Colorflow® Flow and Check Valves

Catalogue HY11-3295/UK
October 2005

Note

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Content

Provide a Visual Check of Precise Valve Settings

Actuation and speed of response of fluid power systems on any type of industrial equipment can be controlled precisely, instantly, and repeatedly with Parker control valves.

The Colorflow line includes flow control valves rated from 0 to 568 LPM, needle valves from 0 to 265 LPM, and for very accurate control, the metering valves provide linear adjustment of flows from 0 to 151 LPM.

Fast actuation and deceleration…precise control of fluid power…protection for fluid power systems against back-pressure and vibration…accurate settings for fluid valves and controls…

These are a few functions that the complete line of Parker control valves fill on all kinds of machinery and equipment around the world.

Engineered to top design, built to top quality standards, these are the finest, most accurate controls you can install on your machines. Features include the exclusive "Colorflow" color-coded system that gives operators a visual checkpoint in setting valves precisely. And the use of quality materials and components in bodies assure a control valve that withstands shock, vibration and wear, and has extraordinary life expectancy.

Why we use poppets exclusively

Poppets are used in all Colorflow valves, instead of check balls. As the poppets are opened and closed, they move in precision-fitted cylinders that eliminate wobble and erratic travel.

Poppets also have hydraulic cushioning to soften the impact of the poppet against the valve spring and seat at the end of travel. By contrast, check balls (not used by Colorflow) have large mass that develops heavy impact on the seat and causes the spring to bottom. These hammer blows can peen the seat, roughen the ball, and eventually create a leaker. Springs that are bottomed frequently are susceptible to early fatigue and failure. Worn balls can develop chatter; and may shift position and not shut off tightly.

Balls cannot be decelerated at the end of their travel in the way poppets are slowed by hydraulic bleeding ports and channels.

A worldwide organization of well-stocked Parker Colorflow distributors means immediate delivery of any control valve in our line of top-quality products to control air and oil on any fluid-power system.

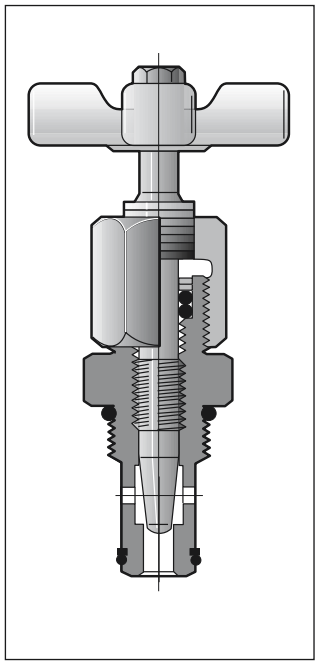
Fully guided poppets are used on all Colorflow valves rather than the less durable ball-check type construction. Poppets open and close more smoothly, last longer, and eliminate the distortion of seats and springs.

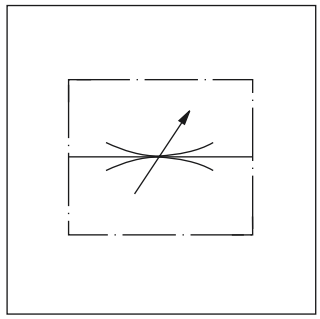
The exclusive "Colorflow" feature on metering, flow control, and needle valves gives highly visible checkpoints for setting valve openings accurately and quickly. This feature also provides a reference point that allows the valve to be precisely reset to a previous setting.

Steel, brass or stainless steel bodies are available. Both include stainless steel needles as standard.

Colorflow valves are available with a variety of porting options.

Needle valve with steel body as screw-in valve for block insertion, optionally with a 30° taper, V notch or rectangular slot. The form of the metering opening influences the fineness of the volume-flow adjustment, which is of course pressure and viscosity dependent. The needle is made of stainless steel and fits into a ring gap in the valve cartridge.





Characteristic values

Size	Operating press. [bar]	Flow [l/min] Δp 10bar	Max. orifice area [cm²]	Kv-factor valve open	Weight [kg]
400	350	25	0.14	6.3	0.18
600	350	65	0.37	18.5	0.32
800	350	105	0.55	27.5	0.59
1200	350	160	0.90	45.7	0.95
Needle					
400-2		11	0.52		
400-3		2	0.012		

Ordering code

MVI — **Cartridge-type needle valve**

□ — **Size and screw-in threads**

Code	Size	Threads
400	**1/4“**	**3/4 - 16 UNF-2B**
600	**3/8“**	**7/8 -14 UNF-2B**
800	**1/2“**	**1 1/16 - 12 UN-2B**
1200	**3/4“**	**1 5/16 - 12 UN-2B**

S — **Steel body**

□ — **Needle**

Code	Needle
ohne	**Standard 30° taper**
2*	fine V-notch
3*	micro-fine slotted

* only for size 400

□ — **Seal**

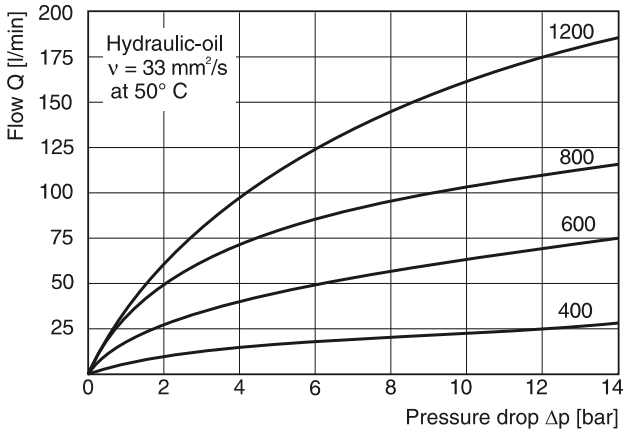
Code	Seal
omit	**NBR**
V	FPM

Bold letters =
Short-term availability

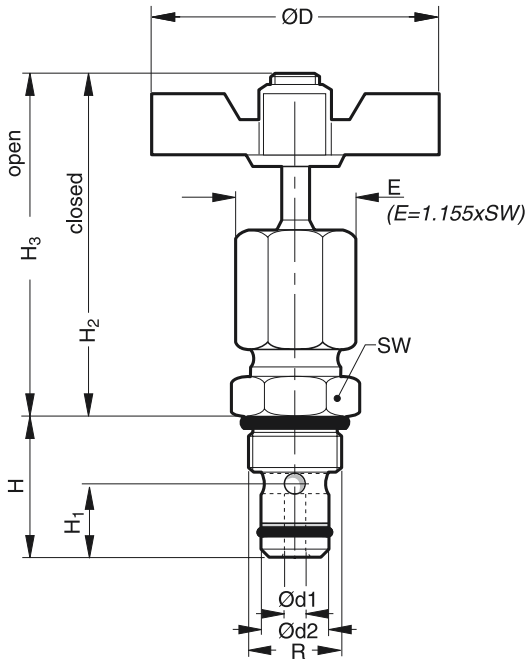
$$\text{Flow rate } Q\ [\text{l/min}] = Kv \cdot \sqrt{\frac{\Delta p}{\gamma}}$$

Kv — see table
Δp [bar]
γ [kg/dm³] = specific gravity of fluid
(γ for mineral oil = 0.85 – 0.9)

Δp/Q curves

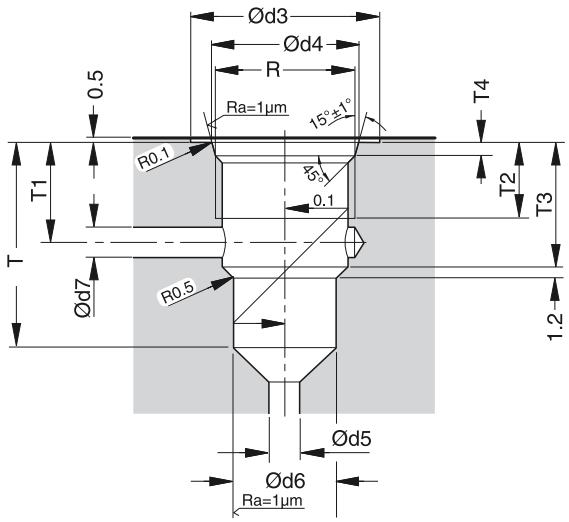


Threaded cartridge valve



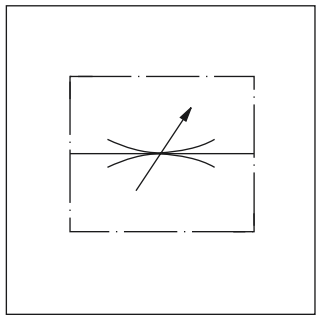
Size	H	H_3	H_2	H_1	$Ød_1$	$Ød_2$	R (Threads)	ØD	SW
MVI 400	25.4	65	60	10.9	4.6	14.22	3/4 - 16 UNF-2	51	22.1
MVI 600	30	81	73	13.5	7.9	15.8	7/8 - 14 UNF-2	64	25.4
MVI 800	39.6	91	79	15.2	9.4	20.55	1 1/16 - 12 UN-2	83	31.8
MVI 1200	43.4	102	88	19.1	11.7	26.92	1 5/16 - 12 UN-2	98	38.1

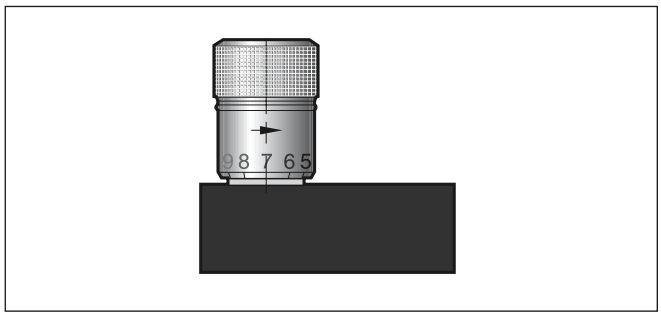
Cavity dimensions



Size	Ød3	$Ød_4{}^{+0.12}$	$Ød_{5\ (min)}$	$Ød_6{}^{+0.05}$	$Ød_7$	$T_4{}^{+0.38}$	T_2	T_3	T	T_1
MVI 400	26	20.6	5.3	14.275	5.3	2.54	15	17.8	27	14.2
MVI 600	30	23.93	8.1	15.85	8.1	2.54	17	21.6	32	16.5
MVI 800	37	29.16	10.2	20.6	10.2	3.3	19	30	42	24.1
MVI 1200	44	35.54	12.7	26.975	12.7	3.3	19	31.8	46	24.6

Shut-off and metering valves with 2-stage needle cone. Fine adjustment for the first stage can be achieved with 3 rotations of the adjustment knob. The second stage with normal throttle characteristics is achieved with 3 further rotations.
A cylindrical needle with a rectangular slot is provided to reduce the viscosity effect for sizes 400 and 600. The flow is dependent on pressure and viscosity.





