posi-flate®
butterfly valves

Controlling the Posi-flate® Inflatable Seated Butterfly Valve

Series 660-196, 660-197, 660-198, 660-199, 660-206, 660-207

660-U Manifold Block

OPERATIONS AND FIELD WIRING GUIDE

MANUAL NUMBER: PF011801

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Posi-flate® Butterfly Valve Controls Series 660-196, 660-197, 660-198, 660-199, 660-206 & 660-207

NOTE: *This section contains custom design information which supersedes the standard design.*

How the Butterfly Valve controls work

The standard Posi-flate control assembly is configured so that the valve is "normally closed". When supplied with air, the Posi-flate control assembly will move the disc to the closed position and automatically inflate the seat. When the control signal (electrical or air pilot) is received, the seat is instantly deflated and the valve disc moves to the open position. When the control signal is dropped, the Posi-flate control assembly will return the disc to the closed position and automatically inflate the seat.

For specific information on normally open butterfly valves, double coil controls or custom controls, see the custom design section at the end of this manual.

NOTE: A limit switch and/or pressure switch are not required for proper function of the controls. If they are not included in the Butterfly Valve Assembly, please disregard the sections in this manual which pertain to them.

⚠ CAUTION:

OPERATING CONDITIONS

POSI-FLATE'S INFLATABLE SEATED BUTTERFLY VALVE CONTROLS HAVE A WELL-DESERVED REPUTATION FOR GIVING LONG AND DEPENDABLE SERVICE, EVEN UNDER SEVERE USE. HOWEVER, THE POSI-FLATE BUTTERFLY VALVE CONTROLS ARE INTENDED FOR SPECIFIC OPERATING CONDITIONS ONLY WITH RESPECT TO AIR PRESSURE AND VOLUME. BECAUSE CONDITIONS FOR MATERIALS HANDLED, INSTALLATION, USE, AND MAINTENANCE OF SUCH PRODUCTS ARE CONTROLLED EXCLUSIVELY BY THE USER, POSI-FLATE DISCLAIMS ALL RESPONSIBILITY FOR DAMAGE OR INJURY RESULTING FROM THE USE OF THE POSI-FLATE BUTTERFLY VALVE CONTROLS. THEREFORE, THE USER ASSUMES ALL RESPONSIBILITY FOR ANY AND ALL CLAIMS ARISING DIRECTLY OR INDIRECTLY FROM THE PRODUCT AND/OR ITS USE.

1. For installation of the Posi-flate Butterfly Valve, see the "Inflatable Seated Butterfly Valve Installation & Operations Guide". Contact the factory if you are unsure of the construction, configuration or voltage of your butterfly valve controls.

2. Air supplied to the Posi-flate controls should be clean, dry, oil-free air at 80 to 115 PSIG (5.5-7.9 BAR). If a low pressure actuator has been purchased, air supply should be 50 to 79 PSIG (3.4-5.4 BAR).

3. Prior to connecting the air supply line to the Butterfly Valve Controls, make sure that all air supply lines are blown clean of metal chips, debris and solvents which might cause premature failure of the internal components of the control assembly.

4. Make sure that the Butterfly Valve Control is wired and piped according to all drawings. An electrical control panel is not provided with the Butterfly Valve Control. The customer is responsible for providing an electrical or pneumatic signal which is appropriate for the butterfly valve control.

5. Before the air supply is turned on, the seat pressure regulator should be set at zero (0). This is done by pulling out on the regulator knob, and then turning the knob counter-clockwise until resistance is felt.

   CAUTION: Failure to set the seat pressure to zero before supplying air may cause immediate seat failure.

6. Turn on the air supply.

   WARNING: When the air is turned on, the valve disc will move to the open or closed position, depending on the configuration of the controls.

7. Cycle the valve with the manual over-ride (if equipped) or the panel controls to verify the butterfly valve operates freely.

8. With the valve in the closed position, set the seat pressure. Consult the "Inflatable Seated Butterfly Valve Installation & Operations Guide" for the proper seat setting. **The correct seat pressure is essential for a long dependable life of your valve.** If you have any questions, consult the factory.

9. Cycle the valve with the manual over-ride (if equipped) or the panel controls to verify the butterfly valve operates according to the sequence of operations.

