

INSTALLATION & MAINTENANCE INSTRUCTIONS

Flow Valve with Integral Closed Loop Position Feedback

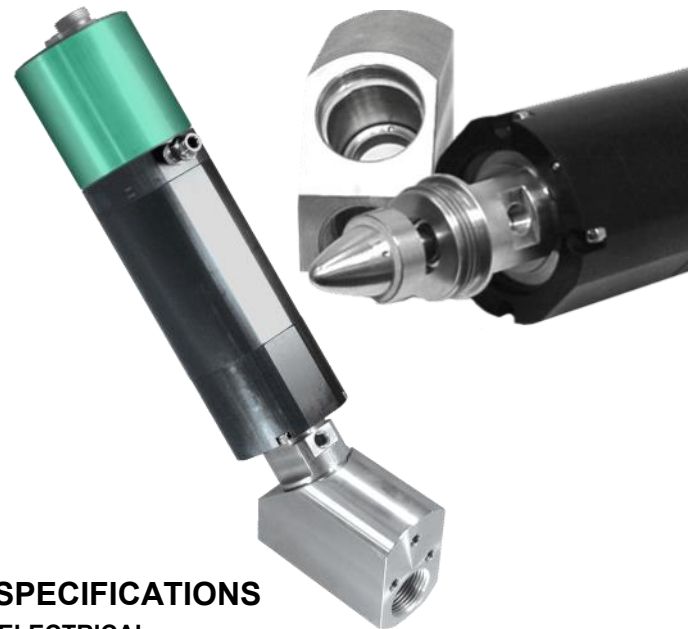
DESCRIPTION / IDENTIFICATION

The Proportion-Air Electro-Pneumatic Proportional Flow Valve, FCV, employs a parabolic valve plug so that the area of valve opening is proportional to valve position. For

example; if valve position is 50% of full stroke, Cv is 50% of maximum rating. Valve position is electronically closed loop controlled, with an LVDT that provides continuous feedback to the control module. LVDT and control module are integral to the valve actuator.

The FCV comes with a monitor output signal. This output is an electrical signal originating for the internal LVDT, 0-1" stroke. The output of this signal is field selectable, 0.5-10Vdc or 4-20mA.

The FCV valve features status indicating LEDs for power and TTL. The TTL signal is a conditional on/off signal to use for diagnostic purposes. When the valve is at position, within the deadband, the TTL is active low (0Vdc) and the green LED is ON.



SPECIFICATIONS

ELECTRICAL

SUPPLY VOLTAGE	15-24 VDC
COMMAND SIGNAL	Differential 4-20 mA or 0-10 VDC <i>(Field Selectable)</i>
VALVE POSITION MONITOR	4-20 Ma Sourcing or 0-10 VDC <i>(Field Selectable)</i>
FAILURE MODES†	Normally Closed and/or Hold to Last Position*

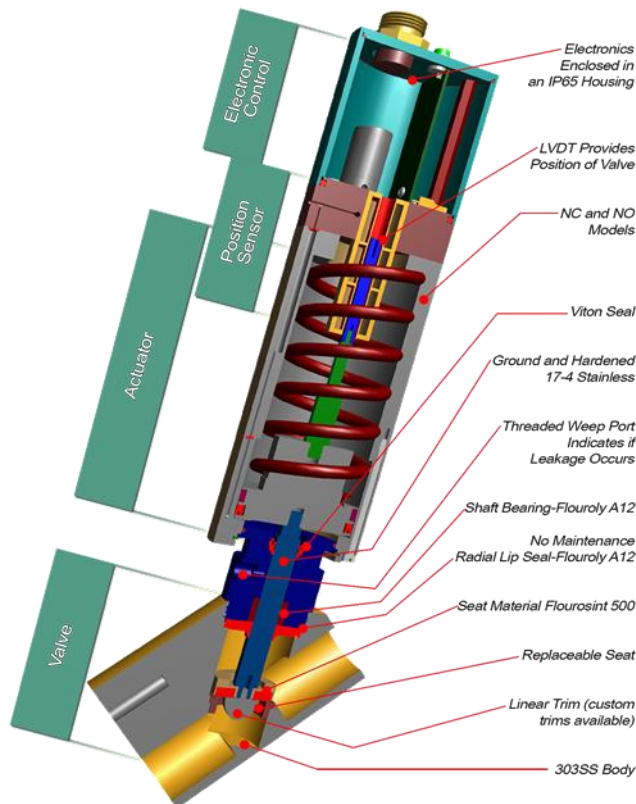
MECHANICAL

MAXIMUM WORKING PRESSURE	250 PSIG (17.25 BAR)
ACTUATOR LOADING PRESSURE	Minimum: 80 PSIG (5.5 BAR) Maximum: 120 PSIG (8.25 BAR)
VALVE Cv	0 to 19 Linear to Command
VALVE Kv	0 to 16.4 Linear to Command
END CONNECTIONS	1" NPT Threaded
RESOLUTION	±0.3%
LINEARITY	±5%
WETTED MATERIALS	316 SS & Reinforced PTFE Seals

