



SAE cavity cartridges



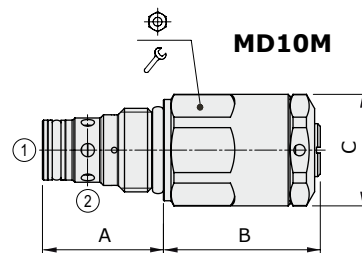
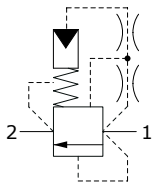
MD..M type shockless pressure relief valve - 2 ways

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

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

		MD10M	MD12M
Nominal flow		60 l/min (15.8 US gpm)	100 l/min (26.4 US gpm)
Max. pressure		350 bar (5100 psi)	
Oil leakage	at 80% of max. pressure setting	5 cm ³ /min (0.3 in ³ /min)	5 cm ³ /min (0.3 in ³ /min)
Fluid		mineral based oil	
Viscosity		10-200 cSt	
Max level of contamination		20/18/14 ISO4406	
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)	
Environmental temp. for working conditions		from -20°C (-4°F) to 50°C (122°F)	
Cavity		SAE 10/2	SAE 12/2
Weight		0.200 kg (0.44 lb)	0.355 kg (0.78 lb)

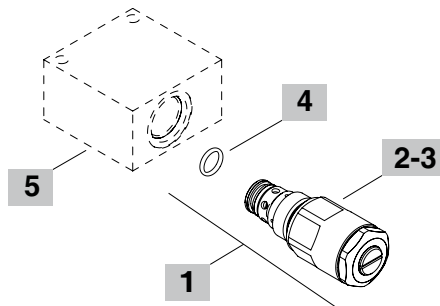
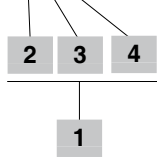
NOTE - For different conditions, please contact Walvoil Sales Dpt.



Valve type	A		B		C		⊕	⌘	Nm	lbft
	mm	in	mm	in	mm	in				
MD10M	32	1.25	73.5	2.89	∅29.5	∅1.16	27	50	37	
MD12M	46	1.81	92.5	3.64	∅35	∅1.38	32	80	59	

Ordering codes and description composition

MD10M/313B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 10/2		
MD10M/313B	OMD10002027	Pressure range 13

SAE cavity 12/2

MD12M/513B	OMD12002004	Pressure range 13
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2 Reaction time

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

3 Pressure range

TYPE	DESCRIPTION
SAE cavity 10/2	
11	Pressure range 130÷200 bar (1900÷2900 psi) Pressure ratio 1.9
12	Pressure range 180÷240 bar (2610÷3480 psi) Pressure ratio 2.2
13	Pressure range 220÷290 bar (3190÷4200 psi) Setting 250 bar (3625 psi) at 25 l/min (6.6 US gpm) Pressure ratio 2.4
21	Pressure range 170÷270 bar (2465÷3915 psi) Pressure ratio 2.5
22	Pressure range 220÷290 bar (3190÷4200 psi) Pressure ratio 2.8

SAE cavity 12/2

11	Pressure range 125÷155 bar (1810÷2250 psi) Pressure ratio 1.7
12	Pressure range 160÷190 bar (2320÷2760 psi) Pressure ratio 1.9
13	Pressure range 180÷240 bar (2610÷3480 psi) Setting 220 bar (3190 psi) at 60 l/min (16 US gpm) Pressure ratio 2.2
21	Pressure range 150÷185 bar (1900÷2685 psi) Pressure ratio 2
22	Pressure range 190÷235 bar (2760÷3400 psi) Pressure ratio 2.35
23	Pressure range 230÷275 bar (3335÷3990 psi) Pressure ratio 2.55

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

4 Seals

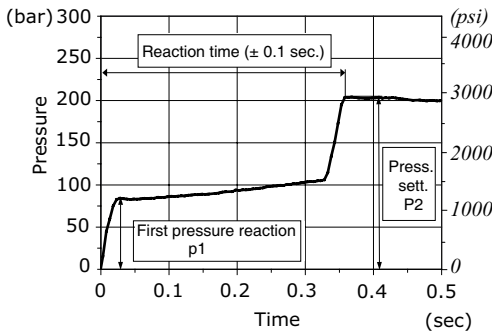
TYPE	DESCRIPTION
B	NBR (Buna) o-ring seals, std configuration
V	FPM (Viton) o-ring seals, contact Sales Dept.