10. Check the electrical function of the limit switch and seat pressure switch (if equipped).

1. The ground wire should be secured under the green screw inside the limit switch.
2. For wiring reference, top switch cam will be nearest the visual monitor and the bottom switch cam will be nearest the Butterfly Valve (see Fig. 1).
3. The proper wiring diagram for the standard (2SPDT Switches) Trak-Lok limit swich is shown in Fig. 2. The numbers shown in the figure match the numbers on the limit switch terminal strip. To integrate the wiring diagram with the Butterfly Valve controls, consult the drawings in the following section.
4. Wiring information for limit switch options other than below are contained in the device installed. Consult the factory if you have any questions.

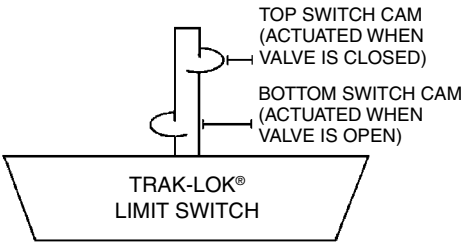


Fig. 1

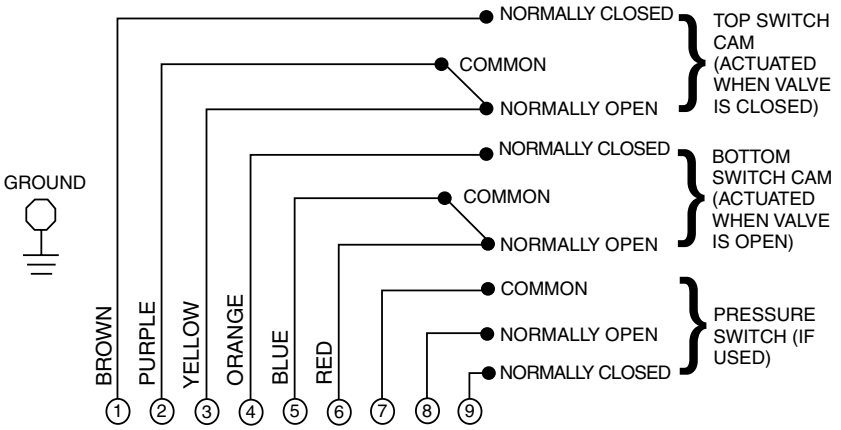


Fig. 2

Please reference the Butterfly Valve & Controls diagram (see section 7.2) and the Butterfly Valve wiring diagram (see section 7.3)

NOTE: For testing purposes, the control power is **ON** and the compressed air is supplied to the control assembly.

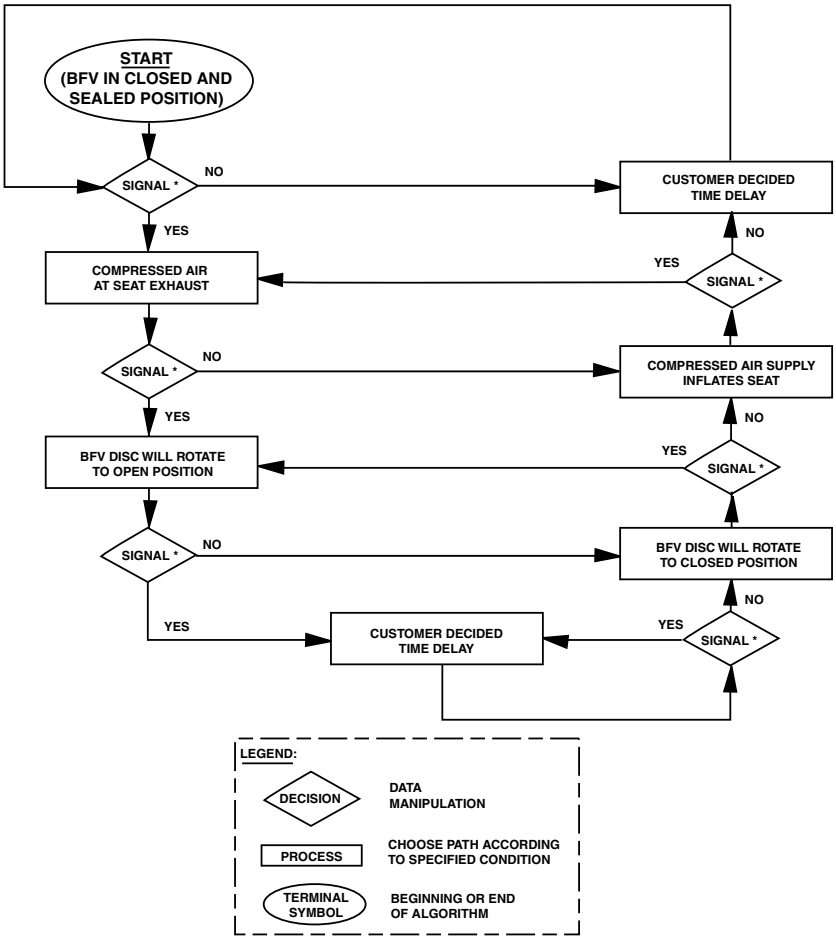
A. From the closed to the open position:

1. Switch the Butterfly Valve selector to the open position.
2. The compressed air supply pressure at the inflatable seat will exhaust and the Butterfly Valve disc will rotate to the open position.
3. The open limit switch (if equipped) will sense that the Butterfly Valve is in the open position.

