CATALOGUE

Check and Pilot check valves

walvoil
HYDRAULIC CONTROL SYSTEMS

WARNING!

Variations and modifications of technical features and dimensions are reserved.
WALVOIL S.p.A. also reserves the right to stop production of each and any model listed in the catalogue with no notice.

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

1st EDITION MAY 2010

General Information

Fluid:best use mineral oil with viscosity ranging between 10 and 200 cSt.
Filter:dirty oil is the main reason for failure and troubles of hydraulic parts and systems.
The table below contains **OLEOSTAR S.p.A**. recommendations about the minimum oil contamination level according to individual specifications of different items. For further safety of your hydraulic equipment and of all valves assembled on it, we either recommend use suction filters (rather than return filters) or separated filter lines.

TYPE OF EQUIPMENT - TYPE OF VALVE	CONTAMINATION LEVEL According to ISO 4406
- Heavy duty equipment - Equipment running at 210-350 bar (3050-5100 psi) working pressure - Equipment using proportional controls - Equipment with high frequency cycles	-/16/13
- Equipment running up to 210 bar *(3050 psi)* working pressure - Spool-type valves - Valves with calibrated ports	-/18/14
- Equipment running at low working pressure - Pilot plants and equipment - Equipment with low frequency cycles	-/19/15

Installation:make sure to provide suitable gasket lubrication with clean oil before screwing the cartridge on the valve body . Also make sure to screw the cartridge manually in to reach against the gaskets in the valve body.
Material:internal components made out of high grade steel duly treated and fabricated.
For more information please ask our technical office .
Working temperature:min. -25°C *(-13°F)* max. 90°C *(194°F)* with standard BUNA N seals.
min. -20°C *(-4°F)* max. 200°C *(392°F)* with optional VITON seals.
Rating diagrams:all rating diagrams of this catalogue are measured with mineral oil of 46 cSt viscosity at 40° *(104°F)* temperature.
All drawings dimensions are defined as $\frac{mm}{in}$

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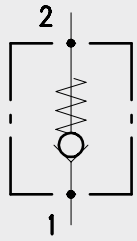
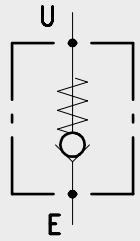
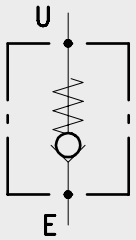
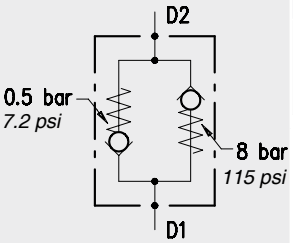
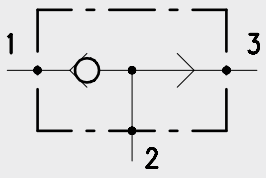
Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VUI**	Poppet type	160	*42*	400	*5800*	9
	UC..A		100	*26*	350	*5100*	

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VUS/INC**	Srew-in, ball type	80	*21*	350	*5100*	19
	VUS	Ball type	150	*40*	400	*5800*	

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VUC**	Poppet type	350	*92*	400	*5800*	25

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VBD**	Double acting, poppet type	70	*18*	350	*5100*	31

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VT**	Shuttle valve, ball type	150	*40*	400	*5800*	35
	UT		20	*5.3*	350	*5100*	

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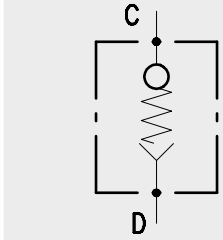
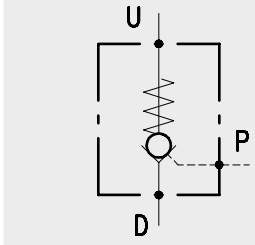
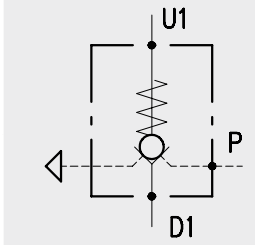
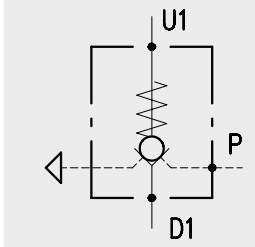
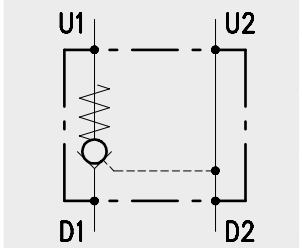
Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VB** **VB/F** **VB/M**	Automatic lock valve	150	*40*	350	*5100*	41

PILOT CHECK VALVES

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VUPSL**	Poppet type	150	*40*	400	*5800*	47
	BC..A		100	*26*	350	*5100*	

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**BC..B**	Poppet type	100	*26*	350	*5100*	57

Hydraulic diagram	Type	Description	Maximum flow up to		Maximum pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VBPSL/PS**	Single acting, line mounting with external pilot control	35	*9.2*	350	*5100*	61

Hydraulic diagram	Type	Description	Max. flow up to		Max. pressure		Page
			l/min	*US gpm*	bar	*psi*	
	**VBPSL**	Single acting, line mounting	100	*26*	350	*5100*	63
	VBPSL/T	Conical seat, cross outlets	100	*26*			
	VBPSL../SO	single acting, line mounting with fixation nut for connection bolt	50	*13*			
	VBPSF	Single acting, face mounting	100	*26*			

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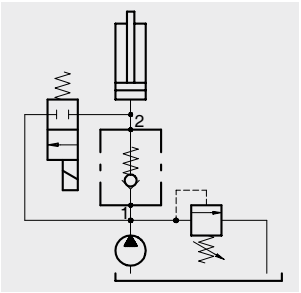
Operation

Free oil flow is allowed from 1 to 2 while oil flow is stopped in the opposite direction.



Performance

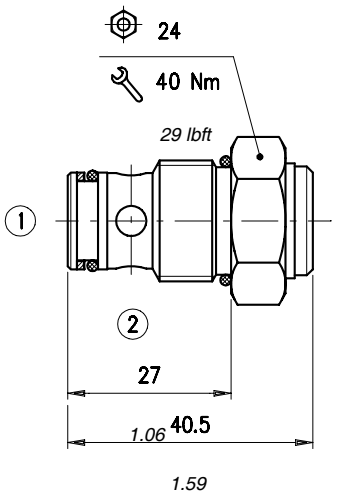
Body Valves

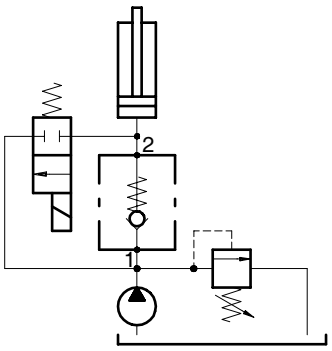
Type VUI	Maximum flow		Maximum pressure		Opening pressure from 1 to 2	Oil leak from 1 to 2	Weight		Cavities and tools
	l/min	*US gpm*	bar	*psi*			kg	*lb*	
VUI 38	25	*6.6*	400	*5800*	0,5 - 5 bar *7.3 - 72.5 psi*	0,10 cm³/min. *- 61x10⁻⁴ in³/min.* (2 drops) at 210 bar *-3050 psi*	0,08	*0.18*	see cavity VUI 38 page 107
VUI 12	40	*10.5*				0,25 cm³/min *- 15x10⁻³ in³/min.* (5 drops) at 210 bar *-3050 psi*	0,15	*0.33*	see cavity VUI 12 page 108
VUI 34	100	*26*					0,30	*0.66*	see cavity VUI 34 page109
VUI 100	160	*42*					0,54	*1.19*	see cavity VUI 100 page 110

Cartridges

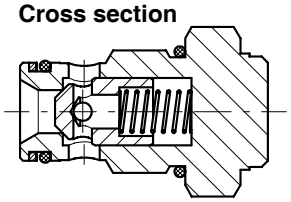
Type UC	Maximum flow		Maximum pressure		Opening pressure from 1 to 2	Oil leak from 1 to 2	Weight		Cavities and tools
	l/min	*US gpm*	bar	*psi*			kg	*lb*	
UC08A	20	*5.3*	350	*5100*	0,5 - 2,5 - 5 bar *7.3 - 36.2 - 72.5 psi*	0,10 cm³/min. *- 61x10⁻⁴ in³/min.* at 210 bar *-3050 psi*	0,08	*0.18*	see cavity SAE 8-2 page 104
UC10A	35	*9.2*				0,25 cm³/min *- 15x10⁻³ in³/min.* at 210 bar *-3050 psi*	0,09	*0.20*	see cavity SAE 10-2 page 104
UC12A	50	*13*					0,18	*0.40*	see cavity SAE 12-2 page 104
UC16A	100	*26*					0,37	*0.81*	see cavity SAE 16-2 page 104

Dimensions and hydraulic circuit



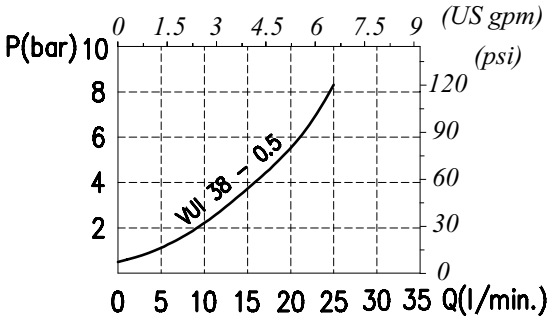


Cross section

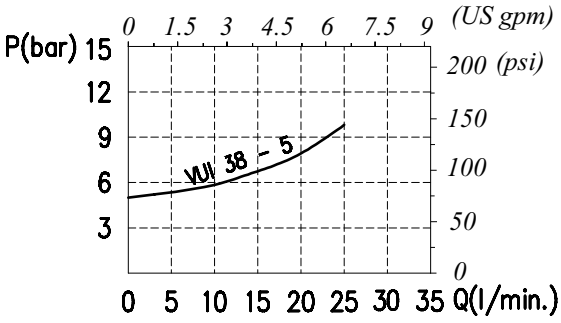


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



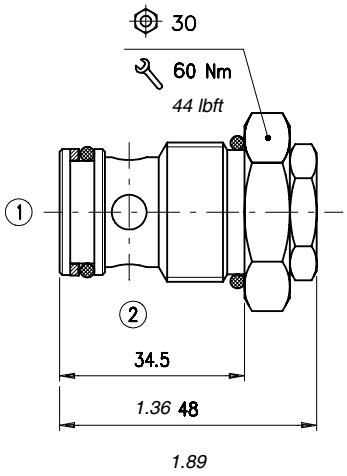
Order code

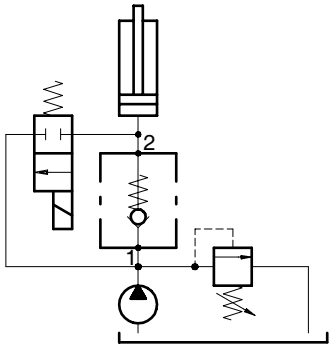
VUI 38 / □□

Opening pressure from 1 to 2

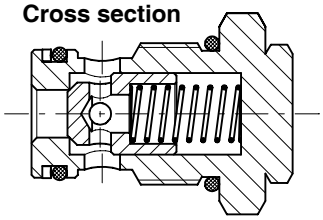
Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*

Dimensions and hydraulic circuit



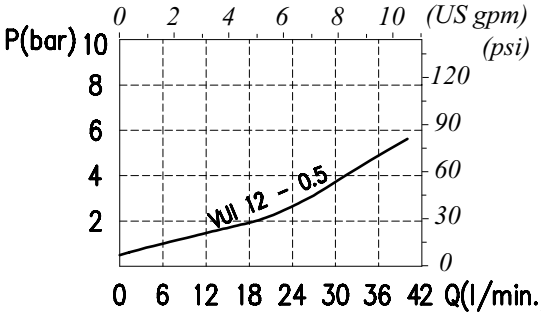


Cross section

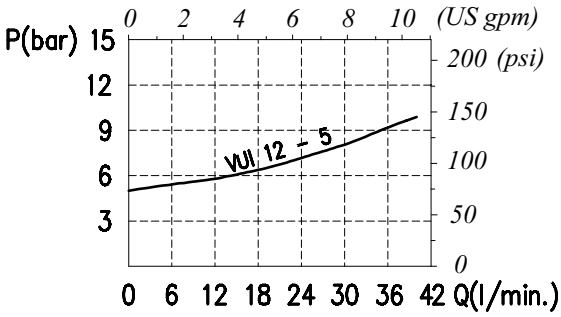


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



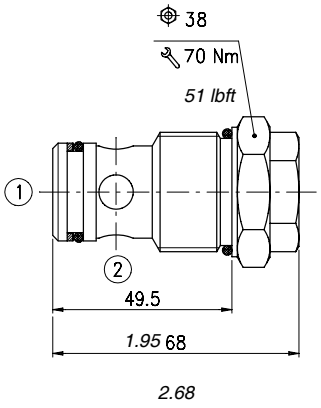
Order code

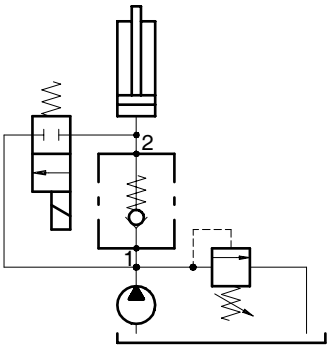
VUI 12 / □□

Opening pressure from 1 to 2

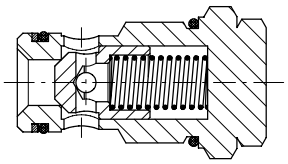
Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*

Dimensions and hydraulic circuit



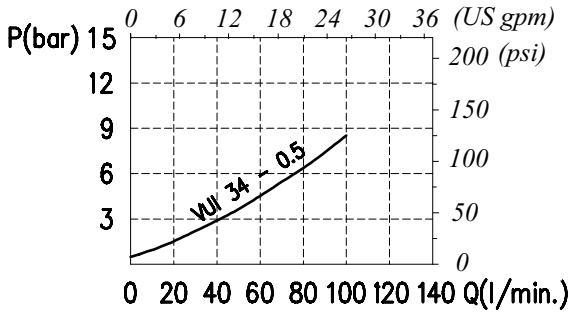


Cross section

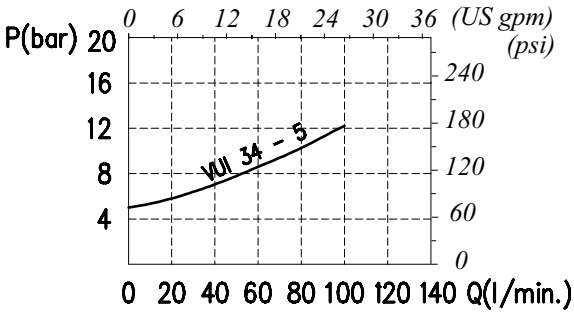


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



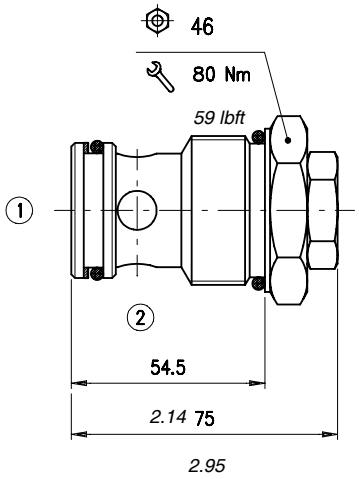
Order code

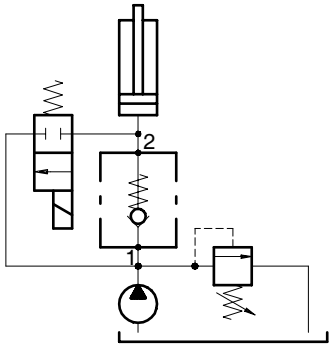
VUI 34 / □□

Opening pressure from 1 to 2

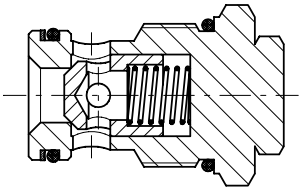
Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*

Dimensions and hydraulic circuit



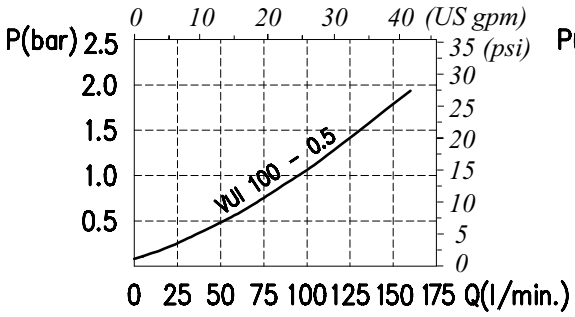


Cross section

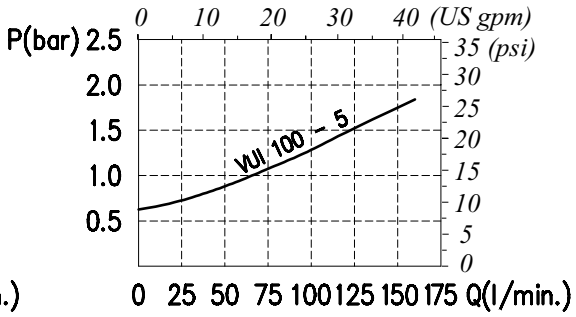


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



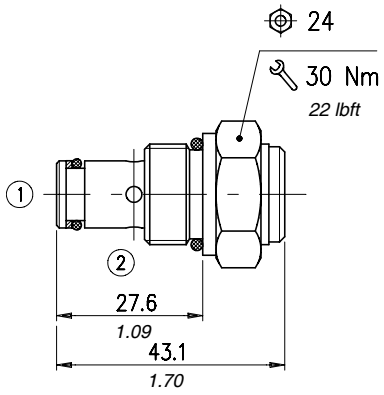
Order code

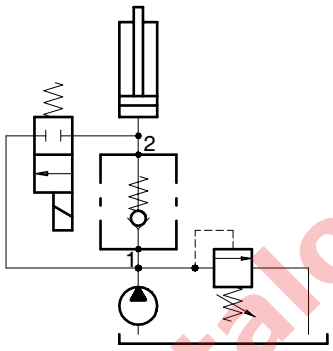
VUI 100 / □□

Opening pressure from 1 to 2

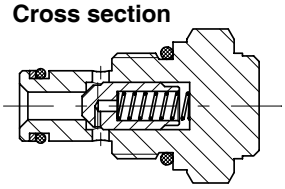
Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*

Dimensions and hydraulic circuit



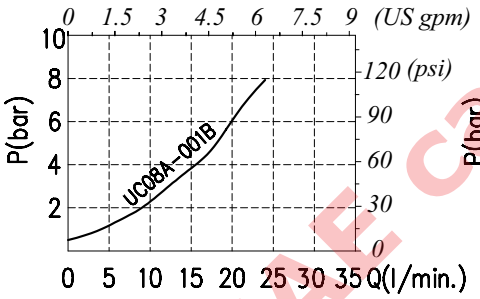


Cross section

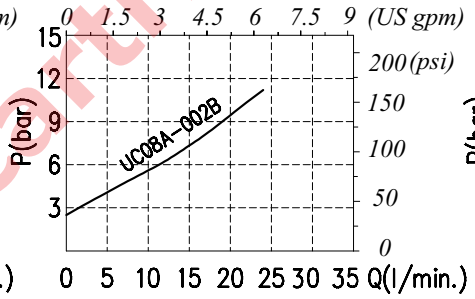


Rating diagrams

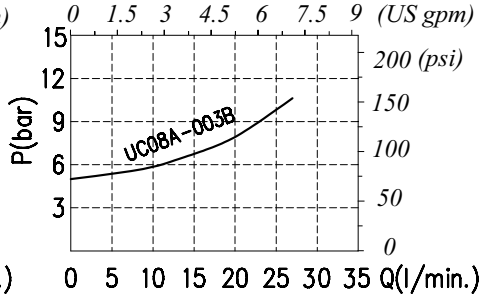
Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

UC08A / 0 -0 -☐ -☐

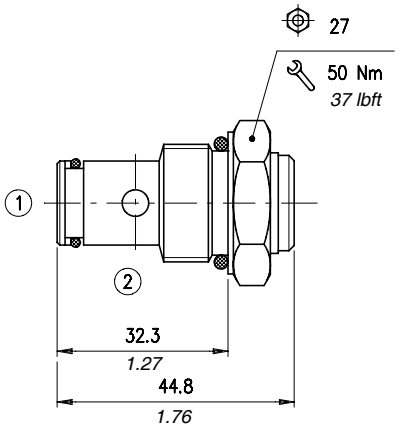
Opening Pressure from 1 to 2

1) 0,5 bar *(7.3 psi)*
2) 2,5 bar *(36.2 psi)*
3) 5 bar *(72.5 psi)*

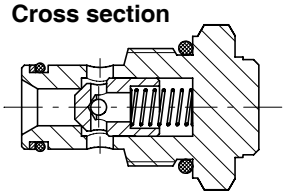
Seals

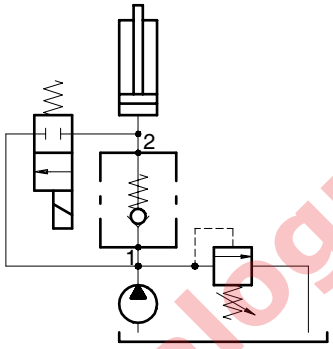
B) Buna
V) Viton

Dimensions and hydraulic circuit



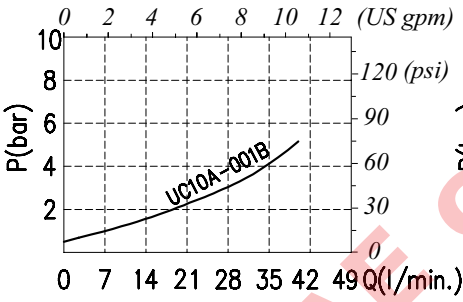
Cross section



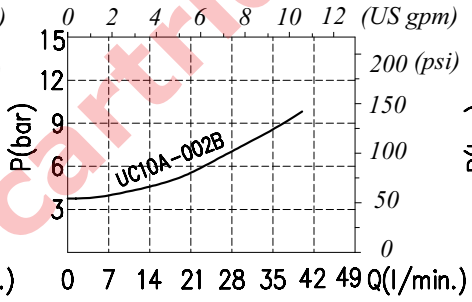


Rating diagrams

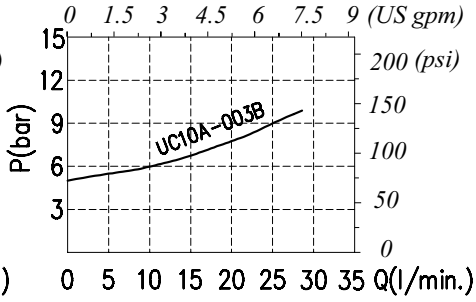
Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

UC10A / 0 -0 -☐ -☐

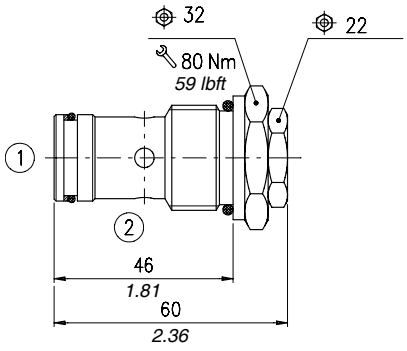
Opening Pressure from 1 to 2

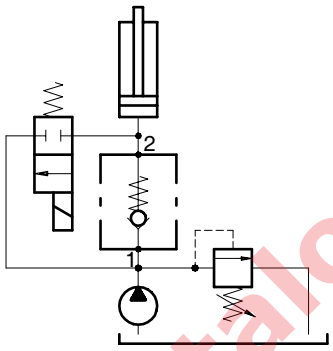
1) 0,5 bar *(7.3 psi)*
2) 2,5 bar *(36.2 psi)*
3) 5 bar *(72.5 psi)*

Seals

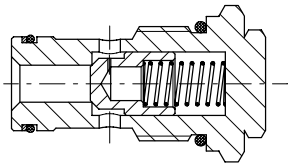
B) Buna
V) Viton

Dimensions and hydraulic circuit



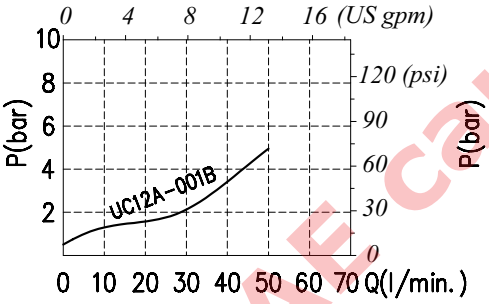


Cross section

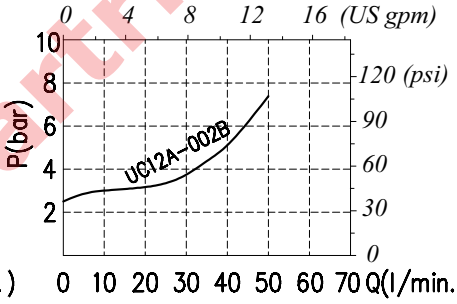


Rating diagrams

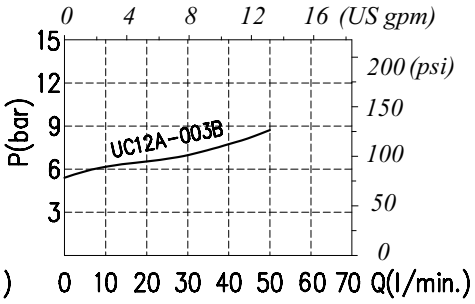
Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

UC12A / 0 -0 -□ -□

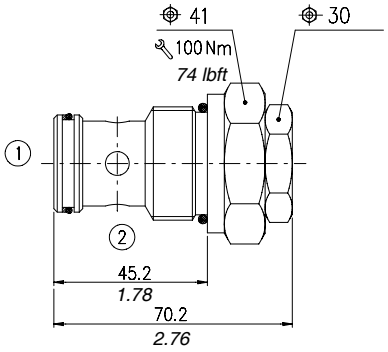
Opening Pressure from 1 to 2

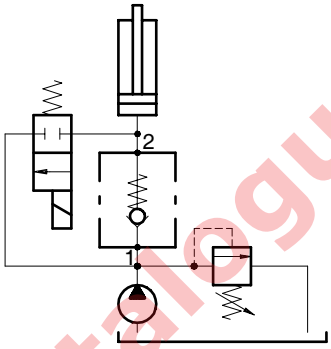
1) 0,5 bar *(7.3 psi)*
2) 2,5 bar*(36.2 psi)*
3) 5 bar *(72.5 psi)*

Seals

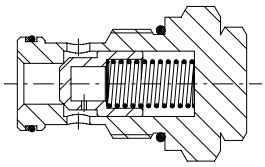
B) Buna
V) Viton

Dimensions and hydraulic circuit



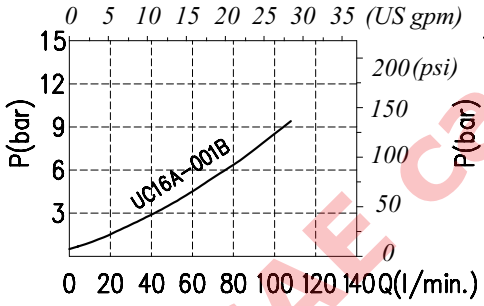


Cross section

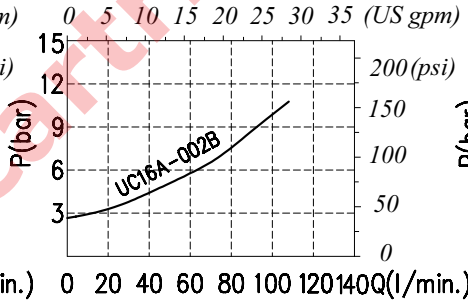


Rating diagrams

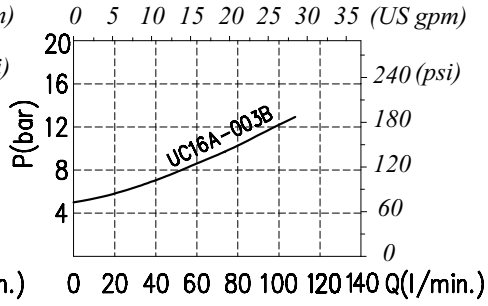
Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

UC16A / 0 -0 -□ -□

Opening Pressure from 1 to 2

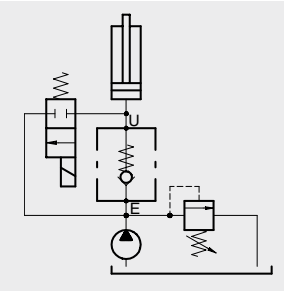
1) 0,5 bar *(7.3 psi)*
2) 2,5 bar *(36.2 psi)*
3) 5 bar *(72.5 psi)*

Seals

B) Buna
V) Viton

Operation

Free oil flow is allowed from E to U while oil flow is stopped in the opposite direction.

