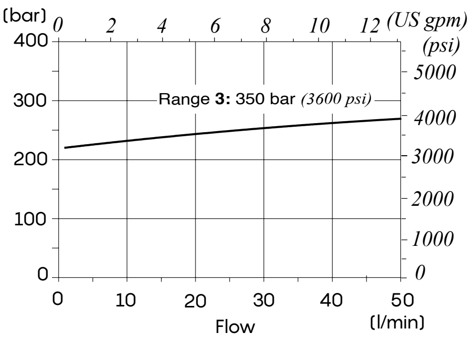
SP10A pressure vs. flow
std. setting at 5 l/min *(1.32 US gpm)*



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)*



SN..L type
sequence valves - 4 way

- Direct acting
- Spool type
- External pilot and drain
- Variable (G) and fixed (F) setting configurations
- The spring chamber is drained to the tank line (port 4)
- The backpressure values on line 4 must be added to valve nominal setting

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

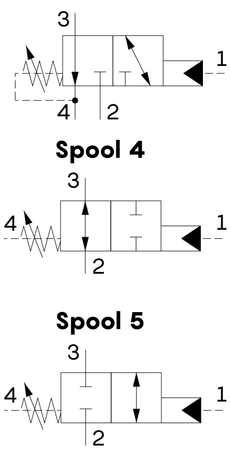
		SN08L/.G	SN08L/.F	SN10L/.F
Nominal flow		20 l/min *(5.3 US gpm)*	20 l/min *(5.3 US gpm)*	50 l/min *(13.2 US gpm)*
Max. pressure		Port 4= 30 bar *(435 psi)* 350 bar *(5100 psi)*	350 bar *(5100 psi)*	350 bar *(5100 psi)*
Oil leakage	at 210 bar *(3050 psi)*	40 cm³/min *(2.44 in³/min)*		
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		20/18/14 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 08/4	SAE 08/4	SAE 10/4
Weight		0.264 kg *(0.582 lb)*	0.131 kg *(0.289 lb)*	0.213 kg *(0.470 lb)*

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

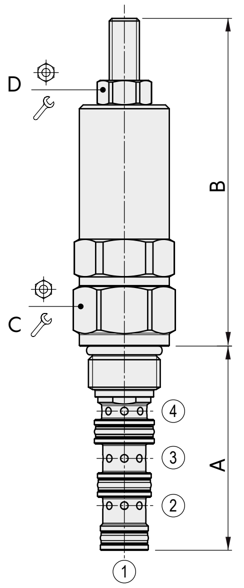
Spool 1

Spool 4

Spool 5



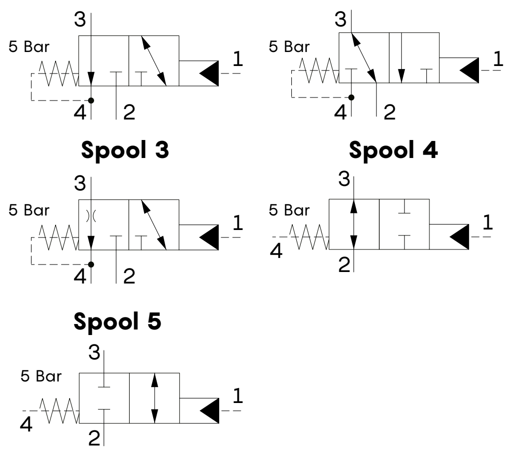
SN08L/G



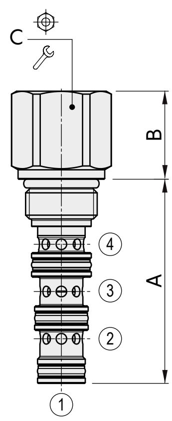
Spool 1 | Spool 2

Spool 3 | Spool 4

Spool 5

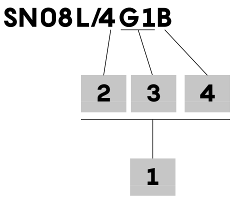


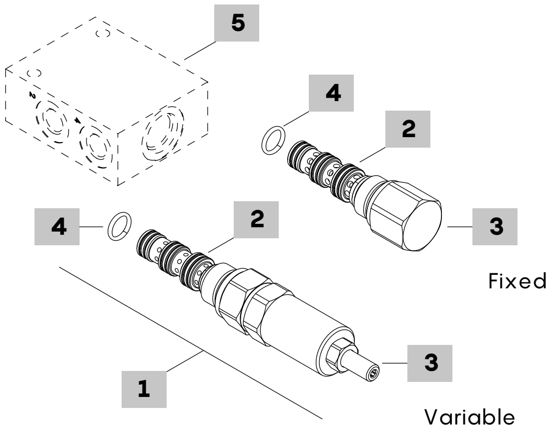
SN08L/F



Valve type	A		B		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
SN08L/.G	54	*2.12*	87.2	*3.43*	24	30	*22*	13	9.8	*7.2*
SN08L/.F	54	*2.12*	23.3	*0.92*	24	30	*22*	-	-	-
SN10L/.F	62.4	*2.46*	32.8	*1.29*	27	50	*37*	-	-	-

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
<u>SAE cavity 08/4</u>		
<u>Variable pressure setting type</u>		
SN08L/1G1B	0SN08002015	From 30 to 90 bar *(435 to 1300 psi)*, spool **1**
SN08L/4G1B	0SN08002012	From 30 to 90 bar *(435 to 1300 psi)*, spool **4**
SN08L/5G1B	0SN08002013	From 30 to 90 bar *(435 to 1300 psi)*, spool **5**
<u>Fixed pressure setting type</u>		
SN08L/1F1B	0SN08002007	Setting 5 bar *(72.5 psi)*, spool **1**
SN08L/2F1B	0SN08002008	Setting 5 bar *(72.5 psi)*, spool **2**
SN08L/3F1B	0SN08002009	Setting 5 bar *(72.5 psi)*, spool **3**
SN08L/4F1B	0SN08002010	Setting 5 bar *(72.5 psi)*, spool **4**
SN08L/5F1B	0SN08002016	Setting 5 bar *(72.5 psi)*, spool **5**
<u>SAE cavity 10/4</u>		
<u>Fixed pressure setting type</u>		
SN10L/1F1B	0SN10002002	Setting 5 bar *(72.5 psi)*, spool **1**
SN10L/4F1B	0SN10002004	Setting 5 bar *(72.5 psi)*, spool **4**
SN10L/5F1B	0SN10002003	Setting 5 bar *(72.5 psi)*, spool **5**

2 Spools

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

3 Pressure setting

Setting is referred to 1 l/min *(0.26 US gpm)* flow

TYPE	DESCRIPTION
G1	Variable setting from 30 to 90 bar *(435 to 1300 psi)*
F1	Fixed setting 5 bar *(72.5 psi)*
F2	Fixed setting 10 bar *(145 psi)*
F3	Fixed setting 20 bar *(290 psi)*

4 Seals

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

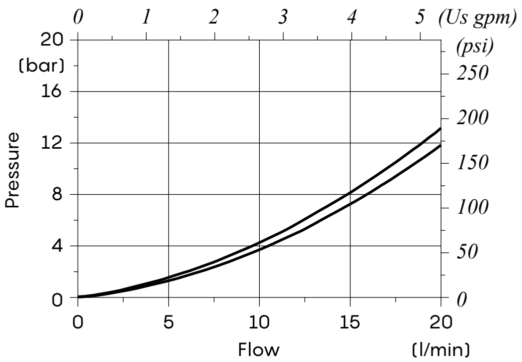
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/4-G 3/8	3CC1040C11	Aluminium body for cavity 10 valve, G 3/8 std thread

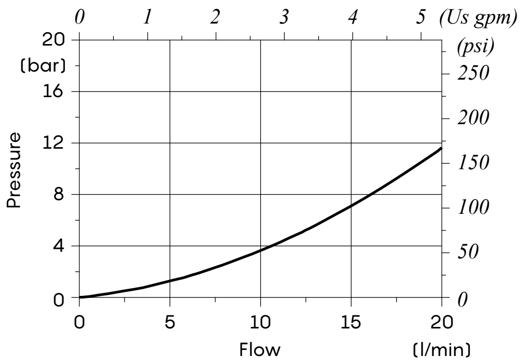
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 212

Rating diagrams

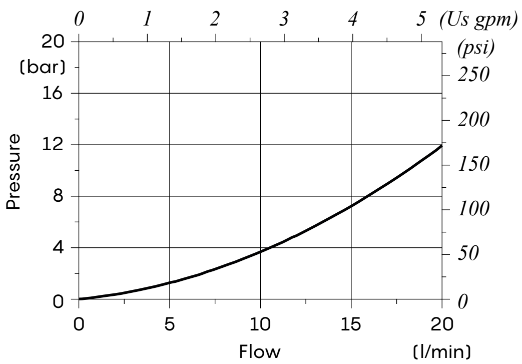
SN08L pressure drop vs. flow
- Spool 1 - Variable pressure -



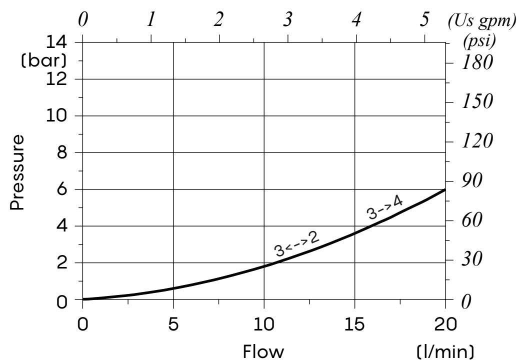
SN08L pressure drop vs. flow
- Spool 4 - Variable pressure -



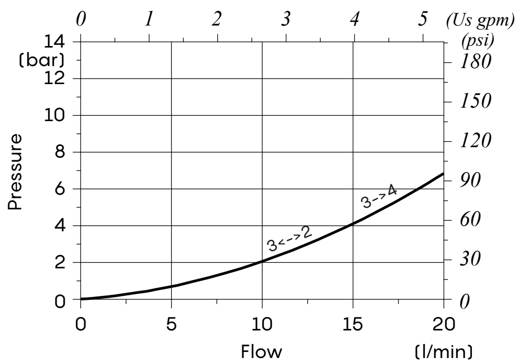
SN08L pressure drop vs. flow
- Spool 5 - Variable pressure -



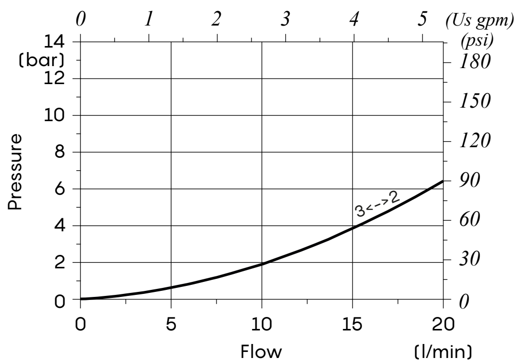
SN08L pressure drop vs. flow
- Spool 1 - Fixed pressure -



SN08L pressure drop vs. flow
- Spool 2 - Fixed pressure -

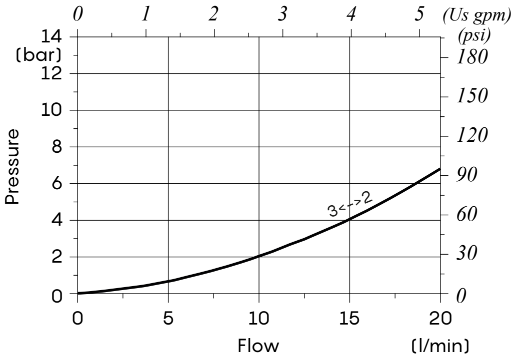


SN08L pressure drop vs. flow
- Spool 3 - Fixed pressure -

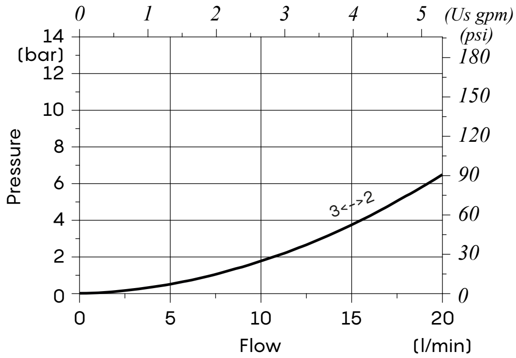


Rating diagrams

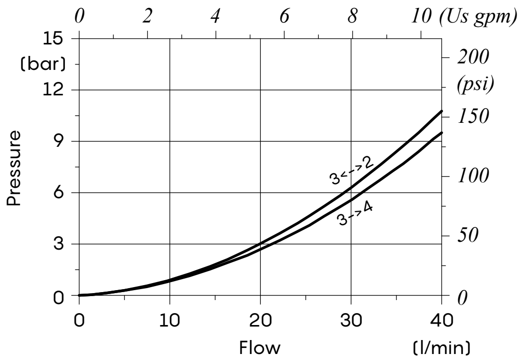
SN08L pressure drop vs. flow
- Spool 4 - Fixed pressure -



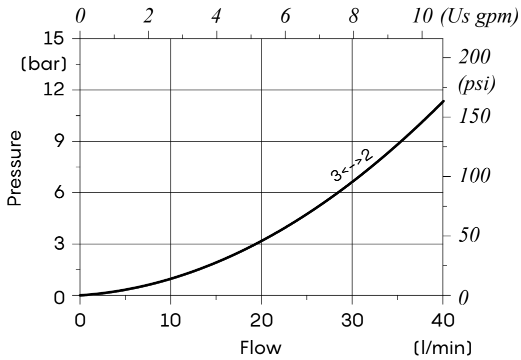
SN08L pressure drop vs. flow
- Spool 5 - Fixed pressure -



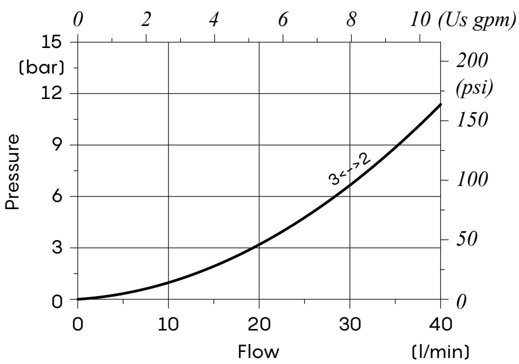
SN10L pressure drop vs. flow
- Spool 1 -



SN10L pressure drop vs. flow
- Spool 4 -



SN10L pressure drop vs. flow
- Spool 5 -



UC..A type
check valves - 2 way

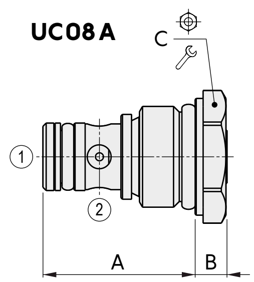
- Poppet type
- Direct acting
- Different opening pressures available
- From SAE08 to SAE16 cavities

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

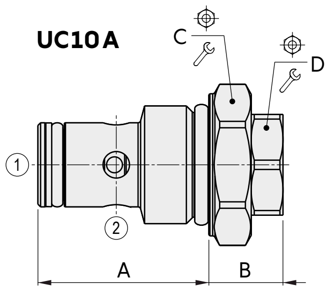
		UC08 A	UC10 A	UC12 A	UC16 A
Nominal flow		up to 20 l/min *(5.3 US gpm)*	up to 35 l/min *(9.2 US gpm)*	up to 50 l/min *(13 US gpm)*	up to 100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
Oil leakage	at 100 bar *(1450 psi)*	0.25 cm³//min *(0.015 in³/min)*	0.25 cm³//min *(0.015 in³/min)*	0.25 cm³//min *(0.015 in³/min)*	0.25 cm³//min *(0.015 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	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.

UC08 A

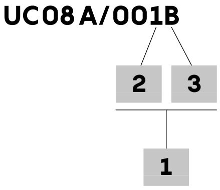


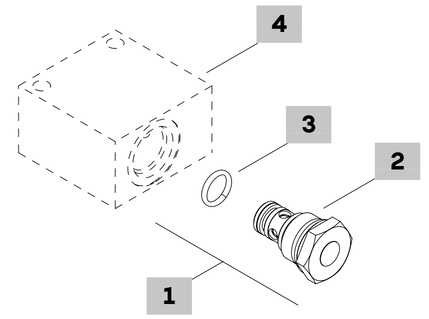
UC10 A



Valve type	A		B		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
UC08 A	28.7	*1.13*	6	*0.24*	22	30	*22*	-	-	-
UC10 A	32.3	*1.27*	14	*0.55*	27	50	*37*	19	30	*22*
UC12 A	46	*1.81*	14	*0.55*	32	80	*59*	22	42	*31*
UC16 A	45.2	*1.78*	25	*0.98*	41	100	*73*	30	65	*48*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
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)*

2 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)*

3 Seals

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

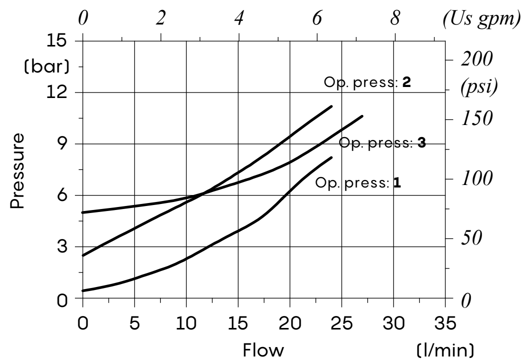
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

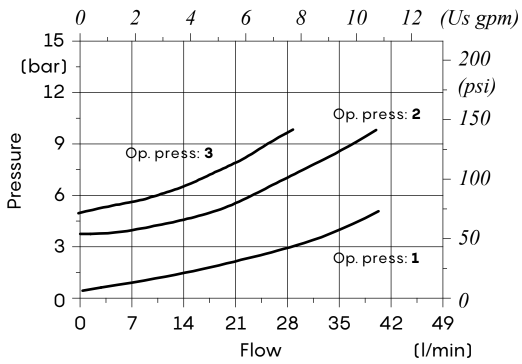
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

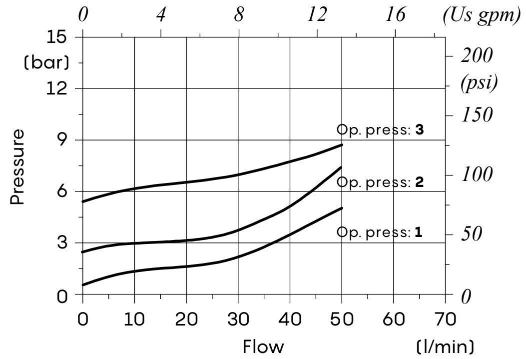
UC08A pressure drop vs. flow



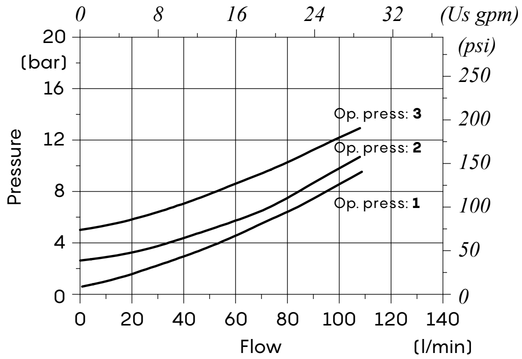
UC10A pressure drop vs. flow



UC12A pressure drop vs. flow



UC16A pressure drop vs. flow



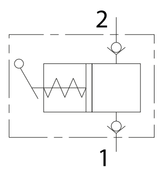
UM08M type check valves - 2 way

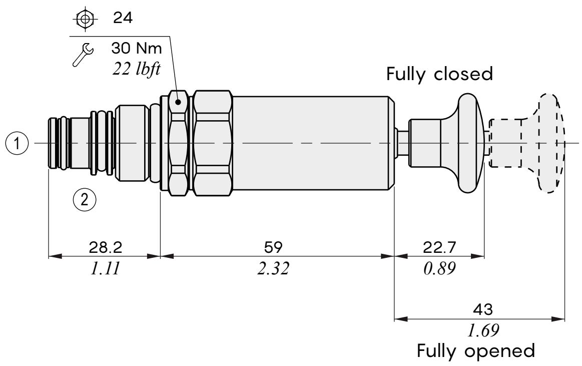
- Direct operation by knob
- Configuration with valve return in delivery position is available
- External zinc-plated and corrosion-proof components

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

		UM08M
Displacement		1 in^3/stroke
Max. pressure		Port 1 = 50 bar *(750 psi)* Port 2 = 210 bar *(3050 psi)*
Oil leakage	at 200 bar *(2900 psi)*	0.25 cm^3/min *(0.015 in^3/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		12-200 cSt
Max level of contamination		20/18/14 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 08/2
Weight		0.212 kg *(0.47 lb)*

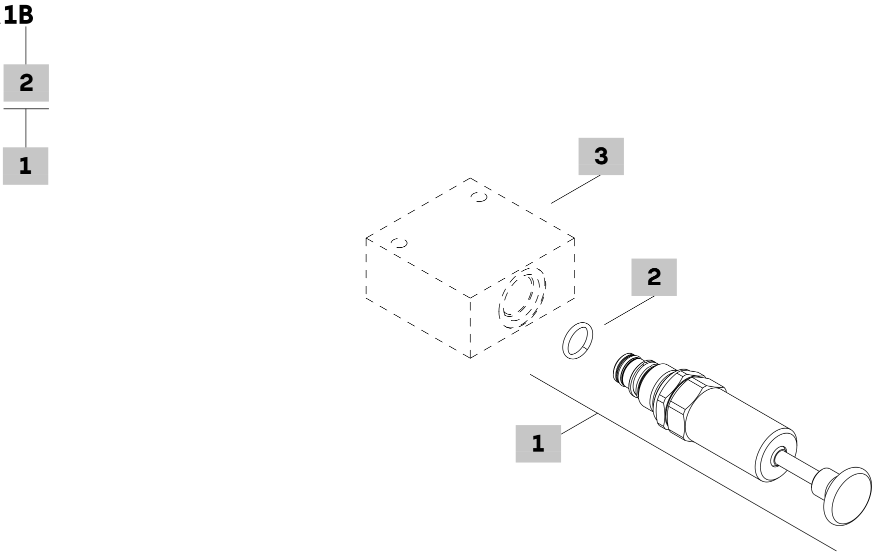
NOTE - For different conditions, please contact Walvoil Sales Dpt.





Ordering codes and description composition

UM08M/1A1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
UM08M/1A1B	0UM08002002	Valve assembly

2 Seals

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

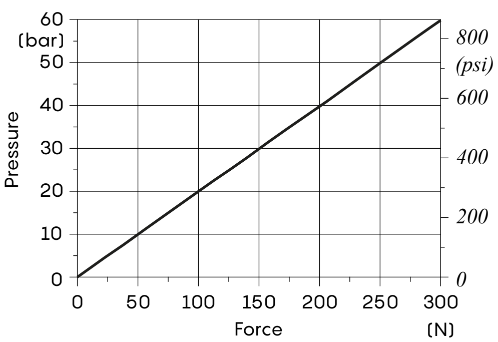
3 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-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 208

Rating diagrams

Output Pressure vs. Input force



UV10M type
check valves - 2 way

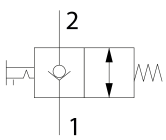
- Poppet type
- Direct operation by knob
- Available mechanical detent
- External zinc-plated and corrosion-proof components

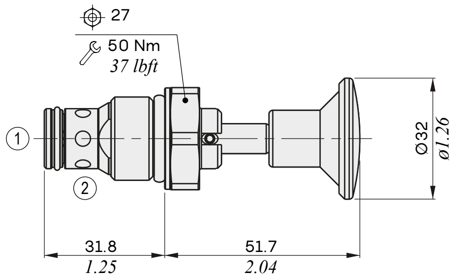
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		UV10M
Nominal flow		60 l/min *(16 US gpm)*
Max. pressure		320 bar *(4650 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		20-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/2
Weight		0.164 kg *(0.36 lb)*

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

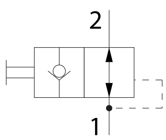
Normally closed configuration

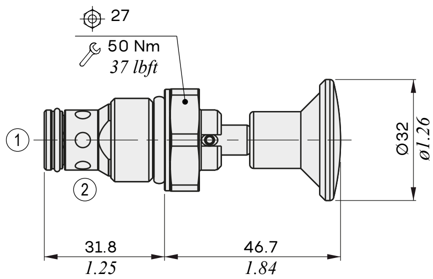




Fully opened

Normally open configuration

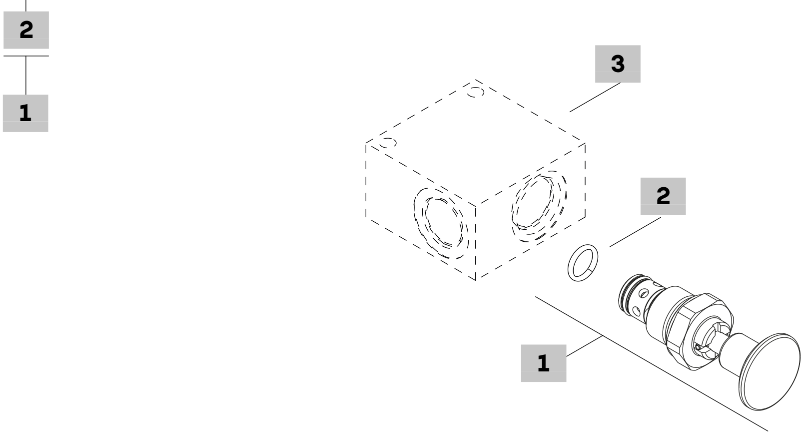




Fully closed

Ordering codes and description composition

UV10M/2 A0B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
UV10M/2A0B	0UV10002000	Normally closed (N.C.) with detent, pull to operate; spring return
UV10M/2E0B	0UV10002002	Normally closed (N.C.) without detent

3 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 1/2	3CC1020D11	Aluminium body for cavity 10 valve, G 1/2 std thread

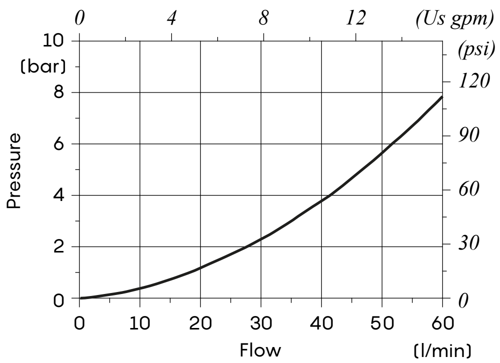
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

2 Seals

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

Rating diagrams

Pressure drop vs. flow



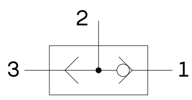
UT..A type shuttle valves - 3 way

- Shuttle valve
- Direct acting
- From SAE08 to SAE10 cavities

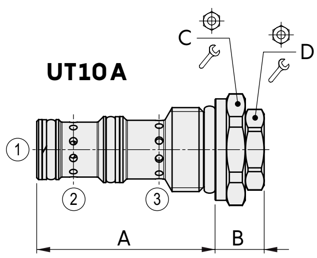
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		UT08 A	UT10 A
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	at 210 bar *(3050 psi)*	0.50 cm³/min *(0.030 in³/min)*	
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 08/3	SAE 10/3
Weight		0.80 kg *(0.18 lb)*	0.100 kg *(0.22 lb)*

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



UT10 A



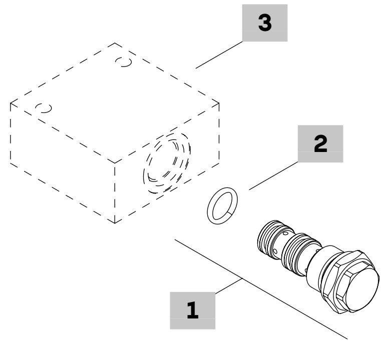
Valve type	A		B		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
UT08 A	40.8	*1.60*	12.5	*0.49*	24	30	*22*	19	24	*18*
UT10 A	47.2	*1.86*	13	*0.51*	27	50	*37*	19	24	*18*

Ordering codes and description composition

UT08 A/000B

2

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
UT08 A/000B	0UT08002000	Valve assembly
SAE cavity 10/3		
UT10 A/000B	0UT10002000	Valve assembly

2 Seals

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

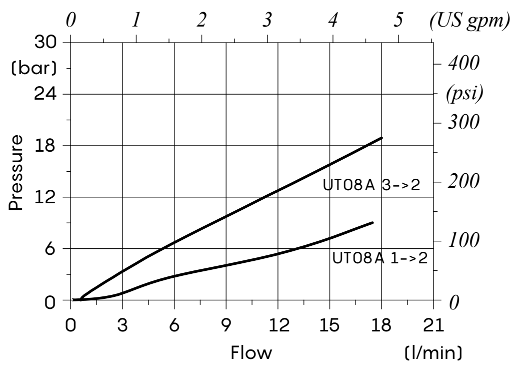
3 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 1/4	3CC0830B11	Aluminium body for cavity 08 valve, G 1/4 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread

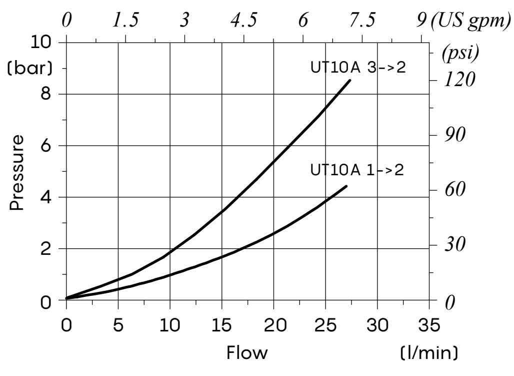
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

UT08 A pressure drop vs flow



UT10 A pressure drop vs flow



BC...type
pilot operated check valves – 3 way

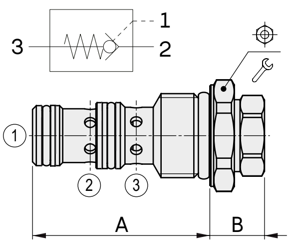
- Poppet type
- Direct acting
- From SAE08 to SAE16 cavities
- Different pilot ratio available

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

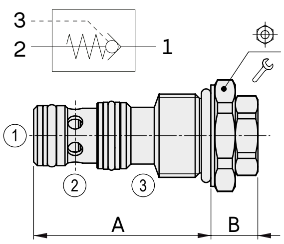
		BC08A	BC10A-B	BC10C	BC12A-B	BC16A-B
Nominal flow		15 l/min *(4 US gpm)*	30 l/min *(8 US gpm)*	60 l/min *(16 US gpm)*	50 l/min *(13 US gpm)*	100 l/min *(26 US gpm)*
Max. pressure		350 bar *(5100 psi)*				
Oil leakage	at 100 bar *(1450 psi)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*	0.25 cm³/min *(0.015 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties				
Viscosity		10-200 cSt				
Max level of contamination		20/18/14 ISO4406				
Fluid temperature	with NBR seals +Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*				
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*				
Cavity		SAE 08/3	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.

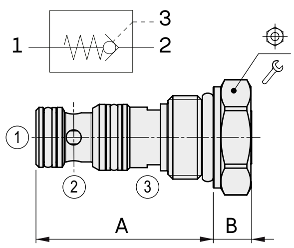
BC..A



BC..B

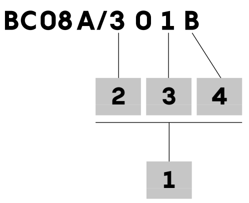


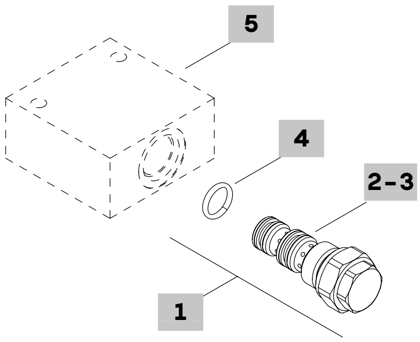
BC..C



Valve type		A mm	A *in*	B mm	B *in*	⌖	Nm	*lbft*
BC..A	SAE 08/3	40.8	*1.61*	17	*0.67*	24	30	*22*
	SAE 10/3	47	*1.85*	12.5	*0.49*	27	50	*36*
	SAE 12/3	73.5	*2.89*	14	*0.55*	32	80	*59*
	SAE 16/3	75	*2.97*	24	*0.94*	41	100	*73*
BC..B	SAE 10/3	47	*1.85*	12.5	*0.49*	27	50	*36*
	SAE 12/3	73.5	*2.89*	14	*0.55*	32	80	*59*
	SAE 16/3	75	*2.95*	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





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
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)*

2 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

3 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

4 Seals

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

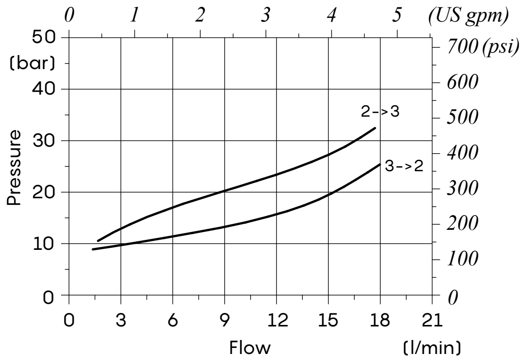
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

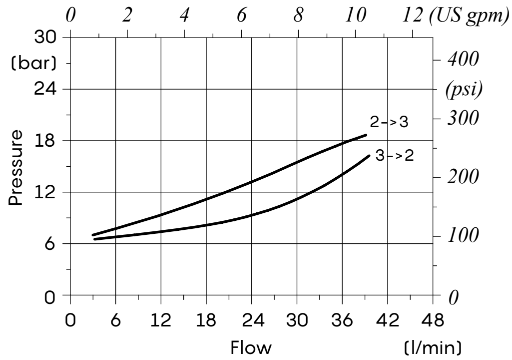
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

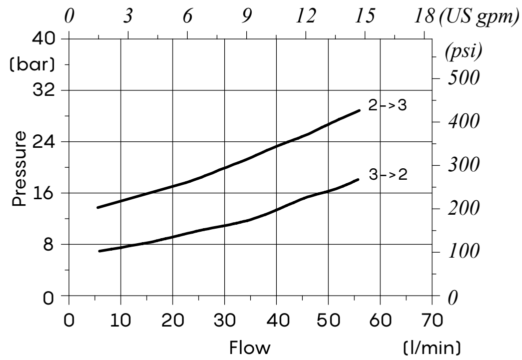
BC08A pressure drop vs flow



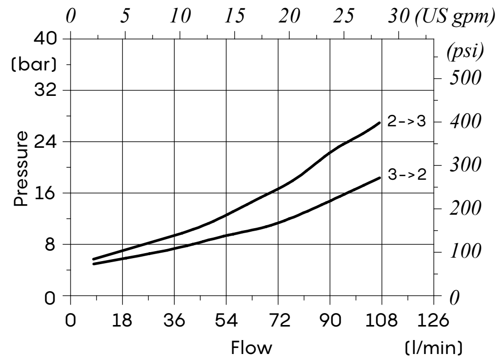
BC10A pressure drop vs flow



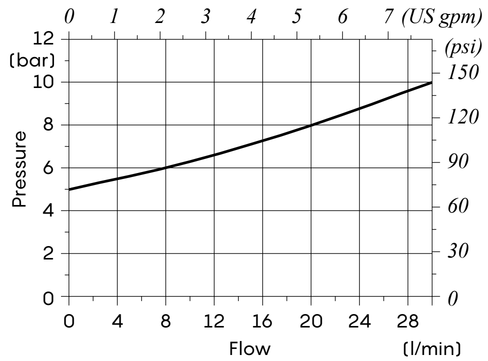
BC12A pressure drop vs flow



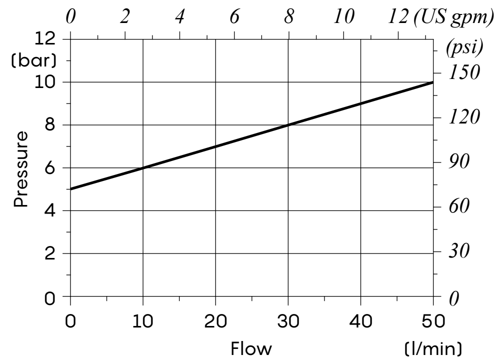
BC16A pressure drop vs flow



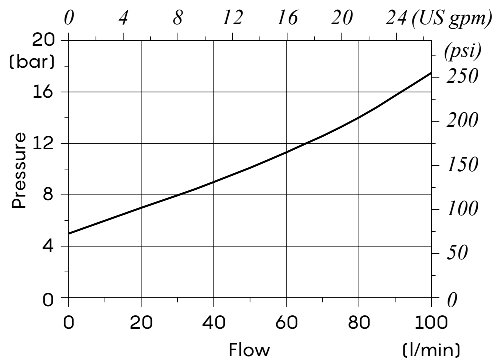
BC10B pressure drop vs flow



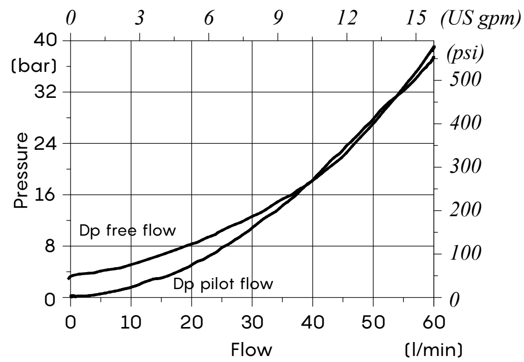
BC12B pressure drop vs flow



BC16B pressure drop vs flow



BC10C pressure drop vs flow



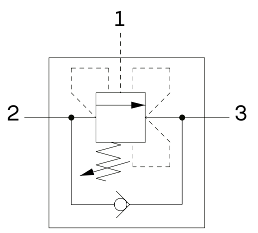
CC..A type counterbalance valves - 3 way

- For closed center
- Line mounting
- Not affected by back pressure
- From SAE10 to SAE16 cavities

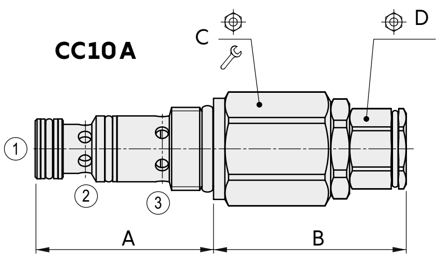
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		CC10A	CC12A	CC16A
Nominal flow		30 l/min *(7.9 US gpm)*	60 l/min *(16 US gpm)*	90 l/min *(24 US gpm)*
Max. pressure		350 bar *(5100 psi)*		
Oil leakage	at 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)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		20/18/14 ISO4406		
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 10/3	SAE 12/3	SAE 16/3
Weight		0.280 kg *(0.62 lb)*	0.380 kg *(0.84 lb)*	0.720 kg *(1.59 lb)*

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



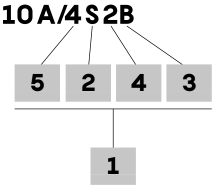
CC10A

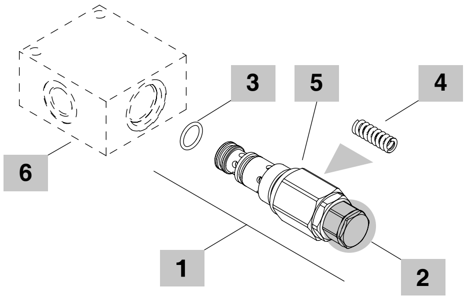


Valve type		A		B		C			D		
		mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
CC10A/	4S	47.2	*1.86*	51	*2.01*	27	50	*37*	19	30	*22*
	W	47.2	*1.86*	51	*2.01*	27	50	*37*	19	30	*22*
CC12A/	4S	73.5	*2.89*	58.5	*2.30*	32	80	*59*	24	35	*26*
	4W	73.5	*2.89*	58.5	*2.30*	32	80	*59*	24	35	*26*
CC16A/	4S	75	*2.95*	69	*2.72*	41	100	*74*	27	30	*22*
	4W	75	*2.95*	69	*2.72*	41	100	*74*	27	30	*22*

Ordering codes and description composition

CC10 A/4 S 2B





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
CC10 A/4 S 2B	0CC10002001	Screw type adjustment, pilot ratio 1:4 pressure range **2**
SAE cavity 12/3		
CC12 A/4 S 2B	0CC12002000	Screw type adjustment, pilot ratio 1:4 pressure range **2**
SAE cavity 16/3		
CC16 A/4 S 2B	0CC16002001	Screw type adjustment, pilot ratio 1:4 pressure range **2**

2 Adjustments

TYPE	DESCRIPTION
S	Screw
W	Copped adjustment

3 Seals

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

4 Pressure setting springs

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

TYPE	CODE	DESCRIPTION
For CC10 A valve		
1	3ML1092502	Setting range 50-220 bar *(725-3200 psi)* red band
2	3ML1092300	Setting range 180-350 bar *(2600-5100 psi)* red band
3	3ML1102800	Setting range 300-700 bar *(4350-10150 psi)* red band
For CC12 A valve		
1	3ML1133201	Setting range 50-220 bar *(725-3200 psi)* blue band
2	3ML1133200	Setting range 180-350 bar *(2600-5100 psi)* red band
3	3ML1133500	Setting range 300-700 bar *(4350-10150 psi)* yellow band
For CC16 A valve		
1	3ML1164000	Setting range 50-220 bar *(725-3200 psi)* blue band
2	3ML1164001	Setting range 180-350 bar *(2600-5100 psi)* red band
3	3ML1164002	Setting range 300-700 bar *(4350-10150 psi)* yellow band

5 Pilot ratio

TYPE	DESCRIPTION
4	1:4

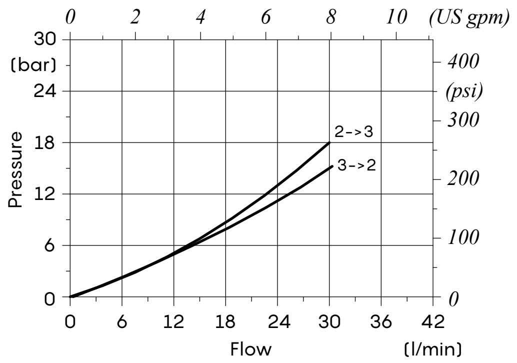
6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

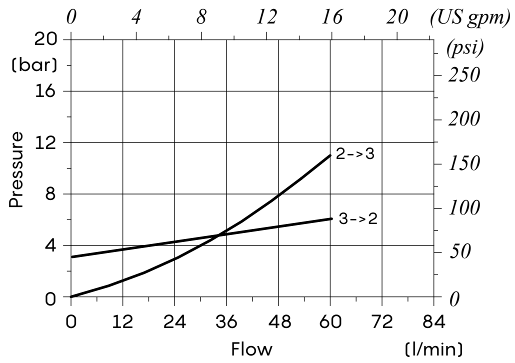
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

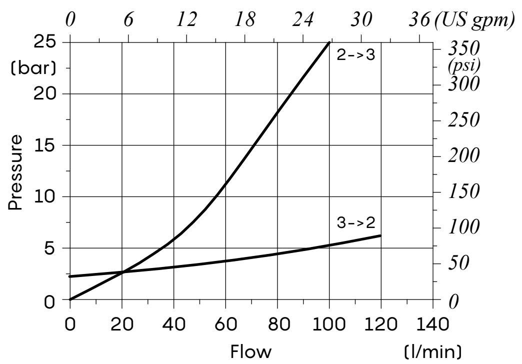
CC10A pressure drop vs. flow



CC12A pressure drop vs. flow



CC16A pressure drop vs. flow



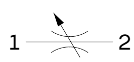
NB..A type
needle valves - 2 way

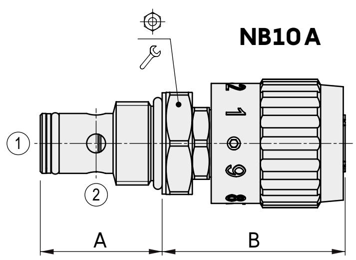
- Poppet type
- Different types of manual adjustment
- Prepared for copped adjustment
- Ideal use in the circuit as bleed off
- From SAE08 to SAE16 cavities

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

		NB08 A	NB10 A	NB12 A	NB16 A
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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	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.