PHYSICAL

AMBIENT TEMPERATURE	32-158°F (0-70°C)
MEDIA WORKING TEMPERATURE	Maximum: 356°F (0-180°C)
WEIGHT	10 lbs. (4.5 kg)
ACTUATOR HOUSING RATING	IP65

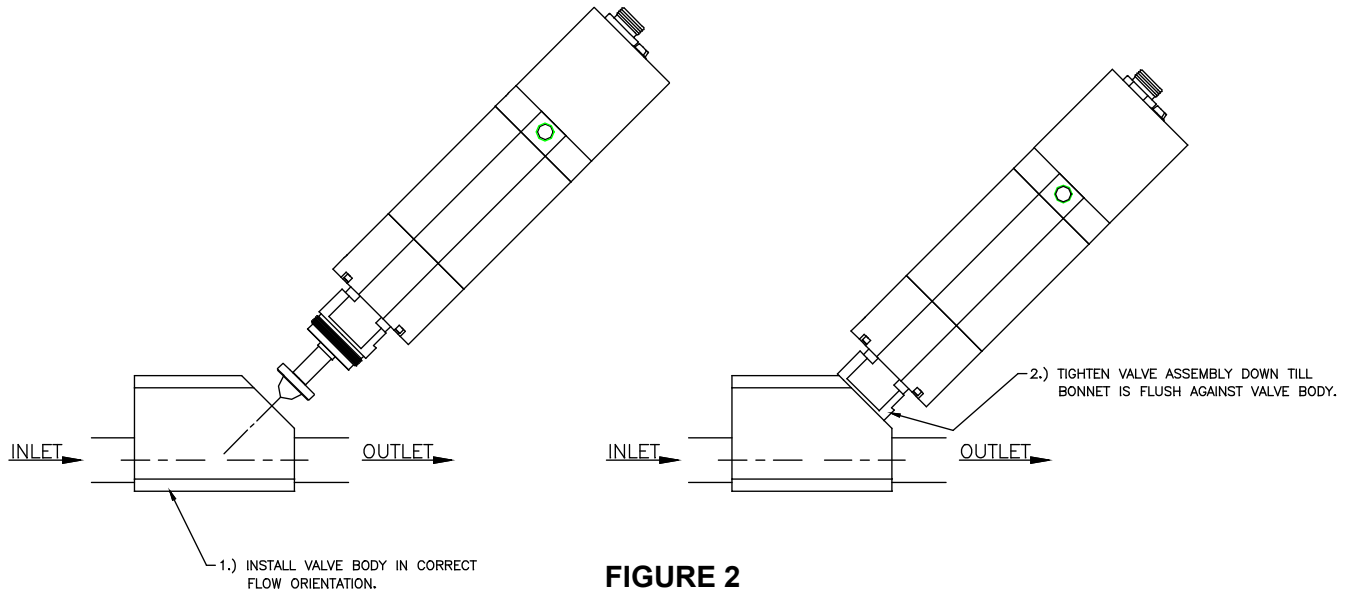
† On loss of DC electrical power, the unit will hold last position until air leakage causes the valve to move to its home position. On loss of pneumatic supply pressure, the valve will move to its home position.



FCV CONNECTION PROCEDURE

Pneumatic Connections:

1. A typical 20 micron (minimum 40 micron) in-line filter is recommended on the pneumatic inlet port "I" of the FCV valve. (Figure 1)
2. Connect pneumatic supply pressure, 80 to 120 psig, to the inline filter on the "I" port. (Figure 1)
3. Install valve body in correct flow orientation. (Figure 2)
4. Tighten valve assembly down till bonnet is flush against valve body. (Figure 2)
5. Proceed with electrical connection.



Electrical connections:

1. Ensure all power is off before making any electrical connections.
2. Figure 3 shows the location of the 6 pin electrical connector and figure 4 shows the connector. Table 1 identifies each connection
3. All valves come with a red LED light and a green LED light. The red light on the unit indicates power is supplied to the unit. Green light indicates the valve's pressure status. A bright green glow indicates that desired position has been achieved.

Note: Both current and voltage command units require that both the command (+) and command (-) pins be connected.

