



## ISF1 INSTALLATION & MAINTENANCE INSTRUCTIONS



- **Hazardous area classification**
- **Description / identification**
- **General specifications**
- **Connection procedure**
- **Re-calibration procedure**
- **Dimensions ISF1 valve**
- **Dimensions QBT-01 bracket**
- **Ordering information and accessories**

### **Before you get started, please read these warnings:**

- ◆ Examine the product. Ensure that you received what you ordered.
- ◆ Read this guide first before you start and save it for later use.
- ◆ All compressed air and power should be shut off before installing, removing or performing maintenance on this product.
- ◆ Installation and use of this product should be under the supervision and control of properly qualified personnel in order to avoid the risk of injury or death.
- ◆ Media vents through exhaust port. If the media is hazardous (classified), the exhaust port should be vented to a different location to maintain a Class I, Division 2 area at the unit.
- ◆ Supply voltage should not exceed 14.5Vdc. Exceeding 14.5Vdc supply will cause the internal fuse to blow. This item is non replaceable.

## **HAZARDOUS AREA CLASSIFICATION**

### **Factory Mutual Approval:**

Non-Incendive for Class I Division 2 Groups C & D with intrinsically safe process connections for Class I, Division 1, Groups A, B, C and D

Suitable for Class II Division 2 Groups F & G with intrinsically safe process connections for Class II, Division 1, Groups E, F and G

Suitable for Class III, Division 2 with intrinsically safe process connections for Class III indoor/outdoor (Type4X) hazardous (classified) locations

### **Special Conditions for Use:**

1. With intrinsically safe process connections.

**NOTE:** End user must determine fitness and suitability of the ISF1 control valve for their application.

## **DESCRIPTION / IDENTIFICATION**

The ISF1 series control valve is an electronic pressure regulator designed to precisely and proportionally control the pressure of gaseous based on an electronic signal.

The ISF1 operates using two normally closed solenoid valves, a pressure sensor, and a control circuit. One valve is actuated to allow unregulated supply media into the system. The second valve is actuated to allow working media to vent to atmosphere. The pressure sensor provides feedback to the control circuit. The control circuit compares the pressure sensor feedback to the user supplied electronic command signal and actuates the appropriate valve until the two signals match.

The ISF1 series can be teamed with a variety of one-to-one pressure volume boosters for even greater flow.

## GENERAL SPECIFICATIONS

### ELECTRICAL

Supply Voltage.....	12Vdc-14.5Vdc (MAX)
Supply Current.....	<80mA
Command Signal.....	4-20mA Differential
Command Signal Impedance.....	100 OHM

### PHYSICAL

Operating temperature.....	32-104°F (0-40°C) (T4)
Weight.....	2 lb. (0.91 kg)
Protection Rating.....	NEMA 4
Housing.....	Blue Anodized Aluminum

### MECHANICAL

Pressure ranges.....	29.9 in. Hg (VAC) -150 psig
Output Pressure.....	0-100% of range
Flow Rate.....	0.80 SCFM @ 80 psig
Min. Closed End Volume.....	1 in <sup>3</sup>
Filtration Required.....	40 micron
Linearity/Hysteresis.....	≤ 0.4% F.S. B.F.S.L
Repeatability.....	≤ 0.2% F.S.
Accuracy.....	≤ 0.5% F.S.
Wetted Parts.....	Elastomers-Fluorocarbon Manifold-Aluminum (Brass optional) Transducer-Silicon, Aluminum, RTV Valves-Nickel Plated Brass