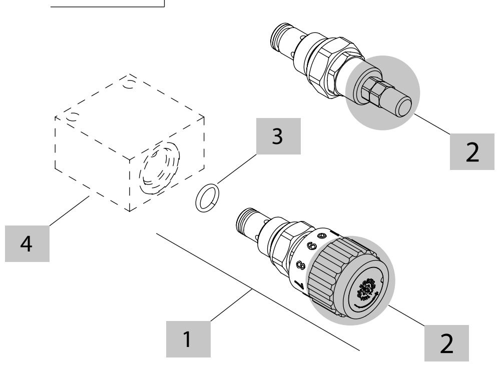




Valve type		A mm	A *in*	B mm	B *in*	⌖	Nm	*lbft*
NB08 A/A	M	27.6	*1.09*	55.5	*2.19*	24	30	*22*
	S	27.6	*1.09*	49.5	*1.95*	24	30	*22*
NB10 A/A	M	32.5	*1.28*	47.5	*1.87*	27	50	*37*
	S	32.5	*1.28*	46.5	*1.83*	27	50	*37*
NB12 A/A	M	46	*1.81*	53.4	*2.10*	32	80	*59*
	S	46	*1.81*	46.3	*1.82*	32	80	*59*
NB16 A/A	M	45.2	*1.78*	71.6	*2.82*	41	100	*74*
	S	45.2	*1.78*	60.9	*2.40*	41	100	*74*

Ordering codes and description composition

NB08 A/AM0B



2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NB08 A/AM0B	0NB08002000	Handknob adjustment
NB08 A/AS0B	0NB08002001	Screw type adjustment
SAE cavity 10/2		
NB10 A/AM0B	0NB10002003	Handknob adjustment
NB10 A/AS0B	0NB10002001	Screw type adjustment
SAE cavity 12/2		
NB12 A/AM0B	0NB12002002	Handknob adjustment
NB12 A/AS0B	0NB12002001	Screw type adjustment
SAE cavity 16/2		
NB16 A/AM0B	0NB16002000	Handknob adjustment
NB16 A/AS0B	0NB16002002	Screw type adjustment

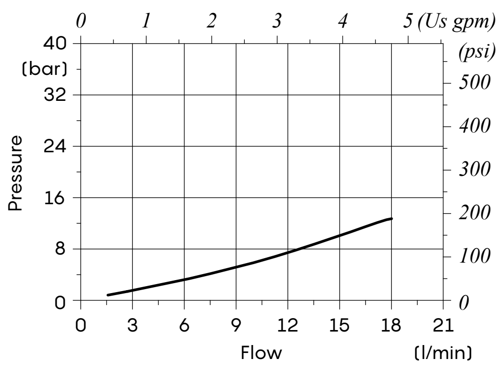
4 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

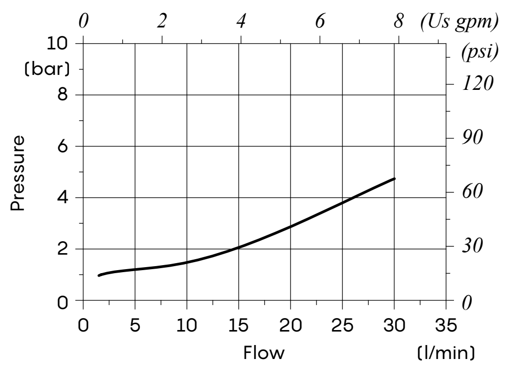
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

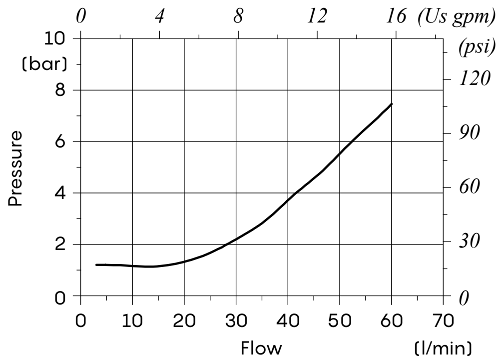
NB08 A: pressure drop vs. flow 1->2 - 2->1, fully open



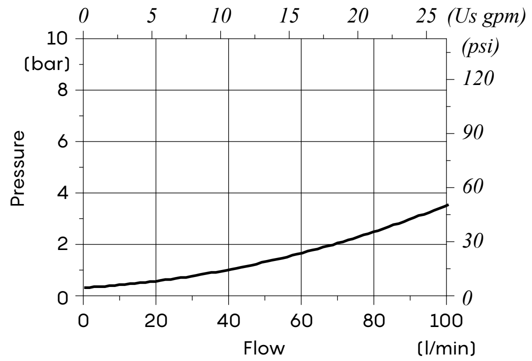
NB10 A: pressure drop vs. flow 1->2 - 2->1, fully open



NB12 A: pressure drop vs. flow 1->2 - 2->1, fully open



NB16 A: pressure drop vs. flow 1->2 - 2->1, fully open



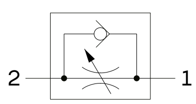
NU..A type
needle valves - 2 way

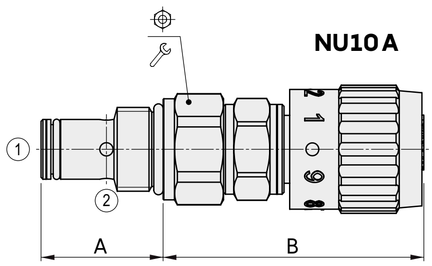
- Poppet type
- Different types of manual adjustment
- Prepared for copped adjustment
- Free return line
- From SAE08 to SAE16 cavities

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

		NU08 A	NU10 A	NU12 A	NU16 A
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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	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.

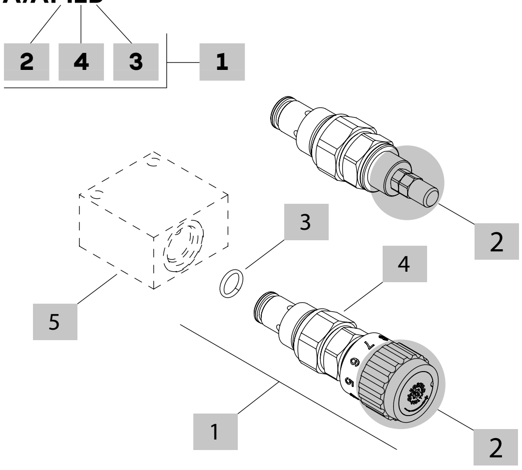




Valve type		A		B				
		mm	*in*	mm	*in*		Nm	*lbft*
NU08 A/A	M	27.6	*1.09*	70.7	*2.78*	24	30	*22*
	S	27.6	*1.09*	64.5	*2.54*	24	30	*22*
NU10 A/A	M	32.3	*1.27*	70	*2.76*	27	50	*37*
	S	32.3	*1.27*	65	*2.56*	27	50	*37*
NU12 A/A	M	46	*1.81*	71.2	*2.80*	32	80	*59*
	S	46	*1.81*	66	*2.60*	32	80	*59*
NU16 A/A	M	45.2	*1.78*	72.9	*2.87*	41	100	*74*
	S	45.2	*1.78*	66	*2.60*	41	100	*74*

Ordering codes and description composition

NU08 A/AM1B



2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NU08 A/AM1B	0NU08002000	Handknob adjustment
NU08 A/AS1B	0NU08002001	Screw type adjustment
SAE cavity 10/2		
NU10 A/AM1B	0NU10002000	Handknob adjustment
NU10 A/AS1B	0NU10002001	Screw type adjustment
SAE cavity 12/2		
NU12 A/AM1B	0NU12002000	Handknob adjustment
NU12 A/AS1B	0NU12002001	Screw type adjustment
SAE cavity 16/2		
NU16 A/AM1B	0NU16002000	Handknob adjustment
NU16 A/AS1B	0NU16002001	Screw type adjustment

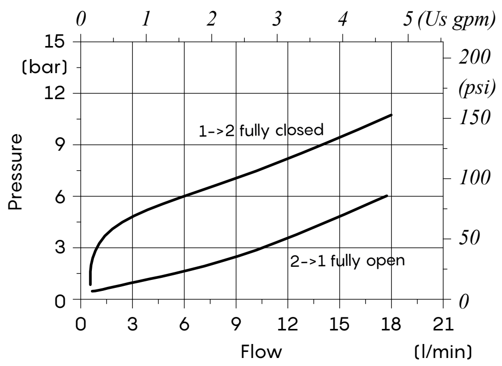
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

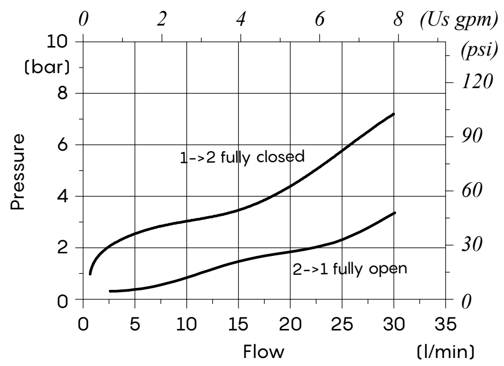
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

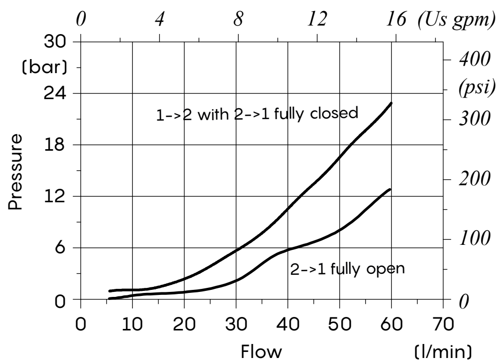
NU08 A pressure drop vs. flow



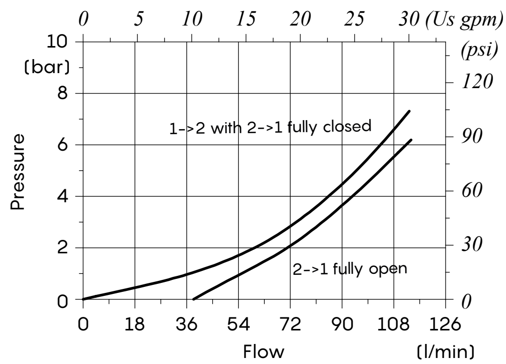
NU10 A pressure drop vs. flow



NU12 A pressure drop vs. flow



NU16 A pressure drop vs. flow



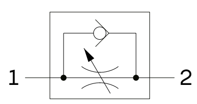
NT..A type
needle valves - 2 way

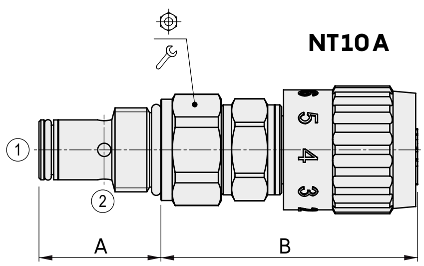
- Poppet type
- Different types of manual adjustment
- Prepared for copped adjustment
- Free return line
- From SAE08 to SAE16 cavities

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

		NT08 A	NT10 A	NT12 A	NT16 A
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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	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.

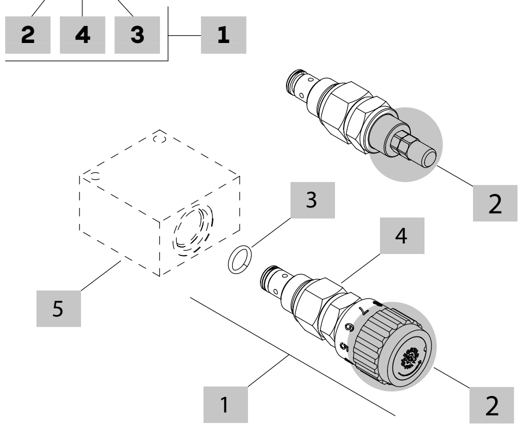




Valve type		A mm	A *in*	B mm	B *in*	⌖	Nm	*lbft*
NT08 A/A	M	27.6	*1.09*	70.7	*2.78*	24	30	*22*
	S	27.6	*1.09*	64.5	*2.54*	24	30	*22*
NT10 A/A	M	32.3	*1.27*	70	*2.76*	27	50	*37*
	S	32.3	*1.27*	65	*2.56*	27	50	*37*
NT12 A/A	M	46	*1.81*	71.2	*2.80*	32	80	*59*
	S	46	*1.81*	66	*2.60*	32	80	*59*
NT16 A/A	M	45.2	*1.78*	72.9	*2.87*	41	100	*74*
	S	45.2	*1.78*	66	*2.60*	41	100	*74*

Ordering codes and description composition

NT08 A/AM1B



2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NT08 A/AM1B	0NT08002000	Handknob adjustment
NT08 A/AS1B	0NT08002001	Screw type adjustment
SAE cavity 10/2		
NT10 A/AM1B	0NT10002000	Handknob adjustment
NT10 A/AS1B	0NT10002001	Screw type adjustment
SAE cavity 12/2		
NT12 A/AM1B	0NT12002000	Handknob adjustment
NT12 A/AS1B	0NT12002001	Screw type adjustment
SAE cavity 16/2		
NT16 A/AM1B	0NT16002000	Handknob adjustment
NT16 A/AS1B	0NT16002001	Screw type adjustment

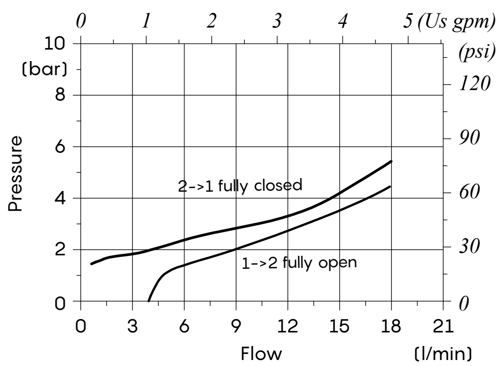
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

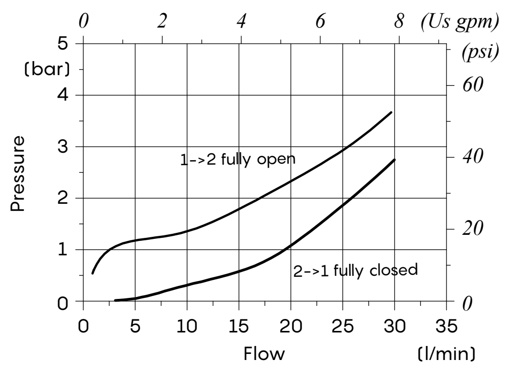
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

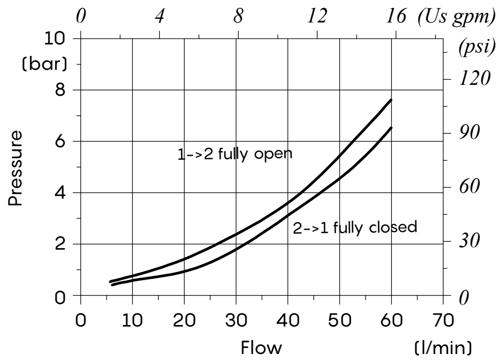
NT08 A pressure drop vs. flow



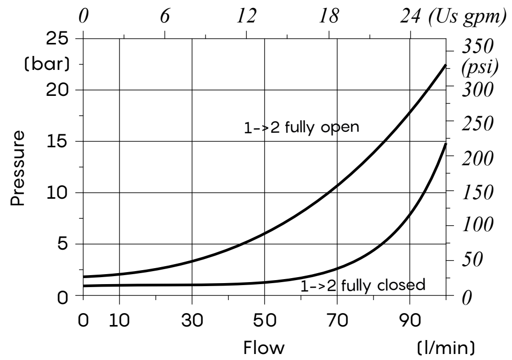
NT10 A pressure drop vs. flow



NT12 A pressure drop vs. flow



NT16 A pressure drop vs. flow



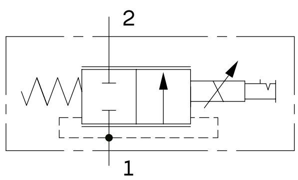
EE..X type
needle valves - 2 way

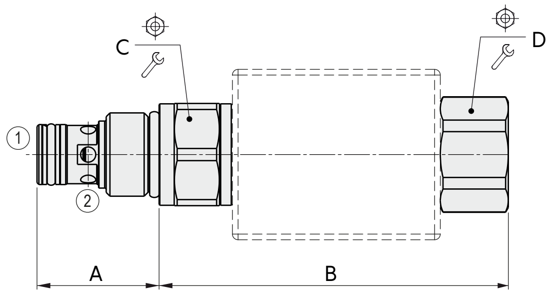
- Spool type
- Direct acting trough proportional solenoid
- Excellent low flow metering capability
- System of purging of air
- To be combined with an external compensator
- SAE10 and SAE12 cavities

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

		EE10X	EE12X
Nominal flow (1)	with 10 bar *(145 psi)* stand-by	40 l/min *(10.6 US gpm)*	60 l/min *(15.8 US gpm)*
Max. pressure		300 bar *(4350 psi)*	315 bar *(4600 psi)*
Oil leakage	at 150 bar *(2175 psi)*	150 cm³/min *(9.1 in³/min)*	200 cm³/min *(12.2 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		12-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/2	SAE 12/2
Coil type (2)		BQP19 or BH	
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		15 W (BQP19) - 33 W (BH)	
Max. control current		12V -> 1.25A - 24V -> 0.63A (BQP19) 12V -> 1.70A - 24V -> 0.85A (BH)	
Dither frequency		150 Hz	
Weight		0.30 kg *(0.66 lb)*	0.426 kg *(0.94 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - (1) Values are checked with cartridge in parallel with compensator - (2) For coils further features see from page 201.

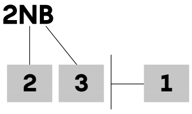


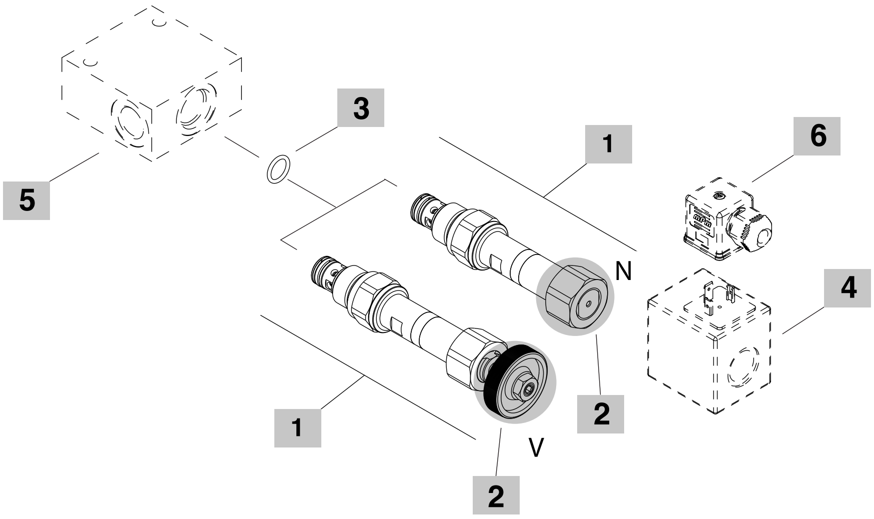


Valve type	A		B N / O without emergency		B V handknob		C			D		
	mm	in	mm	in	mm	in		Nm	lbft		Nm	lbft
EE10X	32.3	*1.27*	92.4	*3.64*	121.9	*4.80*	27	50	*37*	28	5	*3.7*
EE12X	45	*1.77*	94.9	*3.74*	124.3	*4.89*	32	80	*59*	28	5	*3.7*

Ordering codes and description composition

EE10X/22NB





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
EE10X/22NB	0EE10002009	Without emergency
EE10X/22VB	0EE10002008	Handwheel emergency
SAE cavity 12/2		
EE12X/20NB	0EE12002007	Without emergency
EE12X/20VB	0EE12002009	Handwheel emergency

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
V	Handknob emergency

3 Seals

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

4 Coils

TYPE	CODE	DESCRIPTION
BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil

For complete coils list see from page 201
It is possible also combine coils BH

5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

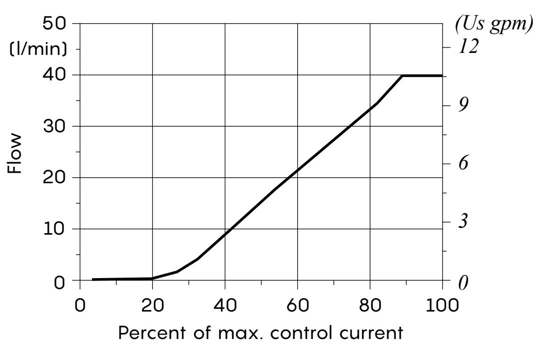
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

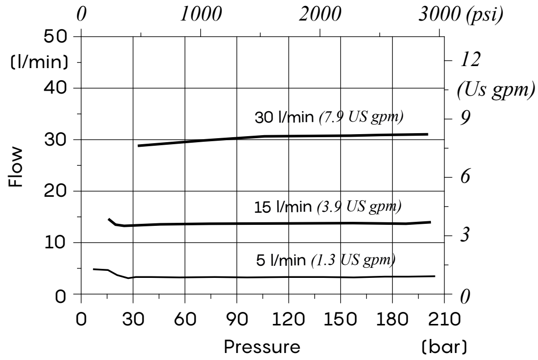
For complete connectors list see from page 201

Rating diagrams

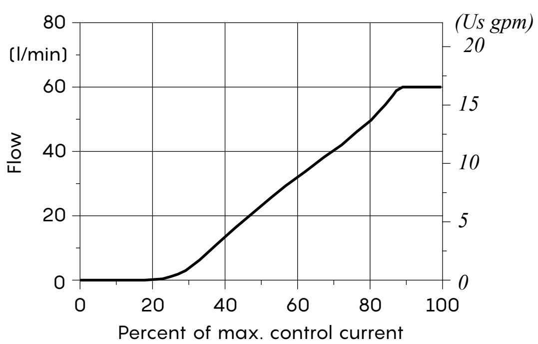
EE10X
flow regulating vs. % max. control current



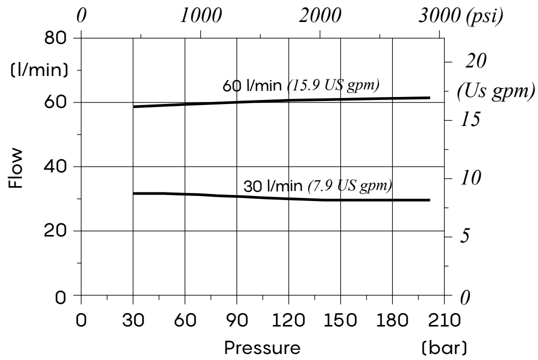
EE10X
***pressure compensation diagram 1→2**



EE12X
flow regulating vs. % max. control current



EE12X
****pressure compensation diagram 1→2**



*Compensation diagram were detected with the cartridge combined with a VPR/3/ET 38-12 compensator with 10 bar *(145 psi)* stand by
**Compensation diagram were detected with the cartridge combined with a VPR/3/ET 38-12 compensator with 7 bar *(102 psi)* stand by

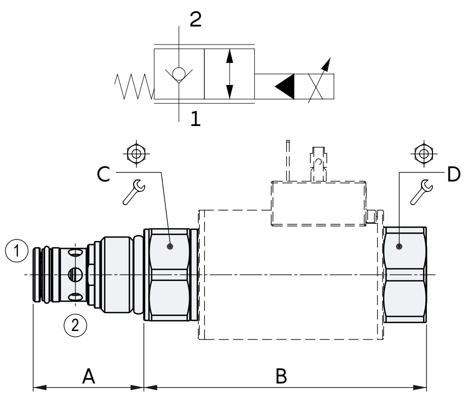
EC..T type
needle valves - 2 way

- Poppet type
- Driven by proportional solenoid
- Excellent low flow metering capability
- To be combined with an external compensator
- From SAE08 to SAE16 cavities

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

		EC08T	EC10T	EC12T	EC16T
Nominal flow [1]	with 5 bar *(72.5 psi)* stand-by	35 l/min *(9.2 US gpm)*	44 l/min *(11.6 US gpm)*	55 l/min *(15.5 US gpm)*	70 l/min *(18.5 US gpm)*
	with 10 bar *(145 psi)* stand-by	44 l/min *(11.6 US gpm)*	58 l/min *(15.3 US gpm)*	70 l/min *(18.5 US gpm)*	97 l/min *(25.6 US gpm)*
Max. pressure		350 bar *(5100 psi)*			
Oil leakage	at 350 bar (5100 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)*	0.35 cm³/min *(0.021 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties			
Viscosity		12-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+Polyurethane	from -25°C *(-13°F)* to 90°C *(194°F)*			
	with FPM seals	from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type [2]		BH			
Nominal voltages		12VDC - 24VDC ± 10%			
Power rating		33 W (BH)			
Max. control current		12V -> 1.70A - 24V -> 0.85A (BH)			
Dither frequency		from 100 Hz to 120 Hz			
Weight		0.275 kg *(0.61 lb)*	0.310 kg *(0.68 lb)*	0.390 kg *(0.86 lb)*	0.490 kg *(1.08 lb)*

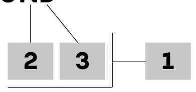
NOTE - For different conditions, please contact Walvoil Sales Dpt. - [1] Values are checked with cartridge in parallel with compensator - [2] For coils further features see from page 201.

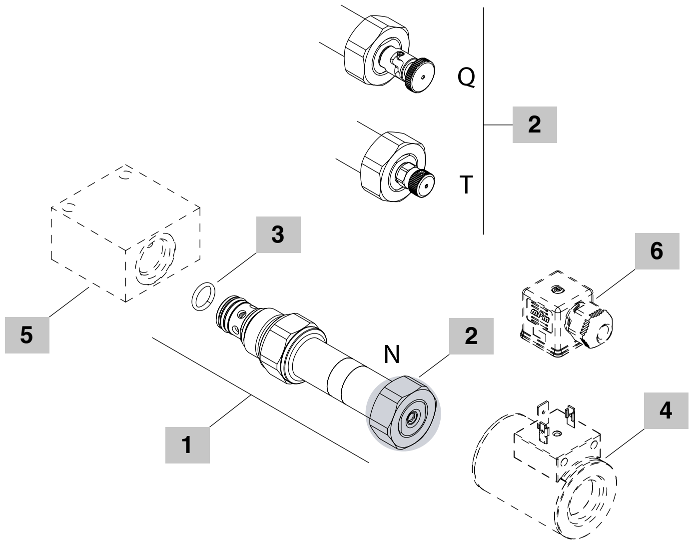


Valve type	A		B N/O without emergency		B T screw		B Q pull type with detent		C			D		
	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
EC08T	28.1	*1.11*	83	*3.27*	97.5	*3.84*	105.6	*4.16*	27	50	*37*	28	5	*3.7*
EC10T	32.5	*1.28*	83	*3.27*	97.5	*3.84*	105.6	*4.16*	27	50	*37*	28	5	*3.7*
EC12T	45	*1.77*	82.5	*3.25*	97	*3.82*	105.1	*4.14*	32	85	*63*	28	5	*3.7*
EC16T	45.6	*1.80*	81	*3.19*	95.5	*3.76*	103.6	*4.08*	32	85	*63*	28	5	*3.7*

Ordering codes and description composition

EC10T/A0NB





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
EC08T/A0NB	0EC08002056	Without emergency
EC08T/A0TB	0EC08002058	Screw type emergency
EC08T/A0QB	0EC08002073	"Push&twist" emergency
SAE cavity 10/2		
EC10T/A0NB	0EC10002025	Without emergency
EC10T/A0TB	0EC10002027	Screw type emergency
EC10T/A0QB	0EC10002029	"Push&twist" emergency
SAE cavity 12/2		
EC12T/A0NB	0EC12002018	Without emergency
EC12T/A0TB	0EC12002019	Screw type emergency
EC12T/A0QB	0EC12002020	"Push&twist" emergency
SAE cavity 16/2		
EC16T/A0NB	0EC16002033	Without emergency
EC16T/A0TB	0EC16002035	Screw type emergency
EC16T/A0QB	0EC16002038	"Push&twist" emergency

2 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type emergency
Q	"Push&twist" emergency

3 Seals

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

4 Coils

TYPE	CODE	DESCRIPTION
BH12VDC	4SLD001200A	12VDC-ISO4400 coil

For complete coils list see from page 201

5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-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 208

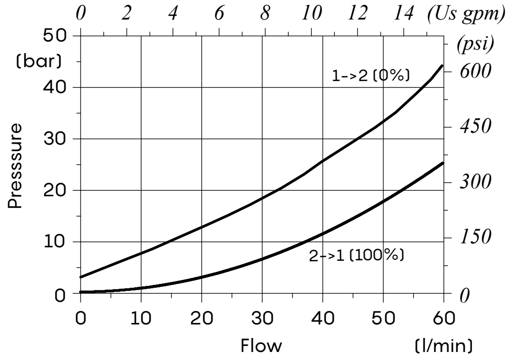
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

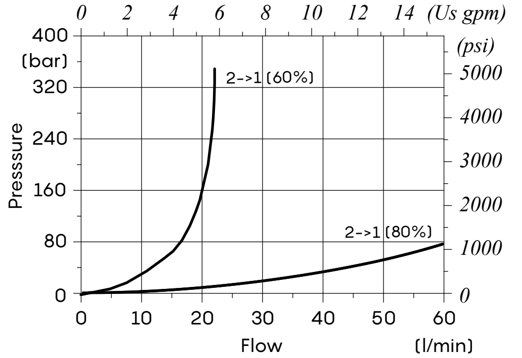
For complete connectors list see from page 201

Rating diagrams

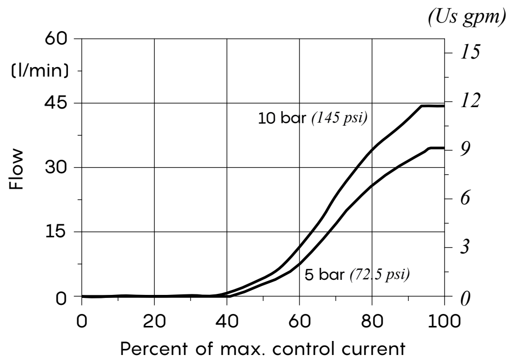
EC08T
pressure drop



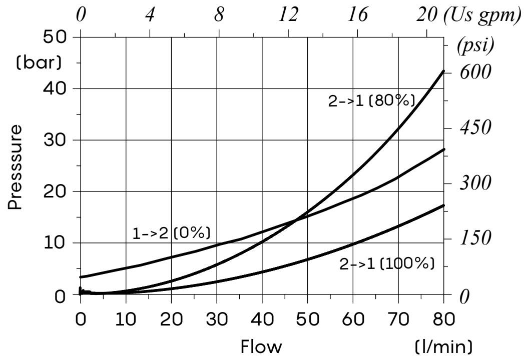
EC08T
pressure drop



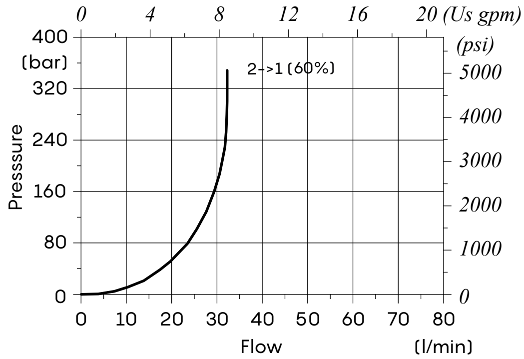
EC08T
flow regulating vs. % max. control current



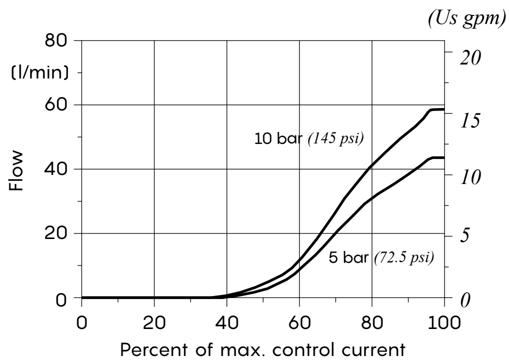
EC10T
pressure drop



EC10T
pressure drop

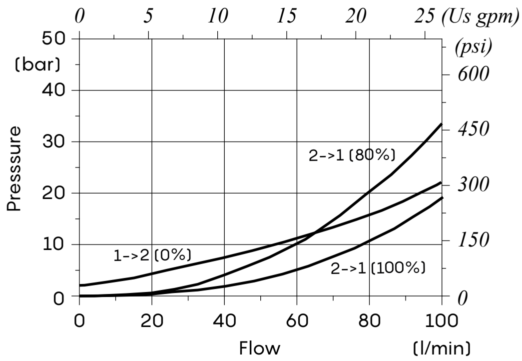


EC10T
flow regulating vs. % max. control current

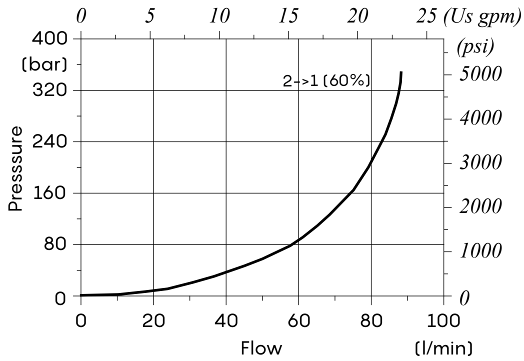


Rating diagrams

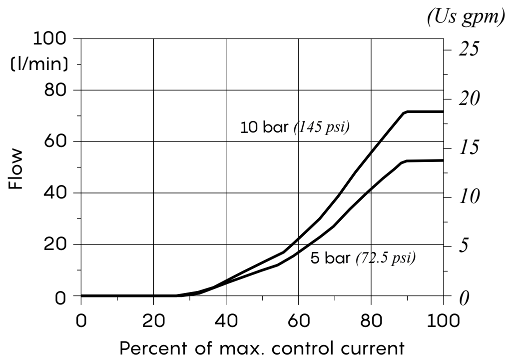
EC12T
pressure drop



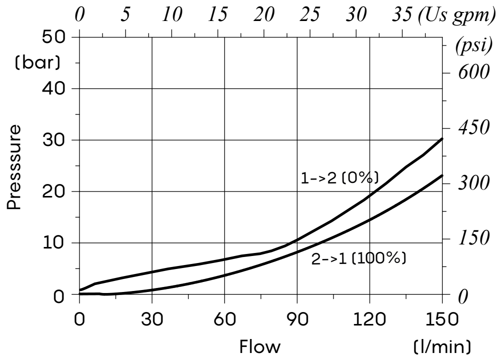
EC12T
pressure drop



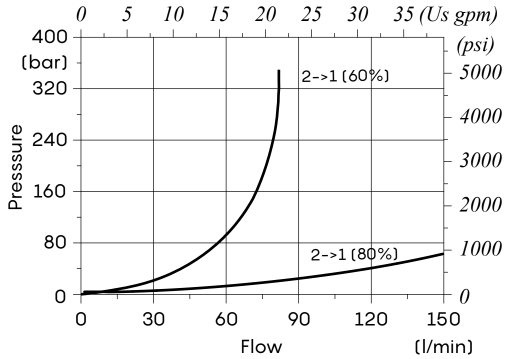
EC12T
flow regulating vs. % max. control current



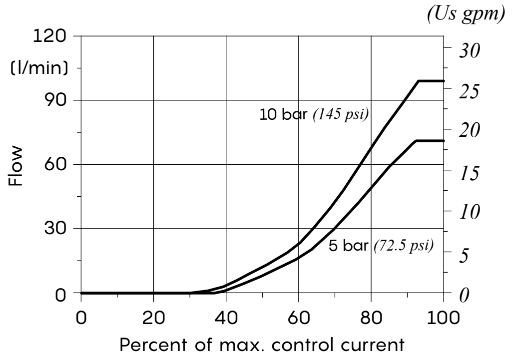
EC16T
pressure drop



EC16T
pressure drop



EC16T
flow regulating vs. % max. control current



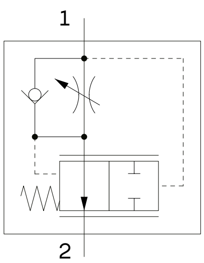
PW..A type
flow control pressure compensated valves - 2 way

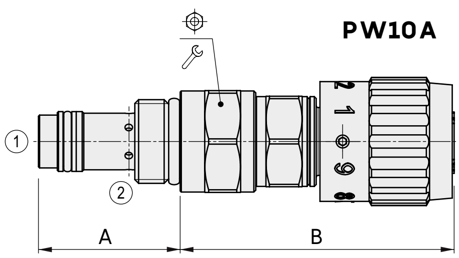
- Spool type
- Different types of manual adjustment
- Adjustment from port 1 to port 2
- With reverse free flow check
- From SAE08 to SAE16 cavities

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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2 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.





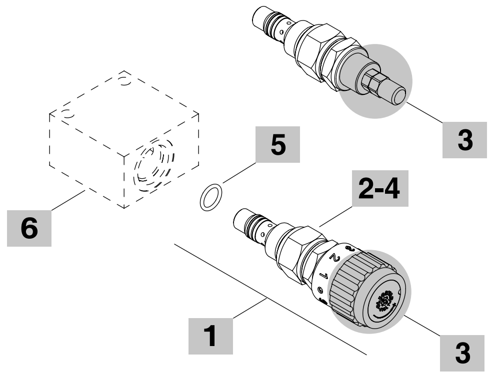
Valve type		A mm	A *in*	B mm	B *in*	⌖	Nm	*lbft*
PW08A/A	M	36.6	*1.44*	67.6	*2.66*	24	30	*22*
	S	36.6	*1.44*	62	*2.44*	24	30	*22*
PW10A/A	M	37.5	*1.48*	72.5	*2.85*	27	50	*37*
	S	37.5	*1.48*	69	*2.72*	27	50	*37*
PW12A/A	M	58.5	*2.30*	69.2	*2.72*	32	80	*59*
	S	58.5	*2.30*	61.5	*2.42*	32	80	*59*
PW16A/A	M	68	*2.68*	102	*4.02*	41	100	*74*
	S	68	*2.68*	96	*3.78*	41	100	*74*

Ordering codes and description composition

PW08A/AM1B

2 3 4 5

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2 A		
PW08A/AM1B	0PW08002000	Handknob adjustment
PW08A/AS1B	0PW08002003	Screw type adjustment
SAE cavity 10/2 A		
PW10A/AM1B	0PW10002000	Handknob adjustment
PW10A/AS1B	0PW10002001	Screw type adjustment
SAE cavity 12/2 A		
PW12A/AM1B	0PW12002000	Handknob adjustment
PW12A/AS1B	0PW12002001	Screw type adjustment
SAE cavity 16/2 A		
PW16A/AM1B	0PW16002000	Handknob adjustment
PW16A/AS1B	0PW16002001	Screw type adjustment

2 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

3 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

4 Pressure drop from 2 to 1

TYPE	DESCRIPTION
1	0.5 bar *(7.3 psi)*

5 Seals

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

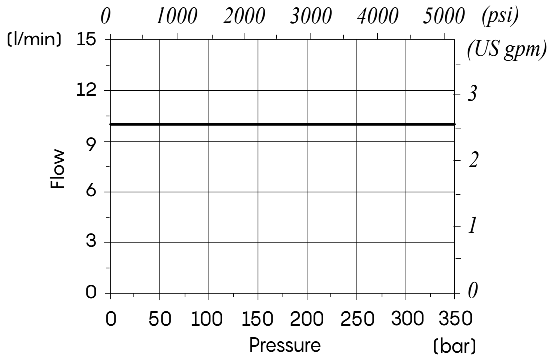
6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

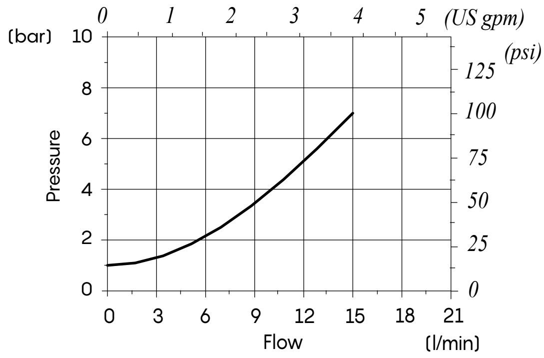
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

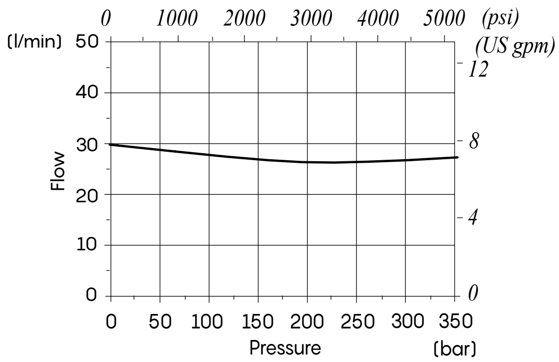
PW08A
pressure compensation diagram 1→2



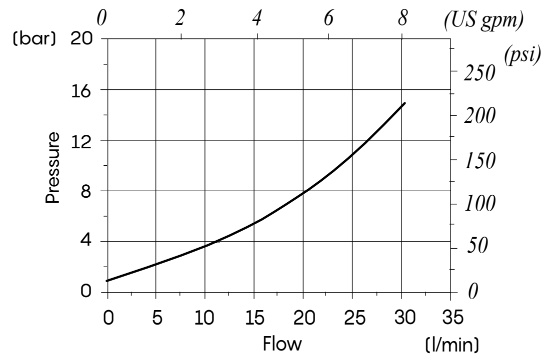
PW08A
pressure drop vs. flow 2→1



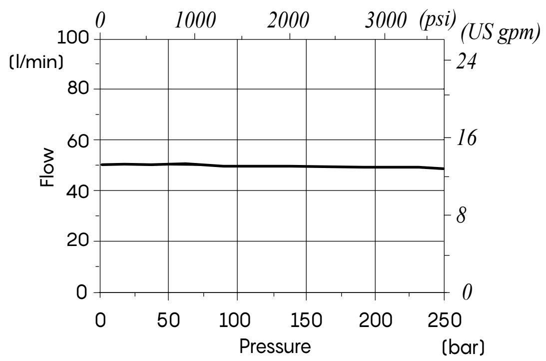
PW10A
pressure compensation diagram 1→2



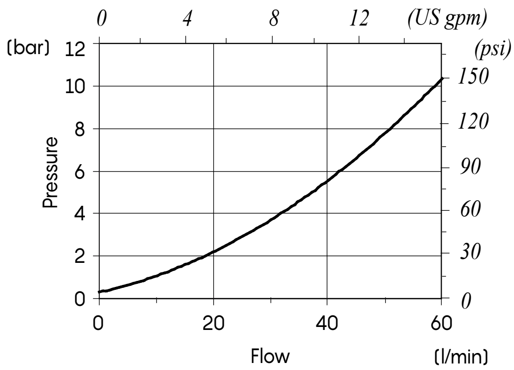
PW10A
pressure drop vs. flow 2→1



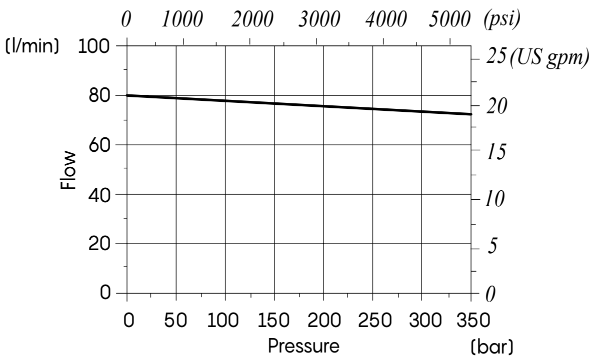
PW12A
pressure compensation diagram 1→2



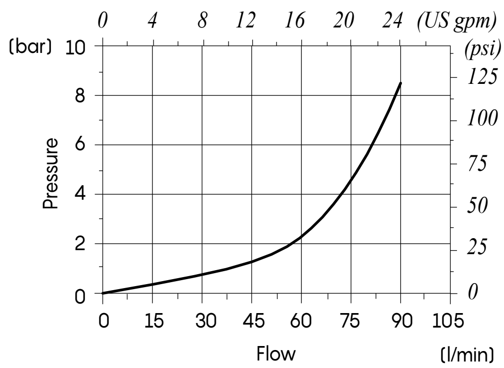
PW12A
pressure drop vs. flow 2→1



PW16A
pressure compensation diagram 1→2



PW16A
pressure drop vs. flow 2→1



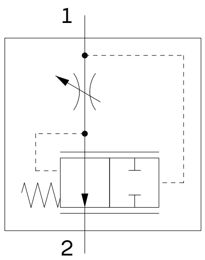
PU..A type
flow control pressure compensated valves - 2 way

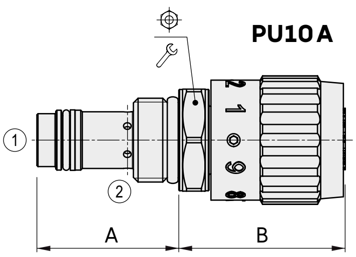
- Spool type
- Different types of manual adjustment
- Adjustment from port 1 to port 2
- From SAE08 to SAE16 cavities

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

		PU08 A	PU10 A	PU12 A	PU16 A
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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2 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)*

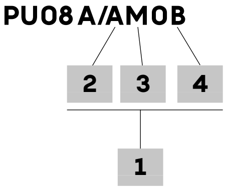
NOTE - For different conditions, please contact Walvoil Sales Dpt.