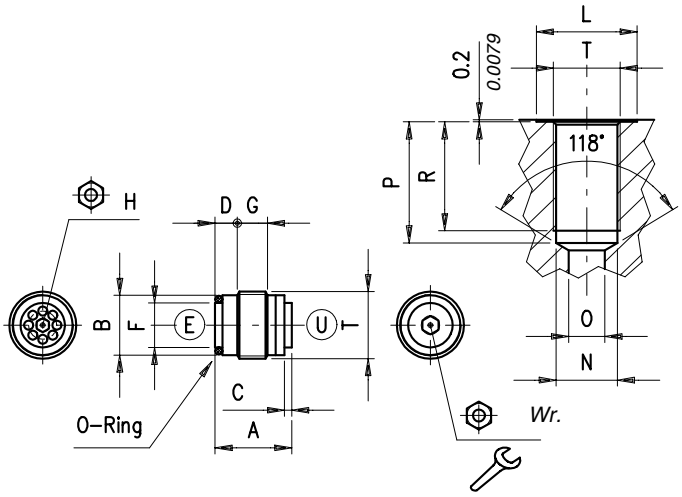


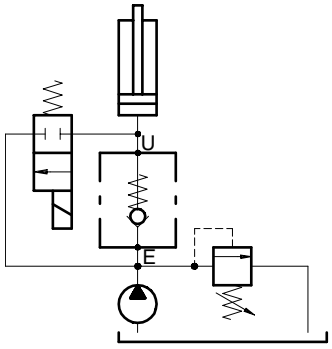
Performance

Body Valves

Type VUS	Maximum flow		Maximum pressure		Opening pressure	Oil leak from U to E	Weight	
	l/min	*US gpm*	bar	*psi*			kg	*lb*
VUS/INC	(14) 19 (38) 28 (12) 50 (34) 80	*5* *7.4* *13* *21*	350	*5100*	0,5 bar *-7.3 psi*	0,50 cm^3/min. - *33x10^{-3} in^3/min.* (10 drops) at 210 bar *-3050 psi*	(14) 0,010 (38) 0,015 (12) 0,035 (34) 0,070	*0.022* *0.033* *0.077* *0.154*
VUS 14	24	*6.3*	400	*5800*			0,10	*0.220*
VUS 38 (12)	(38 and 18) 40 (12) 60	*10.5* *16*	(38 and 18) 400 (12) 350	*5800*			(38 and 18) 0,17 (12) 0,25	*0.374* *0.551*
VUS 34 (100)	(34) 100 (100) 150	*26* *40*	300	*4350*			(34) 0,48 (100) 0,96	*1.058* *2.116*

Dimensions and hydraulic circuit

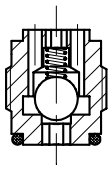




VUS/INC	A	B	C	D	F	G	H	L	N	O	P	R	T	O–Ring		Wr.
14	17 *0.67*	11.3 *0.44*	1 *0.039*	5.5 *0.22*	9.2 *0.36*	6 *0.24*	3 *0.118*	22 *0.87*	11.8 *0.46*	8 *0.31*	28 *1.10*	25 *0.98*	G 1/4	9x1	6Nm *4.42 lbft*	3 *0.118*
38	19 *0.75*	14.8 *0.58*	1.8 *0.071*	5.5 *0.22*	11 *0.43*	7.5 *0.29*	3 *0.118*	25 *0.98*	15.2 *0.60*	9 *0.35*	30 *1.18*	27 *1.06*	G 3/8	10.8x1.8	6Nm *4.42 lbft*	4 *0.157*
12	22.5 *0.88*	18.5 *0.73*	1.8 *0.071*	6.5 *0.25*	14.2 *0.56*	9.5 *0.37*	5 *0.197*	30 *1.18*	19 *0.75*	12 *0.47*	36 *1.42*	32 *1.26*	G 1/2	14x1.8	10Nm *7.37 lbft*	6 *0.236*
34	28.5 *1.12*	24.1 *0.95*	2.7 *0.106*	7 *0.27*	19 *0.75*	14.5 *0.57*	8 *0.315*	36 *1.42*	24.5 *0.96*	17 *0.67*	42 *1.65*	37 *1.46*	G 3/4	18.7x2.6	20Nm *14.75 lbft*	8 *0.315*

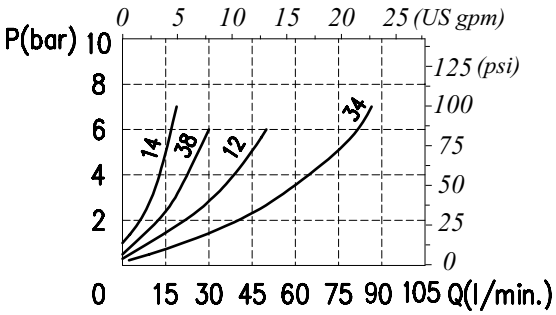
dimensions are in mm-*in*

Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VUS/INC / □□ / □□

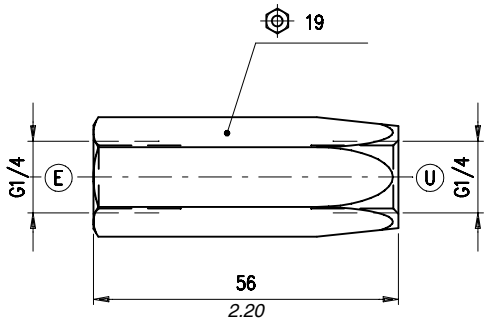
Valve thread

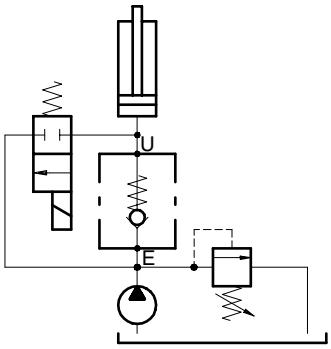
14) G 1/4
38) G 3/8
12) G 1/2
34) G 3/4

Opening pressure from E to U

Pa 0,5) 0,5 bar *(7.3 psi)*

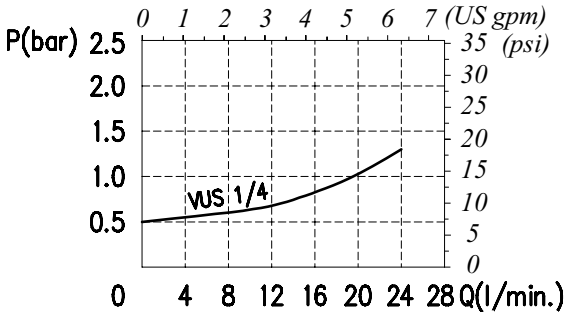
Dimensions and hydraulic circuit





Rating diagrams

Typical pressure drop vs. flow characteristic



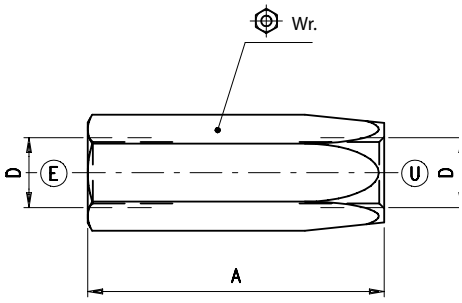
Order code

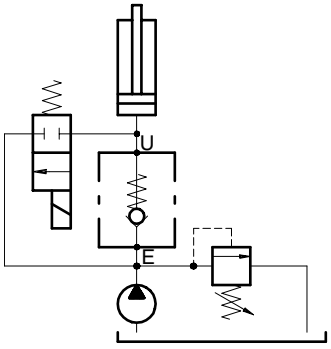
VUS 14 / □□

Opening pressure from E to U

Pa. 0,5) 0,5 bar*(7.3 psi)*

Dimensions and hydraulic circuit



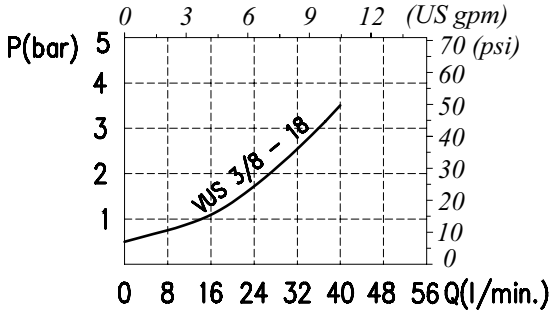


VUS	A	Wr.	D
38	64 - *2.52*	24 - *0.94*	G 3/8
18	64 - *2.52*	24 - *0.94*	M18x1.5
12	72 - *2.83*	28 - *1.10*	G 1/2

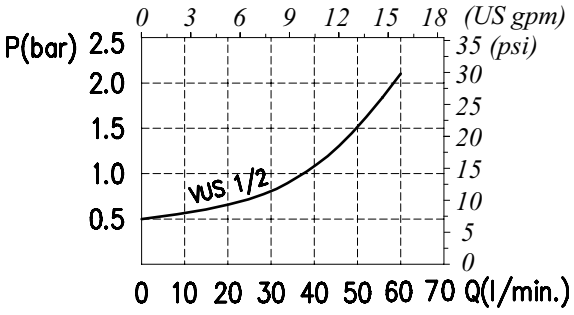
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (38)



Typical pressure drop vs. flow characteristic (12)



Order code

VUS □□ / □□

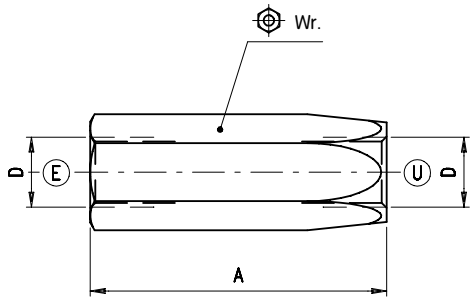
Port size

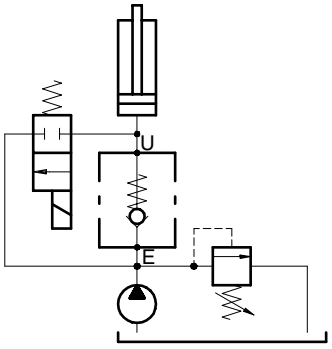
38) G 3/8
12) G 1/2
18) M 18

Opening pressure from E to U

Pa. 0,5) 0,5 bar *(7.3 psi)*

Dimensions and hydraulic circuit



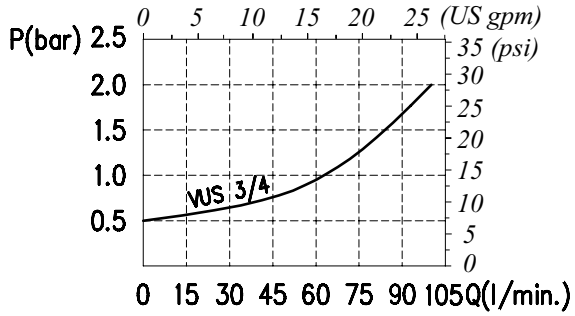


VUS	A	Wr.	D
34	84 - *3.31*	36 - *1.42*	G 3/4
100	102 - *4.01*	46 - *1.81*	G 1"

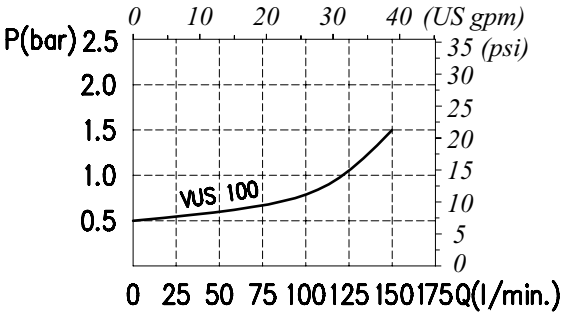
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (34)



Typical pressure drop vs. flow characteristic (100)



Order code

VUS □□ / □□

Port size

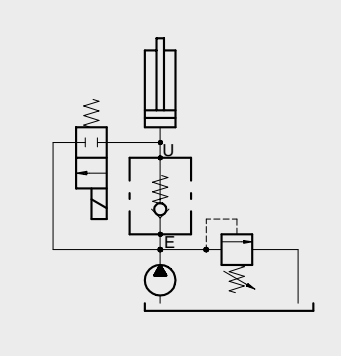
34) G 3/4
100) G 1
18) M18

Opening pressure from E to U

Pa. 0,5) 0,5 bar *(7.3 psi)*

Operation

Free oil flow is allowed from E to U while oil flow is stopped in the opposite direction.

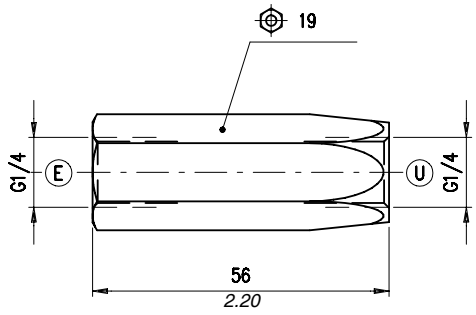


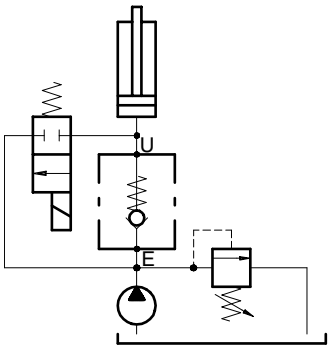
Performance

Body Valves

Typo VUC	Maximum flow		Maximum pressure		Opening pressure	Oil leaks from U to E	Weight	
	l/min	*US gpm*	bar	*psi*			kg	*lb*
VUC 14	24	*6.3*	400	*5800*	0,5;1,5;2; 5;10;30 bar *7.3;21.8;29;* *72.5;145;435 psi*	0,25 cm^3/min *-15x10^{-3}* *in^3/min.* (5 drops) at 210 bar *-3050 psi*	0,10	*0.220*
VUC 38 (12)	(38 e 18) 40 (12) 60	*10.5* *16*	(38 e 18) 400 (12) 350	*5800* *5100*	0,5;1,5;2,5; 5;10 bar *7.3;21.8;72.5;* *145 psi*		(38 e 18) 0,17 (12) 0,25	*0.374* *0.551*
VUC 34 (100)	(34) 100 (100) 150	*26* *40*	300	*4350*	(34) 0,5;1,5;2,5;5 bar *7.3;21.8;36.25;* *72.5 psi* (100) 0,5;1,5;2,5;5;10 bar *7.3;21.8;36.25;72.5;* *145 psi*		(34) 0,48 (100) 0,96	*1.06* *2.12*
VUC 114 (112)	(114) 250 (112) 350	*66* *92*	250	*3600*	(114) 0,5;1,5;2,5;5;10 bar *7.25;21.75;36.25;72.5;* *145 psi* (112) 0,5;1,5;2,5;5 bar *7.3;21.8;36.25;* *72.5 psi*		(114) 1,62 (112) 2,00	*3.57* *4.41*

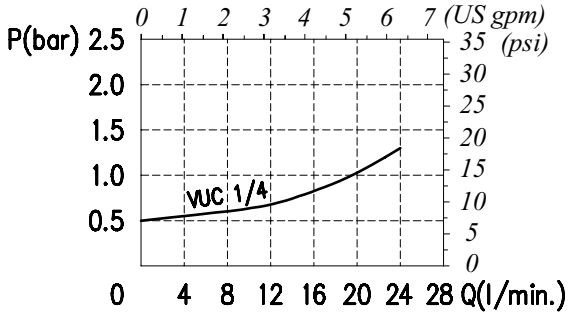
Dimensions and hydraulic circuit





Rating diagrams

Typical pressure drop vs. flow characteristic



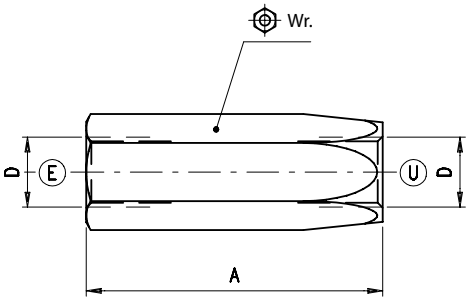
Order code

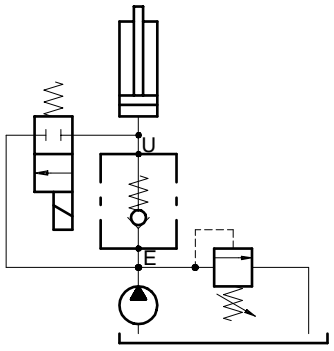
VUC 14 / □□

Opening pressure from E to U

Pa. 0,5) 0,5 bar *(7.25 psi)*
Pa. 1,5) 1,5 bar *(21.8 psi)*
Pa. 2) 2 bar *(29 psi)*
Pa. 5) 5 bar *(72.5 psi)*
Pa. 10) 10 bar *(145 psi)*
Pa. 30) 30 bar *(435 psi)*

Dimensions and hydraulic circuit



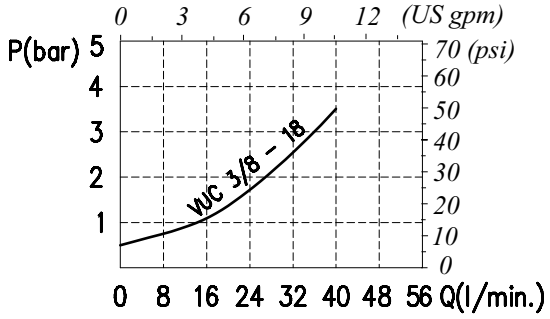


VUC	A	Wr.	D
38	64 - *2.52*	24 - *0.94*	G 3/8
18	64 - *2.52*	24 - *0.94*	M18x1.5
12	72 - *2.83*	28 - *1.10*	G 1/2

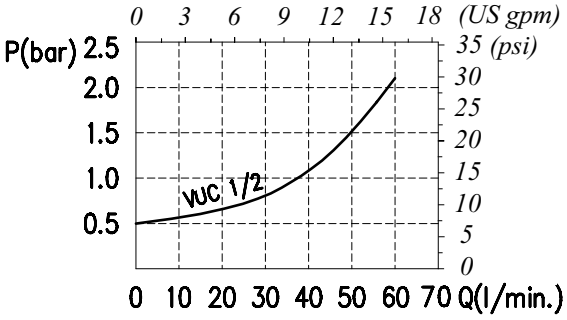
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (38)



Typical pressure drop vs. flow characteristic (12)



Order code

VUC □□ / □□

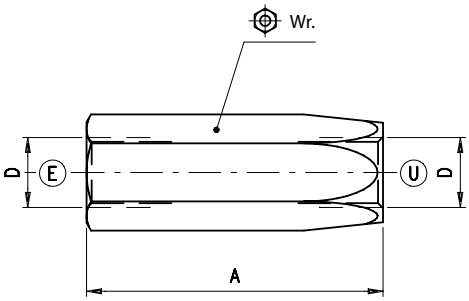
Port size

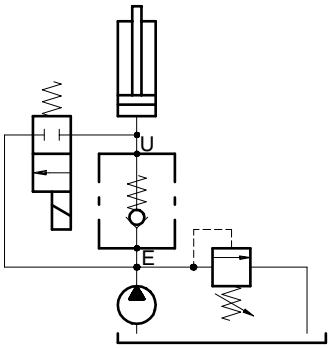
38) G 3/8
12) G 1/2

Opening pressure from E to U (bar)

Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 1,5) 1,5 bar *(21.8 psi)*
Pa. 2,5) 2,5 bar *(38.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*
Pa. 10) 10 bar *(145 psi)*
Pa. 15) 15 bar *(217.5 psi)*

Dimensions and hydraulic circuit



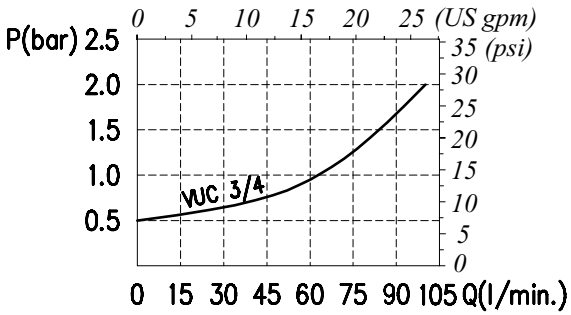


VUC	A	Wr.	D
34	84 - *3.31*	36 - *1.42*	G 3/4
100	102 - *4.01*	46 - *1.81*	G 1"

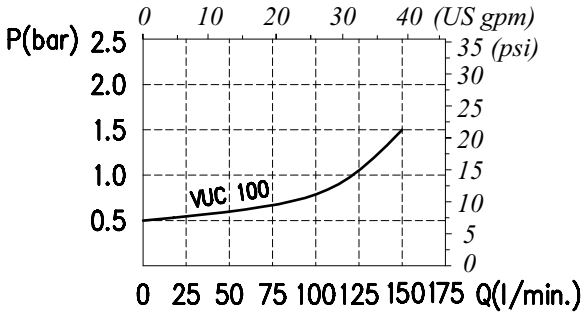
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (34)



Typical pressure drop vs. flow characteristic (100)



Order code

VUC □□ / □□

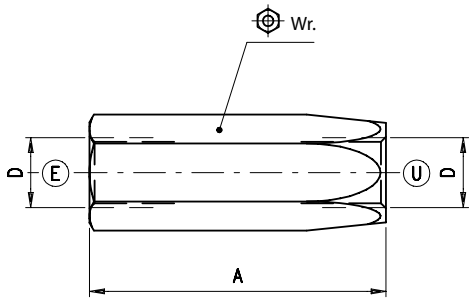
Port size

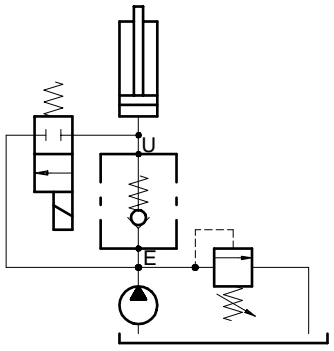
34) G 3/4
100) G 1

Opening pressure from E to U

Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 1,5) 1,5 bar *(21.8 psi)*
Pa. 2,5) 2,5 bar *(36.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*
Pa. 10) 10 bar *(145 psi)*
(VUC 100 only)

Dimensions and hydraulic circuit



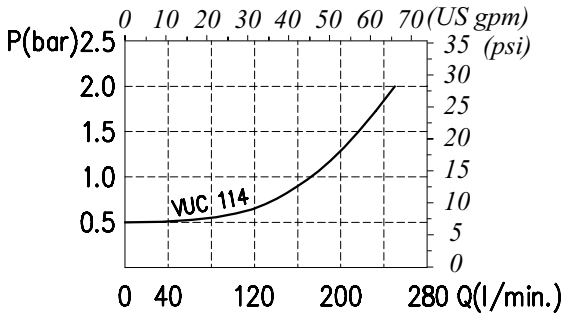


VUC	A	Wr.	D
114	130- *5.12*	55 - *2.16*	G 1" 1/4
112	147- *5.79*	60 - *2.36*	G 1" 1/2

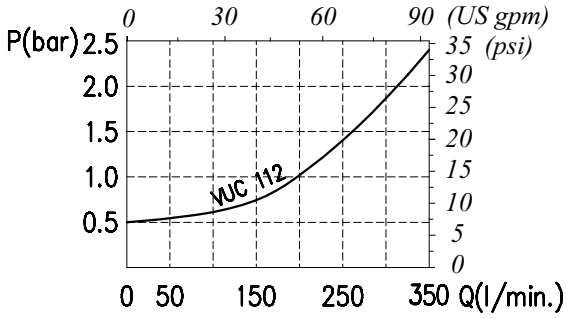
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (114)



Typical pressure drop vs. flow characteristic (112)



Order code

VUC □□ / □□

Port size

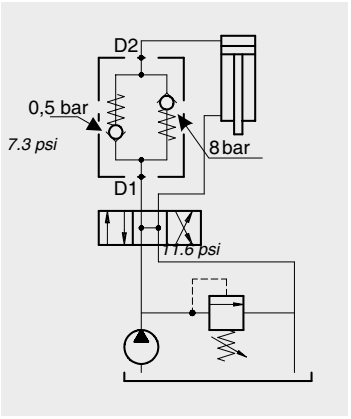
114) G1 1/4
112) G1 1/2

Opening pressure from E to U (bar)

Pa. 0,5) 0,5 bar *(7.3 psi)*
Pa. 1,5) 1,5 bar *(21.8 psi)*
Pa. 2,5) 2,5 bar *(36.3 psi)*
Pa. 5) 5 bar *(72.5 psi)*
Pa. 10) 10 bar *(145 psi)*
(VUC 114 only)

Operation

Free oil flow from D1 to D2 is performed at 0.5 bar-7.3 psi pressure while oil flow from D2 to D1 is produced at 8 bar pressure.



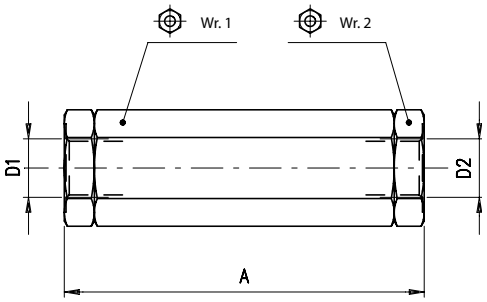
Performance

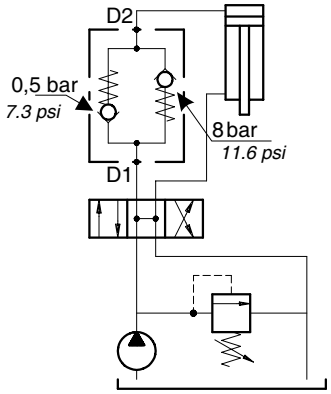
Body Valves

Type VBD	Maximum flow		Maximum pressure		Opening pressure	Oil leaks from U to E	Weight	
	l/min	*US gpm*	bar	*psi*			kg	*lb*
VBD 38 (12)	(38) 25 (12) 40	*6.6* *10.5*	350	*5100*	free flow from D1 to D2=0,5 bar -*7.3 psi* controllated flow da D2 a D1=8*-*116 psi*	0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops)	(38) 0,46 (12) 0,53	*1.01* *1.17*
VBD 34	70	*18*					1,5	*3.31*

*on request it is possible to perform a faisability study for special settings

Dimensions and hydraulic circuit



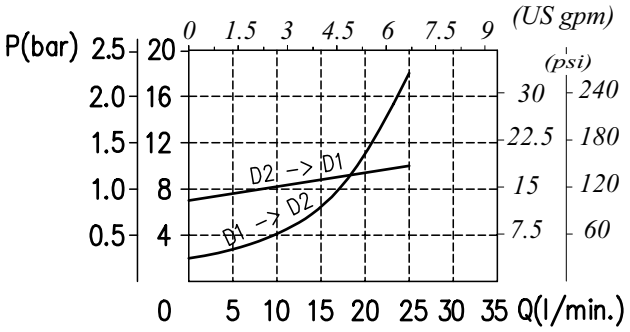


VBD	A	Wr. 1	Wr. 2	D1–D2
38	102 - *4.01*	30 - *1.18*	30 - *1.18*	G 3/8
12	129 - *5.08*	30 - *1.18*	27 - *1.06*	G 1/2

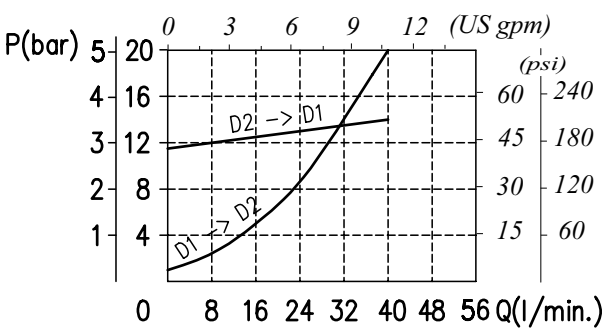
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (38)



Typical pressure drop vs. flow characteristic (12)



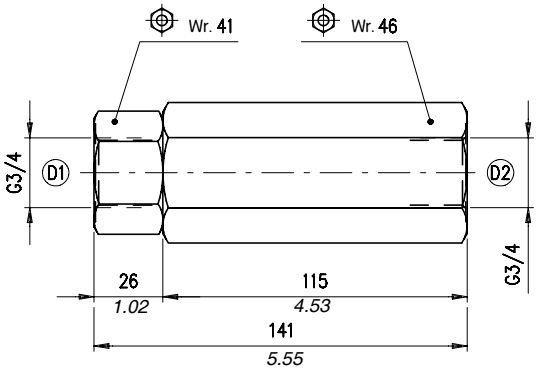
Order code

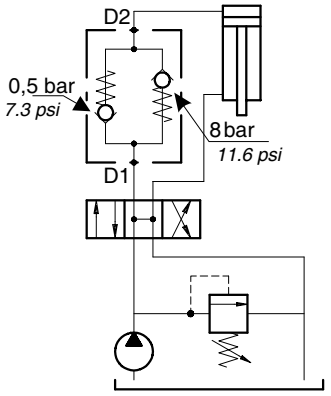
VBD □□ / Pa 0,5 - 8

Port size

38) G 3/8
12) G 1/2

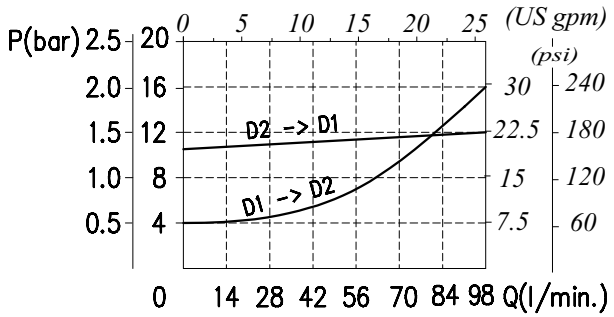
Dimensions and hydraulic circuit





Rating diagrams

Typical pressure drop vs. flow characteristic

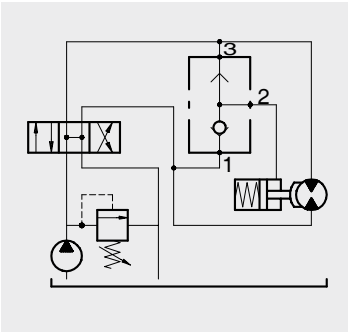


Order code

VBD 34 / Pa 0,5 - 8

Operation

Oil flow is produced from 1 to 2 or 3 to 2 with priority to the way with the bigger pressure.



