

TI Series 5, 150# Flanged, 2-1/2" Port

Transmitter Isolation Ball Valves

Installation, Operation, and Maintenance Instructions



WARNING:

For your safety and protection it is important that the following precautions be taken prior to working on the valve.

1. **Depressurize and drain the line.**
2. **Cycle the valve to relieve any pressure trapped in the valve.**
3. **Disconnect any air and electrical connections to the valve assembly.**
4. **Know what the media is in the line and wear appropriate protective clothing and equipment. Obtain appropriate MSDS sheets.**
5. **To ensure safe product selection and operation, it is the responsibility of the process system designer and end user to determine the appropriate compatible materials of construction and adequate product ratings for the process system. Process system designer, installer, and end user are responsible for proper installation, operation, and maintenance.**
6. **When disposing of Teflon parts, do not incinerate or subject to open flames.**

General

This Installation, Operation, and Maintenance manual is for the safe use of PBM TI Series 5 transmitter isolation ball valves. Please read the instructions carefully and save them for future reference.

Installation

The Transmitter Isolation Valve is a ball valve that mounts to a 150# tapped flange on a tank, and a 150# flange attached to a pressure transmitter. Note: The tank flange may have unequal tapped holes that are needed for knife gate valve installation. The TIV has a bolt holes that accommodate this bolt pattern. PBM's TIV is a ball valve with four purge ports that can be used for purging the body cavity and the fluid volume between the valve and the pressure transmitter. They assist in preventing product from hardening and interfering with operation of the valve or the transmitter. These purge ports are sealed with pressure tight pipe plugs at shipment.

Operation

Operation consists of turning the handle 1/4 turn to close or open the valve. When handle is parallel with the flowline, the valve is in the open position. Good operating procedure requires periodic inspection of the valves and replacement of parts as required. Always use PBM factory authorized replacement parts.

Installing the Valve

1. Install four 5/8" studs in the tapped holes in the tank flange.
2. While installing a gasket between the TIV and the tank flange, push the TIV assembly up against the gasket to trap the gasket between the TIV and the tank flange. Allow the protruding 2-7/8" diameter pilot of the TIV to enter the bore of the tank flange and allow the four 5/8" studs to pass through mating 3/4" holes in the TIV.
3. Install 5/8" nuts on the four studs and tighten in a staggered sequence to compress the gasket trapped between the tank flange and the TIV.
4. Install four 5/8" studs in the tapped holes in the TIV.
5. Install the pressure transmitter and gasket on the open end of the TIV and secure with four 5/8" nuts. The nuts should be tightened in a staggered sequence.

Connecting the Purge Piping

Four 1/4" FNPT purge ports are located in the TIV. They are plugged and sealed at shipment with 1/4" MNPT pipe plugs. The four purge ports are identified as follows (when viewing the valve from the transmitter side, stem vertically up):

Tank side and Transmitter Side, 4 o'clock and Tank Side and Transmitter Side, 7 o'clock

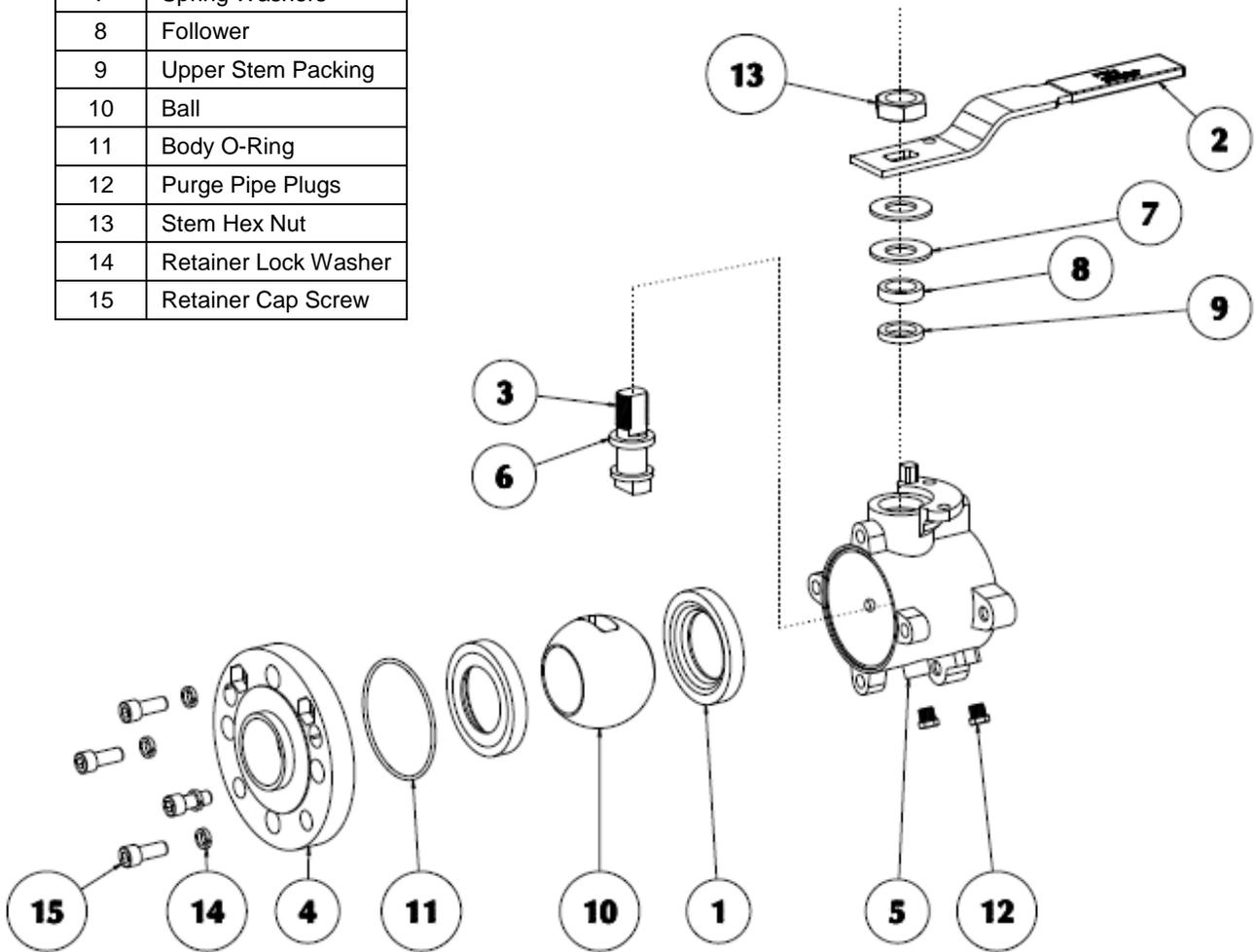
1. The tank side purge ports can be used to purge the body of the valve, using one as an inlet and one as an outlet.
2. The transmitter side purge ports can be used to purge the volume between the body of the valve and the transmitter, using one as an inlet and one as an outlet.
3. If the valve has a ball with flats milled on the transmitter side closed surface, one or both of the tank side purge ports can be used as purge inlet(s) and one of the transmitter side purge ports can be used as the purge outlet. Hence, the body cavity and the fluid volume at the transmitter can be purged with the valve closed.