B. From the open to the closed position:

1. Switch the Butterfly Valve selector to the closed position.
2. The Butterfly Valve disc will rotate to the closed position and pressurize the inflatable seat.
3. The closed limit switch (if equipped) will sense that the Butterfly Valve Disc is closed, and the seat pressure switch (if equipped) will verify seat inflation.

ELECTRICAL OR PNEUMATIC CONTROL FOR NORMALLY CLOSED CONTROL



*** Signal will consist of an electrical signal of the correct voltage or air pressure in excess of 20 PSI for pilot operated solenoids.**

Symptom	Problem	Correction
BUTTERFLY VALVE DISC DOES NOT MOVE	• Improper signal to control assembly	• Ensure that the electrical signal is the correct voltage and the valve is installed in accordance with the electrical schematic
	• Low compressed air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR) for standard actuator, or 50 to 79 PSIG (3.4-5.5 BAR) for low pressure actuator
	• Compressed air supply line leaks	• Eliminate compressed air supply line leaks
	• Seat is inflated	• Ensure control block is installed and operating correctly
		• Remove any seat exhaust restrictions
		• Ensure seat inflation line is not kinked or restricted
	• Seat is deformed (compression set)	• Replace seat
		• Review application to ensure proper seat is being used
	• Valve opens under vacuum	• Contact factory for special "Vacuum Control Assembly"
	• Material is sticking to disc or seat	• Clean material from seat or disc
		• Review application for proper seat and disc selection
	• Material packed above and below disc	• Review valve application
	• Defective actuator	• Repair or replace actuator
	• Defective solenoid valve	• Clean or replace solenoid valve
	• Manual override actuated	• Release manual override
	• Control block installed wrong	• Review installation section, piping diagram and custom design section for correct installation

Symptom	Problem	Correction
BUTTERFLY VALVE DISC DOES NOT MOVE	• Foreign object preventing movement	• Remove object and check valve for damage
	• Butterfly valve seat popped out of housing	• Remove valve and repair
		• Consult "Inflatable Seated Butterfly Valve" manual for proper repair and installation procedure
		• Re-install valve and check function of control block
	• Butterfly valve incorrectly installed	• Remove valve and install in accordance with "Inflatable Seated Butterfly Valve" manual
	• Butterfly valve installed with raised face flanges	• Replace flanges with flat faced flanges or order adapter rings from Posi-flate
	• Defective limit switch	• Repair or replace limit switch (if used)
BUTTERFLY VALVE DISC MOVES SLOWLY	• Low compressed air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR) for standard actuator, or 50 to 79 PSIG (3.4-5.4 BAR) for low pressure actuator
	• Compressed air supply line leaks	• Eliminate compressed air supply line leaks
	• Seat is inflated	• Ensure control block is installed and operating correctly
		• Remove any seat exhaust restrictions
		• Ensure seat inflation line is not kinked or restricted
	• Valve opens under vacuum	• Contact factory for special "Vacuum Control Assembly"
	• Material packed above and below disc	• Review valve application
	• Defective actuator	• Repair or replace actuator
	• Defective solenoid valve	• Clean or replace solenoid valve
	• Plugged or restricted solenoid exhaust	• Remove restriction

Symptom	Problem	Correction
BUTTERFLY VALVE DISC MOVES SLOWLY	• Foreign object preventing movement	• Remove object and check valve for damage
	• Butterfly valve incorrectly installed	• Remove valve and install in accordance with "Inflatable Seated Butterfly Valve" manual
	• Butterfly valve installed with raised face flanges	• Replace flanges with flat faced flanges or order adapter rings from Posi-flate
	• Defective limit switch	• Repair or replace limit switch
BUTTERFLY VALVE SEAT DOES NOT SEAL	• Seat pressure regulator not functioning	• Repair or replace regulator assembly
		• Ensure air supply is clean & dry
	• Seat pressure not correctly set	• Adjust regulator to proper pressure
		• Consult the "Inflatable Seated Butterfly Valve " manual for proper inflation pressure
		• Seat pressure must be 15 PSIG (1 BAR) above process pressure, and must be a minimum of 40 PSIG (2.7 BAR)
	• Air continuously leaking from "seat exhaust" port when disc closed	• Replace seat sensor cartridge
	• Air leaking from solenoid exhaust ports	• Clean, repair or replace solenoid
		• Repair or replace actuator
	• Insufficient air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR) for standard actuator, or 50 to 79 PSIG (3.4-5.4 BAR) for low pressure actuator
	• Butterfly valve seat popped out of housing	• Remove valve and repair
		• Consult "Inflatable Seated Butterfly Valve" manual for proper repair and installation procedure
		• Re-install valve and check function of control block

