



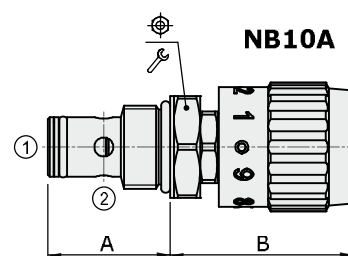
NB..A type needle valves - 2 ways

- Adjustable type
- From SAE08 to SAE16 cavities

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

	NB08A	NB10A	NB12A	NB16A
Nominal flow	15 l/min (3.9 US gpm)	30 l/min (7.9 US gpm)	60 l/min (16 US gpm)	100 l/min (26 US gpm)
Max. pressure	350 bar (5100 psi)			
Fluid	mineral based oil			
Viscosity	10-200 cSt			
Max level of contamination	20/18/14 ISO4406			
Fluid temperature	with NBR seals 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 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.

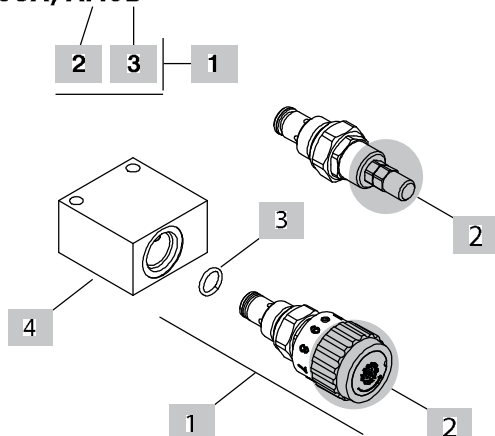


Valve type	A		B				Nm	lbft
	mm	in	mm	in				
NB08A/AM	27.6	1.09	52	2.05	24	30	22	
NB10A/AM	32.3	1.27	48	1.89	27	50	36	
NB12A/AM	46	1.81	49.2	1.94	32	80	59	
NB16A/AM	45.2	1.79	68.8	2.71	41	100	73	

For dimensions with different type of adjustment see page 212

Ordering codes and description composition

NB08A/AM0B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NB08A/AM0B	0NB08002000	Handknob adjustment
NB08A/AS0B	0NB08002001	Screw type adjustment
SAE cavity 10/2		
NB10A/AM0B	0NB10002003	Handknob adjustment
NB10A/AS0B	0NB10002001	Screw type adjustment
SAE cavity 12/2		
NB12A/AM0B	0NB12002002	Handknob adjustment
NB12A/AS0B	0NB12002001	Screw type adjustment
SAE cavity 16/2		
NB16A/AM0B	0NB16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

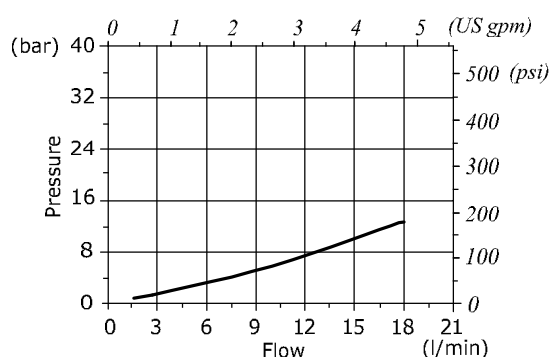
4 Valve body

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

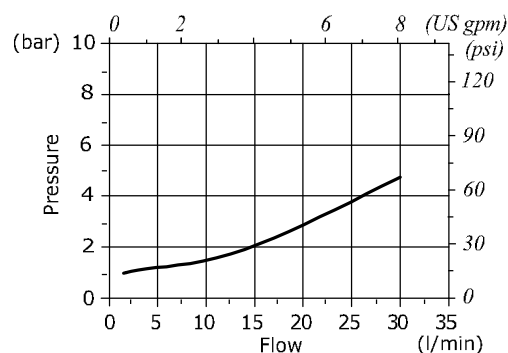
Note: aluminium body can stand up to 210 bar (3050 psi)
For steel bodies or different threading see from page 215