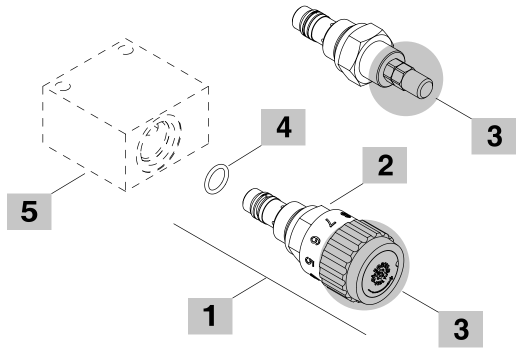




Valve type		A mm	A *in*	B mm	B *in*	⌖	🔧 Nm	🔧 *lbft*
PU08 A/A	M	33.6	*1.32*	48	*1.89*	24	30	*22*
	S	33.6	*1.32*	46	*1.81*	24	30	*22*
PU10 A/A	M	37.5	*1.48*	44	*1.73*	27	50	*37*
	S	37.5	*1.48*	42	*1.65*	27	50	*37*
PU12 A/A	M	58.5	*2.30*	48	*1.89*	32	80	*59*
	S	58.5	*2.30*	42	*1.65*	32	80	*59*
PU16 A/A	M	68	*2.68*	53.5	*2.11*	41	100	*74*
	S	68	*2.68*	51	*2.01*	41	100	*74*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2 A		
PU08 A/AM0B	0PU08002000	Handknob adjustment
PU08 A/AS0B	0PU08002003	Screw type adjustment
SAE cavity 10/2 A		
PU10 A/AM0B	0PU10002001	Handknob adjustment
PU10 A/AS0B	0PU10002000	Screw type adjustment
SAE cavity 12/2 A		
PU12 A/AM0B	0PU12002000	Handknob adjustment
PU12 A/AS0B	0PU12002003	Screw type adjustment
SAE cavity 16/2 A		
PU16 A/AM0B	0PU16002000	Handknob adjustment
PU16 A/AS0B	0PU16002007	Screw type adjustment

2 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

3 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

4 Seals

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

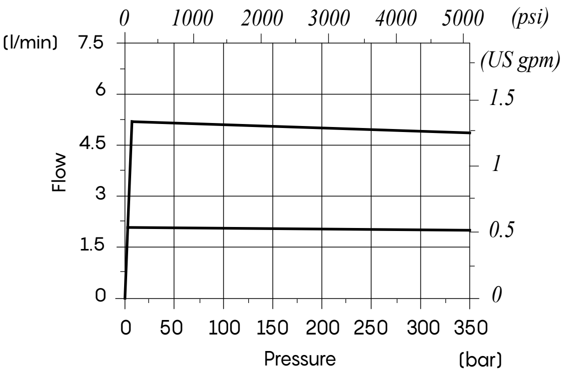
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G 3/4 std thread

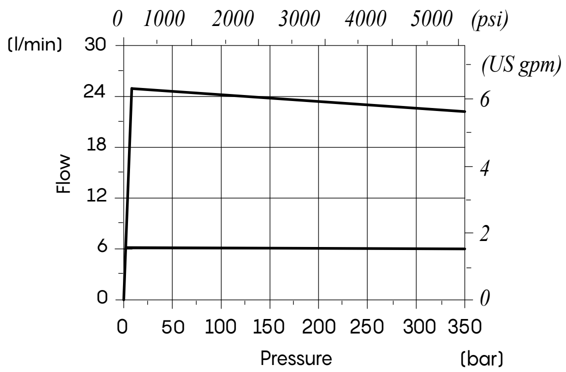
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

Rating diagrams

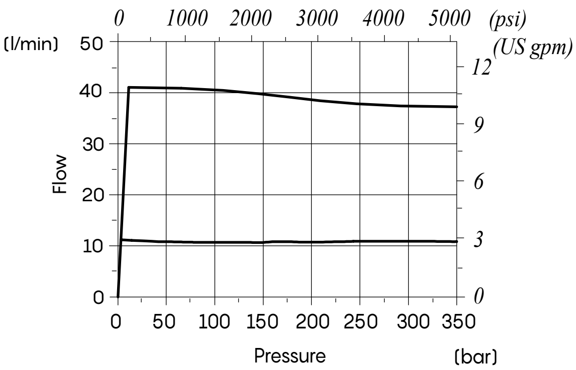
PU08 A
pressure compensation diagram 1→2



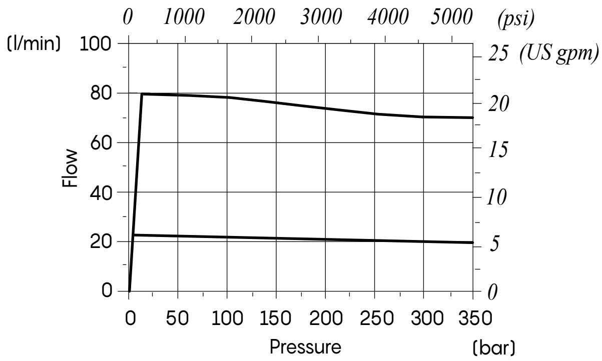
PU10 A
pressure compensationdiagram 1→2



PU12 A
pressure compensation diagram 1→2



PU16 A
pressure compensation diagram 1→2



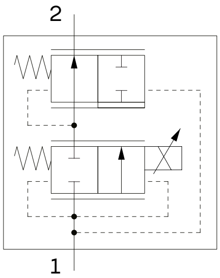
PU..X type
flow control pressure compensated valves - 2 way

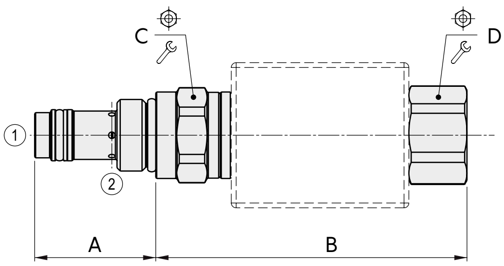
- Spool type
- Direct acting trough proportional solenoid
- Different types of emergencies available
- Adjustment from port 1 to port 2
- From SAE08 to SAE16 cavities

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 US gpm)*	90 l/min *(24 US gpm)*
Max. pressure		315 bar *(4600 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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2 A	SAE 10/2 A	SAE 12/2 A	SAE 16/2 A
Coil type*		BH or BQP19			
Nominal voltages		12VDC - 24VDC ± 10%			
Power rating		33 W (BH) - 15 W (BQP19)			
Max. control current		12V -> 1.70A - 24V -> 0.85A (BH) 12V -> 1.25A - 24V -> 0.63A (BQP19)			
Dither frequency		150Hz			
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 201.





Valve type	A		B N without emergency		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
PU10X	37.5	*1.48*	96.4	*3.80*	27	50	*37*	28	5	*3.7*

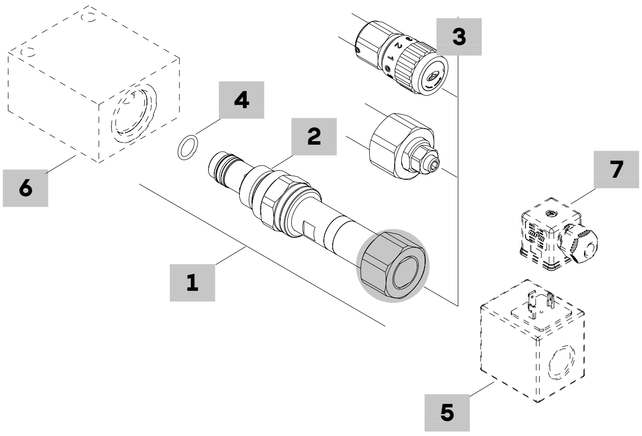
For dimensions with different type of emergency see list page 116

Ordering codes and description composition

PU08X/A0NB

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2 A		
PU08X/A0NB	0PU08002012	Without emergency
PU08X/A0TB	0PU08002013	Screw type emergency
PU08X/A0VB	0PU08002014	Handknob emergency
SAE cavity 10/2 A		
PU10X/A0NB	0PU10002020	Without emergency
PU10X/A0TB	0PU10002021	Screw type emergency
PU10X/A0VB	0PU10002022	Handknob emergency
SAE cavity 12/2 A		
PU12X/A0NB	0PU12002007	Without emergency
PU12X/A0TB	0PU12002008	Screw type emergency
PU12X/A0VB	0PU12002009	Handknob emergency
SAE cavity 16/2 A		
PU16X/A0NB	0PU16002010	Without emergency
PU16X/A0TB	0PU16002011	Screw type emergency
PU16X/A0VB	0PU16002012	Handknob emergency

2 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type
V	Handknob

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil

For complete coils list see from page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-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 208

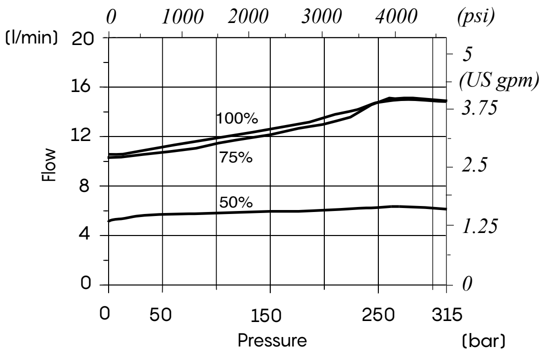
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

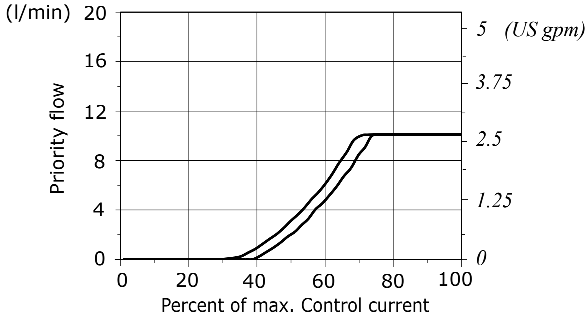
For complete connectors list see from page 201

Rating diagrams

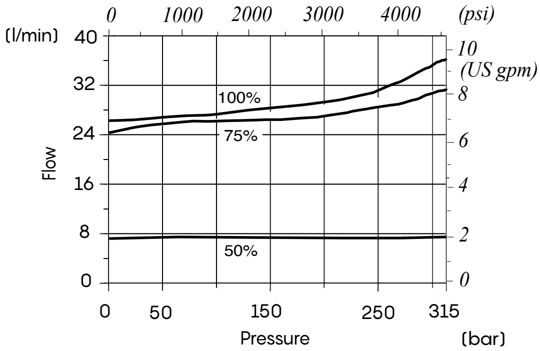
PU08X: pressure compensation diagram 1→2
for % of control current



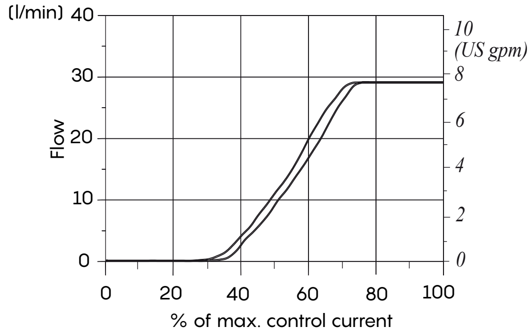
PU08X
flow regulating vs. % max. control current



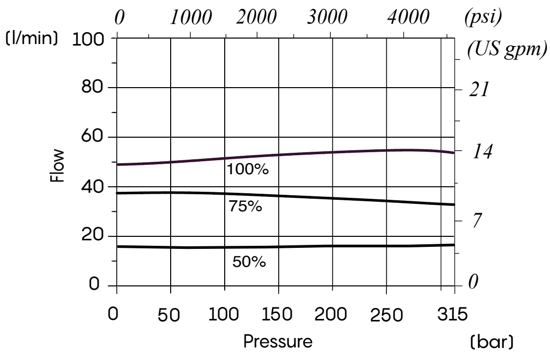
PU10X: pressure compensation diagram 1→2
for % of control current



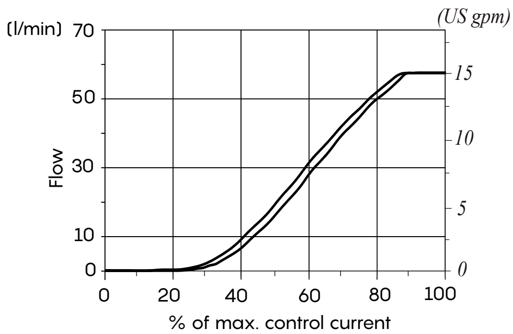
PU10X
flow regulating vs. % max. control current



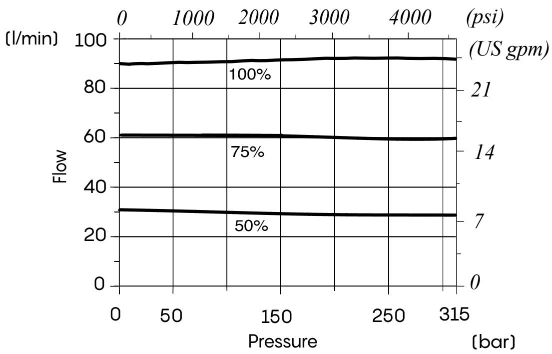
PU12X: pressure compensation diagram 1→2
for % of control current



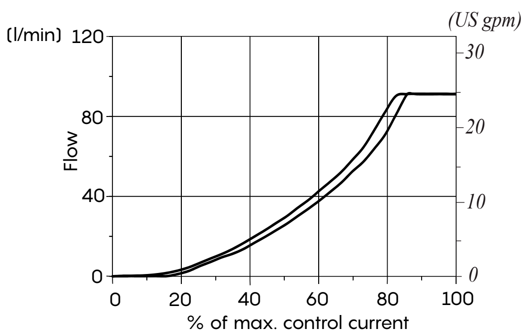
PU12X
flow regulating vs. % max. control current



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



PU16X
flow regulating vs. % max. control current



Types and dimensions

Valve type	A		B						C			D		
			N without emergency		T screw		V handknob							
	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
PU08X	36.6	*1.44*	93.9	*3.70*	107.9	*4.25*	139.9	*5.51*	24	30	*22*	28	5	*3.7*
PU10X	37.5	*1.48*	96.4	*3.80*	110.4	*4.35*	142.4	*5.61*	27	50	*37*	28	5	*3.7*
PU12X	58.5	*2.30*	97.4	*3.83*	111.4	*4.39*	145.4	*5.72*	32	75	*55*	28	5	*3.7*
PU16X	68	*2.68*	121.4	*4.78*	135.4	*5.33*	169.4	*6.67*	41	95	*70*	28	5	*3.7*

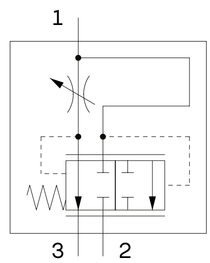
PP..A type
flow control pressure compensated valves - 3 way

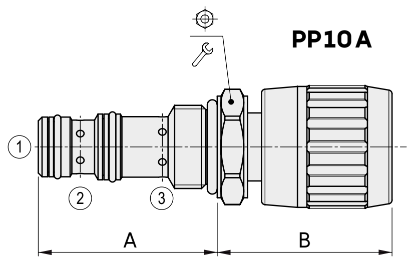
- Spool type
- Different types of manual adjustment
- With exceeding flow to pressure
- From SAE08 to SAE16 cavities

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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		20/18/14 ISO4406			
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/3	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)*

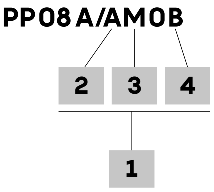
NOTE - For different conditions, please contact Walvoil Sales Dpt.

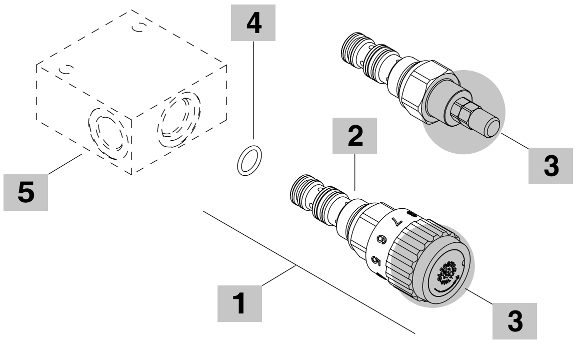




Valve type		A mm	A *in*	B mm	B *in*	⌖	Nm	*lbft*
PP08A/A	M	41.1	*1.62*	54.1	*2.13*	24	30	*22*
	S	41.1	*1.62*	48	*1.89*	24	30	*22*
PP10A/A	M	47.2	*1.86*	47.2	*1.86*	27	50	*37*
	S	47.2	*1.86*	42	*1.65*	27	50	*37*
PP12A/A	M	73.5	*2.89*	47.5	*1.87*	32	80	*59*
	S	73.5	*2.89*	43	*1.69*	32	80	*59*
PP16A/A	M	75	*2.95*	51.5	*2.03*	41	100	*74*
	S	75	*2.95*	51	*2.01*	41	100	*74*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
PP08 A/AM0B	0PP08002000	Handknob adjustment
PP08 A/AS0B	0PP08002004	Screw type adjustment
SAE cavity 10/3		
PP10 A/AM0B	0PP10002000	Handknob adjustment
PP10 A/AS0B	0PP10002005	Screw type adjustment
SAE cavity 12/3		
PP12 A/AM0B	0PP12002000	Handknob adjustment
PP12 A/AS0B	0PP12002004	Screw type adjustment
SAE cavity 16/3		
PP16 A/AM0B	0PP16002001	Handknob adjustment
PP16 A/AS0B	0PP16002006	Screw type adjustment

2 Pressure drop from 1 to 2

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

3 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob

4 Seals

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

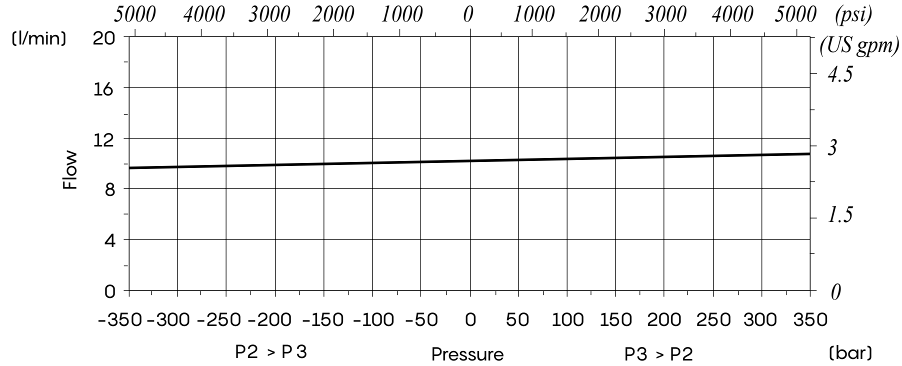
5 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/3-G 3/4	3CC1630E11	Aluminium body for cavity 16 valve, G 3/4 std thread

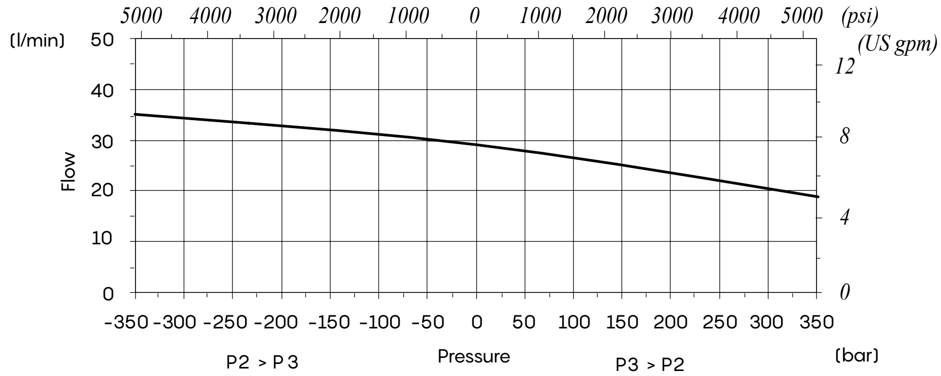
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

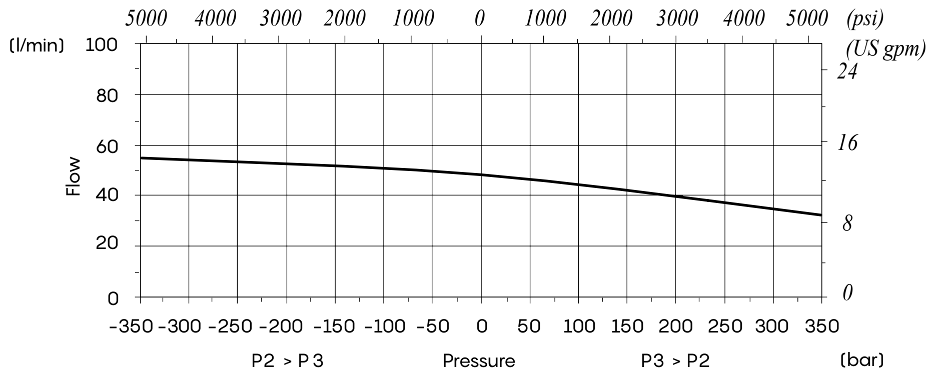
PP08 A
compensation diagram in 3 - changing the Δp between 2 and 3



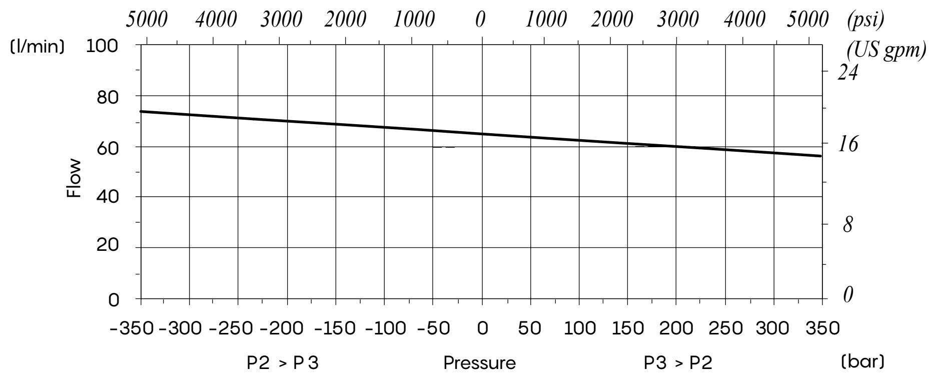
PP10 A
compensation diagram in 3 - changing the Δp between 2 and 3

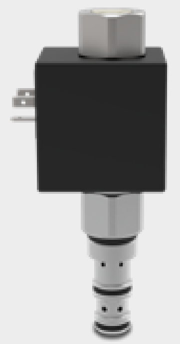


PP12 A
compensation diagram in 3 - changing the Δp between 2 and 3



PP16 A
compensation diagram in 3 - changing the Δp between 2 and 3





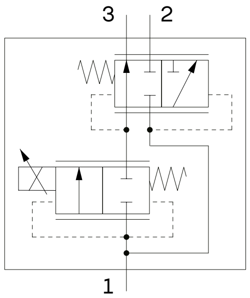
PP..X type
flow control pressure compensated valves - 3 way

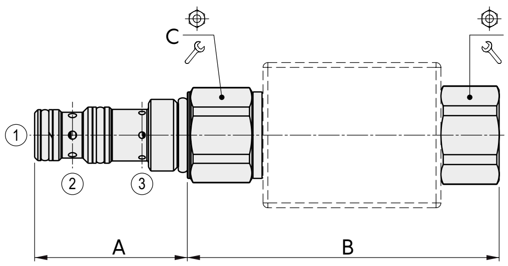
- Spool type
- Direct acting trough proportional solenoid
- Different types of emergencies available
- With exceeding flow to pressure
- From SAE08 to SAE16 cavities

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 *(4 US gpm)*	50 l/min *(13.2 US gpm)* 30 l/min *(7.9 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 *(24 US gpm)*
Max. pressure		315 bar *(4600 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 or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+ Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/3	SAE 10/3	SAE 12/3	SAE 16/3
Coil type*		BQP19 or BH			
Nominal voltages		12VDC - 24VDC ± 10%			
Power rating		33 W (BH) - 15 W (BQP19)			
Max. control current		12V -> 1.70A - 24V -> 0.85A (BH) 12V -> 1.25A - 24V -> 0.63A (BQP19)			
Dither frequency		150Hz			
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 201.



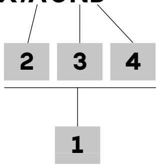


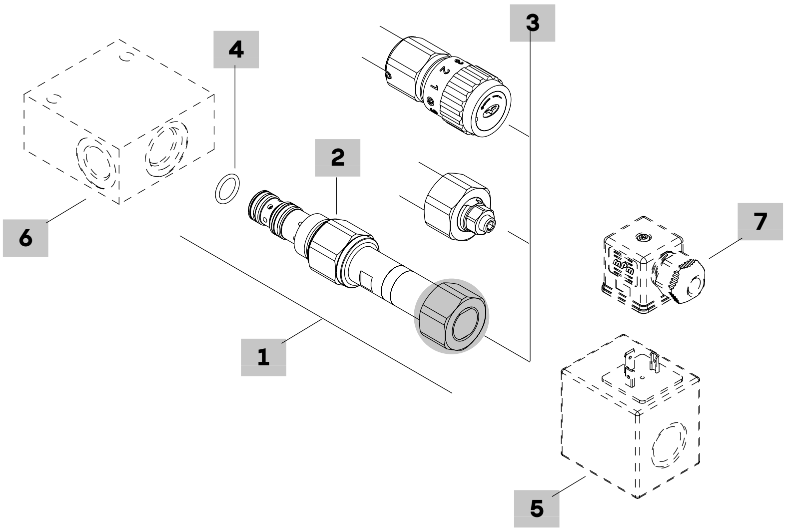
Valve type	A		B N without emergency		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
PP10X	47.2	*1.86*	96.4	*3.80*	27	50	*37*	28	5	*3.7*

For dimensions with different type of emergency see list page 124

Ordering codes and description composition

PP08X/A0NB





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
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

2 Pressure drop from 1 to 3

TYPE	DESCRIPTION
A	12 bar *(170 psi)*

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type
V	Handknob

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BH 12VDC	4SLD001200A	12VDC-ISO4400 coil
BQP19 12VDC	4SL5000126A	12VDC-ISO4400 coil

For complete coils list see from page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/3-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 210

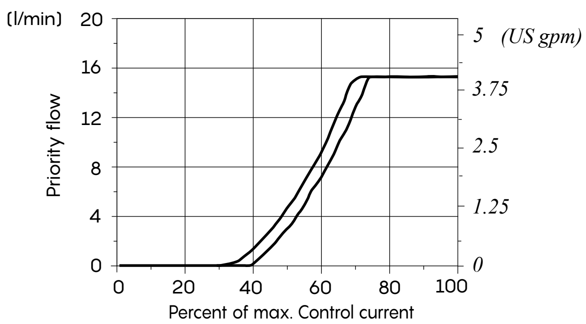
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

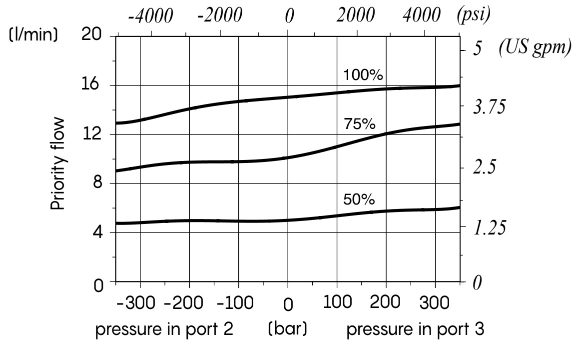
For complete connectors list see from page 201

Rating diagrams

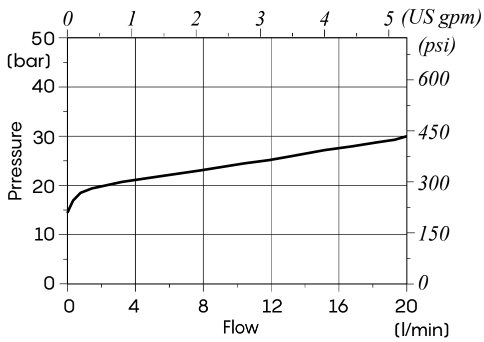
PP08X
flow regulating vs. % max. control current
Q_{in}=priority flow +30%



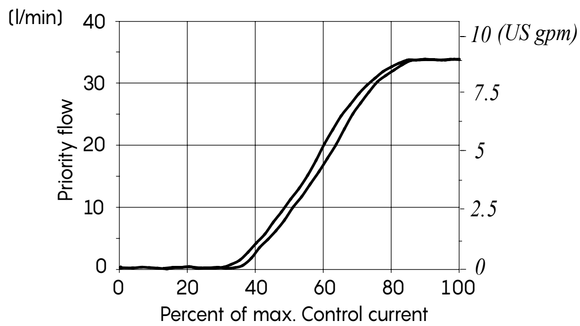
PP08X
pressure compensation diagram 2→3
for % of control current



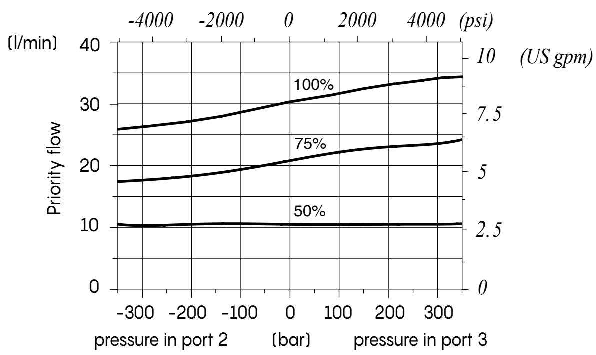
PP08X
pressure drop with de-energized coil
from 1→2



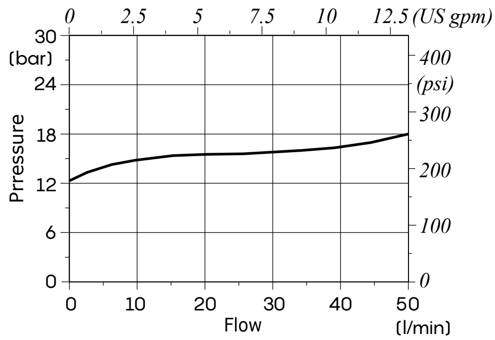
PP10X
flow regulating vs. % max. control current
Q_{in}=priority flow +5%



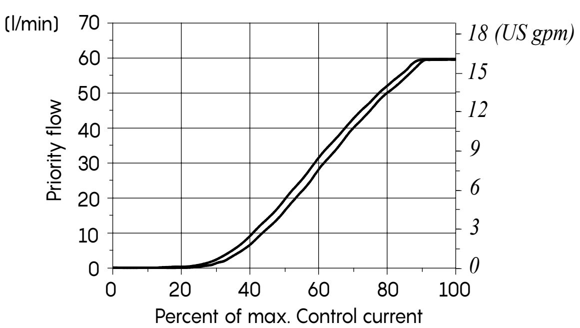
PP10X
pressure compensation diagram 2→3
for % of control current



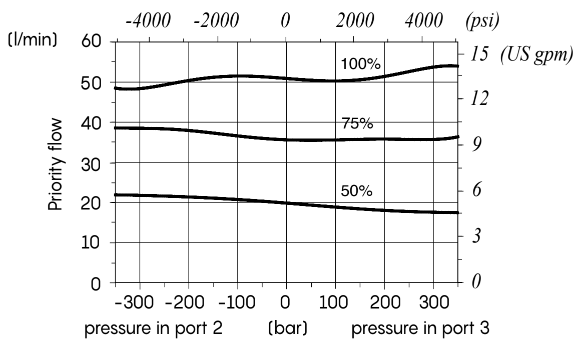
PP10X
pressure drop with de-energized coil
from 1→2



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

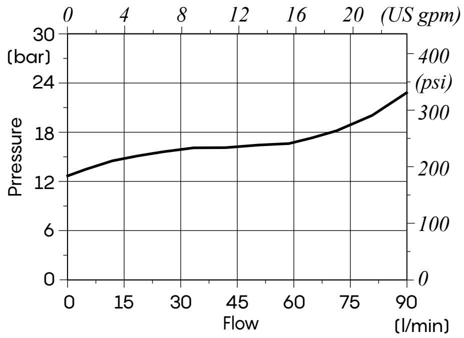


PP12X
pressure compensation diagram 2→3
for % of control current

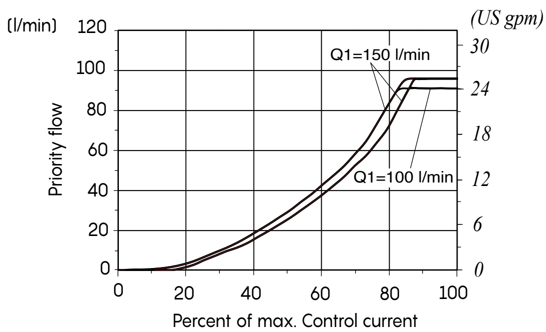


Rating diagrams

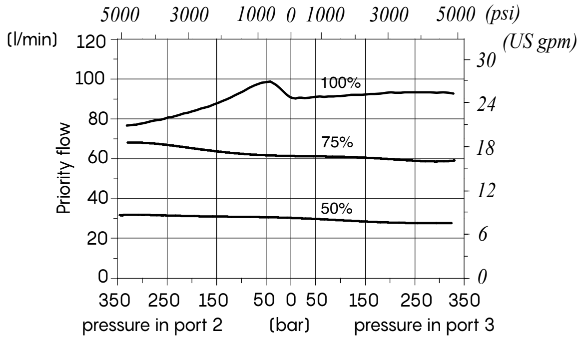
PP12X
pressure drop with de-energized coil
from 1→2



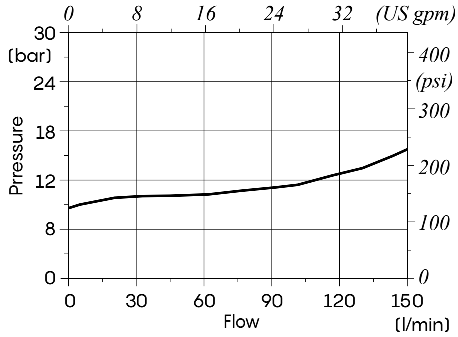
PP16X
flow regulating vs. % max. control current
Q_{in}=priority flow +10%



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



PP16X
pressure drop with de-energized coil
from 1→2



Types and dimensions

Valve type	A		B N without emergency		B T screw		B V handknob		C			D		
	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
PP08X	40.8	*1.60*	93.9	*3.70*	107.9	*4.25*	141.9	*5.59*	24	30	*22*	28	5	*3.7*
PP10X	47.2	*1.86*	96.4	*3.80*	110.4	*4.35*	144.1	*5.67*	27	50	*37*	28	5	*3.7*
PP12X	73.5	*2.89*	97.4	*3.83*	111.4	*4.39*	145.4	*5.72*	32	80	*59*	28	5	*3.7*
PP16X	75	*2.95*	121.4	*4.78*	135.4	*5.33*	168.9	*6.65*	41	100	*74*	28	5	*3.7*

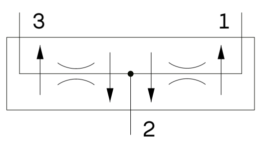
PD... type
flow control pressure compensated valves - 3 way

- Spool type
- Direct mechanical control
- Flow divider in one direction and flow combiner in the opposite direction
- From SAE10 to SAE16 cavities

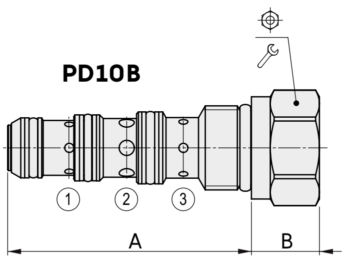
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

	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 or sinthetic hydraulic fluid with lubricating properties						
Viscosity	10-200 cSt						
Max level of contamination	20/18/14 ISO4406						
Fluid temperature with NBR seals+PTFE	from -25°C *(-13°F)* to 90°C *(194°F)*						
Fluid temperature with FPM seals	from -20°C *(-4°F)* to 110°C *(230°F)*						
Environmental temp. for working conditions	from -20°C *(-4°F)* to 60°C *(140°F)*						
Cavity	SAE 10/4	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 *(1.214 lb)*

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



PD10B



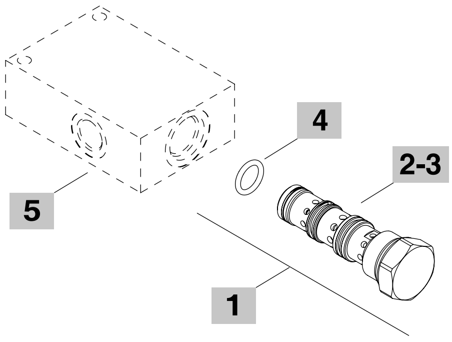
Valve type	A		B				
	mm	*in*	mm	*in*		Nm	*lbft*
PD10B	64.5	*2.54*	18	*0.71*	27	50	*37*
PD12B	83	*3.27*	12	*0.47*	32	80	*59*
PD16C	104	*4.09*	17	*0.69*	41	100	*74*

Ordering codes and description composition

PD10B/110B

2 3 4

1



1 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)*

2 Dividing-Combining ratio

TYPE	DESCRIPTION
1	50÷50

3 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)*

4 Seals

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

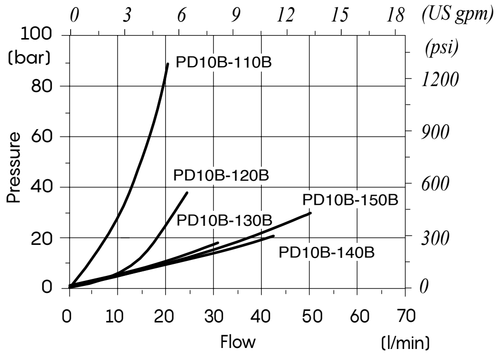
5 Valve body

TYPE	CODE	DESCRIPTION
SAE10/4-G 3/8	3CC1040C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/4-G 3/4	3CC1640E11	Aluminium body for cavity 16 valve, G 3/4 std thread

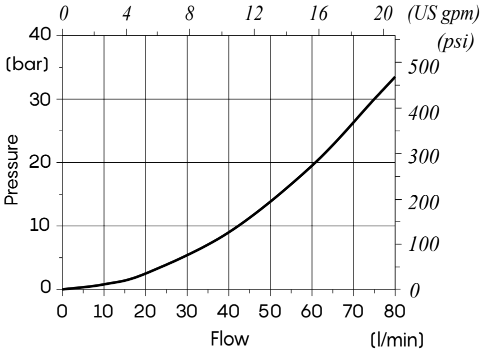
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

Rating diagrams

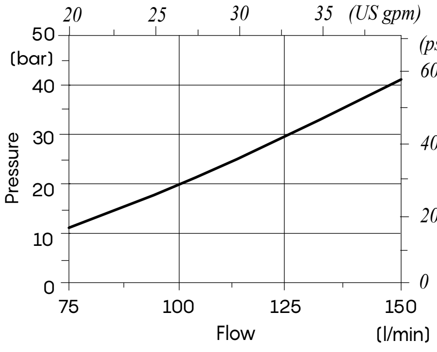
PD10B
pressure drop vs. flow
from 2->1/3 and from 1/3->2



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



PL..M type
flow control pressure compensated valves - 4 way

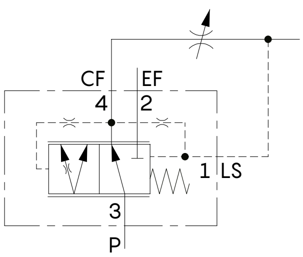
- Spool type
- Piloted acting by mechanical control
- Priority cartridges valves compensated with possibility of static and dynamic load sense
- External zinc-plated and corrosion-proof components
- Priority flow rate (port 4) not affected by changes in working conditions
- SAE10 to SAE16 cavities

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

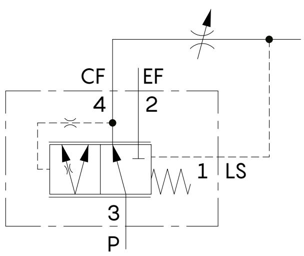
		PL10M	PL12M	PL16M
Nominal flow	on port 3	50 l/min *(13.2 US gpm)*	100 l/min *(26.4 US gpm)*	160 l/min *(42.2 US gpm)*
	max. on port 4	40 l/min *(10.5 US gpm)*	80 l/min *(21.1 US gpm)*	140 l/min *(36.9 US gpm)*
Max. pressure		350 bar *(5100 psi)*		
Stand-by	PL..M/..AB	5 bar *(72.5 psi)*	5 bar *(72.5 psi)*	5.5 bar *(79.7 psi)*
	PL..M/..BB	-	7.5 bar *(108 psi)*	-
	PL..M/..CB	10 bar *(145 psi)*	10.5 bar *(152 psi)*	11 bar *(159 psi)*
	PL..M/..DB	-	-	22 bar *(319 psi)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		18/16/13 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 10/4	SAE 12/4	SAE 16/4
Weight		0.224 kg *(0.494 lb)*	0.378 kg *(0.833 lb)*	0.800 kg *(1.76 lb)*

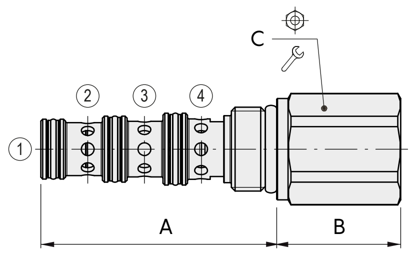
NOTE - For different conditions, please contact Walvoil Sales Dpt.