Characteristic values (only for standard 2-stage needle)

Size	Pressure [bar]		Flow [l/min] Δp 10bar	Max. cross-section [cm²]	Kv-factor valve open	Weight [kg]
	Steel	Brass				
400	210	140	25	0.13	6.3	0.4
600	210	140	40	0.22	11.2	0.6
800	210	140	50	0.28	13.9	1.0
1200	210	140	120	0.70	35.4	2.0
1600	210	35	250	1.48	75	4.0

Ordering code

N	S		S			
Needle valve	Manifold mounting	Size	Steel body	Needle	Clamping screw	Seal

Code	Size
400	**400**
600	**600**
800	**800**
1200	**1200**
1600	1600

Code	Seal
omit	**NBR**
V	FPM

Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

Code	Needle
omit	**Standard 2-stage needle**
4*	micro-fine hollow needle with slot

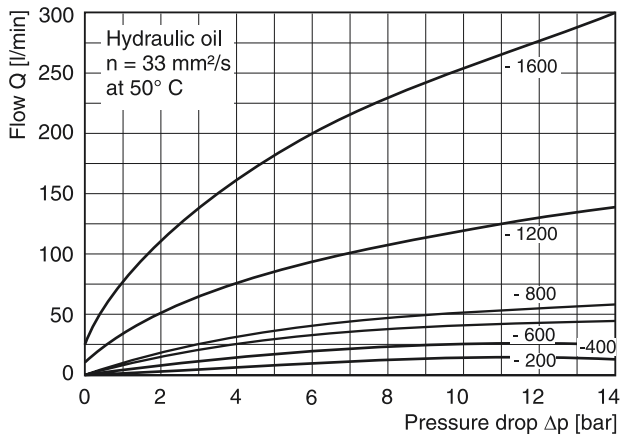
* only for sizes 400 to 600

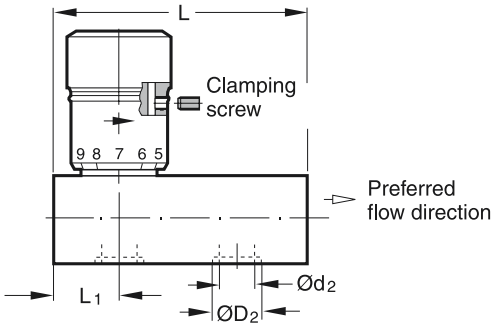
Bold letters =
Short-term availability

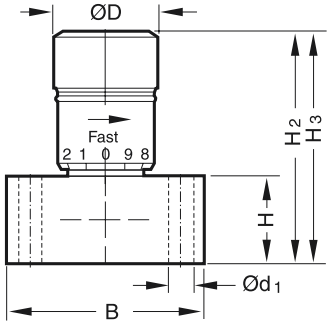
$$\text{Flow rate } Q \text{ [l/min]} = Kv \cdot \sqrt{\frac{\Delta p}{\gamma}}$$

Kv — from the table
Δp [bar]
γ [kg/dm³] = spezific weight of the medium
γ for mineral oil = 0.85 - 0.9

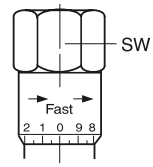
Performance curves



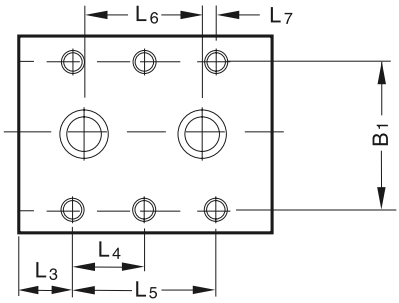


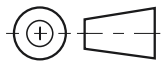


H_2 = closed
H_3 = open



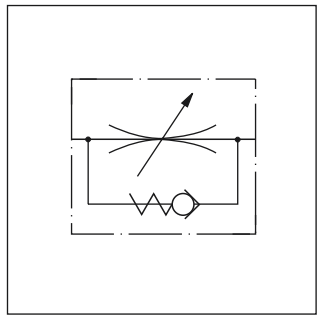
Hexagon adjusting knob, standard for size 1600

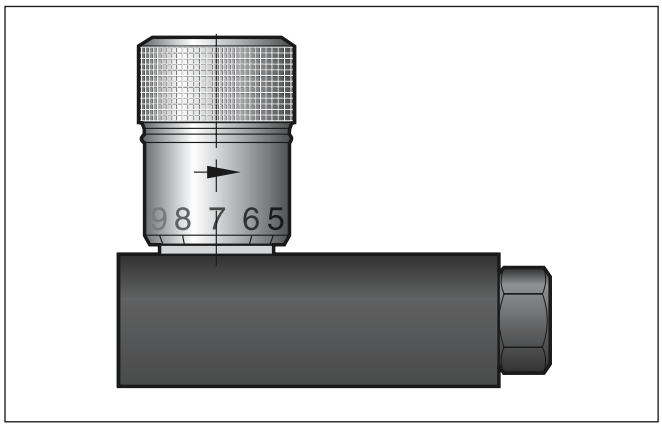




Size	L	L_5	L_4	L_3	L_7	L_6	$ØD_2$	$Ød_2$	B_1	B	H_3	H_2	H	$Ød_1$	ØD	SW	L_1
400	47.5	34.8	-	6.4	4.5	25.4	13.3	7	33.5	44.5	55	50	21	6.8	21	-	11
600	51	33.3	-	8.6	4.1	25.4	16	10	38.1	51	67	61	25.4	7	25	-	13
800	75	38.1	-	18.5	4.1	30	19.1	13	44.5	57.5	77	70	25.4	7	30	-	23
1200	93.5	76.2	38.1	8.6	11.2	54.4	24	17	54	70	95	80	29	9.5	35	-	20
1600	111	95.3	47.5	7.9	19	57.2	32	22	60.2	76.5	140	123	45	9.5	-	47.8	27

Manatrol throttle check valves of series FS allow the adjustment of the flow rate for a defined flow direction. The medium can flow back in the opposite direction via the built-in check valve with little flow resistance. A 2-stage needle allows for very exact setting of smaller flow rates with the first three rotations of the adjustment knob. After 3 more rotations, the valve is completely open. The valve setting can be locked using a locking screw.





Flow Q [l/min] = Kv • $\sqrt{\frac{\Delta p}{\gamma}}$

Kv — from the table
Δp [bar]
γ [kg/dm³] = spezific gravity of fluid
(γ for mineral oil = 0.85 - 0.9)

Characteristic values

Size	Pressure [bar]	Max. flow [l/m Δp10bar]	Opening [cm²]	Check Kv-factor	Throttle [cm²]	Throttle valve open Kv-factor	Weight [kg]
400	210	25	0.37	18.6	0.13	6.3	0.23
600	210	40	0.62	30.4	0.22	11.2	0.31
800	210	50	0.86	43.4	0.28	14	0.67
1200	210	120	1.18	60	0.70	35.4	1.17
1600	210	250	2.23	111	1.48	75	2.31

Ordering code

F	S		S			
Throttle and check valve	Manifold mounting	Size	Steel body	Needle	Clamping screw	Seal

Code	Size
400	**400**
600	**600**
800	**800**
1200	**1200**
1600	1600

Code	Seal
omit	**NBR**
V	FPM

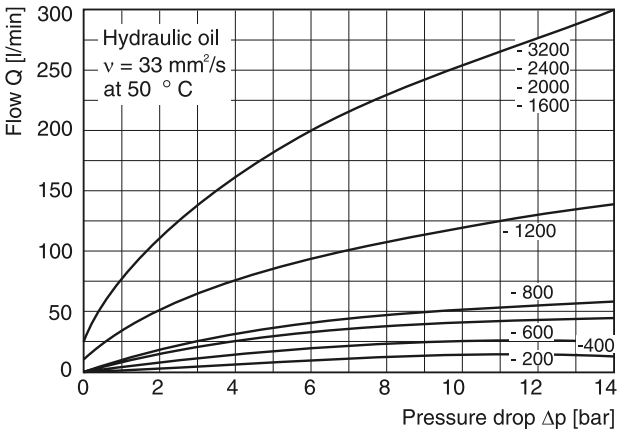
Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

Code	Needle
omit	**Standard 2-stage needle**
4*	micro-fine hollow needle with slot