Rating diagrams

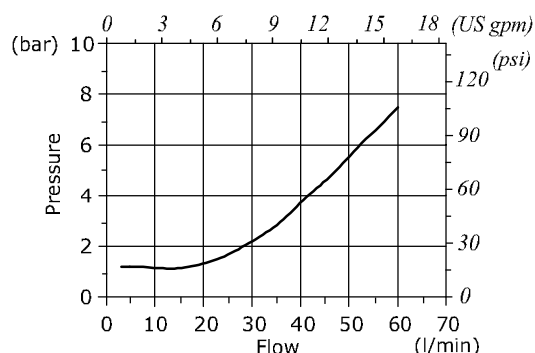
NB08A: pressure drop vs flow 1->2 - 2->1, fully open



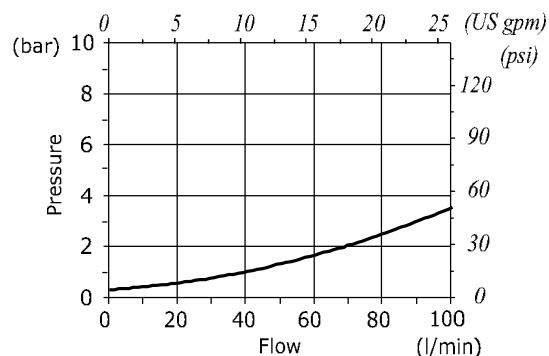
NB10A: pressure drop vs flow 1->2 - 2->1, fully open



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



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





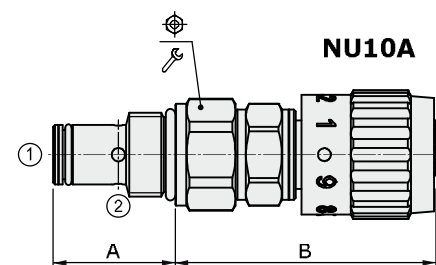
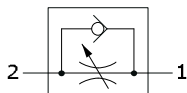
NU..A type needle valves - 2 ways

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

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

	NU08A	NU10A	NU12A	NU16A
Nominal flow	15 l/min (3.9 US gpm)	30 l/min (7.9 US gpm)	60 l/min (16 US gpm)	100 l/min (26 US gpm)
Max. pressure	350 bar (5100 psi)			
Fluid	mineral based oil			
Viscosity	10-200 cSt			
Max level of contamination	20/18/14 ISO4406			
Fluid temperature	with NBR seals 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 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.

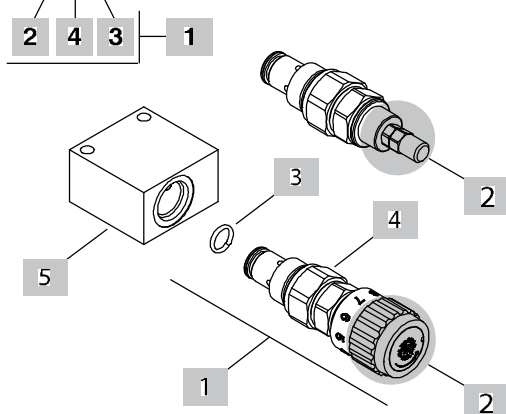


Valve type	A		B				Nm	lbft
	mm	in	mm	in				
NU08A/AM	27.6	1.09	66.5	2.62	24	30	22	
NU10A/AM	32.3	1.27	68	2.68	27	50	36	
NU12A/AM	46	1.81	69	2.72	32	80	59	
NU16A/AM	45.2	1.79	66.9	2.63	41	100	73	

For dimensions with different type of adjustment see page 212

Ordering codes and description composition

NU08A/AM1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NU08A/AM1B	0NU08002000	Handknob adjustment
NU08A/AS1B	0NU08002001	Screw type adjustment
SAE cavity 10/2		
NU10A/AM1B	0NU10002000	Handknob adjustment
NU10A/AS1B	0NU10002001	Screw type adjustment
SAE cavity 12/2		
NU12A/AM1B	0NU12002000	Handknob adjustment
NU12A/AS1B	0NU12002001	Screw type adjustment
SAE cavity 16/2		
NU16A/AM1B	0NU16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

4 Opening pressure check valve from 1 to 2

TYPE	DESCRIPTION
1	0.5 bar (7.3 psi)