Symptom	Problem	Correction
BUTTERFLY VALVE SEAT DOES NOT SEAL	• Butterfly valve seat leaking	• Replace seat • Consult "Inflatable Seated Butterfly Valve" manual for proper repair and installation procedure
	• Butterfly valve incorrectly installed	• Remove valve and install in accordance with "Inflatable Seated Butterfly Valve"
	• Manual override actuated	• Release manual override
	• Improper signal to control assembly	• Ensure that electrical signal is correct voltage and valve is installed in accordance with the electrical schematic
NO PROOF OF BUTTERFLY VALVE POSITION	• Limit switch not properly installed	• Review limit switch installation instructions
	• Valve disc not fully open or fully closed	• See "Butterfly Disc Does Not Move" section of this trouble shooting guide
	• Limit switch assembly is out of adjustment	• Adjust limit switch in accordance with the installation section
	• Limit switch is defective	• Repair or replace limit switch components or assembly
	• Pressure switch is out of adjustment	• Adjust pressure switch
	• Pressure switch defective	• Replace pressure switch
	• Electrical failure	• Review electrical schematic and repair or replace any defective parts
	• Actuator end stops incorrectly adjusted	• Adjust end stops to allow proper rotatiuon of the valve disc
NO PROOF OF SEAT INFLATION	• Pressure switch not properly installed	• Review limit switch installation instructions
	• Pressure switch is out of adjustment	• Adjust pressure switch
	• Pressure switch is defective	• Replace pressure switch

Symptom	Problem	Correction
NO PROOF OF SEAT INFLATION	• Seat not inflated (no indication on gauge)	• See "Butterfly Valve Seat Does Not Seal" section of this trouble shooting guide
	• Seat pressure not correctly set	• Adjust regulator to proper pressure
		• Consult the "Inflatable Seated Butterfly Valve" manual for proper inflation pressure
		• Seat pressure must be 15 PSIG (1 BAR) above process presure, and must be a minimum of 40 PSIG (2.7 BAR)
	• Electrical failure	• Review electrical schematic and repair or replace any defective parts
	• Butterfly valve seat popped out of housing	• Remove valve and repair
		• Consult "Inflatable Seated Butterfly Valve" manual for proper repair and intallation procedures
		• Re-install valve and check function of control block
	• Butterfly valve seat leaking	• Replace seat
		• Consult "Inflatable Seated Butterfly Valve" manual for proper repair and installation procedures
	• Low compressed air supply pressure	• Correct air supply to 80 to 115 PSIG (5.5-7.9 BAR) for standard actuator, or 50 to 79 PSIG (3.4-5.4 BAR) for low pressure actuator
	• Compressed air supply line leaks	• Eliminate compressed air supply line leaks
AIR LEAKING FROM BUTTER-FLY VALVE ASSEMBLY	• Air leaking from seat exhaust port	• Replace sensor cartridge
	• Air leaking from solenoid exhaust ports	• Clean, repair or replace solenoid
		• Repair or replace actuator

Symptom	Problem	Correction
AIR LEAKING FROM BUTTERFLY VALVE ASSEMBLY	• Air leaking from sensor cartridge end cap	• Repair or replace sensor cartridge
	• Air leaking from regulator knob	• Clean or replace regulator assembly
	• Air leaking between control block and actuator	• Tighten control block mounting screws
		• Remove control block and replace o-rings
	• Air leaking between solenoid and manifold	• Tighten solenoid mounting screws
		• Remove solenoid and replace gasket
	• Air leaking from actuator	• Repair or replace actuator
	• Air leaking from seat or butterfly valve housing	• Consult "Inflatable Seated Butterfly Valve" manual for proper repair and installation procedure

Daily, Weekly, Monthly, and Yearly Maintenance

⚠ WARNING:

The Posi-flate butterfly valve and any accessories you have purchased have a limited and variable life, which will depend on each specific application, operating condition and medium of material handled. Over time, the individual components will deteriorate, wear, corrode, and eventually fail. It is therefore the responsibility of the purchaser of the valve to determine when a valve will fail, to safeguard all plant personnel against any and all adverse conditions. The user must follow all instructions contained in this notice and in the operating manuals provided with each Posi-flate product.

