

## Manatrol Series FS Flow Control Valves

These valves provide precise control of flow and shutoff in one direction, and automatically permit full flow in the opposite direction.

A two-step needle allows fine adjustment at low flow by using the first three turns of the adjusting knob; the next three turns open the valve to full flow, and also provide standard throttling adjustments.

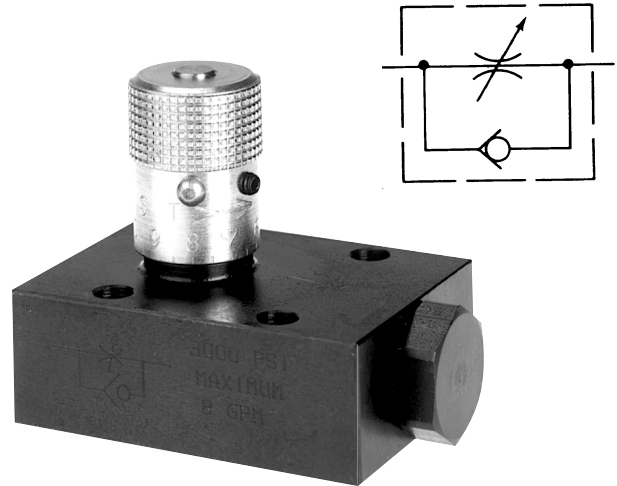
The exclusive "Colorflow" color-band reference scale on the valve stem is a great convenience and time-saver in setting the valve originally and in returning it to any previous setting.

Maximum operating pressure: 3000 PSI

Cracking Pressure, for return check poppet:  
5 PSI (0.4 Bar)

Solid metal poppet.

Needles: Standard needle on all models: Fine needle optional on Models FS400 and FS600.



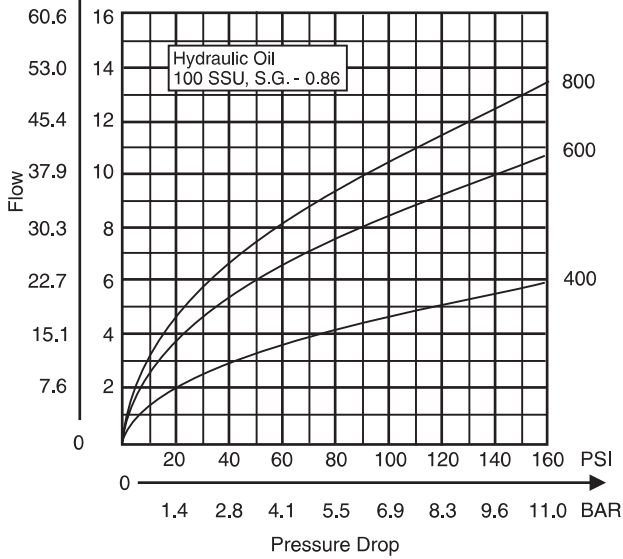
### Quick Reference Data Chart

Model Number	Free Flow Rate, Max. GPM (L/M)	Free Flow Orifice Area in <sup>2</sup>	Free Flow C <sub>v</sub>	Orifice Area, Effective Control Flow, in <sup>2</sup>	Effective Control Flow C <sub>v</sub>	Port Size
FS400	5 (19)	0.068	1.56	.0194	.433	1/4
FS600	8 (30)	0.099	2.27	.0344	.787	3/8
FS800	15 (57)	0.224	5.11	.0427	.976	1/2
FS1200	25 (95)	0.348	7.95	.1080	2.470	3/4
FS1600	40 (151)	0.453	10.35	.2300	5.250	1

