

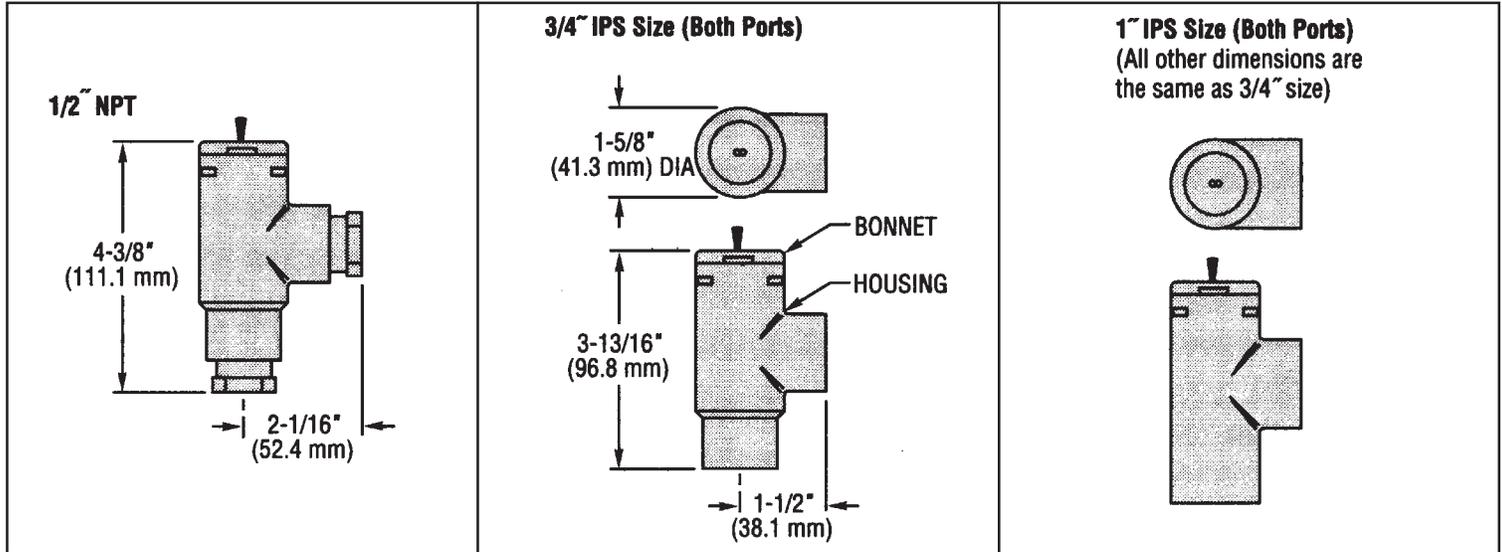


# Shuttle-Type Flow Switches

## FS-400P Series

Instruction Bulletin No. 127430

### Dimensions . . .



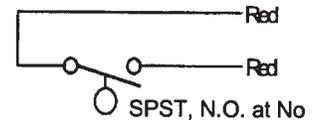
### Specifications . . .

<b>Materials</b>	
Housing, Shuttle, Bonnet	PVC
O-Ring	Buna N
Other Wetted Parts	Epoxy
<b>Operating Pressure, Max.</b>	
-Clear Version	120 PSIG @ +70°F to +100°F (+21°C to +37.8°C)
	50 PSIG @ +101°F to 120°F (+38.3°C to +48.9°C)
-Gray Version	150 PSIG @ +70°F to +100°F (+21°C to +37.8°C)
	75 PSIG @ +101°F to 140°F (+38.3°C to +60°C)
<b>Operating Temperature, Max.</b>	
-Clear Version	+120°F (+48.9°C)
-Gray Version	+140°F (+60°C)
Set Point Accuracy	±20%
Set Point Differential	20% Maximum
Switch*	SPST, 20 VA, N.O. @ No Flow
Inlet/Outlet Ports	1/2" NPT, 3/4" IPS, or 1" IPS
Mounting Attitude	Vertical, Inlet Down
Electric Termination	No. 22 AWG, 24" L., PVC Lead Wires

### Notes

- Care should be taken by specifiers to ensure fluid compatibility with the wetted materials listed.
- Use of 150 micron filtration is recommended

### Typical Wiring Diagram . . .



### \*Switch Ratings Max. Resistive Load

VA	Volts	Amps AC	Amps DC
20	0-30	.4	.3
	120	.17	.13
	240	.08	.06

### Standard Models . . .

PVC Mat'l.	Port Size	Actuation on Incr. Flow	Unit P/N
Clear	1/2" NPT*	0.5 GPM ±20%	135805
	3/4" IPS	0.5 GPM ±20%	135810
	1" IPS	2.0 GPM ±20%	135815
Gray	1/2" NPT*	0.5 GPM ±20%	127045
	3/4" IPS	0.5 GPM ±20%	127050
	1" IPS	2.0 GPM ±20%	127060