Dynamic circuit



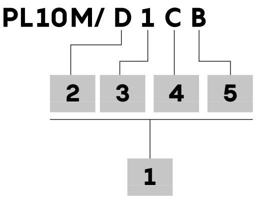
Static circuit

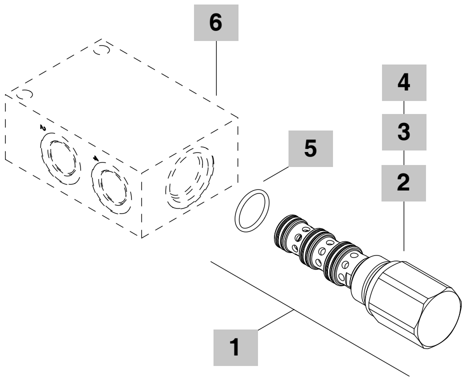




Valve type	A mm	A *in*	B mm	B *in*	C ⌖	C Nm	C *lbft*
PL10M	62.4	*2.46*	32.8	*1.29*	27	50	*37*
PL12M	81.9	*3.22*	35	*1.38*	32	80	*59*
PL16M	102.5	*4.04*	37.6	*1.48*	36	100	*74*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/4		
PL10M/S1AB	0PL10002000	Static circuit, 5 bar *(72.5 psi)* stand by
PL10M/S1CB	0PL10002002	Static circuit, 10 bar *(145 psi)* stand by
PL10M/D1AB	0PL10002003	Dynamic circuit, 5 bar *(72.5 psi)* stand by
PL10M/D1CB	0PL10002001	Dynamic circuit, 10 bar *(145 psi)* stand by
SAE cavity 12/4		
PL12M/S1AB	0PL12002004	Static circuit, 5 bar *(72.5 psi)* stand by
PL12M/S1BB	0PL12002005	Static circuit, 7.5 bar *(109 psi)* stand by
PL12M/S1CB	0PL12002003	Static circuit, 10.5 bar *(152 psi)* stand by
PL12M/D1AB	0PL12002000	Dynamic circuit, 5 bar *(72.5 psi)* stand by
PL12M/D1BB	0PL12002002	Dynamic circuit, 7.5 bar *(109 psi)* stand by
PL12M/D1CB	0PL12002001	Dynamic circuit, 10.5 bar *(152 psi)* stand by
SAE cavity 16/4		
PL16M/S1AB	0PL16002003	Static circuit, 5.5 bar *(79.7 psi)* stand by
PL16M/S1CB	0PL16002004	Static circuit, 11 bar *(159 psi)* stand by
PL16M/S1DB	0PL16002005	Static circuit, 22 bar *(319 psi)* stand by
PL16M/D1AB	0PL16002000	Dynamic circuit, 5.5 bar *(79.7 psi)* stand by
PL16M/D1CB	0PL16002001	Dynamic circuit, 11 bar *(159 psi)* stand by
PL16M/D1DB	0PL16002002	Dynamic circuit, 22 bar *(319 psi)* stand by

2 Circuit type

TYPE	DESCRIPTION
S	Static circuit
D	Dynamic circuit

3 Metering hole

TYPE	DESCRIPTION
1	Static circuit: Ø 0.5 mm *(0.0197 in)* Dynamic circuit: Ø 0.5 mm *(0.0197 in)*

4 Stand-by setting

TYPE	DESCRIPTION		
	PL10M	**PL12M**	**PL16M**
A	5 bar *(72.5 psi)*	5 bar *(72.5 psi)*	5.5 bar *(79.7 psi)*
B	-	7.5 bar *(109 psi)*	-
C	10 bar *(145 psi)*	10 bar *(145 psi)*	11 bar *(159 psi)*
D	-	-	22 bar *(319 psi)*

5 Seals

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

6 Valve body

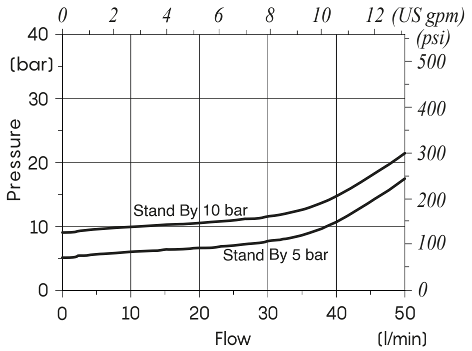
TYPE	CODE	DESCRIPTION
SAE10/4-G 1/2	3CC1040D11	Aluminium body for cavity 10 valve, G 1/2 std thread
SAE12/4-G 1/2	3CC1240D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/4-G 3/4	3CC1640E11	Aluminium body for cavity 16 valve, G 3/4 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 212

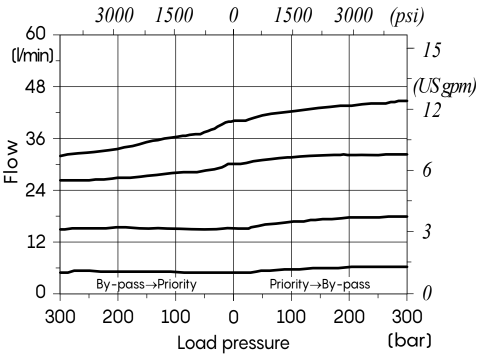
Rating diagrams

PL10M valve (valve body with G 1/2 ports)

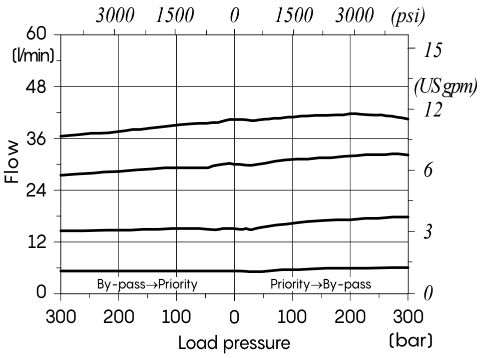
Pressure drop
from 3->2 (4 closed)



Priority flow vs. Load pressure
stand-by: 5 bar *(72.5 psi)*
inlet flow: 50 l/min *(13.2 US gpm)*

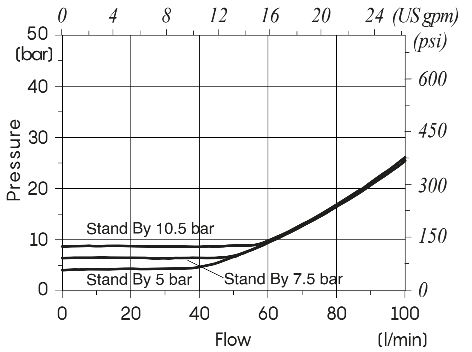


Priority flow vs. Load pressure
stand-by: 10 bar *(145 psi)*
inlet flow: 50 l/min *(13.2 US gpm)*

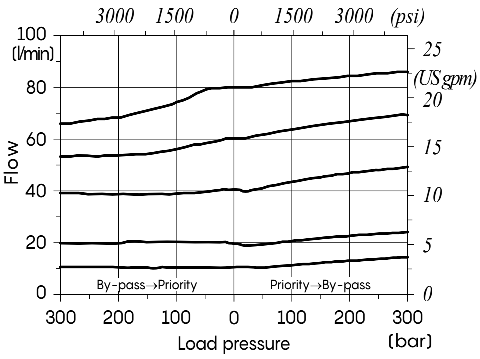


PL12M valve (valve body with G 1/2 ports)

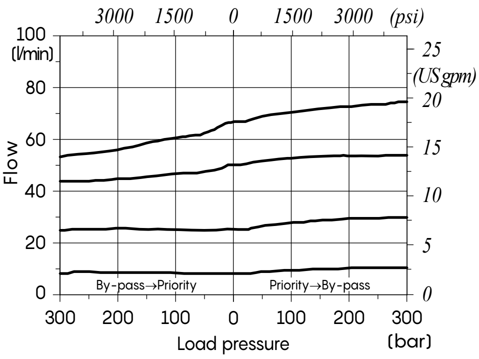
Pressure drop
from 3->2 (4 closed)



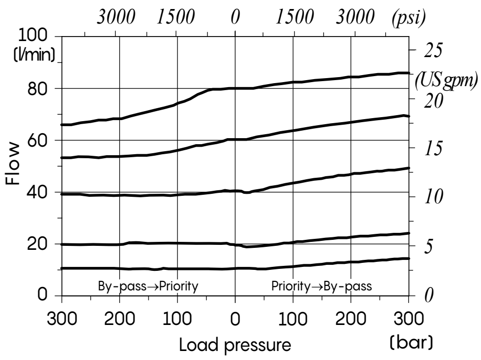
Priority flow vs. Load pressure
stand-by: 5 bar *(72.5 psi)*
inlet flow: 100 l/min *(26.4 US gpm)*



Priority flow vs. Load pressure
stand-by: 7.5 bar *(108 psi)*
inlet flow: 100 l/min *(26.4 US gpm)*



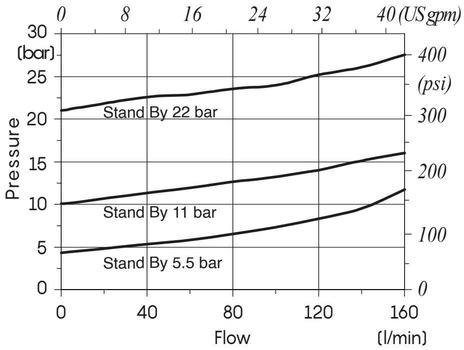
Priority flow vs. Load pressure
stand-by: 10.5 bar *(152 psi)*
inlet flow: 100 l/min *(26.4 US gpm)*



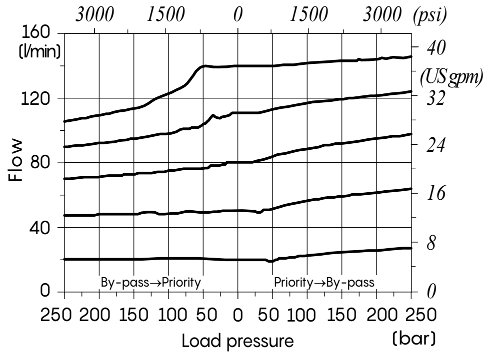
Rating diagrams

PL16M valve (valve body with G 3/4 ports)

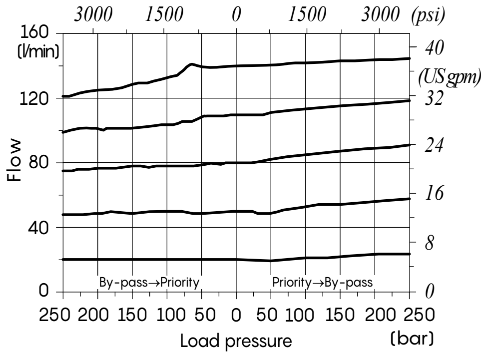
Pressure drop
from 3->2 (4 closed)



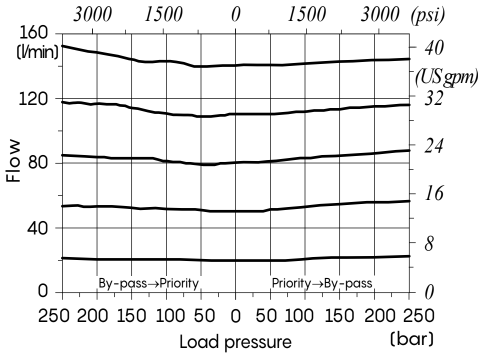
Priority flow vs. Load pressure
stand-by: 5.5 bar *(79.7 psi)*
inlet flow: 160 l/min *(42.2 US gpm)*



Priority flow vs. Load pressure
stand-by: 11 bar *(159 psi)*
inlet flow: 160 l/min *(42.2 US gpm)*



Priority flow vs. Load pressure
stand-by: 22 bar *(319 psi)*
inlet flow: 160 l/min *(42.2 US gpm)*



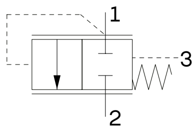
LA..QA type
logic element - 3 way

- Pilot to close configuration
- Fixed or adjustable configuration with lead sealing option
- Screw type adjustable configuration with lead sealing option
- SAE10 and SAE16 cavities

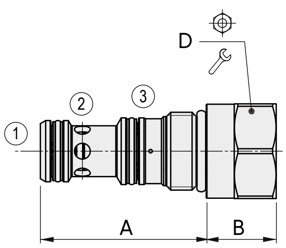
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		LA10QA	LA16QA
Nominal flow		80 l/min *(21 US gpm)*	190 l/min *(50 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Opening pressure		fixed setting: 1, 5, 10 bar *(14.5, 72.5, 145 psi)* adjustable setting: from 8 to 15 bar *(116 to 218 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	80 cm³/min *(4.88 in³/min)*	230 cm³/min *(14.03 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/3Q	SAE 16/3Q
Weight		0.15 kg *(0.33 lb)*	0.45 kg *(0.99 lb)*

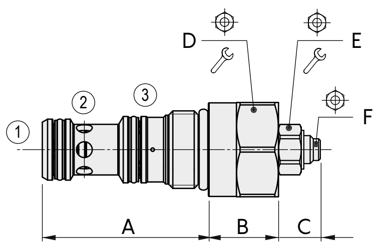
NOTE - For different conditions, please contact Walvoil Sales Dpt.



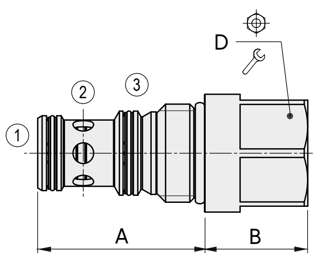
LA10QA/0...



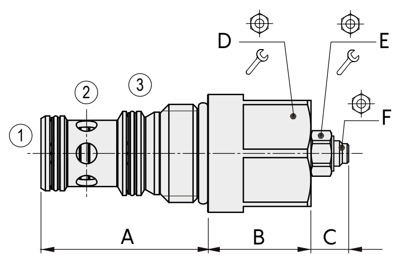
LA10QA/0R..



LA16QA/0...

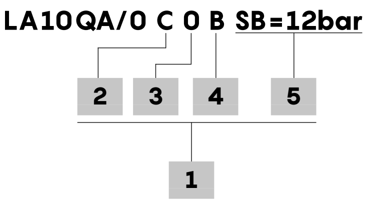


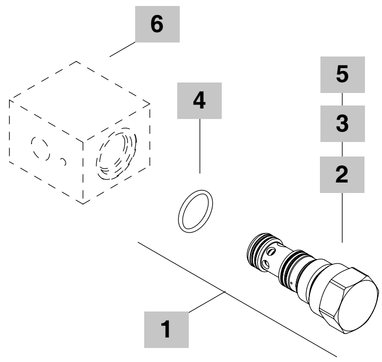
LA16QA/0R..



Valve type	A		B		C (max)		D			E			F
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
LA10QA	47.4	*1.87*	42	*1.65*	11.9	*0.47*	27	70	*52*	13	9.8	*7.2*	3
LA16QA	56.9	*2.24*	35.1	*1.38*	24	*0.94*	36	100	*74*	13	9.8	*7.2*	3

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3Q		
LA10QA/0B0B	0LA10Q002003	Fixed setting, 5 bar *(72.5 psi)*
LA10QA/0C0B	0LA10Q002001	Fixed setting, 10 bar *(145 psi)*
LA10QA/0R0B SB=12bar	0LA10Q002002	Adjustable setting, std setting 12 bar *(174 psi)*
SAE cavity 16/3Q		
LA16QA/0C0B	0LA16Q002000	Fixed setting, 10 bar *(145 psi)*
LA16QA/0R0B SB=12bar	0LA16Q002001	Adjustable setting, std setting 12 bar *(174 psi)*

2 Stand by

Setting is referred to 1 l/min *(0.26 Us gpm)* flow

TYPE	DESCRIPTION
A	Fixed setting: 1 bar *(14.5 psi)*
B	Fixed setting: 5 bar *(72.5 psi)*
C	Fixed setting: 10 bar *(145 psi)*
R	Adjustable setting: from 8 to 15 bar *(116 to 218 psi)*

3 Load sensing

TYPE	DESCRIPTION
0	Without sealing
X	With sealing: for valves with adjustable stand-by only

4 Seals

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

5 Stand-by setting

To be specified only with adjustable stand-by valve

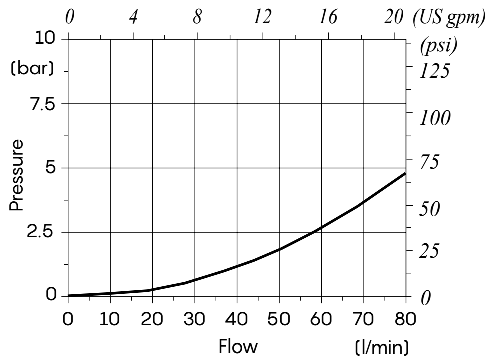
6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3Q-G 1/2	3CC1032D21	Steel body for cavity 08 valve, G 1/2 std thread
SAE16/3Q-G 3/4	3CC1632E21	Steel body for cavity 16 valve, G 3/4 std thread

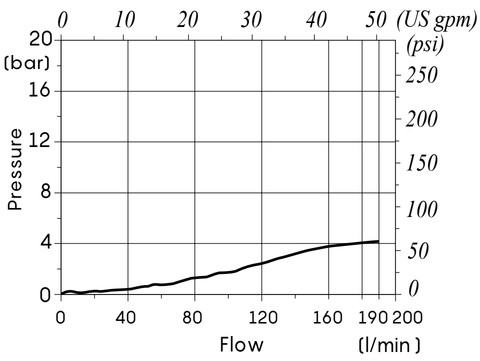
For aluminium bodies or different threading see from page 210

Rating diagrams

LA10QA pressure drop (fully open)



LA16QA pressure drop (fully open)



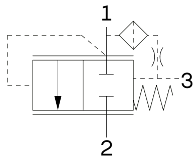
LB..QA type
logic element - 3 way

- Venting to open configuration
- Fixed or adjustable stand-by
- Screw type adjustable configuration with lead sealing option
- SAE10 and SAE16 cavities

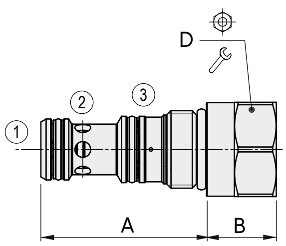
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		LB10QA	LB16QA
Nominal flow		80 l/min *(21 US gpm)*	190 l/min *(50 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Opening pressure		fixed setting: 5, 10 bar *(72.5, 145 psi)* adjustable setting: from 8 to 15 bar *(116 to 218 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	80 cm³/min *(4.88 in³/min)*	230 cm³/min *(14.03 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/3Q	SAE 16/3Q
Weight		0.15 kg *(0.33 lb)*	0.45 kg *(0.99 lb)*

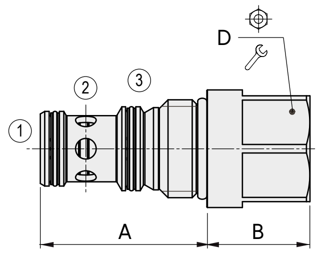
NOTE - For different conditions, please contact Walvoil Sales Dpt.



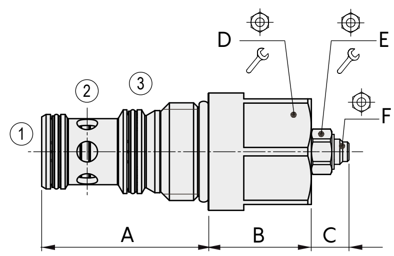
LB10QA/0...



LB16QA/0...



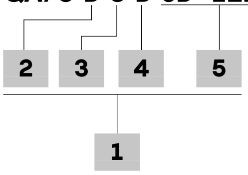
LB16QA/0R..

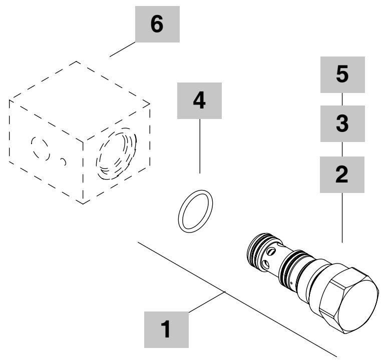


Valve type	A		B		C (max)		D			E			F
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
LB10QA	47.4	*1.87*	20	*0.79*	-	-	27	70	*52*	-	-	-	-
LB16QA	56.9	*2.24*	35.1	*1.38*	24	*0.94*	36	100	*74*	13	9.8	*7.2*	3

Ordering codes and description composition

LB10QA/0 B 0 B SB=12bar





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3Q		
LB10QA/0B0B	0LB10Q002000	Fixed setting, 5 bar *(72.5 psi)*
SAE cavity 16/3Q		
LB16QA/0B0B	0LB16Q002000	Fixed setting, 5 bar *(72.5 psi)*
LB16QA/0R0B	0LB16Q002001	Adjustable setting, stand-by 12 bar *(174 psi)*

2 Stand by

Setting is referred to 1 l/min *(0.26 Us gpm)* flow

TYPE	DESCRIPTION
B	Fixed setting: 5 bar *(72.5 psi)*
C	Fixed setting: 10 bar *(145 psi)*
R	Adjustable setting: from 8 to 15 bar *(116 to 218 psi)*

3 Load sensing

TYPE	DESCRIPTION
0	Without sealing
X	With sealing: for valves with adjustable stand-by only

4 Seals

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

5 Stand-by setting

To be specified only with adjustable stand-by valve

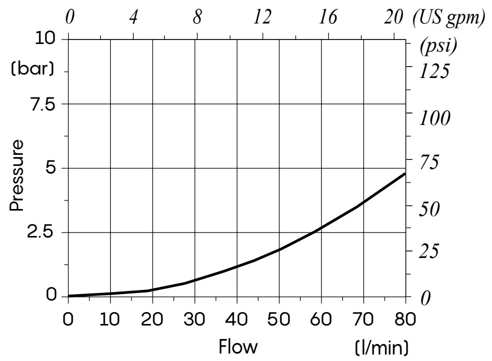
6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3Q-G 1/2	3CC1032D21	Steel body for cavity 08 valve, G 1/2 std thread
SAE16/3Q-G 3/4	3CC1632E21	Steel body for cavity 16 valve, G 3/4 std thread

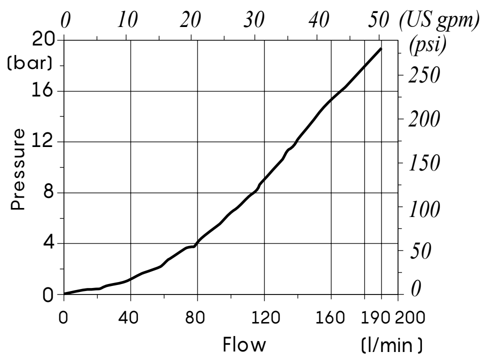
For aluminium bodies or different threading see from page 210

Rating diagrams

LB10QA pressure drop (fully open)



LB16QA pressure drop (fully open)



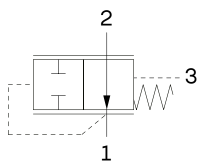
LC..QA type
logic element - 3 way

- Venting to close configuration
- Fixed or adjustable stand-by
- Screw type adjustable configuration with lead sealing option
- SAE10 and SAE16 cavities

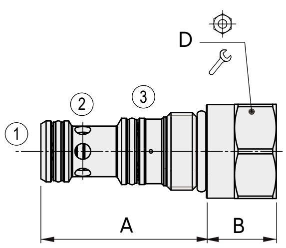
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		LC10QA	LC16QA
Nominal flow		80 l/min *(21 US gpm)*	190 l/min *(50 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Opening pressure		fixed setting: 5, 10 bar *(72.5, 145 psi)* adjustable setting: from 8 to 15 bar *(116 to 218 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	80 cm³/min *(4.88 in³/min)*	230 cm³/min *(14.03 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/3Q	SAE 16/3Q
Weight		0.15 kg *(0.33 lb)*	0.45 kg *(0.99 lb)*

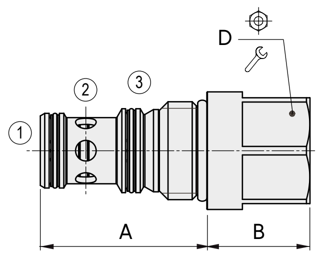
NOTE - For different conditions, please contact Walvoil Sales Dpt.



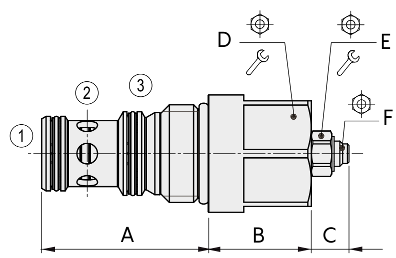
LC10QA/0...



LC16QA/0...



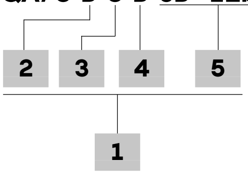
LC16QA/0R..

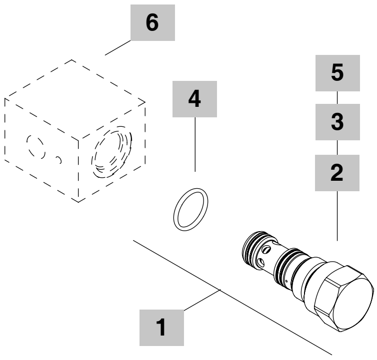


Valve type	A		B		C (max)		D			E			F
	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*	
LC10QA	47.4	*1.87*	20	*0.79*	-	-	27	70	*52*	-	-	-	-
LC16QA	56.9	*2.24*	35.1	*1.38*	24	*0.94*	36	100	*74*	13	9.8	*7.2*	3

Ordering codes and description composition

LC10QA/0 B 0 B SB=12bar





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3Q		
LC10QA/0B0B	0LC10Q002001	Fixed setting, 5 bar *(72.5 psi)*
LC10QA/0C0B	0LC10Q002002	Fixed setting, 10 bar *(145 psi)*
SAE cavity 16/3Q		
LC16QA/0B0B	0LC16Q002001	Fixed setting, 5 bar *(72.5 psi)*
LC16QA/0R0B	0LC16Q002003	Adjustable setting, 12 bar *(174 psi)*

2 Stand by

Setting is referred to 1 l/min *(0.26 Us gpm)* flow

TYPE	DESCRIPTION
B	Fixed setting: 5 bar *(72.5 psi)*
C	Fixed setting: 10 bar *(145 psi)*
R	Adjustable setting: from 8 to 15 bar *(116 to 218 psi)*

3 Load sensing

TYPE	DESCRIPTION
0	Without sealing
X	With sealing: for valves with adjustable stand-by only

4 Seals

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

5 Stand-by setting

To be specified only with adjustable stand-by valve

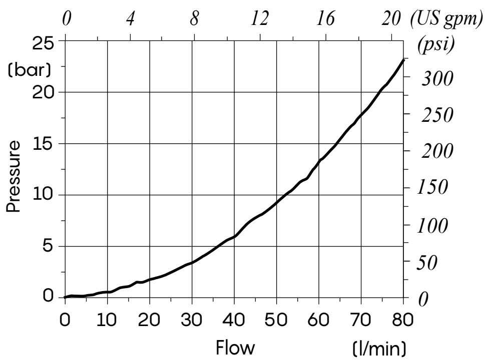
6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3Q-G 1/2	3CC1032D21	Steel body for cavity 08 valve, G 1/2 std thread
SAE16/3Q-G 3/4	3CC1632E21	Steel body for cavity 16 valve, G 3/4 std thread

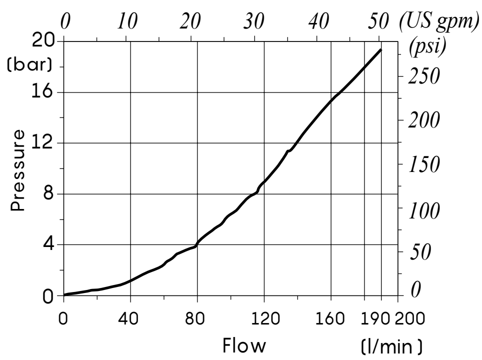
For aluminium bodies or different threading see from page 210

Rating diagrams

LC10QA pressure drop (fully open)



LC16QA pressure drop (fully open)



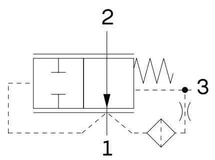
LD..QA type
logic element - 3 way

- Pilot to open configuration
- Fixed or adjustable stand-by
- Screw type adjustable configuration with lead sealing option
- SAE10 and SAE16 cavities

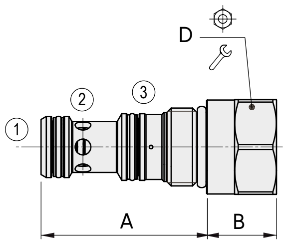
Technical specifications and diagrams are measured with mineral oil of 46 cSt viscosity at 40°C *(104°F)* temperature.

		LD10QA	LD16QA
Nominal flow		80 l/min *(21 US gpm)*	190 l/min *(50 US gpm)*
Max. pressure		350 bar *(5100 psi)*	
Opening pressure		fixed setting: 1, 5, 10 bar *(14.5, 72.5, 145 psi)* adjustable setting: from 8 to 15 bar *(116 to 218 psi)*	
Oil leakage	at 210 bar *(3050 psi)*	80 cm^3/min *(4.88 in^3/min)*	230 cm^3/min *(14.03 in^3/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 10/3Q	SAE 16/3Q
Weight		0.15 kg *(0.33 lb)*	0.45 kg *(0.99 lb)*

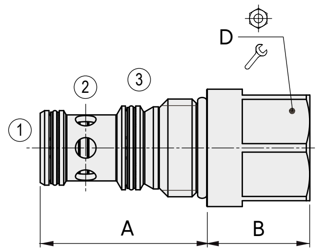
NOTE - For different conditions, please contact Walvoil Sales Dpt.



LD10QA/0...



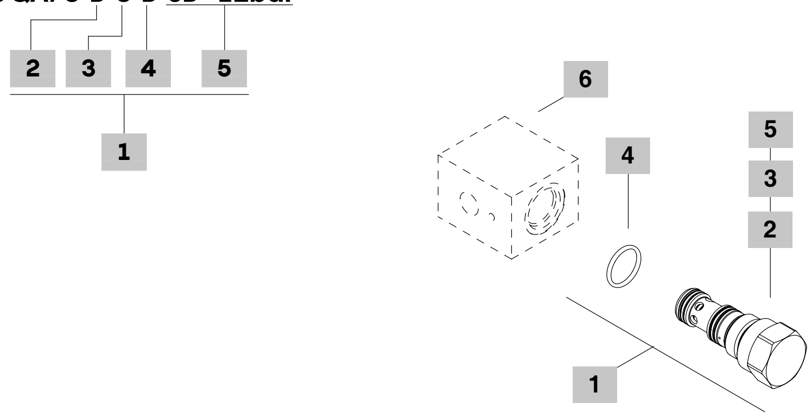
LD16QA/0...



Valve type	A		B		D		
	mm	*in*	mm	*in*		Nm	*lbft*
LD10QA	47.4	*1.87*	20	*0.79*	27	70	*52*
LD16QA	56.9	*2.24*	35.1	*1.38*	36	100	*74*

Ordering codes and description composition

LD10QA/0 B 0 B SB=12bar



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3Q		
LD10QA/0B0B	0LD10Q002000	Fixed setting, 5 bar *(72.5 psi)*
SAE cavity 16/3Q		
LD16QA/0B0B	0LD16Q002000	Fixed setting, 5 bar *(72.5 psi)*

2 Stand by

Setting is referred to 1 l/min *(0.26 Us gpm)* flow

TYPE	DESCRIPTION
A	Fixed setting: 1 bar *(14.5 psi)*
B	Fixed setting: 5 bar *(72.5 psi)*
C	Fixed setting: 10 bar *(145 psi)*;
R	Adjustable setting: from 8 to 15 bar *(116 to 218 psi)*;

3 Load sensing

TYPE	DESCRIPTION
0	Without sealing
X	With sealing: for valves with adjustable stand-by only

4 Seals

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

5 Stand-by setting

To be specified only with adjustable stand-by valve

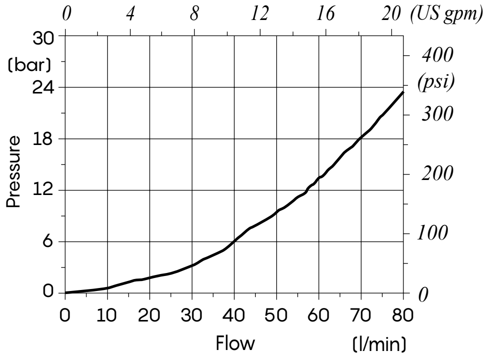
6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3Q-G 1/2	3CC1032D21	Steel body for cavity 08 valve, G 1/2 std thread
SAE16/3Q-G 3/4	3CC1632E21	Steel body for cavity 16 valve, G 3/4 std thread

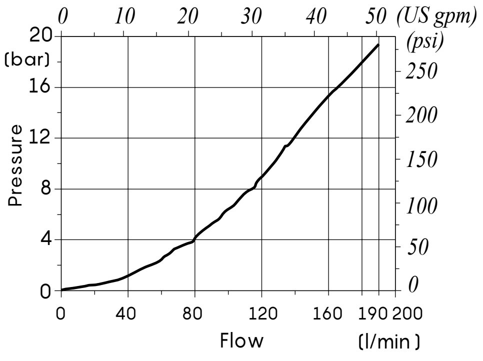
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For aluminium bodies or different threading see from page 210

Rating diagrams

LD10QA pressure drop (fully open)



LD16QA pressure drop (fully open)



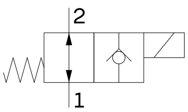
EB08M type
directional solenoid valves - 2 way/2 positions

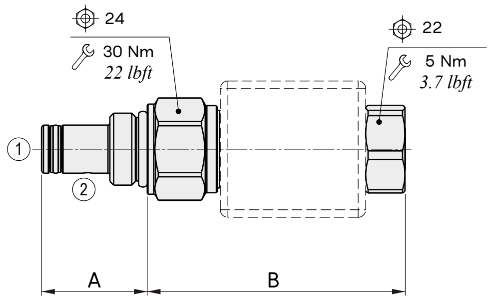
- Poppet type
- Direct acting with on-off solenoid
- Different types of emergencies available
- Configuration normally open

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

		EB08M
Nominal flow		2 l/min *(0.53 US gpm)*
Max. pressure		350 bar *(5100 psi)*
Oil leakage	at 210 bar *(5100 psi)*	0.25 cm^3/min *(0.015 in^3/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 8/2
Coil type*		BER
Nominal voltages		12VDC - 24VDC ± 10%
Power rating		19 W
Weight		0.399 kg *(0.88 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

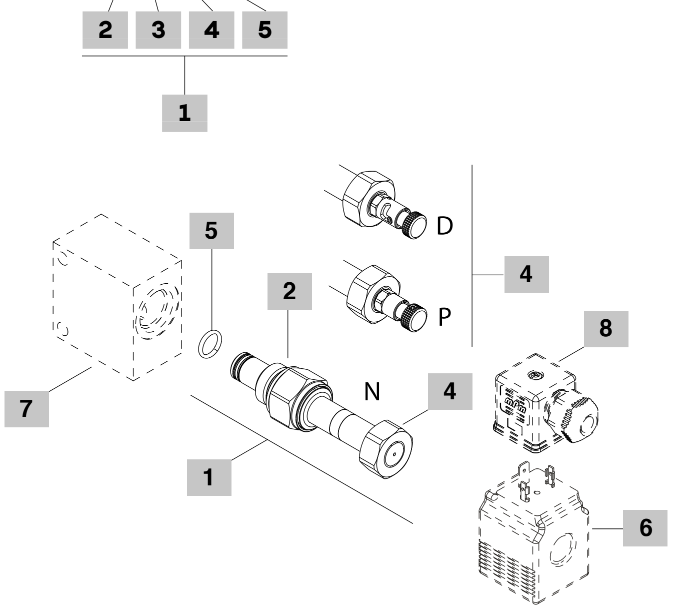




Valve type	A		B					
			N without emergency		P push button		D push type with detent	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*
EB08M	28	*1.10*	68.4	*2.69*	91.3	*3.59*	94	*3.7*

Ordering codes and description composition

EB08M/ 1 0 N B



1 Cartridges

TYPE	CODE	DESCRIPTION
<u>**SAE cavity 08/2**</u>		
EB08M/10NB	0EB08002001	(N.O.) without emergency
EB08M/1HDB	0EB08002000	As previous one, push type with detent emergency
EB08M/10PB	0EB08002002	As previous one, push button emergency

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration

3 Anti tampering arrangement

TYPE	DESCRIPTION
0	Without anti tampering arrangement
H	With anti tampering arrangement

4 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push button emergency
D	Push type with detent

Note: for configurations with different emergency types contact Sales Dept.

5 Seals

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

6 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

7 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-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 208

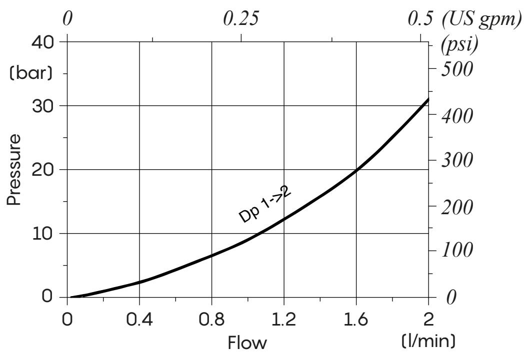
8 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

For complete connectors list see from page 201

Rating diagrams

Pressure drop vs. flow



EE..M type
directional solenoid valves - 2 way/2 positions

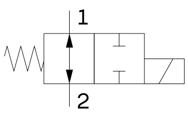
- Spool type
- Direct acting with on-off solenoid
- Different types of emergencies available
- Normally open and closed configurations
- From SAE08 to SAE10 cavities

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

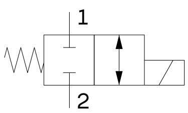
		EE08M	EE10M
Nominal flow		15 l/min *(3.96 US gpm)*	40 l/min *(10.57 US gpm)*
Max. pressure		250 bar *(3600 psi)*	
Oil leakage	at 210 bar *(5100 psi)*	20 cm³/min *(1.22 in³/min)*	40 cm³/min *(2.44 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 8/2	SAE 10/2
Coil type*		BER	BC
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		19 W	26 W
Weight		0.122 kg *(0.27 lb)*	0.19 kg *(0.42 lb)*

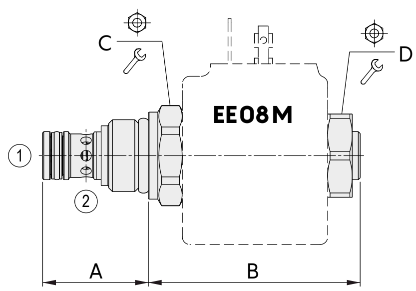
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

Normally open configuration



Normally closed configuration

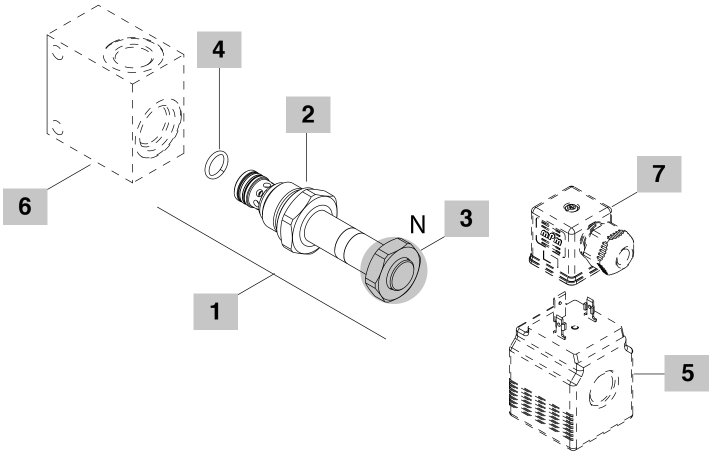




Valve type	A		B N without emergency		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
EE08M	28	*1.10*	56.1	*2.21*	24	30	*22*	22	5±1	*3.7*
EE10M	32.3	*1.27*	68	*2.68*	27	50	*37*	23	5±1	*3.7*

Ordering codes and description composition

EE08M/ 1 0 N B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
EE08M/10NB	0EE08002006	Normally open configuration (N.O.) without emergency
EE08M/20NB	0EE08002007	Normally closed configuration (N.C.) without emergency
SAE cavity 10/2		
EE10M/10NB	0EE10002013	Normally open configuration (N.O.) without emergency
EE10M/20NB	0EE10002014	Normally closed configuration (N.C.) without emergency

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

3 Emergency

TYPE	DESCRIPTION
N	Without emergency

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil
BC12VDC	4SL8000120	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 1/2	3CC1020D11	Aluminium body for cavity 10 valve, G 1/2 std thread

Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 208

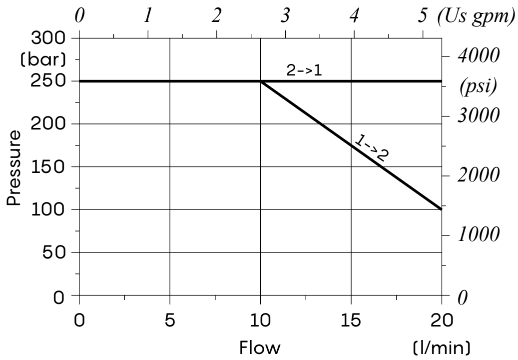
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

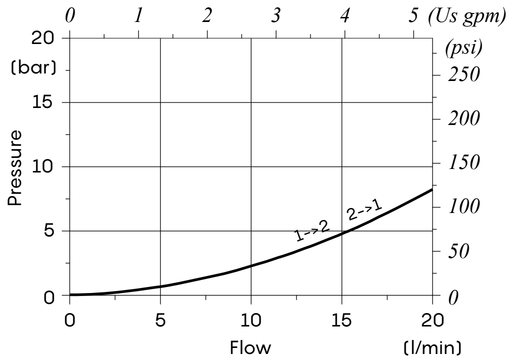
For complete connectors list see from page 201

Rating diagrams

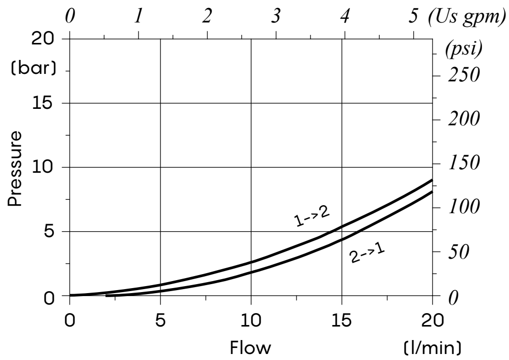
EE08M performance range
- Spool 1 / 2 -



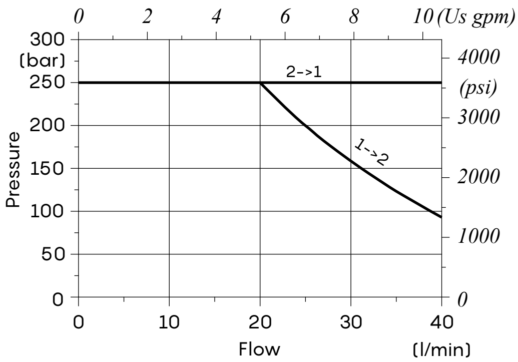
EE08M pressure drop vs. flow
- Spool 1 -



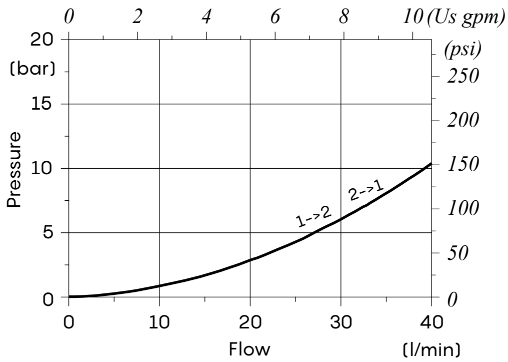
EE08M pressure drop vs. flow
- Spool 2 -



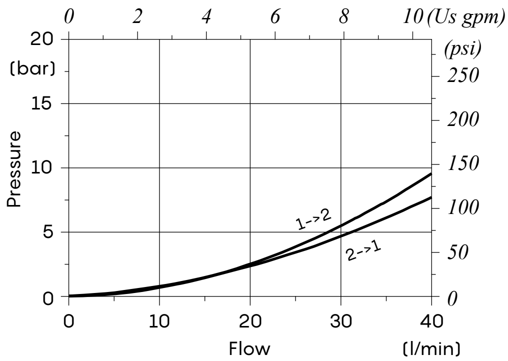
EE10M performance range
- Spool 1 / 2 -



EE10M pressure drop vs. flow
- Spool 1 -



EE10M pressure drop vs. flow
- Spool 2 -



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

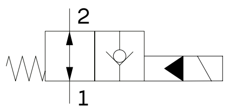
- Poppet type
- Piloted acting with on-off solenoid
- External zinc-plated and corrosion-proof components
- Normally open and closed configurations
- Different types of emergencies available
- From SAE08 to SAE16 cavities

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

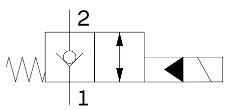
		EC08M	EC10M	EC12M	EC16M
Max. flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm^3/min *(0.015 in^3/min)*			
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12VDC - 24VDC ±10%			
Power rating		19 W (12VDC - 24VDC)			
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)*

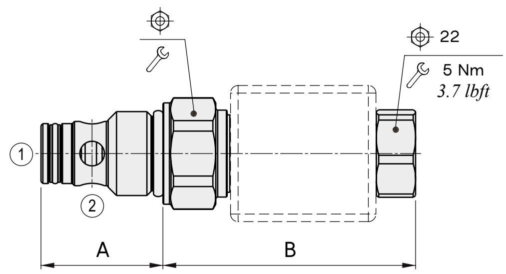
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

Normally open configuration



Normally closed configuration





Valve type	A		B N without emergency				
	mm	*in*	mm	*in*		Nm	*lbft*
EC10M/1	32.3	*1.27*	66.9	*2.63*	27	50	*37*

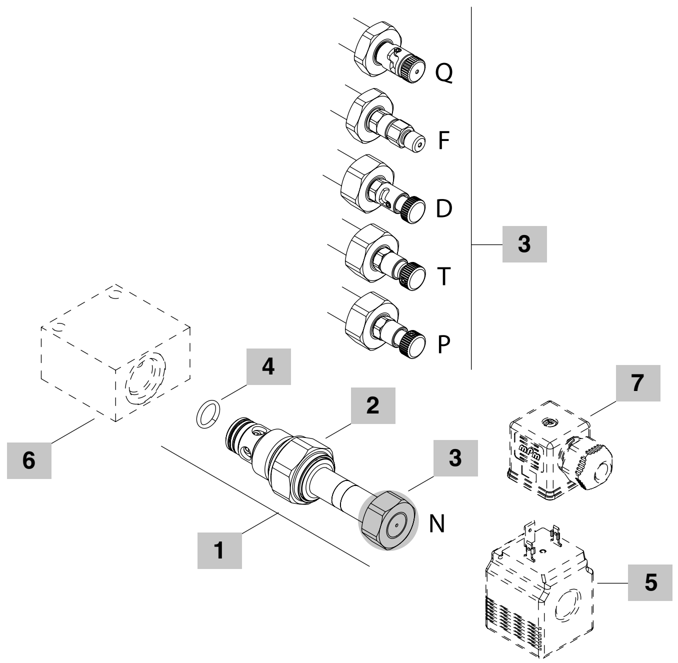
For dimensions with different type of emergency see list page 147

Ordering codes and description composition

EC08M/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
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 (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 (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 (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 (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 (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 (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 (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

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

3 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.)