REQUIRED PREVENTATIVE MAINTENANCE SCHEDULES

The user of Posi-flate supplied valve and equipment must take adequate preventative maintenance precautions to safeguard all plant personnel, equipment and property against any and all adverse conditions that may occur during operation of the Posi-flate butterfly valve. To prevent valve failure, the user must establish, create and follow a daily, weekly, monthly and yearly maintenance schedule, which coincides with the actual intended use of each valve. The maintenance schedule for each situation will depend on the user's specific application and medium of material handled. If the user has any questions about creating a specific maintenance program, you may contact the Posi-flate engineering department for recommendations.

REQUIRED INSPECTIONS

The user of the Posi-flate valve and/or equipment must visually inspect all valves and/or other Posi-flate equipment at least once daily. This inspection is necessary to detect and/or guard against any potential problems or unsafe operating conditions such as leaks, stress cracks, loosening of bolts and part failures, etc.

⚠ WARNING:

VALVES THAT REQUIRE IMMEDIATE SHUTDOWN AND INSPECTION

Whenever any unusual operating conditions are noticed during operation of the Posi-flate valve and any accessories, the valve should be immediately replaced. Prior to replacing the valve, all air and electrical power should be shut off and the upstream pressure relieved, in order to protect personnel from potential injury and to protect any equipment from potential damage or unsafe operating conditions. After replacing the valve, it should be thoroughly inspected to determine the cause of such unusual operating conditions or symptoms. The root cause of the problem must be corrected and/or any worn or failed parts must be replaced prior to putting the valve back into service.

Daily, Weekly, Monthly, and Yearly Maintenance

Conditions that require immediate shutdown and inspection include, but are not limited to excess vibration, unusual pipe or equipment movement, abnormal noise, excessive heat build-up, leaks, sudden loss of air pressure, or sudden and unusual changes in temperature, noise, etc.

SERVICE AND SAFEGUARD REQUIREMENTS

To safeguard plant personnel, prevent valve failure, and optimize valve performance, a qualified Posi-flate factory service technician must inspect each valve on a yearly basis, at a minimum. Failure to follow the above recommendations or observe other safety precautions outlined in the operating manual could damage the Posi-flate valve and endanger plant personnel. It is the user's responsibility to schedule these regular service visits as required.

CHANGES TO POSI-FLATE SUPPLIED EQUIPMENT

Any changes made by the user to the Posi-flate butterfly valve and/or associated components, and not specifically authorized in writing by the Posi-flate engineering department, are made totally at the risk of the user, who assumes all liability. These changes may have a negative effect with regard to the valve's performance and decrease life, damage adjacent equipment, or endanger plant personnel. Failure to follow this requirement could cause damage to the valve, accessories and associated equipment or endanger plant personnel. Should the user fail to operate the valve according to all instructions in the operating manuals, the warranty will be invalidated.

DANGEROUS OR EXPLOSIVE MATERIALS:

The valve or associated equipment furnished by Posi-flate may handle materials that may be dangerous or explosive. The customer assumes all liability and total responsibility to insure the safety of plant personnel by following to the fullest extent those procedures recommended by the suppliers of such dangerous or explosive materials. The user must determine when a valve will fail, be proactive and respond before any plant personnel are put into a dangerous situation. Posi-flate assumes no liability with regard to potential hazards when handling either dangerous or explosive materials.

It is the user's responsibility to perform a "hazardous operation study" by a qualified individual and/or company with regard to possible valve failure and/or possible repercussions or other dangerous situations as a result. In addition, any safeguarding required to protect plant personnel should a Posi-flate butterfly valve or associated equipment and/or accessories fail, is the user's responsibility.