5 Valve body

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

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

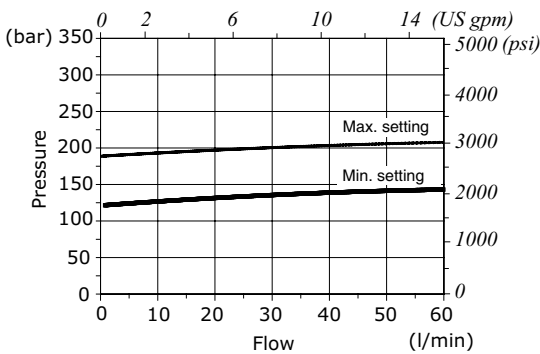
MD10M performance curve example with typical dimensions



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

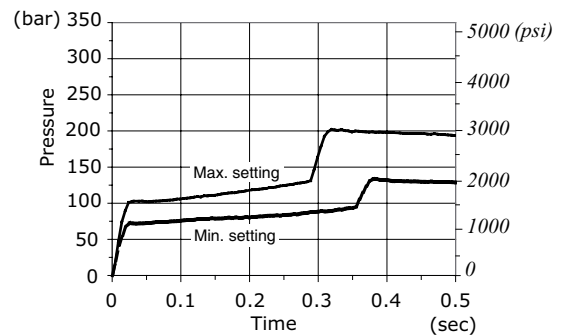
First pressure reaction: $p_1 = \frac{p_2}{R_p}$

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

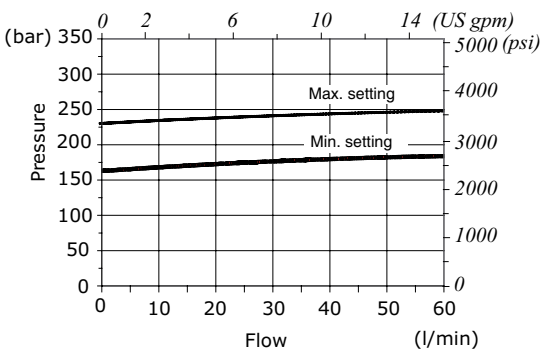


Pressure range 11
 130 ÷ 200 bar
 (1900 ÷ 2900 psi)
 Pressure ratio 1.9
 Q=60l/min
 (15.8 US gpm)

MD10M performance curve at max. and min. setting

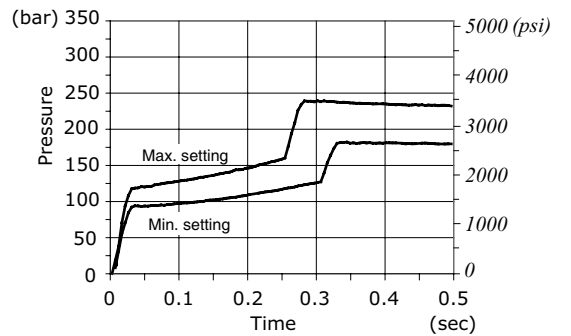


MD10M pressure vs. flow at max. and min. setting

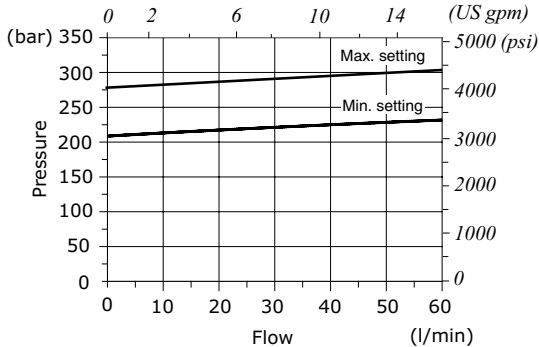


Pressure range 12
 180 ÷ 240 bar
 (2610 ÷ 3480 psi)
 Pressure ratio 2.2
 Q=60l/min
 (15.8 US gpm)

MD10M performance curve at max. and min. setting

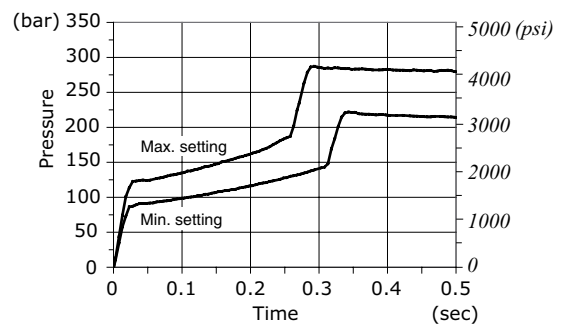


MD10M pressure vs. flow at max. and min. setting



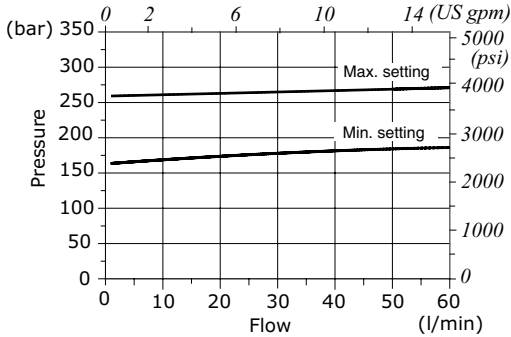
Pressure range 13
 220 ÷ 290 bar
 (3190 ÷ 4200 psi)
 Setting 250 bar (3625 psi) at 25 l/min
 (6.6 US gpm)
 Pressure ratio 2.4
 Q=60l/min
 (15.8 US gpm)