**TABLE 1
FCV PIN DESIGNATORS**

PIN	WIRE COLOR*	FUNCTION
1	WHITE	COMMAND (+)
2	RED	ANALOG OUTPUT
3	GREEN	DC COMMON
4	ORANGE	TTL OUT
5	BLACK	15-24 VDC POWER
6	BLUE	COMMAND (-)

* H6DC6 POWER CORD COLORS

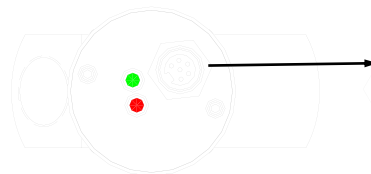


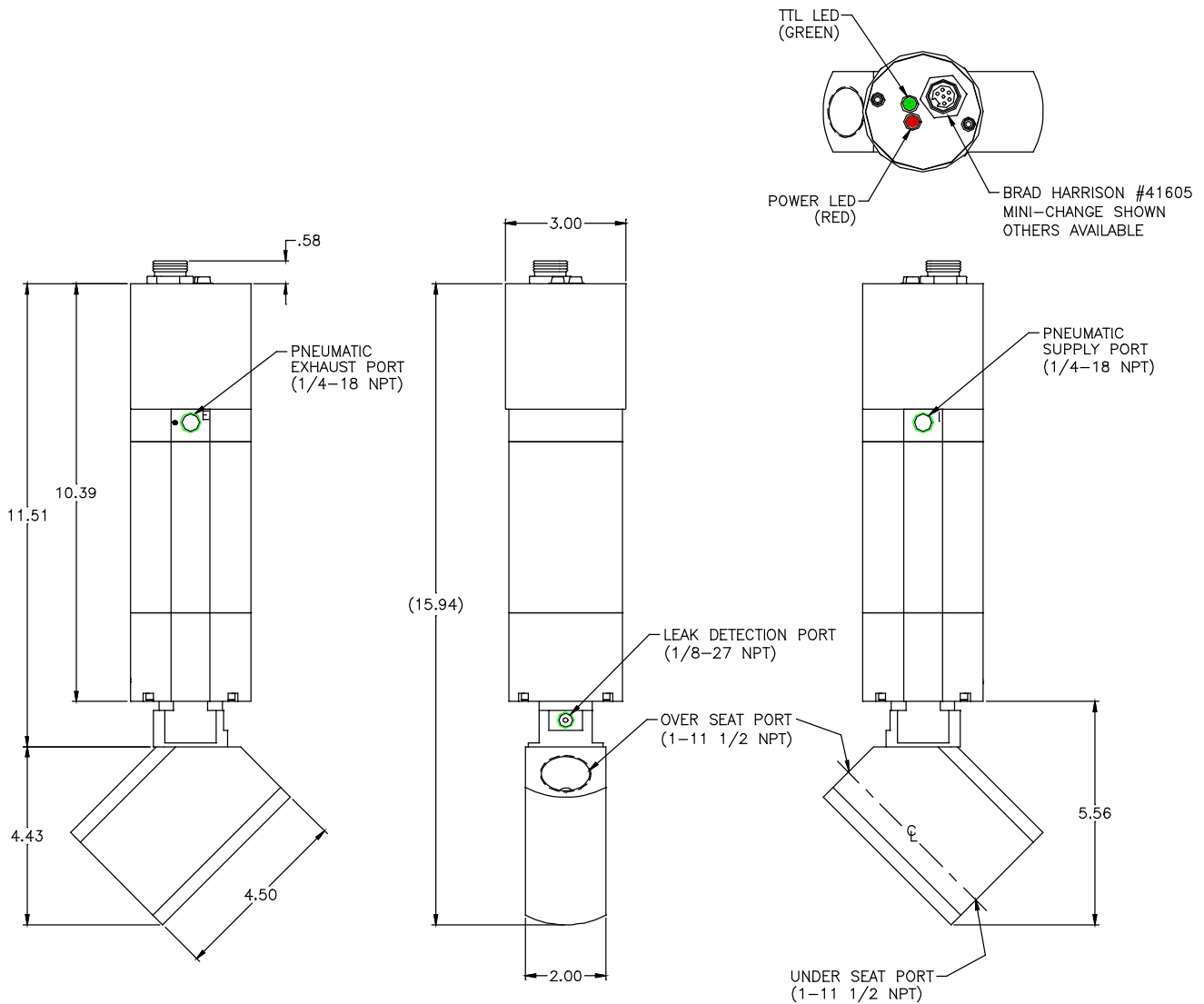
FIGURE 3



FIGURE 4

DIMENSIONS

FIGURE 1



- Integral Closed Loop Positioner
- Integral I/P
- 0.3% Resolution
- Angled Seat Results in Maximum Cv
- Parabolic Valve Trim
- Heavy Duty 303 SS Valve Body
- Replaceable Seat and Trim
- 3/4" DIA Trim with 1" NPT Ports