Description		Part Number
Solenoid*	General Purpose, 120 VAC	1074150
	General Purpose, 240 VAC	1074152
	General Purpose, 24 VDC	1074151
	NEMA 7/9, 120 VAC & 24 VDC	1074159
	NEMA 7/9, 240 VAC	1074161
Manifold*		1074010
Regulator	May be stocked instead of Manifold See Section 7.3 for Installation Instuctions	1033834
Sensor Cartridge	May be stocked instead of Manifold See Section 7.5 for Installation Instructions	1100000
Pressure Switch	If used	1101357
Gauge		1022521
1/4" NPT Muffler		1037770
3/8" NPT Muffler		1042953
DIN Connector	1/2" Conduit	1021954
Mounting Screw		1056644

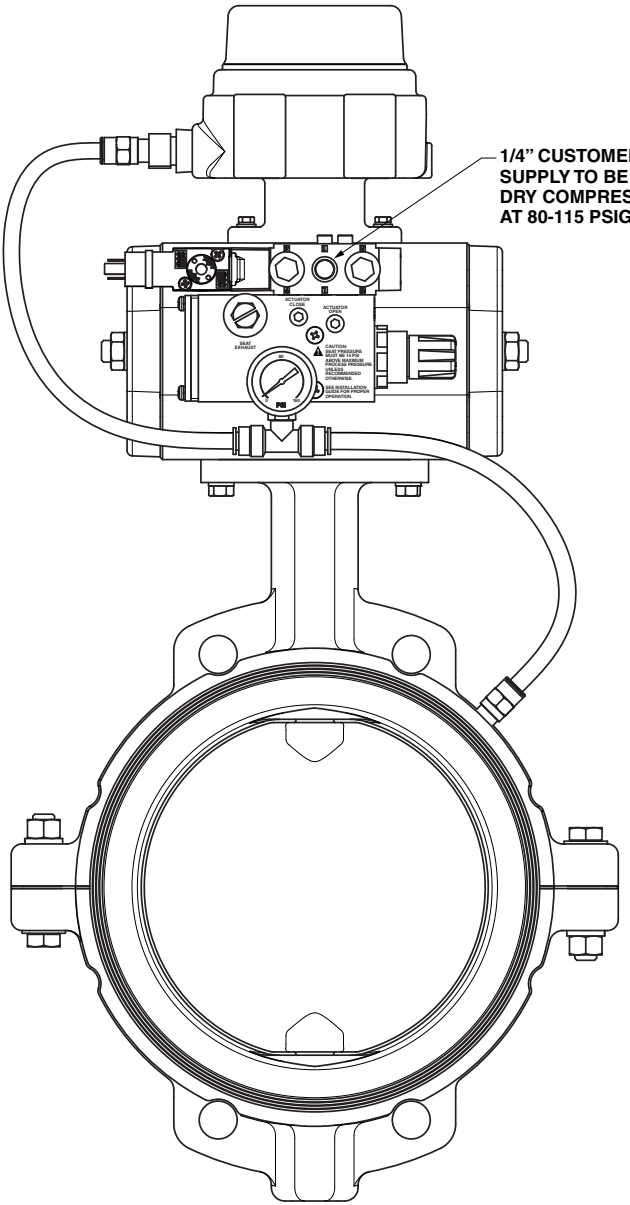
** Recommended spare part to be stocked*

NOTE: *Due to long lead times and part availability, the above parts may not be in Posi-flate's stock.*

NOTE: *The above list pertains to components sold throughout the majority of the world. Due to specific regional requirements, some listed components may not have been supplied on your Posi-flate Valve. Consult the Custom Design Section at the end of the manual for information regarding components not listed.*

Piping Diagram

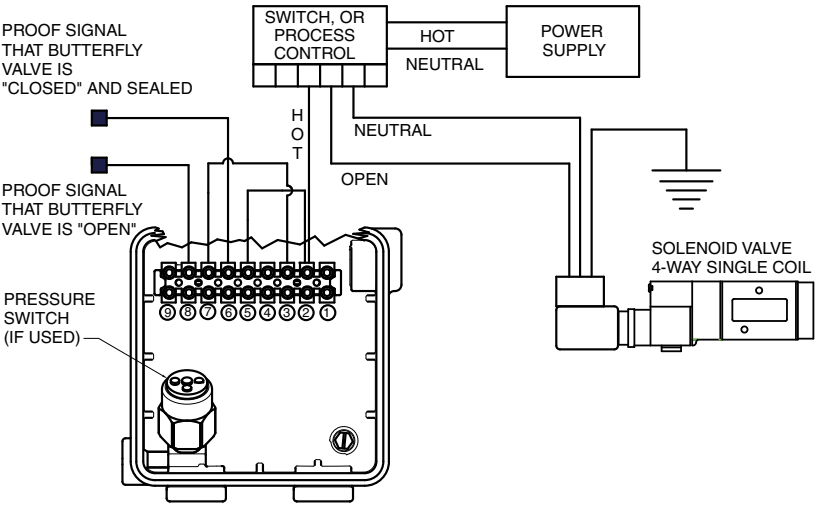
Posi-flate® Butterfly Valve Controls Series 660-196, 660-197, 660-198, 660-199, 660-206 & 660-207