Performance

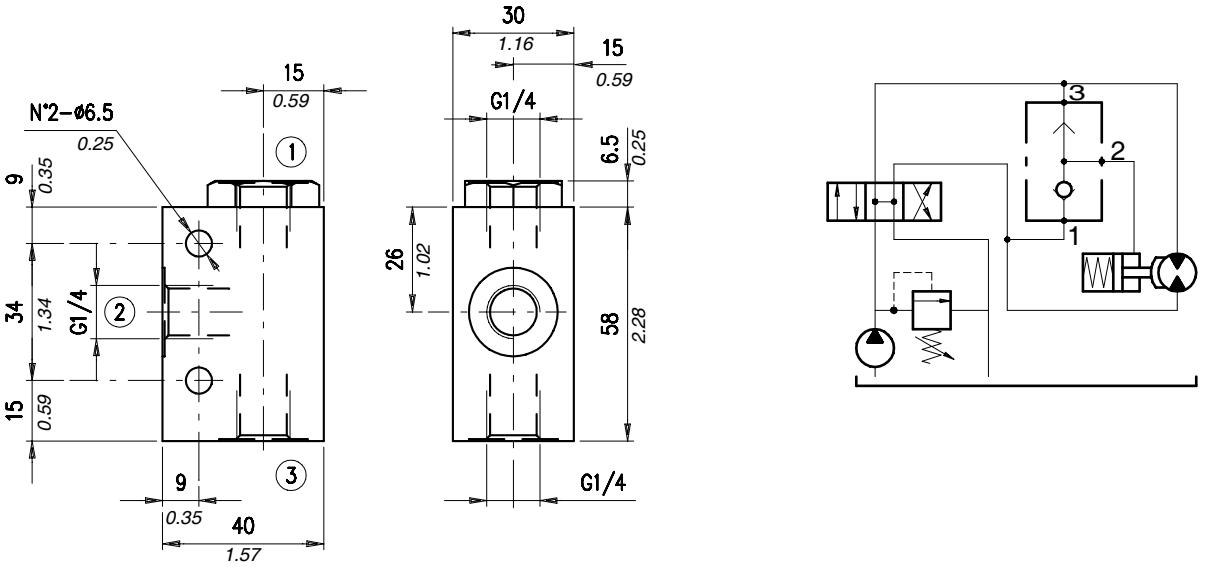
Body Valves

Type VBD	Maximum flow		Maximum pressure		Weight	
	l/min	*US gpm*	bar	*psi*	kg	*lb*
VT 14	20	5.3	400	*5800*	0,48	*1.06*
VT 38 (12)	(38) 35 (12) 50	9.2 13			(38) 0,84 (12) 1,35	*1.85* *2.98*
VT 34 (100)	(34) 100 (100) 150	26 40			(34) 1,95 (100) 3,12	*4.30* *6.88*

Cartridges

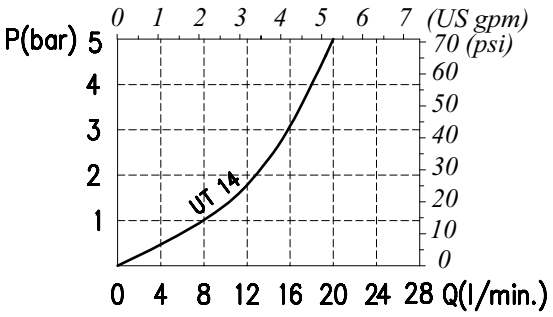
Type UT..A	Maximum flow		Maximum pressure		Weight		Cavities and tools
	l/min	*US gpm*	bar	*psi*	kg	*lb*	
UT08A	15	*4*	350	*5075*	0,08	*0.176*	see cavity SAE 8-3 page 105
UT10A	20	*5.3*			0,1	*0.220*	see cavity SAE 10-3 page 105

Dimensions and hydraulic circuit



Rating diagrams

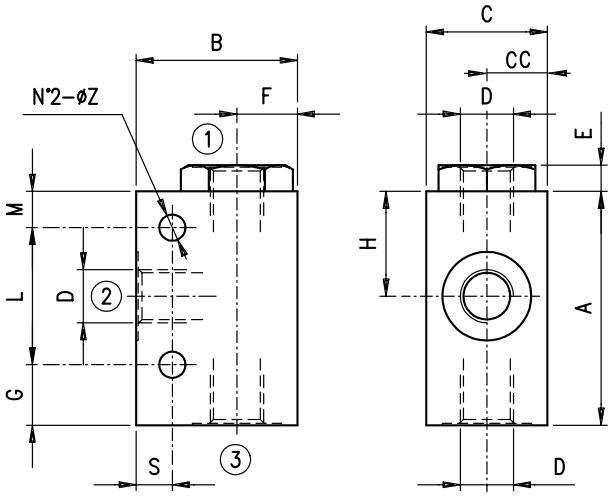
Typical pressure drop vs. flow characteristic

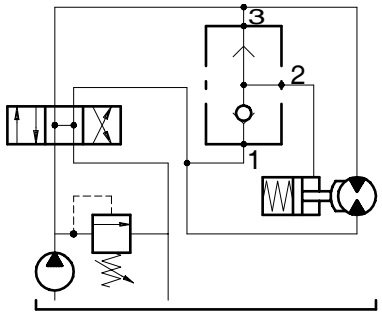


Order code

VT 14 /ac

Dimensions and hydraulic circuit



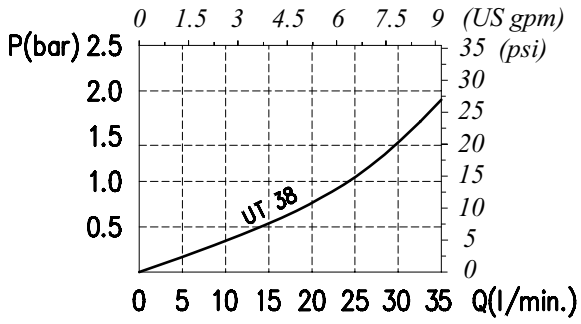


VT	A	B	C	CC	D	E	F	G	H	L	M	S	Z
38	70 - *2.75*	50 - *1.97*	35 - *1.38*	17.5 - *0.71*	G 3/8	6.5 - *0.25*	19 - *0.75*	16 - *0.63*	31.5 - *1.24*	45 - *1.77*	9 - *0.35*	9 - *0.35*	6.5 - *0.25*
12	80 - *3.15*	60 - *2.36*	42 - *1.65*	21 - *0.83*	G 1/2	8 - *0.31*	23 - *0.90*	18 - *0.71*	36 - *1.42*	52 - *2.05*	10 - *0.39*	10 - *0.39*	8.5 - *0.33*

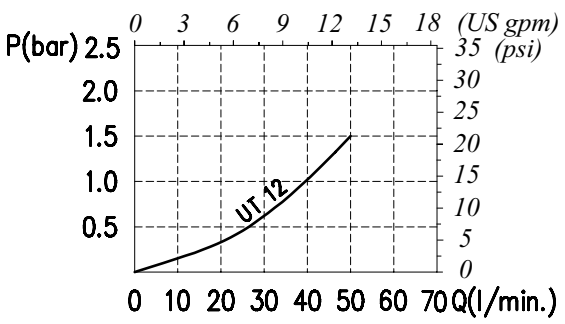
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (38)



Typical pressure drop vs. flow characteristic (12)



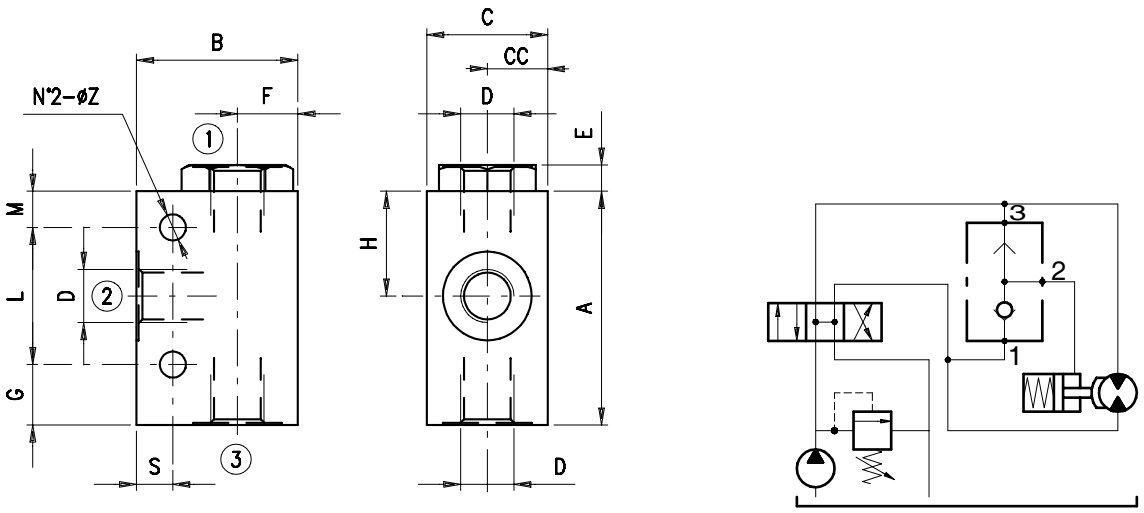
Order code

VT □□ /ac

Port size

38) G 3/8
12) G 1/2

Dimensions and hydraulic circuit

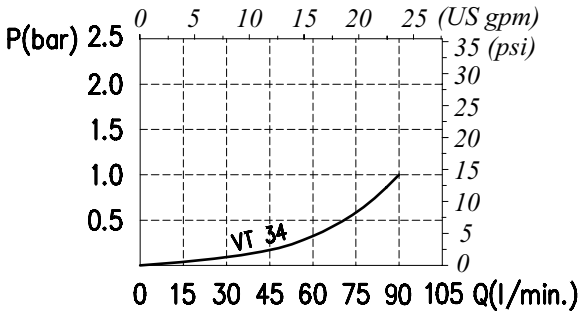


VT	A	B	C	CC	D	E	F	G	H	L	M	S	Z
34	90 - *3.54*	68 - *2.68*	50 - *1.97*	25 - *0.98*	G 3/4	8.5 - *0.33*	26 - *1.02*	19 - *0.75*	41 - *1.61*	60 - *2.36*	11 - *0.43*	11 - *0.43*	8.5 - *0.33*
100	100 - *3.94*	82 - *3.23*	60 - *2.36*	30 - *1.18*	G 1"	10 - *0.39*	32 - *1.26*	22 - *0.87*	45 - *1.77*	66 - *2.60*	12 - *0.47*	11 - *0.43*	10.5 - *0.41*

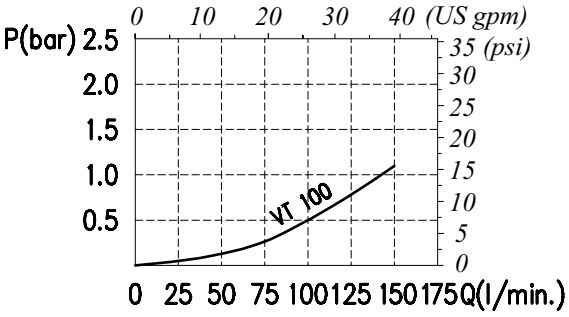
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic (34)



Typical pressure drop vs. flow characteristic (100)



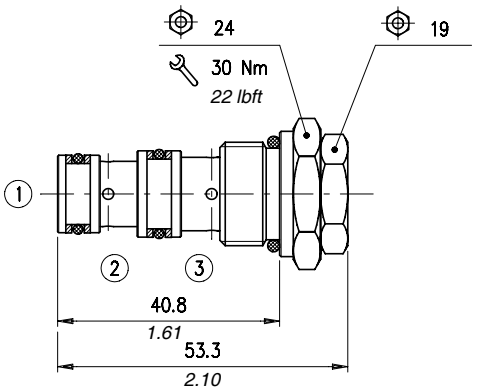
Order code

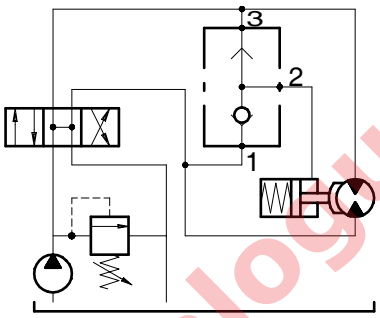
VT □□ /ac

Port size

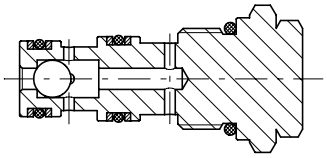
34) G 3/4
100) G 1

Dimensions and hydraulic circuit



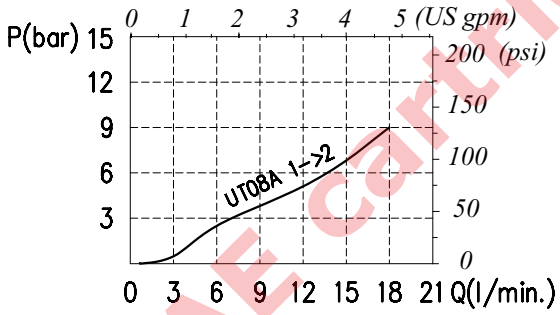


Cross section

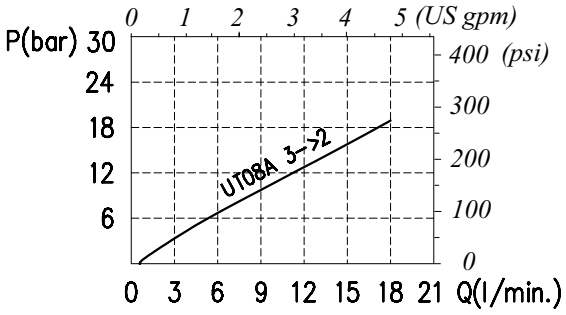


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



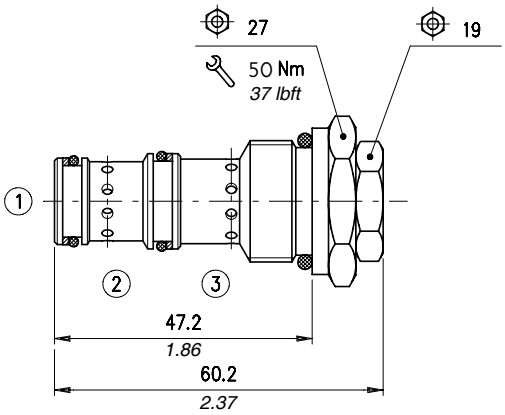
Order code

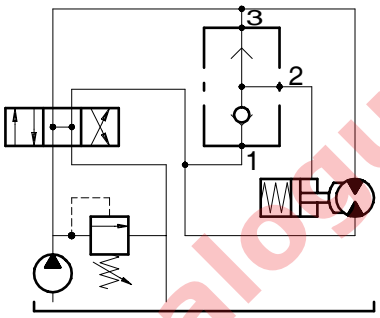
UT08A / 0 -0 -0 -□

Seals

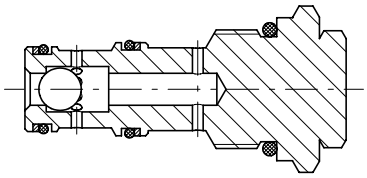
B) Buna
V) Viton

Dimensions and hydraulic circuit



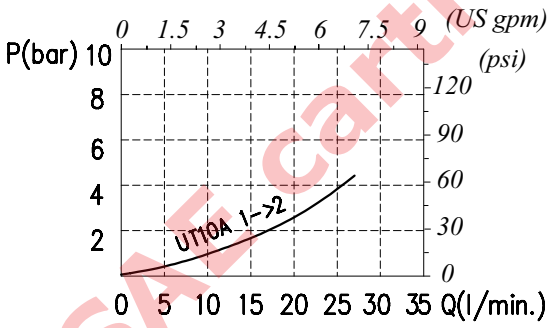


Cross section

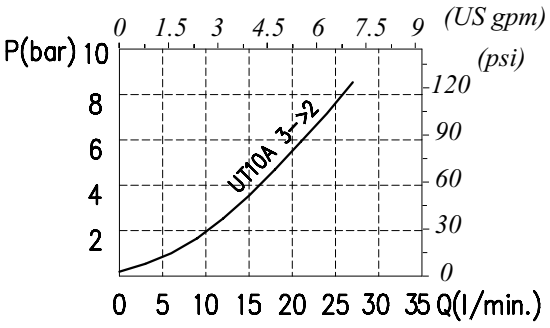


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

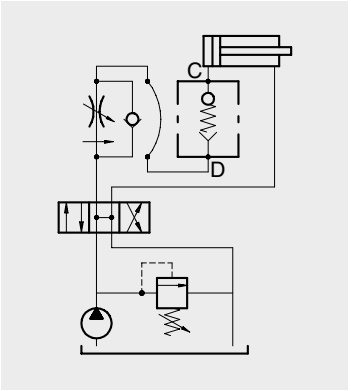
UT10A / 0 -0 -0 -□

Seals

B) Buna
V) Viton

Operation

This valve is specially recommended for use as safety device for actuators, when tubing break is suspected. Free oil flow is allowed from D to C while a limited oil flow up to the required capacity only is allowed in the opposite direction. If a tubing break happens, the outlet flow from the actuator exceeds the original setting value while stopping the whole circuit and thus preventing further function of the actuator. The valve must be set directly on the application. Use of a pressure adjuster on the downstream side of the valve and the relevant tubing section is recommended. The space S must provide for an oil flow which is 50% bigger than the maximum standard capacity.



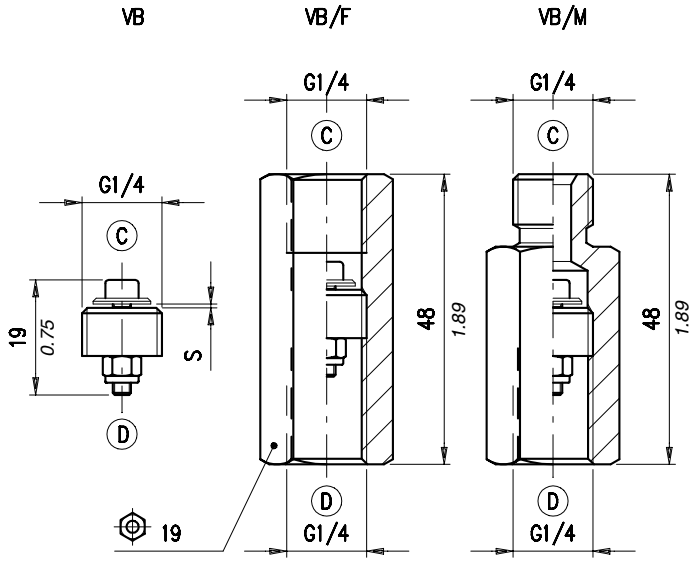
Performance

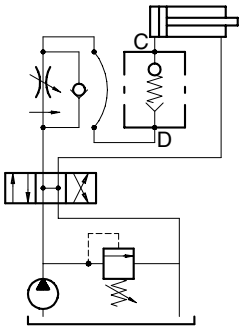
Body Valves

Type VB...	Maximum flow		Maximum pressure		Standard setting*		Weight	
	l/min	*US gpm*	bar	*psi*	mm	*in*	kg	*lb*
VB14 VB/M14 VB/F14	25	*6.6*	350	*5100*	quote S=0,8	*0.031*	0,005 0,070 0,075	*0.011* *0.154* *0.165*
VB38 VB/M38 VB/F38	50	*13*			quote S=1	*0.039*	0,013 0,108 0,120	*0.028* *0.238* *0.264*
VB12 VB/M12 VB/F12	80	*21*			quote S=1,4	*0.055*	0,020 0,170 0,165	*0.044* *0.374* *0.364*
VB34 VB/M34 VB/F34	150	*40*			quote S=1,8	*0.071*	0,050 0,250 0,260	*0.110* *0.551* *0.573*

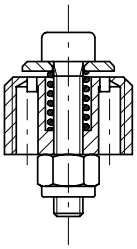
* see the pressure diagram

Dimensions and hydraulic circuit



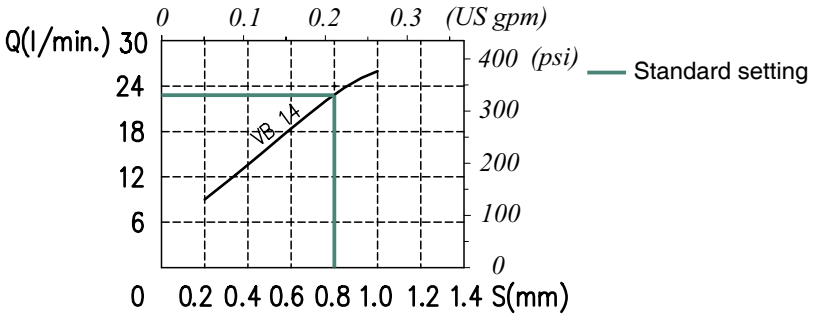


Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic



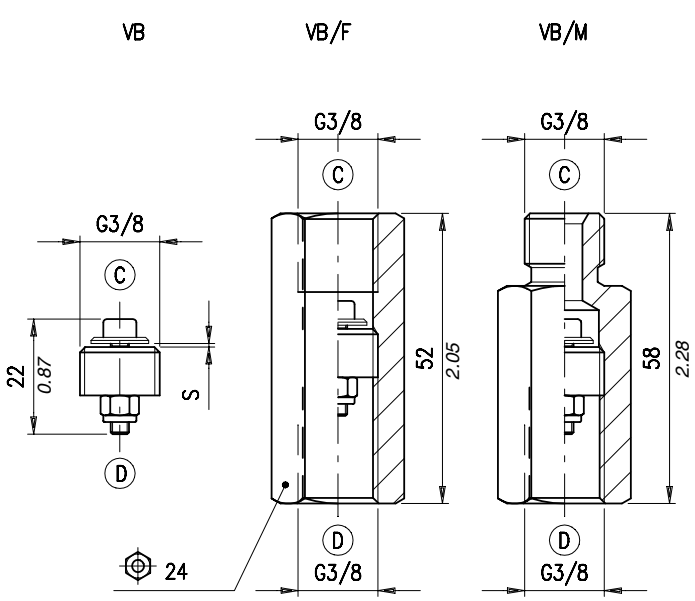
Order code

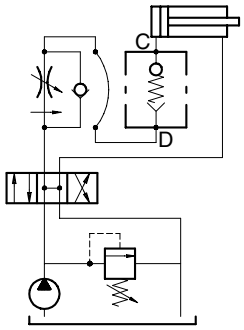
VB /□ / 14

Version

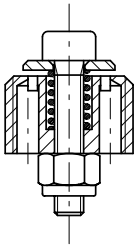
_ cartridge
F) work ports F-F
M) work ports M-F

Dimensions and hydraulic circuit



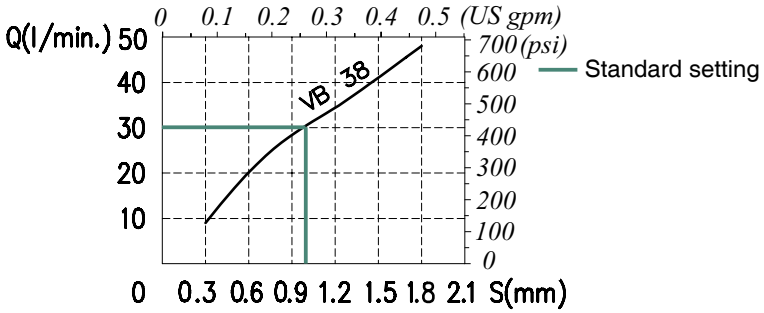


Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic



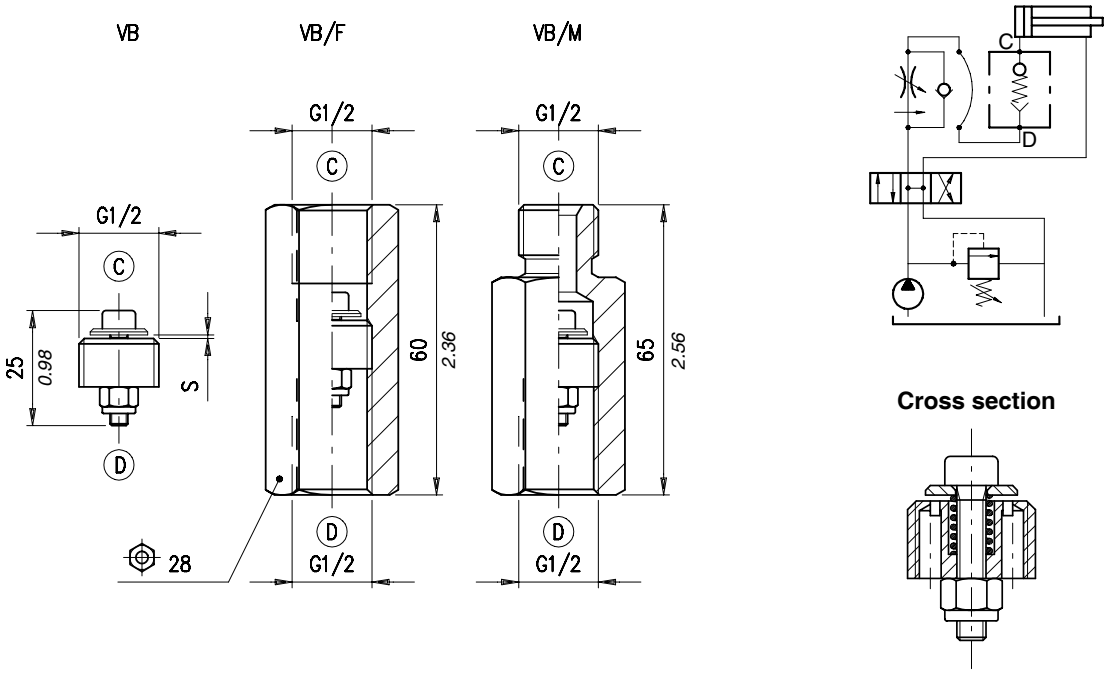
Order code

VB /□ / 38

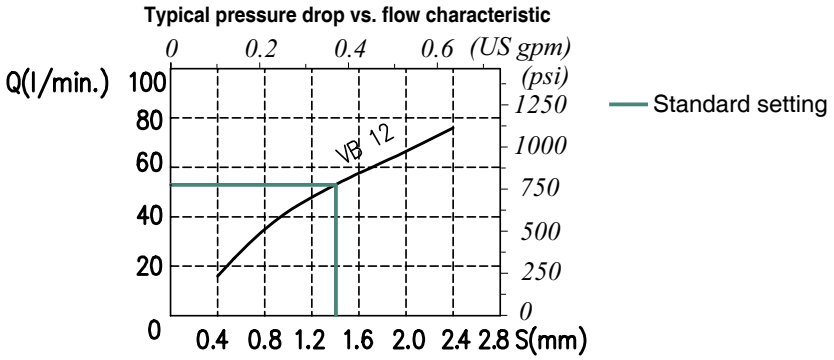
Version

_ cartridge
F) work ports F-F
M) work ports M-F

Dimensions and hydraulic circuit



Rating diagrams



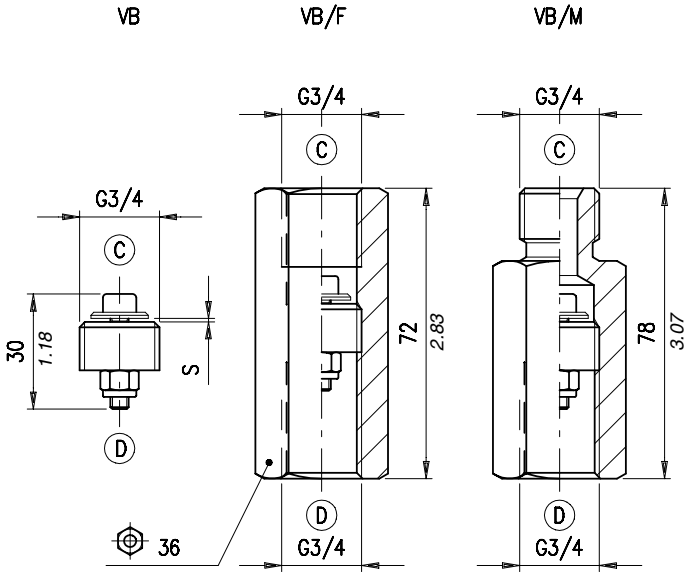
Order code

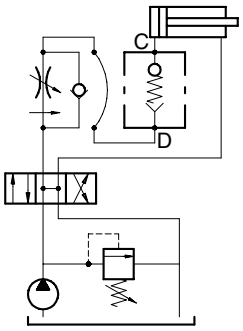
VB /□ / 12

Version

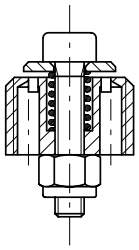
_ cartridge
F) work ports F-F
M) work ports M-F

Dimensions and hydraulic circuit

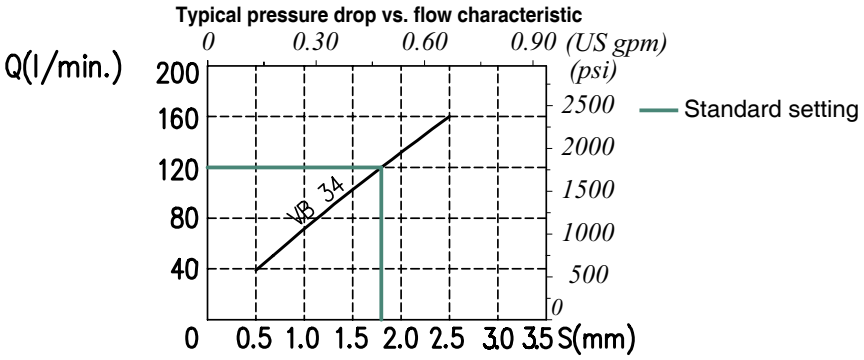




Cross section



Rating diagrams



Order code

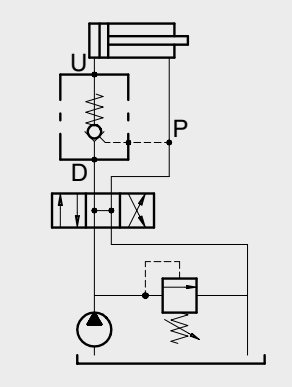
VB /□ / 34

Version

_ cartridge
F) work ports F-F
M) work ports M-F

Operation

The valve allows oil flow from D to U and stops it in the opposite way (from U to D). Free oil flow from U to D is strictly possible when the pilot pressure in P is strong enough to open the valve poppet. To assert the minimum opening pressure divide the value of pressure in U by the pilot ratio. To provide best valve performance from U to D make sure that no counterpressure arises in D.



Performance

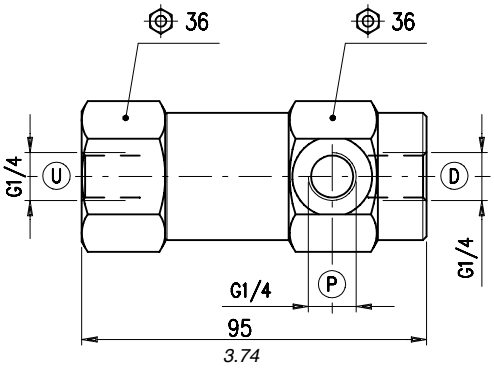
Body Valves

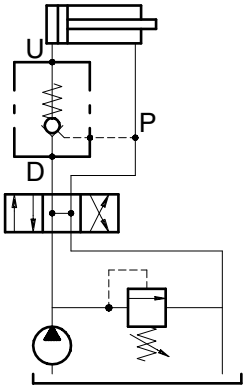
Type VUPSL	Maximum flow		Maximum pressure		Opening pressure from D to U	Oil leaks from U to D	Pilot ratio	Weight	
	l/min	*US gpm*	bar	*psi*				kg	*lb*
VUPSL 14	20	*5.3*	400	*5800*	5 bar *-72.5 psi* with gasket (standard version) 2.5 bar *-36.3 psi* without gasket (on request only)	0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar *-3050 psi*	1:3	0,67	*1.48*
VUPSL 38	35	*9.2*					1:3,2	0,95	*2.09*
VUPSL 12	50	*13*	350	*5100*			1:2,8	1,55	*3.42*
VUPSL 34	100	*26*	300	*4350*			1:3,1	2,57	*5.66*
VUPSL 100	150	*40*					1:3	4,18	*9.21*

Cartridges

Type BC..A	Maximum flow		Maximum pressure		Opening pressure from 2 to 3	Oil leaks from 3 to 2	Pilot ratio	Weight		Cavities and tools
	l/min	*US gpm*	bar	*psi*				kg	*lb*	
BC08A	15	*4*	350	*5100*	5 bars *-72.5 psi* with gasket (standard version) 2.5 bars *-36.3 psi* without gasket (on request only)	0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar *-3050 psi*	1:2,5	0,10	*0.22*	see cavity SAE 8-3 page 105
BC10A	30	*8*					1:3	0,10	*0.22*	see cavity SAE 10-3 page 105
BC12A	50	*13*				0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar *-3050 psi*	1:3	0,23	*0.51*	see cavity SAE 12-3 page 105
BC16A	100	*26*					1:2,5	0,44	*0.97*	see cavity SAE 16-3 page 105

