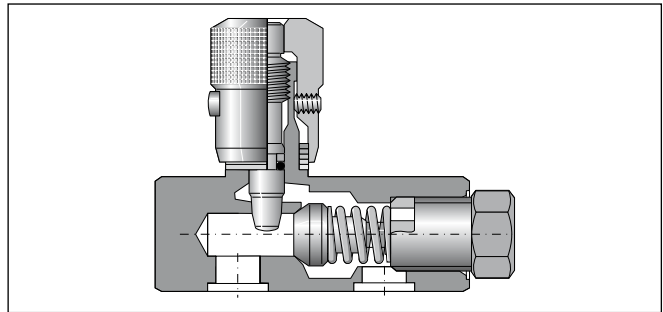
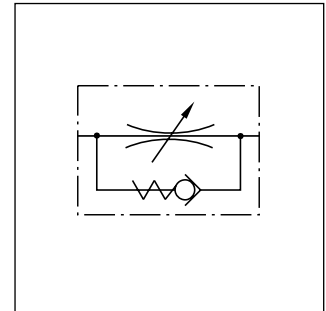
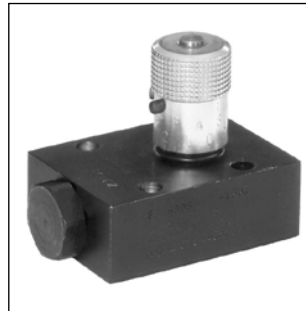


**Characteristics / Ordering Code**

Manatrol throttle check valves series FS allow the adjustment of the flow for a defined direction.

A 2 stage needle allows for very exact setting of smaller flow rates with the first 3 rotations of the adjustment knob. After 3 more rotations, the valve is completely open. The valve setting can be locked by a locking screw.



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

$K_v$  from the table  
 $\Delta p$  [bar]  
 $\gamma$  [kg/dm<sup>3</sup>] = specific gravity of fluid  
 ( $\gamma$  for mineral oil = 0.85 – 0.9)

**Characteristic values**

Size	Pressure [bar]	Max. flow [l/min $\Delta p$ 10 bar]	Opening [cm <sup>2</sup> ]	Check Kv factor	Throttle surface [cm <sup>2</sup> ]	Throttle v. open Kv factor	Weight [kg]
400 <sup>1)</sup>	210	25	0.37	18.6	0.13	6.3	0.23
600 <sup>1)</sup>	210	40	0.62	30.4	0.22	11.2	0.31
800 <sup>1)</sup>	210	50	0.86	43.4	0.28	14	0.67
1200 <sup>1)</sup>	210	120	1.18	60	0.70	35.4	1.17
1600 <sup>1)</sup>	210	250	2.23	111	1.48	75	2.31

<sup>1)</sup> MTTF<sub>p</sub> value 150 years

**Ordering code**

<b>F</b>	<b>S</b>		<b>S</b>			
Throttle and check valve	Subplate mounting	Size	Steel body	Needle	Clamping screw	Seal

Code	Size		Code	Seal
400	400		omit	<b>NBR</b>
600	600		V	FPM
800	800			
1200	1200		Code	Clamping screw
1600	1600		omit	<b>Hexagon socket</b>
			F	With knurled knob

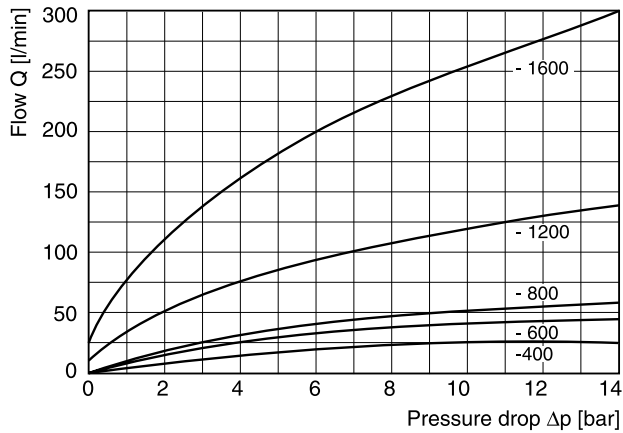
Code	Needle	
omit	<b>Standard 2 stage needle</b>	
4 <sup>1)</sup>	Micro-fine hollow needle with slot	

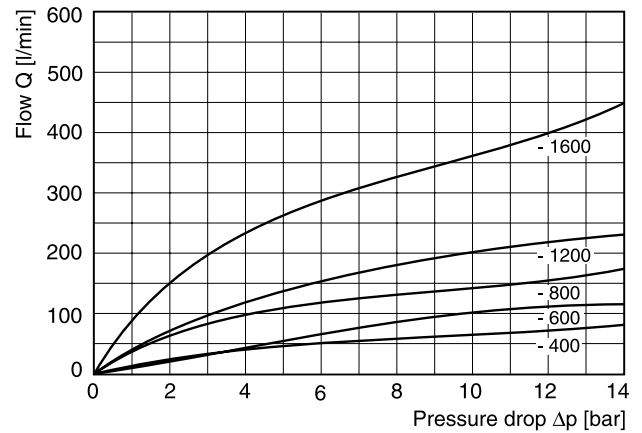
**Bold letters = Short-term availability**

<sup>1)</sup> Only for sizes 400 to 600.