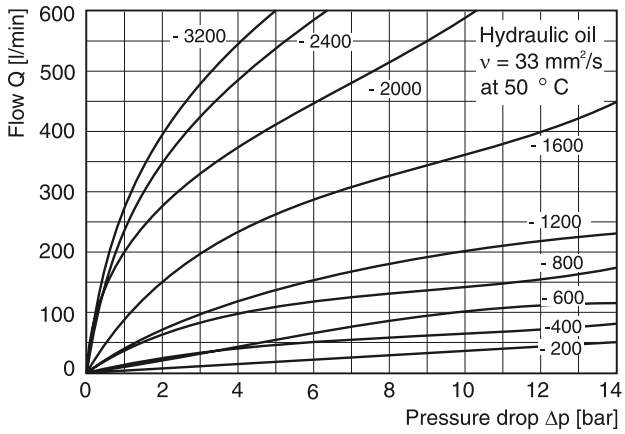
* only for sizes 400 to 600

Bold letters =
Short-term availability

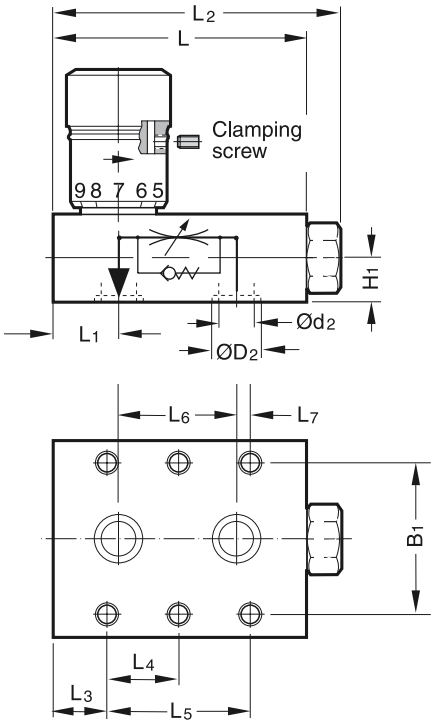
Δp/Q performance curves

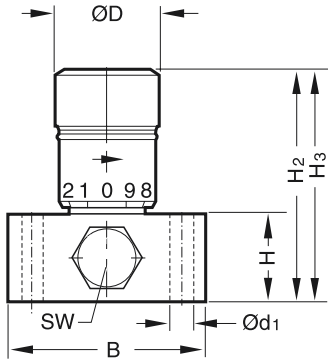


Δp/Q performance curves free flow

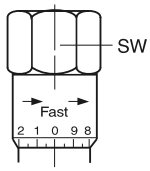


Dimensions

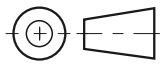




H2 = closed
H3 = open

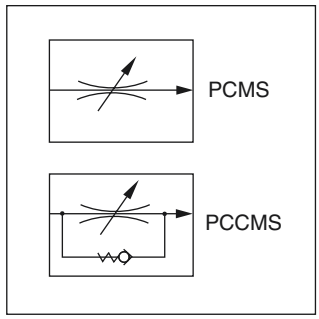


Hex head adjusting knob Standard for Size 1600



Size	L2	L5	L4	L3	L7	L6	ØD2	Ød2	B1	B	H3	H2	H	Ød1	H1	ØD	SW	W1	L1	L
400	71	34.8	-	14.2	4.8	25.5	13.3	7	33.5	44.5	56.5	51	22	6.8	11	21	-	17.5	21.5	63
600	78	33.5	-	18	4.0	25.5	16	10	38.1	51	67.5	61	25.5	7	12.2	25	-	22.2	25.5	70
800	89	38.1	-	21.3	4.0	30	19.1	13	44.5	57.5	84	76	32	7	16	30	-	25.5	24.5	81
1200	114	76.2	38.1	13.7	11.4	54.1	24	14	54	70	111	96	45	9	22.5	35	-	31.8	38.5	104
1600	138	95.2	47.7	15.8	19	57.2	32	22	60.2	76.5	146.5	130	51	9	25.5	-	47.8	38.1	44.5	127

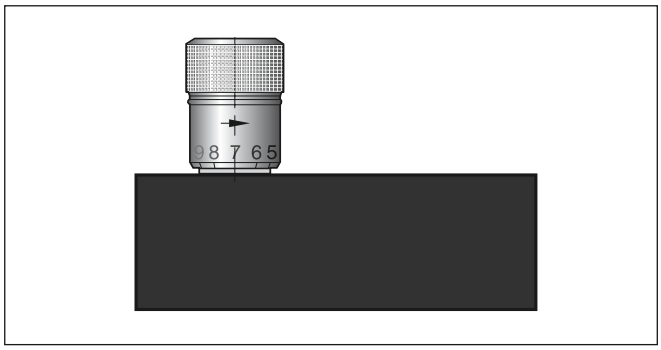
2-way flow control valves for pressure compensated regulation of the flow rate. As a consequence of pressure changes, the set value can vary by ± 5% within the tolerance range. Changes in viscosity and in temperature have the same effect and are to be observed.



Characteristic values

Size	Max. pressure [bar]	Flow control		Check valve		Weight [kg]
		Q* [l/min]	Δp [bar]	Q_{max} [l/min]	Δp [bar]	
400	210	1 - 10	7	20	3	0.77
600	210	2 - 25	7	30	3	1.23
800	210	6 - 60	11	75	8	2.50
1200	210	10 - 100	11	130	8	3.18
1600	210	19 - 190	11	250	10	7.41

* Min. and max. flow rate



Ordering code

PC		M	S		S			20
Pressure compens. flow control valve	**Design**	**Adjustable**	**Manifold mounting**	**Size**	**Steel body**	**Clamping screw**	**Seal**	**Design series** (is determined by factory)

Code	Design
omit	**without check valve**
C	with check valve

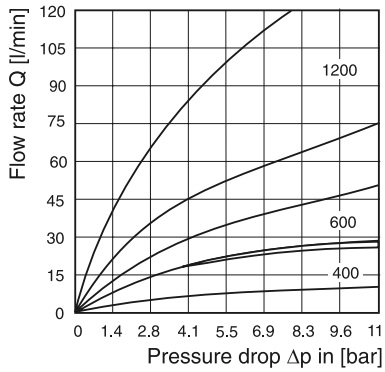
Code	Size
400	400
600	**600**
800	**800**
1200	1200
1600	1600

Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

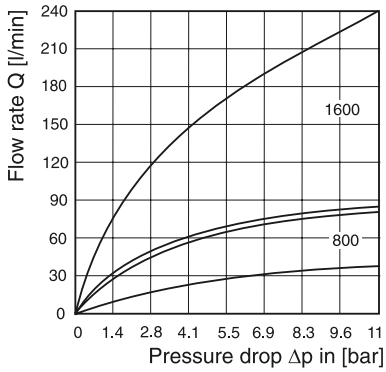
Code	Seal
omit	**NBR**
V	FPM

Bold letters =
Short-term availability

Δp/Q curves

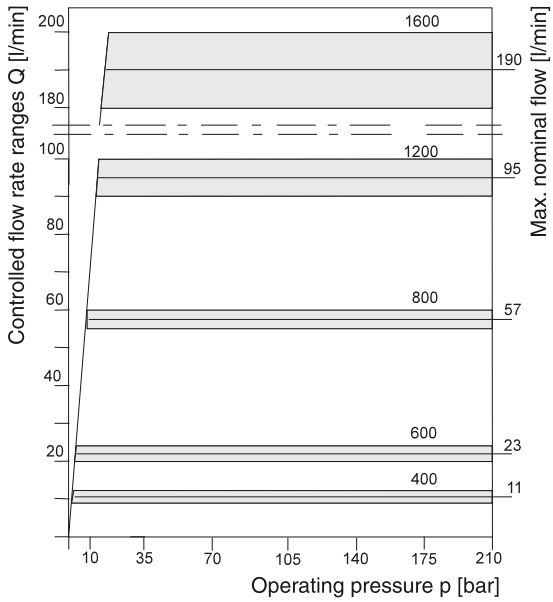


Size 400, 600 and 1200 pressure drop Δp at flowing over check valve each in range Q_{max} / Q_{min}



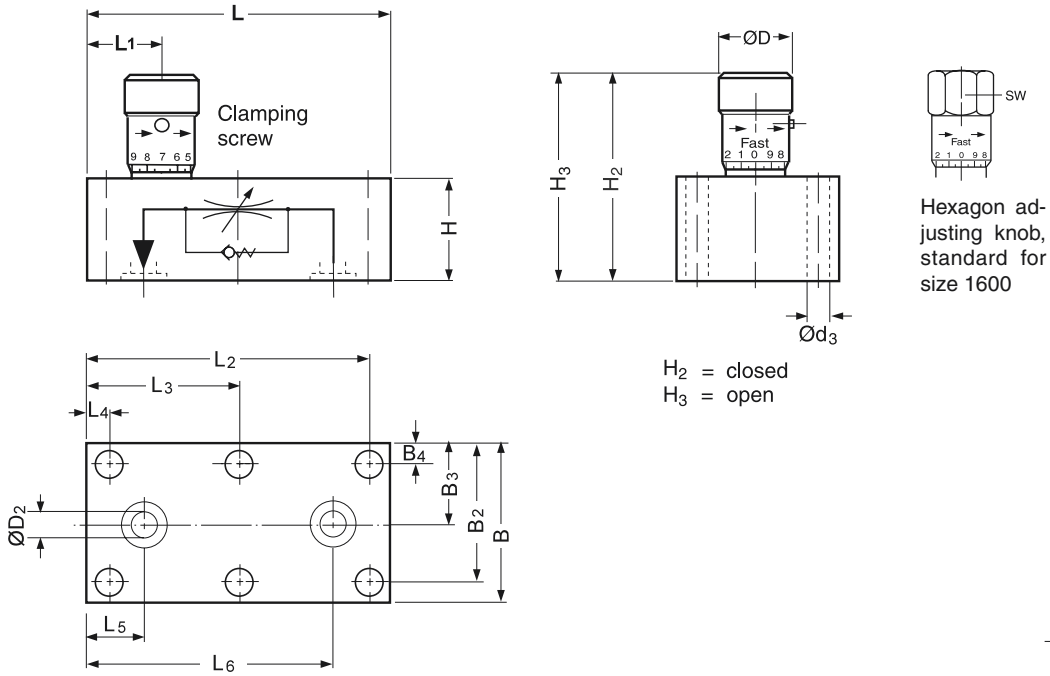
Size 800 and 1600 pressure drop Δp at flowing over check valve each in range Q_{max} / Q_{min}

Size 400 - 1600 p/Q control behaviour



The curves refer to hydraulic oil of 33 cSt / 50°C.