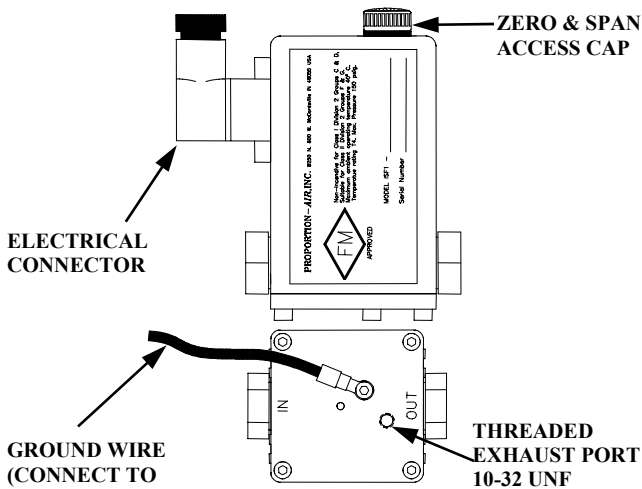


Figure 1

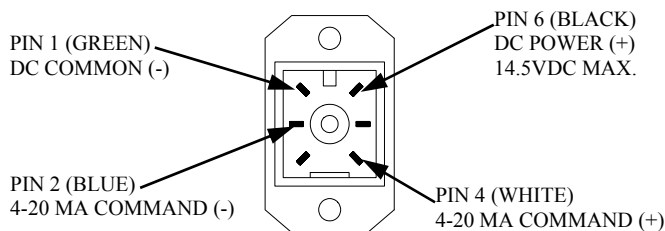


Figure 2

## CONNECTION PROCEDURE

### Pneumatic Connections:

1. A typical 20 micron (minimum 40 micron) in-line filter is recommended on the inlet of the ISF1.
2. Connect supply pressure to the "IN" inlet port (figure 1) not to exceed rated supply pressure. (Table 1)
3. Connect the "OUT" outlet port (figure 1) to the device being controlled.
4. Media vents through exhaust port. If the media is hazardous (classified), the threaded exhaust port (figure 1) should be vented to a different location to maintain a Class I, Division 2 area at the ISF unit.
5. Proceed with electrical connection.

TABLE 1  
RATED PRESSURE FOR ISF1 VALVES

For valves ordered with MAX. calibrated pressure of:	Max. inlet pressure is:
Vacuum up to 10 psig (0.69 bar)	Consult factory
10.1 up to 30 psig (0.70 up to 2 bar)	35 psig (2.4 bar)
31 up to 100 psig (2.1 up to 7 bar)	110 psig (7.6 bar)
101 up to 150 psig (7 up to 12 bar)	150 psig (12 bar)

### Electrical Connections:

1. Ensure all power is off before making any electrical connections.
2. Figure 1 shows the location of the ISF1 electrical connector and figure 2 shows the connector. Table 2 identifies each connection
3. Supply voltage should not exceed 14.5Vdc. Exceeding 14.5Vdc supply will cause to blow the internal fuse. This item is non replaceable.
4. Connect ground wire to intrinsically safe ground (figure 1).

TABLE 2  
ISF1 PIN DESIGNATORS

PIN	WIRE COLOR*	FUNCTION
1	GREEN	DC COMMON
2	BLUE	COMMAND (-)
3	BROWN	NC
4	WHITE	COMMAND (+)
5	RED	NC
6	BLACK	12-14.5 VDC( MAX.) POWER

### \* QBT-C POWER CORD COLORS

End user must determine fitness & suitability of the cord in their applica-

## RE-CALIBRATION PROCEDURE

All ISF1 valves come pre-calibrated from the factory using precision calibration equipment. If the ISF1 valve needs re-calibration, use the procedure described below:

### ISF1 VALVE:

1. Wire servo according to the section titled "Electrical Connections."
2. Connect a precision measuring gage or pressure transducer to the outlet port of the ISF1.