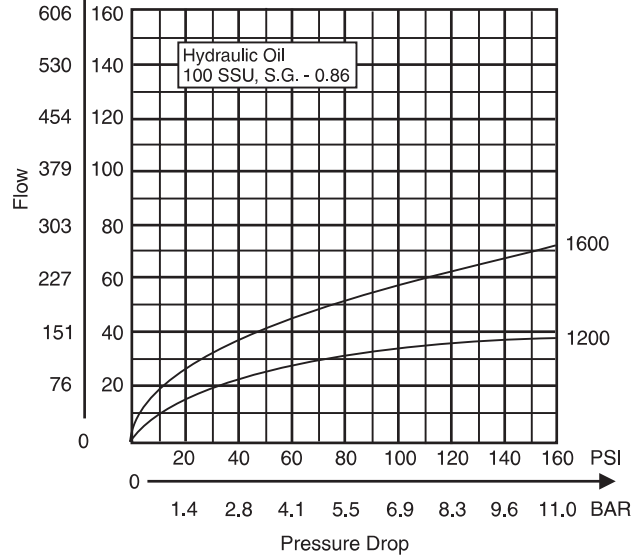


**Performance Data**

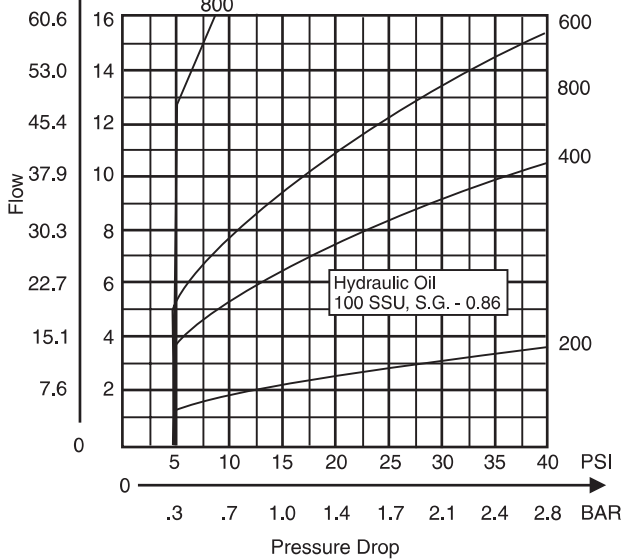
**“FS” Series 400 thru 800  
Controlled Flow vs. Pressure Drop  
Needle Full Open**



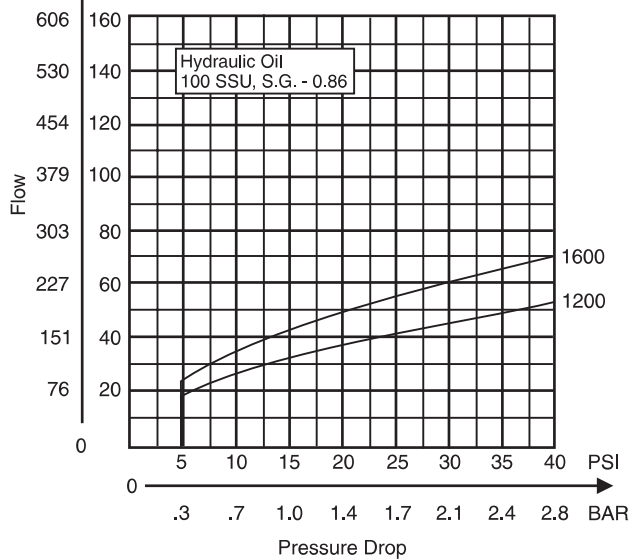
**“FS” Series 1200 thru 1600  
Controlled Flow vs. Pressure Drop  
Needle Full Open**