Dimensions

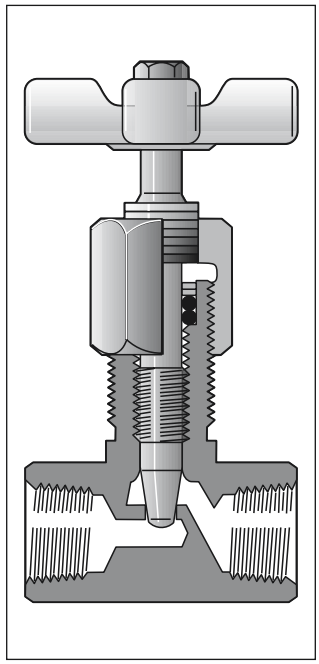


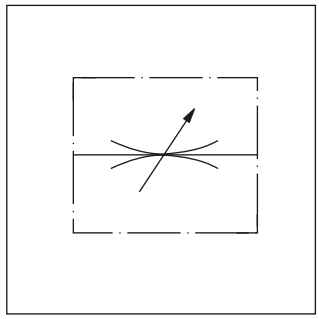
Hexagon adjusting knob, standard for size 1600

H_2 = closed
H_3 = open

Size	B	B_2	B_3	B_4	L_4	L_5	L_6	L_2	L	H	$Ød_3$	H_3	H_2	$ØD_2$	ØD	L_1	L_3	SW
400	45	38.9	22.4	5.6	6.4	15.7	69.9	79.2	86	29	6.8	63	58	7.1	21	21	-	-
600	51	44.5	25.4	6.4	6.4	16.8	84.8	95.3	102	32	7	73	68	8.6	25	25	-	-
800	58	50.8	28.4	6.4	6.7	19.1	98.6	111.3	117	45	7	103	95	11.9	30	45	-	-
1200	70	62.0	35.1	7.9	9.7	25.4	117.3	133.4	143	57	9.5	129	116	16.8	35	41	71.4	-
1600	76	68.3	38.1	7.9	12.7	31.7	139.7	158.7	172	70	9.5	175	158	22.3	-	49	85.8	47.8

Needle valve, optional with 30° poppet, V-notch, or rectangular slot. The form of the throttle opening influences the fineness of the flow setting, which is dependent on the pressure and viscosity. The needle is made of stainless steel and corresponds to a ring gap in the valve body. The body can be steel or brass as well as for pipeline or for panel mounting.





Characteristic values

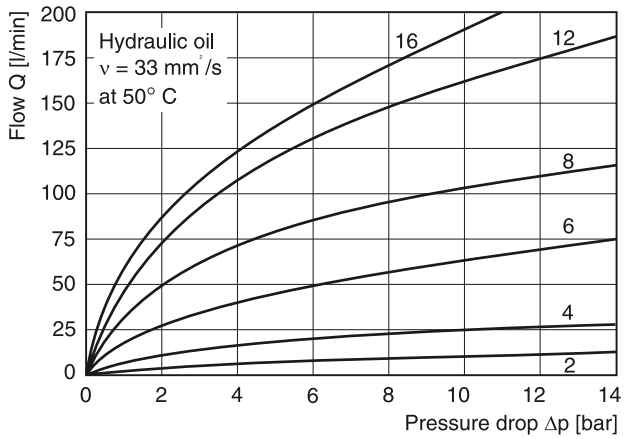
Size	Max.press. [bar]		Flow [l/min] Δp 10bar	Max. cross section [cm²] Δp 10bar	Kv-factor valve open	Weight [kg]
	Steel	Brass				
200	350	140	11	0.07	3.5	0.13
400	350	140	25	0.14	6.3	0.31
600	350	140	65	0.37	18.5	0.54
800	350	140	105	0.55	27.5	0.95
1200	350	-	160	0.90	45.7	1.58
1600	210	-	190	1.10	54.6	1.9

Size and needle	
200-2	7
200-3	2
400-2	11

$$\text{Flow rate } Q \text{ [l/min]} = Kv \cdot \sqrt{\frac{\Delta p}{\gamma}}$$

Kv — from the table
Δp [bar]
γ [kg/dm³] = spezific weight of the medium
(γ for mineral oil = 0.85 - 0.9)

Δp/Q curves



Ordering code

☐	**MV**	☐	☐	☐	☐	
Thread type	**Needle valve**	**Size and design**	**Body**	**Needle**	**Seal**	

Code	Thread
omit	NPTF
9	**BSPP**

Straight way valve		Angle valve
Code	Size	Thread
200	1/8	261
400	1/4“	461
600	3/8“	661
800	1/2“	861
1200	3/4“	1261
1600	1	—

Code	Body
S	**Steel**
B[1)]	Brass

[1)] not for models MV 1200/ 1600 and design “61“

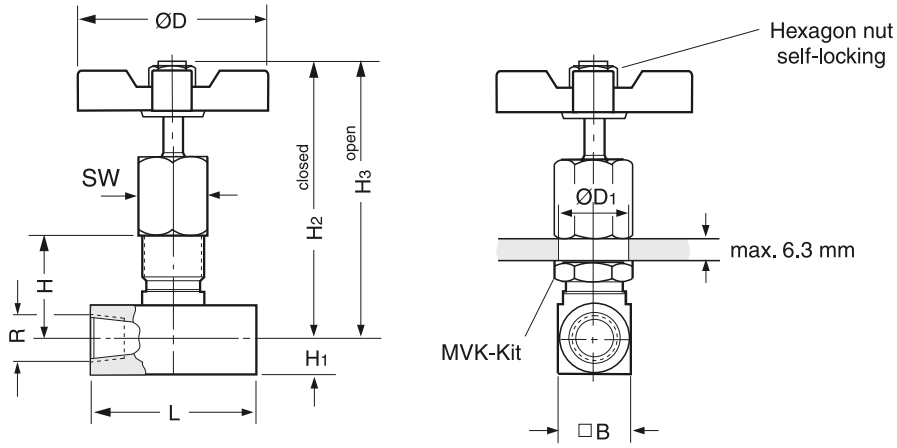
Code	Needle
omit	**Standard 30° taper**
2 [2)]	fine due to V-notch
3 [2)]	micro-fine due to rect. slot

[2)] only for size 400

Code	Seal
omit	**NBR**
V	FPM

Bold letters =
Short-term availability

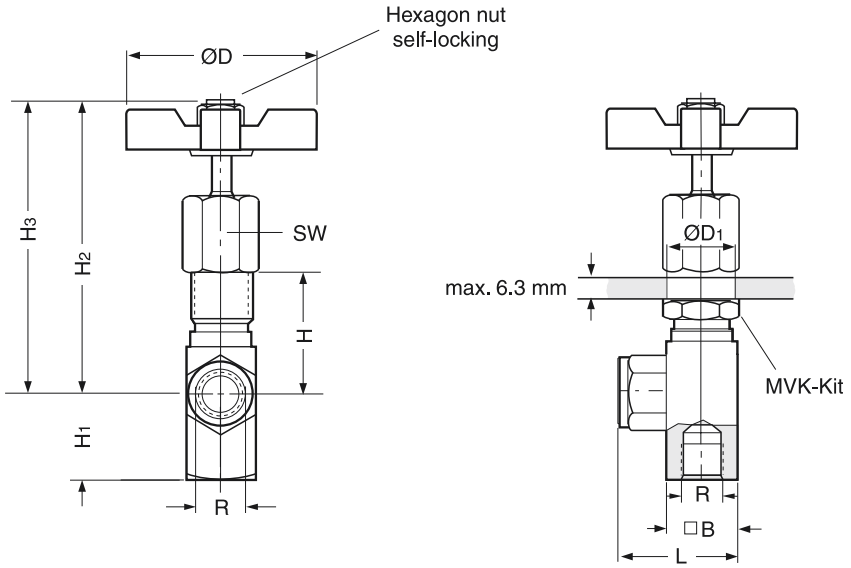
Series MV*00 valve with connecting thread in-line



Size	R*	H	H3	H2	H1	B	ØD1	L	ØD	SW	MVK sets
2	1/8	24	69	64	8	16	15	38	45	15.7	MVK 2
4	1/4	33	86	81	10.5	21	20	51	51	22.1	MVK 4
6	3/8	38	108	100	13	26	23	64	64	25.4	MVK 6
8	1/2	51	130	117	16	32	29	67	83	31.8	MVK 8
12	3/4	54	142	128	19	38	36	83	98	41.2	MVK 12
16	1	60	147	133	22.5	45	36	108	98	41.2	MVK 12

* Pipe thread G or NPTF

Series MV*61 angle valve with connections at 90° angle



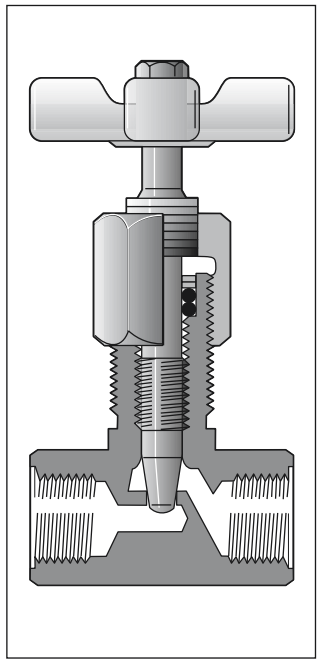
Size	R*	H	H3	H2	H1	B	ØD1	L	ØD	SW
2	1/8	27	72	67	20.6	16	15	27	45	15.7
4	1/4	36	90	85	27.7	21	20	38	51	22.1
6	3/8	42	111	103	34.8	26	23	45	64	25.4
8	1/2	55	134	121	42.7	32	29	53	83	31.8
12	3/4	59	147	133	41.1	38	36	64	98	41.2

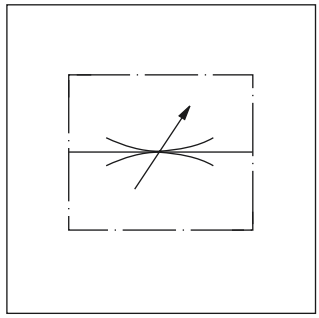
* Pipe thread G or NPTF

Manatrol valves of the series 6MV have metric connecting threads.
The needle form is designed so that the flow can be finely adjusted and precisely regulated.

