Operating & Installation Instructions

Shuttle Type Flow Switches
Series FS-200E / 200E-A

Part Number: 995-0108 **Issue: B**

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Please Note: The flow switch is designed and manufactured in accordance with Sound Engineering Practice as defined by the Pressure Equipment Directive 97/23/EC. This flow switch must not be used as a "safety accessory" as defined by the Pressure Equipment Directive, Article 1, Paragraph 2.1.3. The CE Mark on the unit does not relate to the Pressure Equipment Directive.

Installation

Install FS-200E Series units in piping system using standard pipe fitting procedures. **Be careful to keep sealing compound out of the unit.** Be sure to observe direction of flow - marked **"IN"** and **"OUT"** on housing. **See chart below for port and wrench hex. sizes.**

Unless otherwise specified, standard FS-200 units are factory-calibrated with water.
FS-200 and FS-200 Adjustable units are calibrated horizontally, in line, with lead wires up.
150 micron filtration is suggested for use with all units.

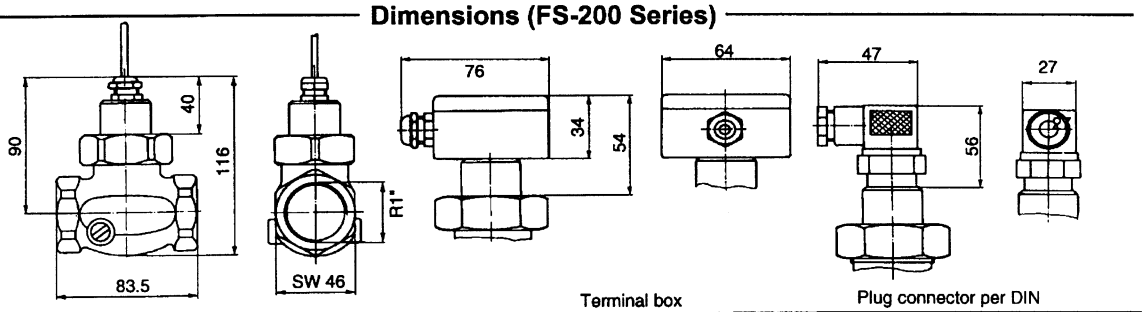
Specifications

Wetted Materials	
Housing	
FS-200	Bronze or 316 Stainless Steel
FS-200 Adj.	Bronze
Shuttle	Teflon®
Bonnet	Bronze or Stainless Steel
Spring	316 Stainless Steel
Other Wetted Parts	Viton®, Ceramic
Pressure Rating	
Operating	27bar @ 40°C
Proof	45 bar @ 40°C
Operating Temperature	
FS-200	-20°C to +80°C Cable (J.Box +150°C)
FS-200 Adj.	-20°C to +80°C Cable (J.Box +150°C)
Repeatability	1% Maximum Deviation
Set Point Accuracy	±10%
Hysteresis	15% Maximum
Switch	SPDT, 20 VA, 0.5A, 250V~
Electrical Termination	3 x 0.34 mm PVC cable or J.Box

Note: Bonnet and shuttle assembly should be removed from unit during welding or brazing.

(See bonnet assembly removal under "Maintenance" on back of sheet.)

Dimensions (FS-200 Series)



CE

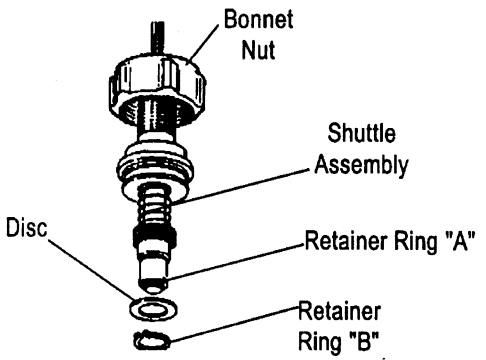
This product is suitable for Class I and Class II applications only, per the requirements of standard EN60730 and any additional specific requirements for a particular application or medium being sensed. Class I compliance of metal bodied units requires a ground connection between the metal body and 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.

Electrical Connection . . .

Cable, DIN 43650 connector or junction box

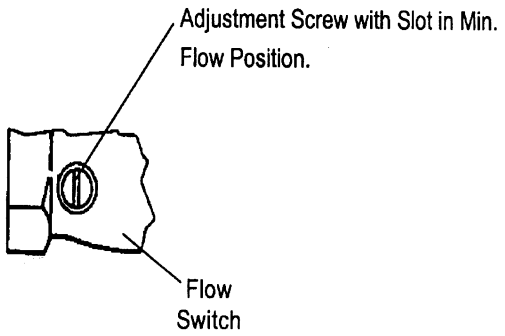
Maintenance . . .

Occasional cleaning when excessive contamination is present in the liquid is the only maintenance normally required. With system shut-down and no liquid in piping, remove bonnet nut to disassemble unit for cleaning. **It is not necessary to remove unit body from the system.** Remove retainer ring "A" for complete shuttle disassembly. Remove ring "B" to disassemble disc only.

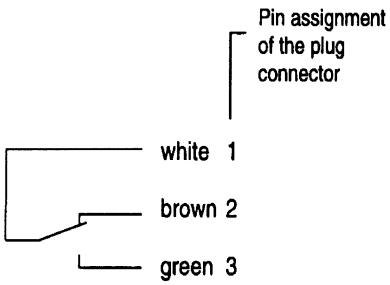


Flow Setting Adjustment . . .
(FS-200E Adjustable)

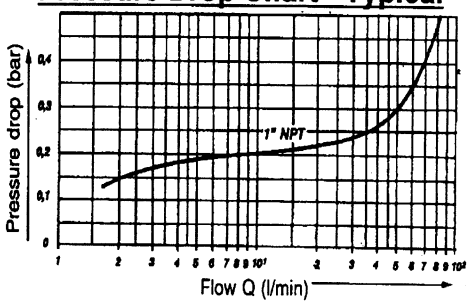
Standard units are normally supplied with adjustment at "minimum flow" - adjustment screw slot (and vane within unit) in vertical position, as shown below. Adjustment may be made with unit on test stand or installed in system. With liquid flowing at desired rate, adjust screw in side of housing until unit just actuates. (Switch closes or opens, as desired.)



Typical Wiring Diagram . . .



Pressure Drop Chart - Typical



Note: Tests conducted with units in horizontal position (lead wires up) with water at 20°C

Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and GEMS technical brochure 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 damage sustained by the product may render it unserviceable.