4 Seals

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

5 Coil

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-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 208

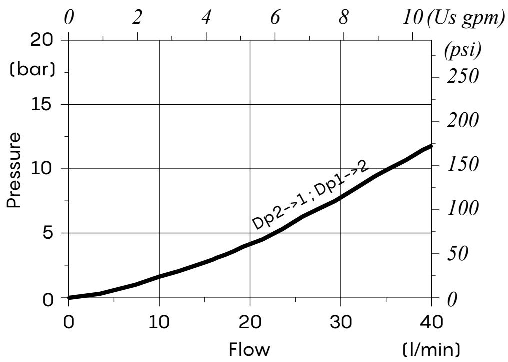
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

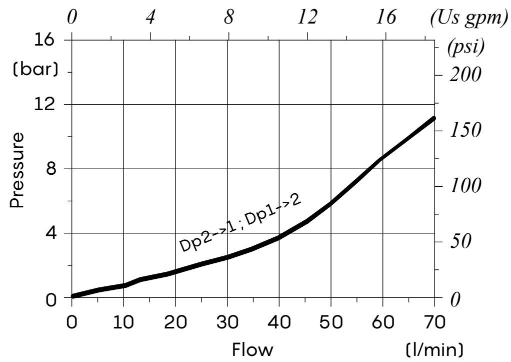
For complete connectors list see from page 201

Rating diagrams

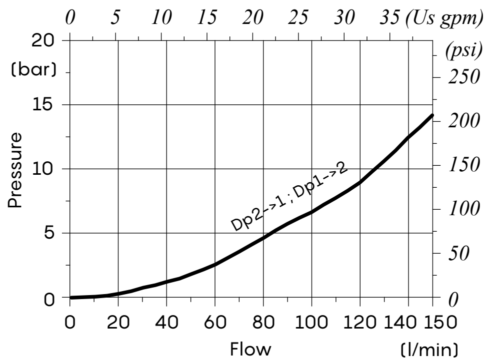
EC08M/10NB - EC08M/20NB
pressure drop vs. flow



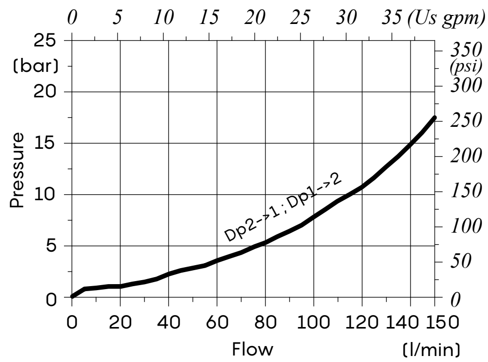
EC10M/10NB - EC10M/20NB
pressure drop vs. flow



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



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



Types and dimensions

Valve type	A		B															
			N without emergency		T screw		P push button		D push type with detent		F pull button		Q pull type with detent		⌖	🔧	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*
EC08M/1	28	*1.10*	67.2	*2.64*	90.1	*3.55*	90.1	*3.55*	92.8	*3.65*	-	-	-	-	24	30	*22*
EC08M/2	28	*1.10*	63.3	*2.49*	77.8	*3.06*	-	-	-	-	91.3	*3.59*	84.4	*3.32*	24	30	*22*
EC10M/1	32.3	*1.27*	66.9	*2.63*	89.8	*3.54*	89.8	*3.54*	92.5	*3.64*	-	-	-	-	27	50	*37*
EC10M/2	32.3	*1.27*	63	*2.48*	77.5	*3.05*	-	-	-	-	91	*3.58*	84.1	*3.31*	27	50	*37*
EC12M/1	45	*1.77*	61.2	*2.40*	84.2	*3.31*	84	*3.31*	86.8	*3.42*	-	-	-	-	32	80	*59*
EC12M/2	45	*1.77*	57.1	*2.25*	73.7	*2.9*	-	-	-	-	85.1	*3.35*	78	*3.07*	32	80	*59*
EC16M/1	46	*1.81*	61.2	*2.40*	84	*3.31*	84.1	*3.31*	86	*3.39*	-	-	-	-	38	80	*59*
EC16M/2	46	*1.81*	57	*2.24*	71.6	*2.82*	-	-	-	-	85	*3.35*	78.3	*3.08*	38	80	*59*

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

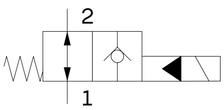
- Poppet type
- Piloted acting with on-off solenoid
- External zinc-plated and corrosion-proof components
- Normally open and closed configurations
- Different types of emergencies available
- From SAE08 to SAE16 cavities

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

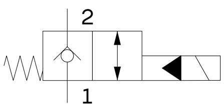
		EF08M	EF10M	EF12M	EF16M
Max. flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	0.50 cm³/min *(0.030 in³/min)*			
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12VDC - 24VDC ±10%			
Power rating		19 W (12VDC - 24VDC)			
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)*

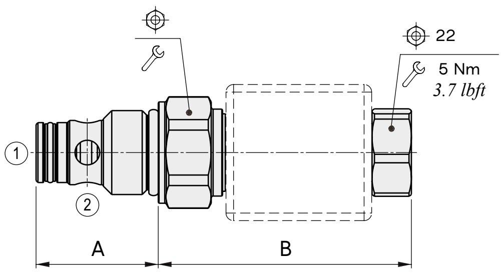
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

Normally open configuration



Normally closed configuration





Valve type	A		B N without emergency		⌖	🔧	
	mm	*in*	mm	*in*		Nm	*lbft*
EF10M/1	32.3	*1.27*	66.9	*2.63*	27	50	*37*

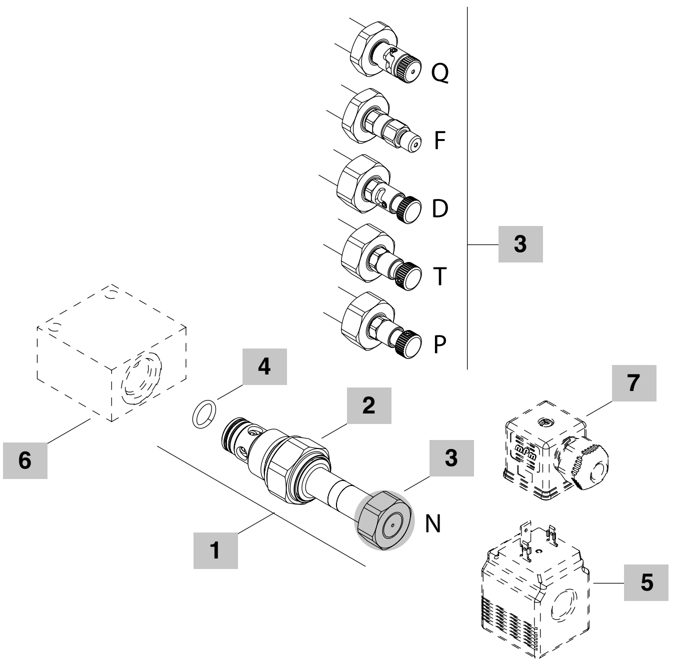
For dimensions with different type of emergency see list page 151

Ordering codes and description composition

EF08M/ 1 0 N B

2 | 3 | 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
EF08M/10NB	0EF08002000	Normally open (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 (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 (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 (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 (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 (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 (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 (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

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

3 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.)

4 Seals

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

5 Coil

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-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 208

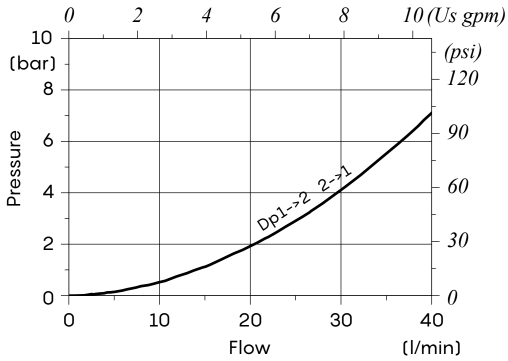
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

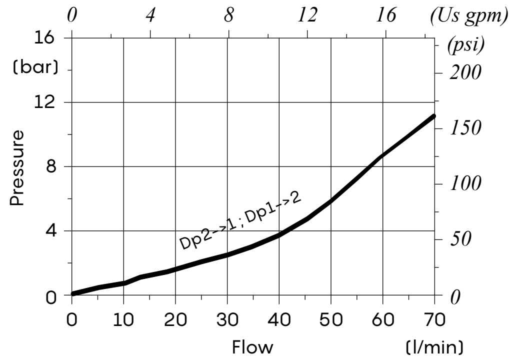
For complete connectors list see from page 201

Rating diagrams

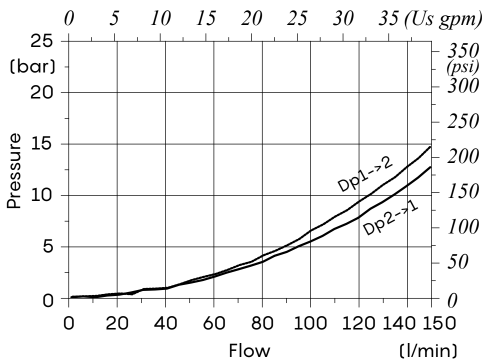
EF08M/10NB - EF08M/20NB
pressure drop vs. flow



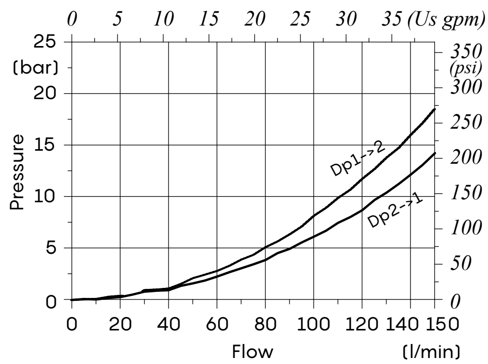
EF10M/10NB - EF10M/20NB
pressure drop vs. flow



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



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



Types and dimensions

Valve type	A		B												⌖	🔧	
			N without emergency		T screw		P push button		D push type with detent		F pull button		Q pull type with detent				
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*
EF08M/1	28	*1.10*	67.2	*2.64*	90.1	*3.55*	90.1	*3.55*	92.8	*3.65*	-	-	-	-	24	30	*22*
EF08M/2	28	*1.10*	63.3	*2.49*	77.8	*3.06*	-	-	-	-	91.3	*3.59*	84.4	*3.32*	24	30	*22*
EF10M/1	32.3	*1.27*	66.9	*2.63*	89.8	*3.54*	89.8	*3.54*	92.5	*3.64*	-	-	-	-	27	50	*37*
EF10M/2	32.3	*1.27*	63	*2.48*	77.5	*3.05*	-	-	-	-	91	*3.58*	84.1	*3.31*	27	50	*37*
EF12M/1	45	*1.77*	61.1	*2.40*	84	*3.31*	84	*3.31*	86.7	*3.41*	-	-	-	-	32	80	*59*
EF12M/2	45	*1.77*	57.1	*2.25*	71.6	*2.82*	-	-	-	-	85.1	*3.35*	78.2	*3.08*	32	80	*59*
EF16M/1	46	*1.81*	61.2	*2.40*	84	*3.31*	84.1	*3.31*	86	*3.39*	-	-	-	-	38	80	*59*
EF16M/2	46	*1.81*	57.2	*2.25*	71.6	*2.82*	-	-	-	-	85	*3.35*	78.3	*3.08*	38	80	*59*

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

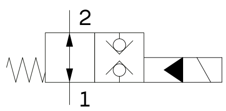
- Poppet type
- Piloted acting with on-off solenoid
- With check in both directions
- Normally open and closed configurations
- Different types of emergencies available
- From SAE08 to SAE16 cavities

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

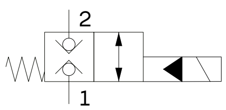
		EH08M	EH10M	EH12M	EH16M
Max. flow		40 l/min *(10.5 US gpm)*	70 l/min *(18.5 US gpm)*	150 l/min *(40 US gpm)*	150 l/min *(40 US gpm)*
Max. pressure		380 bar *(5500 psi)*			
Oil leakage	at 210 bar *(3050 psi)*	0.50 cm³/min *(0.030 in³/min)*		1 cm³/min *(0.061 in³/min)*	
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties			
Viscosity		10-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*			
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*			
Cavity		SAE 08/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type*		BER			
Nominal voltages		12VDC - 24VDC ±10%			
Power rating		19 W (12VDC - 24VDC)			
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)*

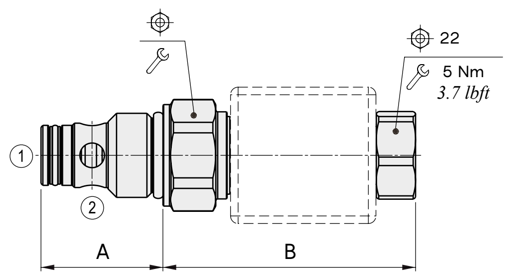
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

Normally open configuration



Normally closed configuration





Valve type	A		B N without emergency				
	mm	*in*	mm	*in*		Nm	*lbft*
EH10M/1	32.3	*1.27*	66.9	*2.63*	27	50	*37*

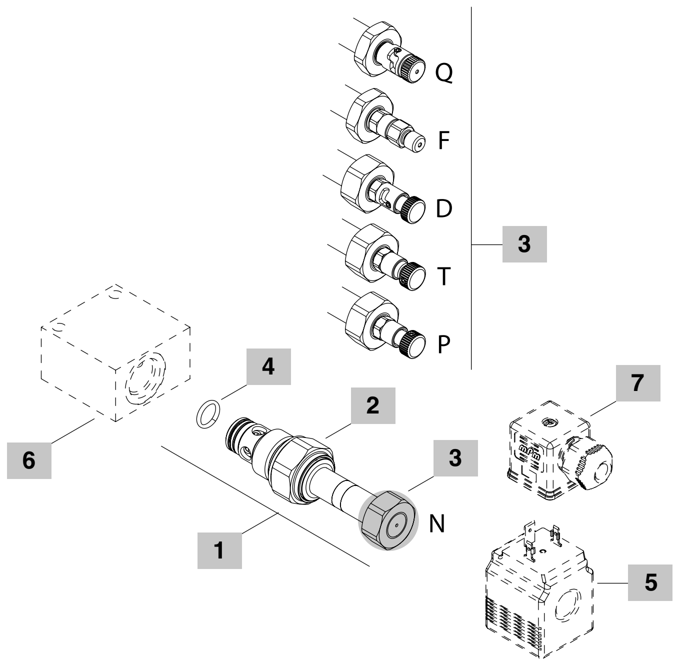
For dimensions with different type of emergency see list page 155

Ordering codes and description composition

EH08M/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
EH08M/10NB	0EH08002000	Normally open (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 (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 (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 (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 (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 (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 (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 (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

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

3 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.)

4 Seals

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

5 Coil

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G 1/2 std thread
SAE16/2-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 208

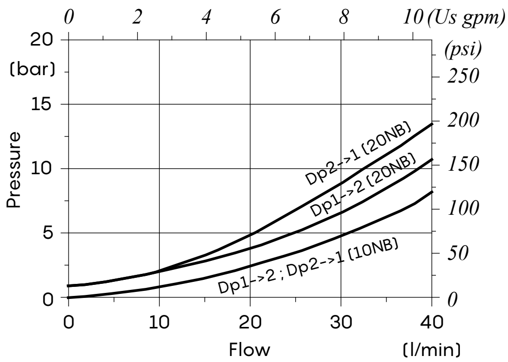
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

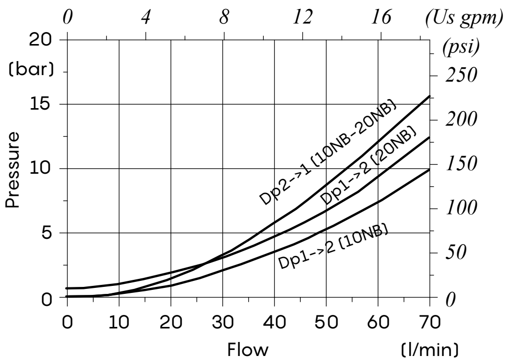
For complete connectors list see from page 201

Rating diagrams

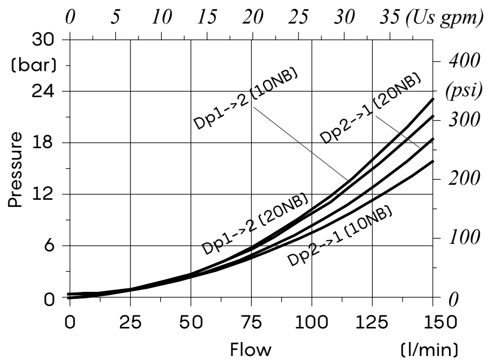
EH08M/10NB - EH08M/20NB
pressure drop vs. flow



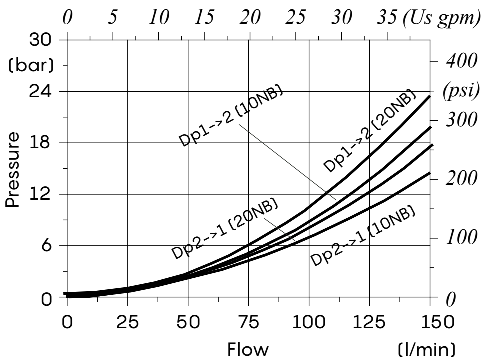
EH10M/10NB - EH10M/20NB
pressure drop vs. flow



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



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



Types and dimensions

Valve type	A		B														
			N without emergency		T screw		P push button		D push type with detent		F pull button		Q pull type with detent		⌖	🔧	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*
EH08M/1	28	*1.10*	67.2	*2.64*	90.1	*3.55*	90.1	*3.55*	92.8	*3.65*	-	-	-	-	24	30	*22*
EH08M/2	28	*1.10*	63.1	*2.48*	77.8	*3.06*	-	-	-	-	91.3	*3.59*	84.4	*3.32*	24	30	*22*
EH10M/1	32.3	*1.27*	66.9	*2.63*	89.8	*3.54*	89.8	*3.54*	92.5	*3.64*	-	-	-	-	27	50	*37*
EH10M/2	32.3	*1.27*	63	*2.48*	77.5	*3.05*	-	-	-	-	90.8	*3.57*	84.1	*3.31*	27	50	*37*
EH12M/1	45	*1.77*	61.3	*2.41*	84.2	*3.31*	83.9	*3.30*	86.8	*3.42*	-	-	-	-	32	80	*59*
EH12M/2	45	*1.77*	57.1	*2.25*	73.7	*2.9*	-	-	-	-	85.1	*3.35*	78	*3.07*	32	80	*59*
EH16M/1	46	*1.81*	61.3	*2.41*	84	*3.31*	84.2	*3.31*	86	*3.39*	-	-	-	-	38	80	*59*
EH16M/2	46	*1.81*	57.1	*2.25*	71.6	*2.82*	-	-	-	-	85.3	*3.36*	78.3	*3.08*	38	80	*59*

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

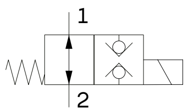
- Poppet type
- Direct acting with on-off solenoid
- With check in both directions
- Normally open and closed configurations
- Different types of emergencies available
- From SAE08 to SAE10 cavities

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

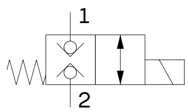
		EW08M	EW10M
Nominal flow		20 l/min *(5.28 US gpm)*	40 l/min *(10.57 US gpm)*
Max. pressure		250 bar *(3600 psi)*	350 bar *(5100 psi)*
Oil leakage	at 210 bar *(5100 psi)*	0.25 cm³/min *(0.015 in³/min)*	
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 8/2	SAE 10/2
Coil type*		BER	BH
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		19 W (12VDC - 24VDC)	33 W
Weight		0.15 kg *(0.33 lb)*	0.30 kg *(0.66 lb)*

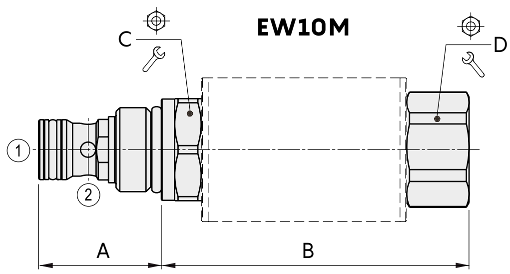
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

Normally open configuration



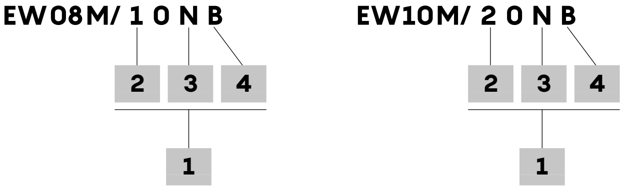
Normally closed configuration

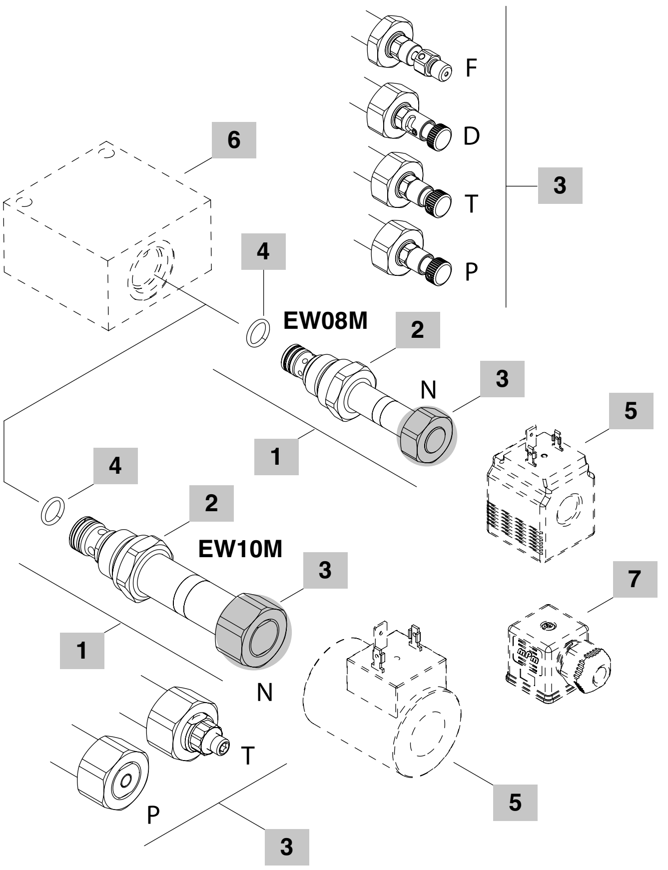




Valve type	A		B										C			D		
			N without emergency		T screw		P push button		D push type with detent		F pull button							
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
EW08M/1	28	*1.10*	60.2	*2.41*	74.7	*2.94*	-	-	-	-	88.2	*3.47*	24	30	*22*	22	5	*3.7*
EW08M/2	28	*1.10*	62.5	*2.46*	85.4	*3.36*	85.4	*3.36*	88.1	*3.47*	-	-	24	30	*22*	22	5	*3.7*
EW10M	32.5	*1.28*	81.5	*3.21*	95.3	*3.75*	81.5	*3.21*	-	-	-	-	27	50	*37*	28	5	*3.7*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
EW08M/10NB	0EW08002014	Normally open (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 (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 (N.C.) without emergency
EW10M/20TB	0EW10002009	(N.C.) screw type emergency
EW10M/20PB	0EW10002010	(N.C.) push button emergency

2 Spool

TYPE	DESCRIPTION
1	Normally open configuration
2	Normally closed configuration

3 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.)

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil for EW08M
BH12VDC	4SLD001200A	12VDC-ISO4400 coil for EW10M

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/2-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 208

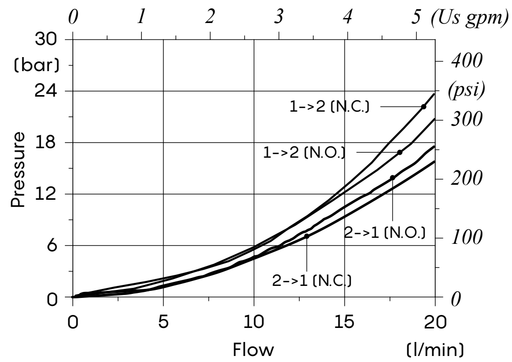
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

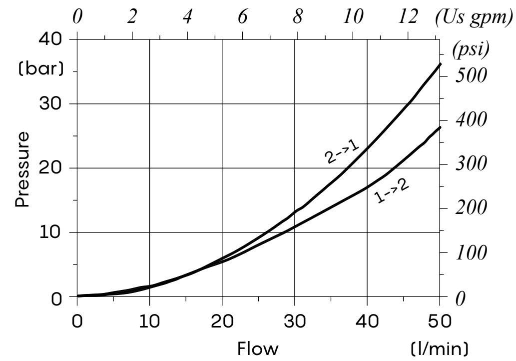
For complete connectors list see from page 201

Rating diagrams

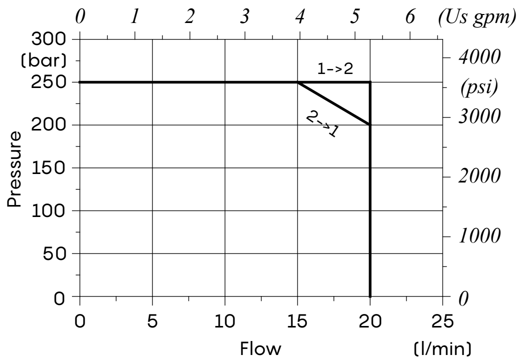
EW08M pressure drop vs. flow



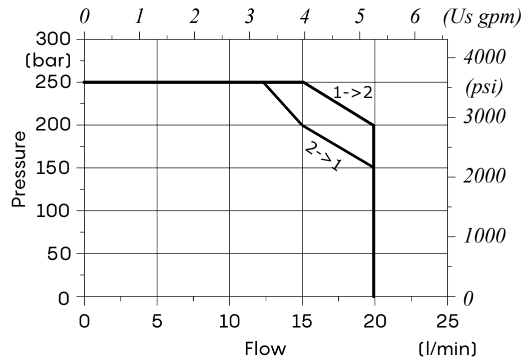
EW10M pressure drop vs. flow
(N.C.)



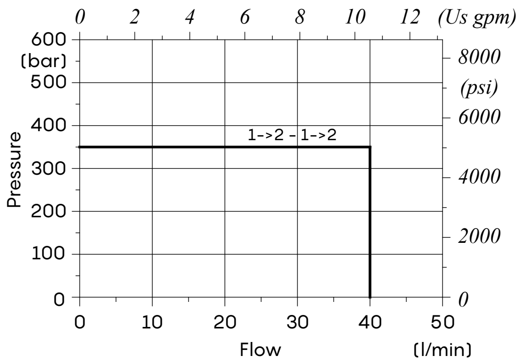
EW08M performance limit
(N.O)



EW08M performance limit
(N.C.)



EW10M performance limit
(N.C.)



EJ08MF type
directional solenoid valves - 3 way / 2 positions

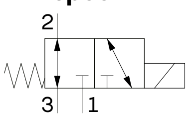
- Spool type
- Direct acting with on-off solenoid
- Suitable for low pressure: 70 bar *(1015 psi)*
- Different types of emergencies available
- Different spool options and related schemes available

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

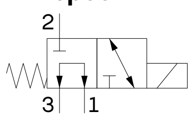
		EJ08MF
Nominal flow		10 l/min *(2.64 US gpm)*
Max. pressure		70 bar *(1015 psi)*
Oil leakage	at 70 bar *(1015 psi)*	20 cm³/min *(1.22 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 8/3
Coil type*		BER
Nominal voltages		12VDC - 24VDC ± 10%
Power rating		19 W
Weight		0.358 kg *(0.79 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

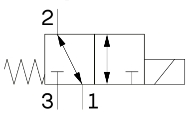
Spool 1



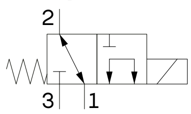
Spool 2



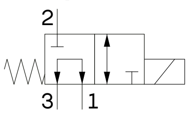
Spool 4

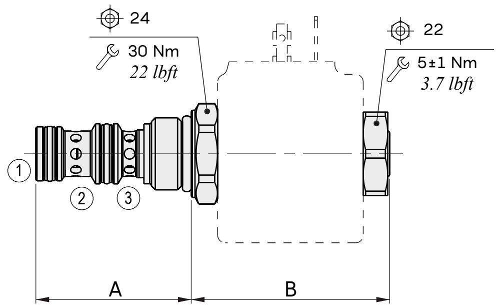


Spool 5



Spool 6





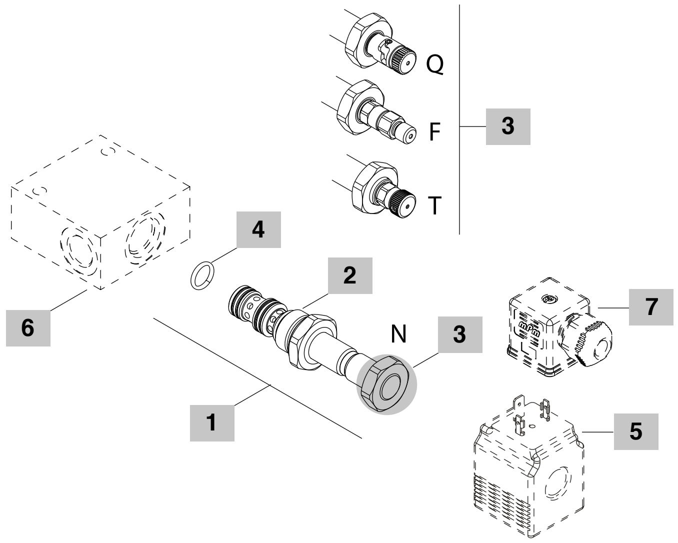
Valve type	A		B			
			N without emergency		T screw type	
	mm	*in*	mm	*in*	mm	*in*
EJ08MF	41.1	*1.62*	52.5	*2.07*	67.5	*2.66*

Ordering codes and description composition

EJ08MF/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
EJ08MF/10NB	0EJ08002070	Without emergency, spool 1
EJ08MF/20NB	0EJ08002072	Without emergency, spool 2
EJ08MF/40NB	0EJ08002074	Without emergency, spool 4
EJ08MF/50NB	0EJ08002075	Without emergency, spool 5
EJ08MF/60NB	0EJ08002076	Without emergency, spool 6
EJ08MF/20TB	0EJ08002079	Screw type emergency, spool 2

2 Spool

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

3 Emergency

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

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread

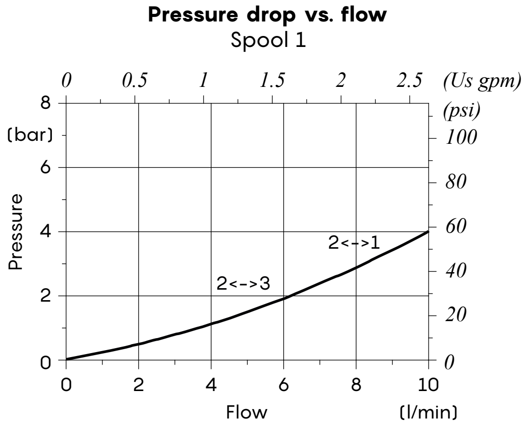
Note: aluminium body can stand up to 210 bar *(3050 psi)*
For steel bodies or different threading see from page 210

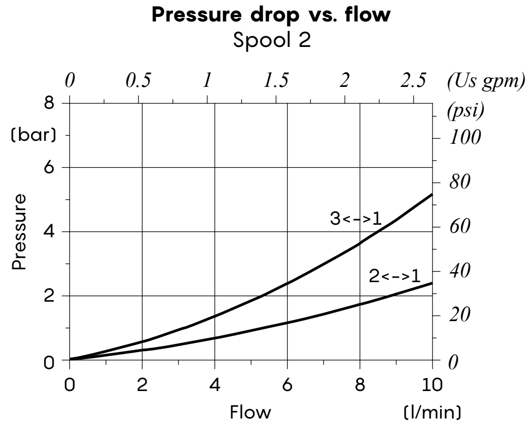
7 Connector

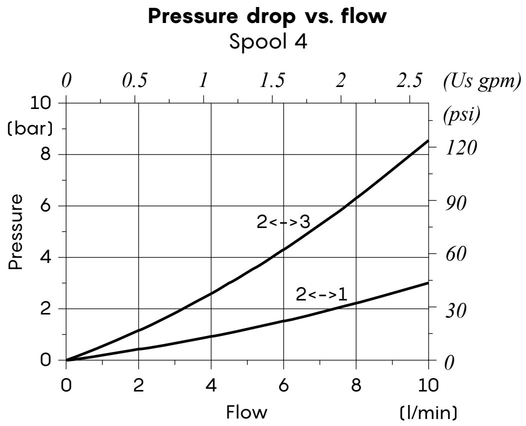
TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

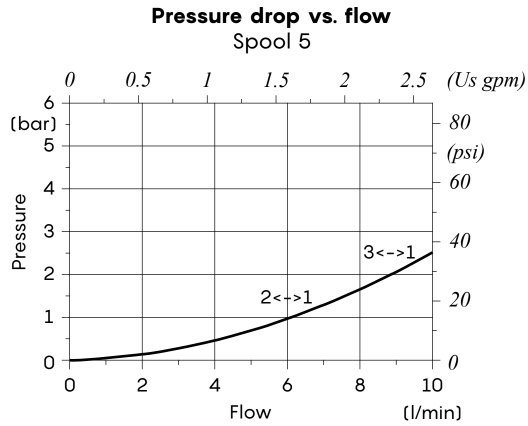
For complete connectors list see from page 201

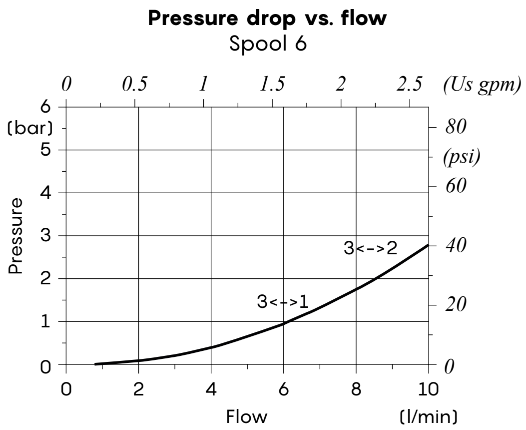
Rating diagrams











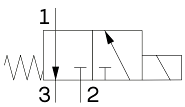
EJ08G type
directional solenoid valves - 3 way / 2 positions

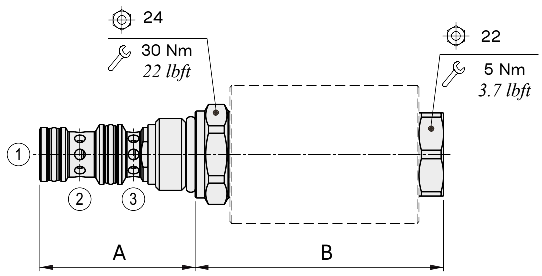
- Spool type
- Direct acting with on-off solenoid
- Suitable for high pressure: 350 bar *(5100 psi)*
- Different types of emergencies available

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 cm³/min *(0.61 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 8/3
Coil type*		BT
Nominal voltages		12VDC - 24VDC ± 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 201.





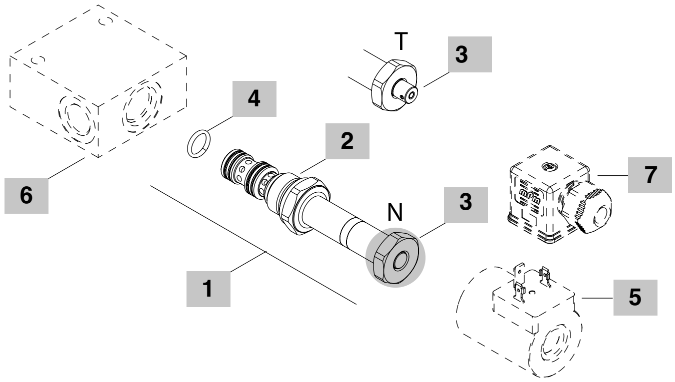
Valve type	A		B			
			N without emergency		T screw type	
	mm	*in*	mm	*in*	mm	*in*
EJ08G	41.1	*1.62*	66	*2.6*	73.5	*2.89*

Ordering codes and description composition

EJ08G/ 2 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
EJ08G/20NB	0EJ08002035	Without emergency
EJ08G/20TB	0EJ08002042	Screw type emergency

2 Spool

TYPE	DESCRIPTION
2	Spool 2

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
T	Screw type

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BT12VDC	4SL3000120	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-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 210

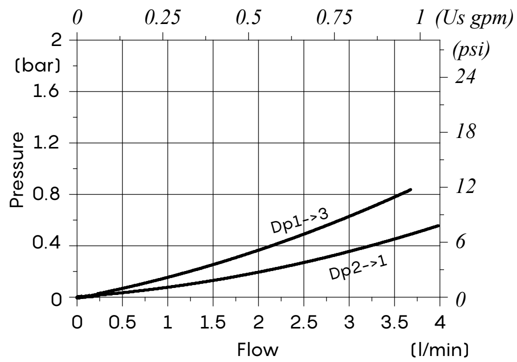
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

For complete connectors list see from page 201

Rating diagrams

Pressure drop vs. flow



EJ..M type
directional solenoid valves - 3 way / 2 positions

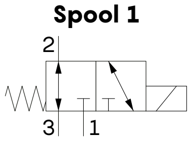
- Spool type
- Direct acting with on-off solenoid
- Different types of emergencies available
- From SAE08 to SAE12 cavities

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

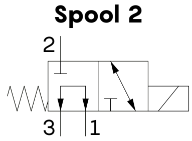
		EJ08M	EJ10M	EJ12M
Max. flow		25 l/min *(6.6 US gpm)*	40 l/min *(10.5 US gpm)*	60 l/min *(15.8 US gpm)*
Max. pressure		250 bar *(3600 psi)*		
Oil leakage	at 210 bar *(3050 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*	400 cm³/min *(24.4 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties		
Viscosity		10-200 cSt		
Max level of contamination		18/16/13 ISO4406		
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*		
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*		
Cavity		SAE 08/3	SAE 10/3	SAE 12/3
Coil type*		BER	BC	BH
Nominal voltages		12VDC - 24VDC ±10%		
Power rating		19 W (12VDC - 24VDC)	26 W (12VDC - 24VDC)	33 W
Weight		0.125 kg *(0.27 lb)*	0.300 kg *(0.661 lb)*	0.434 kg *(0.956 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

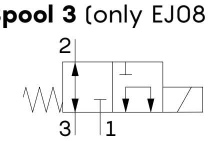
Spool 1



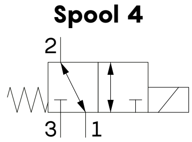
Spool 2



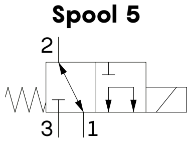
Spool 3 (only EJ08M)



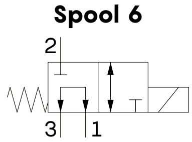
Spool 4

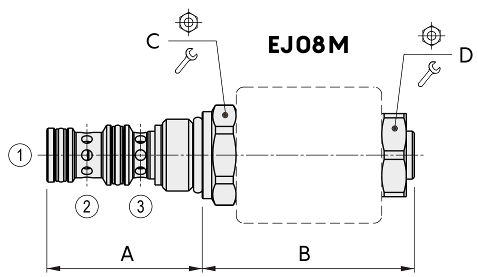


Spool 5



Spool 6





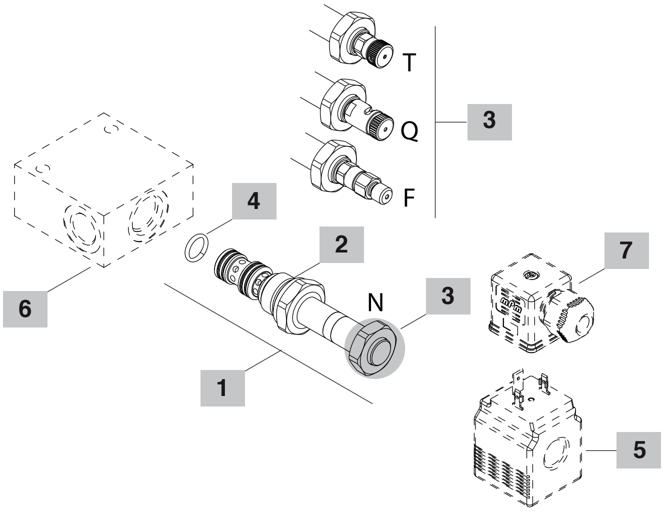
Valve type	A		B N without emergency		C			D		
	mm	*in*	mm	*in*	⊕	Nm	*lbft*	⊕	Nm	*lbft*
EJ08M	41.1	*1.62*	56.1	*2.21*	24	30	*22*	22	5	*3.7*
EJ10M	47	*1.85*	68	*2.68*	27	50	*37*	-	-	-
EJ12M	73.5	*2.89*	85.5	*3.37*	32	85	*63*	28	5	*3.7*

Ordering codes and description composition

EJ08M/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/3		
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	0EJ08002034	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 4
EJ10M/50NB	0EJ10002022	Without emergency, spool 5
EJ10M/60NB	0EJ10002023	Without emergency, spool 6
SAE cavity 12/3		
EJ12M/10NB	0EJ12002011	Without emergency, spool 1
EJ12M/20NB	0EJ12002012	Without emergency, spool 2
EJ12M/40NB	0EJ12002013	Without emergency, spool 4
EJ12M/50NB	0EJ12002014	Without emergency, spool 5

2 Spool

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

3 Emergency

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

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil for EJ08M
BC12VDC	4SL8000120	12VDC-ISO4400 coil for EJ10M
BH12VDC	4SLD001200A	12VDC-ISO4400 coil for EJ12M

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-G 3/8	3CC0830C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/3-G 3/8	3CC1030C11	Aluminium body for cavity 10 valve, G 3/8 std thread
SAE12/3-G 1/2	3CC1230D11	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 210

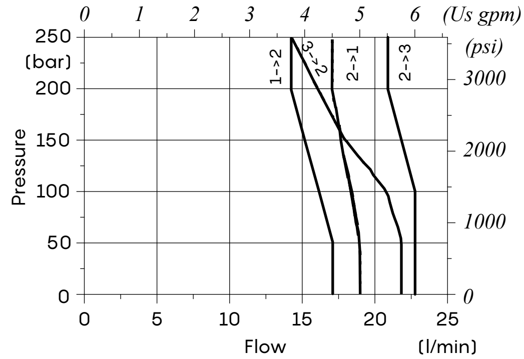
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

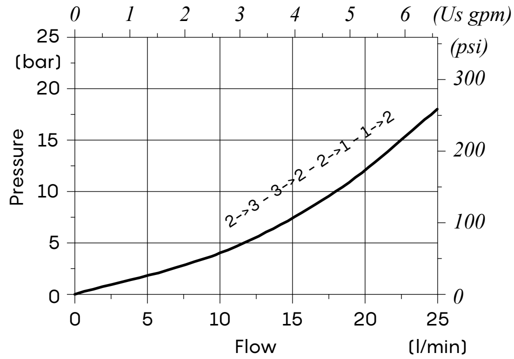
For complete connectors list see from page 201