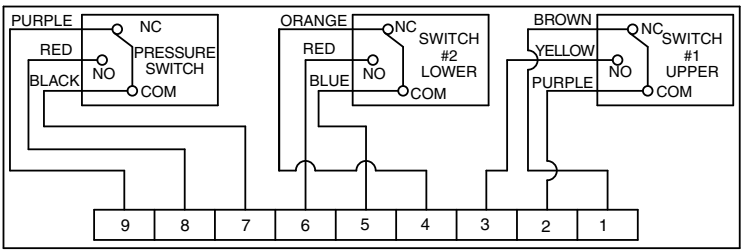
***NOTE: LOW PRESSURE ACTUATOR AIR SUPPLY SHOULD BE 50-80 PSIG.**

C-660-209-1

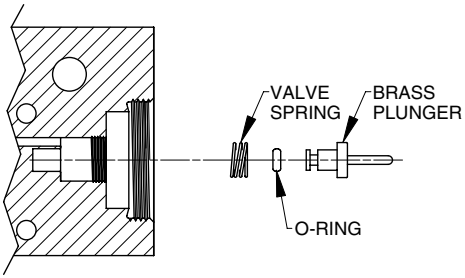
TYPICAL ELECTRICAL WIRING



TYPICAL LIMIT SWITCH WIRING (EXISTING)

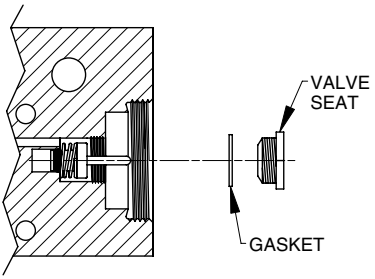


#1



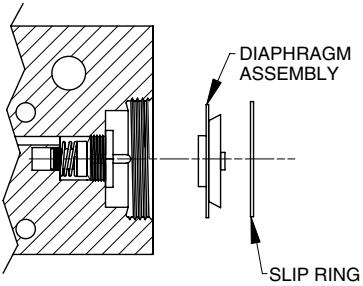
LIGHTLY LUBRICATE O-RING WITH GREASE AND SLIDE O-RING ONTO BRASS PLUNGER. PLACE ASSEMBLED BRASS PLUNGER AND VALVE SPRING INTO REGULATOR HOLE.

#2



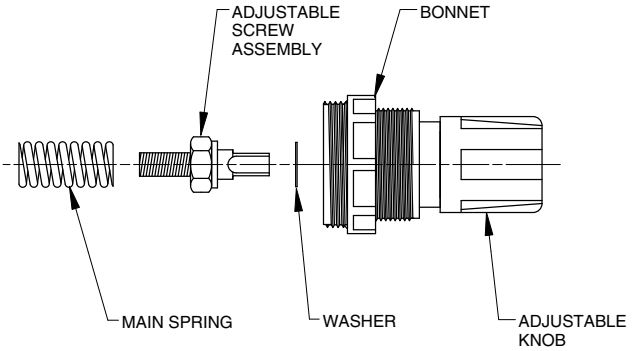
SLIDE GASKET ONTO VALVE SEAT. CAREFULLY SCREW VALVE SEAT INTO REGULATOR HOLE WITHOUT CROSS THREADING VALVE SEAT THREADS AND TIGHTEN TO 5 INCH POUNDS. IF THE BRASS PLUNGER IS PRESSED, IT SHOULD MOVE UP AND DOWN FREELY.

#3



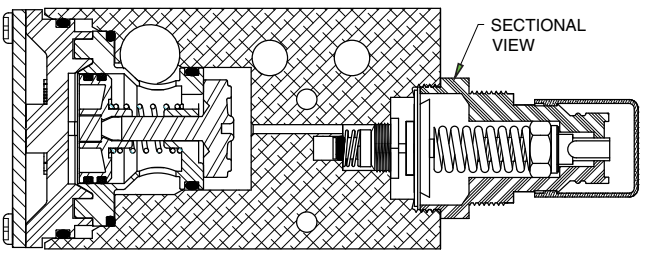
PLACE DIAPHRAGM ASSEMBLY ON TOP OF VALVE SEAT, RUBBER SIDE DOWN. DROP SLIP RING ON TOP OF DIAPHRAGM ASSEMBLY.