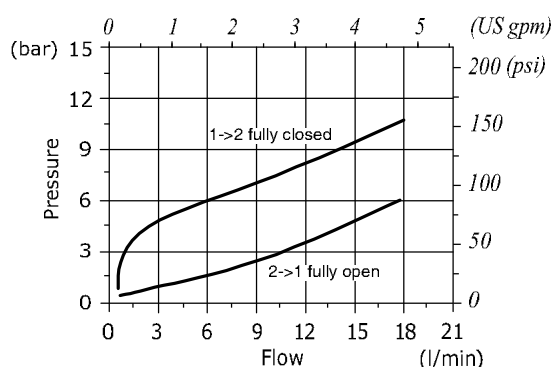
5 Valve body

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

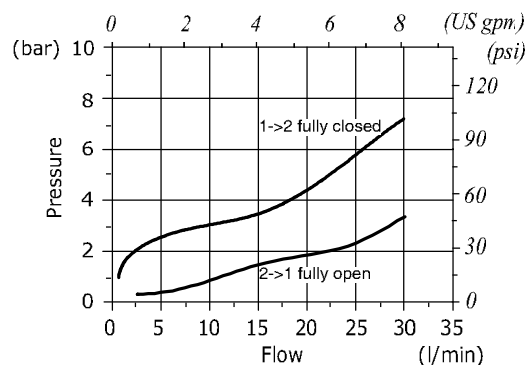
Note: aluminium body can stand up to 210 bar (3050 psi)
For steel bodies or different threading see from page 215

Rating diagrams

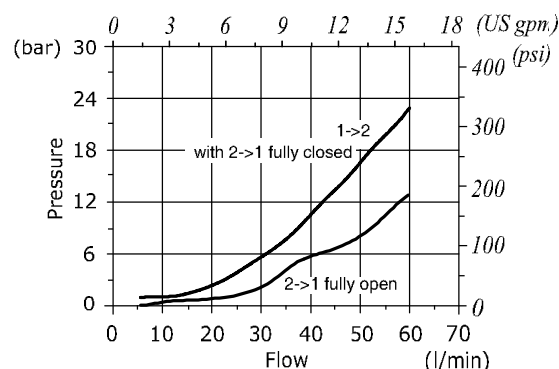
NU08A pressure drop vs flow



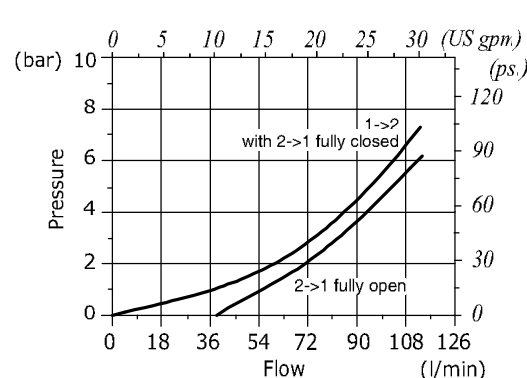
NU10A pressure drop vs flow



NU12A pressure drop vs flow



NU16A pressure drop vs flow





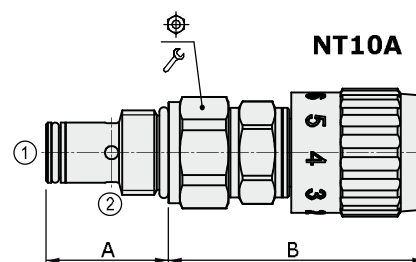
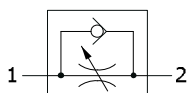
NT..A type needle valves - 2 ways

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

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

	NT08A	NT10A	NT12A	NT16A
Nominal flow	15 l/min (3.9 US gpm)	30 l/min (7.9 US gpm)	60 l/min (16 US gpm)	100 l/min (26 US gpm)
Max. pressure	350 bar (5100 psi)			
Fluid	mineral based oil			
Viscosity	10-200 cSt			
Max level of contamination	20/18/14 ISO4406			
Fluid temperature	with NBR seals 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 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.

