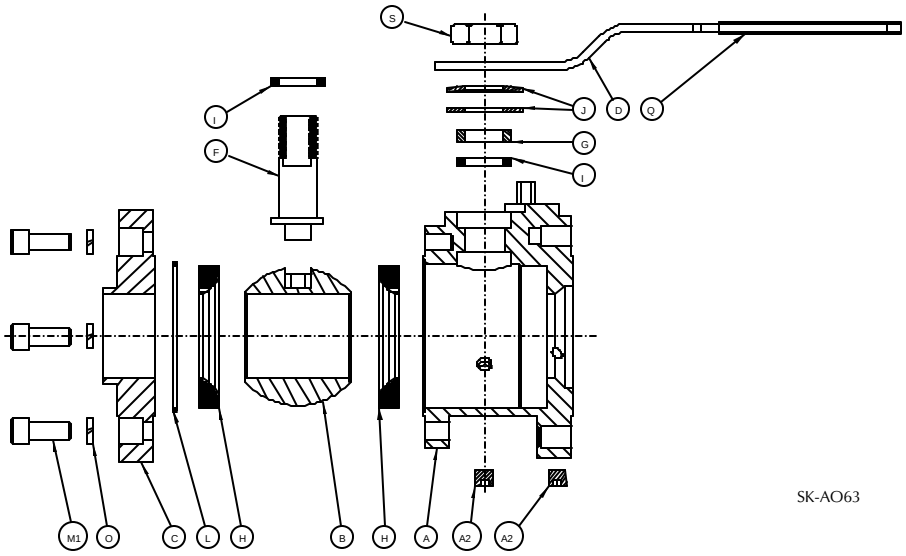
MAINTENANCE INSTRUCTIONS

Transmitter Isolation Valve, 2½″

Manually Operated

COMPONENT LIST	
Item	Description
A	Body
A_2	Pipe Plug
B	Ball
C	End Fitting
D	Handle
F	Stem
G	Follower
H	Seat
I	Stem Packing
J	Spring Washers
L	Body O-Ring
M_1	Hex Capscrew (½″)
O	Lock Washer (½″)
Q	Handle Cover
S	Jam Nut (½″)



SK-AO63

Follow instructions to ensure optimum performance:

General

The Transmitter Isolation Valve is a 2½″ ball valve that mounts to a 3″, 150# tapped flange on a tank, and a 3″, 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.

This valve is available in two styles (TIH-J5L-A-- and TIH-J5L-A-A). Both valves have identical features, except that the TIH-J5L-A-A valve has a ball with milled flats in the closed position facing the pressure transmitter. These milled flats allow the body cavity to be purged towards the transmitter where the purge flow exits the assembly via a purge port on the transmitter side of the ball.

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 the mating ¾″ 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. 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 ¼″ FNPT purge ports are located in the TIV. They are plugged and sealed at shipment with ¼″ MNPT pipe plugs. The four purge ports are identified as follows (when viewing the valve from the transmitter side, stem vertically up):

1. Tank side, 4 o'clock
2. Transmitter side, 4 o'clock
3. Tank side, 7 o'clock
4. Transmitter side, 7 o'clock

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.

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.

If the valve has a ball with flats milled on the transmitter side closed surface (valve style TIH-J5L-A-A), 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.

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.

Customer supplied piping and valving is needed if the purge ports are to be used. Purge ports not in use should be plugged.

Operating the Valve

1. To open the valve, turn the handle 90 degrees counter-clockwise. A stop is provided to limit the rotational travel

of the handle. When the handle is parallel to the axis of the valve and the transmitter, the valve is open.

2. To close the valve, turn the handle 90 degrees clockwise.
3. If it is desired to lock the valve in either the open or closed position, use the provided $^{7}/_{16}$" diameter holes on the handle to install a padlock or other locking device.

Installing Replacement Parts

To replace the seats and seals of the valve, complete the following steps:

1. Drain the tank.
2. Loosen and remove the four $^{5}/_{8}$" nuts connecting the transmitter to the TIV and remove the transmitter and gasket.
3. Loosen and remove the remaining four $^{5}/_{8}$" nuts and pull the TIV away from the tank flange. Remove the gasket.
4. Loosen and remove the four capscrews with lock washers that secure the body.
5. Remove the outer seats and O-ring from the body.
6. Turn the stem to close the ball. Slide the ball out of the body, taking care not to nick or scratch the ball.
7. Loosen and remove the jam nut from the stem. Remove the handle, spring washers, and follower.
8. Push the stem into the body and out the open end of the body. The bottom packing may come off with the stem. If not, reach into the body counterbore and remove.
9. Remove the top packings and the inner seat from the body.
10. Before reassembling the valve, examine the parts and repair or replace damaged or worn parts. Clean metal parts, as necessary, using a solvent compatible with the process fluid and a non-abrasive cloth. PBM recommends using new seats and seals at each assembly.
11. Insert a new seat into the body cavity.
12. Insert a new packing on the stem such that the packing seats on top of the ledge on the stem.
13. Insert the stem into body bore and through the stem bore in the body.
14. Install the remaining packing over the stem. Push the packings into the body counterbore.
15. Install the follower over the stem until it rests on the top packing.
16. Install a spring washer concave side facing upward.
17. Install remaining spring washer with the concave side of the spring washer facing down. Spring washers should not be "nested" (curving in the same direction).
18. Lubricate the stem threads with an anti-galling lubricant.
19. Install the handle on the stem such that stop pin hits the right side of the handle when the valve is open and closed. Install and tighten the jam nut to secure the handle to the stem. Tighten until the spring washers are completely compressed, then back off ¾ turn.
20. Position the stem to close the valve.
21. Insert the ball into the body. Slide the stem tang into the ball slot, being careful not to nick or scratch the ball.
22. Rotate the stem until the ball is in the open position.
23. Install the outer seat into the body, then install the O-ring into the groove in the body.
24. Lubricate external threads of body bolting with anti-galling lubricant.
25. Install the end fittings against body.
26. Install the capscrews and lock washers.
27. Tighten the bolting ½ turn, alternating among all four capscrews, until the end fitting is tight against the body. Cycle the valve to verify freedom of operation and torque.
28. If practical, check the valve seats and seals for leaks.

TABLE 1: REPLACEMENT PARTS FOR 2½" TIV

	Part Number	Material	Quantity Needed
Seat	TIRTJ508	RTFE	2
Stem Packing	SPRTK509	RTFE	2
Body O-Ring	ORVT--12---2224	VTFE	1

Notes for Table 1:

1. PBM recommends that at least one set of replacement parts be available, or enough replacement parts for 10% of the TIV population, whichever is greater.
2. RTFE is Glass Reinforced Polytetrafluoroethylene (PTFE).
3. VTFE is virgin PTFE.

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