

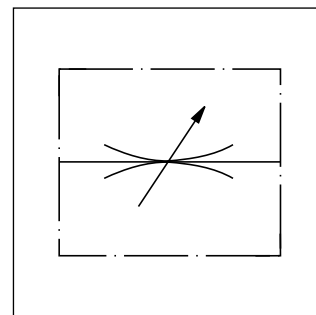
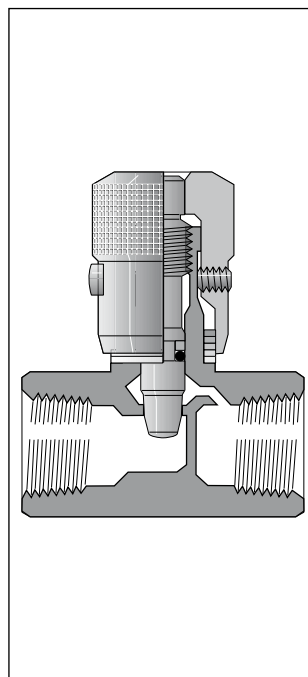
Manatrol stop and throttle valves with 2-stage needle cone. Fine adjustment for the first stage can be achieved with 3 rotations of the adjustment knob. The second stage with normal throttle characteristics is achieved with 3 further rotations. A cylindrical needle with a rectangular slot is provided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

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

K_v from the table
 Δp [bar]
 γ [kg/dm³] = specific weight of the medium
 $(\gamma \text{ for mineral oil} = 0.85 - 0.9)$

Specifications

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



Ordering code

Thread type <table border="1"> <tr><td>Code</td><td>Thread</td></tr> <tr><td>omit</td><td>NPTF</td></tr> <tr><td>9</td><td>BSPP</td></tr> </table>	Code	Thread	omit	NPTF	9	BSPP	N Needle valve	Thread size <table border="1"> <tr><td>Code</td><td>Size</td></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> </table>	Code	Size	200	1/8	400	1/4	600	3/8	800	1/2	1200	3/4	1600	1	Body <table border="1"> <tr><td>Code</td><td>Body</td></tr> <tr><td>S</td><td>Steel</td></tr> <tr><td>B</td><td>Brass</td></tr> </table>	Code	Body	S	Steel	B	Brass	Needle <table border="1"> <tr><td>Code</td><td>Needle</td></tr> <tr><td>omit</td><td>Standard 2-stage needle</td></tr> <tr><td>4 ¹⁾</td><td>Micro-fine hollow needle with slot</td></tr> </table>	Code	Needle	omit	Standard 2-stage needle	4 ¹⁾	Micro-fine hollow needle with slot	Clamping screw <table border="1"> <tr><td>Code</td><td>Clamping screw</td></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"> <tr><td>Code</td><td>Seal</td></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

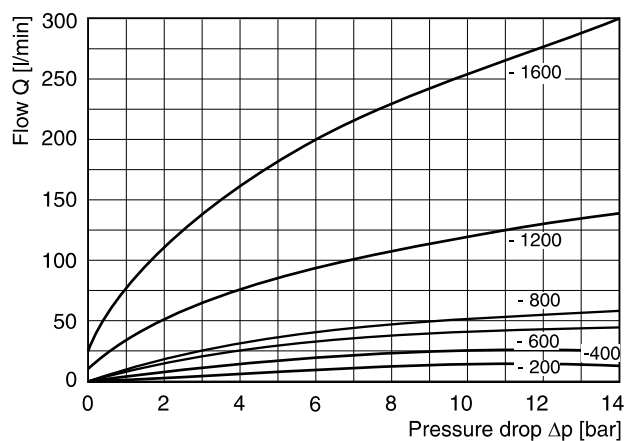
¹⁾ Only for sizes 200 to 600

Technical data (only for standard 2 stage needle)

Size	Pressure [bar]		Flow [l/min]	Max. cross section	Kv factor valve	Weight [kg]
	Steel	Brass				
200	350	140	11	0.066	3.3	0.15
400	350	140	25	0.13	6.3	0.22
600	350	140	40	0.22	11.2	0.6
800	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

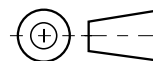
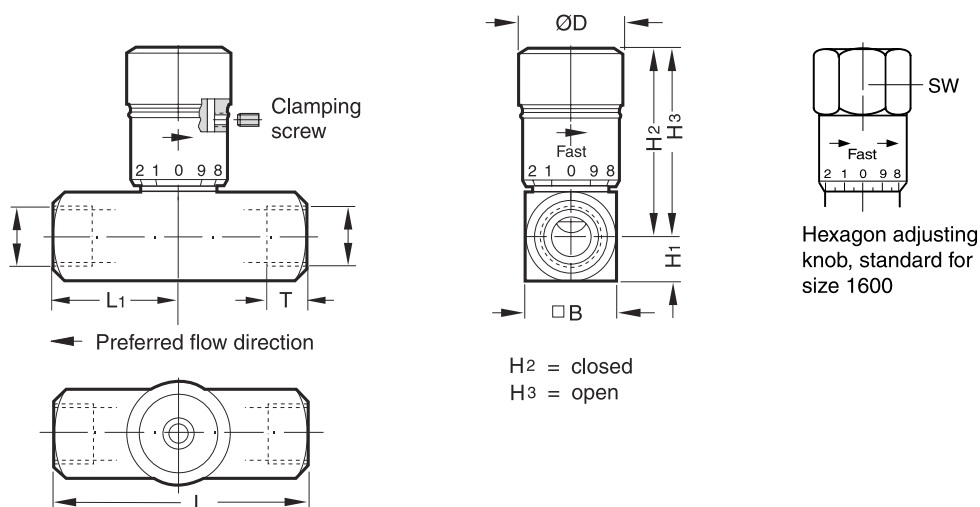
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p/Q curves



All characteristic curves measured with HLP46 at 50 °C.

Dimensions



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