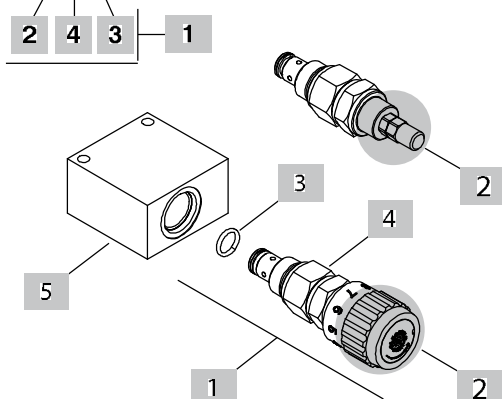


Valve type	A		B				Nm	lbft
	mm	in	mm	in				
NT08A/AM	27.6	1.09	67.5	2.66	24	30	22	
NT10A/AM	32.3	1.27	68	2.68	27	50	36	
NT12A/AM	46	1.81	69	2.72	32	80	59	
NT16A/AM	45.2	1.79	68.9	2.71	41	100	74	

For dimensions with different type of adjustment see page 212

Ordering codes and description composition

NT08A/AM1B



1 Cartridges

TYPE	CODE	DESCRIPTION
SAE cavity 08/2		
NT08A/AM1B	ONT08002000	Handknob adjustment
NT08A/AS1B	ONT08002001	Screw type adjustment
SAE cavity 10/2		
NT10A/AM1B	ONT10002000	Handknob adjustment
NT10A/AS1B	ONT10002001	Screw type adjustment
SAE cavity 12/2		
NT12A/AM1B	ONT12002000	Handknob adjustment
NT12A/AS1B	ONT12002001	Screw type adjustment
SAE cavity 16/2		
NT16A/AM1B	ONT16002000	Handknob adjustment

2 Adjustments

TYPE	DESCRIPTION
S	Screw
M	Handknob calibrated
W	Copped adjustment

3 Seals

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

4 Opening pressure check valve from 1 to 2

TYPE	DESCRIPTION
1	0.5 bar (7.3 psi)

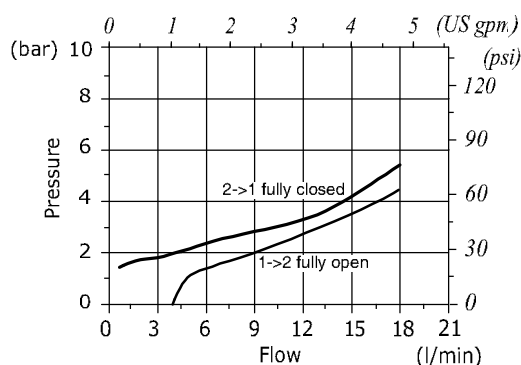
5 Valve body

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

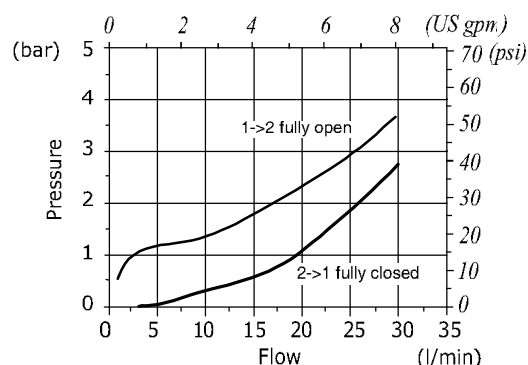
Note: aluminium body can stand up to 210 bar (3050 psi)
For steel bodies or different threading see from page 215