This product is suitable for Class I and Class II applications only, per the requirements of standard EN60730 and any additional specific requirements for a particular application or medium being sensed. Class I compliance of metal bodied units requires a ground connection between the metal body and the earthing system of the installation. Class I compliance of plastic bodied units in contact with a conductive medium requires that the medium be effectively earthed so as to provide an earthed barrier between the unit and accessible areas. For Class III compliance, a supply at safety extra-low voltage (SELV) must be provided. Please consult the Factory for compliance information on specific part numbers.

\* 3/4" IPS Model with 1/2" NPT port adapter installed

## Maintenance ...

### Disassembling for Cleaning ...

It is not necessary to remove the unit from the piping system.

**CAUTION: Make sure the system is turned off and that no residual pressure remains in the piping.**

1. Carefully slide out the two retaining keys, using a screw driver or similar tool.
2. Insert wide-bladed screwdriver in one of bonnet removal slots and twist screwdriver slowly, forcing bonnet out of housing. Do not pull on lead wires, as this can damage unit.

### Cleaning ...

Clean shuttle, stem and inside of housing by lightly scraping and/or wiping. Be careful not to damage guide finders in bottom of housing or flutes inside of shuttle. Check O-Ring, bonnet assembly and shuttle, and replace if necessary **See "Replacement Parts" (below)**. Note: Replacement of O-Ring is recommended whenever unit is disassembled.

### To Reassemble Unit...

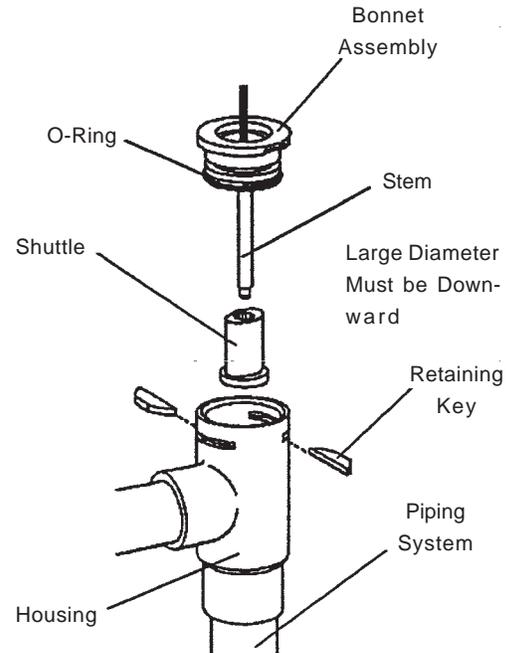
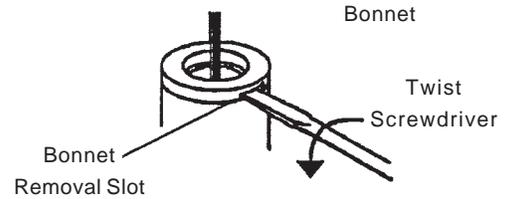
1. Assemble shuttle on bonnet stem, making sure large, round end of shuttle is downward,
2. Hold shuttle on stem and insert bonnet squarely into housing. Gently press bonnet into place.
- 3 Slide two retaining keys into slots in housing.

### \*Replacement Parts.

Complete Repair Kit (Includes Bonnet Ass'y, Shuttle, O-Ring).....P/N 127645

\*Order by P/N from Gems

## Removal of Bonnet From Housing ...



### Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and GEMS product catalog and instruction bulletin. Failure to observe this warning could result in serious injuries or damages.

An appropriate explosion-proof enclosure or intrinsically safe interface device must be used for hazardous area applications involving such things as (*but not limited to*) ignitable mixtures, combustible dust and flammable materials.

Pressure and temperature limitations shown on individual catalog pages and drawings for the specified flow switches must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of GEMS flow switches. Take care in the proper selection of materials of construction; particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact GEMS if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the specific gravity of a liquid can vary with temperature.

Flow switches have been designed to resist shock and vibration; however, shock and vibration should be minimized.

Liquid media containing particulate and/or debris should be filtered to ensure proper operation of GEMS products.

Electrical entries and mounting points may require liquid/vapor sealing if located in an enclosed tank.

Flow switches must not be field repaired.

Physical damaged sustained by the product may render it unserviceable.



**Gems Sensors Inc.**  
One Cowles Road  
Plainville, CT  
06062.1198

tel 860.747.3000  
fax 860.747.4244