

# TVS 4000/F Trap Valve Station Installation and Operation Manual

79-C



# General Safety Information

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the TVS 4000/F Trap Valve Station Series. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or its local representative if further information is required.

## Operation

In a piston valve, the control of stem and seat leakage is obtained by tightness of valve sealing rings to the body and valve plug. The bonnet compresses the valve sealing rings against the body and the valve plug.

Flexible disc springs automatically assure a tight seal by exerting pressure on the valve sealing rings, keeping them compressed.

## Opening and Closing the TVS Isolation Valve

The isolation valve begins to stop flow when the valve plug enters the lower valve sealing ring.

When the isolation valve is completely closed, the valve plug is in full contact with the valve sealing rings, ensuring the best possible seal. Since there is no metal to metal seating, torquing the isolation valve closed is not required. **Armstrong recommends that after closing the isolation valve completely, the handwheel should be turned back one half turn.** This makes it easy to re-open the valve after prolonged periods of no use.

## Testing TVS 4000/F Trap for Operation

- Open test valve – Condensate may discharge from the test port on the bottom of the connector.  
*Note: Test valve is on the inlet side of the casting marked "Test".*

**Caution:** Hot condensate and flash steam will be discharged from the test port. Use caution as burns could occur to personnel.

- Close TVS outlet isolation valve.
- Observe trap operation at test port.
- To place trap back in operation open TVS outlet isolation valve and close test valve.
- Close test valve with 40-50 ft. lbs. torque.

## Testing TVS 4000/F Trap for Operation

- Close TVS 4000/F inlet and outlet isolation valves.
- Open TVS 4000/F strainer blowdown valve to relieve pressure inside trap.

**Caution:** Hot condensate and flash steam will be discharged from the trap at the strainer blowdown valve discharge port. Use caution as burns could occur to personnel.

- After pressure has been relieved, remove bolts and the trap.
- Clean trap connector sealing surfaces.
- Apply "never seize" to the new trap bolts, insert bolts through connector block making sure, if the trap is an inverted bucket type it is in the vertical position. Tighten bolts evenly.
- Close TVS 4000/F strainer blowdown valve.
- Open TVS 4000/F inlet and outlet isolation valves.
- Check for leaks around trap connector.

# Troubleshooting – TVS 4000/F Isolation Valves

A piston valve will retain its leak tightness for several years without maintenance. In severe service, such as rapid heating and cooling, some field maintenance may be required. Depending on the problem, these simple steps may help:

- Isolation valve leaks when the valve is closed. First, Check to make sure the valve is actually closed. Check to see if bonnet is seated on the body, if not, tighten the bonnet bolts until the bonnet seats. This compresses the valve sealing rings against the body and the valve plug. If valve continues to leak, replace the isolation valve assembly.
- Valve stem leaks. Same as above.
- Maintain the isolation valves as soon as leakage starts. Internal leakage can wear the valve plug or valve sealing rings and they will have to be replaced if leakage continues.

**Caution:** Before tightening the bonnet bolts, make sure the valve is in the closed position.

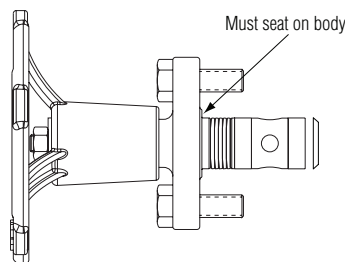
- Test valve leaks. Reseat with 40-50 ft. lbs. torque.

## Removing the bonnet assembly, valve sealing rings, lantern bushing and valve washers.

- This can be done with the TVS 4000/F Trap Valve Station remaining in the steam line. Be sure to isolate the TVS 4000/F Trap Valve Station both up and down stream by using separate shut-off valves before performing any maintenance.
- Open TVS 4000/F Isolation Valves
- Open the bleed valve all the way slowly to depressurize trap and then open the test valve all the way until it stops.
- Loosen and remove the bonnet bolts.
- Pull bonnet assembly out of valve body.
- Remove valve sealing rings, valve washers and lantern bushing using a Packing Hook. Check to see if all components, have been removed. Inspect and clean any debris that might have remained in the valve body.

## Installing New Isolation Valve Assembly

- Place Armstrong Part No. B7024 or SS handwheel part number D152592 isolation valve assembly in valve body.
- Lightly tap the isolation valve assembly to the bottom of the valve body.
- Coat the treads of the bonnet bolts with “never seize”, insert bolts through bonnet and tighten evenly until the bonnet seats on the valve body.
- Check the TVS 4000/F isolation valve for proper operation by opening and closing the valve one or two times leaving them in the open position.
- Open isolation valves up and down stream from the Trap Valve Station and check for leaks with trap installed.



**TVS 4000/F Isolation  
Valve Assembly**  
Part No. B7024 or SS handwheel  
Part No. D152592

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