Rating diagrams

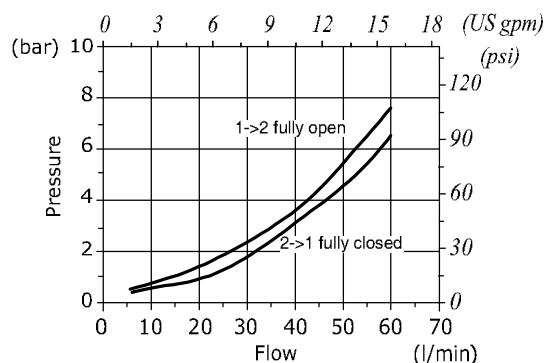
NT08A pressure drop vs flow



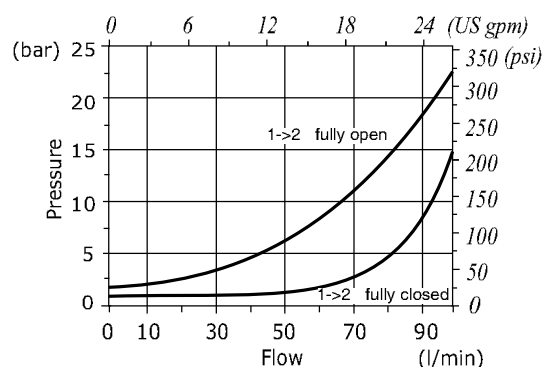
NT10A pressure drop vs flow



NT12A pressure drop vs flow



NT16A pressure drop vs flow





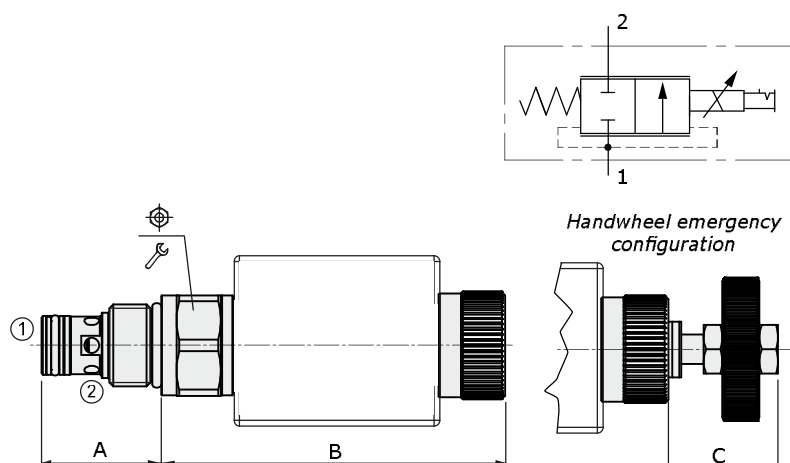
EE..X type needle valves - 2 ways

- Solenoid proportional type
- 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		315 bar (4600 psi)	315 bar (4600 psi)
Oil leakage	at 150 bar (2175 psi)	150 cm³/min (9.1 in³/min)	200 cm³/min (9.1 in³/min)
Fluid		mineral based oil	
Viscosity		12-200 cSt	
Max level of contamination		18/16/13 ISO4406	
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)	
Environmental temp. for working conditions		from -20°C (-4°F) to 50°C (122°F)	
Cavity		SAE 10/2	SAE 12/2
Coil type ⁽²⁾		BQP19 or BH	
Nominal voltages		12 VDC - 24 VDC ± 10%	
Power rating		22,8 W (12 VDC) 22,5 W (24 VDC)	
Max control current		12 V -> 1.25 A - 24 V -> 0.63 A (BQP19) 12 V -> 1.70 A - 24 V -> 0.85 A (BH)	
Dither frequency		150 Hz	
Weight		0.3 kg (0.66 lb) kg	

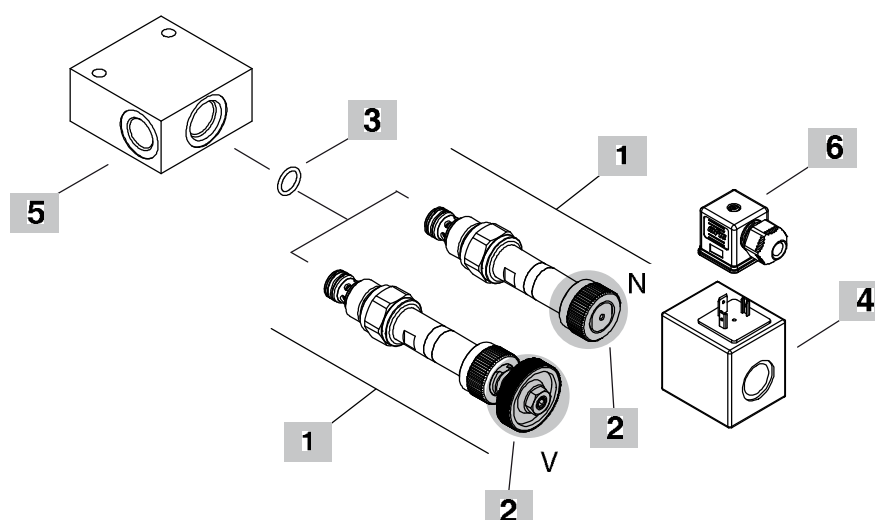
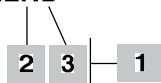
NOTE - For different conditions, please contact Walvoil Sales Dpt. - ⁽¹⁾ Values are checked with cartridge in parallel with compensator - ⁽²⁾ For coils further features see from page 206.