Advantages

- Connection form corresponds to the standard ISO 6149 with conical contacting surface for the O-ring.
- Metric connecting thread
- Seal reliable against leakage due to O-ring seal between screw-in threaded joint and connecting thread
- World-wide availability





Shown without O-ring

Technical data

Connecting thread	Nominal pressure [bar]	Max. flow [l/min] at Δp 10bar
M16 x 1.5	350	25
M18 x 1.5	350	65
M22 x 1.5	350	105
M27 x 2.0	350	160

Material

Body	ASTM 12L14	Steel
Union nut	ASTM 12L14	Steel
Needle valve	ASTM 416	Stainless steel
Handle	Zinc die-casting	

Ordering code

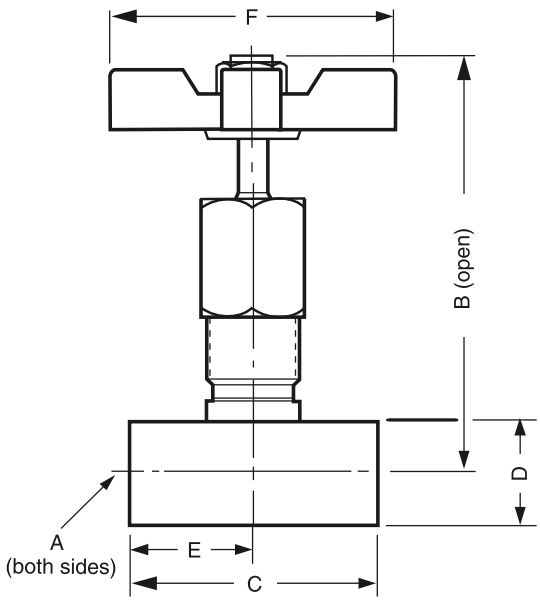
6	MV		S
Metric connecting thread ISO 6149	**Needle valve**	**Size**	**Steel body**

Code	Size
616	**M16 x 1.5**
818	M18 x 1.5
1022	M22 x 1.5
1227	**M27 x 2.0**

Seals

NBR = Standard
FPM = Option

Bold letters =
Short-term availability

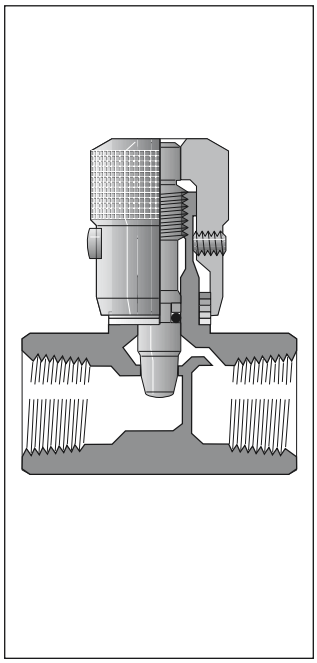


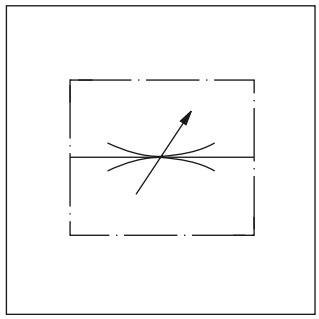
Series	Connecting thread	Dimensions [mm]				
	A	B	C	D	E	F
6MV616S	M16 x 1.5	89.2	60.3	25.4	30.2	50.8
6MV818S	M18 x 1.5	108.7	76.2	28.6	38.1	63.5
6MV1022S	M22 x 1.5	129.5	88.9	31.8	44.5	82.6
6MV1227S	M27 x 2.0	141.8	101.6	38.1	50.8	101.6

Stop and throttle valves with 2-stage needle cone. Fine adjustment for the first stage can be achieved with 3 rotations of the adjustment knob. The second stage with normal throttle characteristics is achieved with 3 further rotations. A cylindrical needle with a rectangular slot is provided to reduce the viscosity effect for sizes 200 up to 600. The flow is dependent on pressure and viscosity.

$$\text{Flow rate } Q\ [\text{l/min}] = Kv \cdot \sqrt{\frac{\Delta p}{\gamma}}$$

Kv — from the table
Δp [bar]
γ [kg/dm³] = spezific weight of the medium
(γ for mineral oil = 0.85 - 0.9)





Specifications

Return check poppet nominal cracking pressure	0.4 bar
Operating temperature	-40°C to +121°C

Characteristic values (only for standard 2-stage needle)

Size	Pressure [bar]			Flow [l/min] Δp 10bar	Max. cross section [cm²]	Kv-factor valve open	Weight [kg]
	Steel	Stainless steel	Brass				
200	350	–	140	11	0.066	3.3	0.13
400	350	350	140	25	0.13	6.3	0.22
600	350	350	140	40	0.22	11.2	0.6
800	350	350	140	50	0.28	13.9	0.63
1200	350	–	140	120	0.70	35.4	1.04
1600	210	–	35	250	1.48	75	2.13

Ordering code

	N					
Thread type	Needle valve	Thread size	Body	Needle	Clamping screw	Seal

Code	Thread
omit	NPTF
9	**BSPP**

Code	Thread size
200	**1/8**
400	**1/4**
600	**3/8**
800	**1/2**
1200	**3/4**
1600	1

Code	Body
S	**Steel**
B	Brass
SS[1)]	Stainless steel

[1)] only for sizes 400, 600, 800

Code	Seal
omit	**NBR**
V	FPM

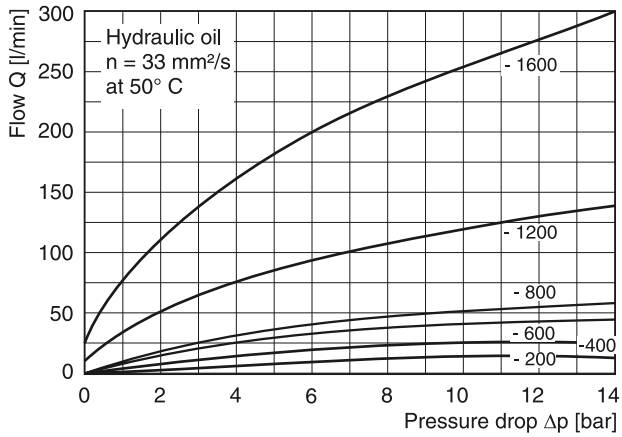
Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

Code	Needle
omit	**Standard 2-stage needle**
4[2)]	micro-fine hollow needle with slot

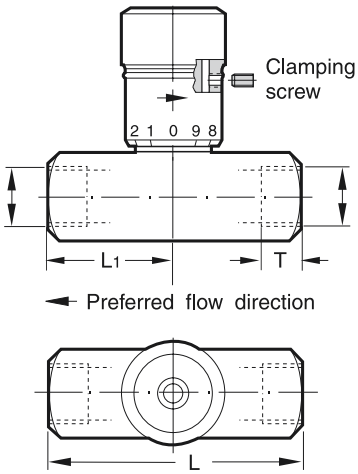
[2)] only for sizes 200 to 600

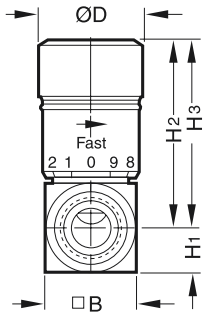
Bold letters =
Short-term availability

p/Q curves

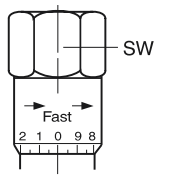


Dimensions

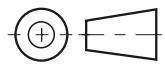




H2 = closed
H3 = open



Hexagon adjusting knob, standard for size 1600



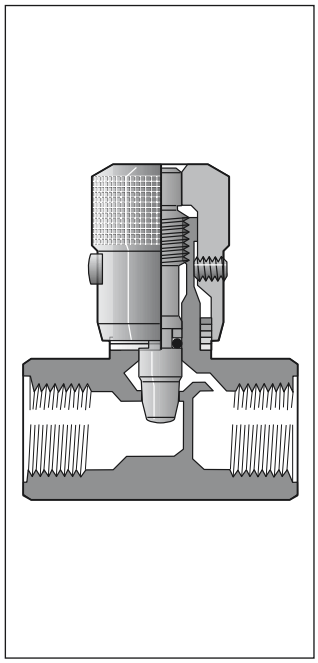
Size	R* threads	H3	H2	H1	B	L1	L	ØD	SW
200	1/8	39	35	8	16	16	38	19	-
400	1/4	46	40	10.5	21	25	51	21	-
600	3/8	55	49	13	26	32	64	25	-
800	1/2	69	61	16	32	33	67	30	-
1200	3/4	86	71	19	38	41	83	35	-
1600	1	124	107	22.5	45	54	108	-	47.8

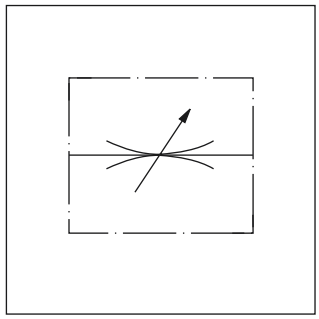
* G or NPTF

Manatrol valves of the series 6N have metric connecting thread.
There are different needle forms available which allow the flow rate to be finely adjusted.