MD10M performance curve at max. and min. setting



Rating diagrams

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

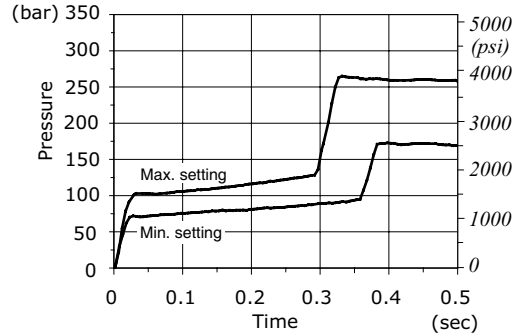


Pressure range

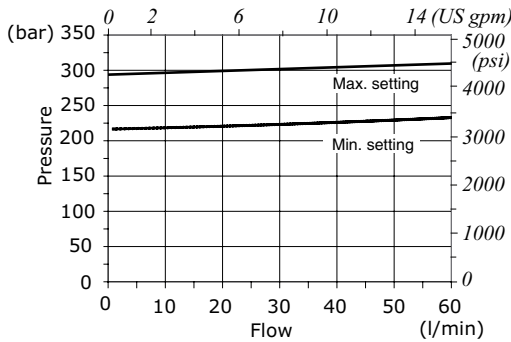
21

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

MD10M performance curve
at max. and min. setting



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

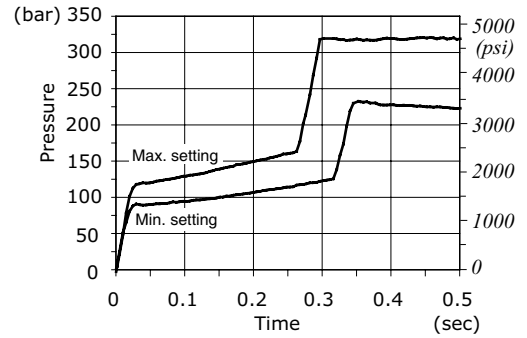


Pressure range

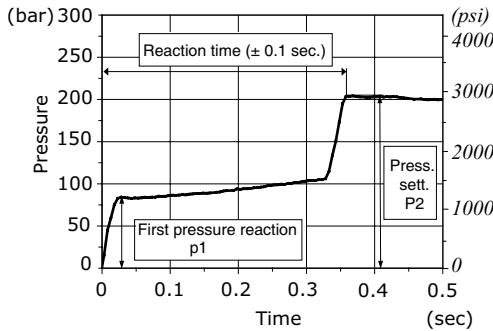
22

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

MD10M performance curve
at max. and min. setting



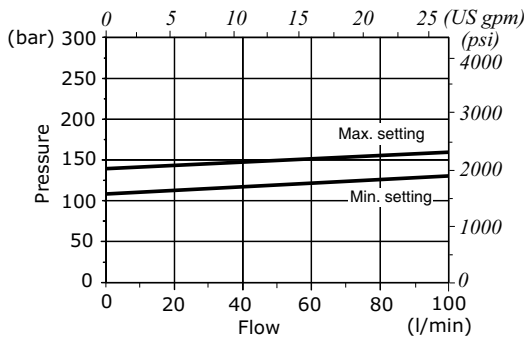
MD12M performance curve example with typical dimensions



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

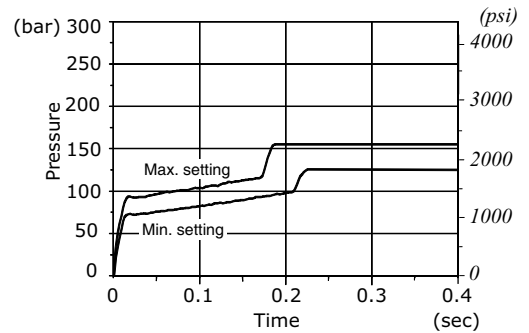
First pressure reaction: $p_1 = \frac{p_2}{R_p}$

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

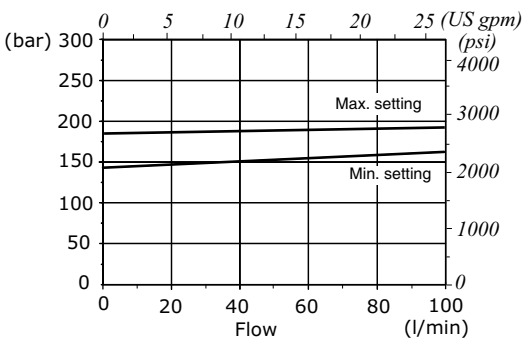


Pressure range 11
 125 ÷ 155 bar
 (1810 ÷ 2250 psi)
 Pressure ratio 1.7
 Q=100 l/min
 (26.4 US gpm)