Rating diagrams

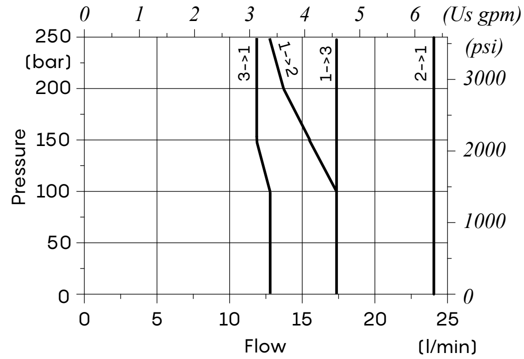
EJ08M performance limit
spool 1



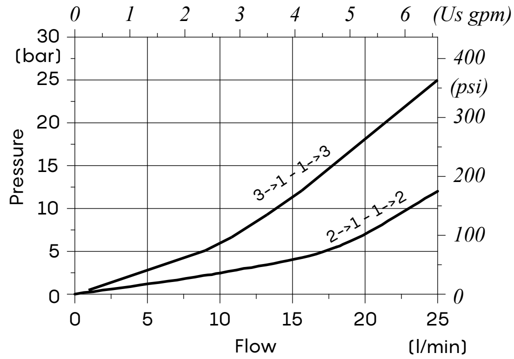
EJ08M pressure drop vs. flow
spool 1



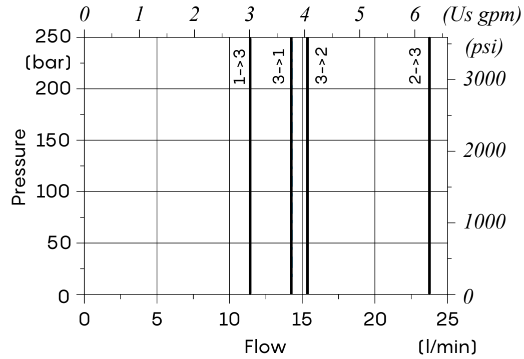
EJ08M performance limit
spool 2



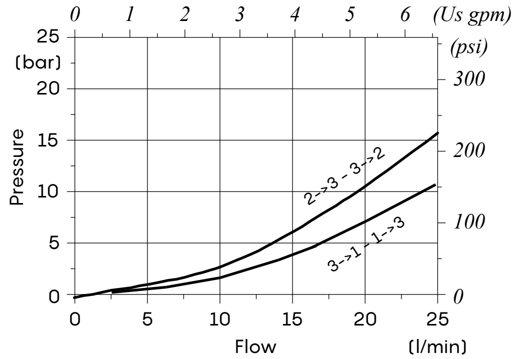
EJ08M pressure drop vs. flow
spool 2



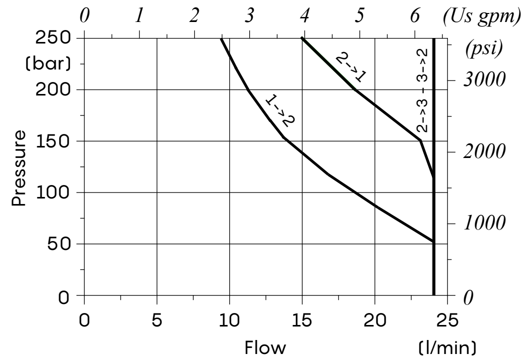
EJ08M performance limit
spool 3



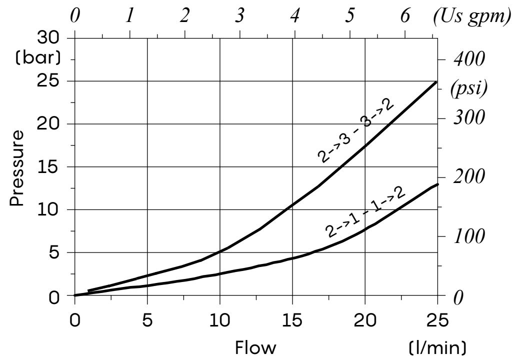
EJ08M pressure drop vs. flow
spool 3



EJ08M performance limit
spool 4

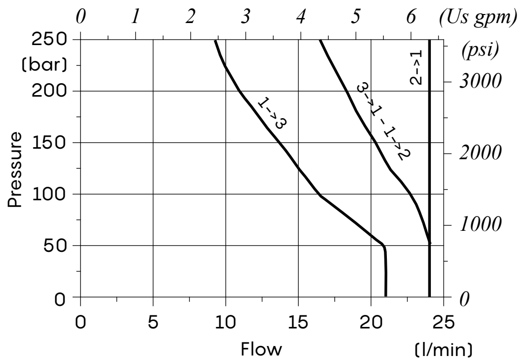


EJ08M pressure drop vs. flow
spool 4

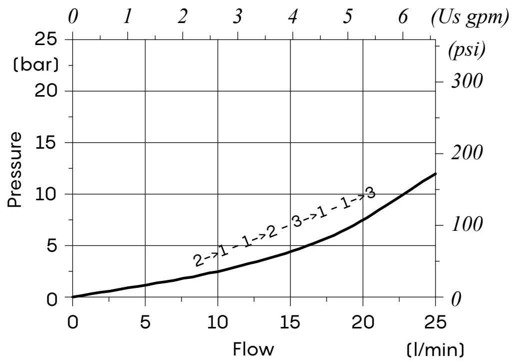


Rating diagrams

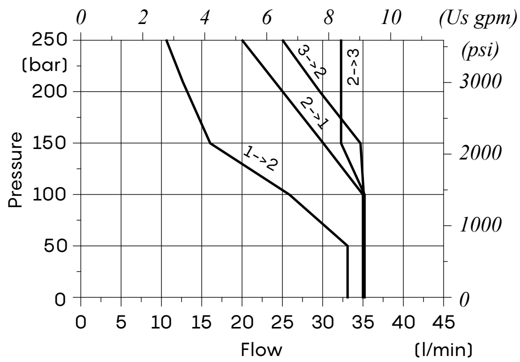
EJ08M performance limit
spool 5



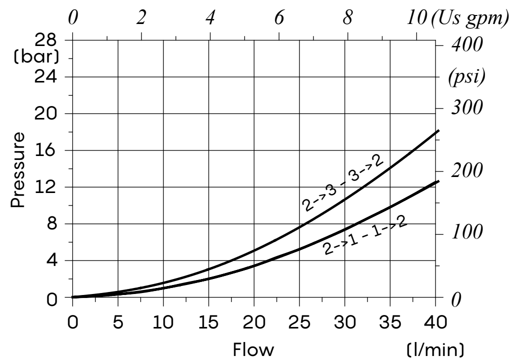
EJ08M pressure drop vs. flow
spool 5



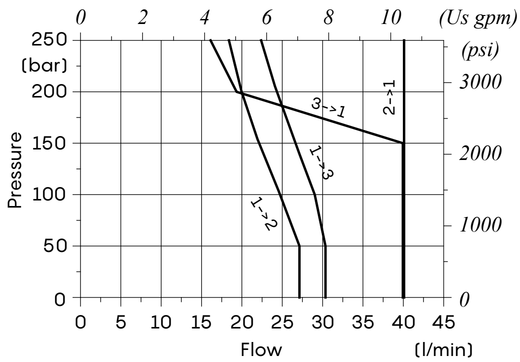
EJ10M performance limit
spool 1



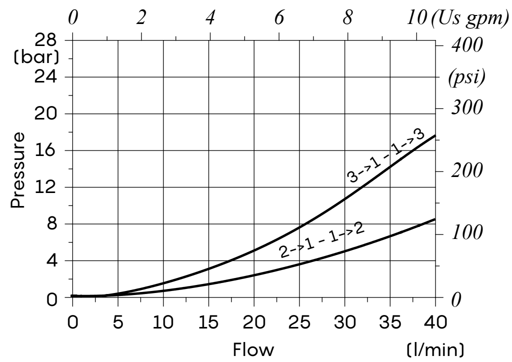
EJ10M pressure drop vs. flow
spool 1



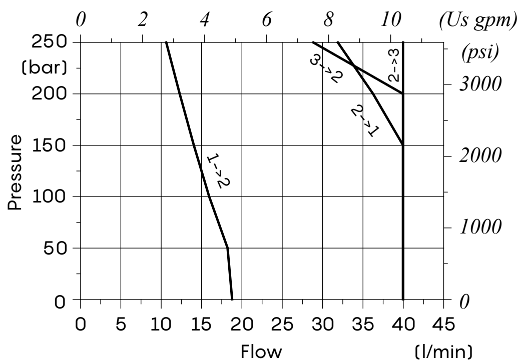
EJ10M performance limit
spool 2



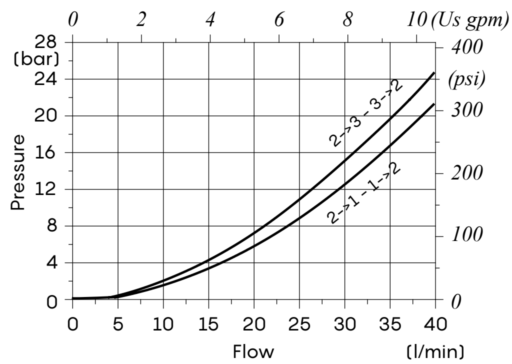
EJ10M pressure drop vs. flow
spool 2



EJ10M performance limit
spool 4

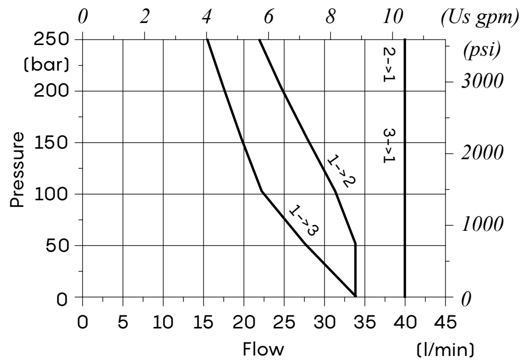


EJ10M pressure drop vs. flow
spool 4

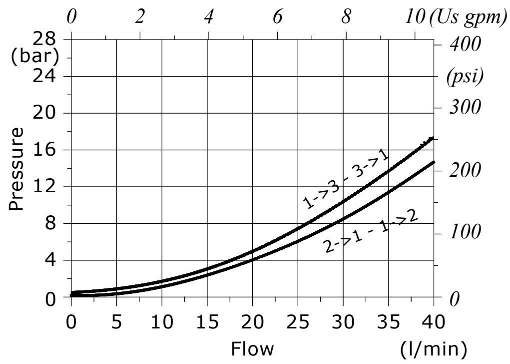


Rating diagrams

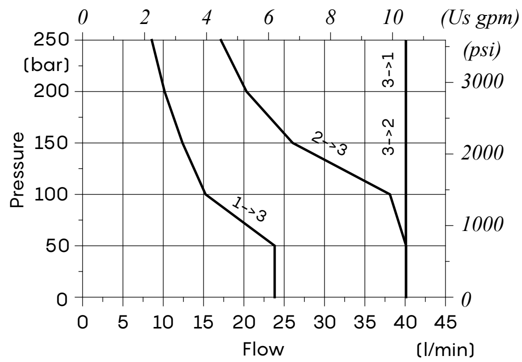
EJ10M performance limit
spool 5



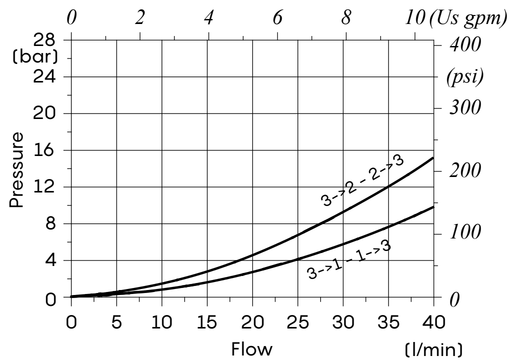
EJ10M pressure drop vs. flow
spool 5



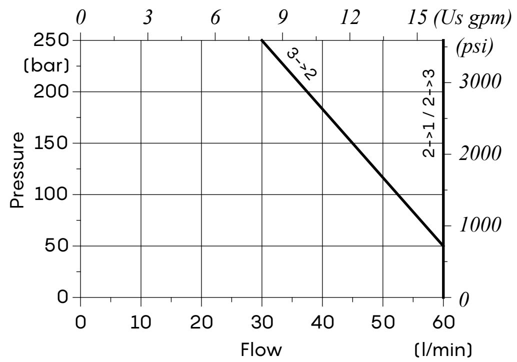
EJ10M performance limit
spool 6



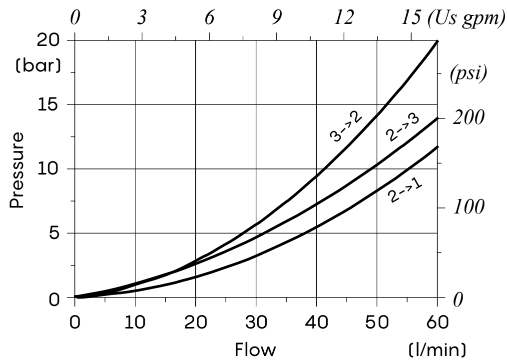
EJ10M pressure drop vs. flow
spool 6



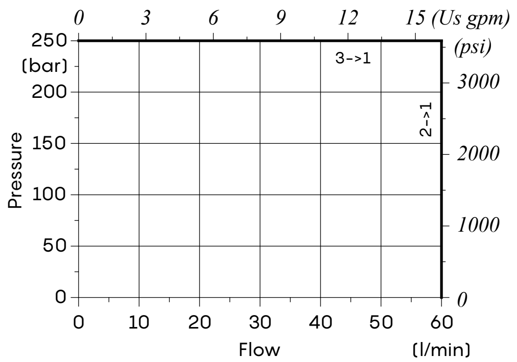
EJ12M performance limit
spool 1



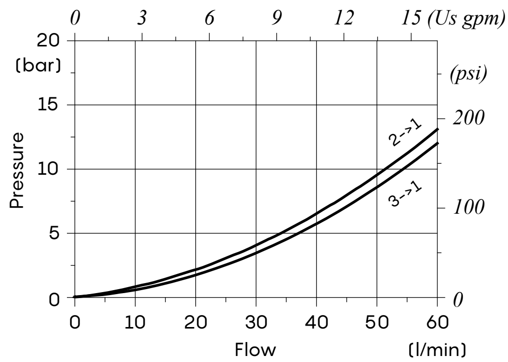
EJ12M pressure drop vs. flow
spool 1



EJ12M performance limit
spool 2

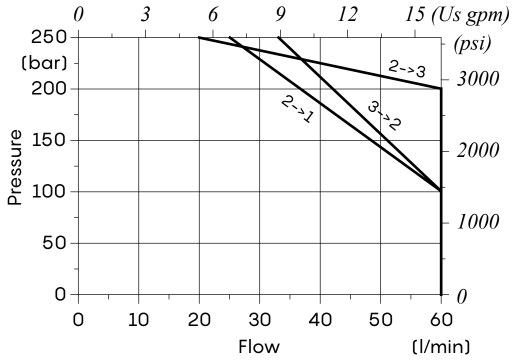


EJ12M pressure drop vs. flow
spool 2

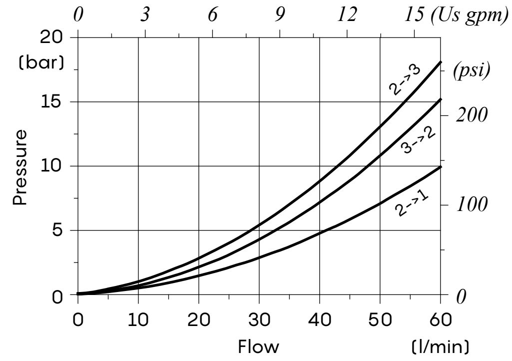


Rating diagrams

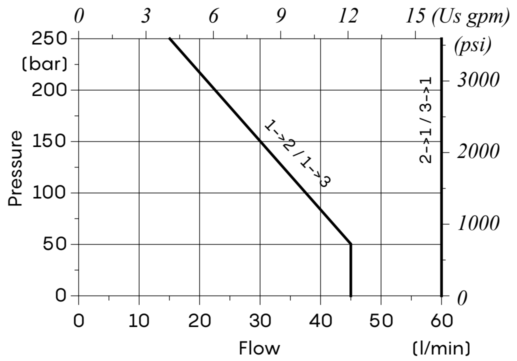
EJ12M performance limit
spool 4



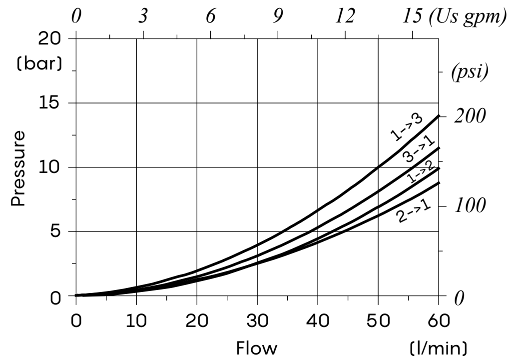
EJ12M pressure drop vs. flow
spool 4



EJ12M performance limit
spool 5



EJ12M pressure drop vs. flow
spool 5



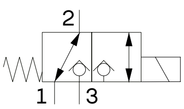
EL08B type
directional solenoid valves - 3 way / 2 positions

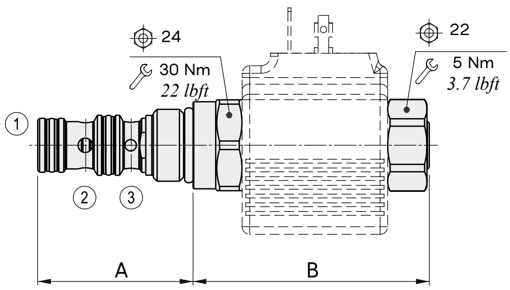
- Poppet type
- Direct acting with on-off solenoid
- Different types of emergencies available
- Suitable for low pressure: 100 bar *(1450 psi)*

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

		EL08B
Nominal flow		10 l/min *(2.64 US gpm)*
Max. pressure		250 bar *(3600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm³/min *(0.015 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 08/3
Coil type*		BER
Nominal voltages		12VDC - 24VDC ± 10%
Power rating		19 W
Weight		0.16 kg *(0.35 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

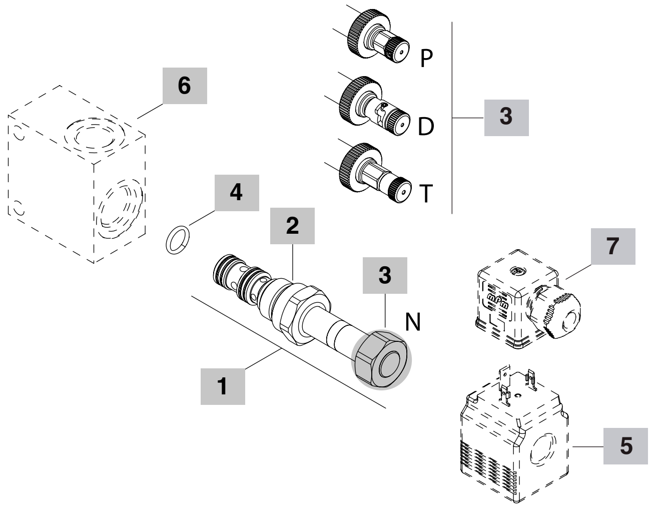




Valve type	A		B							
			N without emergency		T screw		P push button		D push type with detent	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*
EL08B	41.1	*1.62*	62.5	*2.46*	85.4	*3.36*	85.4	*3.36*	88.1	*3.47*

Ordering codes and description composition

EL08B/ 1 0 N B



1 Cartridges

TYPE	CODE	DESCRIPTION
EL08B/10NB	0EL08002009	Without emergency
EL08B/10PB	0EL08002006	With push-button emergency
EL08B/10TB	0EL08002007	Screw type emergency
EL08B/10DB	0EL08002008	Push type with detent emergency

2 Spool

TYPE	DESCRIPTION
1	Spool 1

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
P	Push-button emergency
T	Screw type emergency
D	Push type with detent emergency

4 Seals

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

5 Coil

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/3-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 210

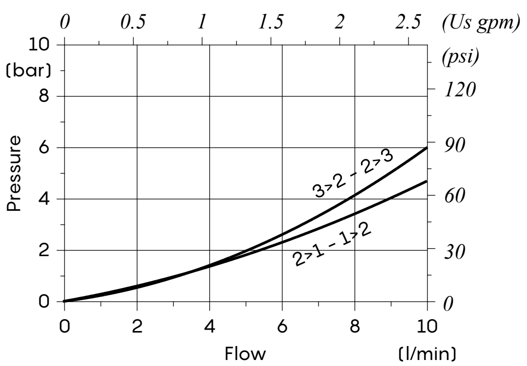
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

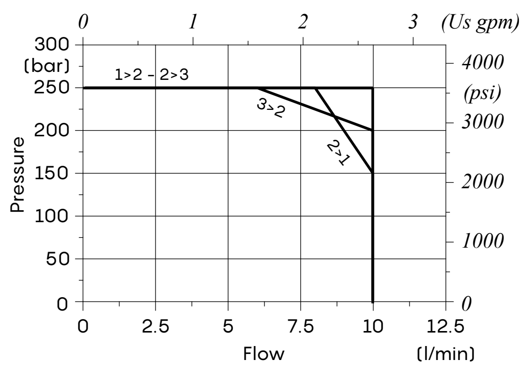
For complete connectors list see from page 201

Rating diagrams

Pressure drop vs. flow



Performance limit



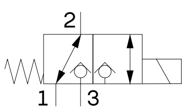
EL10C type
directional solenoid valves - 3 way / 2 positions

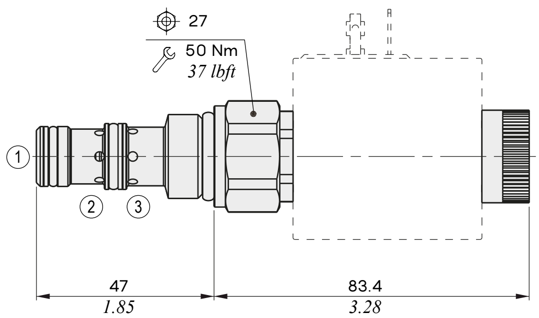
- Poppet type
- Direct acting with on-off solenoid

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

		EL10C
Nominal flow		20 l/min *(5.28 US gpm)*
Max. pressure		210 bar *(3050 psi)*
Oil leakage	at 210 bar *(3050 psi)*	0.25 cm^3/min *(0.015 in^3/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+PTFE with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/3
Coil type*		BQ16
Nominal voltages		12VDC ± 10%
Power rating		30 W
Weight		0.27 kg *(0.59 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.



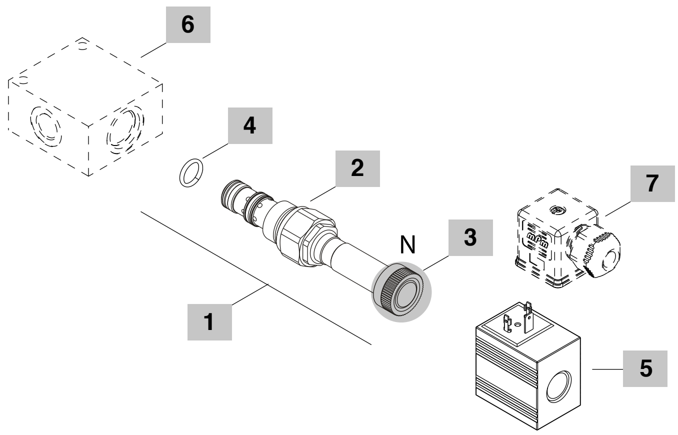


Ordering codes and description composition

EL10C/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/3		
EL10C/10NB	0EL10002008	Without emergency

2 Spool

TYPE	DESCRIPTION
1	Spool 1

3 Emergency

TYPE	DESCRIPTION
N	Without emergency

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BQ16 12VDC	4SL8000121	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/3-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 210

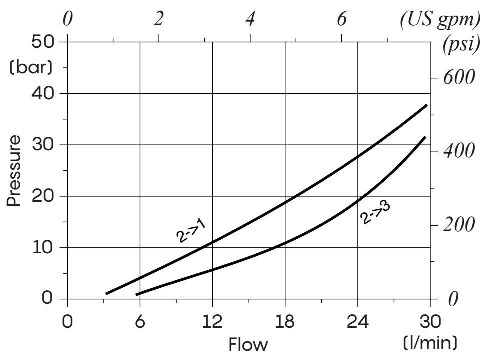
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

For complete connectors list see from page 201

Rating diagrams

Pressure drop vs. flow



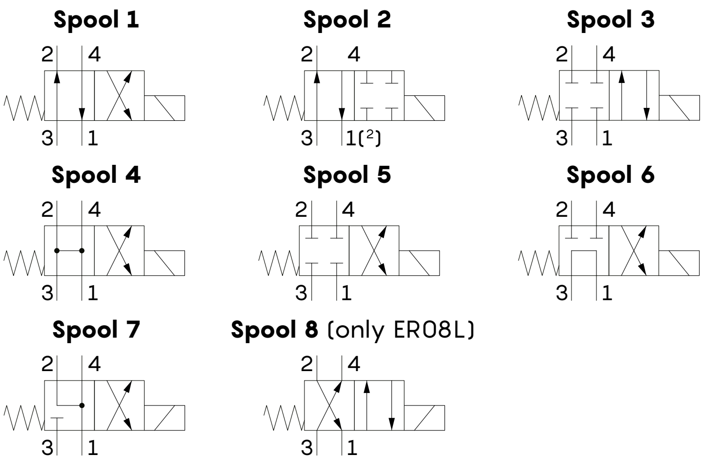
ER..L type
directional solenoid valves - 4 way/2 positions

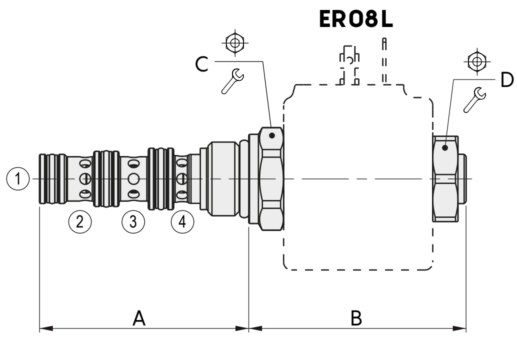
- Spool type
- Direct acting with on-off solenoid
- Different types of emergencies available
- External zinc-plated and corrosion-proof components
- Low pressure drop
- From SAE08 to SAE10 cavities

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

		ER08L	ER10L
Nominal flow		20 l/min *(5.3 US gpm)*	40 l/min *(10.6 US gpm)*
Max. pressure		250 bar *(3600 psi)*	
Oil leakage	at 210 bar *(5100 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 08/4	SAE 10/4
Coil type*		BER	BC
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		19 W (12VDC - 24VDC)	26 W (12VDC - 24VDC)
Weight		0.372 kg *(0.82 lb)*	0.432 kg *(0.95 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.
- (²) Port 1 may be fully pressurized, it's not intended for use as the valve's inlet.





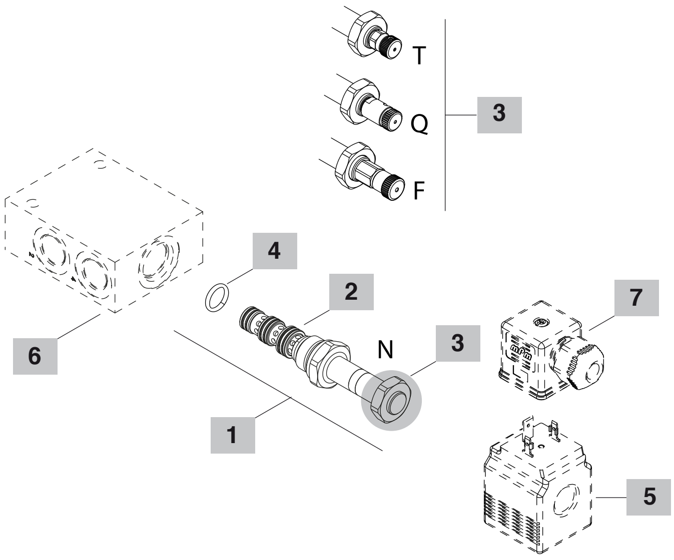
Valve type	A		B								C			D		
			N without emergency		T screw type		F pull button		Q pull type with detent							
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
ER08L	54	*2.13*	56.1	*2.21*	71.1	*2.8*	84	*3.31*	77.2	*3.04*	24	30	*22*	22	5±1	*3.7*
ER10L	62.4	*2.46*	68	*2.68*	82.5	*3.25*	95.2	*3.75*	88.5	*3.48*	27	50	*37*	23	5±1	*3.7*

Ordering codes and description composition

ER08L/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/4		
ER08L/10NB	0ER08002036	Without emergency, spool 1
ER08L/20NB	0ER08002042	Without emergency, spool 2
ER08L/30NB	0ER08002043	Without emergency, spool 3
ER08L/40NB	0ER08002044	Without emergency, spool 4
ER08L/50NB	0ER08002039	Without emergency, spool 5
ER08L/60NB	0ER08002045	Without emergency, spool 6
ER08L/70NB	0ER08002046	Without emergency, spool 7
ER08L/80NB	0ER08002047	Without emergency, spool 8
ER08L/70QB	0ER08002041	Pull type with detent, spool 7
SAE cavity 10/4		
ER10L/10NB	0ER10002040	Without emergency, spool 1
ER10L/20NB	0ER10002047	Without emergency, spool 2
ER10L/30NB	0ER10002048	Without emergency, spool 3
ER10L/40NB	0ER10002044	Without emergency, spool 4
ER10L/50NB	0ER10002045	Without emergency, spool 5
ER10L/60NB	0ER10002042	Without emergency, spool 6
ER10L/70NB	0ER10002046	Without emergency, spool 7

2 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

3 Emergency

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

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil for ER08L
BC12VDC	4SL8000120	12VDC-ISO4400 coil for ER10L

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/4-G 1/2	3CC1040D11	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 212

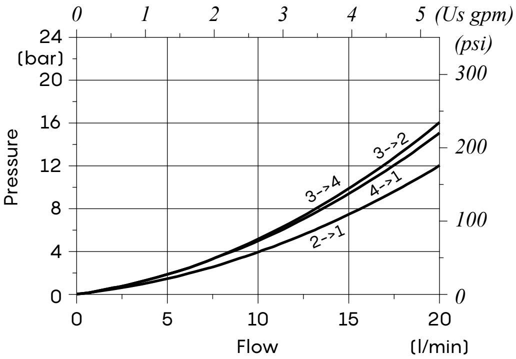
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

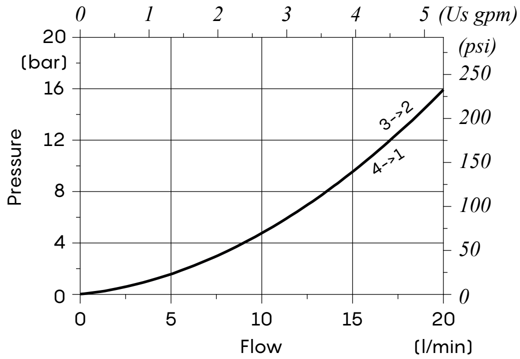
For complete connectors list see from page 201

Rating diagrams

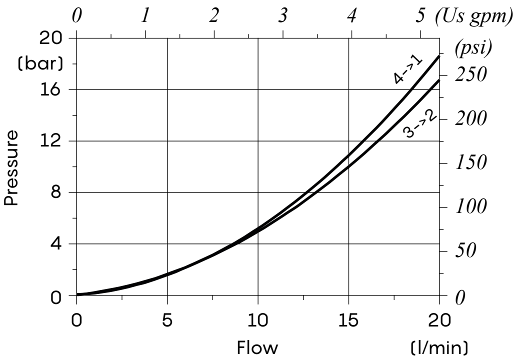
ER08L pressure drop vs. flow
spool 1



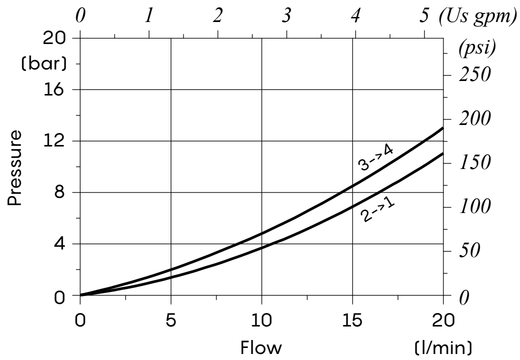
ER08L pressure drop vs. flow
spool 2



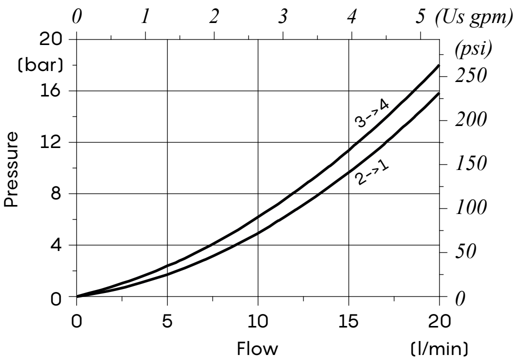
ER08L pressure drop vs. flow
spool 3



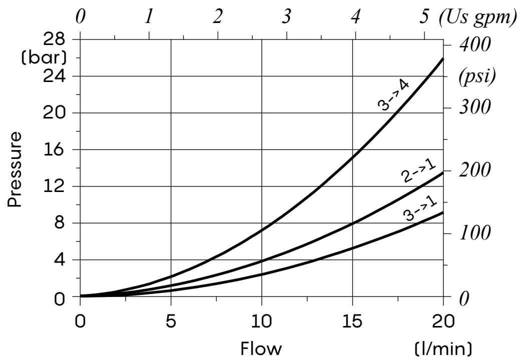
ER08L pressure drop vs. flow
spool 4



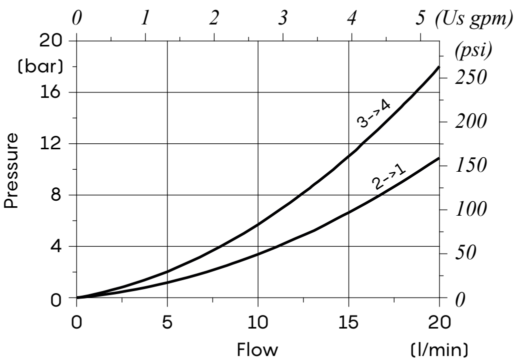
ER08L pressure drop vs. flow
spool 5



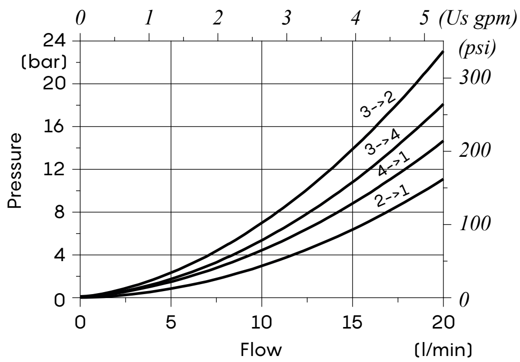
ER08L pressure drop vs. flow
spool 6



ER08L pressure drop vs. flow
spool 7

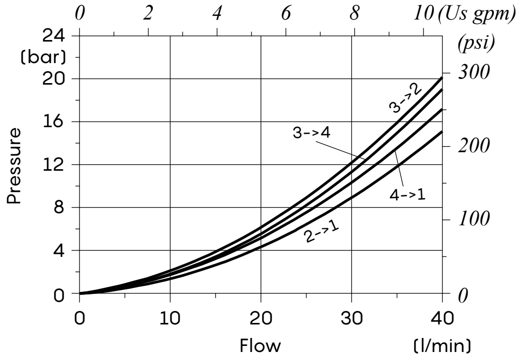


ER08L pressure drop vs. flow
spool 8

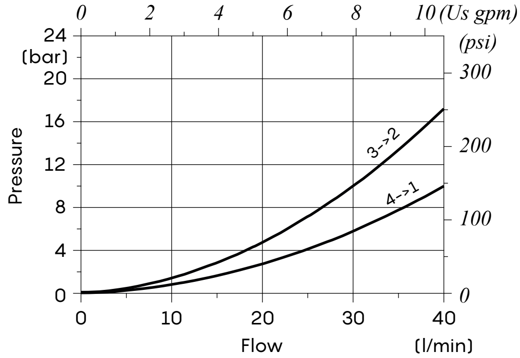


Rating diagrams

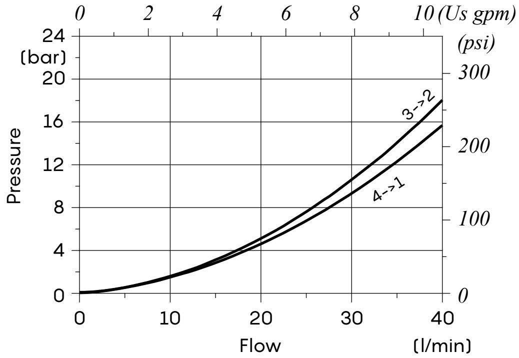
ER10L pressure drop vs. flow
spool 1



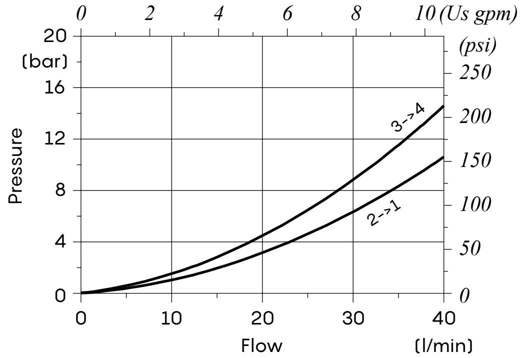
ER10L pressure drop vs. flow
spool 2



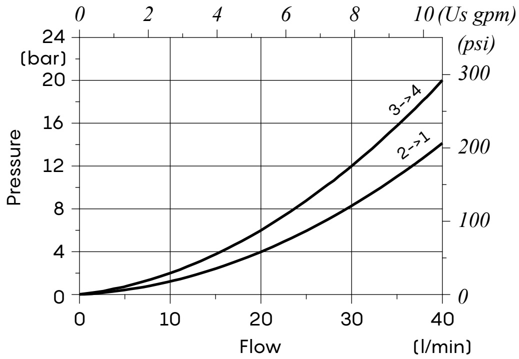
ER10L pressure drop vs. flow
spool 3



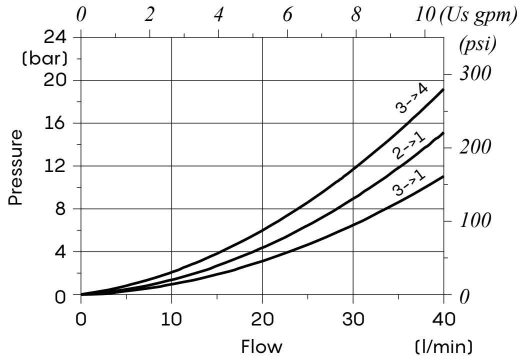
ER10L pressure drop vs. flow
spool 4



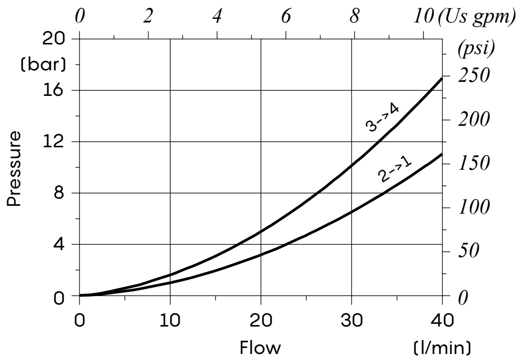
ER10L pressure drop vs. flow
spool 5



ER10L pressure drop vs. flow
spool 6



ER10L pressure drop vs. flow
spool 7



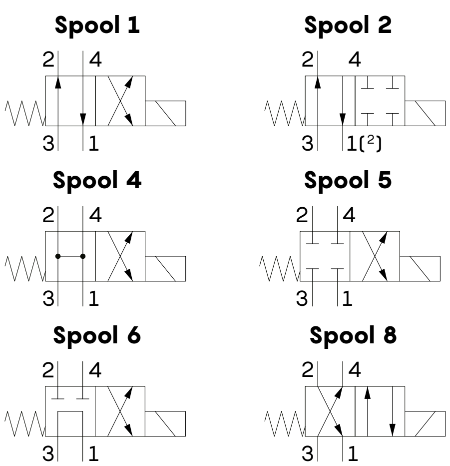
ER12M type
directional solenoid valves - 4 way / 2 positions

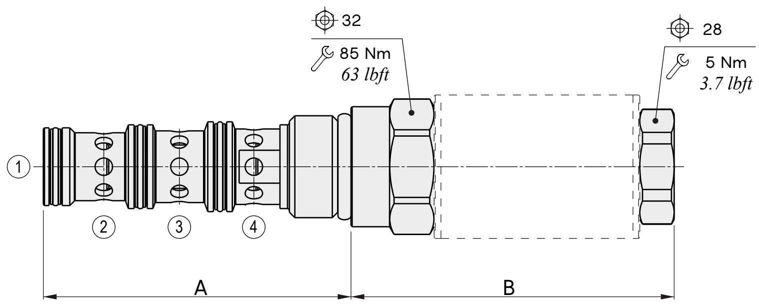
- Spool type
- Direct acting with on-off solenoid
- Different types of emergencies available

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

		ER12M
Nominal flow		60 l/min *(15.8 US gpm)*
Max. pressure	port 1 port 2, 3, 4	250 bar *(3600 psi)* 320 bar *(4600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	200 cm³/min *(12.20 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 12/4
Coil type*		BH
Nominal voltages		12VDC - 24 VDC ± 10%
Power rating		33 W (12/24 VDC)
Weight		0.73 kg *(1.61 lb)*

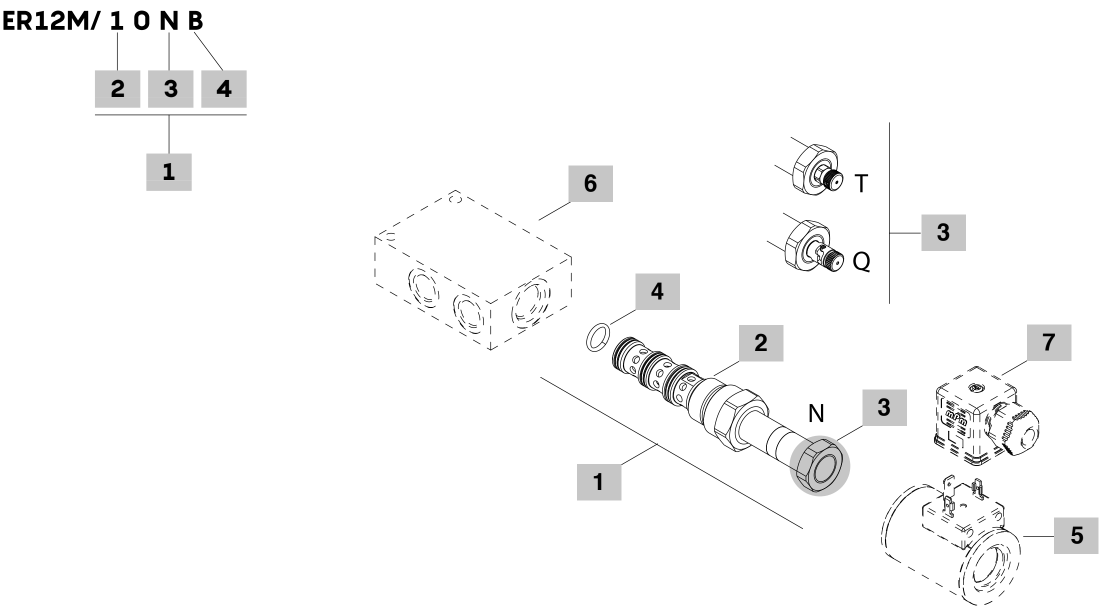
NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.