Advantages

- Connection form corresponds to the standard ISO 6149 with conical contacting surface for the O-ring.
- Metric connecting thread
- Seal reliable against leakage due to O-ring seal between screw-in threaded joint and connecting thread
- World-wide availability





Shown without O-ring

Technical data

Connecting thread	Nominal pressure [bar]	Max. flow [l/min] at Δp 10bar
M16 x 1.5	350	25
M18 x 1.5	350	40
M22 x 1.5	350	50
M27 x 2.0	350	120

Material

Body	ASTM 12L14	Steel
Adjustment knob	ASTM 12L14	Steel
Needle valve	ASTM 416	Stainless steel

Ordering code

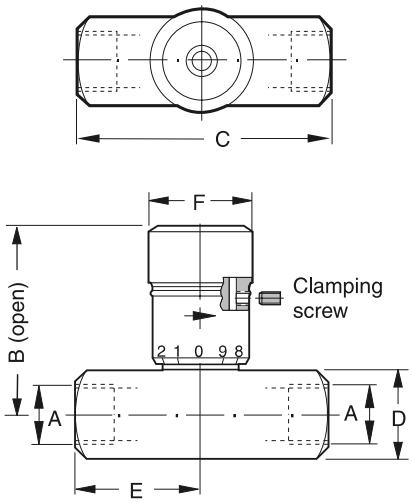
6	N		S
Metric connecting thread ISO 6149	**Needle valve**	**Size**	**Steel body**

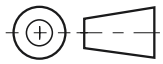
Code	Size
616	**M16 x 1,5**
818	M18 x 1,5
1022	M22 x 1,5
1227	**M27 x 2,0**

Seals

NBR = Standard
FPM = Option

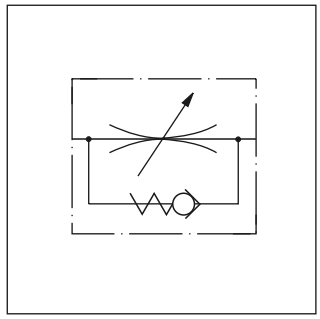
Bold letters =
Short-term availability

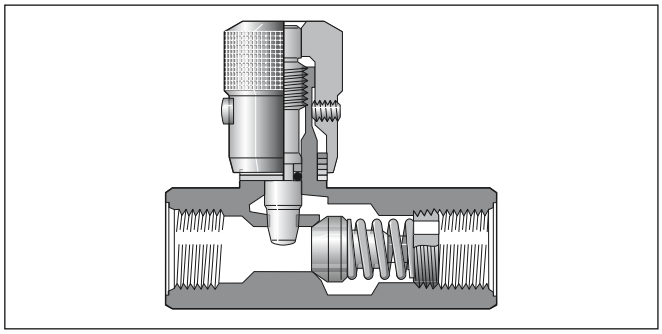




Series	Connecting thread A	Dimensions [mm]				
		B	C	D	E	F
6N616S	M16 x 1.5	46.3	60.3	25.4	30.2	20.6
6N818S	M18 x 1.5	56.2	76.2	28.6	38.1	24.5
6N1022S	M22 x 1.5	68.1	88.9	31.8	44.5	30.2
6N1227S	M27 x 2.0	85.9	101.6	38.1	50.8	35.1

Manatrol throttle check valves of series F allow the adjustment of the flow rate for a defined flow direction. The medium can flow back in the opposite direction via the built-in check valve with little flow resistance. A 2-stage needle allows for very exact setting of smaller flow rates with the first three rotations of the adjustment knob. After 3 more rotations, the valve is completely open. The valve setting can be locked using a locking screw.





$$\text{Flow rate } Q\ [l/min] = Kv \cdot \sqrt{\frac{\Delta p}{\gamma}}$$

Kv — from the table
Δp [bar]
γ [kg/dm³] = spezific weight of the medium
(γ for mineral oil = 0.85 - 0.9)

Specifications

Return check poppet, nominal cracking pressure	0.4 bar
Operating temperature	-40°C to +121°C

Characteristic values

Size	Pressure [bar]			Max. flow [l/min] Δp10bar	Opening [cm²]	Check Kv-factor	Throttle surface [cm²]	Throttle valve open Kv-factor	Weight [kg]	
	Steel	Stainl. st.	Brass						Steel	Brass
200	350	–	140	11	0.14	6.7	0.066	3.3	0.13	0.13
400	350	350	140	25	0.37	18.6	0.13	6.3	0.23	0.23
600	350	350	140	40	0.62	30.4	0.22	11.2	0.31	0.31
800	350	350	140	50	0.86	43.4	0.28	14	0.67	0.68
1200	210	–	140	120	1.18	60	0.70	35.4	1.17	1.18
1600	210	–	35	250	2.23	111	1.48	75	2.31	2.32
2000	210	–	–	250	3.45	174	1.48	75	3.67	–
2400	210	–	–	250	4.40	225	1.48	75	4.62	–
3200	210	–	–	250	5.11	259	1.48	75	7.78	–

Ordering Code

		F					
Thread type	**Throttle check valve**		**Thread size**	**Body**	**Needle**	**Clamping screw**	**Seal**

Code	Thread
omit	NPTF
9	**BSPP**

Code	Thread size
200	**1/8**
400	**1/4**
600	**3/8**
800	**1/2**
1200	**3/4**
1600[1)]	**1**
2000[1)]	1 ¼
2400[1)]	1 ½
3200[1)]	2

[1)] only sizes 1600 to 3200

Code	Body
S	**Steel**
B[2)]	Brass
SS[3)]	Stainless steel

[2)] only for sizes 200 to 1600
[3)] available in sizes 400, 600 and 800

Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

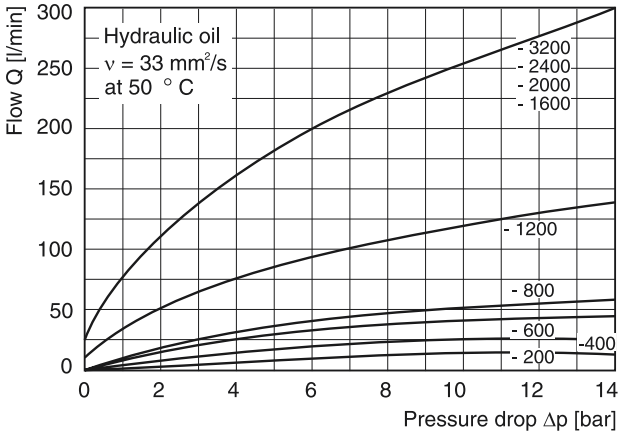
Code	Needle
omit	**Standard 2-stage needle**
4[4)]	micro-fine hollow needle with slot

[4)] only for sizes 200 to 600

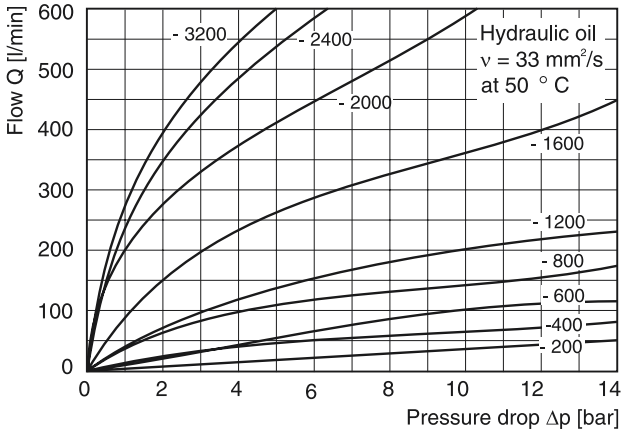
Code	Seal
omit	**NBR**
V	FPM

Bold letters =
Short-term availability

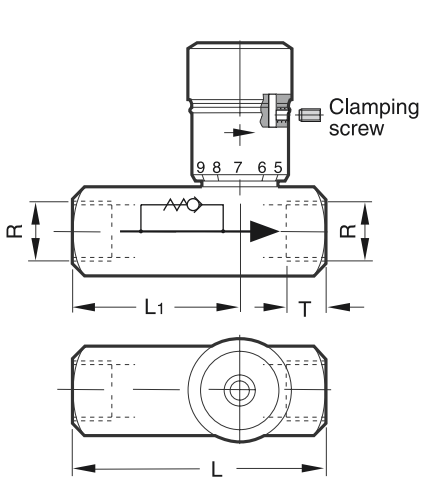
Controlled flow vs. pressure drop needle fully open

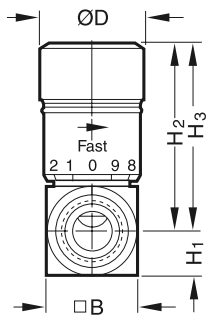


Free flow vs. pressure drop needle fully open

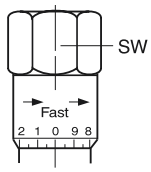


Dimensions

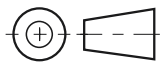




H_2 = closed
H_3 = open



Hexagon adjusting knob, standard for sizes 1600 to 3200



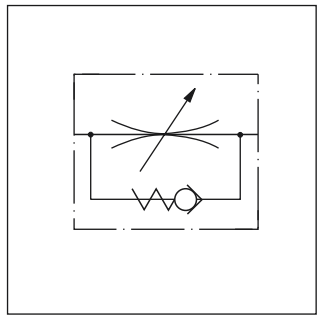
Size	R*	H_3	H_2	H_1	B	L_1	L	ØD	SW	T
200	1/8	39	35	8	16	36	51	19	-	9
400	1/4	46	40	10.5	21	43	67	21	-	13
600	3/8	55	49	13	26	45	70	25	-	13
800	1/2	69	61	16	32	57	87	30	-	16
1200	3/4	86	71	19	38	65	99	35	-	17
1600	1	124	107	22.5	45	83	127	-	47.8	20
2000	1 1/4	130	114	29	58	99	143	-		21.5
2400	1 1/2	137	120	35	70	114	143	-		23.5
3200	2	146	130	44.5	89	134	165	-		25

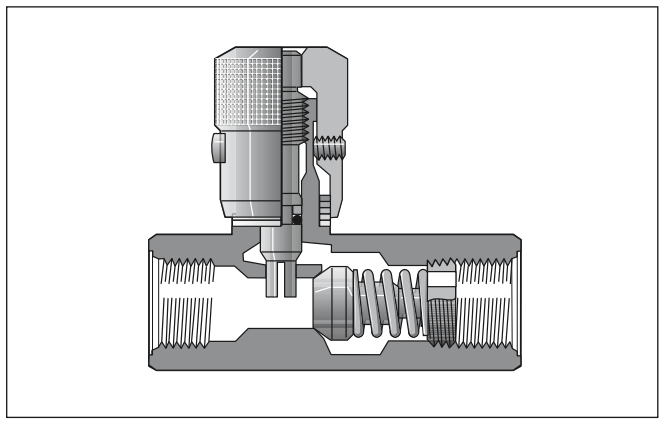
* Pipe thread G or NPTF

Manatrol throttle check valves of the series 6F have metric connecting thread. The flow can be finely adjusted in a defined direction. A bypass check valve allows revers free flow.