MD12M performance curve at max. and min. setting

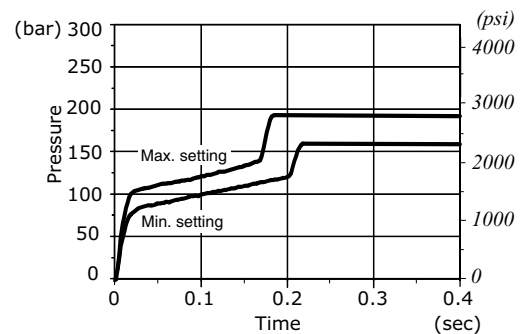


MD12M pressure vs. flow at max. and min. setting

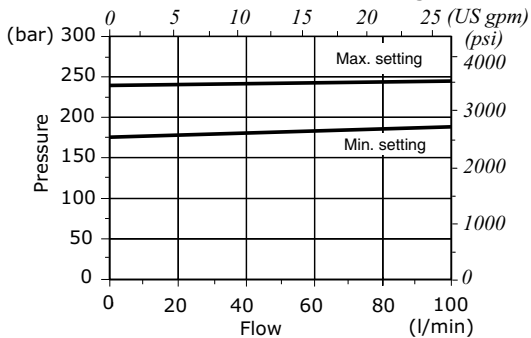


Pressure range 12
 160 ÷ 190 bar
 (2320 ÷ 2760 psi)
 Pressure ratio 1.9
 Q=100 l/min
 (26.4 US gpm)

MD12M performance curve at max. and min. setting

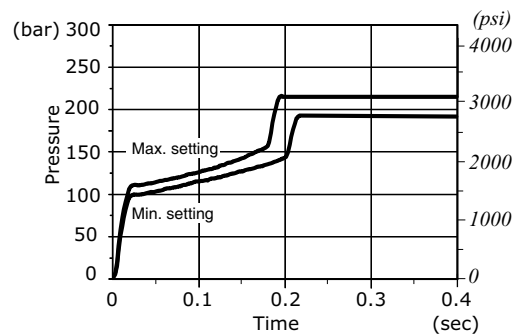


MD12M pressure vs. flow at max. and min. setting



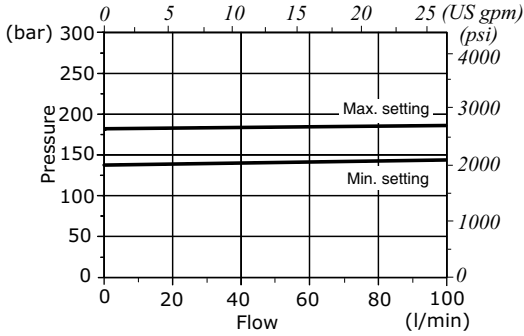
Pressure range 13
 180 ÷ 220 bar
 (2610 ÷ 3190 psi)
 Setting 220 bar (3190 psi) at 60 l/min
 (16 US gpm)
 Pressure ratio 2.2
 Q=100 l/min
 (26.4 US gpm)

MD12M performance curve at max. and min. setting



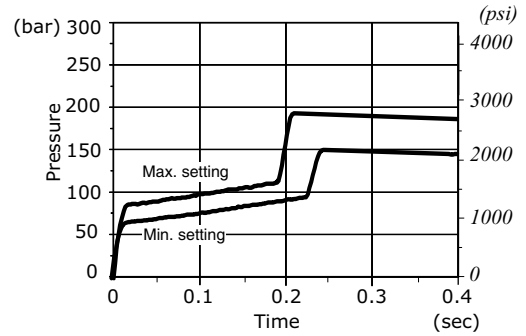
Rating diagrams

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

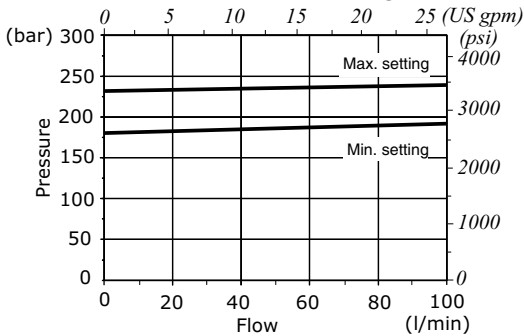


Pressure range
21
150÷185 bar
(1900÷2685 psi)
Pressure ratio 2
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