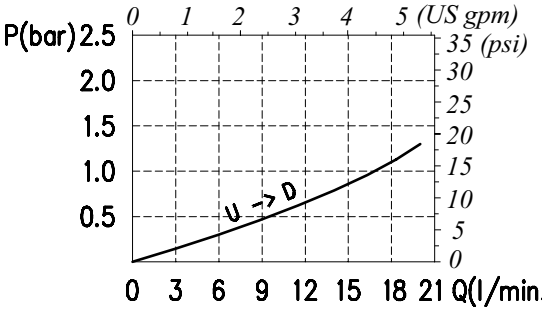
Dimensions and hydraulic circuit



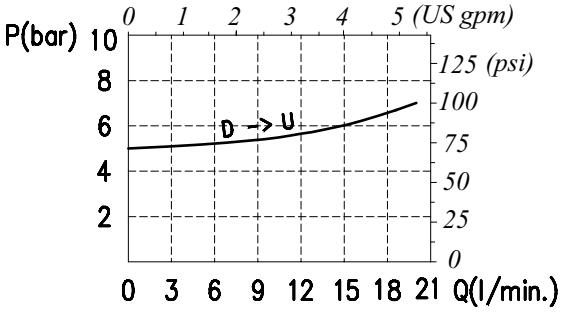


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



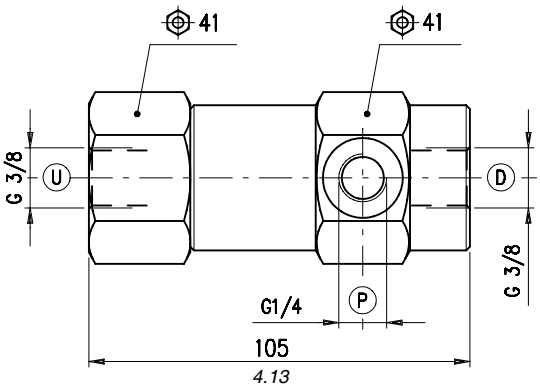
Order code

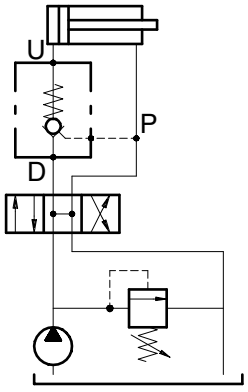
VUPSL 14 / □□

Pilot ratio

P3) 1:3

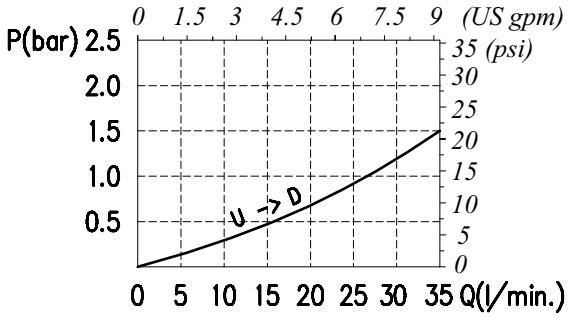
Dimensions and hydraulic circuit



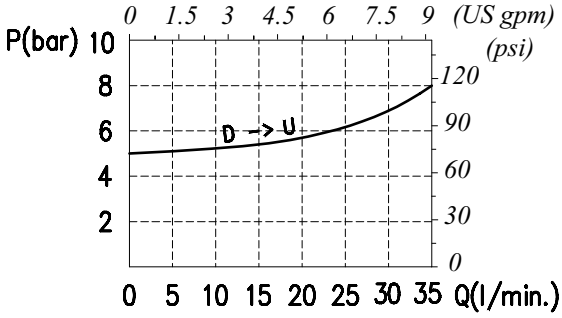


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



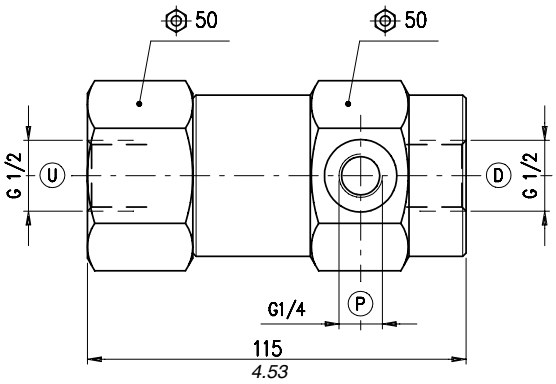
Order code

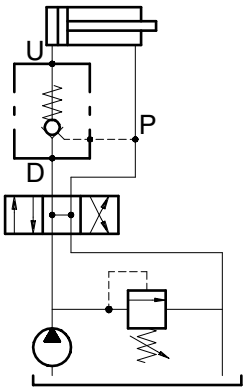
VUPSL 38 / □□

Pilot ratio

p3) 1:3,2

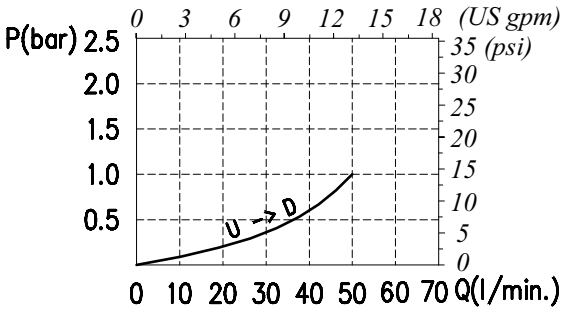
Dimensions and hydraulic circuit



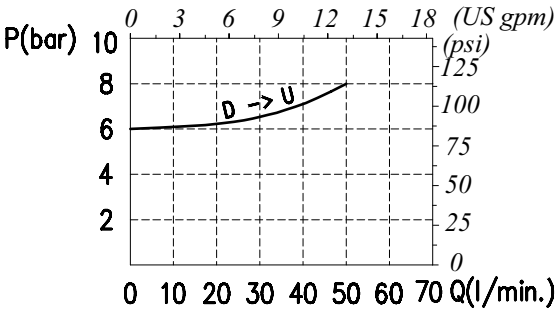


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



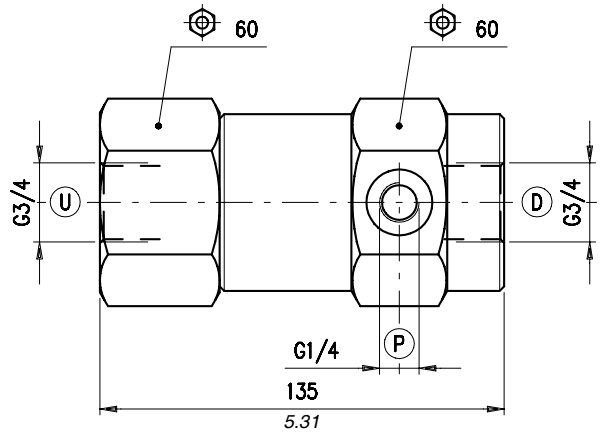
Order code

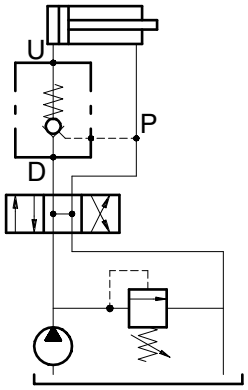
VUPSL 12 / □□

Pilot ratio

p3) 1:2,8

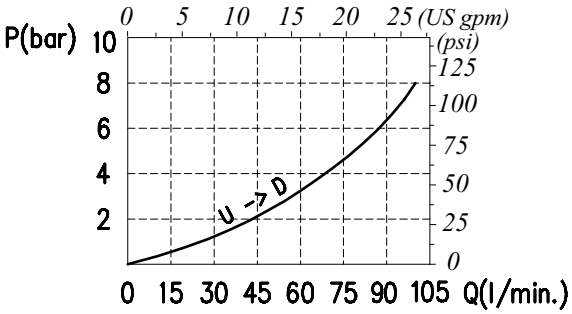
Dimensions and hydraulic circuit



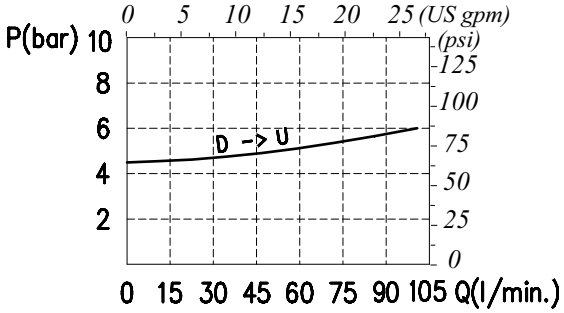


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



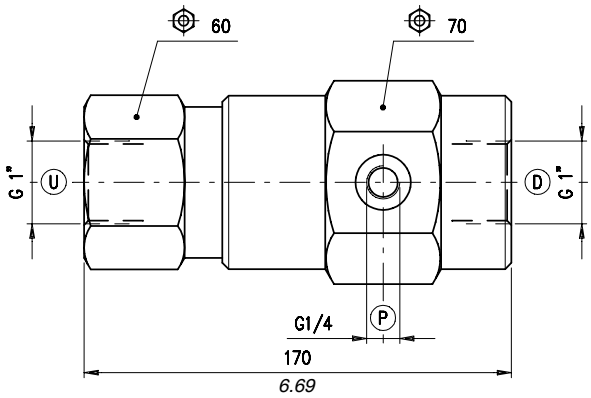
Order code

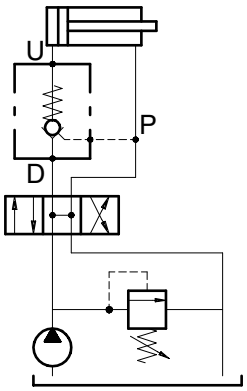
VUPSL 34 / □□

Pilot ratio

p3) 1:3,1

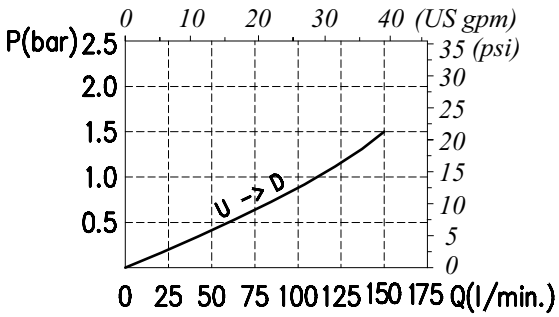
Dimensions and hydraulic circuit



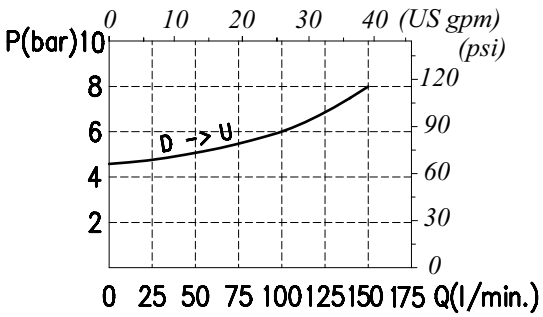


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



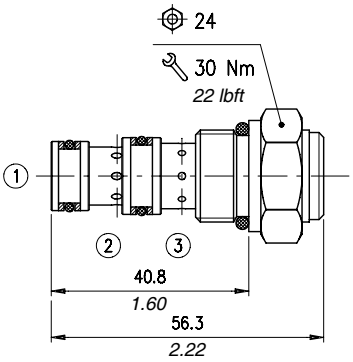
Order code

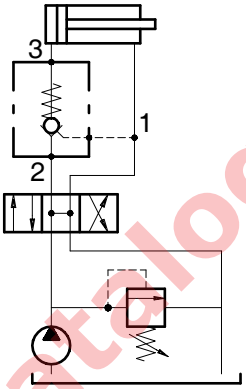
VUPSL 100 / □□

Pilot ratio

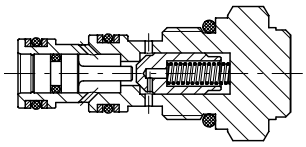
p3) 1:3

Dimensions and hydraulic circuit



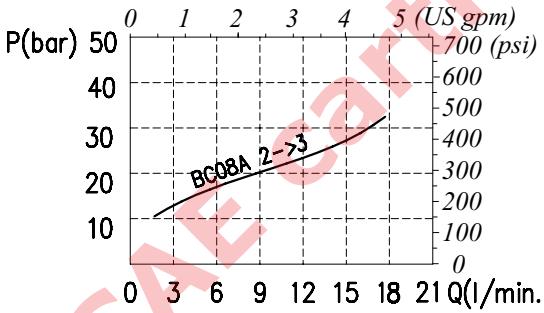


Cross section

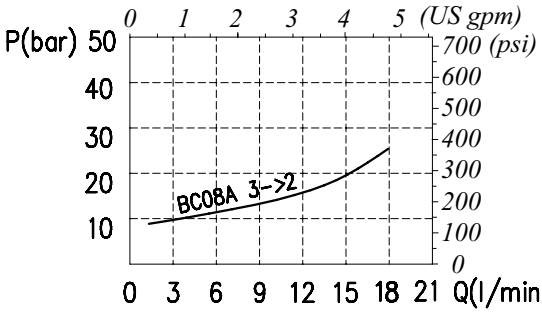


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

BC08A / ☐ -0 -☐ -☐

Pilot Ratio

3) 1:2,5

Opening pressure from 2 to 3

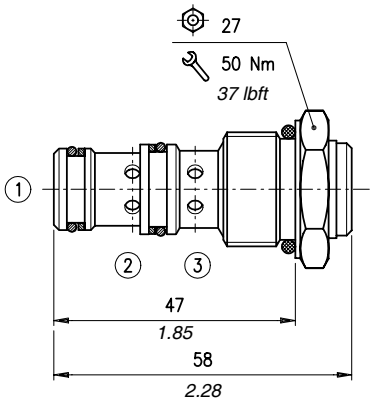
1) 5 bar with sealed piston *(72.5 psi)*

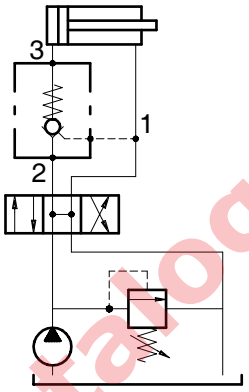
2) 2,5 bar without sealed piston *(36.3 psi)*

Seals

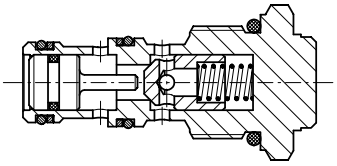
B) Buna
V) Viton

Dimensions and hydraulic circuit



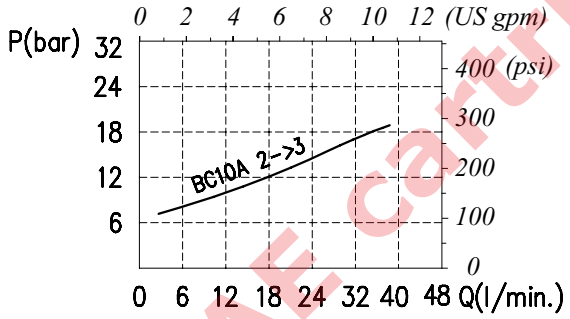


Cross section

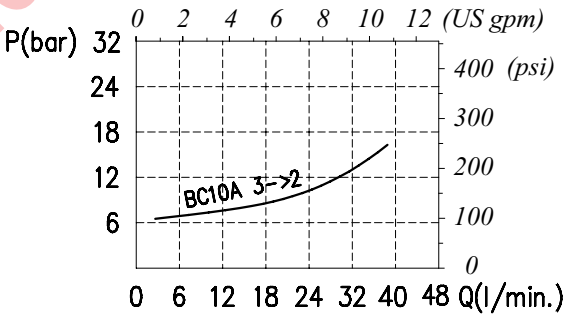


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

BC10A / ☐ -0 -☐ -☐

Pilot Ratio

3) 1:3

Opening pressure from 2 to 3

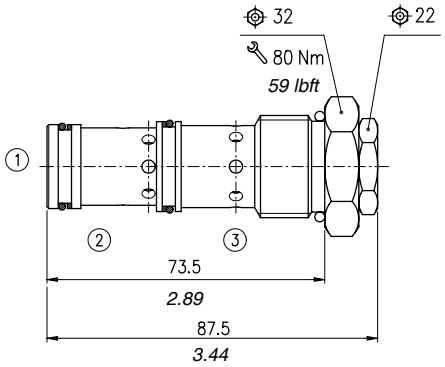
1) 5 bar with sealed piston
(72.5 psi)

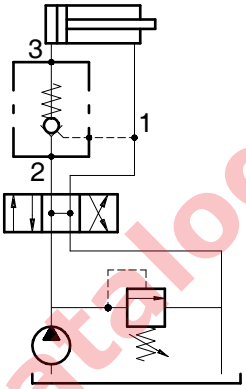
2) 2,5 bar without sealed piston
(36.3 psi)

Seals

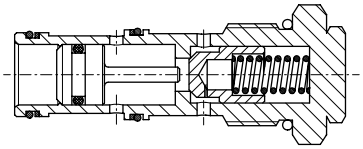
B) Buna
V) Viton

Dimensions and hydraulic circuit



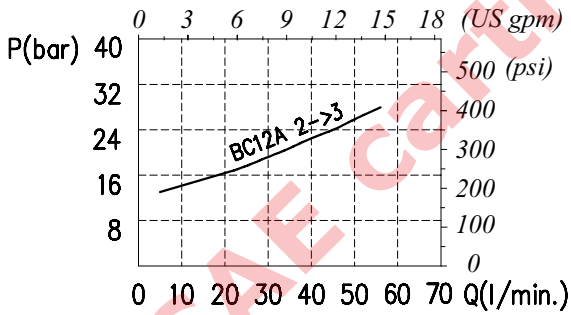


Cross section

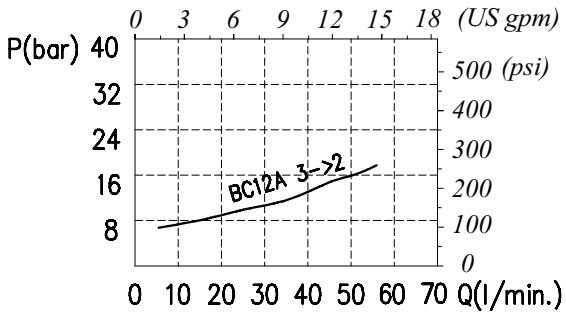


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

BC12A / ☐ -0 -☐ -☐

Pilot Ratio

3) 1:3

Opening pressure from 2 to 3

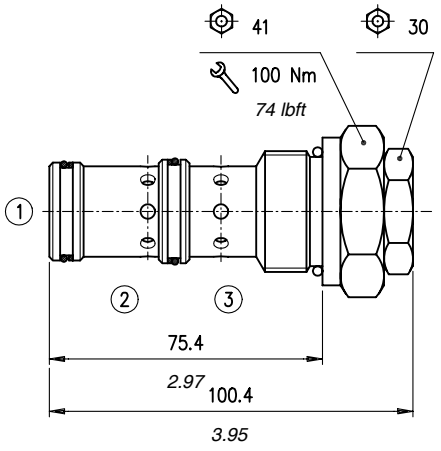
1) 5 bar with sealed piston *(72.5 psi)*

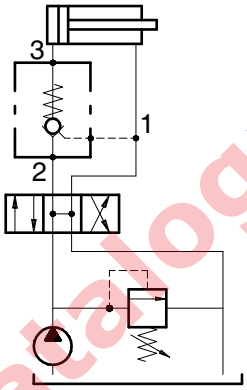
2) 2,5 bar without sealed piston *(36.3 psi)*

Seals

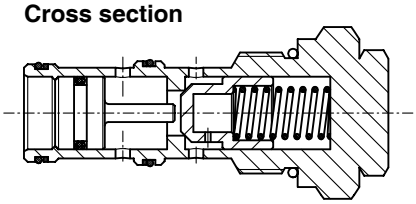
B) Buna
V) Viton

Dimensions and hydraulic circuit



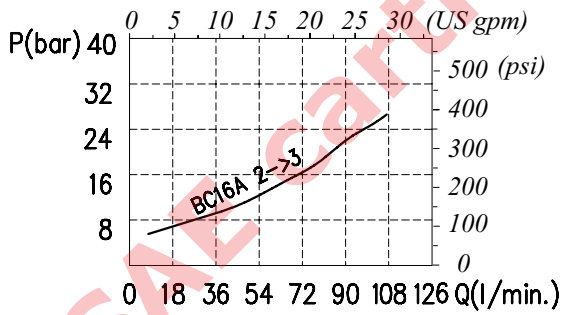


Cross section

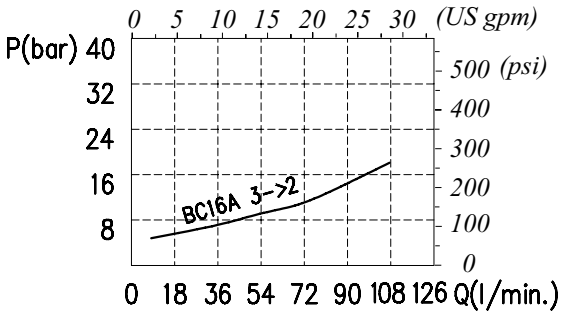


Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

BC16A / ☐ -0 -☐ -☐

Pilot Ratio

3) 1:2,5

Opening pressure from 2 to 3

1) 5 bar with sealed piston
(72.5 psi)

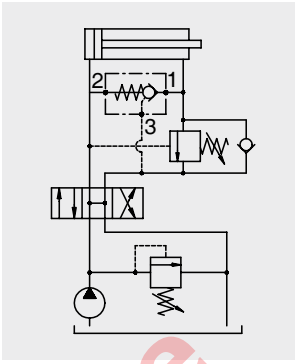
2) 2,5 bar without sealed piston
(36.3 psi)

Seals

B) Buna
V) Viton

Operation

The oil flow is permitted from 2 to 3 and stopped in the opposite direction. A free oil flow from 3 to 2 is strictly possible when the pilot pressure in 1 is enough to release the valve poppet. The minimum release pressure can be figured by dividing pressure value in 3 by the pilot ratio. To assure best valve performance from 3 to 2, make sure that no counter pressure arises in 2.

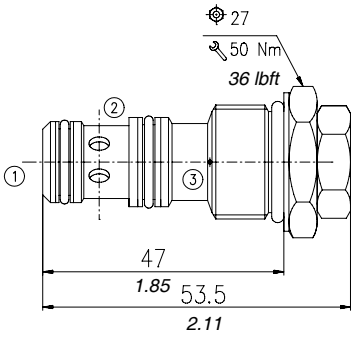


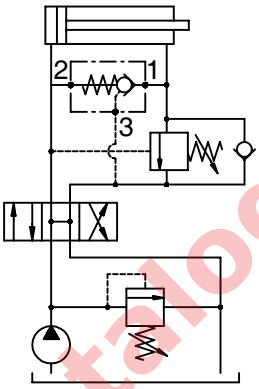
Performance

Cartridges

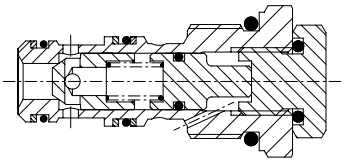
Type BC..B	Maximum flow		Maximum pressure		Opening pressure from 1 to 2	Oil leaks from 2 to 1	Pilot ratio	Weight		Cavities and tools
	l/min	*US gpm*	bar	*psi*				kg	*lb*	
BC10B	30	*8*	350	*5100*	5 bar *-72.5 psi* with gasket	0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar *-3050 psi*	1:2	0,10	0.220	see cavity SAE 10-3 page 105
BC12B	50	*13*			5 bar *-72.5 psi* with gasket (standard version)	0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar *-3050 psi*	1:3	0,22	0.485	see cavity SAE 12-3 page 105
BC16B	100	*26*					1:2,5	0,44	0.970	see cavity SAE 16-3 page 105

Dimensions and hydraulic circuit



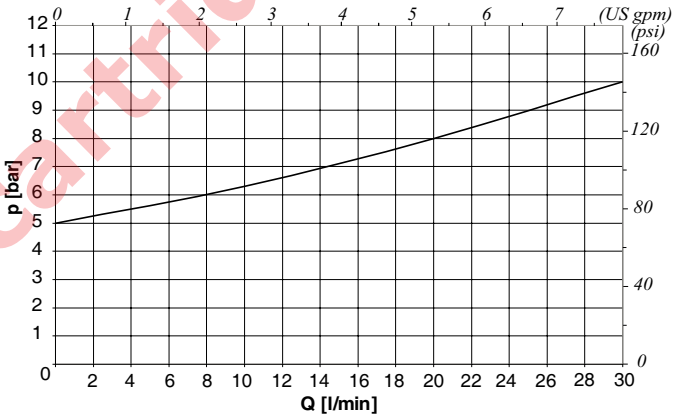


Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic

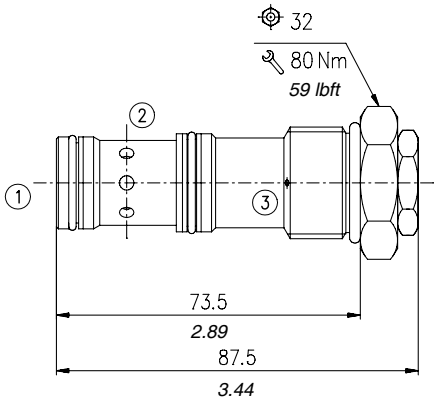


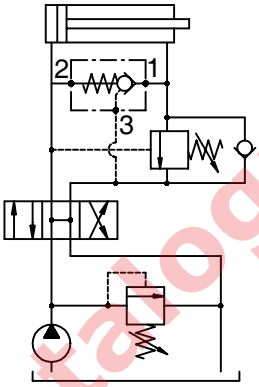
Order code

BC10B / ☐ -0 -☐ -☐

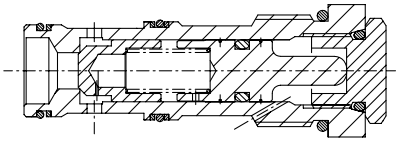
Pilot Ratio	Opening pressure from 1 to 2	Seals
3) 1:2	**1)** 5 bar with sealed piston *(72.5 psi)*	**B)** Buna **V)** Viton

Dimensions and hydraulic circuit



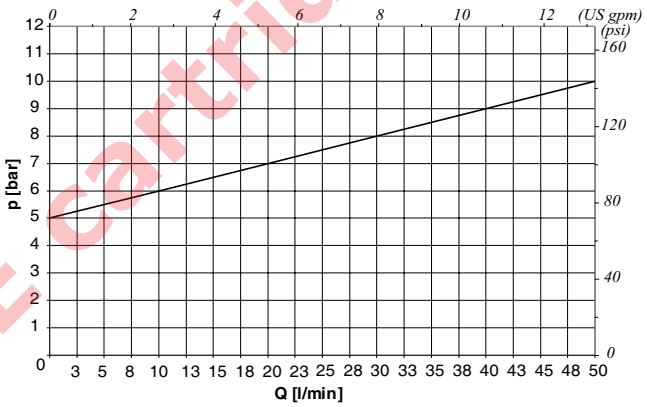


Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic

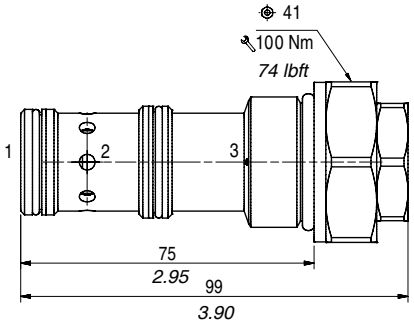


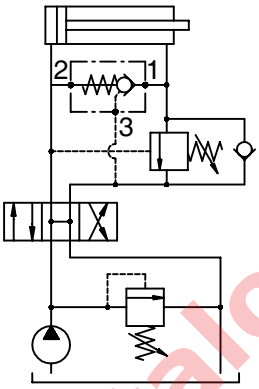
Order code

BC12B / ☐ -0 -☐ -☐

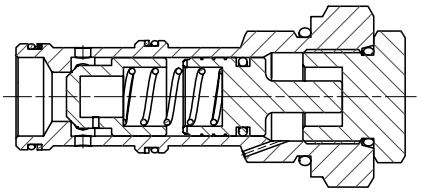
Pilot Ratio	Opening pressure from 1 to 2	Seals
3) 1:3	**1)** 5 bar with sealed piston *(72.5 psi)*	**B)** Buna **V)** Viton

Dimensions and hydraulic circuit



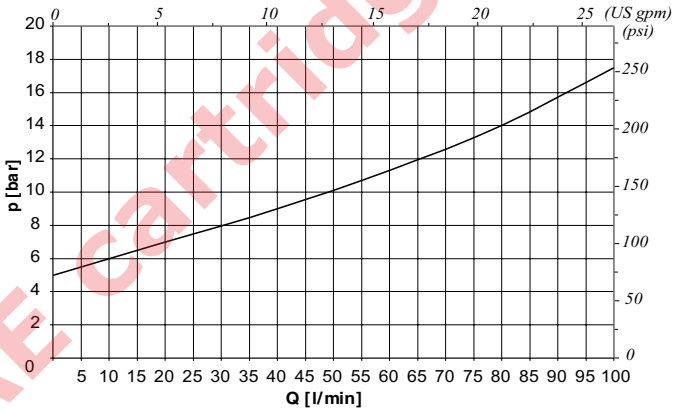


Cross section



Rating diagrams

Typical pressure drop vs. flow characteristic



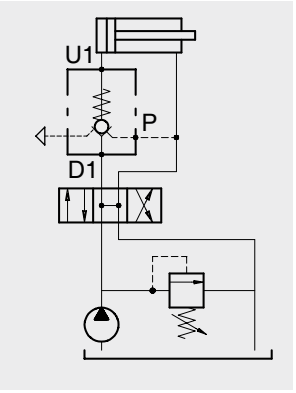
Order code

BC16B / ☐ -0 -☐ -☐

Pilot Ratio	Opening pressure from 1 to 2	Seals
3) 1:2,5	**1)** 5 bar with sealed piston *(72.5 psi)*	**B)** Buna **V)** Viton

Operation

Allows oil flow from D to U and stops it in the opposite way (from U to D). Free oil flow from U to D is strictly possible when the pilot pressure in P is strong enough to open the valve poppet. To assert the minimum opening pressure divide the value of pressure in U by the pilot ratio.
Because of a separate pilot control chamber, counterpressures from D will not affect best valve performance.

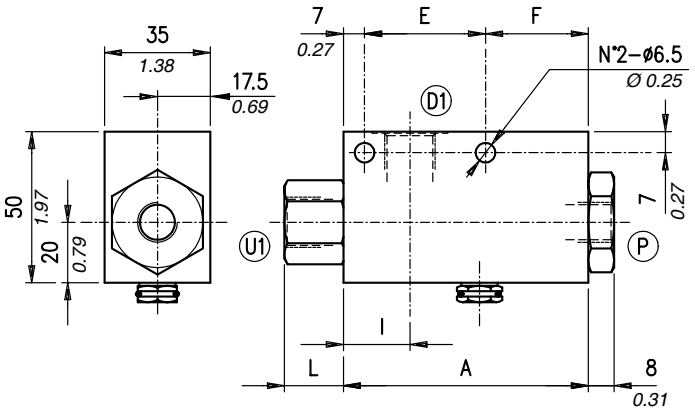


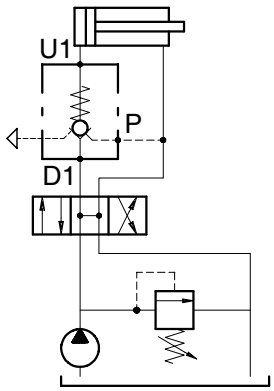
Performance

Body Valves

Type VBPSL/PS	Maximum flow		Maximum pressure		Oil leaks from U to D	Pilot ratio	Weight	
	l/min	*US gpm*	bar	*psi*			kg	*lb*
VBPSL/PS 38	25	*6.6*	210 (aluminium body) 350 (steel body)	*3050* *5100*	0,25 cm^3/min *-15x10^{-3} in^3/min.* (5 drops) at 210 bar *-3050 psi*	1:10	0,53	*1.17*
							aluminium	
							1,07	*2.36*
							steel	
VBPSL/PS 12	35	*9.2*				1:6	0,65	*1.43*
							aluminium	
							1,19	*2.65*
							steel	

Dimensions and hydraulic circuit



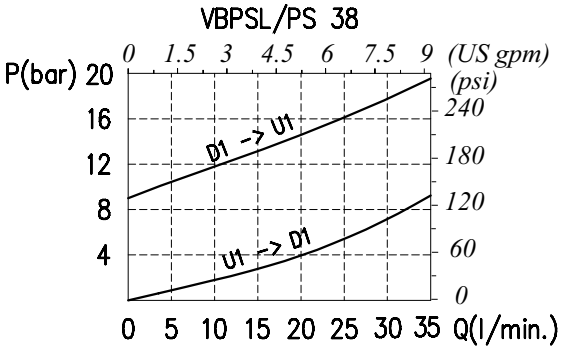


VBPSL/PS	A	E	F	I	L	U1–D1	P
38	81 - *3.19*	40 - *1.57*	34 - *1.34*	22 - *0.87*	19.5 - *0.77*	G 3/8	G 1/4
12	90 - *3.54*	50 - *1.97*	33 - *1.30*	32 - *1.26*	33 - *1.30*	G 1/2	G 1/4

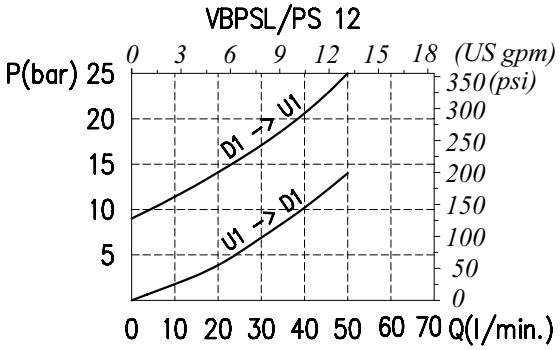
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



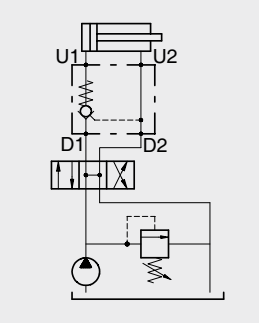
Order code

VBPSL /PS □□ /□□ / □□

Port Size	Pilot Ratio	Body Material
38) G 3/8	**p10)** 1:10 (VBPSL /PS 38)	_ Aluminium
12) G 1/2	**p6)** 1:6 (VBPSL /PS 12)	**ac** Steel

Operation

These valves allows oil flow from D1 to U1 and stops it in the opposite way (from U1 to D1). Free oil flow from U1 to D1 is strictly possible when the pilot pressure in U2 and D2 is strong enough to open the valve poppet. To assert the minimum opening pressure divide the value of pressure in U1 by the pilot ratio. To provide best valve performance from U1 to D1 make sure that no counterpressure arises in D1.



