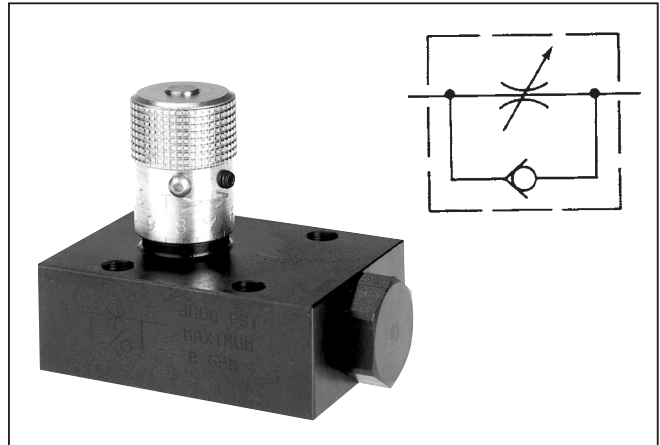


**General Description**

Series FS flow control 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.



**Features**

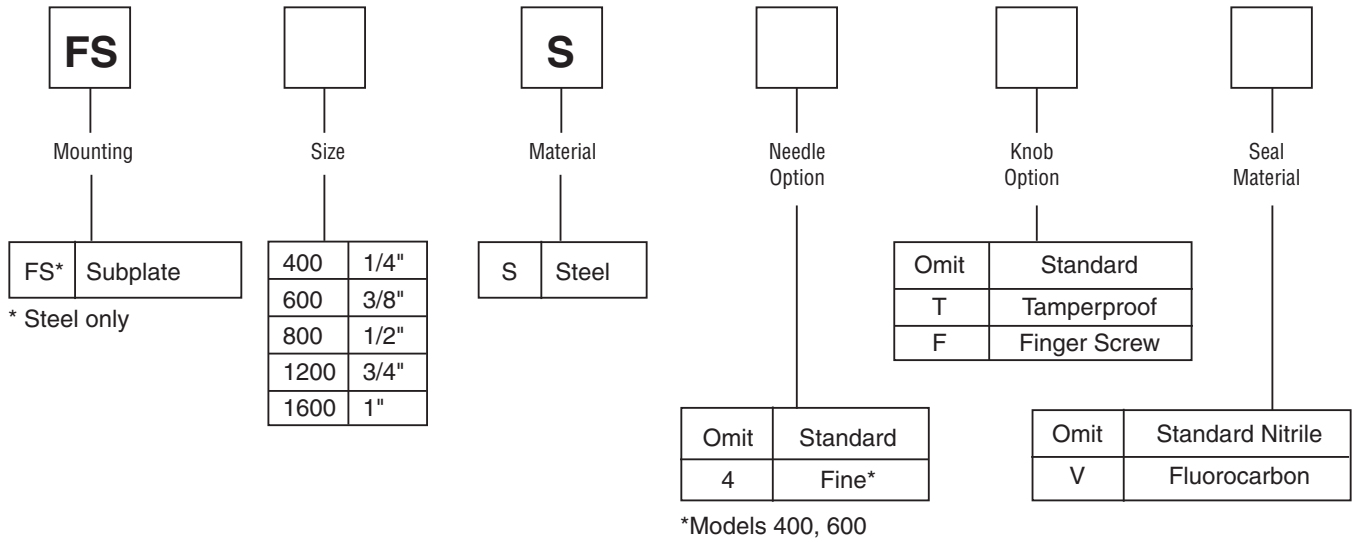
- The exclusive “Colorflow” color-band reference scale on the valve stem is a great convenience and time-saver in setting the valve originally and in returning it to any previous setting.
- A simple set screw locks the valve on any desired setting.
- Stainless steel poppets are standard.

**Specifications**

|                                   |  |
|-----------------------------------|--|
| <b>Maximum Operating Pressure</b> | 210 Bar (3000 PSI)   |
| <b>Nominal Cracking Pressure</b>  | 0.3 Bar (5 PSI)<br>For return check poppet                                     |
| <b>Poppet Style</b>               | Solid metal poppet, steel  |
| <b>Needles</b>                    | Standard needle on all models except:<br>Fine needle option on FS400 and FS600 |

**Flow Data**

| Model Number | Free Flow Rate, Max. GPM (LPM) | Free Flow Orifice Area in <sup>2</sup> | Free Flow Cv | Orifice Area, Effective Control Flow, in <sup>2</sup> | Effective Control Flow Cv | 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         |