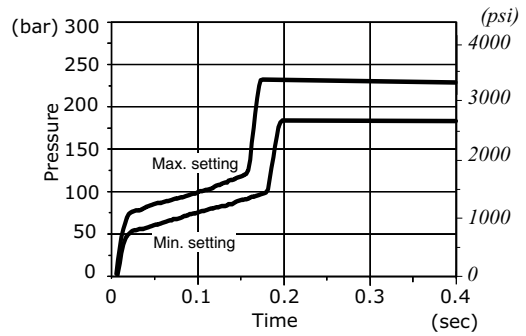


MD12M pressure vs. flow
at max. and min. setting

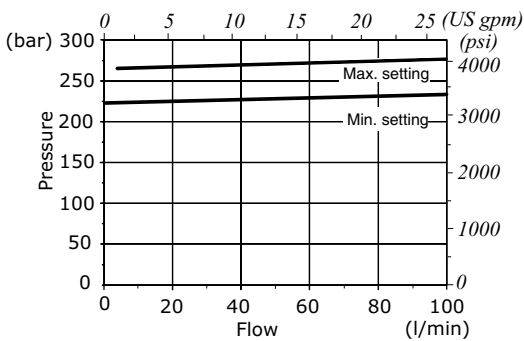


Pressure range
22
190÷235 bar
(2760÷3400 psi)
Pressure ratio 2.35
Q=100 l/min
(26.4 US gpm)