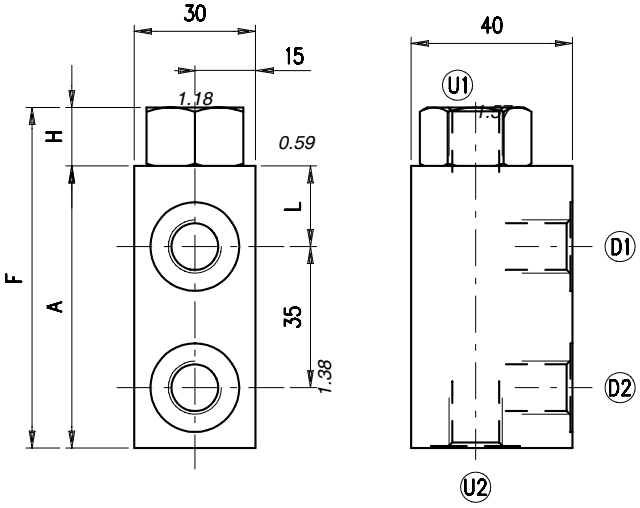
Performance

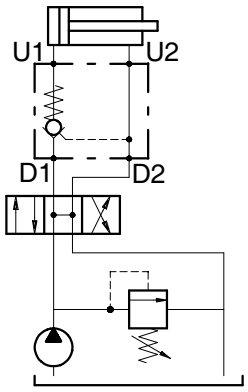
Body Valves

Type VBPSL	Maximum flow		Maximum pressure	Oil leaks from U1 a D1	Pilot ratio	Weight		Cartridge valve
	l/min	*US gpm*				kg	*lb*	
VBPSL 14 (/VP 38)	**(14)** 15 **(/VP 38)** 25	*4* *6.6*	210 bar *-3050 psi* (aluminium body) 350 bar *-5100 psi* (steel body)	0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar	1:4,5 (1) 1:3 (2)	**(14)** aluminium body 0,30 steel body 0,63 **(/VP 38)** aluminium body 0,32 steel body 0,67	*0.661* *1.39* *0.705* *1.48*	
VBPSL 38 - (12)	**(38)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (2 drops) at 210 bar	1:4 (1) 1:6,3 (2) 1:7,5 (2)	**(38)** aluminium body 0,63 steel body 1,20 **(12)** aluminium body 0,65 steel body 1,22	*1.39* *2.65* *1.43* *2.69*	
VBPSL 34	100	*26*			1:4,3	aluminium body 1,68 steel body 3,33	*3.70* *7.34*	
VBPSL/T 38	25	*6.6*			1:4,5 (1) 1:3 (2)	aluminium body 0,47 steel body 1,13	*1.04* *2.49*	see VUI 38 page 107
VBPSL/T 12	50	*13*			1:4 (1) 1:6,3 (2) 1:7,5 (2)	aluminium body 0,63 steel body 1,44	*1.39* *3.18*	see VUI 12 page 108
VBPSL/T 34	100	*26*			1:4,3	aluminium body 1,76 steel body 3,49	*3.88* *7.69*	see VUI 34 page 109
VBPSL 14 (VP38)/SO	**(VBPSL/SO 14)** 15 **(VBPSL12/SO)** 50	*4* *13*		0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) a 210 bar	1:4,5 (1) 1:3 (2)	**(VBPSL/SO 14)** aluminium body 0,35 steel body 0,68 **(VBPSL/VP 38/SO)** aluminium body 0,37 steel body 0,74	*0.092* *1.50* *0.816* *1.63*	
VBPSL 38/VG (12) /SO	**(VBPSL 38/VG /SO)** 35 **(VBPSL 12 /SO)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (2 drops) at 210 bar	1:4 (1) 1:6,3 (2) 1:7,5 (2)	**(VBPSL 38/VG /SO)** aluminium body 0,65 steel body 1,22 **(VBPSL 12 /SO)** aluminium body 0,65 steel body 1,22	*1.43* *2.690* *1.43* *2.69*	
VBPSF 14	15	*4*		0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar	1:4,5 (1) 1:3 (2)	aluminium body 0,31 steel body 0,65	*0.683* *1.43*	see VUI 38 page 107
VBPSF 38 (12)	**(38)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar	1:4 (1) 1:6,3 (2) 1:7,5 (2)	**(38)** aluminium body 0,67 steel body 1,54 **(12)** aluminium body 0,64 steel body 1,51	*1.48* *3.40* *1.41* *3.33*	see VUI 12 page 108
VBPSF 34	100	*26*			1:4,3	aluminium body 1,66 steel body 3,91	*3.66* *8.62*	see VUI 34 page 109

(1) standard version (2) on request

Dimensions and hydraulic circuit



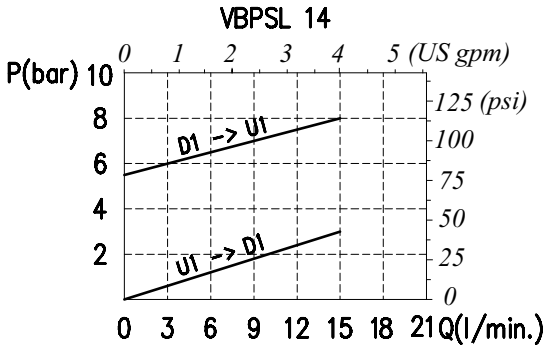


VBPSL	D1–D2	U1–U2	A	F	H	L
14	G 1/4	G 1/4	70 - *2.75*	84.5 - *3.33*	14.5 - *0.57*	20 - *0.79*
VP/38	G 3/8	G 3/8	80 - *3.15*	99.5 - *3.92*	19.5 - *0.77*	22.5 - *0.88*

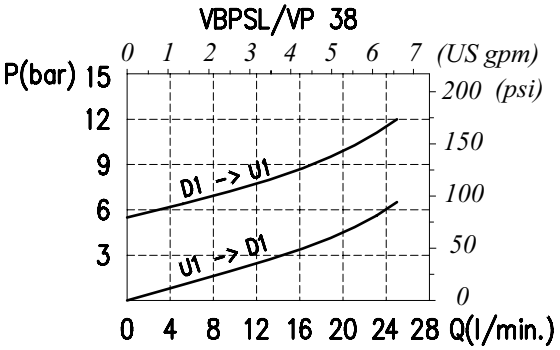
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPSL □□ / □□ / □□

Port size

14) G 1/4
/VP 38) G 3/8

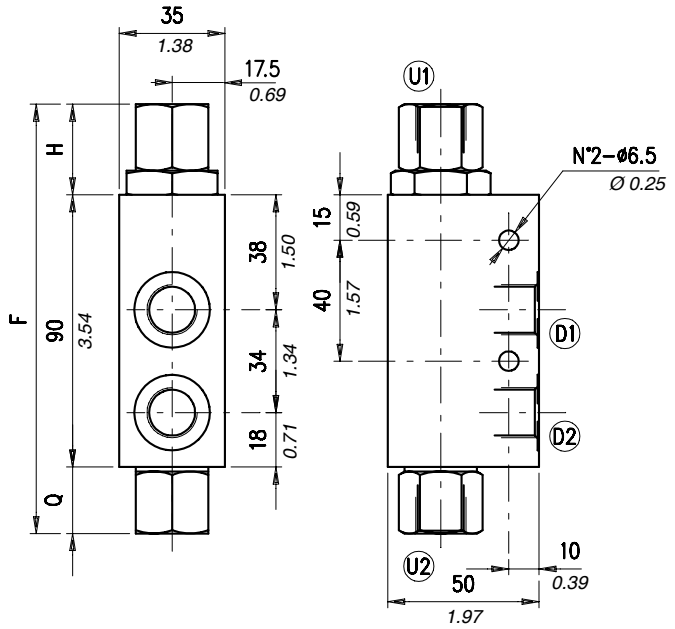
Pilot ratio

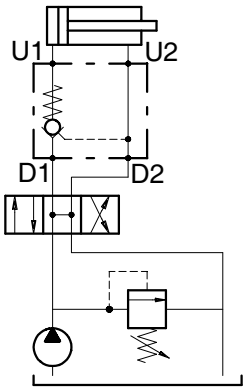
p3) 1:3
p4) 1:4,5 (standard)

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



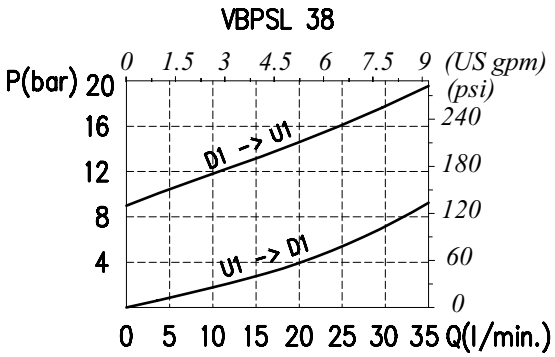


VBPSL	D1–D2	U1–U2	F	H	Q
38	G 3/8	G 3/8	142 - *5.59*	30 - *1.18*	22 - *0.87*
12	G 1/2	G 1/2	148 - *5.83*	33 - *1.30*	25 - *0.98*

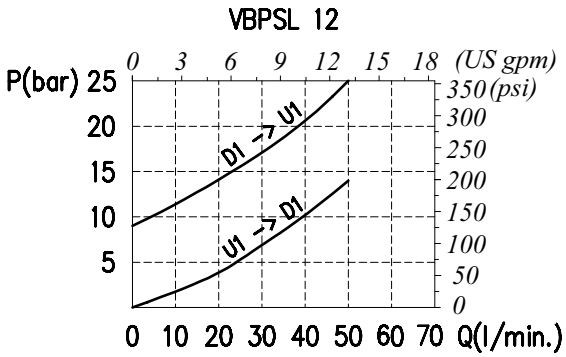
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPSL □□ / □□ / □□

Port size

38) G 3/8
12) G 1/2

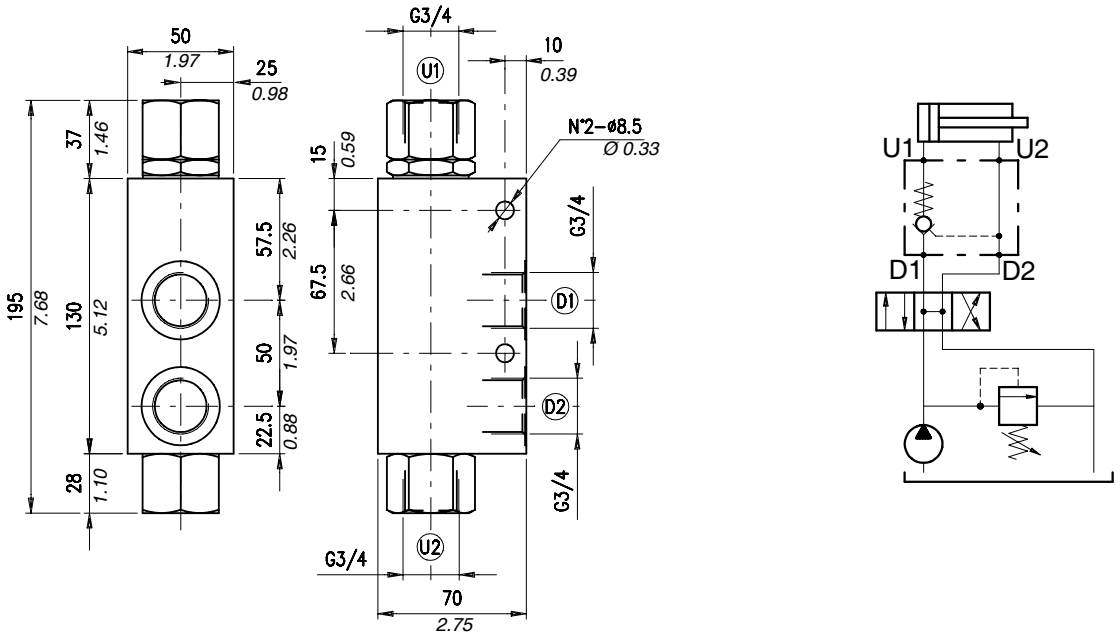
Pilot ratio

p4) 1:4 (standard)
p6,3) 1:6,3
p7,5) 1:7,5

Body material

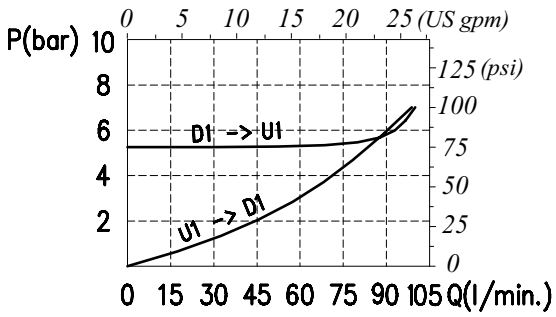
_ Aluminium
ac Steel

Dimensions and hydraulic circuit



Rating diagrams

Typical pressure drop vs. flow characteristic

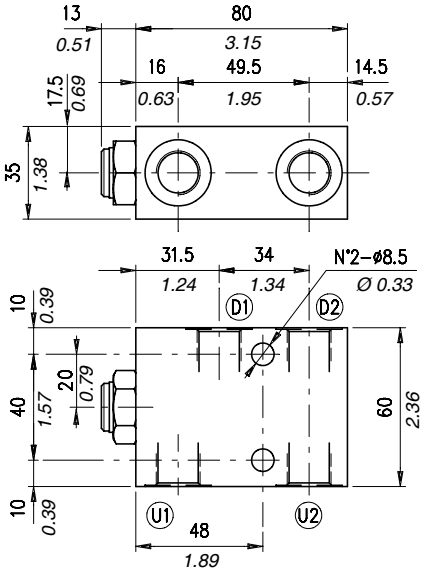


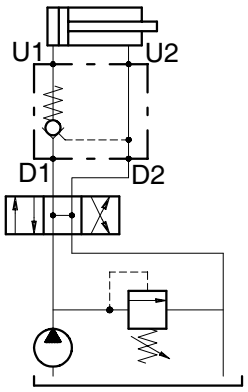
Order code

VBPSL 34 / □□ / □□

Pilot ratio	Body material
P4)1:4,3 (standard)	_ Aluminium
	ac Steel

Dimensions and hydraulic circuit

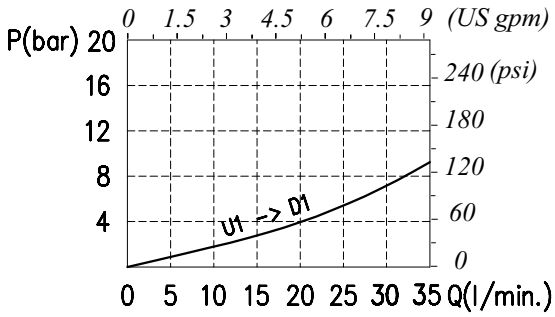




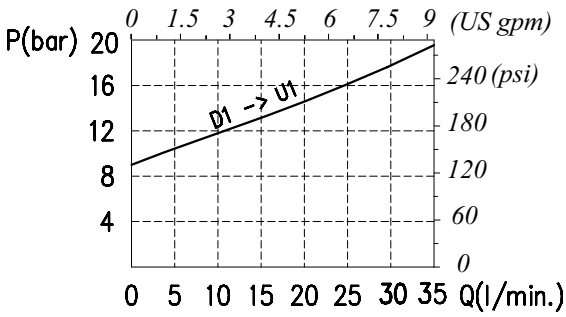
VBPSL/T	D1–D2	U1–U2
38	G 3/8	G 3/8

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic

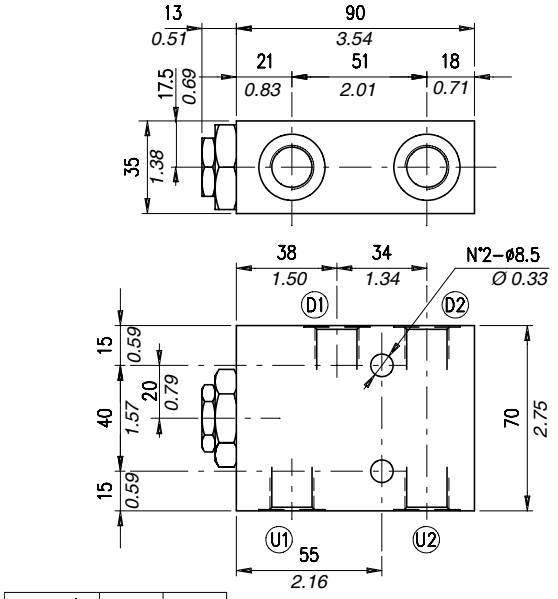


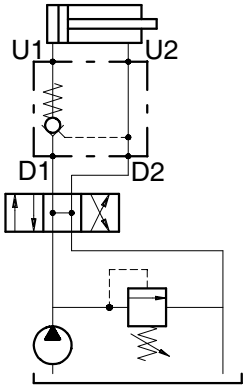
Order code

VBPSL /T 38 / □□ / □□

Port size	Pilot ratio	Body material
38) G 3/8	**p3)** 1:3	_ Aluminium
	P4) 1:4,5 (standard)	**ac** Steel

Dimensions and hydraulic circuit

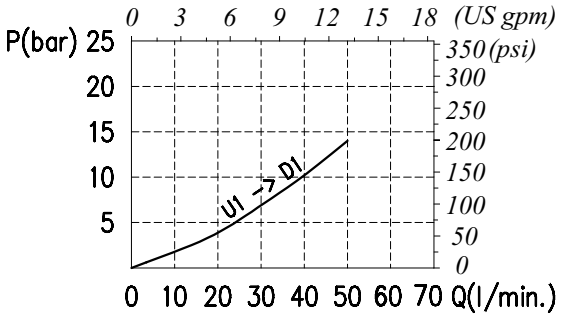




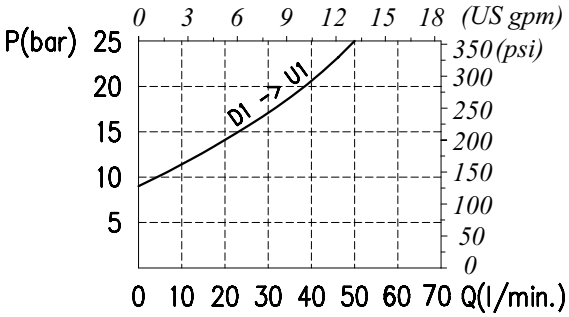
VBPSL/T	D1–D2	U1–U2
12	G 1/2	G 1/2

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPSL /T 12 / □□ / □□

Port size

12) G 1/2

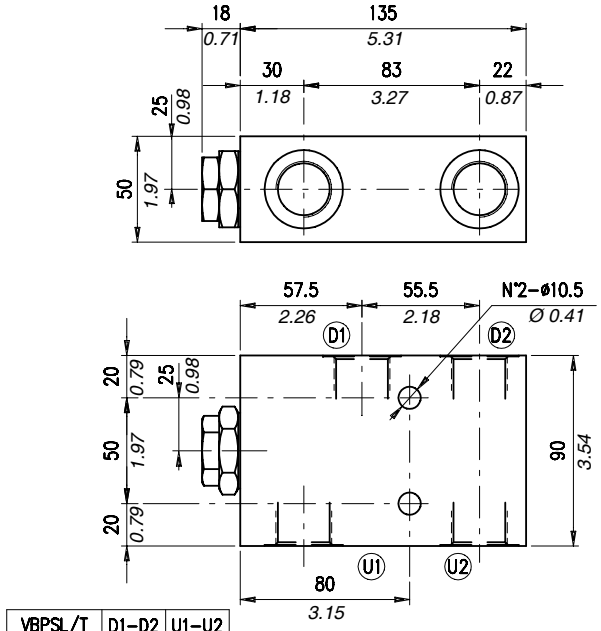
Pilot ratio

p4) 1:4 (standard)
p6,3) 1:6,3
p7,5) 1:7,5

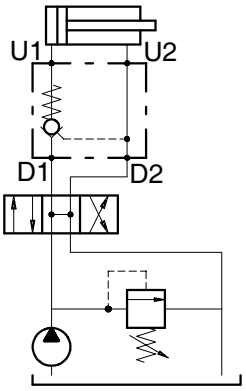
Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

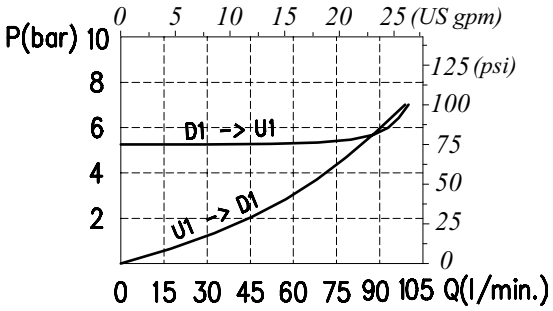


VBPSL/T	D1-D2	U1-U2
34	G 3/4	G 3/4



Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPSL /T 34 / □□ / □□

Pilot ratio

p4) 1:4,3 (standard)

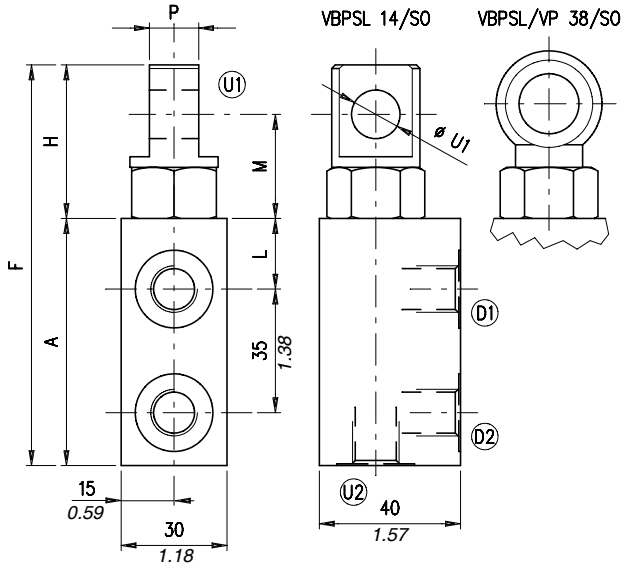
Body material

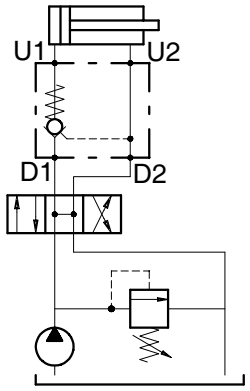
_ Aluminium
ac Steel

Type VBPSL 14 (VP38)/SO

Pilot operated check valve, single acting, line mounting with fixation nut for connection bolt

Dimensions and hydraulic circuit



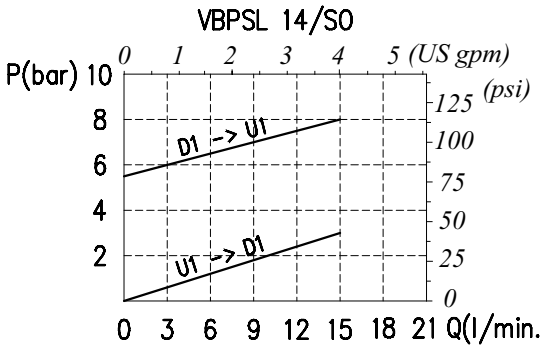


VBPSL	D1–D2	ø U1	U2	A	F	H	L	M	P
14/SO	G 1/4	ø13.75 - *Ø 0.54*	G 1/4	70 - *2.75*	113.5 - *4.47*	43.5 - *1.71*	20 - *0.79*	29.5 - *1.16*	14 - *0.55*
VP 38/SO	G 3/8	ø17 - *Ø 0.67*	G 3/8	80 - *3.15*	127.5 - *5.02*	47.5 - *1.87*	22.5 - *0.88*	32.5 - *1.28*	17 - *0.67*

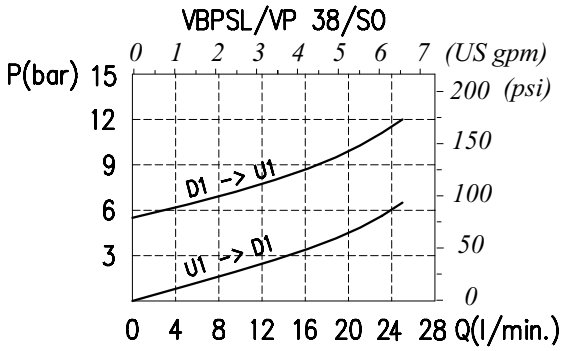
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic

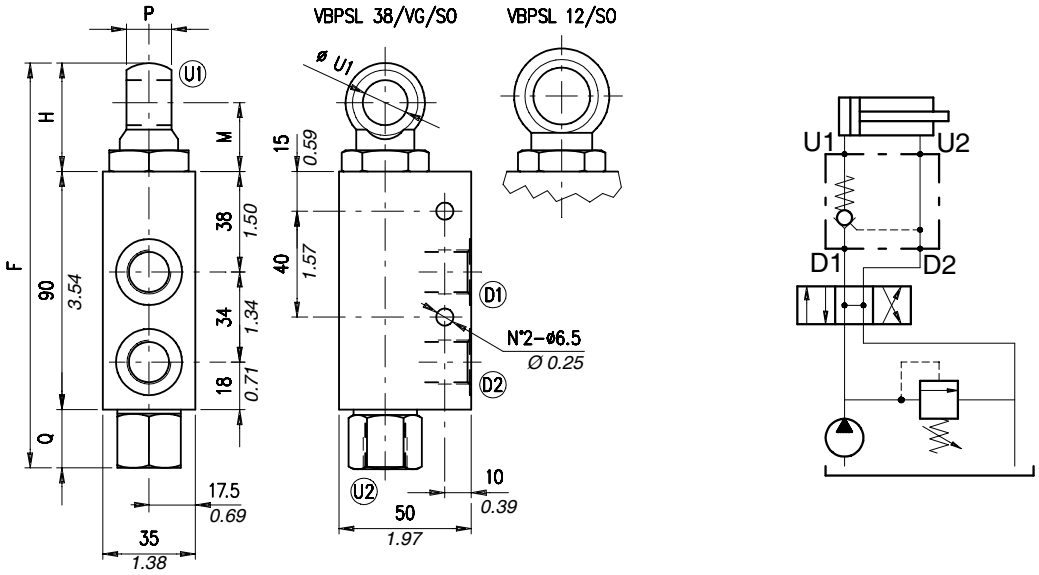


Order code

VBPSL □□ /SO /□□ / □□

Port size	Pilot ratio	Body material
14) G 1/4	**p3)** 1:3	_ Aluminium
/VP 38) G 3/8	**p4)** 1:4,5 (standard)	**ac** Steel

Dimensions and hydraulic circuit

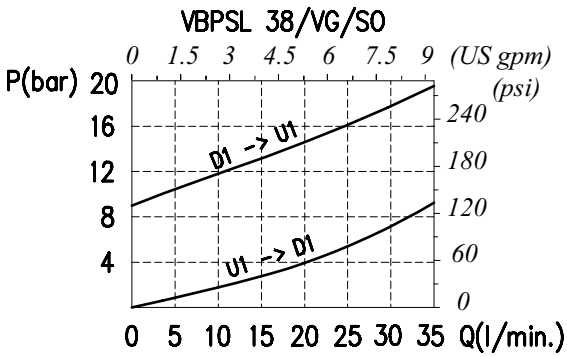


VBPSL	D1–D2	ø U1	U2	F	H	M	P	Q
38/VG/SO	G 3/8	ø17 - *Ø 0.67*	G 3/8	153 - *6.02*	41 - *1.61*	26 - *1.02*	17 - *0.67*	22 - *0.87*
12/SO	G 1/2	ø21.5 - *Ø 0.85*	G 1/2	161.5 - *6.36*	46.5 - *1.83*	28.5 - *1.12*	23 - *0.90*	25 - *0.98*

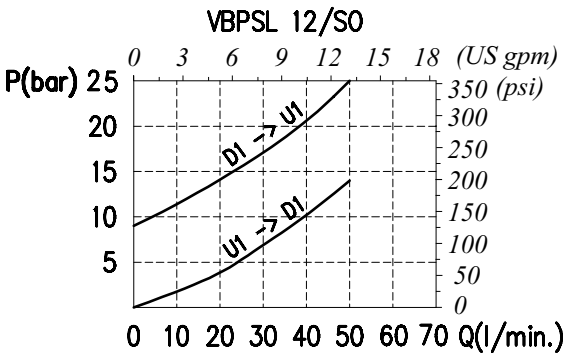
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPSL □□ /SO /□□ / □□

Port size

38/VG) G 3/8
12) G 1/2

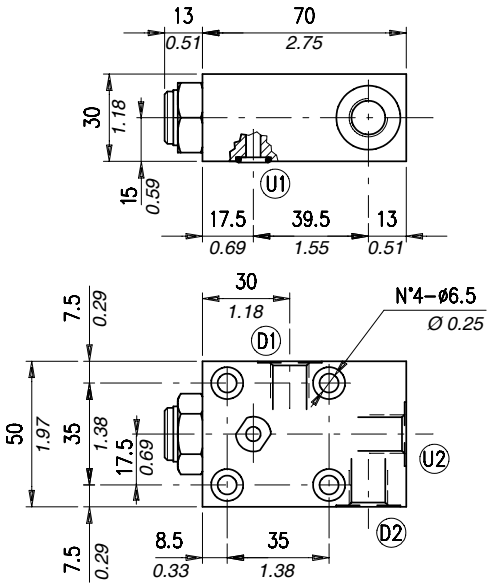
Pilot ratio

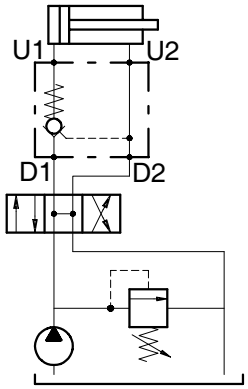
p4) 1:4 (Standard)
p6,3) 1:6,3

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



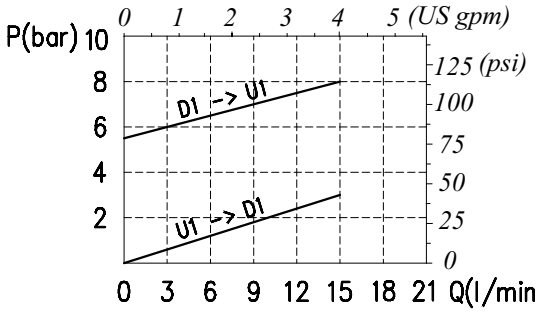


VBPSF	D1–D2	U2	U1
14	G 1/4	G 1/4	ø5 - 0.20

dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPSF 14 /□□ /□□

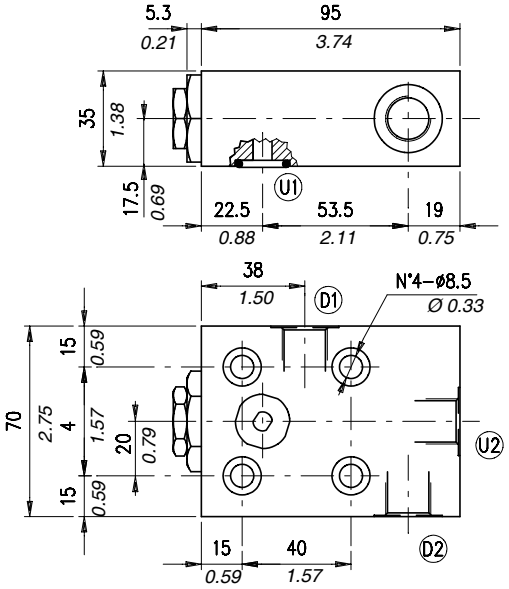
Pilot ratio

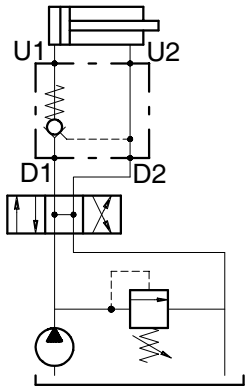
p3) 1:3
p4) 1:4,5 (standard)