Valve type	A		B					
			N without emergency		**T** screw type		**Q** pull type with detent	
	mm	*in*	**mm**	*in*	**mm**	*in*	**mm**	*in*
ER12M	81.4	*3.2*	85.5	*3.37*	99.5	*3.92*	106.1	*4.18*

Ordering codes and description composition



1 Cartridges

TYPE	CODE	DESCRIPTION
<u>**SAE cavity 12/4**</u>		
ER12M/10NB	0ER12002021	Without emergency, spool 1
ER12M/20NB	0ER12002023	Without emergency, spool 2
ER12M/40NB	0ER12002031	Without emergency, spool 4
ER12M/50NB	0ER12002024	Without emergency, spool 5
ER12M/60NB	0ER12002028	Without emergency, spool 6
ER12M/80NB	0ER12002022	Without emergency, spool 8
ER12M/10QB	0ER12002033	Pull type emergency with detent, spool 1
ER12M/60TB	0ER12002030	Screw type, spool 6

2 Spool

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

3 Emergency

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

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BH12VDC-ISO4400	4SLD001200A	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE12/4-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 212

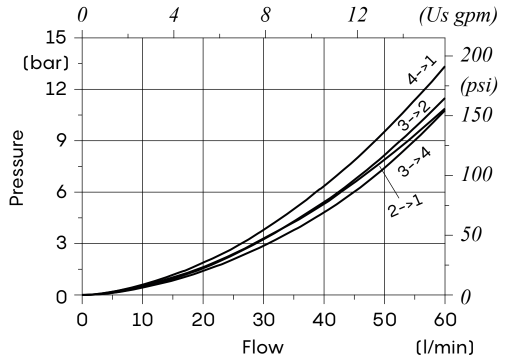
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

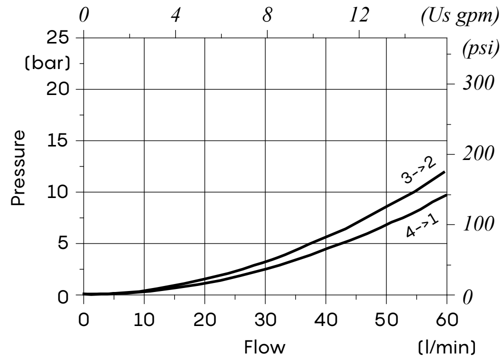
For complete connectors list see from page 201

Rating diagrams

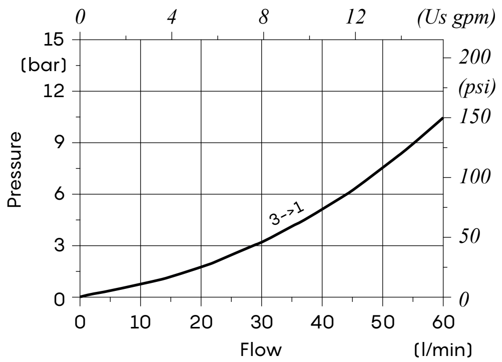
ER12M pressure drop vs. flow
spool 1



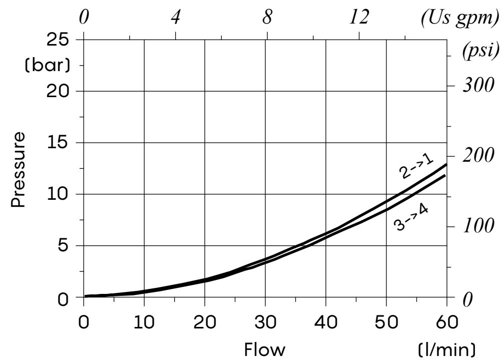
ER12M pressure drop vs. flow
spool 2



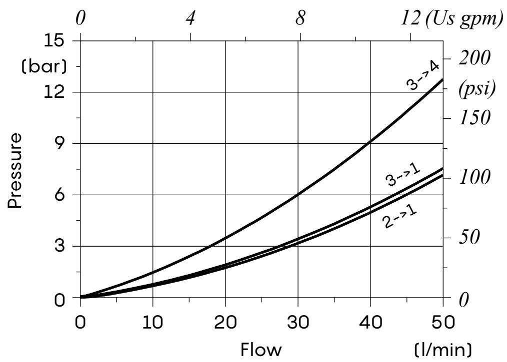
ER12M pressure drop vs. flow
spool 4



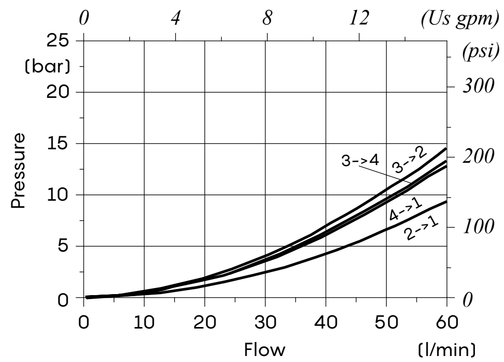
ER12M pressure drop vs. flow
spool 5



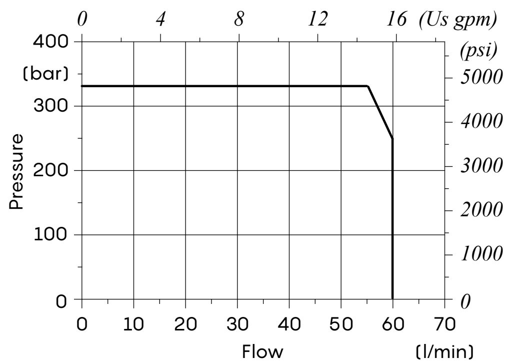
ER12M pressure drop vs. flow
spool 6



ER12M pressure drop vs. flow
spool 8



ER12M performance limit



ET..L type
directional solenoid valves - 4 way/3 positions

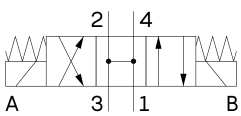
- Spool type
- Direct acting with on-off solenoid
- Different types of emergencies available
- External zinc-plated and corrosion-proof components
- From SAE08 to SAE10 cavities

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

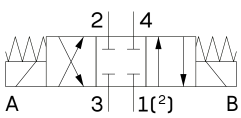
		ET08L	ET10L
Nominal flow		20 l/min *(5.3 US gpm)*	40 l/min *(10.6 US gpm)*
Max. pressure		250 bar *(3600 psi)*	
Oil leakage	at 210 bar *(5100 psi)*	40 cm³/min *(2.44 in³/min)*	80 cm³/min *(4.88 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 08/4	SAE 10/4
Coil type*		BER	BC
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		19 W (12VDC - 24VDC)	26 W (12VDC - 24VDC)
Weight		0.635 kg *(1.4 lb)*	0.702 kg *(1.55 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.
- (²) Port 1 may be fully pressurized, it's not intended for use as the valve's inlet.

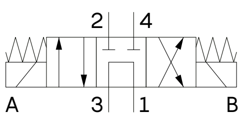
Spool 1



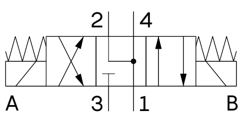
Spool 2



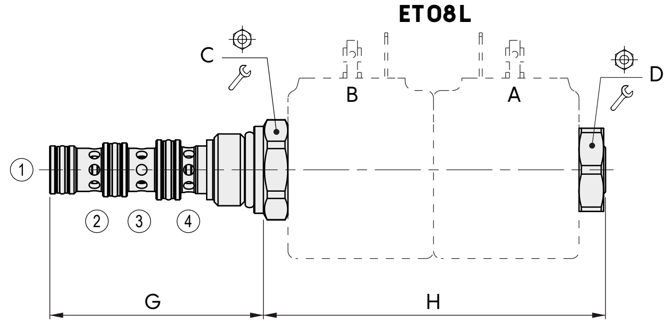
Spool 3



Spool 4



ET08L



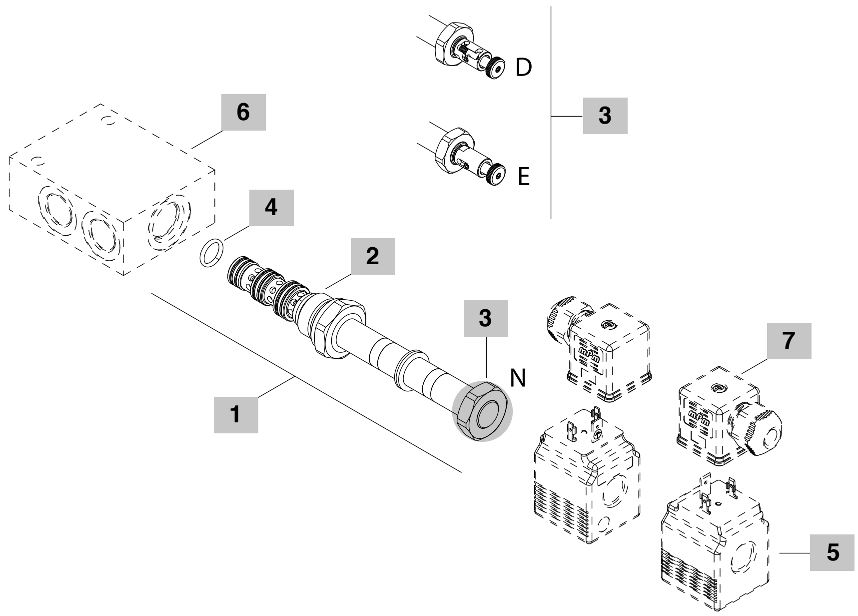
Valve type	G		H						C			D		
			N without emergency		D push type with detent		E with pull/ push button		⌖	🔧		⌖	🔧	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
ET08L	54	*2.13*	93	*3.66*	122	*4.8*	122	*4.8*	24	30	*22*	22	5±1	*3.7*
ET10L	62.4	*2.46*	114	*4.49*	142.8	*5.62*	142.8	*5.62*	27	50	*37*	23	5±1	*3.7*

Ordering codes and description composition

ET08L/ 1 0 N B

2 3 4

1



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/4		
ET08L/10NB	0ET08002026	Without emergency, spool 1
ET08L/20NB	0ET08002027	Without emergency, spool 2
ET08L/30NB	0ET08002025	Without emergency, spool 3
ET08L/40NB	0ET08002028	Without emergency, spool 4
SAE cavity 10/4		
ET10L/10NB	0ET10002041	Without emergency, spool 1
ET10L/20NB	0ET10002043	Without emergency, spool 2
ET10L/30NB	0ET10002040	Without emergency, spool 3
ET10L/40NB	0ET10002042	Without emergency, spool 4

2 Spool

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

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
D	Push/pull type with detent
E	Push/pull type without detent

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil for ET08L
BC12VDC	4SL8000120	12VDC-ISO4400 coil for ET10L

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/4-G 1/2	3CC1040D11	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 212

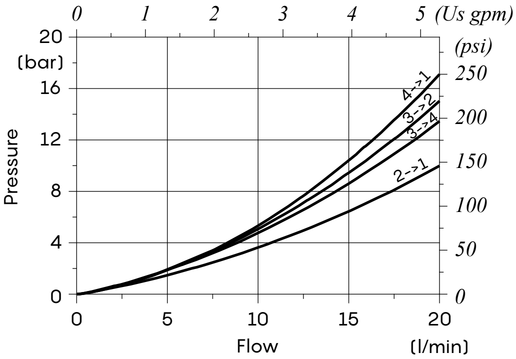
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

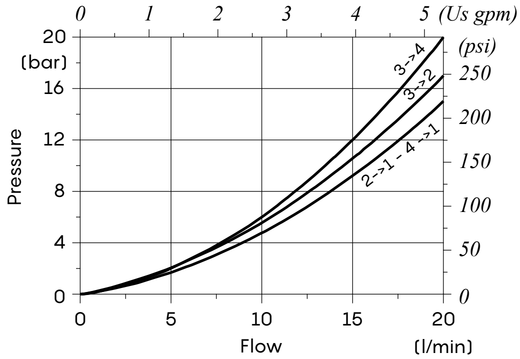
For complete connectors list see from page 201

Rating diagrams

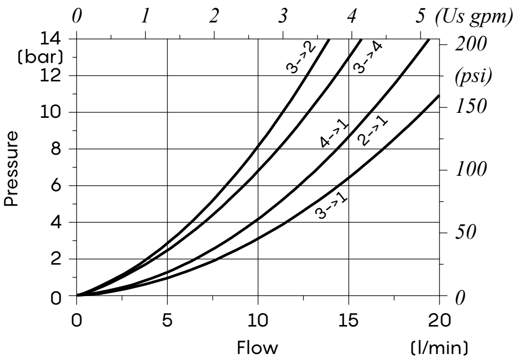
ET08L pressure drop vs. flow
spool 1



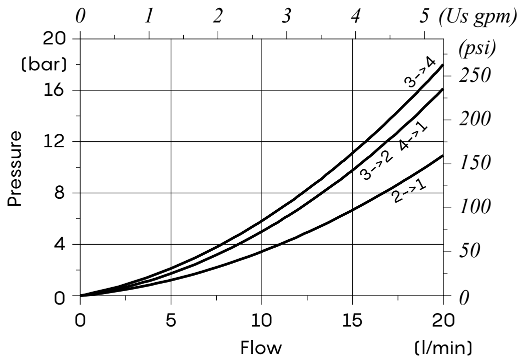
ET08L pressure drop vs. flow
spool 2



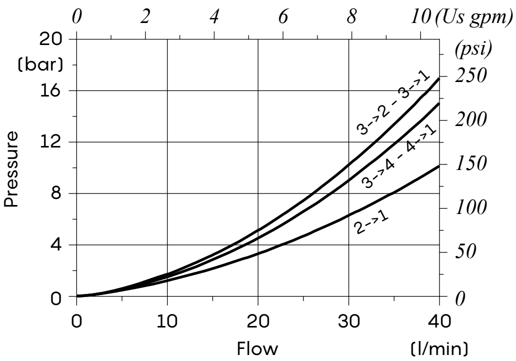
ET08L pressure drop vs. flow
spool 3



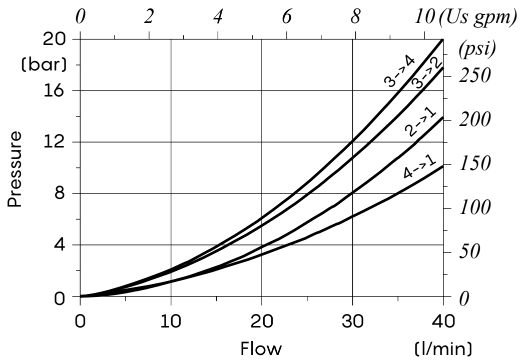
ET08L pressure drop vs. flow
spool 4



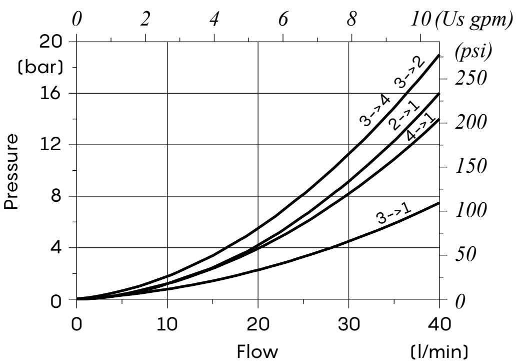
ET10L pressure drop vs. flow
spool 1



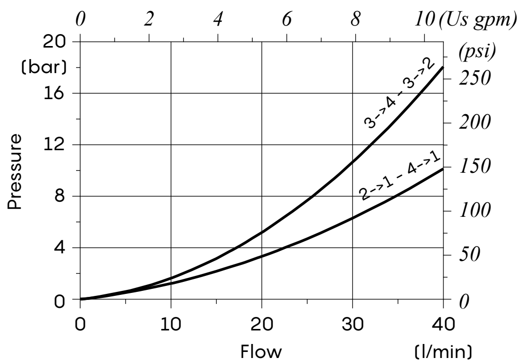
ET10L pressure drop vs. flow
spool 2



ET10L pressure drop vs. flow
spool 3



ET10L pressure drop vs. flow
spool 4



ET..X type
directional solenoid valves - 4 way/3 positions

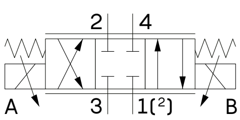
- Spool type
- Direct acting with proportional solenoid
- Different types of emergencies available
- Optimized linearity and hysteresis
- External zinc-plated and corrosion-proof components
- From SAE08 to SAE10 cavities

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

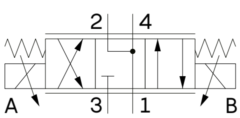
		ET08X	ET10X
Nominal flow		12 l/min *(3.17 US gpm)*	23 l/min *(6.1 US gpm)*
Max. pressure		250 bar *(3600 psi)*	
Oil leakage	at 210 bar *(5100 psi)*	80 cm³/min *(4.88 in³/min)*	200 cm³/min *(12.20 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties	
Viscosity		10-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*	
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*	
Cavity		SAE 08/4	SAE 10/4
Coil type*		BER	BC
Nominal voltages		12VDC - 24VDC ± 10%	
Power rating		19 W (12VDC - 24VDC)	26 W (12VDC - 24VDC)
Weight		0.638 kg *(1.41 lb)*	0.720 kg *(1.59 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.
- (²) Port 1 may be fully pressurized, it's not intended for use as the valve's inlet.

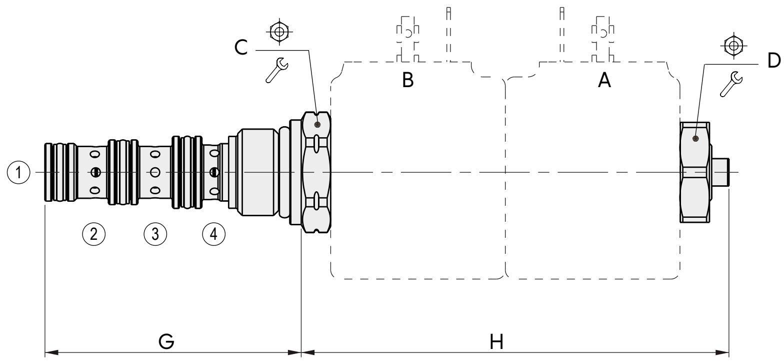
Spool 2



Spool 4

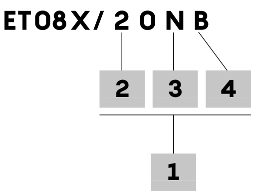


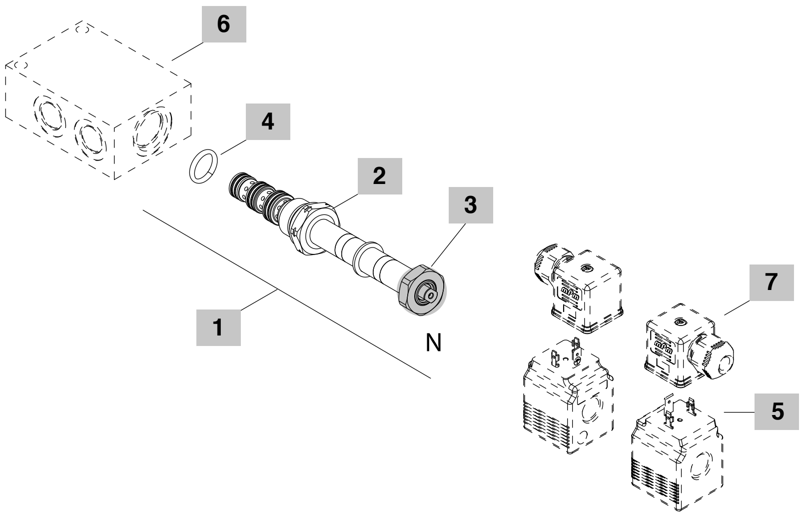
ET08X



Valve type	G		H N without emergency		C			D		
	mm	*in*	mm	*in*		Nm	*lbft*		Nm	*lbft*
ET08X	54	*2.13*	96.8	*3.81*	24	30	*22*	22	5±1	*3.7*
ET10X	62.4	*2.46*	117.8	*4.64*	27	50	*37*	23	5±1	*3.7*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/4		
ET08X/20NB	0ET08002035	Without emergency, spool 2
ET08X/40NB	0ET08002036	Without emergency, spool 4
SAE cavity 10/4		
ET10X/20NB	0ET10002058	Without emergency, spool 2
ET10X/40NB	0ET10002059	Without emergency, spool 4

2 Spool

TYPE	DESCRIPTION
2	Spool 2
4	Spool 4

3 Emergency

TYPE	DESCRIPTION
N	Without emergency

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BER12VDC	4SLE001200A	12VDC-ISO4400 coil for ET08X
BC12VDC	4SL8000120	12VDC-ISO4400 coil for ET10X

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE08/4-G 3/8	3CC0840C11	Aluminium body for cavity 08 valve, G 3/8 std thread
SAE10/4-G 3/8	3CC1040C11	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 212

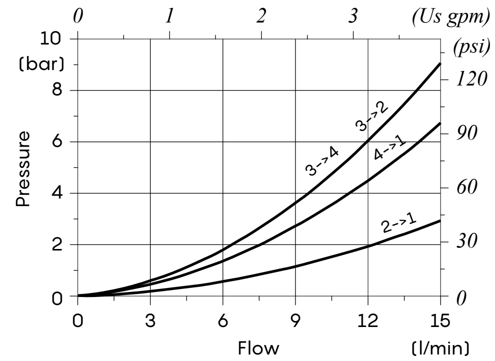
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

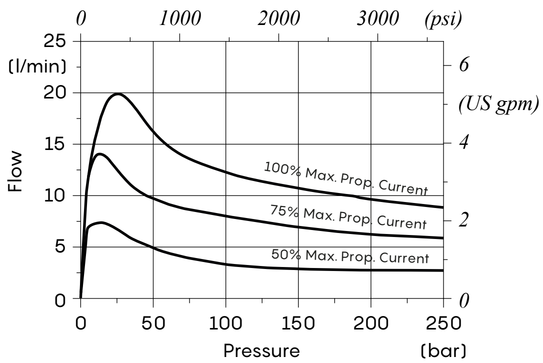
For complete connectors list see from page 201

Rating diagrams

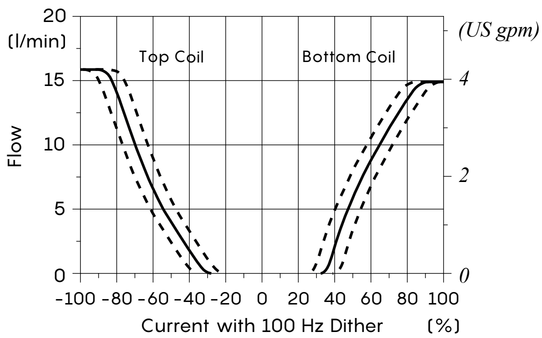
ET08X pressure drop vs. flow
spool 2



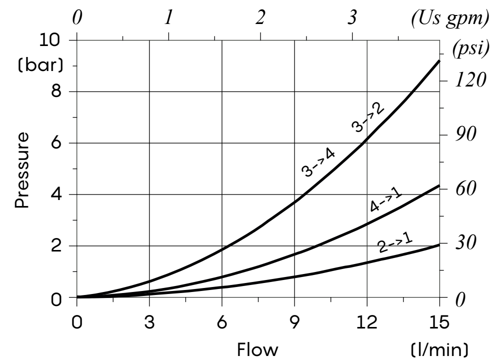
Pressure compensation
(inlet to work port - spool 2)



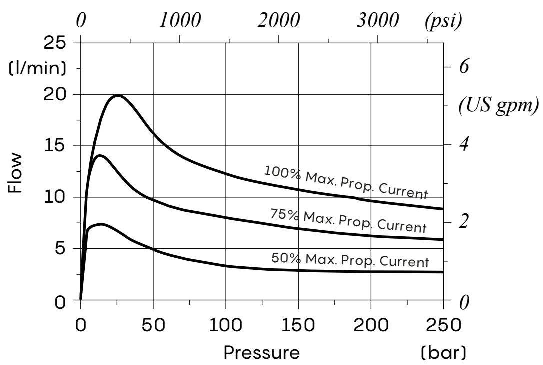
Flow vs. current
(with 10.5 bar/*152 psi* inline compensator- spool 2)



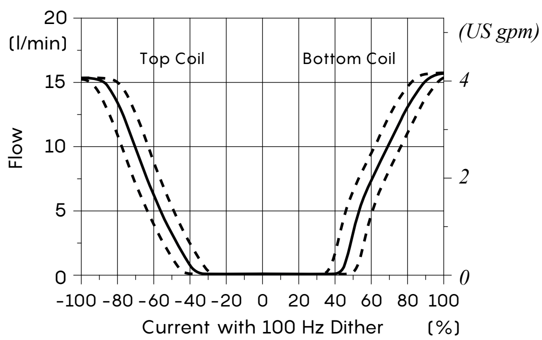
ET08X pressure drop vs. flow
spool 4



Pressure compensation
(inlet to work port - spool 4)

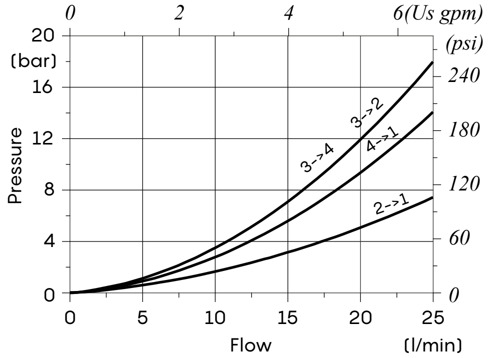


Flow vs. current
(with 10.5 bar/*152 psi* inline compensator- spool 4)

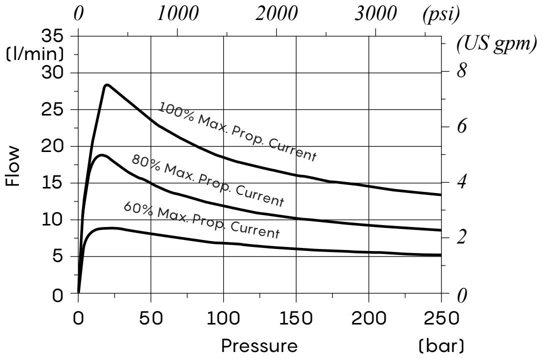


Rating diagrams

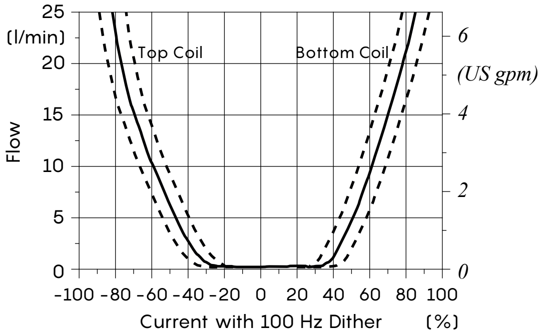
ET10X pressure drop vs. flow
spool 2/4 type



Pressure compensation
(inlet to work port - spool 2/4 type)



Flow vs. current
(with 10.5 bar/*152 psi* inline compensator- spool 2/4 type)



EK10L type
directional solenoid valves - 5 way / 3 positions

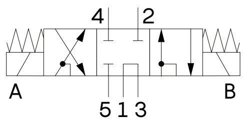
- Spool type
- Direct acting with proportional solenoid
- Different types of emergencies available
- External zinc-plated and corrosion-proof components

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

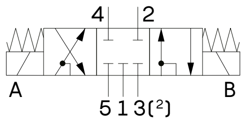
		EK10L
Nominal flow		20 l/min *(5.3 US gpm)*
Max. pressure		250 bar *(3600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	80 cm³/min *(4.88 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/5
Coil type*		BC
Nominal voltages		12VDC - 24 VDC ± 10%
Power rating		26 W (12VDC - 24VDC)
Weight		0.720 kg *(1.59 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.
- (²) Port 1 may be fully pressurized, it's not intended for use as the valve's inlet.

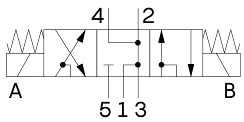
Spool 21



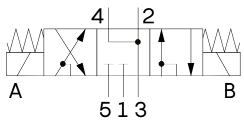
Spool 22

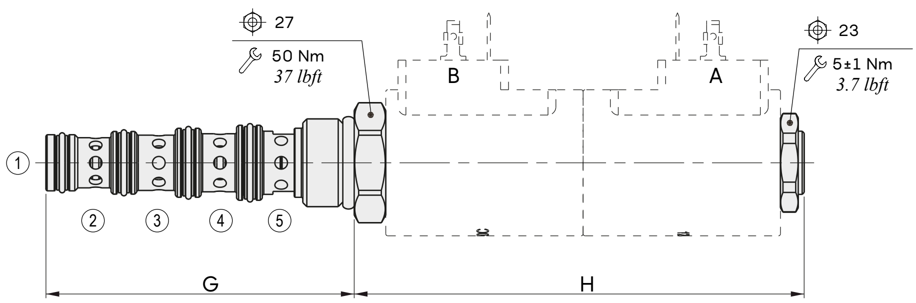


Spool 41



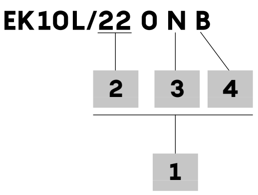
Spool 42

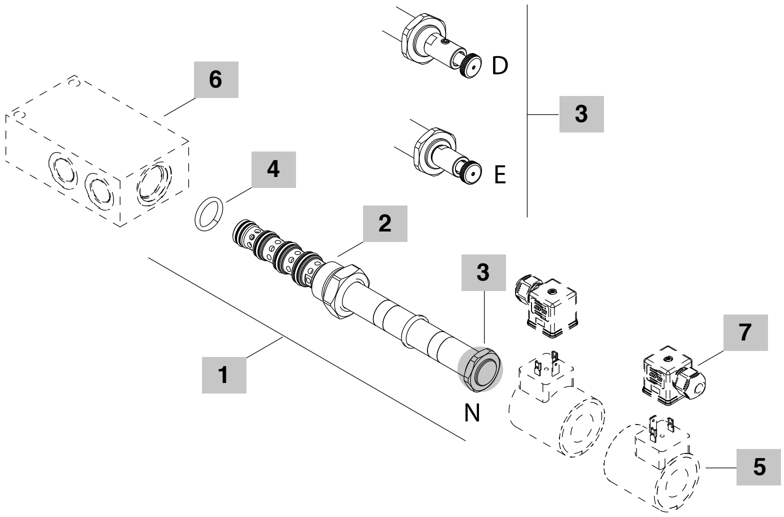




Valve type	G		H					
			N without emergency		D push type with detent		E with pull/ push button	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*
EK10L	78.1	*3.07*	114	*4.49*	142	*5.59*	142	*5.59*

Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/5		
EK10L/210NB	0EK10002003	Without emergency, spool 21
EK10L/220NB	0EK10002000	Without emergency, spool 22
EK10L/410NB	0EK10002001	Without emergency, spool 41
EK10L/420NB	0EK10002004	Without emergency, spool 42

2 Spool

TYPE	DESCRIPTION
21	Spool 21
22	Spool 22
41	Spool 41
42	Spool 42

3 Emergency

TYPE	DESCRIPTION
N	Without emergency
D	Push/pull type with detent
E	Push/pull type without detent

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BC12VDC	4SL8000120	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/5-G 3/8	3CC1050C11	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 214

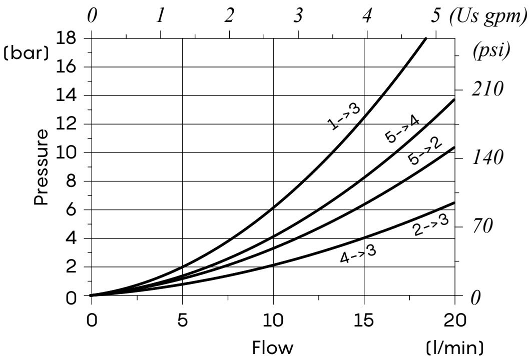
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

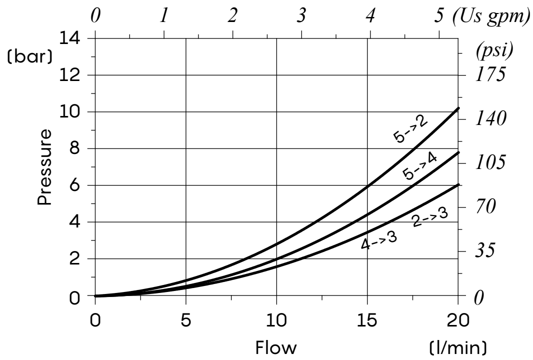
For complete connectors list see from page 201

Rating diagrams

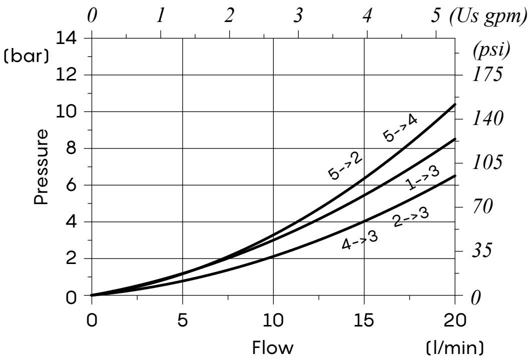
EK10L pressure drop vs. flow
spool 21



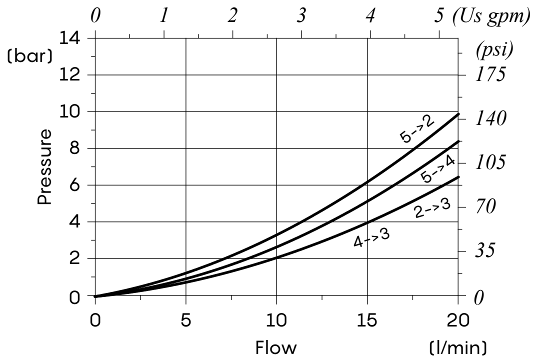
EK10L pressure drop vs. flow
spool 22



EK10L pressure drop vs. flow
spool 41



EK10L pressure drop vs. flow
spool 42



EK10X type
directional solenoid valves - 5 way / 3 positions

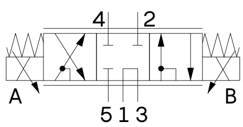
- Spool type
- Direct acting with proportional solenoid
- Different types of emergencies available
- Optimized linearity and hysteresis
- External zinc-plated and corrosion-proof components

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

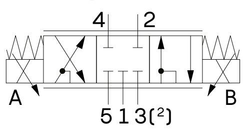
		EK10X
Nominal flow		23 l/min *(6.1 US gpm)*
Max. pressure		250 bar *(3600 psi)*
Oil leakage	at 210 bar *(3050 psi)*	200 cm³/min *(12.2 in³/min)*
Fluid		mineral based or sinthetic hydraulic fluid with lubricating properties
Viscosity		10-200 cSt
Max level of contamination		18/16/13 ISO4406
Fluid temperature	with NBR seals+Polyurethane with FPM seals	from -25°C *(-13°F)* to 90°C *(194°F)* from -20°C *(-4°F)* to 110°C *(230°F)*
Environmental temp. for working conditions		from -20°C *(-4°F)* to 60°C *(140°F)*
Cavity		SAE 10/5
Coil type*		BC
Nominal voltages		12VDC - 24 VDC ± 10%
Power rating		26 W (12VDC - 24VDC)
Weight		0.736 kg *(1.62 lb)*

NOTE - For different conditions, please contact Walvoil Sales Dpt. - *For coils further features see from page 201.

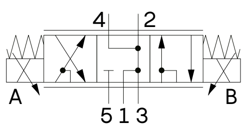
Spool 21



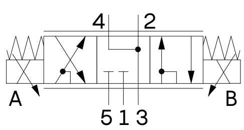
Spool 22

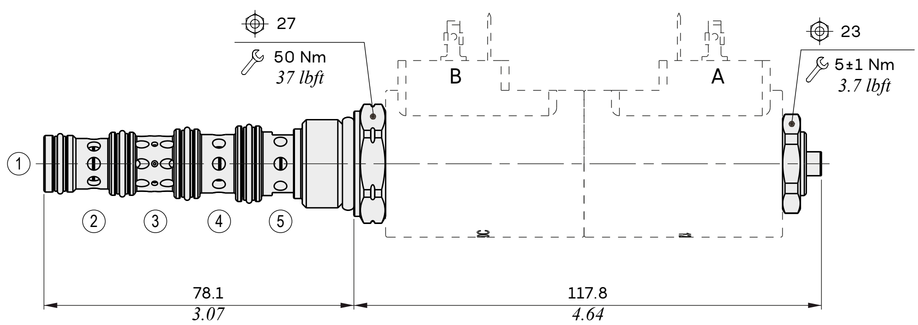


Spool 41

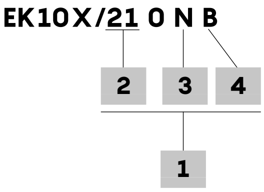


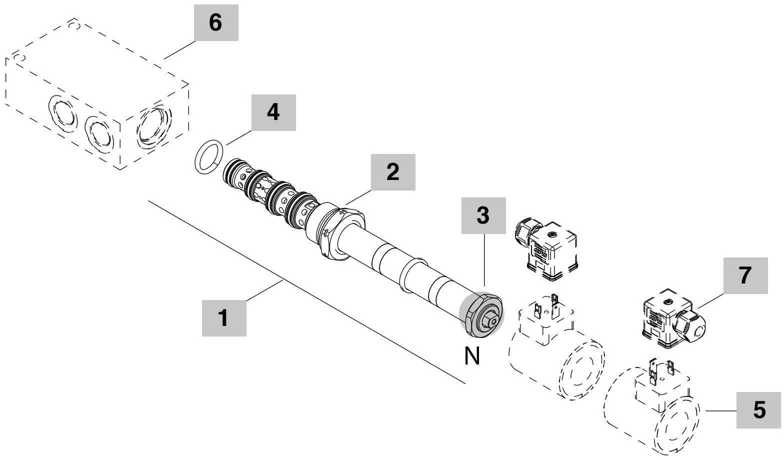
Spool 42





Ordering codes and description composition





1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/5		
EK10X/210NB	0EK10002017	Without emergency, spool 21
EK10X/220NB	0EK10002015	Without emergency, spool 22
EK10X/410NB	0EK10002014	Without emergency, spool 41
EK10X/420NB	0EK10002002	Without emergency, spool 42

2 Spool

TYPE	DESCRIPTION
21	Spool 21
22	Spool 22
41	Spool 41
42	Spool 42

3 Emergency

TYPE	DESCRIPTION
N	Without emergency

4 Seals

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

5 Coils

TYPE	CODE	DESCRIPTION
BC12VDC	4SL8000120	12VDC-ISO4400 coil

For complete coils list see page 201

6 Valve body

TYPE	CODE	DESCRIPTION
SAE10/5-G 3/8	3CC1050C11	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 214

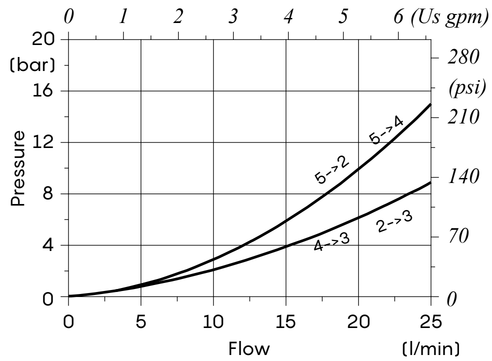
7 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995B	Connector

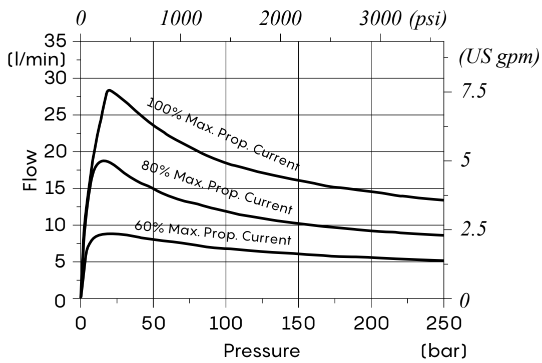
For complete connectors list see from page 201

Rating diagrams

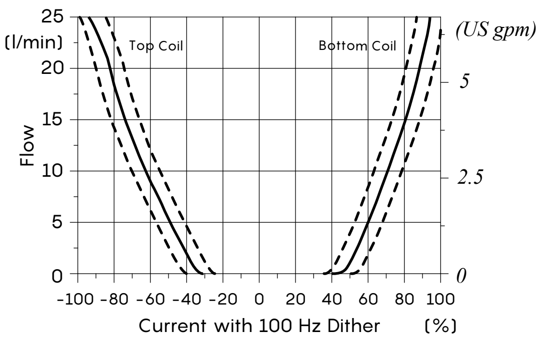
EK10X pressure drop vs. flow
spool 22



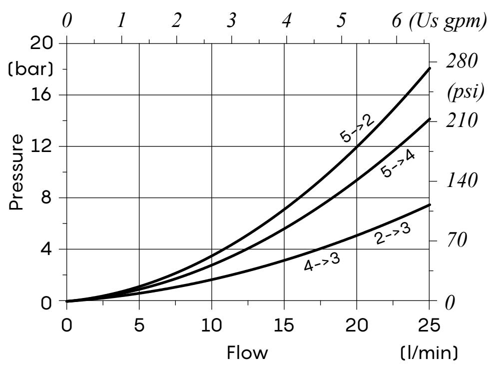
Pressure compensation
(inlet to work port - spool 22)



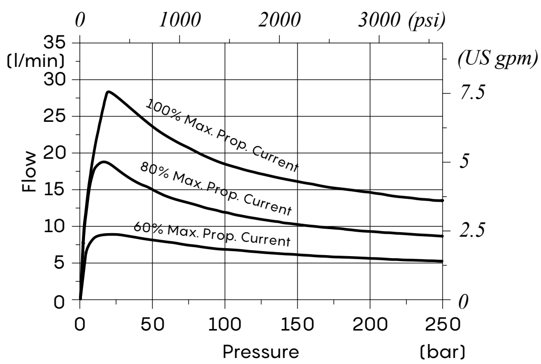
Flow vs. current
(with 10.5 bar/*152 psi* inline compensator- spool 22)



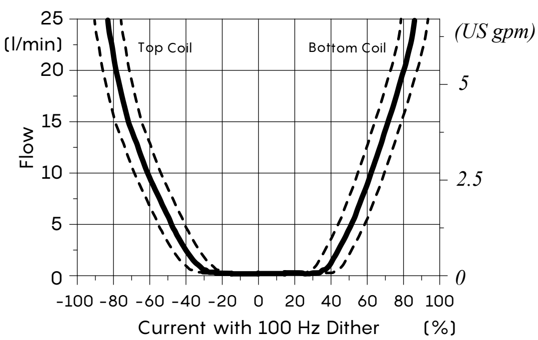
EK10X pressure drop vs. flow
spool 21-41-42



Pressure compensation
(inlet to work port - spool 21-41-42)



Flow vs. current
(with 10.5 bar/*152 psi* inline compensator- spool 21-41-42)



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								
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]	-	-	-	-	
EC..T EW10M ER12M RD08TX EJ12M	**BH**	**12 VDC**	4SLD001200A	4SLD001201A[6]	4SLD001207A[6]	-	-	4SLD001203A
		24 VDC	4SLD002400A	4SLD002401A[6]	4SLD002407A[6]	-	-	4SLD002403A
EE08A EB08M EC..M EF..M EH..M EW08M EJ08MF EJ08M EL08B ER08L ET08L ET08X	**BER**	**10 VDC**	4SLE001000A	-	-	-	-	-
		12 VDC	4SLE001200A 4SLE001217A[3]	4SLE001201A[5] 4SLE001209A[3-5] 4SLE001202A[6] 4SLE001216A[3-6] 4SLE001206A[2]	4SLE001203A[5] 4SLE001211A[3-5]	4SLE001210A[2]	4SLE001214[2]	4SLE001207A
		24 VDC	4SLE002400A 4SLE002408A[3] 4SLE302400A[1]	4SLE002401A[5] 4SLE002407A[3-5] 4SLE002402A[6]	4SLE002403A[5]	-	-	4SLE002404A
		48 VDC	4SLE004800A 4SLE304800A[1]	-	-	-	-	-
		110 VDC	4SLE011000A 4SLE311000A[1]	-	-	-	-	-
		220 VDC	4SLE022000A 4SLE322000A[1]	-	-	-	-	-
EE10A	**BIN19**	**10.5 VDC**	4SL6000100	-	-	-	-	-
		12 VDC	4SL6000121	-	-	-	-	-
		24 VDC	4SL6000240	-	-	-	-	-
EE12A	**BIN22**	**12 VDC**	4SL6000128	-	-	-	-	-
		24 VDC	4SL6000245	-	-	-	-	-
EJ10M ER10L ET10L ET10X EK10L EK10X	**BC**	**10.5 VDC**	4SL8000110					
		12 VDC	4SL8000120	4SL800012BA[6] 4SL8001201A[6-3]	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	4SL8032200A[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								
MC10T MC10X MP..T MP..X PP..X PU..X RP..X EE.X	**BQP19**	**12 VDC**	4SL5000126A	4SL5000125A(6)	4SL5000129A(5)	-	-	-
		24 VDC	4SL5000245A	4SL5000244A(6)	4SL5000248(A5)	-	-	-
	BH	**12 VDC**	4SLD001200A	4SLD001201A(6)	4SLD001207A(6)	-	-	4SLD001203A
		24 VDC	4SLD002400A	4SLD002401A(6)	4SLD002407A(6)	-	-	4SLD002403A
Mating connectors (For connector with rectifier see following table)			4CN1009995B	5CON140031	5CON003	5CON001	5CON017	-

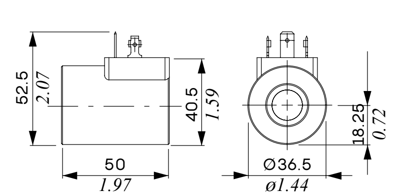
Notes: (1) supply with AC and use only with rectifier connector - (2) with flying leads - (3) with bidirectional diode - (4) with unidirectional diode
(5) integrated perpendicular type - (6) integrated parallel type

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

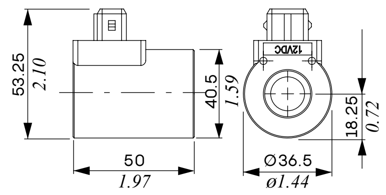
Dimensional data and features

BT type

ISO4400 connector

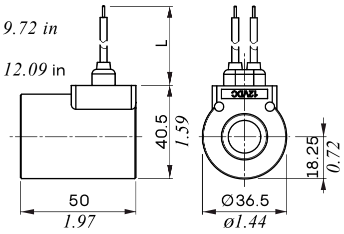


AMP JPT connector

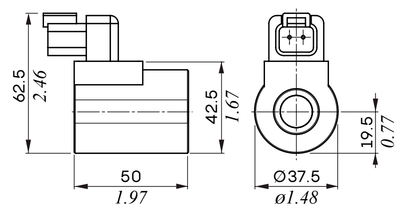


Dimension L:
12 VDC =
247 mm / *9.72 in*
24 VDC =
307 mm / *12.09* in

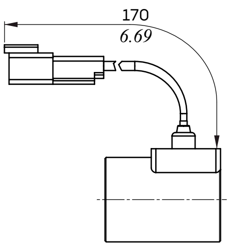
Flying leads



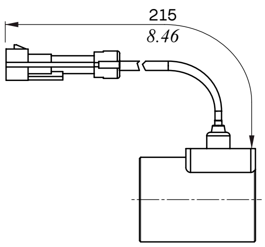
DEUTSCH DT04 connector



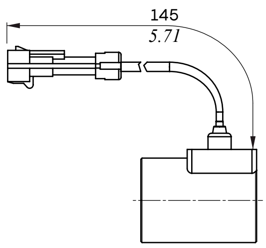
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector