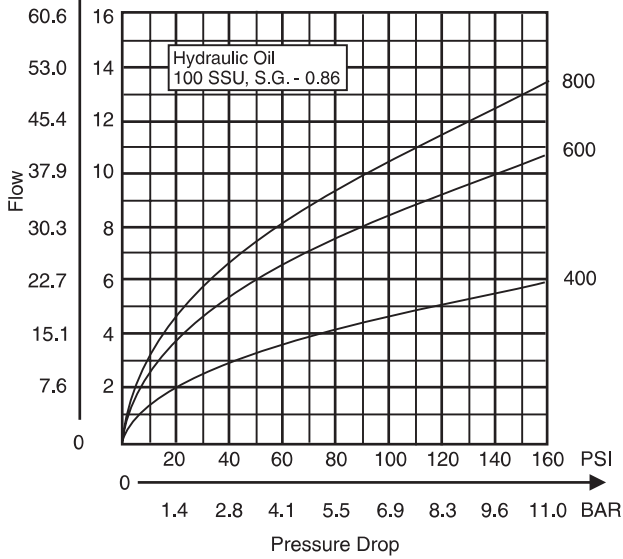
**Bolt Kits** To order bolt kits, specify bolt kit number

| 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. |

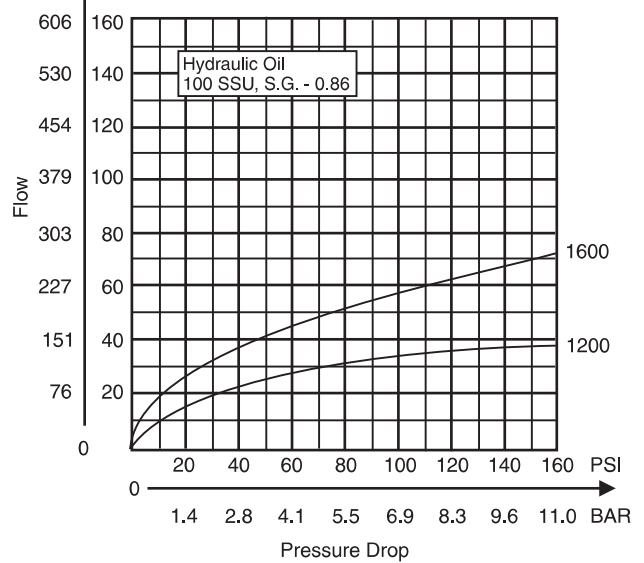
\*Use SAE Grade 8 or Better.

**D**

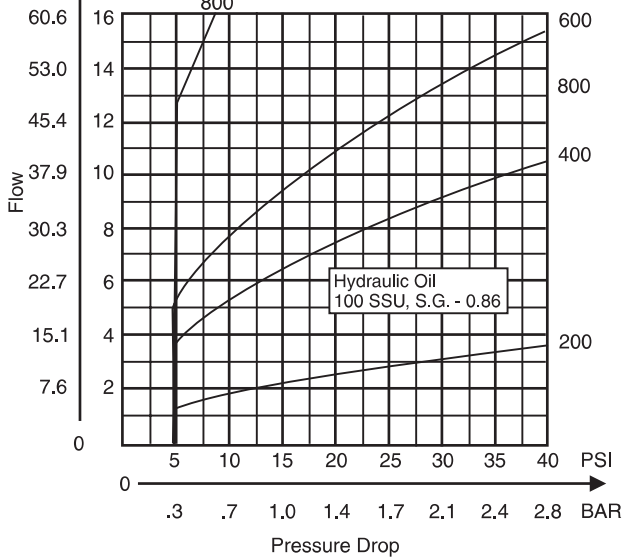
**“FS” Series 400 thru 800**  
**Controlled Flow vs. Pressure Drop**  
**Needle Full Open**



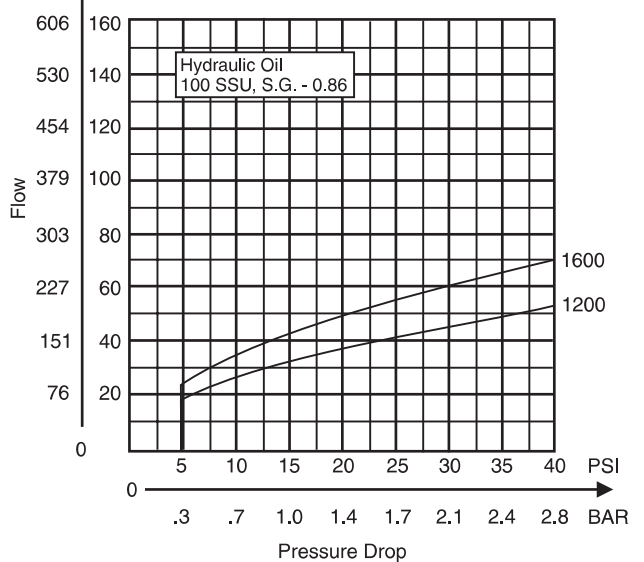
**“FS” Series 1200 thru 1600**  
**Controlled Flow vs. Pressure Drop**  
**Needle Full Open**