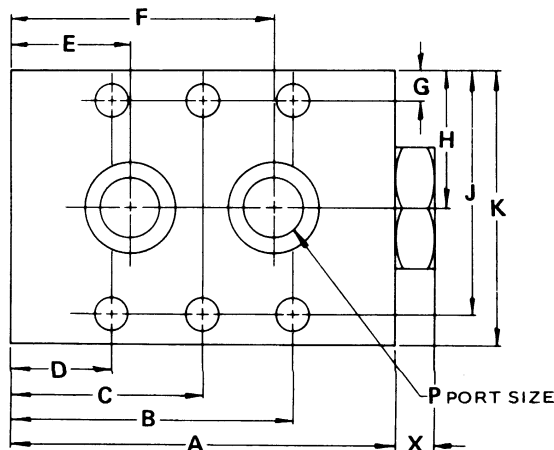
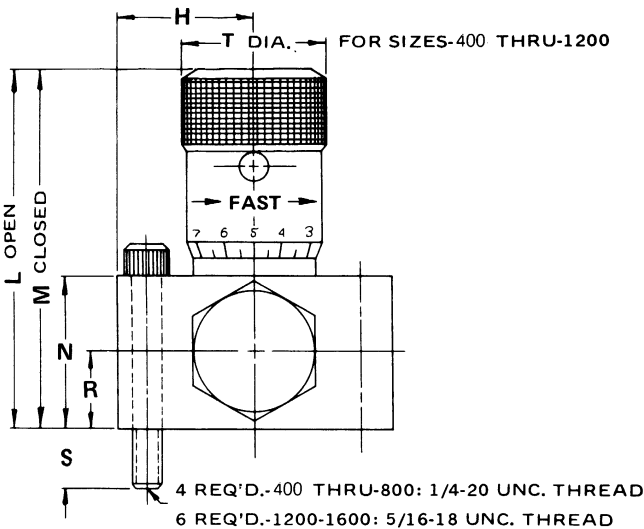
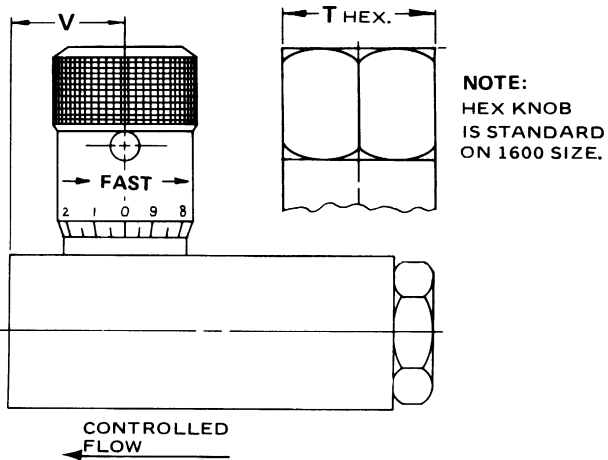
**“FS” Series 400 thru 800  
Free Flow vs. Pressure Drop  
Needle Full Closed**



**“FS” Series 1200 thru 1600  
Free Flow vs. Pressure Drop  
Needle Full Closed**

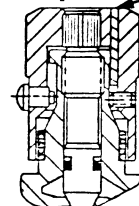


**Dimensions**  
Models FS400 through FS 1600  
Subplate-mounted  
Flow Control Valves

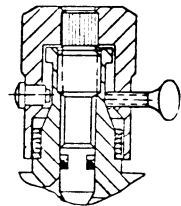


repcat-k.p65, dd, fn

**Knob Options**



Tamperproof Option (Code "T") permanently locks knob at desired flow setting by installing a pin in predrilled hole.

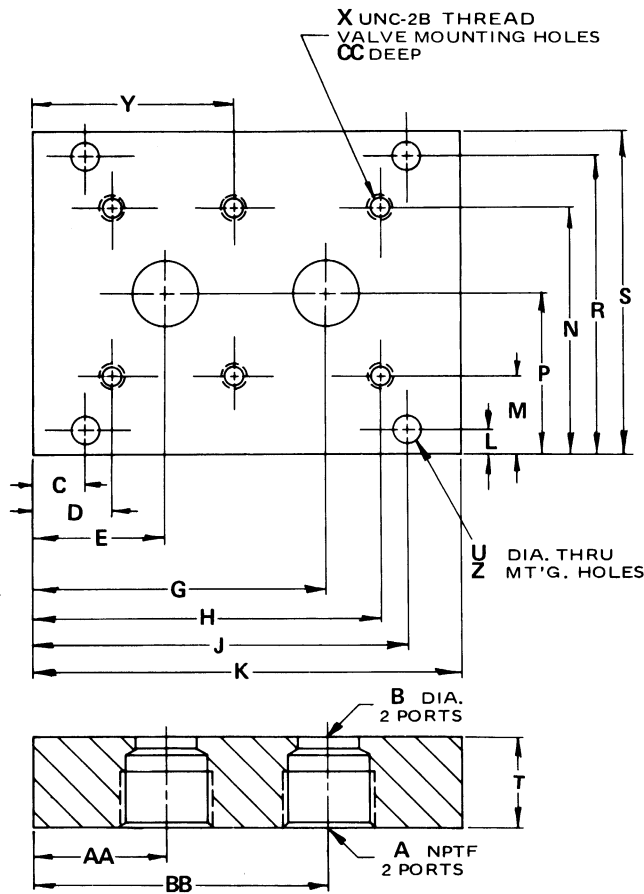


Finger screw option (Code "F") provides this thumbscrew in place of set screw.