Flying leads with PACKARD METRI-PACK connector

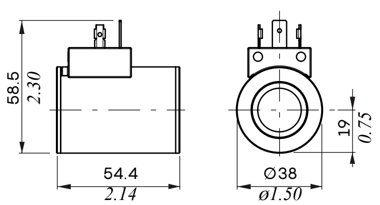


Features

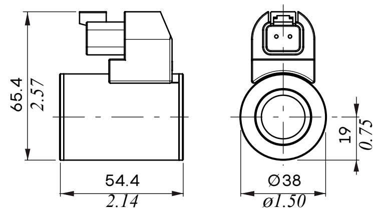
Nominal voltage tolerance	: ±10%
Power rating	: 19 W - 10 VDC
	: 21 W - 12/24/26 VDC
	: 20.3 W - 48 VDC
	: 17.3 W - 110 VDC
	: 17.7 W - 220 VDC
	: 19.9 W - 24 RAC
	: 20.7 W - 48 RAC
	: 20 W - 110 / 220 RAC
Max. operating current	: 1.9 A - 10 VDC
	: 1.77 A - 12 VDC
	: 0.89 A - 24VDC
	: 0.84 A - 26 VDC
	: 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

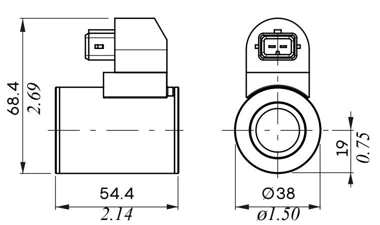
ISO4400 connector



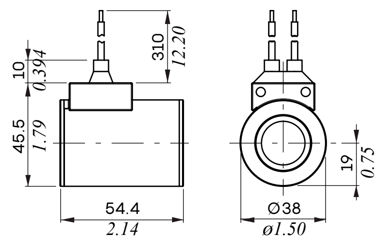
DEUTSCH DT04 connector



AMP JPT connector



Flying leads



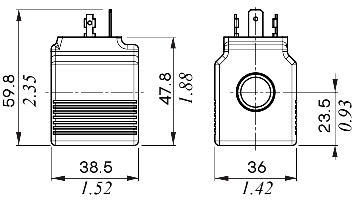
Features

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%

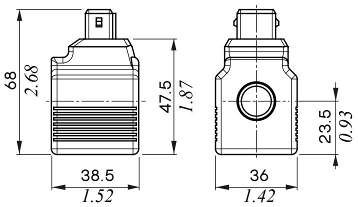
Dimensional data and features

BER type

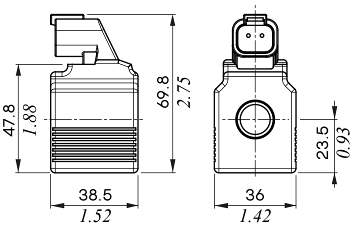
ISO4400 connector



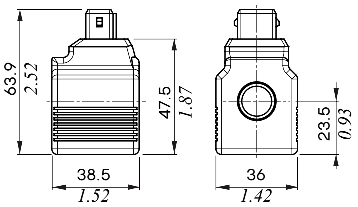
DEUTSCH DT04 connector
(perpendicular type)



DEUTSCH DT04 connector
(parallel type)



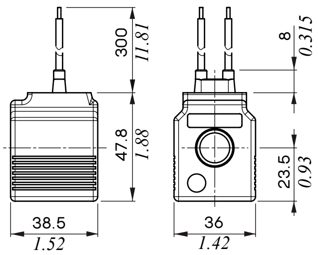
AMP JPT connector



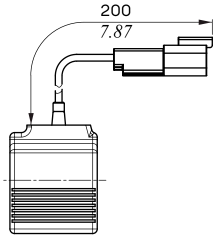
Features

Nominal voltage tolerance : ±10%
Power rating. . . . . : 19 W - 10/12/24/48/110/220 VDC
: 19 W - 24/110/220 RAC
: 19 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%

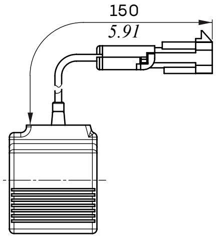
With flying leads



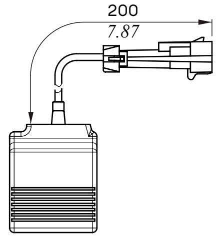
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector

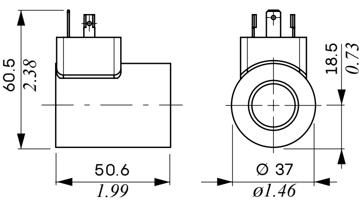


Flying leads with PACKARD METRI-PACK connector



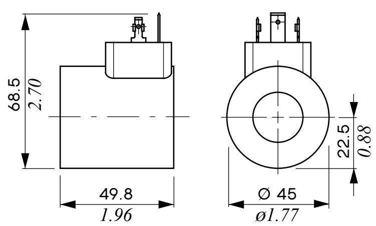
BIN19 type

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

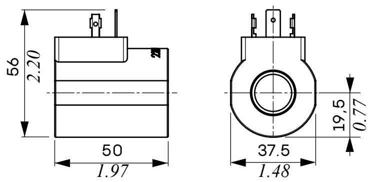
BIN22

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

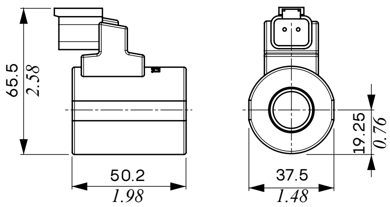
Dimensional data and features

BC type

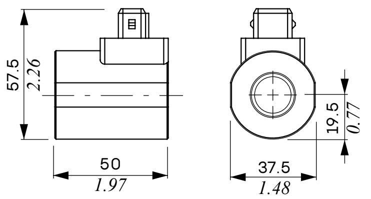
ISO4400 connector



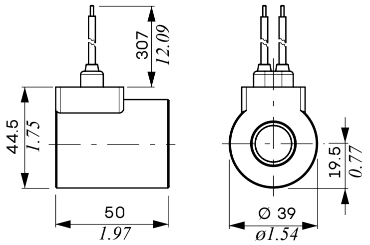
DEUTSCH DT04 connector



AMP JPT connector



Flying leads

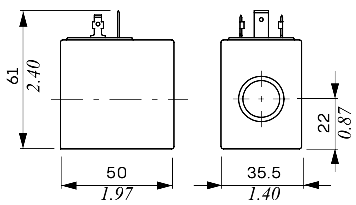


Features

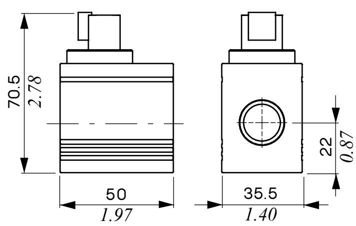
Nominal voltage tolerance : ±10%
Power rating. . . . . : 26.9 W - 10.5 VDC
: 26 W - 12 VDC
: 26 W - 24 VDC
: 24 W - 26 VDC
: 26 W - 24/48/110/220 RAC
Max. operating current . . . : 2.6 A - 10.5 VDC
: 2.19 A - 12 VDC
: 1.08 A - 24 VDC
: 0.92 A - 26 VDC
: 1.2 A - 24 RAC
: 0.6 A - 48 RAC
: 0.3 A - 110 RAC
: 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



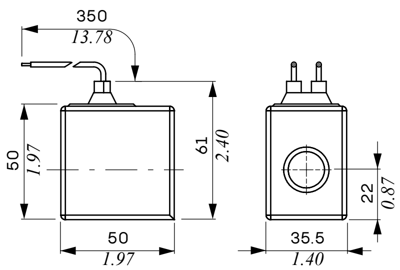
DEUTSCH DT04 connector



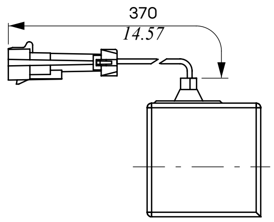
Features

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%

Flying leads



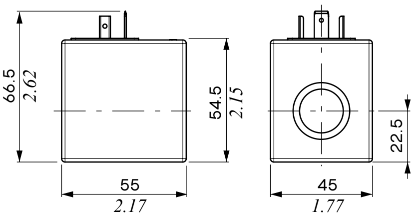
Flying leads with PACKARD METRI-PACK connector



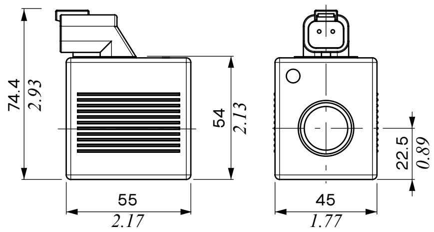
Dimensional data and features

BQP19 type

ISO4400 connector



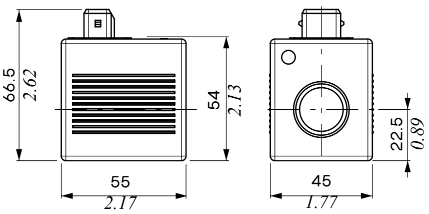
DEUTSCH DT04 connector



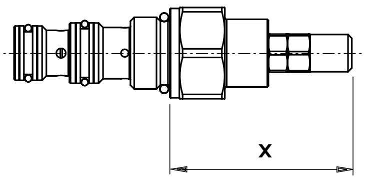
Features

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



Types and dimensions



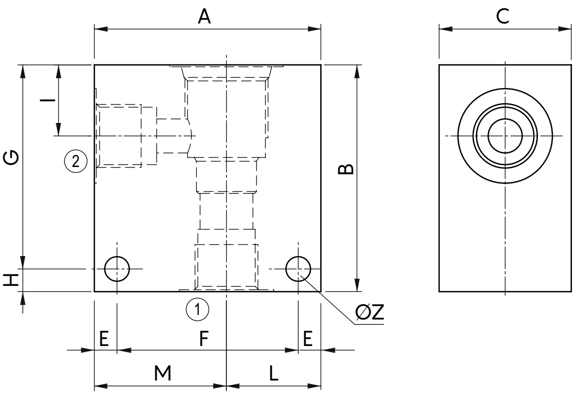
Valve type	Cavity	Dimension "X" M handknob		S (Y) screw		X Valve set with antitampering cap		W Copped adjustment	
		mm	*in*	mm	*in*	mm	*in*	mm	*in*
MC..MV	10/2	-	-	44.5	*1.75*	49.8	*1.96*	-	-
MC..R	08/2	-	-	46.6	*1.83*	54.9	*2.16*	-	-
	09/2	-	-	46.6	*1.83*	54.9	*2.16*	-	-
	10/2	-	-	44.4	*1.75*	52.7	*2.07*	-	-
MG..A	10/2	-	-	94.5	*3.72*	-	-	-	-
	12/2	-	-	126.5	*4.98*	-	-	-	-
MP..M	10/2	-	-	48.3	*1.9*	-	-	-	-
	12/2	-	-	46.9	*1.85*	-	-	-	-
	16/2	-	-	49.8	*1.96*	58.25	*2.29*	-	-
SW..A	10/2	-	-	52.5	*2.07*	-	-	-	-
	12/2	-	-	54.5	*2.15*	-	-	-	-
	16/2	-	-	58	*2.28*	-	-	-	-
SP..A	10/3	-	-	53	*2.09*	-	-	-	-
CC..A	10/3	-	-	51	*2.01*	-	-	51	*2.01*
	12/3	-	-	58.5	*2.3*	-	-	58.5	*2.3*
	16/3	-	-	69	*2.72*	-	-	69	*2.72*
NB..A	08/2	55.5	*2.18*	49.5	*1.95*	-	-	-	-
	10/2	47.5	*1.87*	46.5	*1.83*	-	-	-	-
	12/2	53.4	*2.10*	46.3	*1.82*	-	-	-	-
	16/2	71.6	*2.82*	60.9	*2.40*	-	-	-	-
NU..A	08/2	70.7	*2.78*	64.5	*2.54*	-	-	-	-
	10/2	70	*2.75*	65	*2.56*	-	-	-	-
	12/2	71.2	*2.80*	66	*2.60*	-	-	-	-
	16/2	72.9	*2.87*	66	*2.60*	-	-	-	-
NT..A	08/2	70.7	*2.78*	64.5	*2.54*	-	-	-	-
	10/2	70	*2.76*	65	*2.56*	-	-	-	-
	12/2	71.2	*2.80*	66	*2.60*	-	-	-	-
	16/2	72.9	*2.87*	66	*2.60*	-	-	-	-
PW..A	08/2	67.6	*2.66*	62	*2.44*	-	-	-	-
	10/2	72.5	*2.85*	69	*2.72*	-	-	-	-
	12/2	69.2	*2.72*	61.5	*2.42*	-	-	-	-
	16/2	102	*4.02*	96	*3.78*	-	-	-	-
PU..A	08/2	48	*1.89*	46	*1.81*	-	-	-	-
	10/2	44	*1.73*	42	*1.65*	-	-	-	-
	12/2	48	*1.89*	42	*1.65*	-	-	-	-
	16/2	53.5	*2.11*	51	*2.01*	-	-	-	-
PP..A	08/2	54.1	*2.13*	48	*1.89*	-	-	-	-
	10/2	47.2	*1.86*	42	*1.65*	-	-	-	-
	12/2	47.5	*1.87*	43	*1.69*	-	-	-	-
	16/2	51.5	*2.03*	51	*2.01*	-	-	-	-

Dimensional and ordering codes

Description composition

3/CC/- □ □ /20/ □ - □ - 1

Cavity	Ports	Materials
08	**B)** G 1/4	**1)** Aluminium
09	**C)** G 3/8	**2)** Steel
10	**D)** G 1/2	
12	**E)** G 3/4	
16	**F)** G 1	
	J) SAE6	
	K) SAE8	
	L) SAE10	
	M) SAE12	
	N) SAE16	



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

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	ØZ	Ordering code Aluminium	Ordering code 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*	*2.12*	*0.24*	*0.55*	*0.98*	*1.38*	*0.26*		
SAE 09/2	G 3/8	**mm**	60	60	35	6	48	54	6	14	25	35	6.5	3CC0920C11	3CC0920C21
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.55*	*0.98*	*1.38*	*0.26*		
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*		
	SAE6	**mm**	60	60	35	6	48	64	6	18.8	25	35	6.5	3CC1020J11	3CC1020J21
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.52*	*0.24*	*0.74*	*0.98*	*1.38*	*0.26*		
	SAE8	**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*		
	SAE10	**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*		

Dimensional and ordering codes

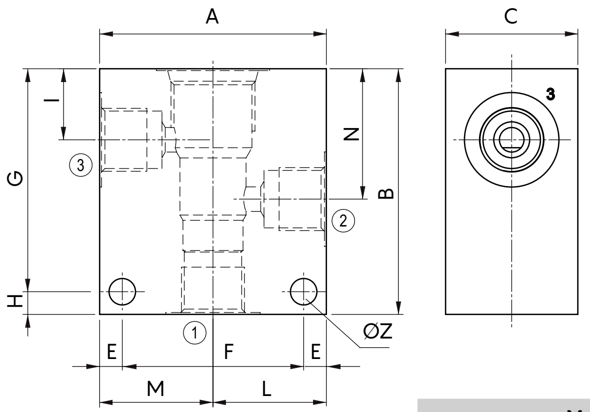
Cavity	Ports		Dimensions											Ordering code	
			A	B	C	E	F	G	H	I	L	M	ØZ	Aluminium	Steel
SAE 12/2	G 1/2	mm	70	80	40	8	54	72	8	25	30	40	8.5	3CC1220D11	3CC1220D21
		in	*2.75*	*3.15*	*1.57*	*0.31*	*2.12*	*2.83*	*0.31*	*0.98*	*1.18*	*1.57*	*0.33*		
	G 3/4	mm	70	90	40	8	54	82	8	25	30	40	8.5	3CC1220E11	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*		

Dimensional and ordering codes

Description composition

3/CC/- ☐ ☐ /30/ ☐ - ☐ - 1

Cavity	Ports	Materials
08	**B)** G 1/4	**1)** Aluminium
10	**C)** G 3/8	**2)** Steel
10Q	**D)** G 1/2	
12	**E)** G 3/4	
16	**F)** G 1	
16Q	**J)** SAE6	
	K) SAE8	
	L) SAE10	
	M) SAE12	
	N) SAE16	



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

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	ØZ	Ordering code Aluminium	Ordering code Steel
SAE 08/3	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	3CC0830K21
		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 08/3C	G 3/8	mm	60	50	30	7	46	40	10	14.5	30	30	22	6.5	3CC0833C11	/
		in	*2.36*	*1.97*	*1.18*	*0.27*	*1.81*	*1.57*	*0.39*	*0.57*	*1.18*	*1.18*	*0.87*	*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*		

Dimensional and ordering codes

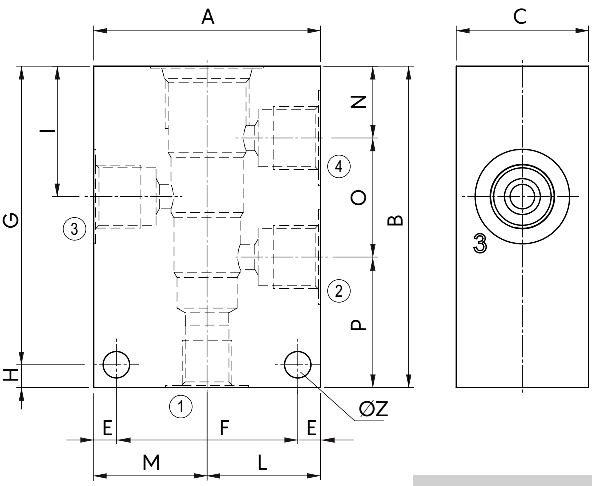
Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	ØZ	Ordering code Aluminium	Ordering code Steel
SAE 10/3Q	ports 1-2 = G 1/2 port 3 = G 1/4	mm	60	70	35	6	48	64	6	14.8	30	30	31.7	7	/	3CC1032D21
		in	2.36	2.75	1.38	0.24	1.89	2.52	0.24	0.58	1.18	1.18	1.25	0.27		
SAE 12/3	G 1/2	mm	70	100	40	8	54	92	8	25	35	35	53.5	8.5	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		
SAE 16/3Q	ports 1-2 = G 3/4 port 3 = G 1/4	mm	80	85	50	10	60	75	10	17.2	40	40	38.1	10.5	/	3CC1632E21
		in	3.15	3.35	1.97	0.39	2.36	2.95	0.39	0.68	1.57	1.57	1.50	0.41		

Dimensional and ordering codes

Description composition

3/CC/- □ □ /40/ □ - □ - 1

Cavity	**Ports**	**Materials**
08	**B)** G 1/4	**1)** Aluminium
10	**C)** G 3/8	**2)** Steel
12	**D)** G 1/2	
16	**E)** G 3/4	
	F) G 1	
	J) SAE6	
	K) SAE8	
	L) SAE10	
	M) SAE12	
	N) SAE16	



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

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	O	P	ØZ	Ordering code Aluminium	Ordering code Steel
SAE 08/4	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*		

Dimensional and ordering codes

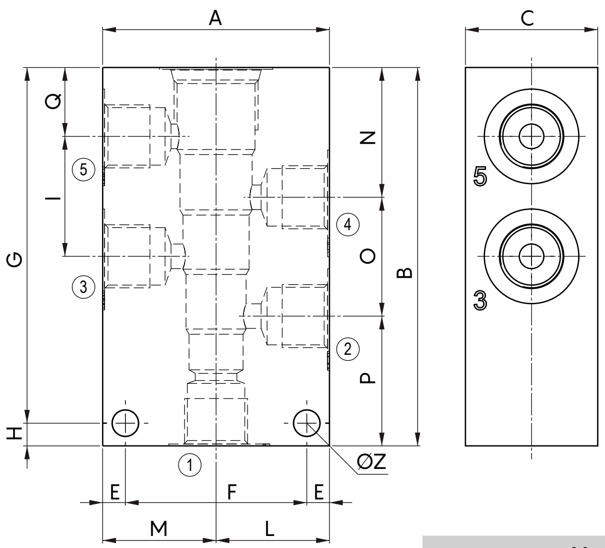
Cavity	Ports		Dimensions														Ordering code	
			A	B	C	E	F	G	H	I	L	M	N	O	P	ØZ	Aluminium	Steel
SAE 12/4	G 3/8	mm	80	115	40	8	64	107	8	44	40	40	22	44.5	48.5	8.5	3CC1240C11	3CC1240C21
		in	*3.15*	*4.53*	*1.57*	*0.31*	*2.52*	*4.21*	*0.31*	*1.73*	*1.57*	*1.57*	*0.87*	*1.75*	*1.9*	*0.33*		
	G 1/2	mm	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*		

Dimensional and ordering codes

Description composition

3/CC/- □ □ /50/ □ - □ - 1

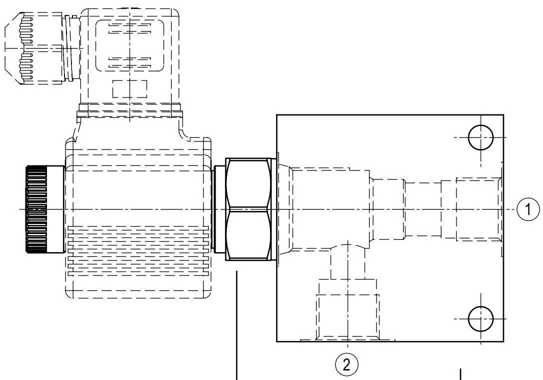
Cavity	Ports	Materials
10	**B)** G 3/8	**1)** Aluminium
	C) SAE6	**2)** Steel



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

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	O	P	Q	ØZ	Ordering code Aluminium	Ordering code Steel
SAE 10/5	G 3/8	mm	60	100	35	6	48	94	6	31.7	30	30	34.3	31.4	34.3	18.2	7	3CC1050C11	3CC1050C21
		in	*2.36*	*3.94*	*1.38*	*0.24*	*1.89*	*3.7*	*0.24*	*1.25*	*1.18*	*1.18*	*1.35*	*1.24*	*1.35*	*0.72*	*0.27*		
	SAE6	mm	60	100	35	6	48	94	6	31.7	30	30	34.3	31.4	34.3	18.2	7	3CC1050J11	3CC1050J21
		in	*2.36*	*3.94*	*1.38*	*0.24*	*1.89*	*3.7*	*0.24*	*1.25*	*1.18*	*1.18*	*1.35*	*1.24*	*1.35*	*0.72*	*0.27*		

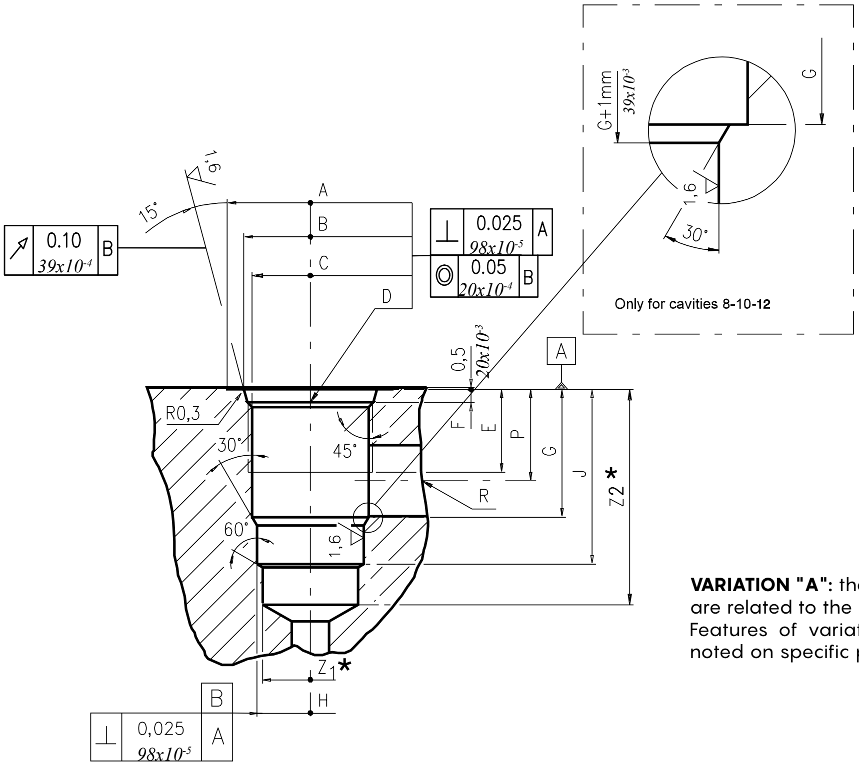
How to order valves with body



Cartridge description	Body description
EC 10 M/10NB	C 1 1

Cavity	Ports	Materials
08	**B)** G 1/4	**1)** Aluminium
09	**C)** G 3/8	**2)** Steel
10	**D)** G 1/2	
12	**E)** G 3/4	
16	**F)** G 1	
	J) SAE6	
	K) SAE8	
	L) SAE10	
	M) SAE12	
	N) SAE16	

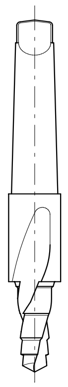
Dimensions



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

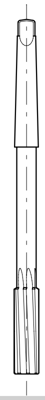
Cavity		A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	J	K ±0.02	L	M ±0.02	N	P	R ØMAX	S	T ØMAX	U	V ØMAX	X ØMAX	Z1* ØMIN	Z2* MIN
08/2 08/2 A	mm	27	20.66	17.42	3/4-16 UNF	12.5	2.5	18.2	12.72	29.5	-	-	-	-	14	8	-	-	-	-	-	12	39
	in	*1.06*	*0.81*	*0.68*		*0.49*	*0.10*	*0.72*	*0.50*	*1.16*					*0.55*	*0.31*						*0.47*	*1.53*
09/2A	mm	27	20.66	17.42	3/4-16 UNF	13.5	2.5	18	15.9	29.5	-	-	-	-	14	8.5	-	-	-	-	-	14	35
	in	*1.06*	*0.81*	*0.68*		*0.53*	*0.10*	*0,71*	*0.62*	*1.16*					*0.55*	*0.35*						*0.57*	*1.43*
10/2 10/2 A	mm	30	24	20.62	7/8-14 UNF	16	2.8	24	15.9	33.5	-	-	-	-	18.3	11	-	-	-	-	-	14.5	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	3.5	34.15	22.25	46.8	-	-	-	-	24.5	19	-	-	-	-	-	21.5	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	35.6	31.34	1 5/16-12 UNF	22	3.50	34	28.62	47	-	-	-	-	24.5	19	-	-	-	-	-	25.5	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



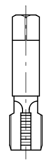
Cavity	Ordering code
08/2	UDPF175030
08/2A	UDPF175030
09/2A	UDPF174230
10/2	UDPF20503F
10/2A	UDAS24003C
12/2 12/2A	UDAS380031
16/2 16/2A	UDPF313031

Finisher tool



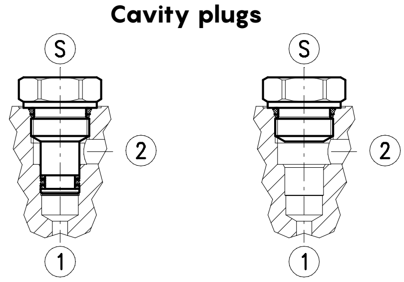
Cavity	Ordering code
08/2	UCAC127066
08/2A	UCAC127060
09/2A	UCAT159260
10/2	UCAC159080
10/2A	UCAC159080
12/2 12/2A	UDAC222661
16/2 16/2A	UDAC286261

Tap



Cavity	Ordering code
08/2	UCMS3/4161
08/2A	UCMS3/4161
09/2A	UCPL140020
10/2	UCMS7/8142
10/2A	UCMS7/8142
12/2 12/2A	UCMS11/162
16/2 16/2A	UCMS15/160

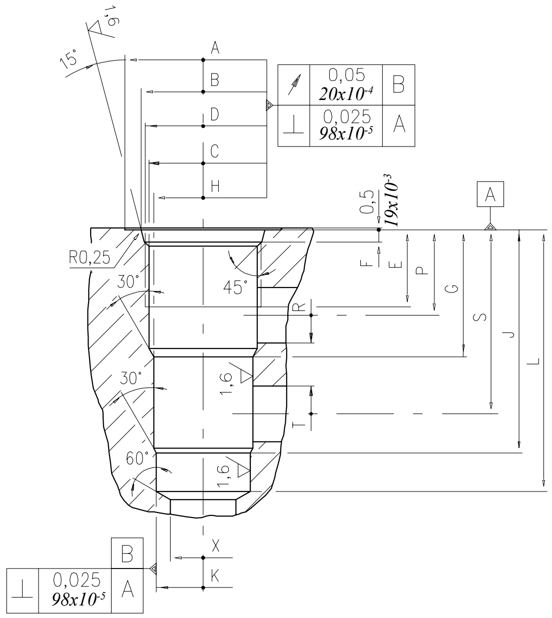
Cavity plugs



Cavity	Ordering code	1	2	S
08/2 08/2A	3XTP3533700	X	X	X
	4TP5531500	0	0	X
09/2A	XTAP524340D	X	X	X
10/2 10/2A	3XTP3544200	X	X	X
	3XTP1542300	0	0	X
12/2 12/2A	3XTP3555400	X	X	X
	3XTP1552900	0	0	X
16/2 16/2A	3XTP3575500	X	X	X
	3XTAP838200	0	0	X

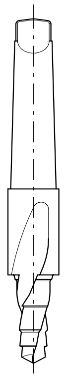
X=Close 0=Open

Dimensions



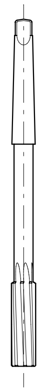
Cavity		A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	J	K ±0.02	L	M ±0.02	N	P	R øMAX	S	T øMAX	U	V øMAX	X øMAX
08/3	mm	27	20.66	17.42	3/4 -16 UNF	12.5	2.5	19.1	15.90	33.3	14.3	43.3	-	-	14.3	5.5	28.6	5.5	-	-	12.5
	in	*1.06*	*0.81*	*0.68*		*0.49*	*0.10*	*0.75*	*0.62*	*1.31*	*0.56*	*1.70*			*0.56*	*0.22*	*1.12*	*0.22*			*0.49*
08/3C	mm	27	20.66	17.42	3/4 -16 UNF	10	2.5	14.3	15.9	25.2	14.3	31.5	-	-	10.5	5	21.5	5	-	-	12.5
	in	*1.06*	*0.81*	*0.68*		*0.39*	*0.10*	*0.56*	*0.62*	*1.31*	*0.56*	*1.70*			*0.41*	*0.20*	*0.85*	*0.20*			*0.49*
10/3	mm	30	24	20.62	7/8 -14 UNF	16	2.8	23.1	17.5	39.6	15.9	47.6	-	-	18.3	6.5	34	6.5	-	-	14
	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*
10/3Q	mm	30	24	20.62	7/8 -14 UNF	14.2	2.5	17.75	19.05	39.7	17.475	47.6	-	-	14.2	4.4	31.2	14	-	-	12.5
	in	*1.18*	*0.94*	*0.81*		*0.56*	*0.10*	*0.7*	*0.75*	*1.56*	*0.69*	*1.87*			*0.56*	*0.17*	*1.23*	*0.55*			*0.49*
12/3	mm	38	29.23	24.73	1 1/16 -12 UNF	19	3.56	36.6	23.82	63.5	22.25	75.4	-	-	24.5	16	53	16	-	-	19
	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	35.6	28.62	1 5/16 -12 UNF	22	3.5	36.5	28.62	64.3	27.02	75.3	-	-	24.5	16	53	16	-	-	19
	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*
16/3Q	mm	45	35.55	31.34	1 5/16 -12 UNF	17.5	3.5	22.1	28.6	47.6	25.425	56.85	-	-	16.5	6	37	15.5	-	-	19
	in	*1.77*	*1.40*	*1.23*		*0.69*	*0.14*	*0.87*	*1.13*	*1.87*	*1*	*2.24*			*0.65*	*0.24*	*1.46*	*0.61*			*0.75*
20/3	mm	58	43.6	36.55	1 5/8 -12 UNF	21	3.5	46	36.55	87.6	33.37	100	-	-	31	25.4	71.5	25.4	-	-	30
	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



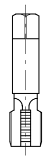
Cavity	Ordering code
08/3	UDAS207021
08/3C	UDPF174021
10/3	UDPF20503B
10/3Q	UDAS30003I
12/3	UDAS380032
16/3	UDAS450032
16/3Q	UDAS450033
20/3	UT05X55380

Finisher tool



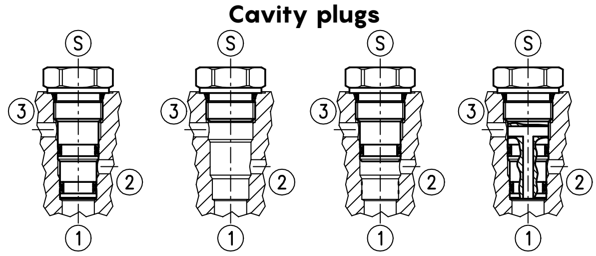
Cavity	Ordering code
08/3	UDAS159064
08/3C	UDAS159063
10/3	UDAC175080
10/3Q	UDAS190560
12/3	UDAS238060
16/3	UDAS286261
16/3Q	UDAS286060
20/3	UT05X55390

Tap



Cavity	Ordering code
08/3	UCMS3/4161
08/3C	UCMS3/4161
10/3	UCMS7/8142
10/3Q	UCMS7/8142
12/3	UCMS11/162
16/3	UCMS15/160
16/3Q	UCMS15/160
20/3	UCMS15/812

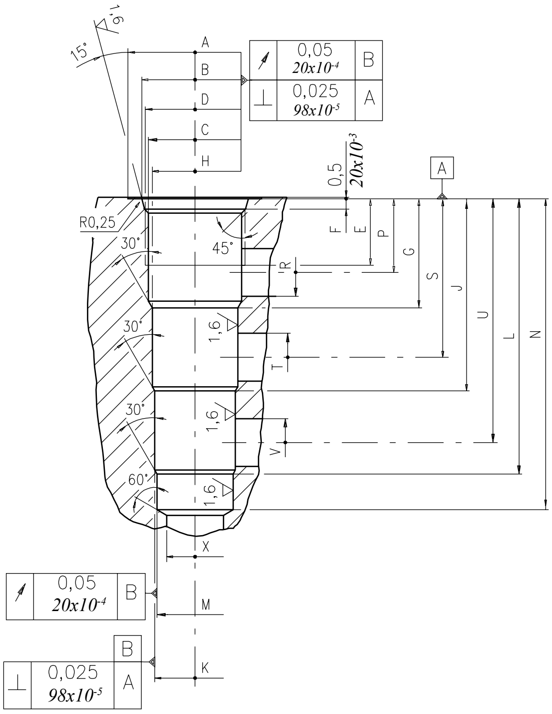
Cavity plugs



Cavity	Ordering code	①	②	③	Ⓢ
08/3	XTAP324541	X	X	X	X
	3XTAP822150	0	0	0	X
	XTAP324400	0	0	X	X
	XTAP324540	0	X	0	X
08/3C	XTAP824370	X	X	X	X
	3XTAP822150	0	0	0	X
10/3	3XTP3545700	X	X	X	X
	3XTP1542300	0	0	0	X
	3XTP3545701	0	X	0	X
10/3Q	XTAP327350	0	0	X	X
	XTAP327573	X	X	X	X
12/3	3XTP3558200	X	X	X	X
	3XTP1552900	0	0	0	X
	3XTP3558201	0	X	0	X
16/3	3XTP3578400	X	X	X	X
	3XTAP838200	0	0	0	X
16/3Q	XTAP341570	X	X	X	X

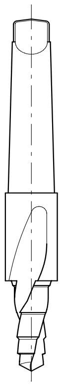
X=Close 0=Open

Dimensions



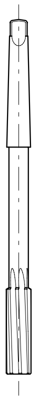
Cavity		A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	J	K ±0.02	L	M ±0.02	N	P	R øMAX	S	T øMAX	U	V øMAX	X øMAX
08/4	mm	28.00	20.66	17.42	3/4-16 UNF	12.5	2.5	19.1	15.9	33.3	14.3	47.6	12.72	57.6	14.3	5.5	28.6	5.5	42.9	5.5	11
	in	*1.10*	*0.81*	*0.68*		*0.49*	*0.10*	*0.75*	*0.62*	*1.31*	*0.56*	*1.87*	*0.50*	*2.27*	*0.56*	*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	2.8	23.6	19.08	39.6	17.5	55.4	15.9	63.5	18.3	6.5	34	6.5	50	6.5	14
	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	3.56	29.5	23.82	51.5	22.25	73.6	20.65	83.33	21.5	11	43.5	11	66	11	19
	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	3.5	36.5	28.62	64.3	27.02	92.07	25.45	104	24.6	16	53	16	81.5	16	19
	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



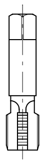
Cavity	Ordering code
08/4	UDAS207020
10/4	UDAS30003H
12/4	UDAS292020
16/4	UDAS356030

Finisher tool



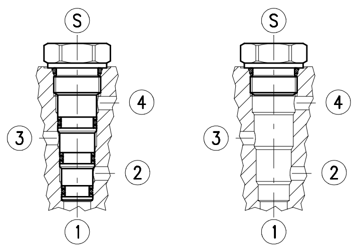
Cavity	Ordering code
08/4	UDAS170080
10/4	UDAS190861
12/4	UDAS238260
16/4	UDAS286262

Tap



Cavity	Ordering code
08/4	UCMS3/4161
10/4	UCMS7/8142
12/4	UCMS11/162
16/4	UCMS15/160

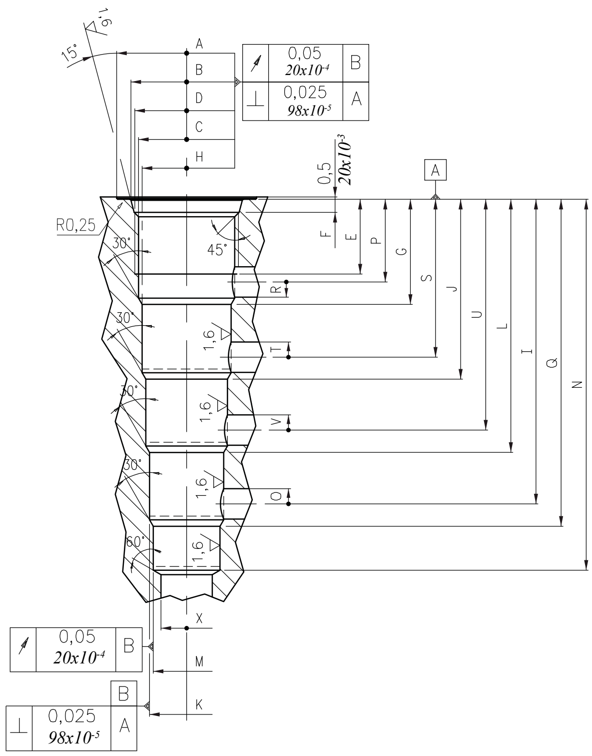
Cavity plugs



Cavity	Ordering code	1	2	3	4	S
08/4	3XTP3536500	X	X	X	X	X
	3XTAP822150	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	3XTP3578300	X	X	X	X	X
	3XTAP838200	0	0	0	0	X

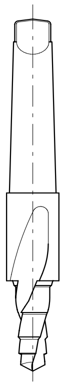
X=Close 0=Open

Dimensions



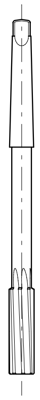
Cavity		A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	I	J	K ±0.02	L	M ±0.02	N	O øMAX	P	Q	R øMAX	S	T øMAX	U	V øMAX	X øMAX
10/5	**mm**	30	24.00	20.62	7/8-14 UNF	16	2.8	22.5	19.08	65.2	38.5	15.9	54.2	14.3	79.4	3.25	17.7	70	3.25	33.8	3.25	49.4	3.25	11
	in	*1.18*	*0.94*	*0.81*		*0.63*	*0.11*	*0.89*	*0.75*	*2.57*	*1.51*	*0.63*	*2.13*	*0.56*	*3.13*	*0.13*	*0.70*	*2.75*	*0.13*	*1.33*	*0.13*	*1.94*	*0.13*	*0.43*

Rougher tool



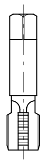
Cavity	Ordering code
10/5	UDPS188030

Finisher tool



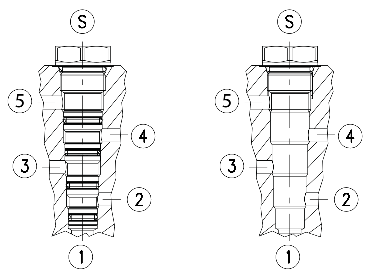
Cavity	Ordering code
10/5	UDPF204021

Tap



Cavity	Ordering code
10/5	UDAS190862

Cavity plugs



Cavity	Ordering code	1	2	3	4	5	S
10/5	XTAP327880	X	X	X	X	X	X
	3XTP1542300	0	0	0	0	0	0

X=Close 0=Open

Notes

WALVOIL NEL MONDO | WALVOIL WORLDWIDE

WALVOIL S.P.A.
DIREZIONE E COORDINAMENTO INTERPUMP GROUP S.P.A.
Sede principale, Filiali e Uffici di rappresentanza
Headquarters, Subsidiaries and Representative Offices

WALVOIL S.P.A. SEDE PRINCIPALE | HEADQUARTERS
Via Adige, 13/D . 42124 Reggio Emilia . Italy
TEL. +39 0522 932411
info@walvoil.com | www.walvoil.com

AUSTRALASIA | AUSTRALASIA

WALVOIL FLUID POWER AUSTRALASIA PTY LTD
6 Leonard Avenue . Toukley NSW 2263 . Sydney . Australia
TEL. +61 413 739 938
australasia@walvoil.com

BRASILE | BRAZIL

INTERPUMP HYDRAULICS BRASIL LTDA | WALVOIL DIVISION
Rua Gilberto de Zorzi, 525 . Bairro Forqueta 95115-730
Caxias do Sul (RS)
TEL. +55 54 3289 7000
infobrasil@walvoil.com

CANADA | CANADA

WALVOIL CANADA INC.
3100, Rue Jacob Jordan . Terrebonne . Qc J6X 4J6 . Canada
TEL. +1 450 477 1076 Ext:225
info@walvoilcanada.com | www.walvoilcanada.com

CINA | CHINA

WALVOIL FLUID POWER (DONGGUAN) CO. LTD
1st Floor, the Third Factory Area, Sijia, Shijie Town, Dongguan City
Guangdong province. China.
TEL. +86 769 81816189-8020
info@walvoil.com.cn | www.walvoil.com.cn

COREA DEL SUD | SOUTH KOREA

WALVOIL FLUID POWER KOREA LTD.
(17818) 80-15, Oseongsandan 1Ro, Oseong-myun,
Pyeongtaek-si Gyeonggi-do
Republic of Korea 451-872
TEL. +82 31 682 6030
info@walvoil.co.kr | www.walvoil.co.kr

FRANCIA | FRANCE

WALVOIL FLUID POWER FRANCE
362 rue de La Jaunais . Vritz . 44540 Vallons-de-l'Erdre
TEL. +33 2 41 94 41 06
france@walvoil.com

INDIA | INDIA

WALVOIL FLUID POWER (INDIA) PVT. LTD.
No. 1, 2nd Cross, 2nd Main, KIADB Industrial Area, Attibele, Anekal Taluk
Bangalore - 562107 .
TEL. +91 80 0614 24000
info@walvoil.co.in | www.walvoil.co.in

MESSICO | MEXICO

WALVOIL FLUID POWER MEXICO S.A. DE C.V.
Julian Sepulveda Davila #109, Parque Industrial SG, cp. 66640, Apodaca
Nuevo León, Mexico

U.S.A. | U.S.A.

WALVOIL FLUID POWER CORP. | HEADQUARTERS
4111 North Garnett Tulsa, OK 74116, USA
TEL. +1 918 858 7100
info@walvoilusa.com | www.walvoilusa.com

WALVOIL FLUID POWER CORP
1109, Technology Drive . Red Wing . MN 55066 . U.S.A.
TEL. +1 651 212 6400
info@walvoilusa.com | www.walvoilusa.com

D2WWEI01E
2nd edition April 2025

A member of
INTERPUMP GROUP