MD12M performance curve
at max. and min. setting

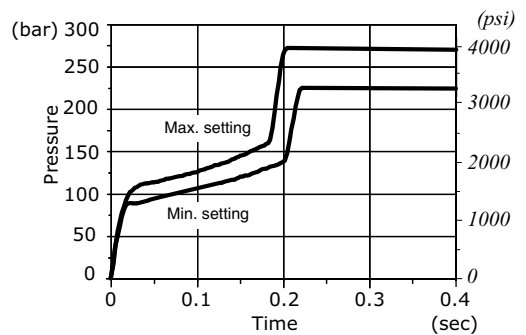


MD12M pressure vs. flow
at max. and min. setting



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

MD12M performance curve
at max. and min. setting

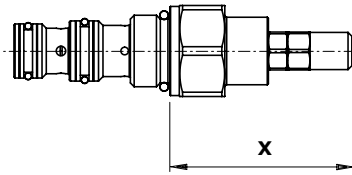


Types and ordering codes

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

Adjustments

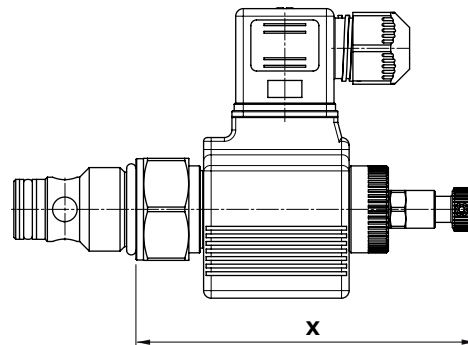
Types and dimensions



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

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

Types and dimensions



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

Types and dimensions

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

Dimensions and ordering codes

Description composition

3/CC/- □ □ /20/ □ □ -1

Cavity

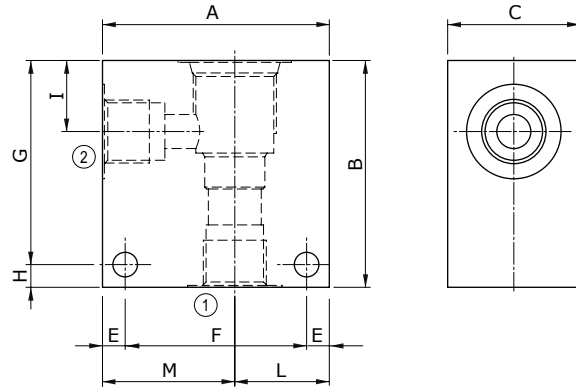
- 08
- 10
- 12
- 16

Ports

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

Materials

- 1) Aluminium
- 2) Steel



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

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

Dimensions and ordering codes

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

Dimensions and ordering codes

Description composition

3/CC/- □ □ /30/ □ □ -1

Cavity

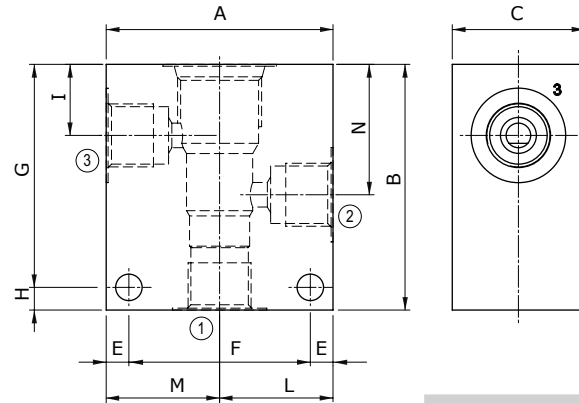
- 08
- 10
- 12
- 16

Ports

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

Materials

- 1) Aluminium
- 2) Steel



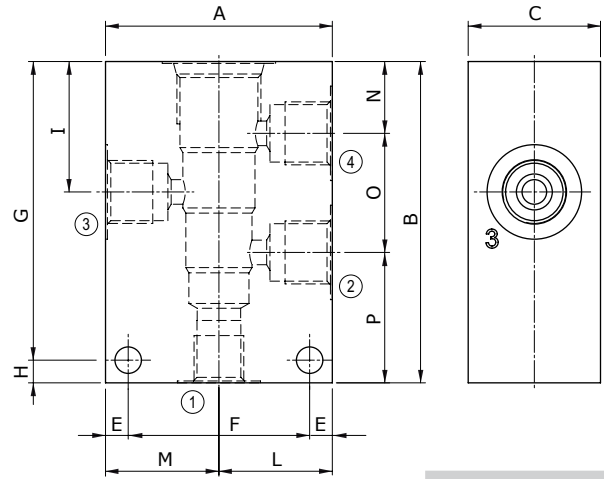
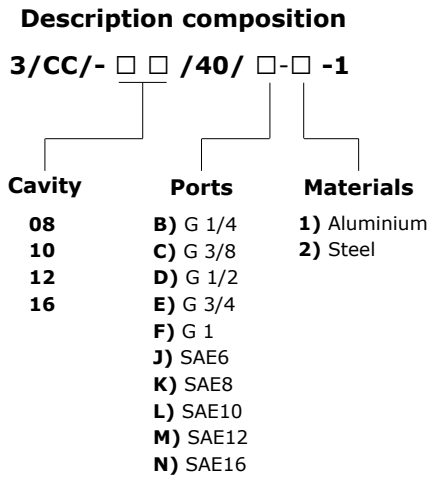
Material	Max. pressure	
	bar	psi
Aluminium	210	3050
Steel	350	5100

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

Dimensions and ordering codes

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

Dimensions and ordering codes



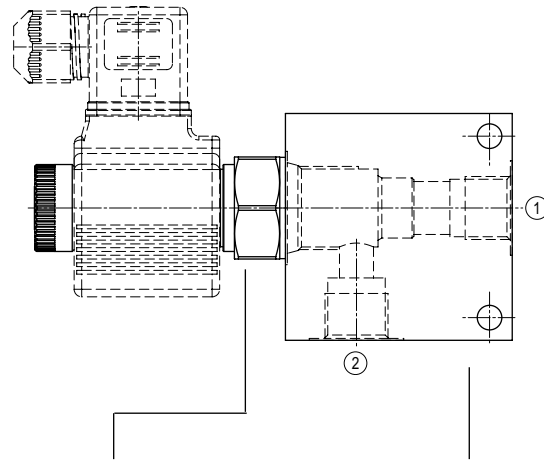
Material	Max. pressure	
	bar	psi
Aluminium	210	3050
Steel	350	5100