	Valve Model				
	FS400	FS600	FS800	FS1200	FS1600
<b>A</b>	2.50 (63.5)	2.75 (69.9)	3.19 (81.0)	4.09 (103.9)	5.00 (127.0)
<b>B</b>	1.94 (49.3)	2.03 (51.6)	2.34 (59.4)	3.55 (90.2)	4.38 (111.3)
<b>C</b>	—	—	—	2.05 (52.1)	2.50 (63.5)
<b>D</b>	.56 (14.2)	.72 (18.3)	.84 (21.3)	.55 (14.0)	.62 (15.7)
<b>E</b>	.75 (19.1)	.88 (22.4)	1.00 (25.4)	.99 (25.1)	1.38 (35.1)
<b>F</b>	1.75 (44.5)	1.88 (47.8)	2.19 (55.6)	3.12 (79.2)	3.62 (92.0)
<b>G</b>	.22 (5.6)	.25 (6.4)	.25 (6.4)	.31 (7.9)	.31 (7.9)
<b>H</b>	.88 (22.4)	1.00 (25.4)	1.12 (28.4)	1.38 (35.1)	1.50 (38.1)
<b>J</b>	1.53 (38.9)	1.75 (44.5)	2.00 (50.8)	2.44 (62.0)	2.69 (68.3)
<b>K</b>	1.75 (44.5)	2.00 (50.8)	2.25 (57.2)	2.75 (69.9)	3.00 (76.2)
<b>L</b>	2.21 (56.1)	2.65 (67.3)	3.29 (83.6)	4.35 (110.5)	5.76 (146.3)
<b>M</b>	2.01 (51.1)	2.40 (61.0)	3.00 (76.2)	3.76 (95.5)	5.10 (129.5)
<b>N</b>	.87 (22.1)	1.00 (25.4)	1.25 (31.8)	1.75 (44.5)	2.00 (50.8)
<b>P</b>	.28 (7.1)	.41 (10.4)	.47 (11.9)	.66 (16.8)	.88 (22.4)
<b>R</b>	.43 (10.9)	.50 (12.7)	.62 (15.7)	.87 (22.1)	1.00 (25.4)
<b>S</b>	.38 (9.7)	.50 (12.7)	.50 (12.7)	.50 (12.7)	.50 (12.7)
<b>T</b>	.81 (20.6)	1.00 (25.4)	1.18 (30.0)	1.37 (34.8)	1.87 (47.5)
<b>V</b>	.84 (21.3)	1.00 (25.4)	1.21 (30.7)	1.52 (38.6)	1.78 (45.2)
<b>X</b>	.31 (7.9)	.32 (8.1)	.32 (8.1)	.42 (10.7)	.42 (10.7)

**Subplate Dimensions**  
Models FS400 through FS1600

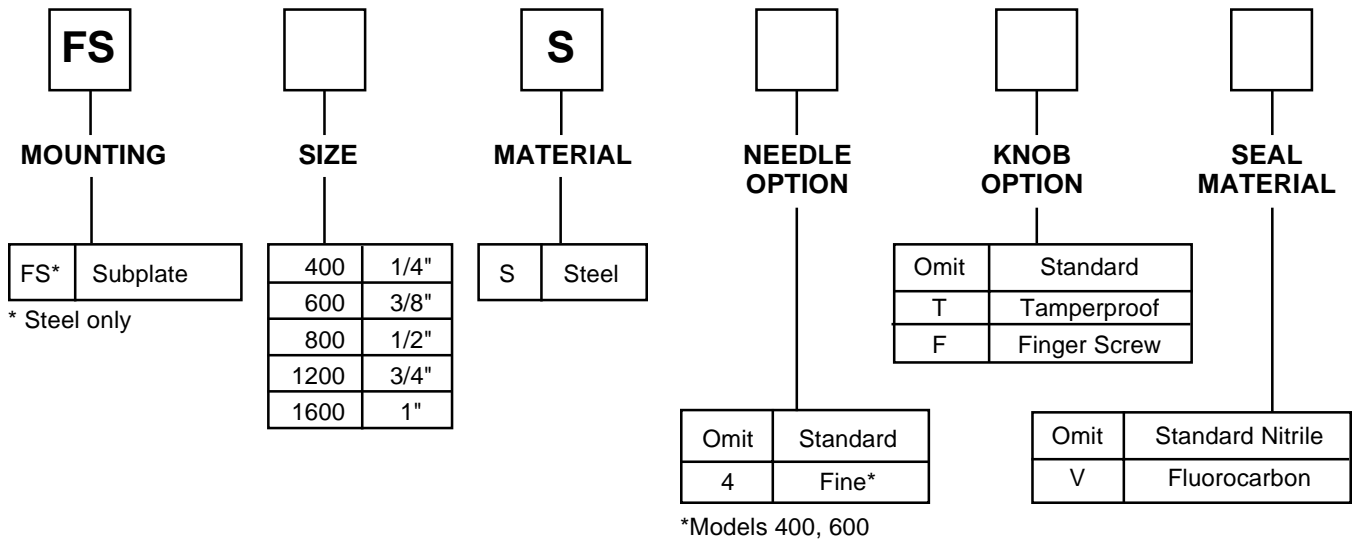
Reference Data Only  
(Subplates are not available)



