

Manatrol throttle check valves of series F with fine adjustment of the flow rate for a defined flow direction. The built-in check valve allows free flow in the counter direction with little flow resistance. A 2-stage needle provides 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.

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

K_v from the table

Δp [bar]

γ [kg/dm³]

= specific weight of the medium

(γ for mineral oil

= 0.85 - 0.9)

Specifications

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

Technical data

Size	Pressure [bar]		Max. flow [l/min Δp 10bar]	Throttle surface [cm ²]	Throttle v. open K_v factor	Weight [kg]	
	Steel	Brass				Steel	Brass
200	350	140	11	0.066	3.3	0.13	0.13
400	350	140	25	0.13	6.3	0.23	0.23
600	350	140	40	0.22	11.2	0.31	0.31
800	350	140	50	0.28	14	0.67	0.68
1200	210	140	120	0.70	35.4	1.17	1.18
1600	210	35	250	1.48	75	2.31	2.32
2000	210	—	250	1.48	75	3.67	—
2400	210	—	250	1.48	75	4.62	—
3200	210	—	250	1.48	75	7.78	—

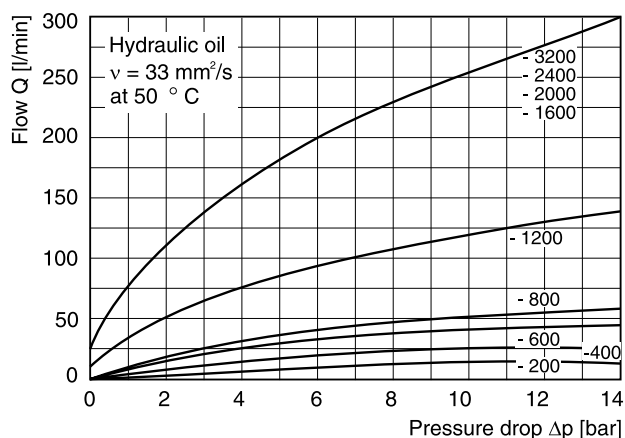
Ordering code

Thread type <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Thread</th></tr> <tr> <td>omit</td><td>NPTF</td></tr> <tr> <td>9</td><td>BSPP</td></tr> </table>	Code	Thread	omit	NPTF	9	BSPP	F Throttle check valve	Thread size <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Size</th></tr> <tr> <td>200</td><td>1/8</td></tr> <tr> <td>400</td><td>1/4</td></tr> <tr> <td>600</td><td>3/8</td></tr> <tr> <td>800</td><td>1/2</td></tr> <tr> <td>1200</td><td>3/4</td></tr> <tr> <td>1600</td><td>1</td></tr> <tr> <td>2000</td><td>1 1/4</td></tr> <tr> <td>2400</td><td>1 1/2</td></tr> <tr> <td>3200</td><td>2</td></tr> </table>	Code	Size	200	1/8	400	1/4	600	3/8	800	1/2	1200	3/4	1600	1	2000	1 1/4	2400	1 1/2	3200	2	Body <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Body</th></tr> <tr> <td>S</td><td>Steel</td></tr> <tr> <td>B ¹⁾</td><td>Brass</td></tr> </table>	Code	Body	S	Steel	B ¹⁾	Brass	Needle <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Needle</th></tr> <tr> <td>omit</td><td>Standard 2-stage needle</td></tr> <tr> <td>4 ³⁾</td><td>Micro-fine hollow needle with slot</td></tr> </table>	Code	Needle	omit	Standard 2-stage needle	4 ³⁾	Micro-fine hollow needle with slot	Clamping screw <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Clamping screw</th></tr> <tr> <td>omit</td><td>Hexagon socket</td></tr> <tr> <td>F</td><td>With knurled knob</td></tr> <tr> <td>T</td><td>Tamper-proof</td></tr> </table>	Code	Clamping screw	omit	Hexagon socket	F	With knurled knob	T	Tamper-proof	Seal <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Code</th><th>Seal</th></tr> <tr> <td>omit</td><td>NBR</td></tr> <tr> <td>V</td><td>FPM</td></tr> </table>	Code	Seal	omit	NBR	V	FPM
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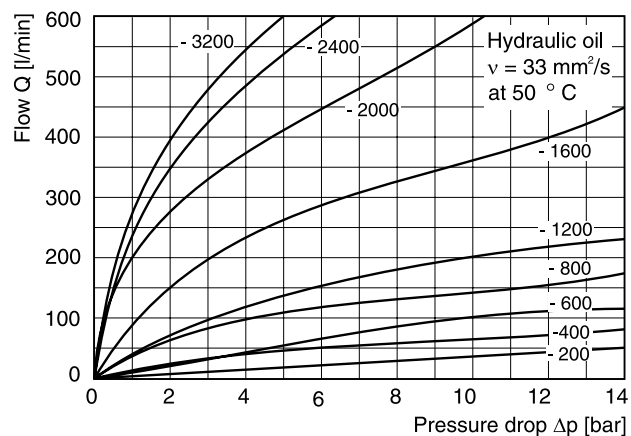
Bold letters =
Short-term availability

³⁾ only for sizes 200 to 600

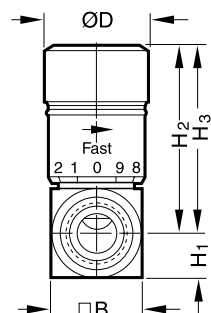
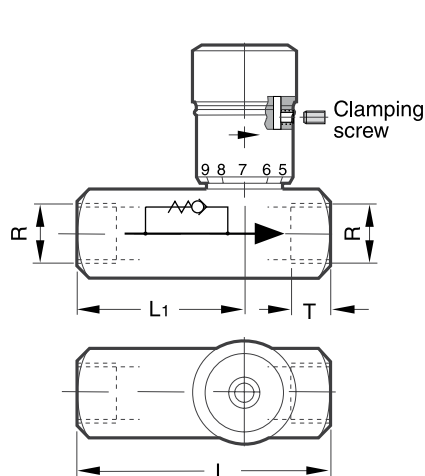
Controlled flow vs. pressure drop needle fully open



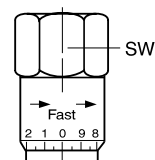
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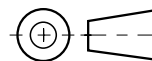
Dimensions



H₂ = closed
H₃ = open



Hexagon adjusting
knob, standard for
sizes 1600 to 3200



Size	R*	H3	H2	H1	B	L1	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