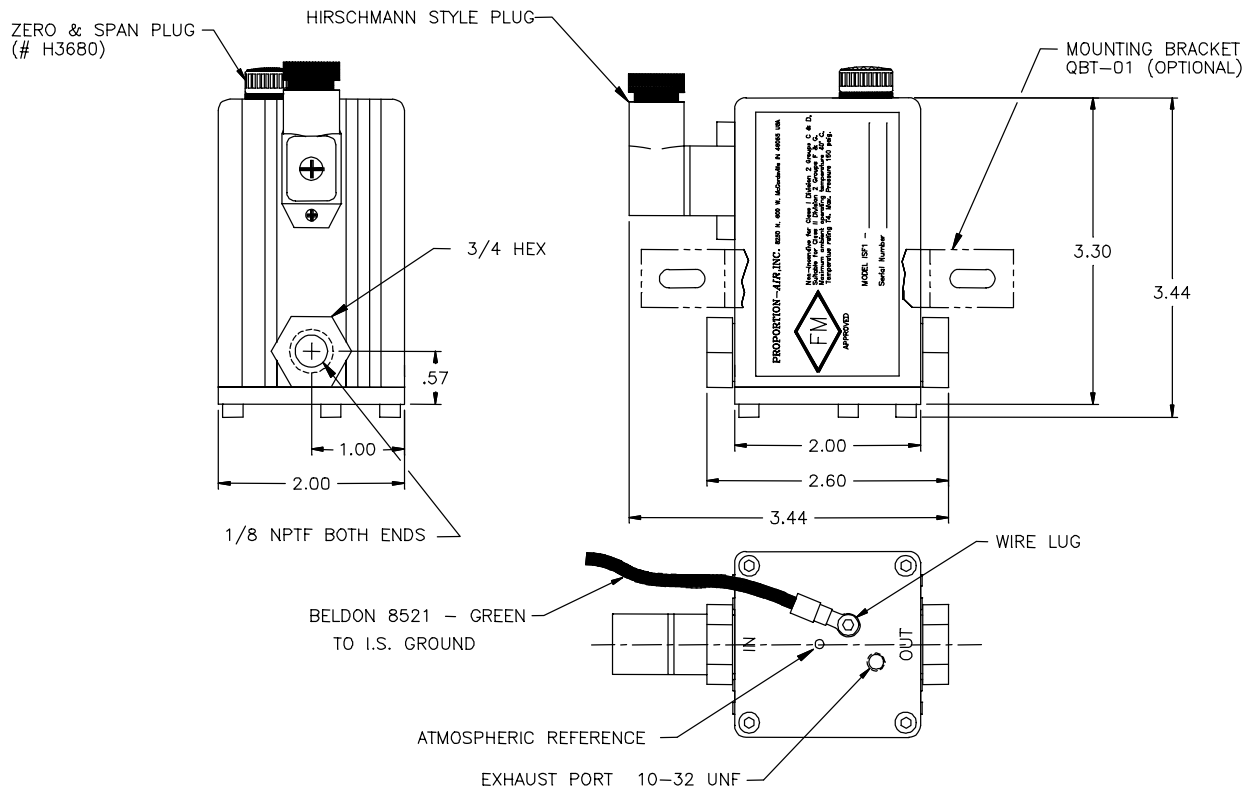
**NOTE:** There must be a closed volume of at least 1 cu.in. between the valve outlet and the measuring device for the valve to be stable.

3. Provide supply pressure to the inlet port of the ISF1. (See figure 1). Make sure supply pressure does not exceed the rating for the valve. (see table 1)
4. Locate the calibration access cap on top of the ISF1 valve and locate the ZERO and SPAN adjustment potentiometers (figure 1).

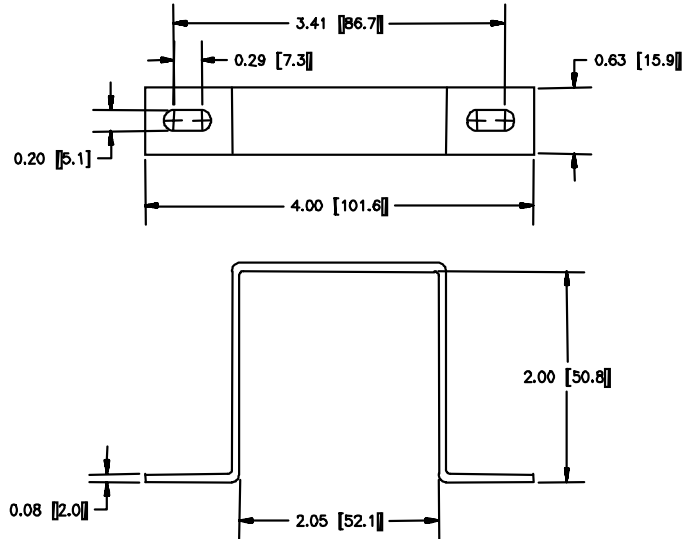
**NOTE:** Only use this step if your device is totally out of calibration. If it is slightly out of calibration, omit this step and move on to paragraph 5. Using a small screwdriver, turn both potentiometers 15 turns clockwise. Then turn them 7 turns counter clockwise. This will put the ISF1 roughly at mid scale.