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



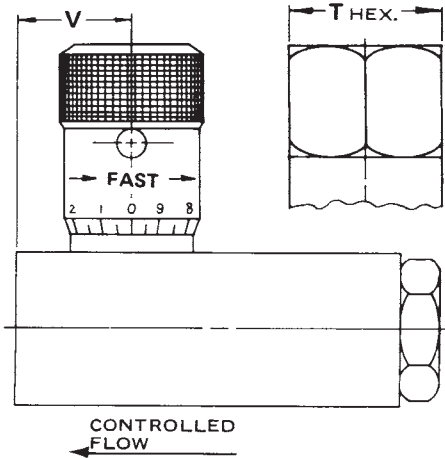
**“FS” Series 1200 thru 1600**  
**Free Flow vs. Pressure Drop**  
**Needle Full Closed**



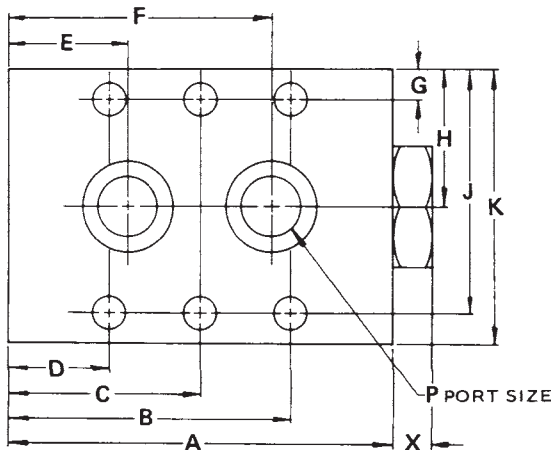
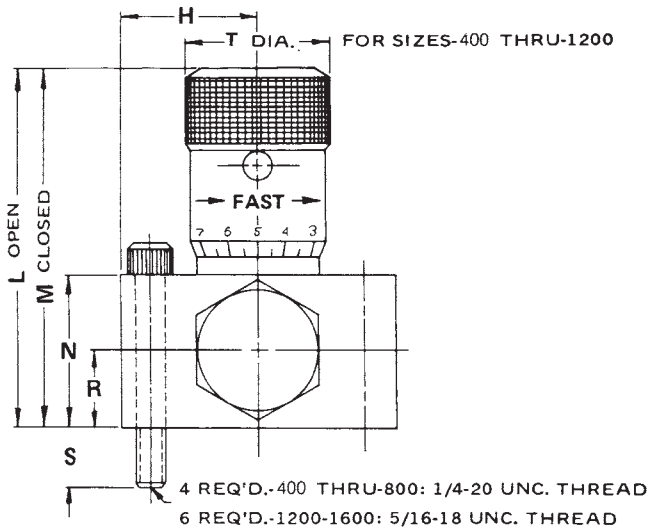
Millimeter equivalents for inch dimensions are shown in (\*\*)

**Models FS400 through FS 1600**

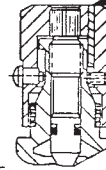
Subplate mounted Flow Control Valves



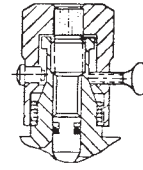
**NOTE:**  
 HEX KNOB  
 IS STANDARD  
 ON 1600 SIZE.



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



Millimeter equivalents for inch dimensions are shown in (\*\*)

**Subplate**

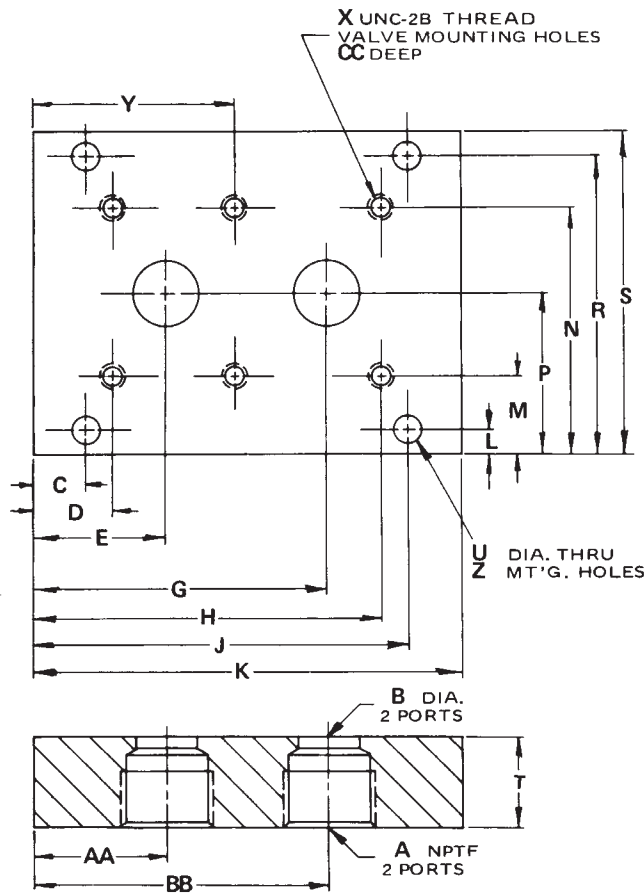
**Models FS400 through FS1600**

Reference Data Only

(Subplates are not available)



**D**



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