Valve type	A		B		C				
	mm	in	mm	in	mm	in		Nm	lbft
EE10X	32.3	1.27	92.4	3.64	29.5	1.16	27	50	37
EE12X	45	1.77	94.9	3.74	29.5	1.16	32	80	59

For dimensions with different type of emergency see page 213

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) Std configuration without addition
V	For valve with FPM (Viton) o-ring seals, contact Sales Dept.

4 Coils

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

For complete coils list see from page 206
 It is possible also combine coils BH

5 Valve body

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

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

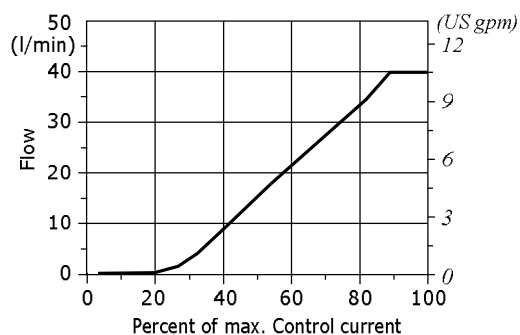
6 Connector

TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector

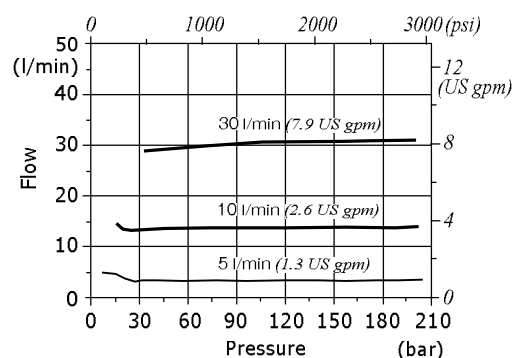
For complete connectors list see from page 206

Curve caratteristiche

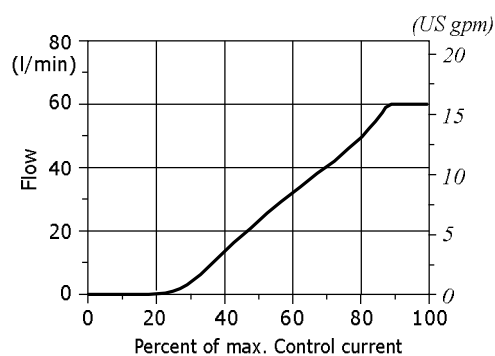
EE10X
flow regulating vs. % max. control current



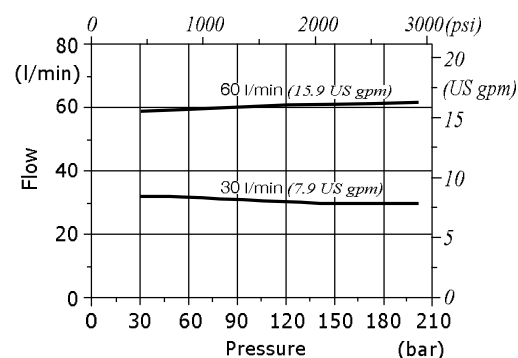
EE10X
*pressure compensation diagram 1→2



EE12X
flow regulating vs. % max. control current



EE12X
**pressure compensation diagram 1→2



*Le curve di compensazione sono state rilevate con la cartuccia abbinata ad un compensatore VPR/3/ET 38-12 con stand by di 10 bar

**Le curve di compensazione sono state rilevate con la cartuccia abbinata ad un compensatore VPR/3/ET 38-12 con stand by di 7 bar



Tipo EC..T

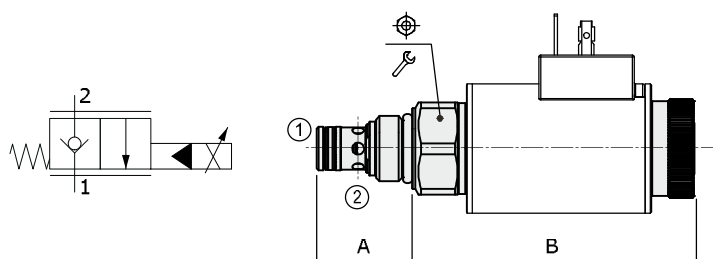
valvola strozzatrice - 2 vie

- A comando elettrico proporzionale
- Da abbinare ad un compensatore esterno
- Cavità da SAE08 a SAE16

I dati e i diagrammi riportati in questo catalogo sono stati rilevati con olio a base minerale avente viscosità di 46 cSt alla temperatura di 40°C.