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



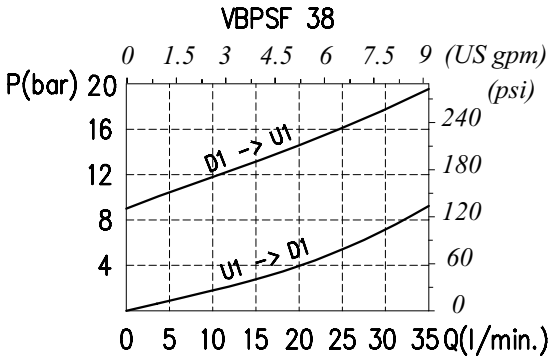


VBPSF	D1–D2	U2	U1
38	G 3/8	G 3/8	ø7 - 0.27
12	G 1/2	G 1/2	ø7 - 0.27

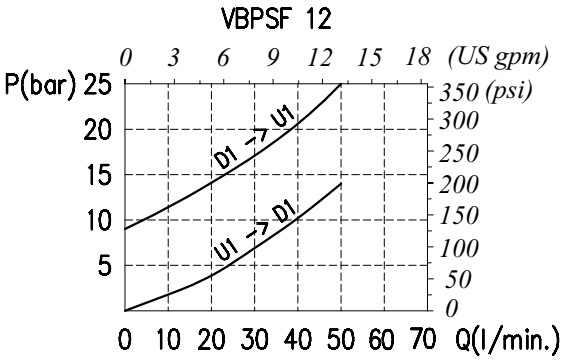
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPSF □□ /□□ /□□

Port size

38) G 3/8
12) G 1/2

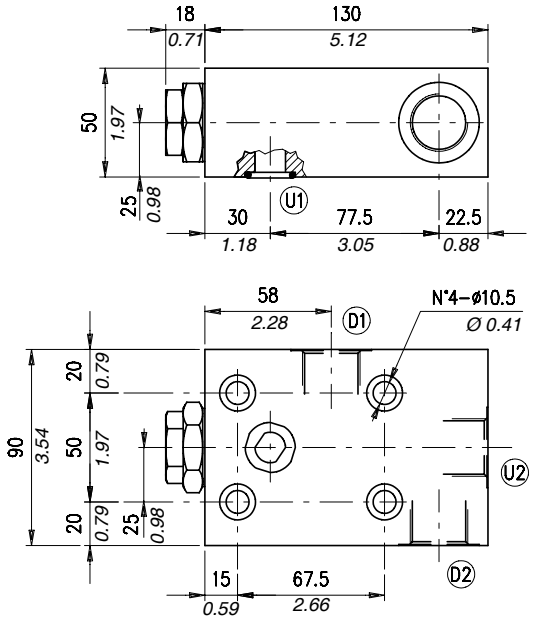
Pilot ratio

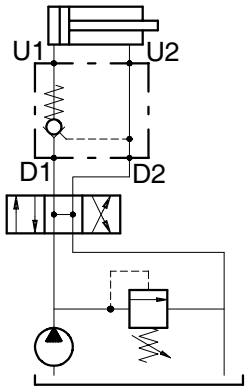
p4)1:4 (standard)
p6,3) 1:6,3
p7,5) 1:7,5

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



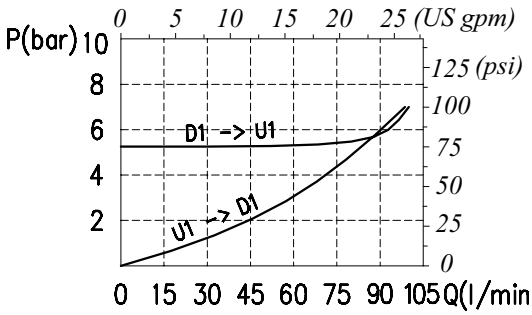


VBPSF	D1-D2	U2	U1
34	G 3/4	G 3/4	ø14 - 0.55

dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPSF 34 /□□ /□□

Pilot ratio

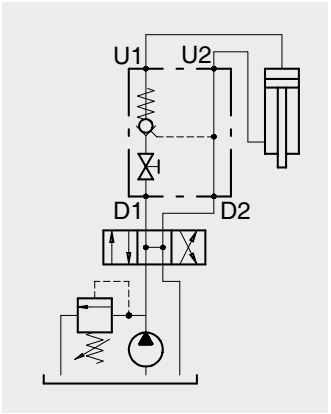
p4) 1:4,3 (standard)

Casing material

_ Aluminium
ac Steel

Operation

Allows oil flow from D1 to U1 and stops it in the opposite way (from U1 to D1). Free oil flow from U1 to D1 is strictly possible when the pilot pressure in U2 and D2 is strong enough to open the valve poppet. To assert the minimum opening pressure divide the value of pressure in U1 by the pilot ratio. To provide best valve performance from U1 to D1 make sure that no counterpressure arises in D1. A built-in shut-off valve allows for flow break from D1 to U1 and viceversa, so that - at wish - the operator may cut the check valve off the hydraulic system.



Performance

Body Valves

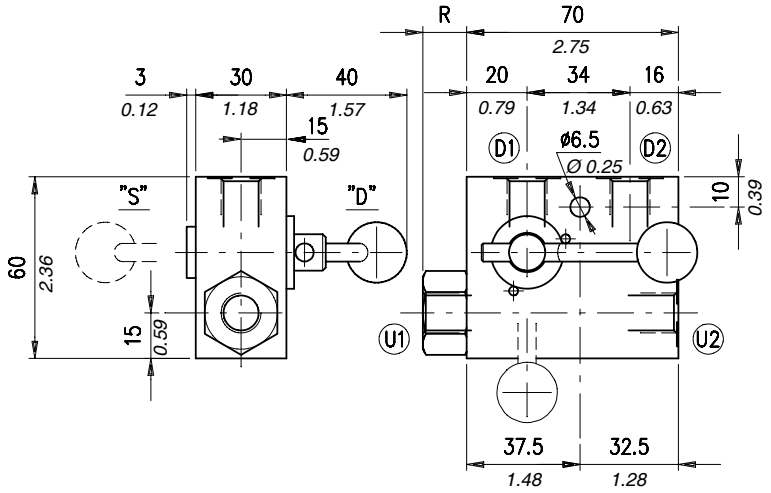
Type VBPSL/R/□	Maximum flow		Maximum pressure	Oil leaks from U1 to D1	Pilot ratio	Weight	
	l/min	*US gpm*				kg	*lb*
VBPSL/R/□14 (VP38)	**(14)** 15 **(VP38)** 25	*4* *6.6*	210 bar *-3050 psi* (aluminium body) 350 *-5100 psi* (steel body)	0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar *-3050 psi*	1:4,5[1] 1:3[2]	**(14)** 0,46 (aluminium) 0,96 (steel) **(VP38)** 0,45 (aluminium) 0,97 (steel)	*1.01* *2.12* *0.992* *2.14*
VBPSL/R/□38 (12)	**(38)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar *-3050 psi*	1:4[1] 1:6,3[2] 1:7,5[2]	**(38)** 0,94 (aluminium) 1,76 (steel) **(12)** 0,95 (aluminium) 1,77 (steel)	*2.07* *3.88* *2.09* *3.90*

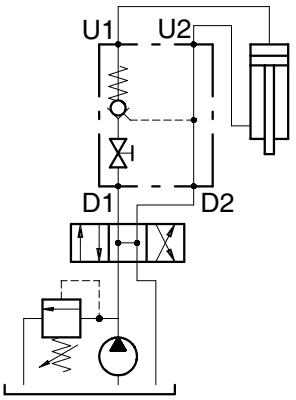
[1] standard version [2] on request

Type VBPSL/R/p/14 (VP38)

Pilot operated check valve, single acting, line mounting, complete with built-in shut-off valve

Dimensions and hydraulic circuit



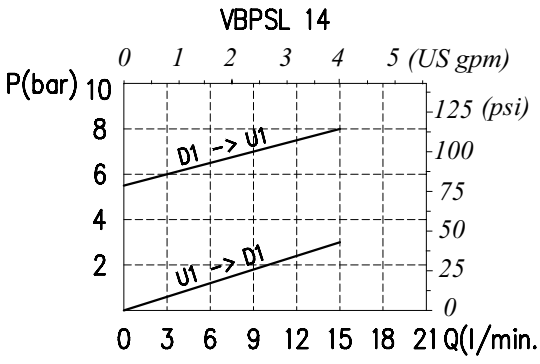


VBPSL	D1–U1	D2–U2	R
14	G 1/4	G 1/4	14,5 - *0.57*
VP 38	G 3/8	G 3/8	19.5 - *0.77*

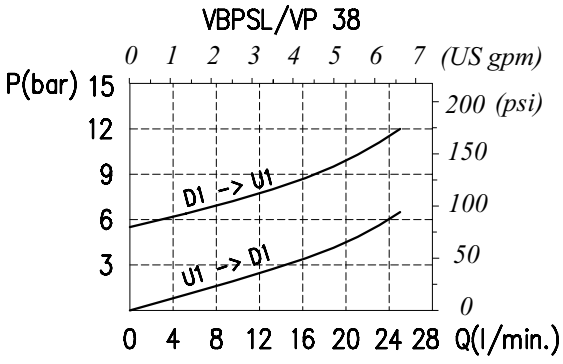
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic

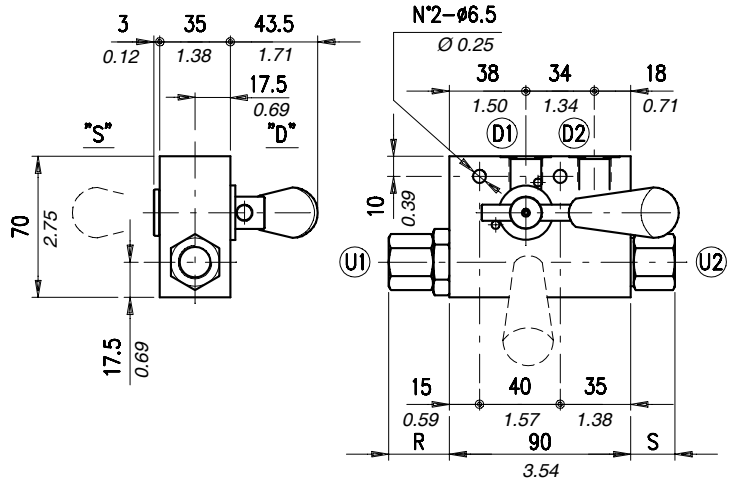


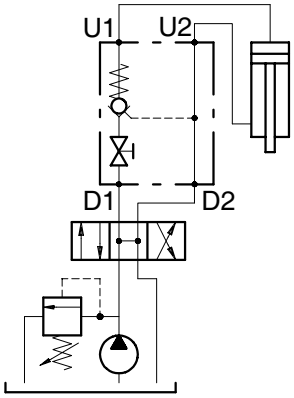
Order code

VBPSL /□□ /R /□ □□ /□□ / □□

Valve size	Valve version	Port size	Pilot ratio	Body material
_ G 1/8	**D)** Right	**14)** G 1/4	**P4)**1:4,5 (standard)	_ Aluminium
VP) G 3/8	**S)** Left	**38)** G 3/8	**p3)** 1:3	**ac** Steel

Dimensions and hydraulic circuit



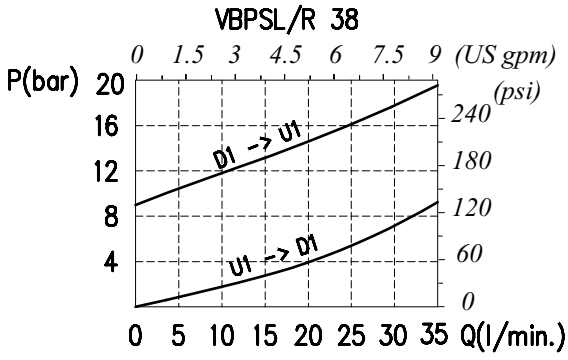


VBPSL	D1	D2	R	S
R 38	G 3/8	G 3/8	30 - *1.18*	22 - *0.87*
R 12	G 1/2	G 1/2	33 - *1.30*	25 - *0.98*

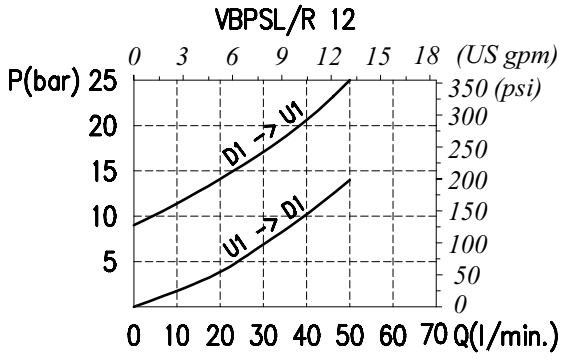
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic

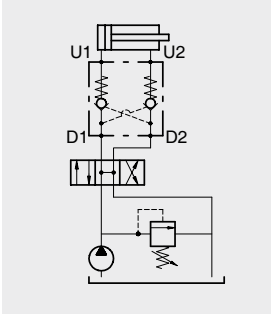


Order code

VBPSL /R /□ □□ /□□ / □□

Valve version	Port size	Pilot ratio	Body material
D) Right	**38)** G 3/8	**P4)** 1:4 (standard)	_ Aluminium
S) Left	**12)** G 1/4	**p6,3)** 1:6,3	**ac** Steel
		p7,5) 1:7,5	

Operation



These valves allows oil flow from D1(D2) to U1 (U2) and stops it in the opposite way (from U1/U2 to D1/D2). Free oil flow from U1/U2 to D1/D2 is strictly possible when the pilot pressure in the opposite way is strong enough to open the valve poppet. To assert the minimum opening pressure divide the value of pressure in U1/U2 by the pilot ratio. To provide best valve performance from U1/U2 to D1/D2 make sure that no backpressure arises in D1/D2.

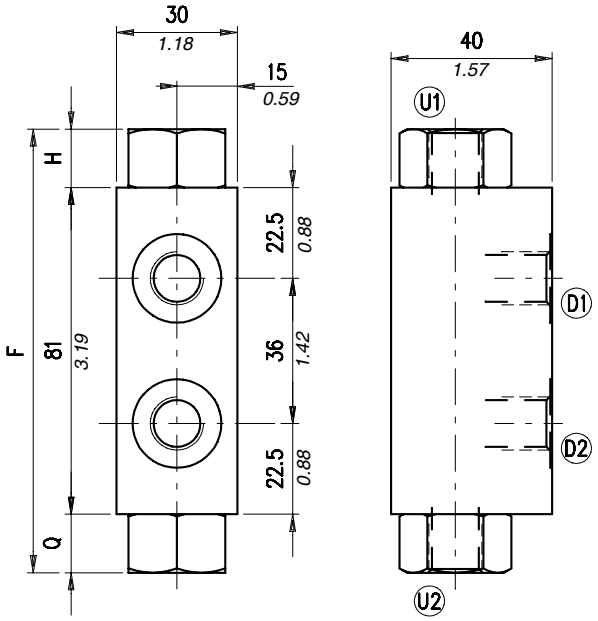
Performance

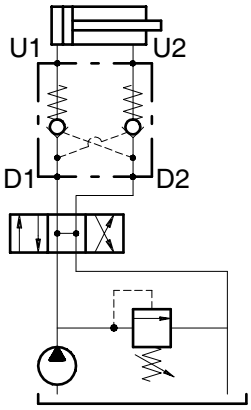
Body Valves

Type VBPDL-VBPDF	Maximum flow		Maximum pressure	Oil leaks from U1(U2) to D1(D2)	Pilot ratio	Weight		Cartridge valve
	l/min	*US gpm*				kg	*lb*	
VBPDL 14 (VP38)	**(14)** 15 **(VP38)** 25	*4* *6.6*	210 bar *-3050 psi* (aluminium body) 350 bar *-5100 psi* (steel body)	0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar	1:4,5[1] 1:3[2]	**(14)** 0,40 (aluminium) 0,73 (steel) **(VP38)** 0,40 (aluminium) 0,74 (steel)	*0.881* *1.609* *0.881* *1.63*	
VBPDL 38 (12)	**(38)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar	1:4[1] 1:6,3[2] 1:7,5[2]	**(38)** 0,78 (aluminium) 1,45 (steel) **(12)** 0,81 (aluminium) 1,45 (steel)	*1.72* *3.20* *1.79* *3.20*	
VBPDL /XC 38 (12)	**(38)** 35 **(12)** 50	*9.2* *13*			1:4[1] 1:6,3[2]	**(38)** 0,8 (aluminium) 1,1 (steel) **(12)** 0,62 (aluminium) 1,1 (steel)	*1.76* *2.43* *1.37* *2.43*	
VBPDL 34	100	*26*			1:4,3	2,14 (aluminium) 4,30 (steel)	*4.72* *1.95*	
VBPDL/T 38	25	*6.6*			1:4,5[1] 1:3[2]	0,63 (aluminium) 1,41 (steel)	*1.39* *3.10*	see VUI 38 page 107
VBPDL/T 12	50	*13*			1:4[1] 1:6,3[2] 1:7,5[2]	0,87 (aluminium) 1,824 (steel)	*1.92* *4.02*	see VUI 12 page 108
VBPDL/T 34	100	*26*			1:4,3	2,30 (aluminium) 5,23 (steel)	*5.07* *11.53*	see VUI 34 page 109
VBPDL/T 14 (VP38)/SO	**(14)** 15 **(VP38)** 25	*4* *6.6*		0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar	1:4,5[1] 1:2,5[2]	**(14)** 0,46 (aluminium) 0,76 (steel) **(12)** 0,46 (aluminium) 0,80 (steel)	*1.01* *1.67* *1.01* *1.76*	
VBPDL 38/VG (12)/SO	**(38/VG)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar	1:4[1] 1:6,3[2] 1:7,5[2]	**(38/VG)** 0,80 (aluminium) 1,47 (steel) **(12)** 0,82 (aluminium) 1,49 (steel)	*1.76* *3.24* *1.81* *3.28*	
VBPDF 14	15	*4*		0,10 cm³/min *-61x10⁻⁴ in³/min.* (2 drops) at 210 bar	1:4,5[1] 1:2,5[2]	0,47 (aluminium) 0,95 (steel)	*1.04* *2.09*	see VUI 38 page 107
VBPDF 38 (12)	**(38)** 35 **(12)** 50	*9.2* *13*		0,25 cm³/min *-15x10⁻³ in³/min.* (5 drops) at 210 bar	1:4[1] 1:6,3[2] 1:7,5[2]	**(38)** 0,85 (aluminium) 1,82 (steel) **(12)** 0,85 (aluminium) 1,82 (steel)	*1.87* *2.61* *1.87* *2.61*	see VUI 12 page 108
VBPDF 34	100	*26*			1:4,3	2,28 (aluminium) 5,10 (steel)	*5.026* *11.24*	see VUI 34 page 109

[1] standard version [2] on request

Dimensions and hydraulic circuit



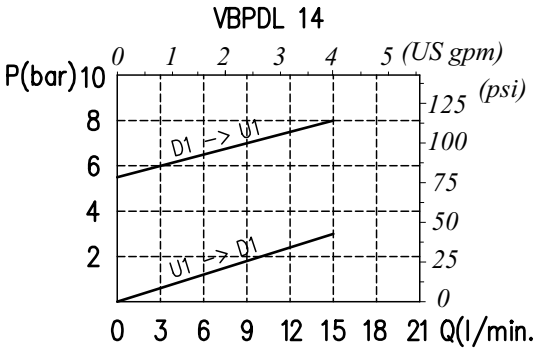


VBPDL	D1–D2	U1–U2	F	H	Q
14	G 1/4	G 1/4	110 - *4.33*	14.5 - *0.57*	14.5 - *0.57*
VP 38	G 3/8	G 3/8	120 - *4.72*	19.5 - *0.77*	19.5 - *0.77*

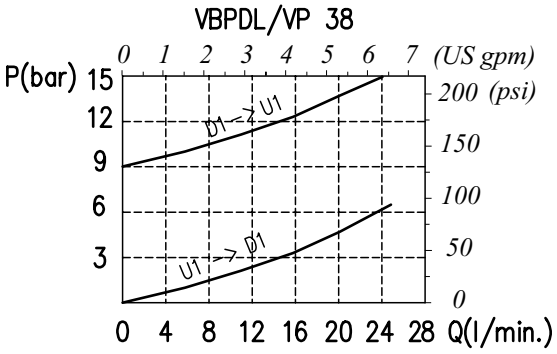
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL □□ / □□ / □□

Port size

14) G 1/4
/VP 38) G 3/8

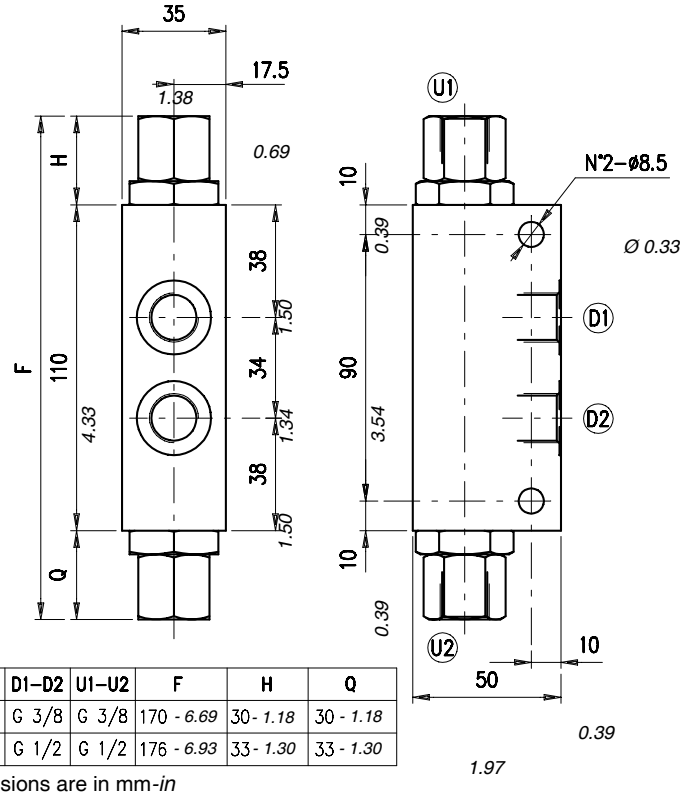
Pilot ratio

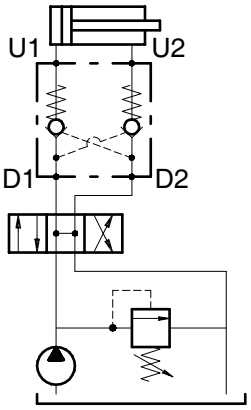
p4) 1:4,5 (standard)
p2,5) 1:2,5

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



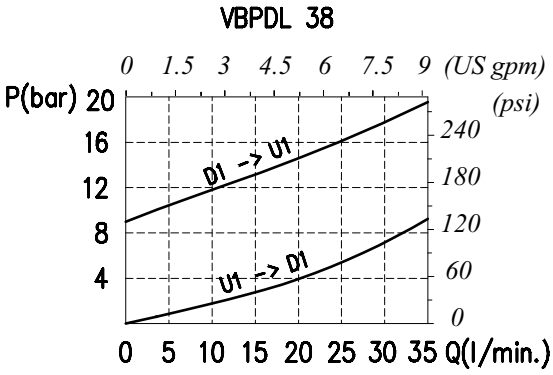


VBPDL	D1–D2	U1–U2	F	H	Q
38	G 3/8	G 3/8	170 - *6.69*	30 - *1.18*	30 - *1.18*
12	G 1/2	G 1/2	176 - *6.93*	33 - *1.30*	33 - *1.30*

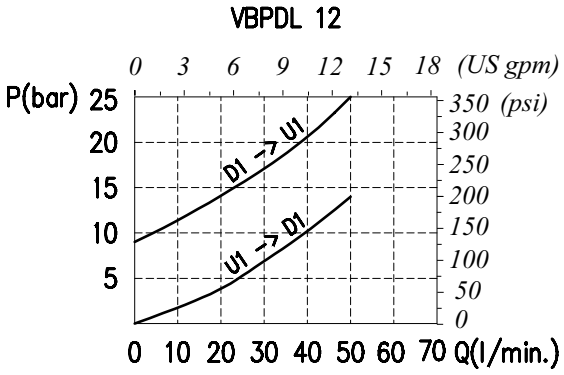
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL □□ / □□ / □□

Port size

38) G 3/8
12) G 1/2

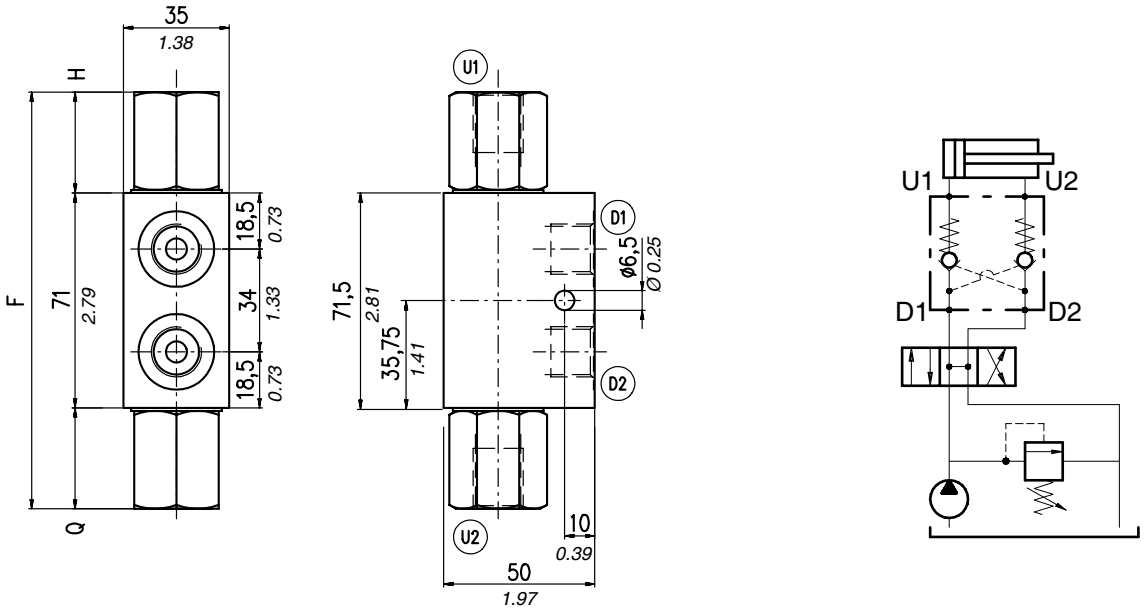
Pilot ratio

p4) 1:4 (standard)
p6,5) 1:6,3
p7,5) 1:7,5

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

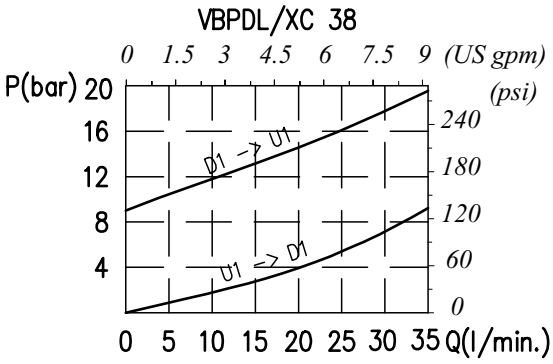


VBPDL	D1–D2	U1–U2	F	H	Q
38	G 3/8	G 3/8	137 - *5.39*	33 - *1.30*	33 - *1.30*
12	G 1/2	G 1/2	145 - *5.71*	37 - *1.46*	37 - *1.46*

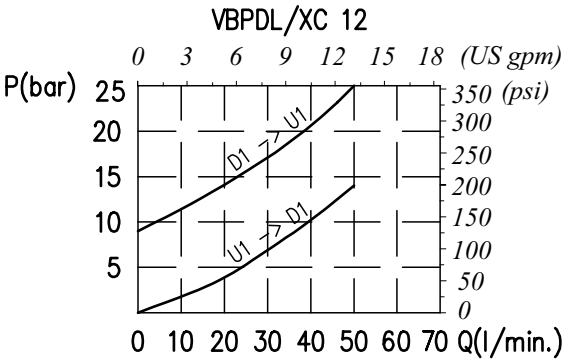
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL/XC/ □□ / □□/ □□

Port size

38) G 3/8
12) G 1/2

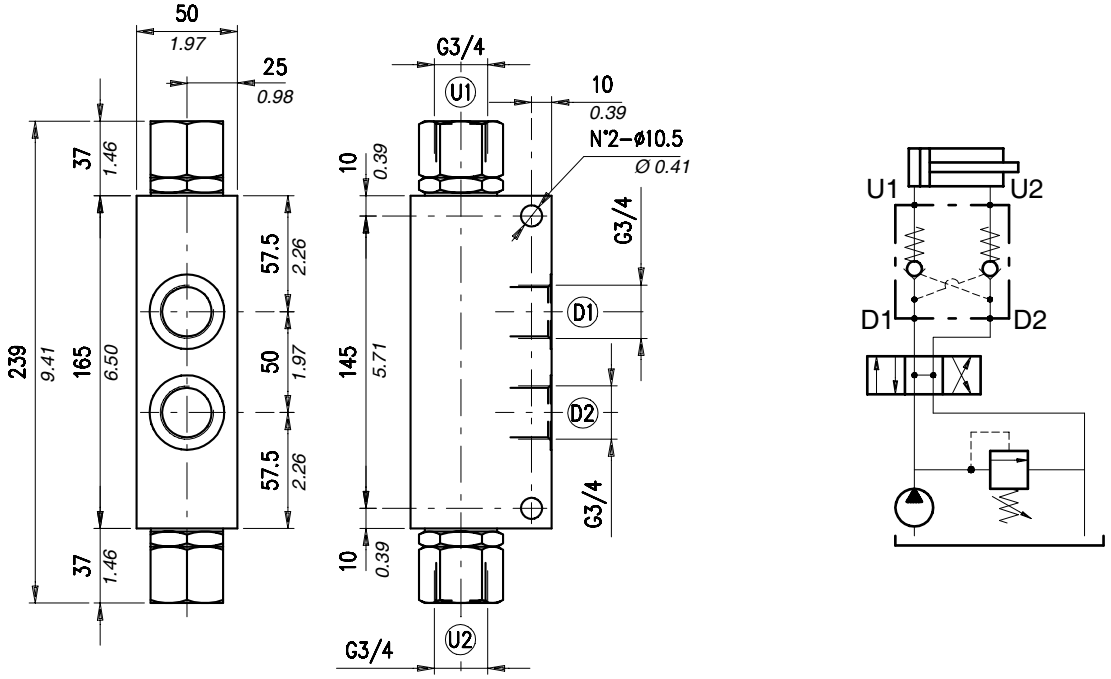
Pilot ratio

p4) 1:4 (standard)
p6,3) 1:6,3

Body material

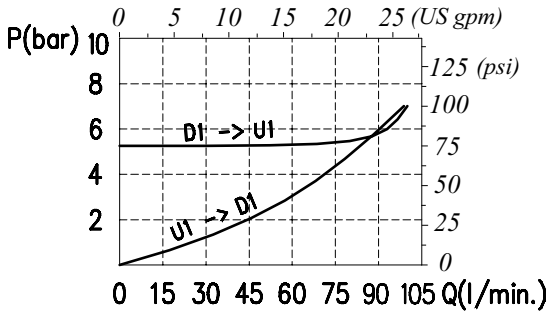
_ Aluminium
ac Steel

Dimensions and hydraulic circuit



Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPDL 34 / □□ / □□

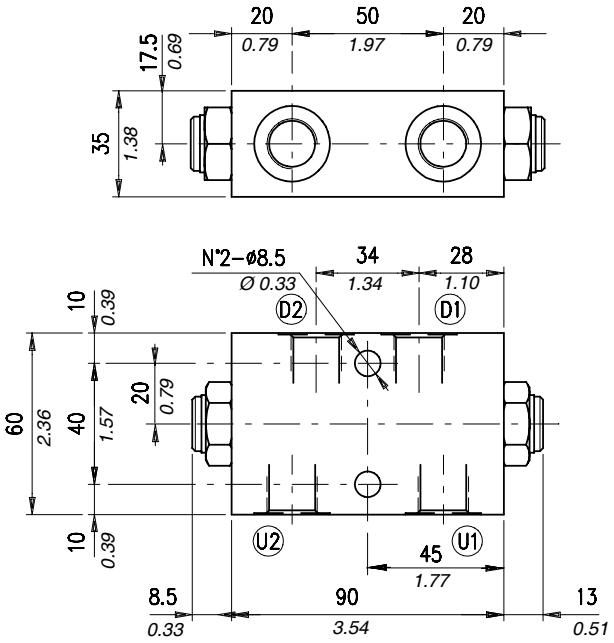
Pilot ratio

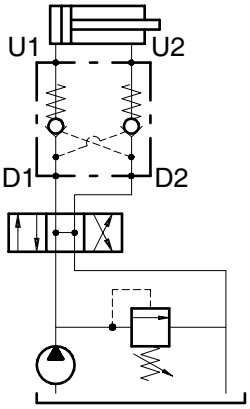
p4) 1:4,3 (standard)