5. Set the electrical command input to 20mADC. Adjust the SPAN potentiometer until MAXIMUM desired pressure is reached (clockwise to increase pressure).
6. Set the electrical command input to 10 percent of full value (5.6mA).
7. Adjust the ZERO potentiometer until 10 percent of maximum desired pressure is reached. (clockwise increases pressure).
8. The ZERO and SPAN potentiometers interact slightly. Repeat steps 5-10 until no error exists.
9. Verify unit shuts off by going to 4mADC command. Check linearity by going to at least six pressures throughout the full range.

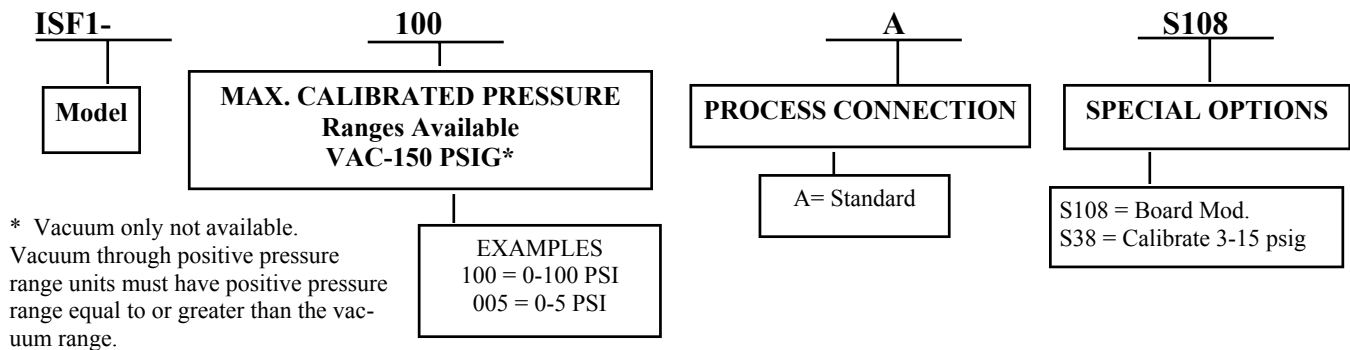
## DIMENSIONS ISF1 VALVE



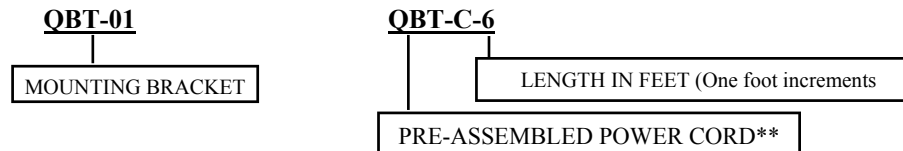
## DIMENSIONS QBT-01 BRACKET



## ORDERING INFORMATION



## ACCESSORIES



\*\*End user must determine fitness & suitability of the cord in their application.

## WARRANTY

Proportion-Air products are warranted to the original purchaser only against defects in material or workmanship for one (1) year from the date of manufacture. The extent of Proportion-Air's liability under this warranty is limited to repair or replacement of the defective unit at Proportion-Air's option. Proportion-Air shall have no liability under this warranty where improper installation or filtration occurred.

All specifications are subject to change without notice. **THIS WARRANTY IS GIVEN IN LIEU OF, AND BUYER HEREBY EXPRESSLY WAIVES, WARRANTIES OR LIABILITIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY OBLIGATION OF PROPORTION-AIR WITH REGARD TO CONSEQUENTIAL DAMAGES, WARRANTIES OF MERCHANTABILITY, DESCRIPTION, AND FITNESS FOR A PARTICULAR PURPOSE.**

**WARNING:** Installation and use of this product should be under the supervision and control of properly qualified personnel in order to avoid the risk of injury or death.

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