	Valve Numbers				
	FS 400	FS 600	FS 800	FS 1200	FS 1600
A	1/4"	3/8"	1/2"	3/4"	1"
B	.281 (7.1)	.406 (10.3)	.469 (11.9)	.656 (16.7)	.875 (22.2)
C	.375 (9.5)	.375 (9.5)	.500 (12.7)	.344 (8.7)	.344 (8.7)
D	.562 (14.3)	.843 (21.4)	.875 (22.2)	.750 (19.1)	1.125 (28.6)
E	.750 (19.1)	1.000 (25.4)	1.031 (26.2)	1.188 (30.2)	1.875 (47.6)
G	1.750 (44.5)	2.000 (50.8)	2.219 (56.4)	3.312 (84.1)	4.125 (104.8)
H	1.938 (49.2)	2.156 (54.8)	2.375 (60.3)	3.750 (95.3)	4.875 (123.8)
J	2.125 (54.0)	2.625 (66.7)	2.750 (69.9)	4.156 (105.6)	5.656 (143.7)
K	2.50 (63.5)	3.00 (76.2)	3.25 (82.6)	4.50 (114.3)	6.00 (152.4)
L	.344 (8.7)	.250 (6.4)	.438 (11.1)	.344 (8.7)	.344 (8.7)
M	.844 (21.4)	.750 (19.1)	1.125 (28.6)	1.062 (27.0)	1.062 (27.0)
N	2.156 (54.8)	2.250 (57.2)	2.875 (73.0)	3.188 (81.0)	3.438 (87.3)
P	1.500 (38.1)	1.500 (38.1)	2.000 (50.8)	2.125 (54.0)	2.250 (57.2)
R	2.656 (67.5)	2.750 (69.9)	3.562 (90.5)	3.906 (99.2)	4.156 (105.6)
S	3.00 (76.2)	3.00 (76.2)	4.00 (101.6)	4.25 (108.0)	4.50 (114.3)
T	1.125 (28.6)	1.125 (28.6)	1.125 (28.6)	1.125 (28.6)	1.250 (31.8)
U	.281 (7.1)	.281 (7.1)	.359 (9.1)	.422 (10.7)	.422 (10.7)
X	1/4-20	1/4-20	1/4-20	5/16-18	5/16-18
Y	—	—	—	2.250 (57.2)	3.000 (76.2)
Z	4	4	4	6	6
AA	.750 (19.1)	1.000 (25.4)	1.031 (26.2)	1.188 (30.2)	1.875 (47.6)
BB	1.750 (44.5)	2.000 (50.8)	2.219 (56.4)	3.312 (84.5)	4.125 (104.8)
CC	.505 (12.8)	.525 (13.3)	.525 (13.3)	.525 (13.3)	.525 (13.3)



### Ordering Information



### Bolt Kits To order bolt kits, specify bolt kit number

Valve	Bolt Kit	Bolt Specification*	Bolt Torque
FS400S	BK01	1/4-20 x 1-1/4"	13 Ft.-Lbs.
FS600S	BK02	1/4-20 x 1-1/2"	13 Ft.-Lbs.
FS800S	BK04	1/4-20 x 1-3/4"	13 Ft.-Lbs.
FS1200S	BK08	5/16-18 x 2-1/4"	27 Ft.-Lbs.
FS1600S	BK10	5/16-18 x 2-1/2"	27 Ft.-Lbs.

\*Use SAE Grade 8 or Better.