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

Dimensions and ordering codes

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

How to order valves with body



Cartridge description

Body description

EC 10 M/10NB

C 1 1

Cavity

- 08
- 10
- 12
- 16

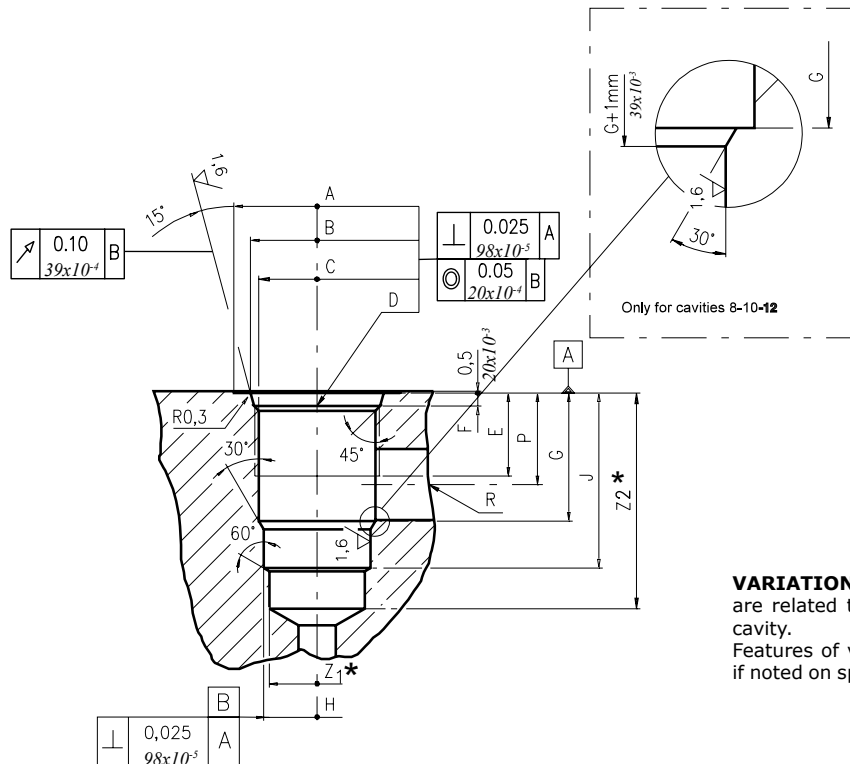
Ports

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

Materials

- 1) Aluminium
- 2) Steel

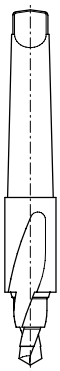
Dimensions



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

Cavity	A	B ±0.05	C ±0.05	D	E	F	G	H ±0.02	J	K ±0.02	L	M ±0.02	N	P	R ØMAX	S	T ØMAX	U	V ØMAX	X ØMAX	Z1* ØMIN	Z2* MIN
08/2	mm 27	20.66	17.42	3/4-16 UNF	12.50	2.50	18.20	12.72	29.50	-	-	-	-	14.00	8.00	-	-	-	-	-	12.00	39
08/2 A	in 1.06	0.81	0.68		0.49	0.10	0.72	0.50	1.16	-	-	-	-	0.55	0.31	-	-	-	-	-	0.47	1.53
10/2	mm 30	24.00	20.62	7/8-14 UNF	16.00	2.80	24.00	15.90	33.50	-	-	-	-	18.30	11.00	-	-	-	-	-	14.50	40
10/2 A	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	mm 38	29.23	24.73	1 1/16-12 UNF	19.00	3.50	34.15	22.25	46.80	-	-	-	-	24.50	19.00	-	-	-	-	-	21.50	60
12/2 A	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	mm 45	35.60	31.34	1 5/16-12 UNF	22.00	3.50	34.00	28.62	47.00	-	-	-	-	24.50	19.00	-	-	-	-	-	25.50	70
16/2 A	in 1.77	1.40	1.23		0.87	0.14	1.34	1.13	1.85	-	-	-	-	0.96	0.75	-	-	-	-	-	1.00	2.75

Rougher tool



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

Finisher tool



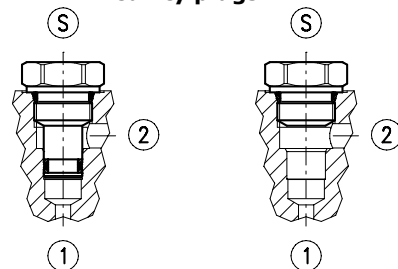
Cavity	Code number
08/2	3UT06A1270N
10/2	3UT00054580
12/2	3UT00054670
16/2	3UT00054520

Tap



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

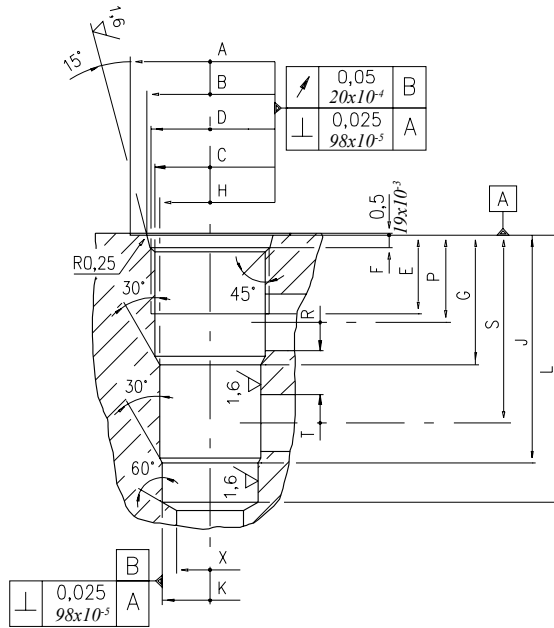
Cavity plugs



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

X=Closed 0=Open

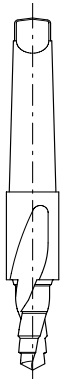
Dimensions



Cavity	A	B ±0,05	C ±0,05	D	E	F	G	H ±0,02	J	K ±0,02	L	M ±0,02	N	P	R øMAX	S	T øMAX	U	V øMAX	X øMAX	
08/3	mm	27	20,66	17,42	3/4 -16 UNF	12,50	2,50	19,10	15,90	33,30	14,30	43,30	-	-	14,30	5,50	28,60	5,50	-	-	12,50
	in	1.06	0.81	0.68		0.49	0.10	0.75	0.62	1.31	0.56	1.70	-	-	0.56	0.22	1.12	0.22	-	-	0.49
10/3	mm	30	24,00	20,62	7/8 -14 UNF	16,00	2,80	23,10	17,50	39,60	15,90	47,60	-	-	18,30	6,50	34,00	6,50	-	-	14,00
	in	1.18	0.94	0.81		0.63	0.11	0.94	0.69	1.56	0.62	1.87	-	-	0.72	0.25	1.34	0.25	-	-	0.55
12/3	mm	38	29,23	24,73	1 1/16 -12 UNF	19,00	3,56	36,60	23,82	63,50	22,25	75,40	-	-	24,50	16,00	53,00	16,00	-	-	19,00
	in	1.50	1.15	0.97		0.75	0.14	1.44	0.94	2.5	0.88	2.97	-	-	0.96	0.63	2.09	0.63	-	-	0.75
16/3	mm	45	35,60	28,62	1 5/16 -12 UNF	22,00	3,50	36,50	28,62	64,30	27,02	75,30	-	-	24,50	16,00	53,00	16,00	-	-	19,00
	in	1.77	1.40	1.13		0.87	0.14	1.44	1.13	2.53	1.06	2.96	-	-	0.96	0.63	2.09	0.63	-	-	0.75
20/3	mm	58	43,60	36,55	1 5/8 -12 UNF	21,00	3,50	46,00	36,55	87,60	33,37	100	-	-	31	25,40	71,5	25,40	-	-	30,00
	in	2.28	1.71	1.44		0.83	0.14	1.81	1.04	3.45	1.31	3.93	-	-	1.22	1	2.81	1	-	-	1.18