Advantages

- Connection form corresponds to the standard ISO 6149 with conical contacting surface for the O-ring.
- Metric connecting thread
- Seal reliable against leakage due to O-ring seal between screw-in threaded joint and connecting thread
- World-wide availability





Shown without O-ring

Technical data

Connecting thread	Nominal pressure [bar]	Max. flow rate [l/min] at Δp 10 bar
M16 x 1.5	350	25
M18 x 1.5	350	40
M22 x 1.5	350	50
M27 x 2.0	350	120

Material

Body	ASTM 12L14	Steel
Adjustment knob	ASTM 12L14	Steel
Needle valve	ASTM 416	Stainless steel
Poppet	ASTM 416	Stainless steel
Guide	ASTM 416	Stainless steel
Spring	ASTM 316	Stainless steel

Ordering code

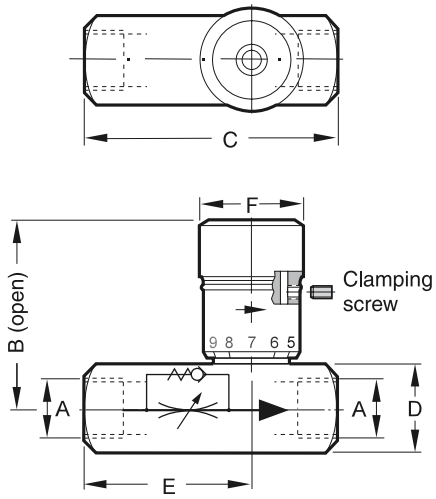
6	F		S
Metric connecting thread ISO 6149	**Throttle check valve**	**Size**	**Steel body**

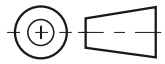
Code	Size
616	**M16 x 1.5**
818	M18 x 1.5
1022	M22 x 1.5
1227	**M27 x 2.0**

Seals

NBR = Standard
FPM = Option

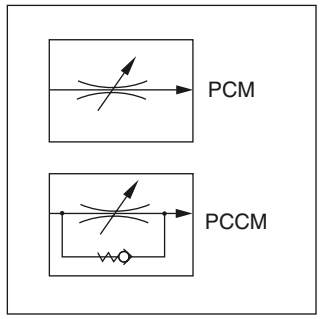
Bold letters =
Short-term availability





Size	Connection thread A	Dimensions [mm]				
		B	C	D	E	F
6F616S	M16 x 1.5	47.0	79.4	25.4	48.8	20.6
6F818S	M18 x 1.5	56.2	88.9	28.6	53.8	24.5
6F1022S	M22 x 1.5	68.1	101.6	31.8	65.0	30.2
6F1227S	M27 x 2.0	85.9	117.5	38.1	76.5	35.1

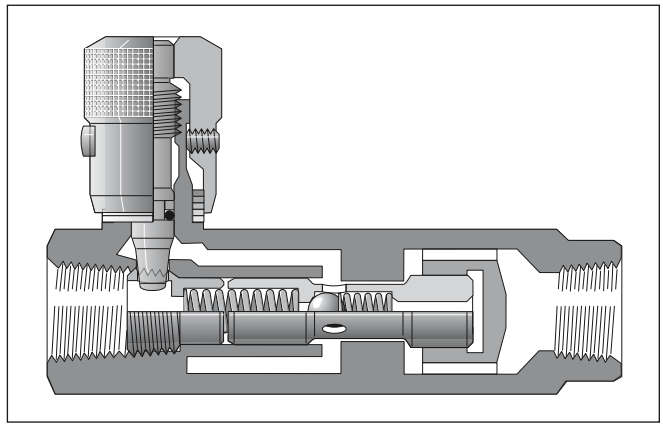
2-way flow control valves for pressure compensated regulation of the flow rate. As a consequence of pressure changes, the set value can vary by ± 5% within the tolerance range. Viscosity changes have the same effect and are to be observed.



Characteristic values

Size	Max. press. [bar]	Flow control		Check valve		Weight [kg]
		$Q^{1)}$ [l/min]	Δp [bar]	Q_{max} [l/min]	Δp [bar]	
400	210	1 - 10	7	20	3	0.82
600[2)]	210	2 - 25	7	30	3	1.05
800[2)]	210	6 - 60	11	75	8	1.68
1200[2)]	210	10 - 100	11	130	8	3.64
1600	210	19 - 190	11	250	10	6.59

[1)] Min. and max. flow rate
[2)] Stainless steel



Ordering code

☐	**PC**	☐	**M**	☐	☐	☐	☐	☐	☐
Thread type	**Pressure compens. flow control valvel**	**Design**		**Pipe thread size**	**Steel body**	**Clamping screw**	**Seal**	**Design series** (is determined by factory)	

Code	Thread
omit	NPTF
9	**BSPP**

Code	Design
omit	**without check valve**
C	with check valve

Code	Thread size
400	**1/4**
600	**3/8**
800	**1/2**
1200	**3/4**
1600	**1**

Code	Seal
omit	**NBR**
V	FPM

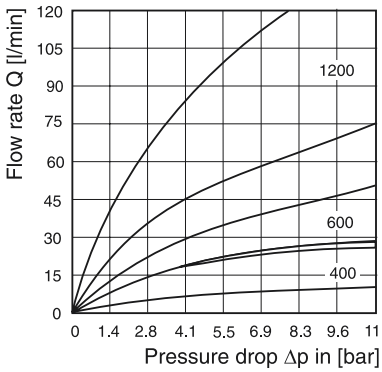
Code	Clamping screw
omit	**Hexagon socket**
F	with knurled knob

Code	Gehäuse
S	**Stahl**
SS[1)]	Edelstahl

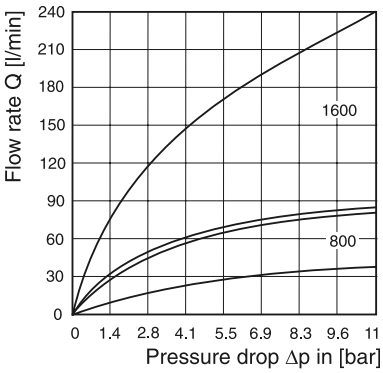
[1)] available in sizes 600 and 800

Bold letters =
Short-term availability

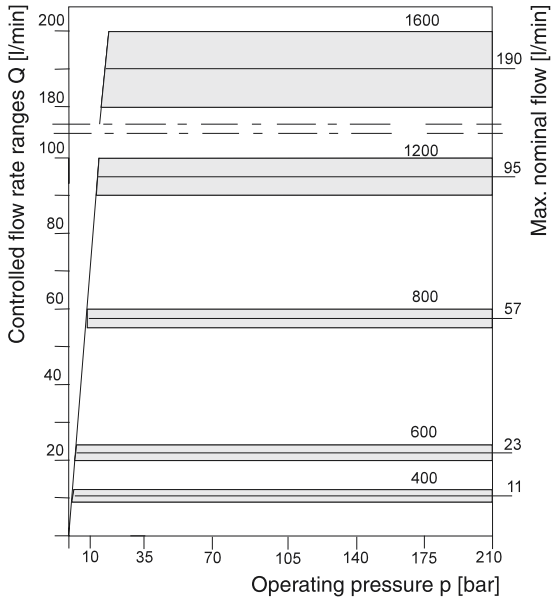
Δp/Q curves



Size 400, 600 and 1200 pressure drop Δp at flowing over check valve each in range Q_{max} / Q_{min}

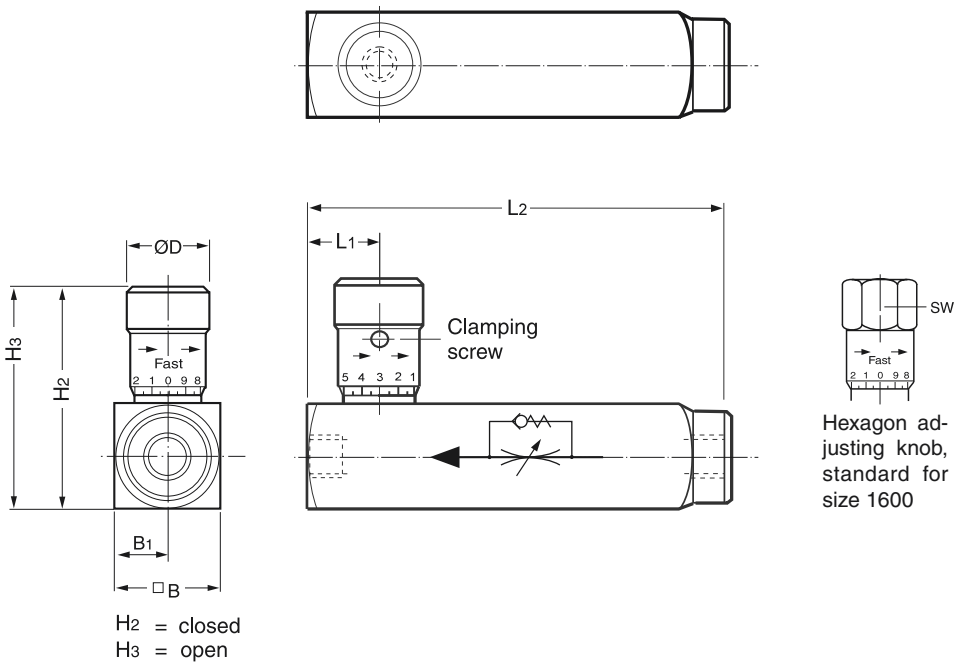


Size 800 and 1600 pressure drop Δp at flowing over check valve each in range Q_{max} / Q_{min}



The curves refer to hydraulic oil of 33 cSt / 50°C.