4. One of the transmitter side purge ports can be used for calibration of the transmitter with a test pressure source with the TIV in the closed position.
5. Customer supplied piping and valves are needed if the purge ports are to be used. Purge ports not in use should be plugged.

Installing Replacement Parts:

1. Drain the tank and loosen and remove the four 5/8" nuts connecting the transmitter to the TIV and remove the transmitter and gasket.
2. Loosen and remove the remaining four 5/8" nuts and pull the TIV away from the tank flange. Remove the gasket.
3. Loosen and remove the cap screws w/ lock washers that secure the seat retainer to the body.
4. Remove the outer seat and O-Ring from the body.
5. Turn the stem to close the ball. Remove the ball and inner seat from the body. Take care not to nick or scratch the ball.
6. Loosen and remove the 1/2" hex nut from the stem, then remove handle, spring washers, and follower from the stem.
7. Push the stem down through the valve body and remove the stem, then remove the lower and upper packings from the stem and/or the valve body.
8. Clean all metal parts using a suitable solvent and a non-abrasive cloth.
9. Set the body on a horizontal surface with the transmitter side resting down.
10. Install a new seat in the body then install new lower packing by sliding it over the top of the stem and allowing it to rest on the ledge of the stem.
11. Slide the stem up into the bore of the bonnet until the lower packing rests on the body.
12. Install the upper packing over the stem and into the counterbore of the body
13. Install the follower over the stem and allow it to rest on the upper packing.
14. Install the ball onto the stem tang in the body. For valves with a milled flat on the closed surface of the ball, the milled flat should face the installed seat with the valve (transmitter side) in the closed position. Take care not to nick or scratch the ball.
15. Install the two spring washers, first one with the concave side facing upward and the second one with the concave side facing downward. Spring washers should not be "nested".
16. Install the handle down over the stem such that the stop pin hits the right side of the handle in the open and closed positions.
17. Lubricate the stem threads with a non-galling lubricant then install the 1/2" hex nut on the stem and tighten to completely compress the spring washers. Then loosen this nut 1/8 turn.
18. Rotate the stem until the ball is in the open position and place the body O-ring seal into the groove in the body and place the remaining seat into the body.
19. Turn the valve handle to position the ball in the closed position.
20. Install the seat retainer onto the body until it bottoms.
21. Lubricate external threads of the body bolting with a non-galling lubricant, then install the cap screws and lock washers.
22. Tighten the bolting 1/2 turn, alternating among all four cap screws, until the end fitting is tight against the body. Cycle the valve to verify freedom of operation and torque.
23. If practical, check the valve seats and seals for leaks.
24. The valve is now assembled. Complete assembly to the tank using the installation instructions provided on Page 1.

PARTS LIST	
ITEM	DESCRIPTION
1	Seat
2	Handle
3	Stem
4	Seat Retainer
5	Body
6	Lower Stem Packing
7	Spring Washers
8	Follower
9	Upper Stem Packing
10	Ball
11	Body O-Ring
12	Purge Pipe Plugs
13	Stem Hex Nut
14	Retainer Lock Washer
15	Retainer Cap Screw



Replacement Kits and Parts				
Valve Size	Repair Kit (TFM™)	Repair Kit (S-TEF®)	Ball (316L S/S)	Stem (316L S/S)
2-1/2" Port	TITFJ5 -- G -- 1	TIHTJ5 -- H -- 1	SPHLJ102	TIHLJ505

Notes for Table above:

1. Standard repair kits include 2 TFM™ seats, 1 TFM™ stem packing, 1 o-ring, and 1 S-TEF® (gray) stem packing. S-TEF® repair kits use 2 S-TEF® seats, 2 S-TEF® stem packings and 1 o-ring.
2. Standard repair kits and replacement parts are TFM™.
3. Replacement parts are one each per part number.

Material Definitions:

TF TFM™ Chemically modified polytetrafluoroethylene
HT S-TEF® Stainless steel reinforced polytetrafluoroethylene



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