FCV

PORT SIZE	1" NPT	PRESSURE	0 to 250 psig (17 bar)
LIQUID & GAS FLOW CONTROL VALVE			

Example Part Number

FCV	8	E	E	SS	NO	OC	
	1	2	3	4	5	OPTIONS	

Section Reference

1	Port Size
8	1" NPT

2	Input Signal Range	3	Output Signal Range
E	0 to 10 VDC	X	No Monitor
I	4 to 20 mA DC	E	0 to 10 VDC
K	0 to 5 VDC	K	0 to 5 VDC*
V	1 to 5 VDC*	V	1 to 5 VDC* ¹
*Requires V for Monitor Signal (#3)		S	4 to 20 mA DC (Sourcing)
		*Requires E, I or K for Input Signal Range (#2)	
		*Requires V for Input Signal Range (#2)	

4	Body Material
SS	Stainless Steel with Full 1" Seat
S6	Stainless Steel with 3/4" Seat

5	Type
NO	Normally Open, Non-Venting
NVO	Normally Open, Venting
NC	Normally Closed, Non-Venting
NVC	Normally Closed, Venting

Safety Precautions



Please read all of the following Safety Precautions before installing or operating any Proportion-Air, Inc. equipment or accessories. To confirm safety, be sure to observe 'ISO 4414: Pneumatic Fluid Power - General rules relating to systems' and other safety practices.

Warning

Improper operation could result in serious injury to persons or loss of life!

- PRODUCT COMPATIBILITY**
Proportion-Air, Inc. products and accessories are for use in industrial pneumatic applications with compressed air media. The compatibility of the equipment is the responsibility of the end user. Product performance and safety are the responsibility of the person who determined the compatibility of the system. Also, this person is responsible for continuously reviewing the suitability of the products specified for the system, referencing the latest catalog, installation manual, Safety Precautions and all materials related to the product.
- EMERGENCY SHUTOFF**
Proportion-Air, Inc. products cannot be used as an emergency shutoff. A redundant safety system should be installed in the system to prevent serious injury or loss of life.
- EXPLOSIVE ATMOSPHERES**
Products and equipment should not be used where harmful, corrosive or explosive materials or gases are present. Unless certified, Proportion-Air, Inc. products cannot be used with flammable gases or in hazardous environments.
- AIR QUALITY**
Clean, dry air is not required for Proportion-Air, Inc. products. However, a 40 micron particulate filter is recommended to prevent solid contamination from entering the product.
- TEMPERATURE**
Products should be used with a media and ambient environment inside of the specified temperature range of 32°F to 158°F. Consult factory for expanded temperature ranges.
- OPERATION**
Only trained and certified personnel should operate electronic and pneumatic machinery and equipment. Electronics and pneumatics are very dangerous when handled incorrectly. All industry standard safety guidelines should be observed.
- SERVICE AND MAINTENANCE**
Service and maintenance of machinery and equipment should only be handled by trained and experienced operators. Inspection should only be performed after safety has been confirmed. Ensure all supply pressure has been exhausted and residual energy (compressed gas, springs, gravity, etc.) has been released in the entire system prior to removing equipment for service or maintenance.

Caution

Improper operation could result in serious injury to persons or damages to equipment!

- PNEUMATIC CONNECTION**
All pipes, pneumatic hose and tubing should be free of all contamination, debris and chips prior to installation. Flush pipes with compressed air to remove any loose particles.
- THREAD SEALANT**
To prevent product contamination, thread tape is not recommended. Instead, a non-migrating thread sealant is recommended for installation. Apply sealant a couple threads from the end of the pipe thread to prevent contamination.
- ELECTRICAL CONNECTION**
To prevent electronic damage, all electrical specifications should be reviewed and all electrical connections should be verified prior to operation.

Exemption from Liability

- Proportion-Air, Inc.** is exempted from any damages resulting from any operations not contained within the catalogs and/or instruction manuals and operations outside the range of its product specifications.
- Proportion-Air, Inc.** is exempted from any damage or loss whatsoever caused by malfunctions of its products when combined with other devices or software.
- Proportion-Air, Inc.** and its employees shall be exempted from any damage or loss resulting from earthquakes, fire, third person actions, accidents, intentional or unintentional operator error, product misapplication or irregular operating conditions.
- Proportion-Air, Inc.** and its employees shall be exempted from any damage or loss, either direct or indirect, including consequential damage or loss, claims, proceedings, demands, costs, expenses, judgments, awards, loss of profits or loss of chance and any other liability whatsoever including legal expenses and costs, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

Warranty

Proportion-Air, Inc. 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.