Dimensions



Hexagon adjusting knob, standard for size 1600

H_2 = closed
H_3 = open

Size	R*	H_3	H_2	B	L_1	B_1	L_2	ØD	SW
400	1/4	69	64	35	16	18	92	21	-
600	3/8	80	74	38	18	19	106	25	-
800	1/2	103	95	44	22	22	125	30	-
1200	3/4	128	116	57	28	29	149	35	-
1600	1	175	158	70	33	35	176	-	47.8

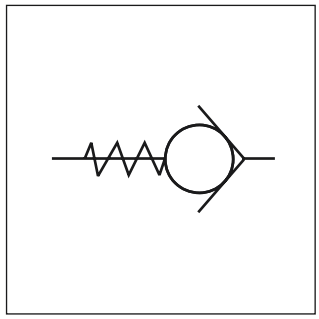
* Pipe thread G or NPTF

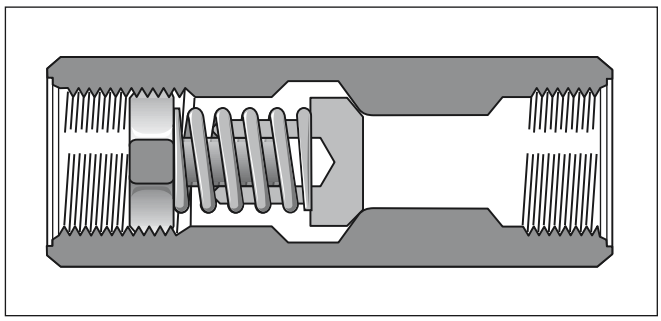
HY11-3295 UK Manatrol.INDD.RH

Parker Hannifin GmbH & Co. KG
Hydraulic Controls Division
Kaarst, Germany

Manatrol check valves of the series C for pipeline installation provide free flow in one direction and block flow in the counter direction. Depending on material specification, these valves are suited for use in hydraulic and pneumatic systems.
Specific Manatrol poppet and poppet guides ensure reliable functional integrity even at high flow rates and/or pulsations.

The diagram shows a poppet made of stainless steel. In contrast to balls, poppets offer lower wear and prevent chatter. An exact guide for the poppet and spring ensures function stability.





Technical data

Size			200	400	600	800	1200	1600
Working pressure	Steel	[bar]	350	350	350	350	350	210
	Stainless steel	[bar]	–	350	350	350	–	–
	Brass	[bar]	140	140	140	140	140	34
Pressure drop Δp		[bar]	10	10	10	10	1	1
Nominal flow Q		[l/min]	40	65	110	155	112	160

Ordering Code

		C				
Thread type		**Pipeline installation**	**Port size**	**Body**	**Opening pressure**	**Seal**

Code	Thread
omit	NPTF
9	**G = Withworth pipe tread**

Code	Thread size
200	1/8
400	**1/4**
600	**3/8**
800	**1/2**
1200	**3/4**
1600	**1**

Code	Seal
omit	**NBR**
V	FPM

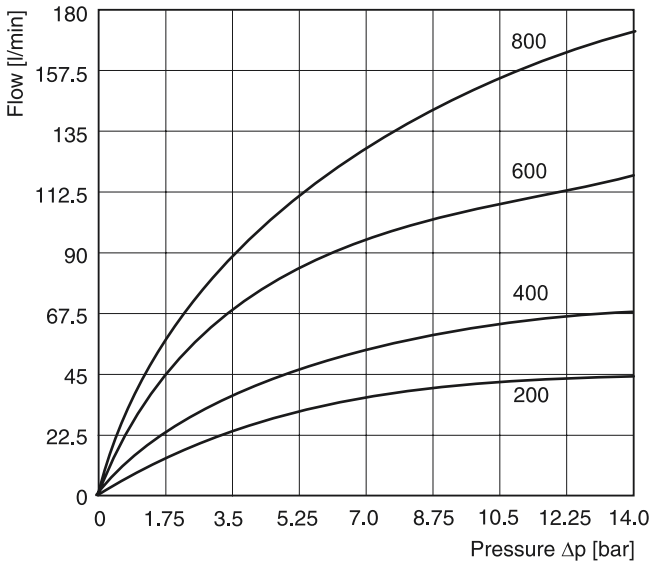
Code	Pressure [bar]
omit	**0.35**
65	4.5

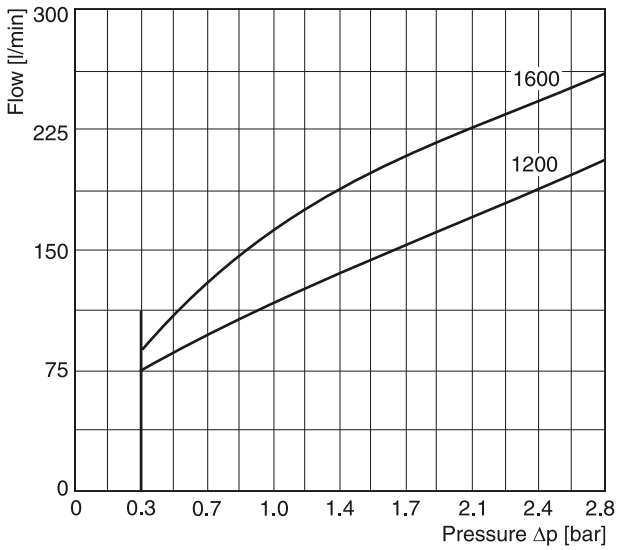
Code	Body
S	**Steel**
B	Brass
SS[1)]	Stainless steel

[1)] available in 400, 600, 800

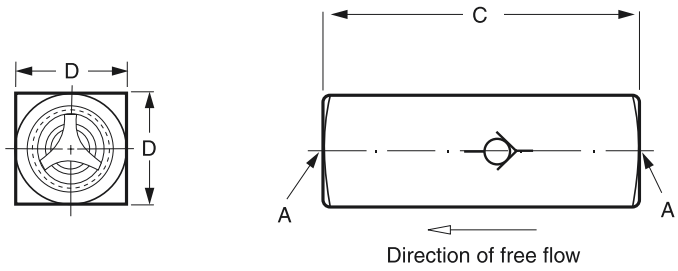
Bold letters =
Short-term availability

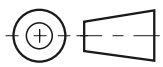
Δp/Q performance curves





Dimensions

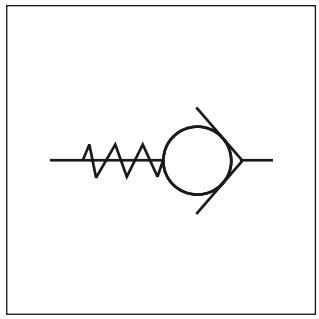


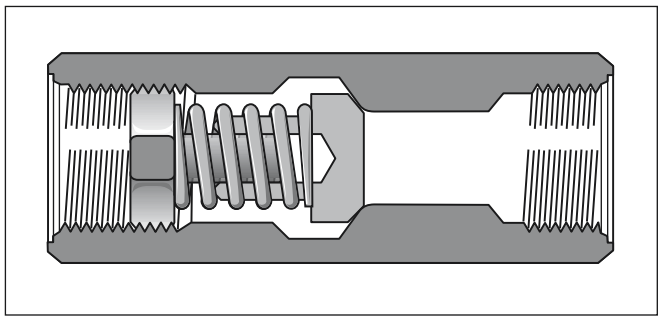


Size	Threaded connection R*		Dimensions [mm]		Weight [kg]
	G thread	NPTF thread	B	L	
C 200	R 1/8“	1/8-27 NPTF	16	51	0.05
C 400	R 1/4“	1/4-18 NPTF	21	66	0.2
C 600	R 3/8“	3/8-18 NPTF	25	70	0.2
C 800	R 1/2“	1/2-14 NPTF	32	87	0.6
C 1200	R 3/4“	3/4-14 NPTF	38	99	0.9
C 1600	R 1“	1-11-1/2 NPTF	45	127	1.5

* For alternative thread design, see ordering code

Check valves of the series 6C have metric connecting thread. The valve enables the free flow in a direction and blocks flow in the counter direction.





Drawing shown without O-ring

Advantages

- Connection form corresponds to the standard ISO 6149 with conical contacting surface for the O-ring.
- Metric connecting thread
- Seal reliable against leakage due to O-ring seal between screw-in threaded joint and connecting thread
- World-wide availability

Technical data

Size		616	818	1022	1227
Nom. pressure	[bar]	350	350	350	350
Flow	[l/min]	65	110	155	240
Connecting thread		M16x1.5	M18x1.5	M22x1.5	M27x2
Opening press.	[bar]	0.35 (standard)			
Material	Body	ASTM 12L14 steel			
	Poppet	ASTM 416 stainless steel			
	Guide	ASTM 416 stainless steel			
	Spring	ASTM 316 stainless steel			
Seal*		Nitrile (NBR)			
		Fluorocarbon (FPM)			

* no seal at M27x2.0

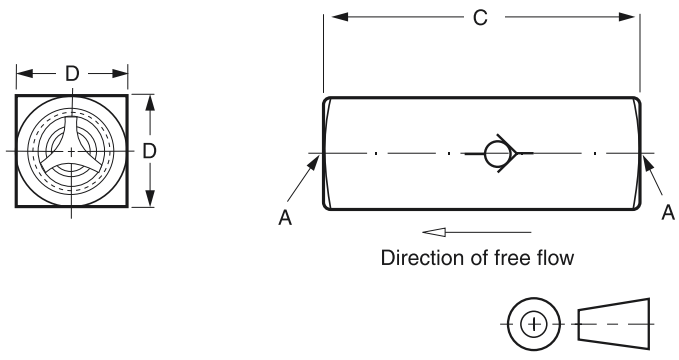
Ordering code

6	C		S
Metric port thread ISO 6149	Pipeline installation	Size	Steel body

Code	Size
616	**M16 x 1.5**
818	**M18 x 1.5**
1022	**M22 x 1.5**
1227	**M27 x 2.0**

Bold letters =
Short-term availability

Dimensions



Size	Connecting thread A	Dimensions C	Dimensions D
6C616S	M16 x 1.5	79.4	25.4
6C818S	M18 x 1.5	88.9	28.6
6C1022S	M22 x 1.5	101.6	31.8
6C1227S	M27 x 2.0	117.5	38.1

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