Cavity plugs

Rougher tool



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

Finisher tool

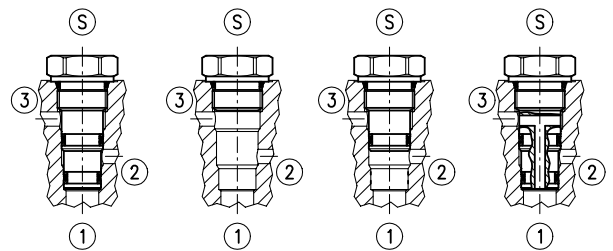


Cavity	Code number
08/3	3UT00052740
10/3	3UT00054180
12/3	3UT00054300
16/3	3UT00054480

Tap

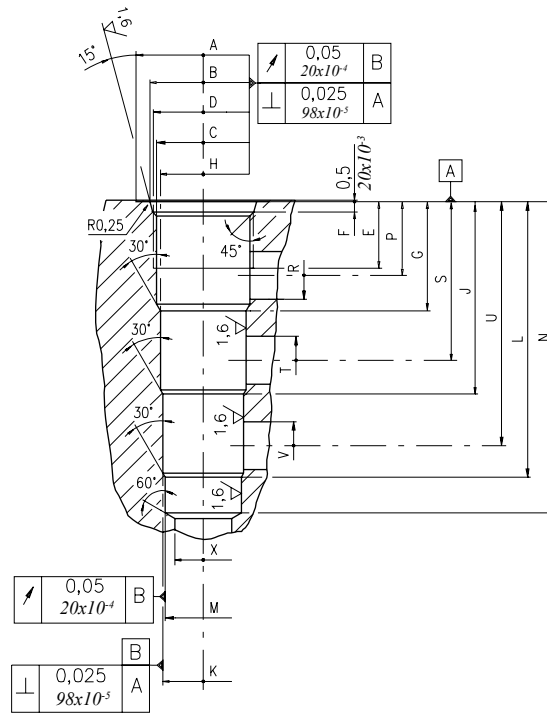


Cavity	Code number
08/3	3UT03416UNF
10/3	3UT07814UNF
12/3	3UT0111612UN
16/3	3UT0151612UN



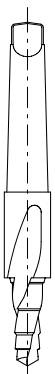
Cavity	Code number	①	②	③	Ⓢ
08/3	3XTP3535100	X	X	X	X
	4TP5531500	0	0	0	X
	3XTP3534000	0	0	X	X
	3XTP3534800	0	X	0	X
10/3	3XTP3545700	X	X	X	X
	3XTP1542300	0	0	0	X
12/3	3XTP3545701	0	X	0	X
	3XTP3558200	X	X	X	X
	3XTP1552900	0	0	0	X
16/3	3XTP3558201	0	X	0	X
	3XTP3578400	X	X	X	X
	3XTP1572900	0	0	0	X

X=Closed 0=Open



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

Rougher tool



Cavity	Code number
08/4	3UT00052040
10/4	3UT00054250
12/4	3UT00054410
16/4	3UT00054820

Finisher



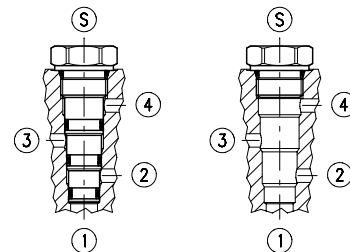
Cavity	Code number
08/4	3UT00052020
10/4	3UT00054260
12/4	3UT00054420
16/4	3UT00054830

Tap



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

Cavity plugs



Cavity	Code number	①	②	③	④	⑤
08/4	3XTP3536500	X	X	X	X	X
	4TP5531500	0	0	0	0	X
10/4	3XTP3548301	X	X	X	X	X
	3XTP1542300	0	0	0	0	X
12/4	3XTP3559300	X	X	X	X	X
	3XTP1552900	0	0	0	0	X
16/4	3XTP357B300	X	X	X	X	X
	3XTP1572900	0	0	0	0	X

X=Closed 0=Open

6th edition September 2015

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