**Δp/Q performance curves**



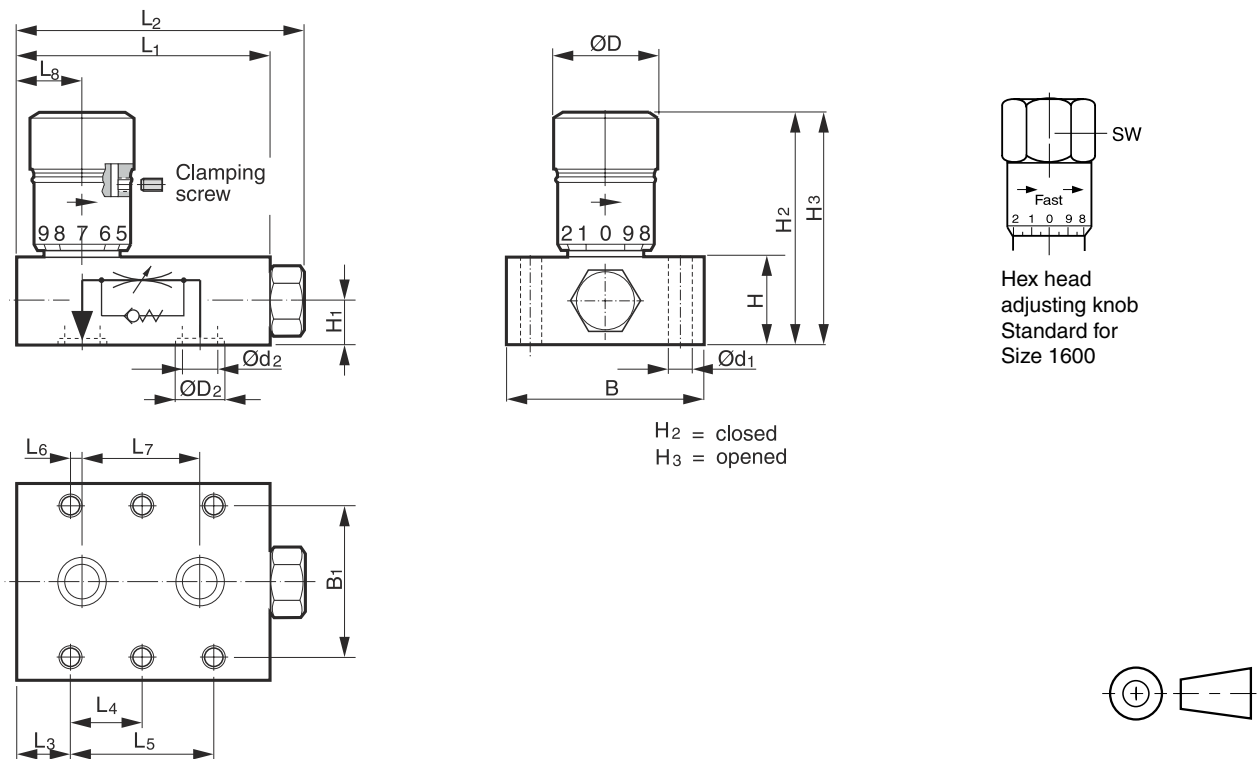
**Δp/Q performance curves free flow**



All characteristic curves measured with HLP46 at 50 °C.

**5**

**Dimensions**



Size	L1	L2	L3	L4	L5	L6	L7	L8	B	B1	H	H1	H2	H3	Ød1	Ød2	ØD2	ØD	SW
FS400	63.5	71.4	14.2	-	35.1	4.9	25.4	21.3	44.5	33.3	22.1	10.9	51.1	56.1	6.8	7.1	13.3	20.6	-
FS600	69.9	78.0	18.3	-	33.3	4.1	25.4	25.4	50.8	38.1	25.4	12.7	61.0	67.3	7.0	10.4	16	25.4	-
FS800	81.0	89.2	21.3	-	38.1	4.1	30.2	30.7	57.2	44.5	31.8	15.7	76.2	83.6	7.0	11.9	19.1	30.0	-
FS1200	103.9	114.6	14.0	38.1	76.2	11.2	54.1	38.6	69.9	54.1	44.5	22.1	95.5	110.5	9.0	16.8	24	34.8	-
FS1600	127.0	137.7	15.7	47.8	95.5	19.3	56.9	45.2	76.2	60.5	50.8	25.4	129.5	146.3	9.0	22.4	32	-	47.5