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

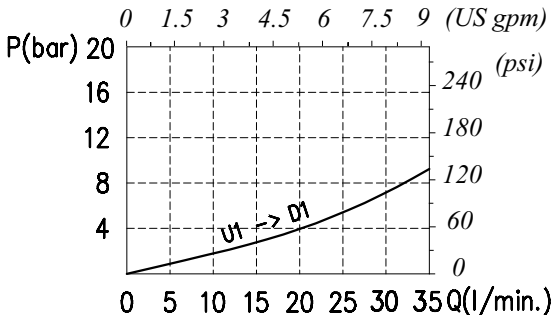




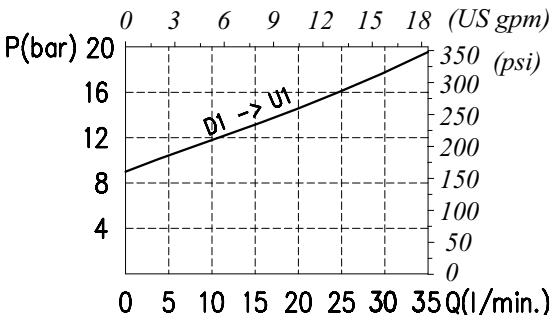
VBPDL/T	D1–D2	U1–U2
38	G 3/8	G 3/8

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL /T 38 / □□ / □□

Port size

38) G 3/8

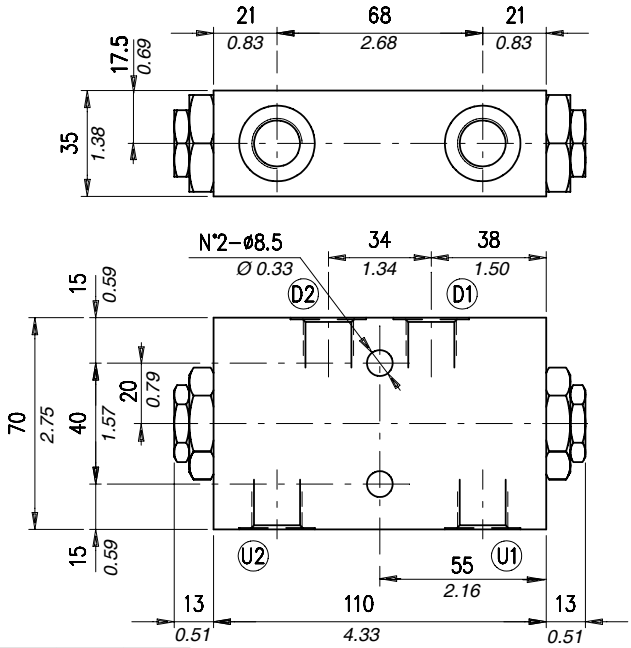
Pilot ratio

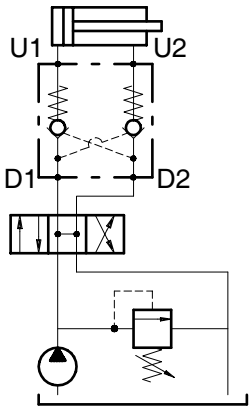
p4) 1:4,5 (standard)
p2,5) 1:3

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

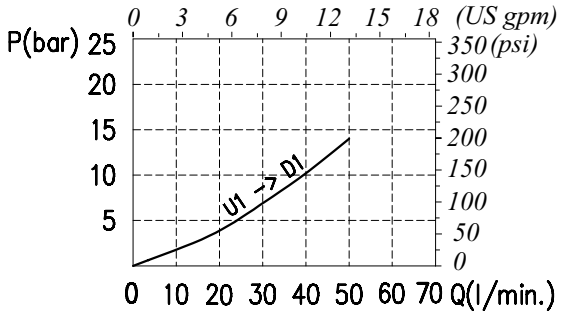




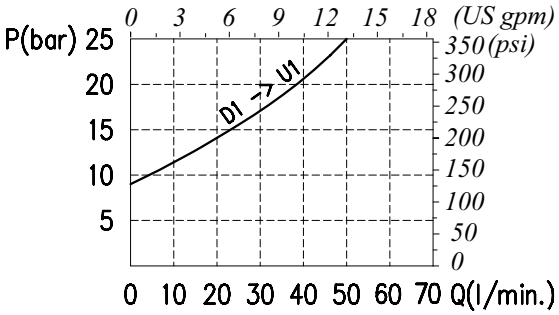
VBPDL/T	D1–D2	U1–U2
12	G 1/2	G 1/2

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL /T 12 / □□ / □□

Port size

12) G 1/2

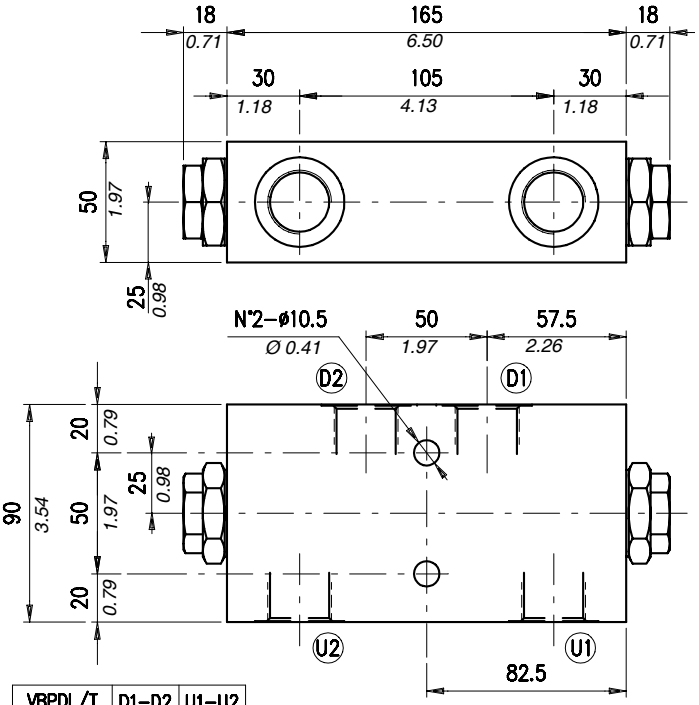
Pilot ratio

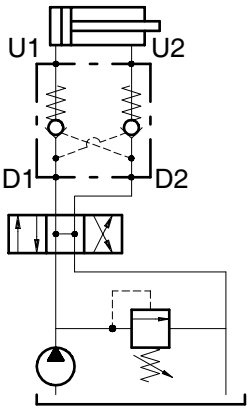
p4) 1:4 (standard)
p6,3) 1:6,3

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



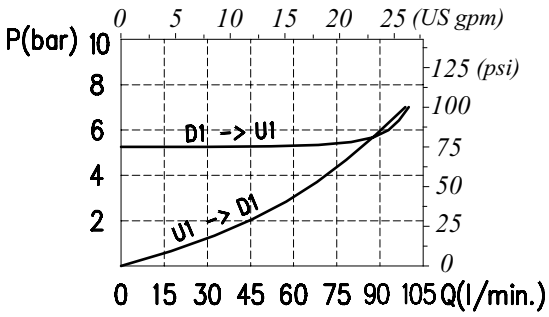


VBPDL/T	D1–D2	U1–U2
34	G 3/4	G 3/4

3.25

Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPDL /T 34 / □□ / □□

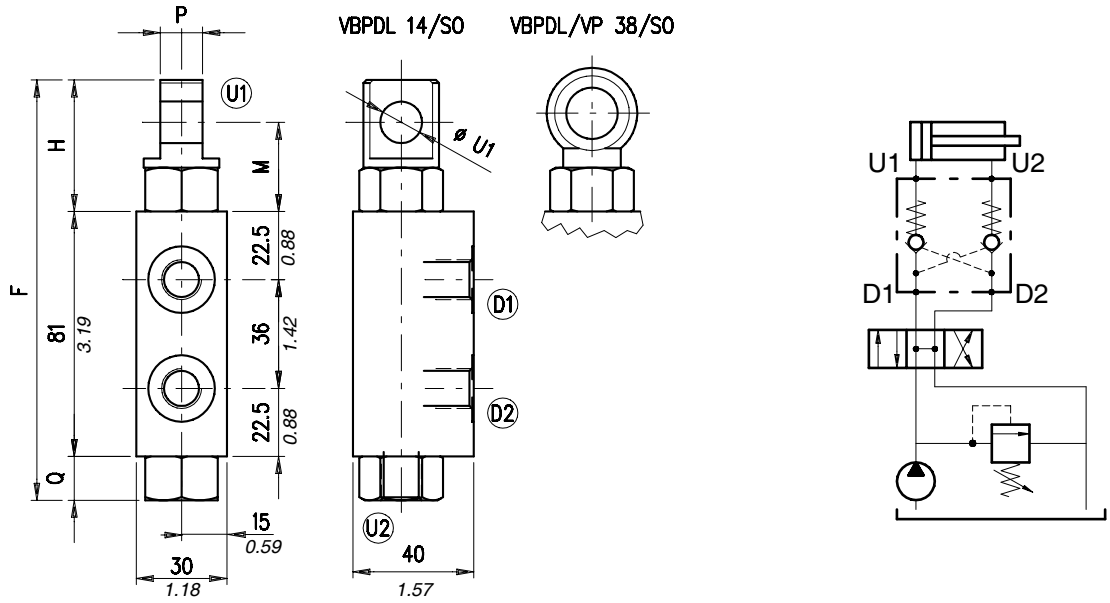
Pilot ratio

p4) 1:4,3 (standard)

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

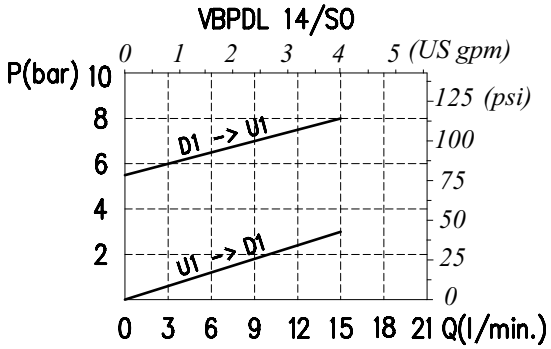


VBPDL	D1–D2	ø U1	U2	F	H	M	P	Q
14/SO	G 1/4	ø13.75 - *0.54*	G 1/4	139 - *5.47*	43.5 - *1.71*	29.5 - *1.16*	14 - *0.55*	14.5 - *0.57*
VP 38/SO	G 3/8	ø17 - *0.69*	G 3/8	148 - *5.83*	47.5 - *1.87*	32.5 - *1.28*	17 - *0.67*	19.5 - *0.77*

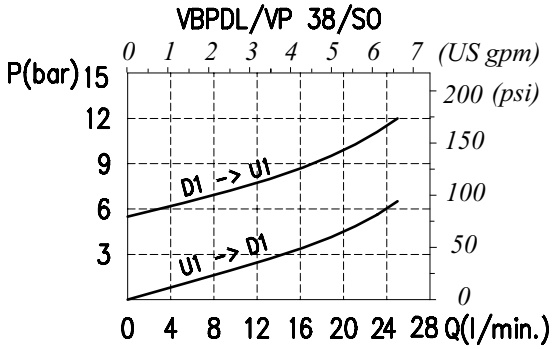
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDL □□ /SO /□□ / □□

Port size

14) G 1/4
/VP 38) G 3/8

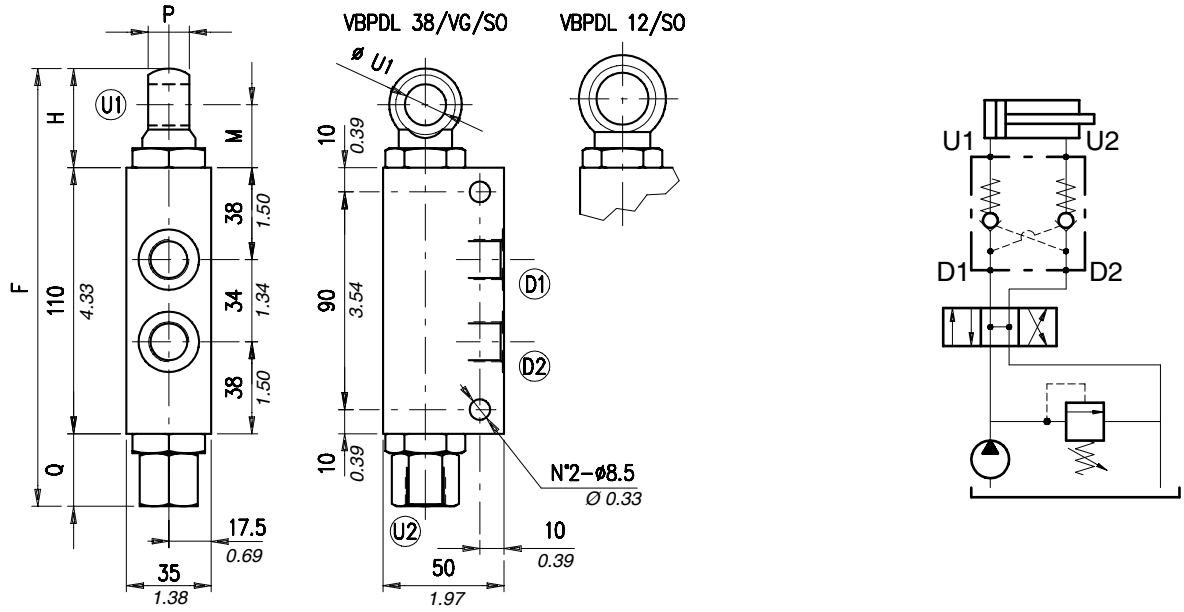
Pilot ratio

p4) 1:4,5 (standard)
p2,5) 1:2,5

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit

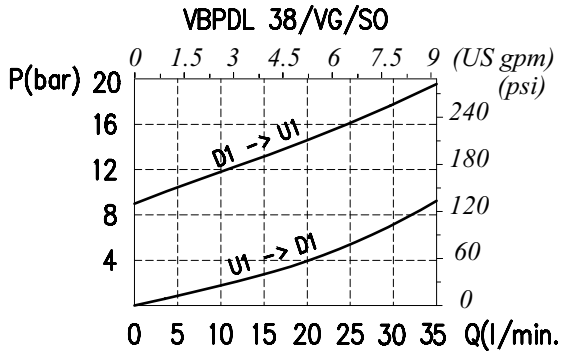


VBPDL	D1–D2	ø U1	U2	F	H	M	P	Q
38/VG/SO	G 3/8	ø17 - *0.67*	G 3/8	181 - *7.12*	41 - *1.61*	26 - *1.02*	17 - *0.67*	30 - *1.18*
12/SO	G 1/2	ø21.5 - *0.85*	G 1/2	189.5 - *7.46*	46.5 - *1.83*	28.5 - *1.12*	23 - *0.94*	33 - *1.30*

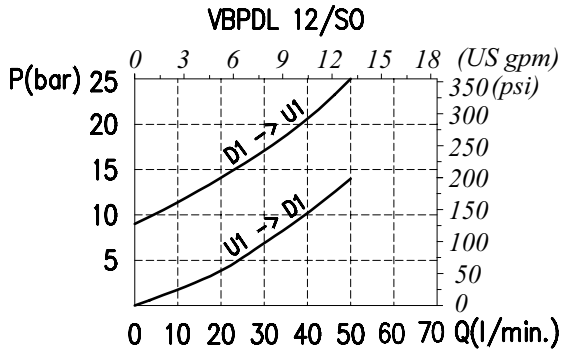
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic

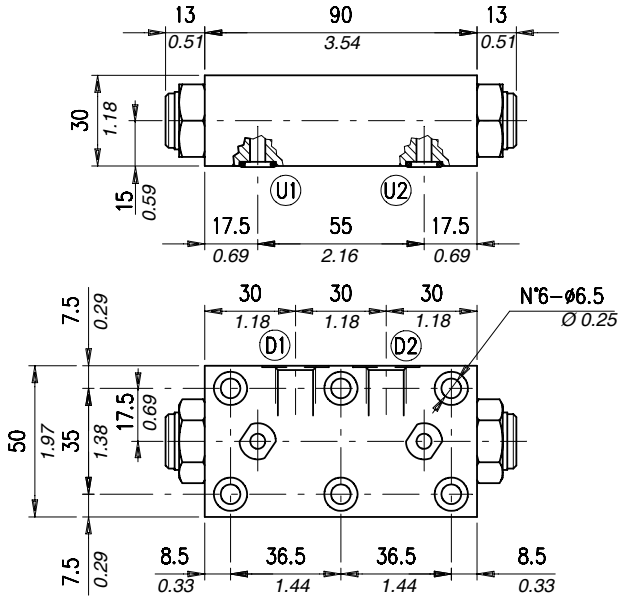


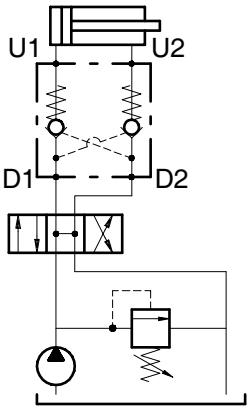
Order code

VBPDL □□ /SO /□□ / □□

Port size	Pilot ratio	Body material
38/VG) G 3/8	**p4)** 1:4 (standard)	_ Aluminium
12) G 1/2	**p6,3)** 1:6,3	**ac** Steel
	p7,5) 1:7,5	

Dimensions and hydraulic circuit



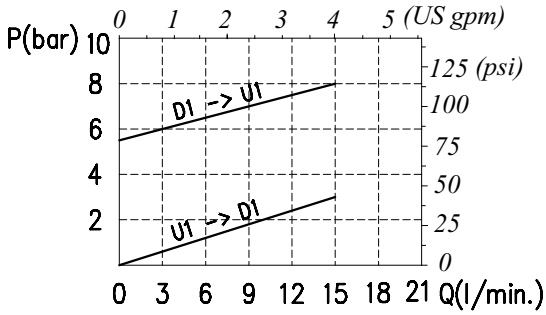


VBPDF	D1–D2	U1–U2
14	G 1/4	ø5 - Ø 0.20

dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPDF 14 /□□ /□□

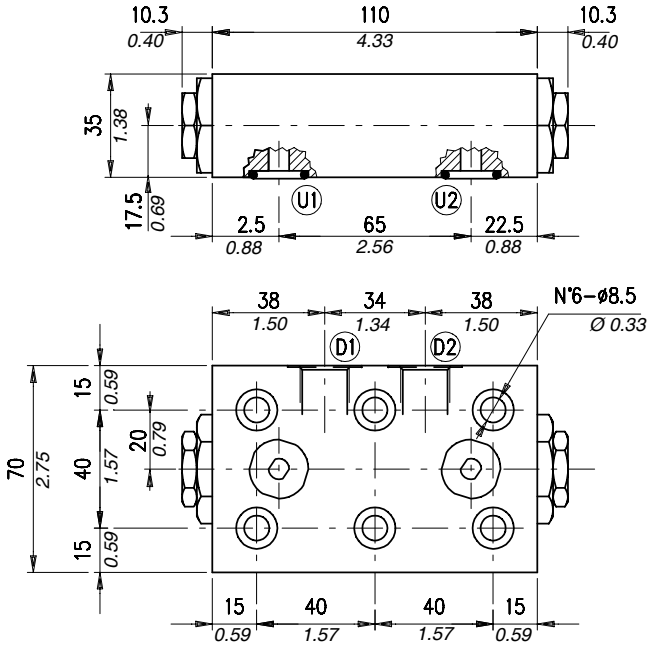
Pilot ratio

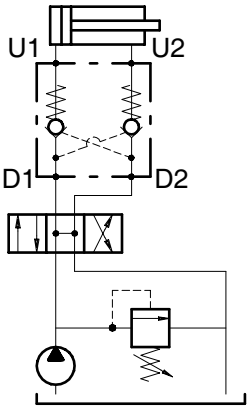
p4)1:4,5 (standard)
ps2,5) 1:2,5

Body material

_ Aluminium
ac Steel

Dimensions and hydraulic circuit



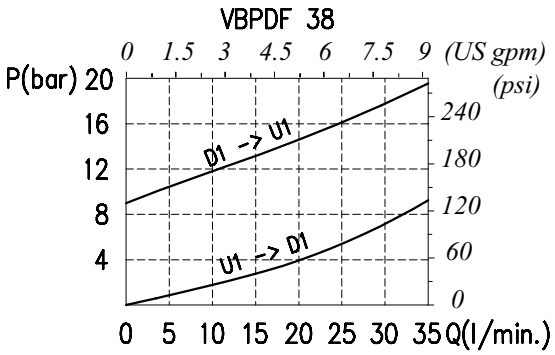


VBPDF	D1–D2	U2	U1
38	G 3/8	G 3/8	ø7 - 0.27
12	G 1/2	G 1/2	ø7 - 0.27

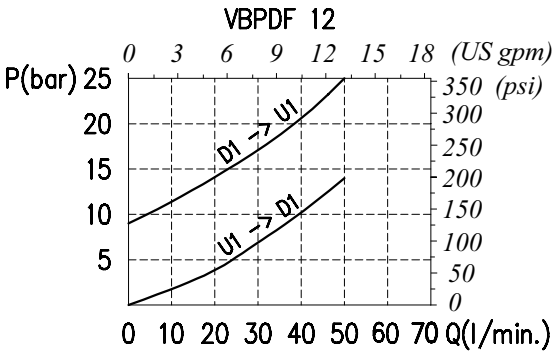
dimensions are in mm-*in*

Rating diagrams

Typical pressure drop vs. flow characteristic



Typical pressure drop vs. flow characteristic



Order code

VBPDF □□ /□□ /□□

Port size

38) G 3/8
12) G 1/2

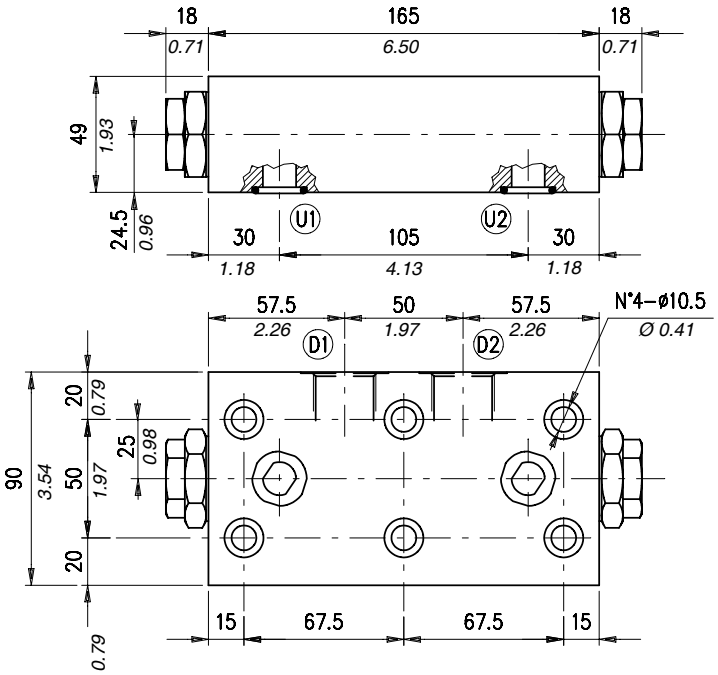
Pilot ratio

p4) 1:4 (standard)
p6,3) 1:6,3
p7,5) 1:7,5

Body material

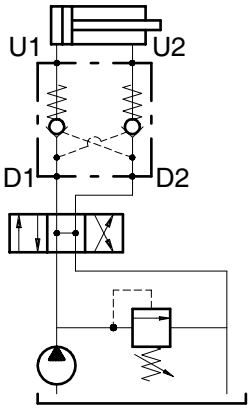
_ Aluminium
ac Steel

Dimensions and hydraulic circuit



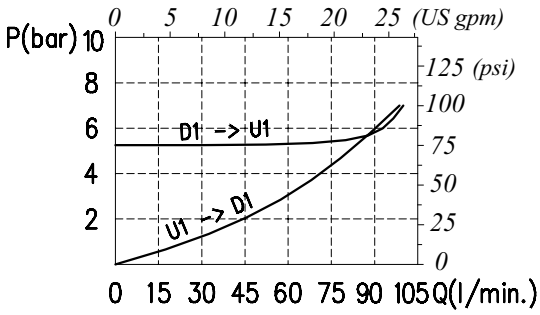
VBPSF	D1–D2	U1–U2
34	G 3/4	ø14 - 0.55

dimensions are in mm-*in*



Rating diagrams

Typical pressure drop vs. flow characteristic



Order code

VBPDF 34 /□□ /□□

Pilot ratio

p4) 1:4,3 (standard)

Body material

_ Aluminium
ac Steel

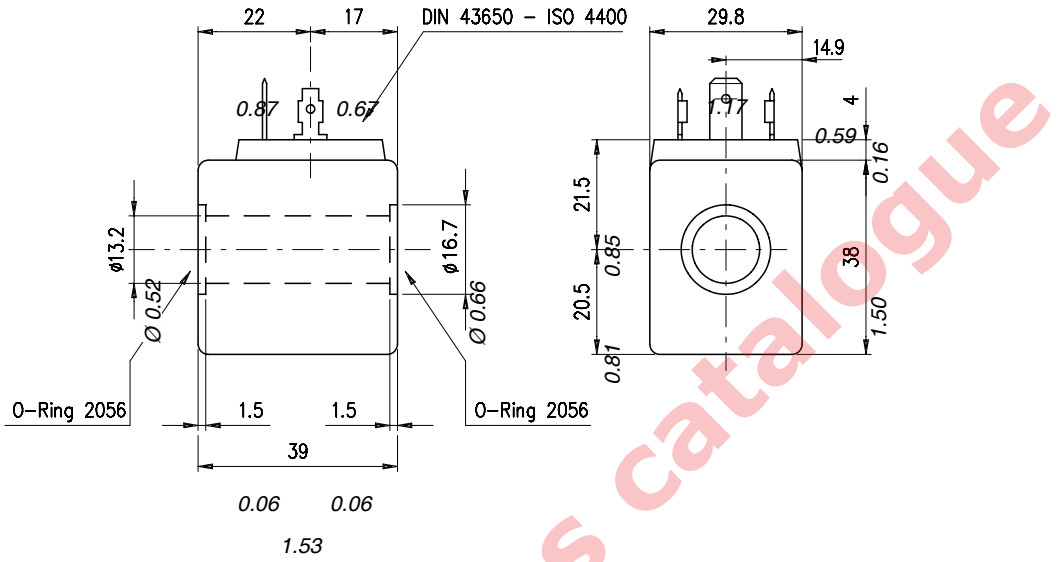
Operation

Multiple coil versions are available to allow use with direct and alternated current.
Thermal insulation class: F (Tmax = 155°C) – (VDE 0580)
Relative duty cycle: ED 100% (VDE 0580)
To assure ED = 100% and perform continuous coil operation, the following conditions should be met:
TA +ΔT < Tmax
Whereas:
-TA = ambient temperature
-ΔT = temperature increase due to operation
-Tmax = maximum admissible temperature according to insulation class
We therefore recommend always checking that the maximum ambient temperature is same as Tmax - ΔT (providing no special operating requirement are there).
Safety standards (DIN 40050): IP54 without connector
IP65 with connector
Admissible voltage range for long lasting and trouble free operations life: nominal voltage ±10%

Performance

Type	Resistance Ω T_A=20°C *68°F*	Current (A) Cold	Current (A) Warm	Power (W) or (VA) Cold	ΔT After 1 hour at: -Ta=20-25°C *68-77°F* -Nominal voltage C°	ΔT *F°*
BE 12 Vcc	7,7	1,56	1,16	18,7 W	110	*230*
BE 24 Vcc	31	0,77	0,58	18,6 W	110	*230*
BE 48 Vcc	116	0,41	0,3	19,8 W	115	*238*
BE 110 Vcc	700	0,157	0,12	17,3 W	105	*221*
BE 24 Vca (50 Hz)	5,3	1,16	0,87	28 VA	105	*221*
BE 48 Vca (50 Hz)	21,3	0,6	0,45	28,8 VA	105	*221*
BE 110 Vca (50 Hz)	108	0,26	0,19	28,6 VA	105	*221*
BE 220 Vca (50 Hz)	438	0,13	0,09	28,6 VA	105	*221*
BE 380 Vca (50 Hz)	1400	0,09	0,06	34,2 VA	105	*221*
BE 24 RAC	27	0,8	0,6	17,3 W	105	*221*
BE 110 RAC	630	0,157	0,12	15,6 W	100	*212*
BE 220 RAC	2500	0,08	0,06	15,7 W	100	*212*
BT 12 Vcc	6,8	1,77	1,15	21 W	-	-
BT 24 Vcc	27	0,89	0,58	21 W	-	-
BT 48 Vcc	110	0,43	0,32	20,3 W	105	*221*
BT 110 Vcc	700	0,15	0,11	15,7 W	100	*212*
BT 24 Vca (50 Hz)	4,2	0,94	0,83	22,6 VA	-	-
BT 48 Vca (50 Hz)	15,3	0,73	0,54	35 VA	105	*221*
BT 110 Vca (50 Hz)	89	0,21	0,18	23,1 VA	-	-
BT 220 Vca (50 Hz)	350	0,1	0,08	22 VA	-	-
BT 24 RAC	90	0,47	0,37	20,7 W	105	*221*
BT 110 RAC	540	0,2	0,16	21,6 W	110	*230*
BT 220 RAC	2170	0,1	0,08	21,7 W	105	*221*