#4

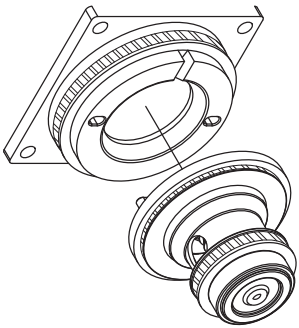


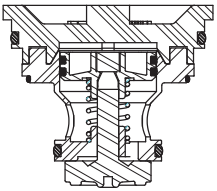
SNAP BONNET AND ADJUSTABLE KNOB TOGETHER. PLACE WASHER ON SCREW ASSEMBLY OPPOSITE OF NUT AND THREADS. CAREFULLY SET SCREW ASSEMBLY INTO BONNET/KNOB ASSEMBLY. PLACE MAIN SPRING ON SCREW ASSEMBLY OVER TREADS.

#5

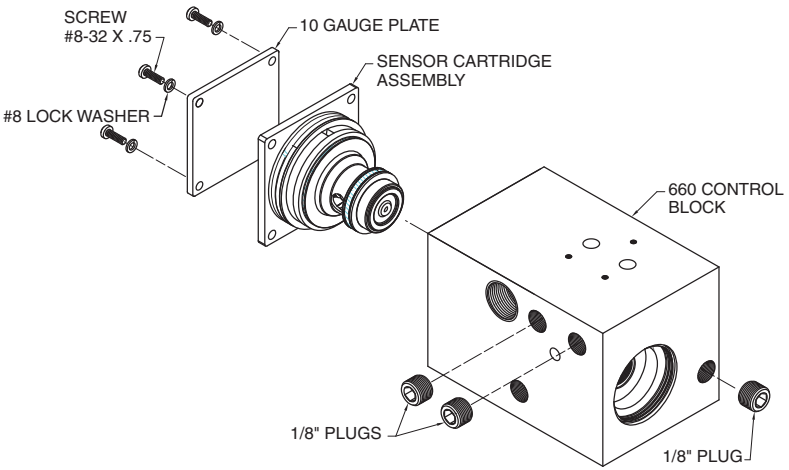


SCREW ADJUSTABLE KNOB ASSEMBLY COMPLETE WITH BONNETT, ADJUSTABLE SCREW ASSEMBLY, WASHER, AND MAIN SPRING INTO 660 BLOCK. TIGHTEN SECURELY. A CORRECTLY ASSEMBLED REGULATOR SHOULD TURN EASILY.





CLEAN AND REMOVE ANY DEBRIS FROM O-RING GROOVES. LIGHTLY GREASE ALL O-RINGS AND PLACE IN GROOVES AS SHOWN. PRESS END CAP AND SENSOR CARTRIDGE TOGETHER ALIGNING HOLES WITH PINS.



SCREW IN 1/8" PLUGS SO THAT THEY ARE FLUSH WITH BLOCK. PLACE SENSOR CARTRIDGE ASSEMBLY INTO CONTROL BLOCK AND PUSH DOWN FORCING END CAP FLUSH WITH BLOCK. SCREW DOWN 10 GAUGE PLATE ALTERNATING THE TIGHTENING OF SCREWS TO DISTRIBUTE FORCE.

Should any questions arise with regard to installation and/or operation that is not covered in this manual, please call Posi-flate for further recommendations or visit our website at **www.posiflate.com**.

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Posi-flate is interested in feedback from our customers. Please help us serve you better by going to www.posiflate.com/customer.html and completing our Customer Satisfaction Survey or complete the survey below and fax or e-mail it to us.

1. Are you satisfied with the delivery of your Posi-flate product?
   ☐ Yes ☐ No
2. Are you satisfied with the performance of your Posi-flate product?
   ☐ Yes ☐ No
3. Are you satisfied with the customer service you received?
   ☐ Yes ☐ No
4. Are you satisfied with the technical support?
   ☐ Yes ☐ No
5. Are you satisfied with the price?
   ☐ Yes ☐ No
6. Are you likely to buy more Posi-flate products?
   ☐ Yes ☐ No
7. Do you have any suggestions to improve the Posi-flate product quality or service?
   ☐ Yes ☐ No

Comments:

_____

_____

_____

Thank for your help. Please tell us about yourself:

Name: _____

Company: _____

Country: _____

Phone Number: _____

E-mail Address: _____

Would you like someone from Posi-flate to contact you?

☐ Yes ☐ No (If Yes, be sure to include your contact information above.)

*Please fax this page to Posi-flate at **+1 651-484-7015** or email to **info@posiflate.com**.*

This section contains custom design information which supersedes the standard design. All drawings and material lists in this section will replace the drawings and material lists of identical nature previously listed. If this section has no information, all components are standard.