		EC08T	EC10T	EC12T	EC16T
Nominal flow ⁽¹⁾	with 5 bar (72.5 psi) stand-by	25 l/min (6.6 US gpm)	35 l/min (9.2 US gpm)	50 l/min (13 US gpm)	60 l/min (15.8 US gpm)
	with 10 bar (145 psi) stand-by	35 l/min (9.2 US gpm)	50 l/min (13 US gpm)	70 l/min (18.5 US gpm)	85 l/min (22.5 US gpm)
Max. pressure		350 bar (5100 psi)			
Oil leakage	at 350 bar (5100 psi)	0.25 cm ³ /min (0.015 in ³ /min)	0.25 cm ³ /min (0.015 in ³ /min)	0.25 cm ³ /min (0.015 in ³ /min)	0.35 cm ³ /min (0.021 in ³ /min)
Fluid		mineral based oil			
Viscosity		12-200 cSt			
Max level of contamination		18/16/13 ISO4406			
Fluid temperature	with NBR seals with FPM seals	from -20°C (-4°F) to 80°C (176°F) from -20°C (-4°F) to 100°C (212°F)			
Environmental temp. for working conditions		from -20°C (-4°F) to 50°C (122°F)			
Cavity		SAE 08/2	SAE 10/2	SAE 12/2	SAE 16/2
Coil type ⁽²⁾		BH or BQP19			
Nominal voltages		12 VDC - 24 VDC ± 10%			
Power rating		22.8 W (12 VDC) 22.5 W (24 VDC)			
Max control current		12 V -> 1.25 A - 24 V -> 0.63 A (BQP19) 12 V -> 1.70 A - 24 V -> 0.85 A (BH)			
Dither frequency		150 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 206.

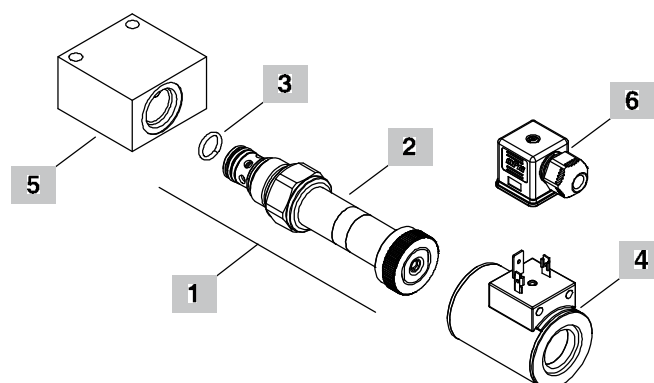
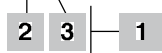


Valve type	A		B				
	mm	in	mm	in			Nm lbft
EC08T	28.1	1.11	83	3.27	27	50	37
EC10T	32.5	1.28	83	3.27	27	50	37
EC12T	45	1.77	82.5	3.25	32	85	63
EC16T	45.6	1.80	81	3.19	32	85	63

For dimensions with different type of emergency see page 213

Ordering codes and description composition

EC10T/A0NB



1 Cartucce

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 Emergenze

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

3 Seals

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

4 Bobine

TYPE	CODE	DESCRIPTION
BH 12VDC	4SLD001200	Coil 12VDC-ISO4400
For complete coils list see from page 206		
It is possible also combine coils BQP19		

5 Valve body

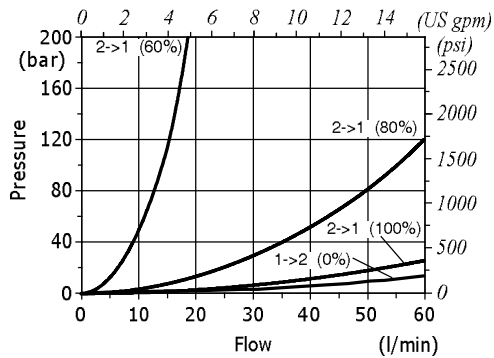
TYPE	CODE	DESCRIPTION
SAE 08/2-G 3/8	3CC0820C11	Aluminium body for cavity 08 valve, G3/8 std thread
SAE 10/2-G 3/8	3CC1020C11	Aluminium body for cavity 10 valve, G3/8 std thread
SAE 12/2-G 1/2	3CC1220D11	Aluminium body for cavity 12 valve, G1/2 std thread
SAE 16/2-G 3/4	3CC1620E11	Aluminium body for cavity 16 valve, G3/4 std thread
Note: aluminium body can stand up to 210 bar (3050 psi)		
For steel bodies or different threading see from page 215		