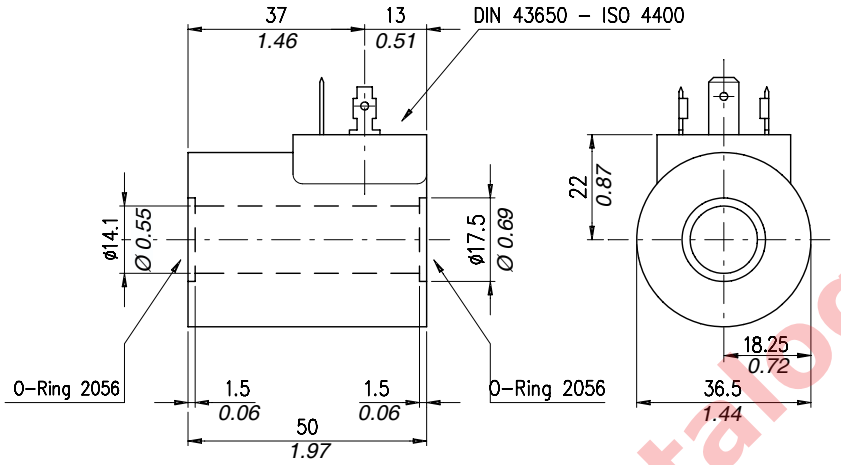
Dimensions



Order code

Type	Ordering code	Ordering code with standard connector	Standard connector code	Connector page
BE 12 Vcc	4SL1000120	5SL1000120	4CN1009990	Page 97 (CC-CA)
BE 24 Vcc	4SL1000240	5SL1000240		
BE 48 Vcc	4SL1000480	5SL1000480		
BE 110 Vcc	4SL1001100	5SL1001100		
BE 24 Vca (50 Hz)	4SL1010240	5SL1010240		
BE 48 Vca (50 Hz)	4SL1010480	5SL1010480		
BE 110 Vca (50 Hz)	4SL1011100	5SL1011100		
BE 220 Vca (50 Hz)	4SL1012200	5SL1012200		
BE 380 Vca (50 Hz)	4SL1013800	5SL1013800		
BE 24 RAC	4SL1030240	5SL1030240	4CN1010240	Page 97 (CL)
BE 110 RAC	4SL1031100	5SL1031100	4CN1011100	
BE 220 RAC	4SL1032200	5SL1032200	4CN1012200	

Dimensions



Order code

Type	Ordering code	Ordering code with standard connector	Standard connector code	Connector page
BT 12 Vcc	4SL3000120	5SL3000120	4CN1009990	Page 97 (CC-CA)
BT 24 Vcc	4SL3000240	5SL3000240		
BT 48 Vcc	4SL3000480	5SL3000480		
BT 110 Vcc	4SL3001100	5SL3001100		
BT 24 Vca (50 Hz)	4SL3010240	5SL3010240		
BT 48 Vca (50 Hz)	4SL3010480	5SL3010480		
BT 110 Vca (50 Hz)	4SL3011100	5SL3011100		
BT 220 Vca (50 Hz)	4SL3012200	5SL3012200		
BT 24 RAC	4SL3030240	5SL3030240	4CN3010240	Page 97 (CP)
BT 48 RAC	4SL3030480	5SL3030480	4CN3010480	
BT 110 RAC	4SL3031100	5SL3031100	4CN3011100	
BT 220 RAC	4SL3032200	5SL3032200	4CN3012200	

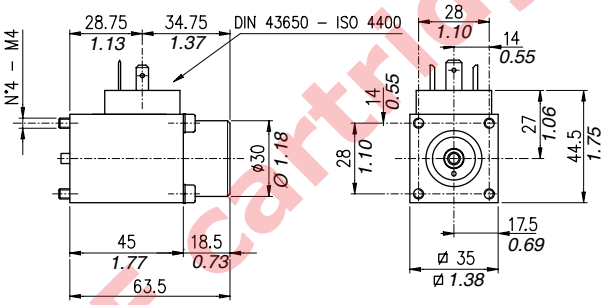
Proportional coils 35x35 and 45x45

Operation

Proportional coil. 12 and 24 coils direct voltage, supply a force proportional to the current amount.
thermal insulation class: F (TMAX = 155 °C) - (VDE 0580).
Relative duty cycle: ED = 100 % (VDE 0580).
To assure ED=100% and perform continuous coil operation, the following conditions should be met:
TA +ΔT < TMAX
TA= ambient temperature; ΔT = a temperature increase due to operation; TMAX = maximum admissible temperature according to insulation class.
We therefore recommend always checking that the maximum ambient temperature is same as Tmax-ΔT (providing no special operating requirement are there).
Safety standards (DIN40050): IP 54 without connector
IP 65 with connector
Admissible voltage range for long lasting and trouble free operations life: nominal voltage± 10 %
Current Hysteresis: <2,5%
Force Hysteresis: <2%

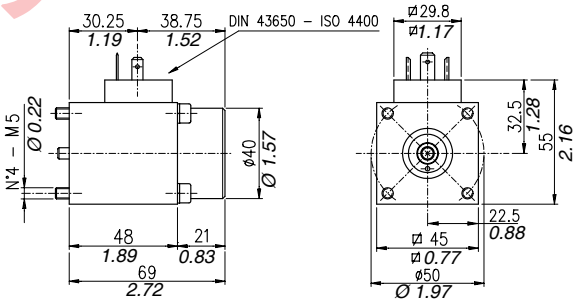
Performance

Voltage [Volt]	Resistance [Ω]	Current [A]		Power [W]		ΔT [C°] After 1 hour at: Ta=20-25°C 68-77°F -Nominal voltage	Weight	
	Ta=20°C 68°F	cold	warm	nom.	lim.		kg	lb
(35x35) 12	7,2	1,25		11,2	17,4	120	0,43	0.95
(35x35) 24	24,6	0,68		11,4				
(45x45) 12	4,3	1,78		13,6	20,8		0,75	1.65
(45x45) 24	21	0,81		13,8				



P.C. 35X35

Type	Ordering code	Ordering code with standard connector	Standard connector code	Connector page
35x35 12 Vcc	4SL4000120	5SL4000120	4CN1009990	see page 97 (CC-CA)
35x35 24 Vcc	4SL4000240	5SL4000240		



P.C. 45X45

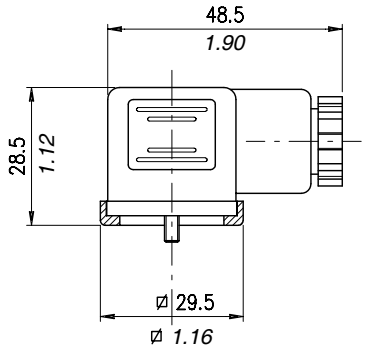
Type	Ordering code	Ordering code with standard connector	Standard connector code	Connector page
45x45 12 Vcc	4SL4000243	5SL4000243	4CN1009990	see page 97 (CC-CA)
45x45 24 Vcc	4SL4000241	5SL4000241		

Operation

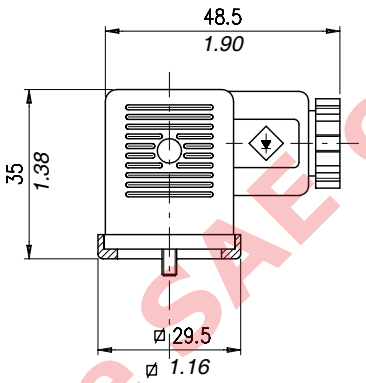
There are 3 types of different solenoid connectors:
"CC-CA" 2-poles + GROUND electric connectors in compliance with DIN and A/ISO standards 43650 and 4400.
Electric connectors suitable for connection of DC and AC current coils. Type of current must be same as for the coil used**.**
"CL" 2-poles + rectifier + GROUND electric connectors in compliance with DIN and A/ISO standards 43650 and 4400.
Electric connectors suitable for connection of DC current coils BE...RAC. AC current operation only. Use of these poles depends on the type of valve used.
"CP" 2-poles + rectifier + GROUND electric connectors in compliance with DIN and A/ISO standards 43650 and 4400.
Electric connectors suitable for connection of DC current coils BT...RAC. AC current operation only. Use of these poles depends on the type of valve used.

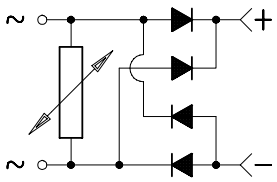
Performance

Type	Nominal voltage	Maximum capacity of in-built diode	Nominal poles voltage	Max poles voltage	Poles resistance	Max poles section	Cable size options	Cable diameter	Safety standards	Insulation index
CC-CA	AC max 250 V DC max 300 V	-	10 A	16 A	≤4 m Ohm	1,5 mm² *0.002in²*	Pg09	6-8 mm *0.24-0.31 in*	IP65 (DIN 40050)	VDE0110-1/89
CL		1 A								
CP		3 A								

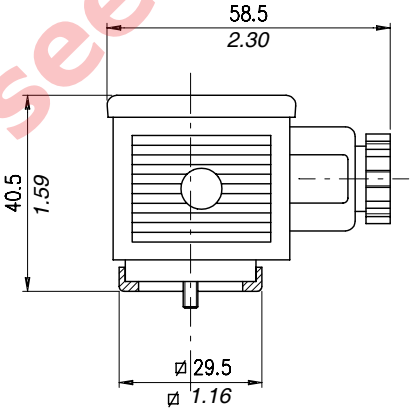


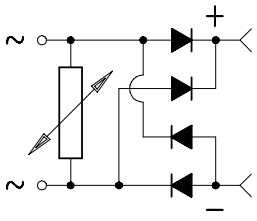
code number CC-CA Connector





code number CL Connector

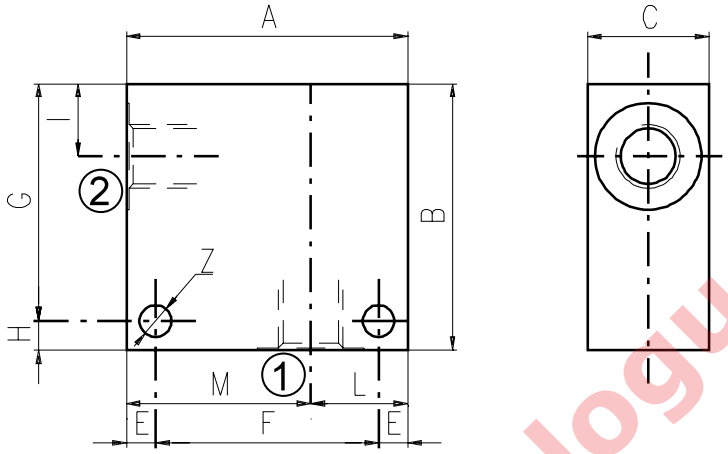




code number CP Connector

Dimensions

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



Cavità	Attacchi		A	B	C	E	F	G	H	I	L	M	Z
SAE 8/2	G 1/2	**mm**	70	65	35	7	56	53	12	14,5	35	35	6,5
		in	*2.75*	*2.56*	*1.38*	*0.27*	*2.20*	*2.09*	*0.47*	*0.57*	*1.38*	*1.38*	*0.25*
	G 1/4	**mm**	50	50	30	6	38	44	6	14,8	20	30	6,5
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.25*
	G 3/8	**mm**	50	50	30	6	38	44	6	14,8	20	30	6,5
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.25*
	SAE6	**mm**	50	50	30	6	38	44	6	14.8	20	30	6.5
		in	*1.97*	*1.97*	*1.18*	*0.24*	*1.50*	*1.73*	*0.24*	*0.58*	*0.79*	*1.18*	*0.25*
SAE 10/2	G 1/4	**mm**	60	60	35	6	48	54	6	18,8	25	35	6,5
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.25*
	G 3/8	**mm**	60	60	35	6	48	54	6	18,8	25	35	6,5
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.25*
	G 1/2	**mm**	60	60	35	6	48	54	6	18,8	25	35	6,5
		in	*2.36*	*2.36*	*1.38*	*0.24*	*1.89*	*2.12*	*0.24*	*0.74*	*0.98*	*1.38*	*0.25*
	SAE8	**mm**	60	70	35	6	48	64	6	18.8	25	35	6.5
		in	*2.36*	*2.75*	*1.38*	*0.24*	*1.89*	*2.52*	*0.24*	*0.74*	*0.98*	*1.38*	*0.25*
	SAE10	**mm**	70	70	35	6	58	64	6	18.5	35	35	6,5
		in	*2.75*	*2.75*	*1.38*	*0.24*	*2.28*	*2.52*	*0.24*	*0.73*	*1.38*	*1.38*	*0.25*
	SAE12	**mm**	70	70	40	8	54	62	8	22	30	40	8.5
		in	*2.75*	*2.75*	*1.57*	*0.31*	*2.12*	*2.44*	*0.31*	*0.87*	*1.18*	*1.57*	*0.33*
SAE 12/2	G 1/2	**mm**	70	80	40	8	54	72	8	25	30	40	8,5
		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
		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
		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
		in	*2.75*	*3.35*	*1.57*	*0.31*	*2.12*	*3.03*	*0.31*	*0.98*	*1.18*	*1.57*	*0.33*

Dimensions

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	Z
SAE 16/2	G 1/2	mm	80	90	50	10	60	80	10	25	35	45	10,5
		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
		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
		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
		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
		in	*3.15*	*3.94*	*1.97*	*0.39*	*2.36*	*3.54*	*0.39*	*0.98*	*1.38*	*1.77*	*0.41*

Order code

3/CC /- □ □ /20/□- □-1

Cavity

08
10
12
16

Ports

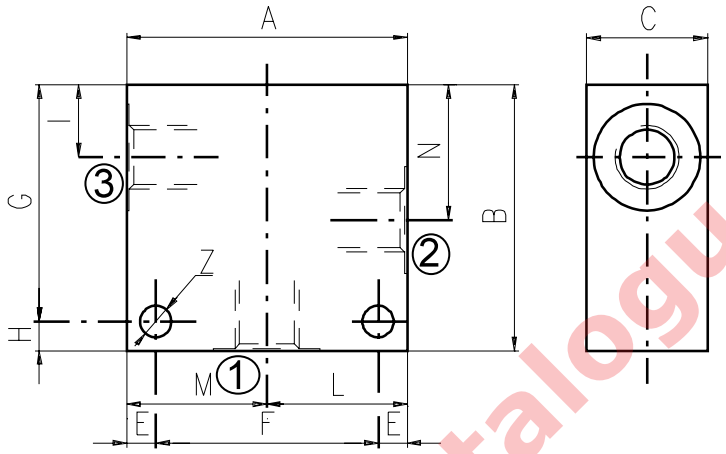
B) G 1/4
C) G 3/8
D) G 1/2
E) G 3/4
F) G 1

Materials

1) Aluminium
2) Steel

Dimensions

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



Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	Z
SAE 8/3	G 1/4	mm	60	60	30	7	46	48	12	14,8	30	30	29,1	6,5
		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
		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
		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
		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*
SAE 10/3	G 1/4	mm	60	65	35	6	48	59	6	18	30	30	34,5	7
		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
		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
		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
		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
		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*
SAE 12/3	G 1/2	mm	70	100	40	8	54	92	8	25	35	35	53,5	8,5
		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
		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
		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
		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*

Dimensions

Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	Z
SAE 16/3	G 3/4	**mm**	90	100	50	10	70	90	10	25,1	45	45	53,5	10,5
		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*
	SAE12	**mm**	90	105	50	10	70	95	10	25,1	45	45	53,5	10,5
		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
		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*

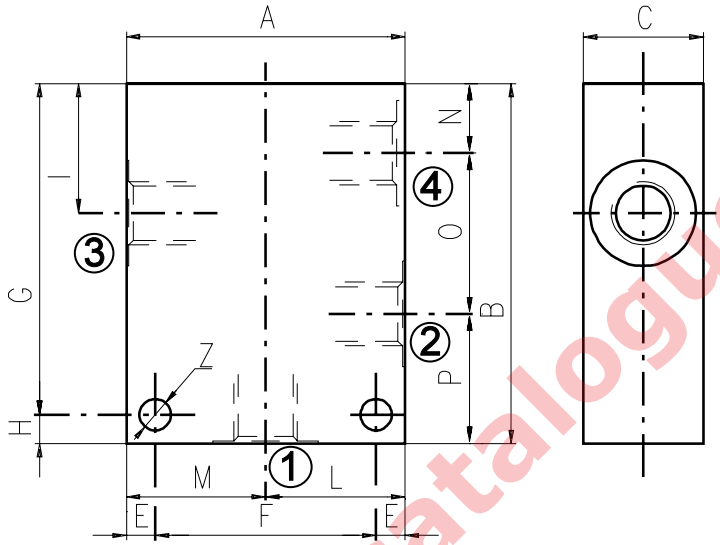
Order code

3/CC /- □ □ /30/□- □-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	

Dimensions

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



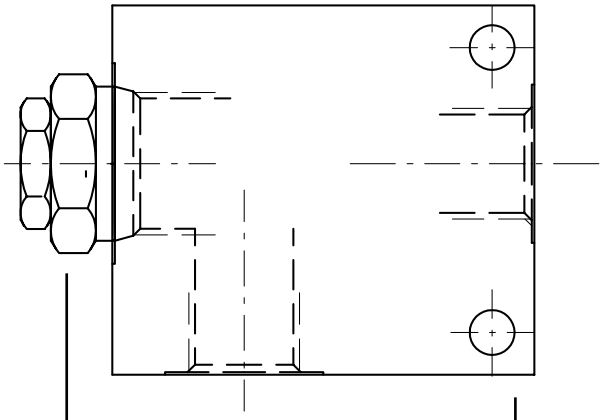
Cavity	Ports		A	B	C	E	F	G	H	I	L	M	N	O	P	Z
SAE 8/4	G 1/4	mm	60	75	30	7	46	63	12	29,1	30	30	14,8	29,1	31,1	6,5
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.58*	*1.14*	*1.22*	*0.25*
	SAE6	mm	60	75	30	7	46	63	12	29,1	30	30	14,8	29,1	31,1	6,5
		in	*2.36*	*2.95*	*1.18*	*0.27*	*1.81*	*2.48*	*0.47*	*1.14*	*1.18*	*1.18*	*0.58*	*1.14*	*1.22*	*0.25*
SAE 10/4	G 3/8	mm	60	85	35	6	48	79	6	34,5	30	30	18,8	31,7	34,5	7
		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
		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
		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
		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*
SAE 12/4	G 1/2	mm	80	115	40	8	64	107	8	44	40	40	22	44,5	48,5	8,5
		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
		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
		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*

Order code

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	

How to order valves with body



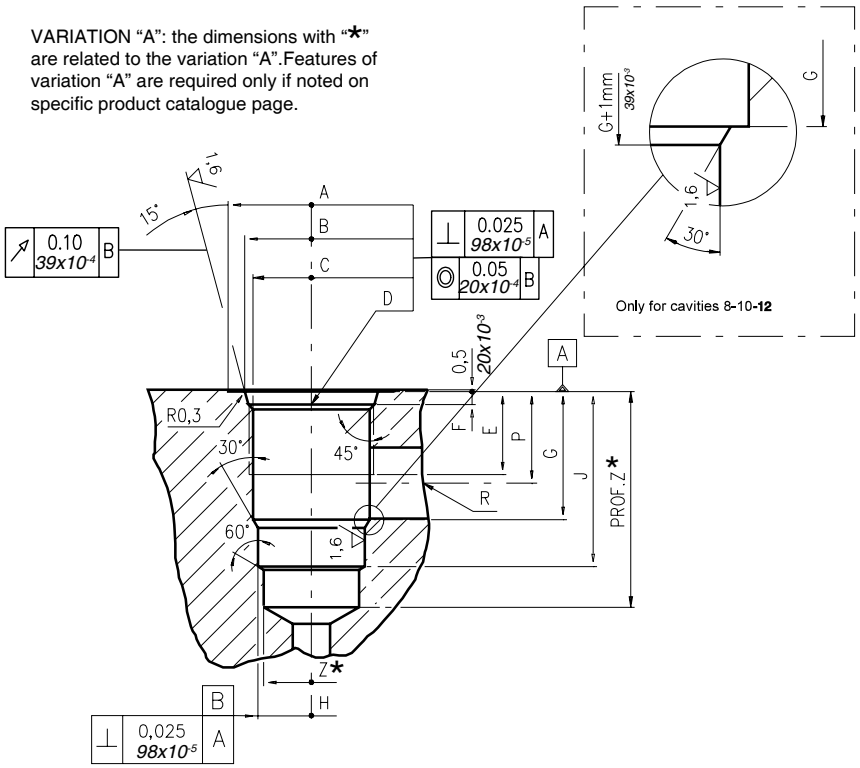
CARTRIDGE CODE **BILLET CODE**

UC-10-A/0-0-2B/ **D- 1-1**

CavitY	Ports	Materials
08	B) G 1/4	1) Aluminium
10	C) G 3/8	
12	D) G 1/2	
16	E) G 3/4	
	F) G 1	
	J) SAE 6	2) Steel
	K) SAE 8	
	L) SAE 10	
	M) SAE 12	
	N) SAE 16	

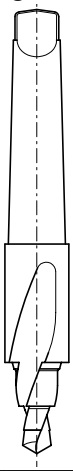
Dimensions

VARIATION “A”: the dimensions with “*” are related to the variation “A”.Features of variation “A” are required only if noted on specific product catalogue page.



\		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	Z* øMIN	Prof.Z 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
	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
	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
	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
	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

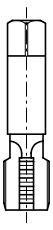


Cavity	Code number
08/2	3UT00053190
10/2	3UT00056610
12/2	3UT00054090
16/2	3UT00054510

Finisher tool

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

Tap



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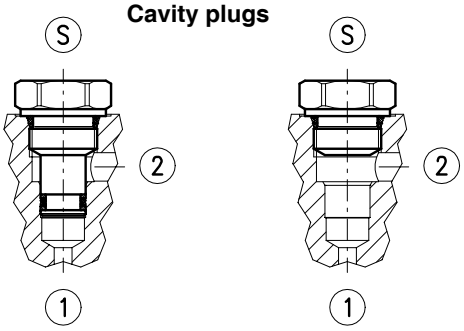
10/2	3UT07814UNF
12/2	3UT0111612UN
16/2	3UT0151612UN

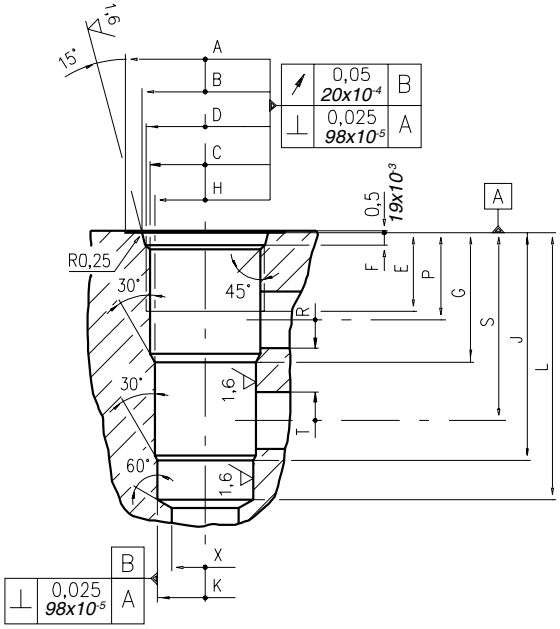
Cavity plugs



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

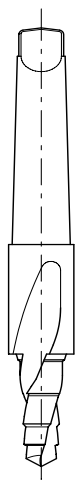
X=Closed 0=Open

Dimensions



\		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	Z øMIN	Prof. Z MIN
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	31,34	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*	*1.23*		0.87	0.14	1.44	1.13	2.53	1.06	2.96			*0.96*	*0.63*	*2.09*	*0.63*			*0.75*		

Rougher tool



Cavity	Code number
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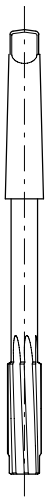
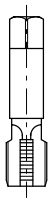
12/3	3UT00054290
16/3	3UT00054470

Finisher tool



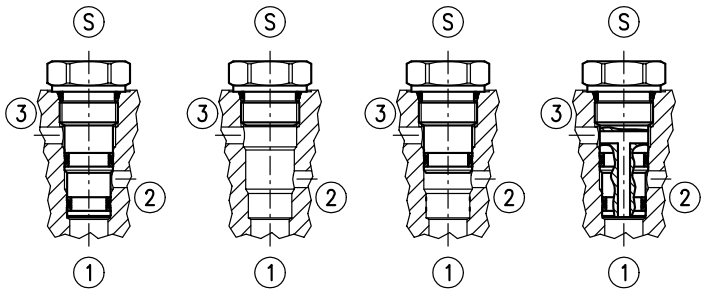
Cavity	Code number
08/3	3UT00052740
10/3	3UT00054180
12/3	3UT00054300
16/3	3UT00054480

Tap



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

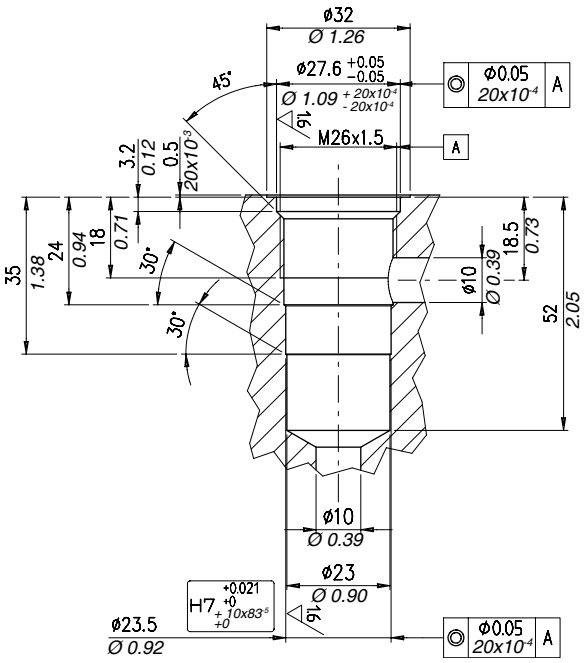
Cavity plugs



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

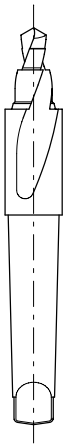
X=Closed 0=Open

Dimensions



Rougher tool

Code 3UT00050140

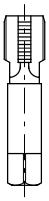


Finisher tool

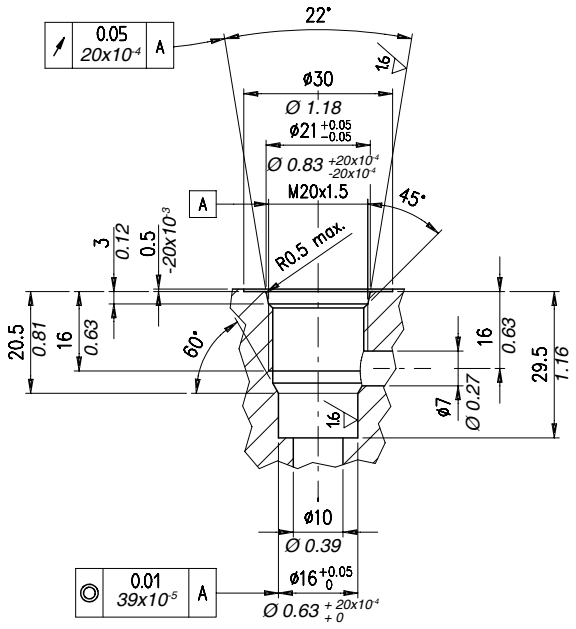
Code 3UT00055020

Tap

Code 3UT08A26F150



Dimensions



Rougher tool

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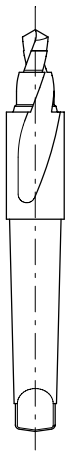
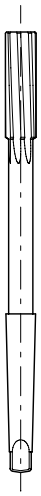


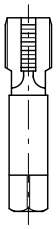
Finisher tool

Cod.3UT06A1600N

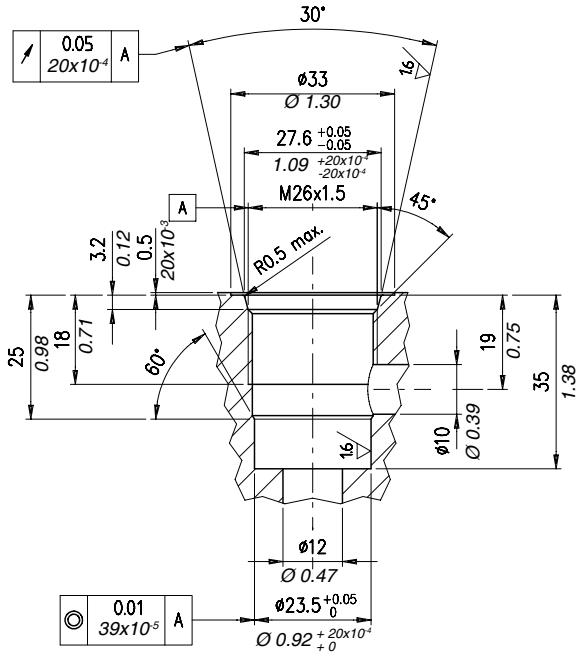


Tap

Cod.3UT08A20F150

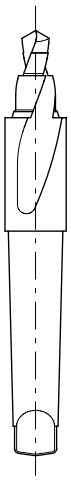


Dimensions



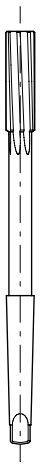
Rougher tool

Code 3UT00050140



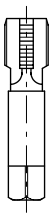
Finisher tool

Code 3UT00055020

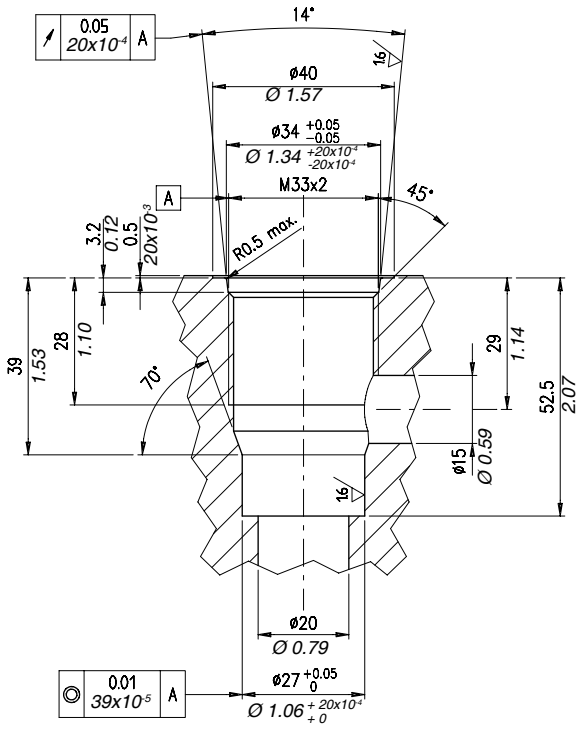


Tap

Code 3UT08A26F150

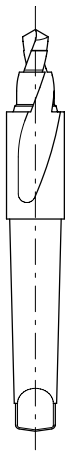


Dimensions



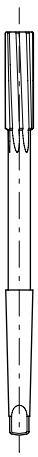
Rougher tool

Code 3UT00050460



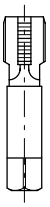
Finisher tool

Code 3UT06A2700N

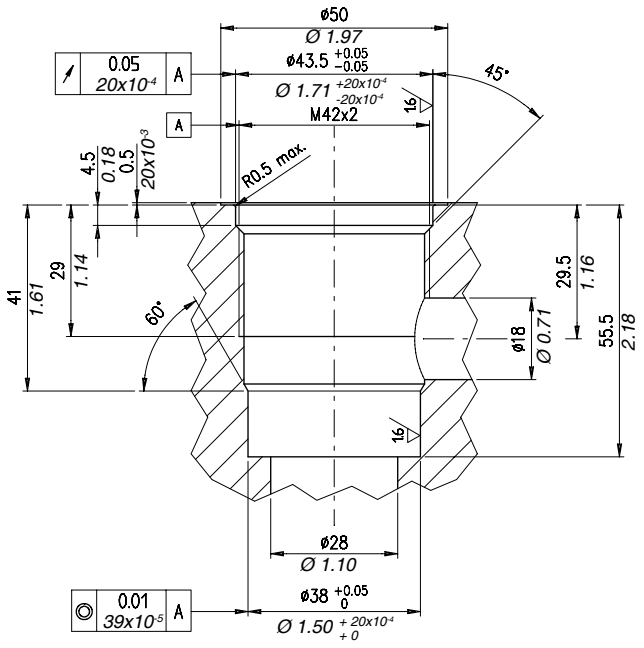


Tap

Code 3UT08A33F200

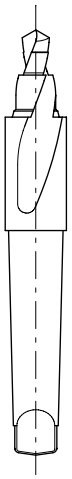


Dimensions



Rougher tool

Code 3UT00050780

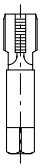


Finisher

Code 3UT06A3800N

Cavity plugs

Code 3UT08A42F200



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