6 Connector

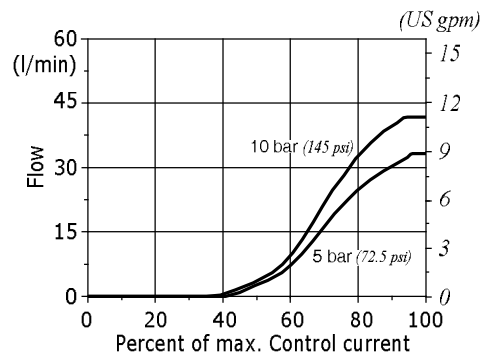
TYPE	CODE	DESCRIPTION
ISO4400	4CN1009995	Connector
For complete connectors list see from page 206		

Curve caratteristiche

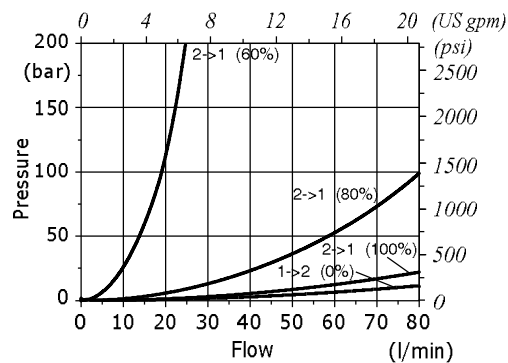
EC08T
pressure drop



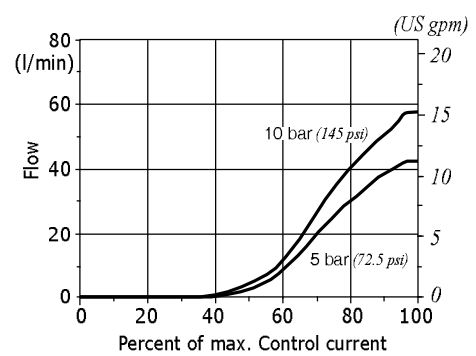
EC08T
flow regulating vs. % max. control current



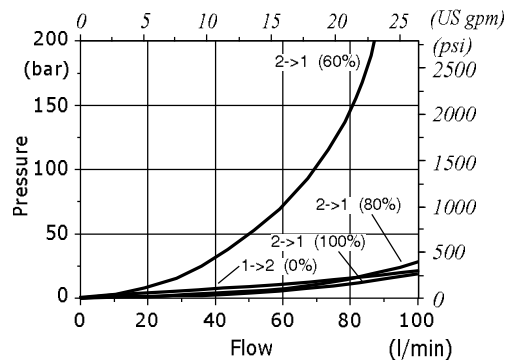
EC10T
pressure drop



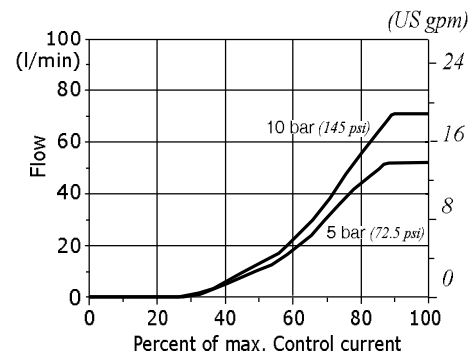
EC10T
flow regulating vs. % max. control current



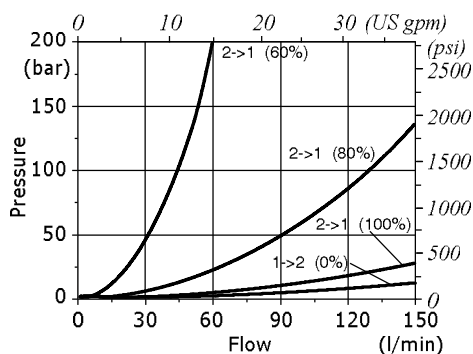
EC12T
pressure drop



EC12T
flow regulating vs. % max. control current



EC16T
pressure drop



EC16T
flow regulating vs. % max. control current

