Armstrong

TVS-3000 Series
Trap Valve Station
Installation, Operation and Maintenance Instructions

Operation

In a piston valve, the control of stem and seat leakage is obtained by tightness of the 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 isolatio valve is completely closed, the valve plug is in contact with the full height of the valve sealing rings, ensuring the best possible seal. In fact, there is no advantage to be gained in torqueing the isolation valve closed. **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 by avoiding metal to metal seizure.

Testing TVS-3000 Trap for Operation

- Open test valve - Condensate may come from the test port on the bottom of the connector.

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.

Replacing and Depressurization of TVS-3000 Trap WITHOUT bleed valve.

- Close TVS inlet and outlet isolation valves.
- Carefully loosen trap mounting bolts and allow pressure in trap to bleed off.

Caution: Hot condensate and flash steam will be discharged from the trap connector block seal. 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.
- Open TVS-3000 inlet and outlet isolation valves.
- Check for leaks around trap connector.

Replacing and Depressurization of TVS-3000 Trap WITH optional bleed valve

- Close TVS-3000 inlet and outlet isolation valves.
- **Open TVS-3000** bleed valve to relieve pressure inside trap.

Caution: Hot condensate and flash steam will be discharged from the trap at the bleed 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-3000 bleed valve.
- Open TVS-3000 inlet and outlet isolation valves.
- Check for leaks around trap connector.

Troubleshooting — TVS-3000 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 recompresses 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.

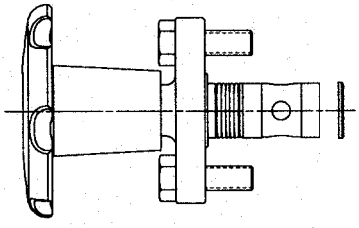
Caution: Before tightening the bonnet bolts, make sure the valve is in the **closed position.**

Replacing the Isolation Valve Assembly

Special Extraction Tool Required — Do not attempt to replace the valve sealing rings without the Part No. A9542 special valve sealing ring extractor tool. This tool is available from Armstrong International, Inc.

Removing the valve sealing rings, lantern bushing and valve washers.

- This can be done with the TVS3000 Trap Valve Station remaining in the steam line. **Be sure to isolate the** TVS3000 **Trap Valve Station both up and down stream by using separate shut-off valves before performing any maintenance.**
- **Open TVS-3000** Isolation Valves
- Using the handwheel or wrench, **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.
- Place the special valve ring extractor into the body of the valve and turn the top square nut of the special valve ring extractor with a wrench in order to allow the spindle to expand under the **valve washer.**
- Tighten the lower nut of the extractor and pull the extractor out of the valve body. The disc springs, valve sealing rings, valve washers and lantern bushing will come out on the end of the extractor. Check to see if all components including valve washer at bottom of valve body has been removed. Inspect and clean any debris that might have remained in the valve body.



TVS-3000 **Isolation Valve Assembly**
Part No. 85248

Installing New Isolation Valve Assembly

- Place valve washer into valve body with the **Beveled Edge down.**
- Place Armstrong Part No. 85248 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-3000 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.

Operation of the TVS-3000 Bleed/Test Valve

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

When the valve is completely closed, the valve plug is in contact with the full height of the valve sealing rings, ensuring the best possible seal. In fact, there is no advantage to be gained in torqueing the valve closed.

Troubleshooting — Bleed/Test Valves

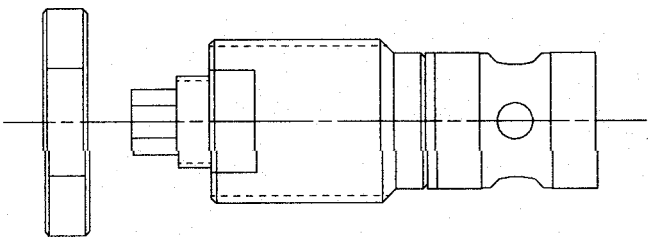
A piston valve will retain its leak tightness for several years without maintenance. In severe service, such as rapid heating and cooling, some field maintenance may be required. Depending on the problem, these simple steps may help:

- **Bleed/Test Valve leaks, when the valve is closed.** First, **Check to make sure the valve is actually closed.** Tighten the packing gland with the valve closed until the leak stops. This recompresses the valve sealing rings against the body and the valve plug. If the valve continues to leak, replace the Bleed/Test Valve Assembly.
- **Bleed/Test Valve stem leaks.** Same a 1 above.
- **Maintain the bleed/test valve 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 packing gland make sure the valve is in the **closed** position

Removing the Bleed/Test, packing gland, valve plug, sealing valve rings, lantern bushing and valve washer.

- This can be done with the TVS3000 Trap Valve Station remaining in the steam line. **Be sure to isolate the TVS-3000 Trap Valve Station bleed/test valves before performing any maintenance on the bleed/test valves by closing the TVS-3000 inlet and outlet isolation valves.**
- Using the handwheel or a wrench, open the bleed valve slowly all the way to depressurize the trap all the way, then **open** the test valve all the way.
- Loosen and remove the locknut.
- Untighten packing gland. Remove **packing gland, valve plug, valve sealing rings, lantern bushing and valve washer** from valve body. Check to see if **all components** have been removed. Inspect and clean any debris that might have remained in the valve body.



Bleed/Test Valve Assembly
Part No. B5255

Installing New Bleed/Test Valve Assembly

- Apply “never seize” to the packing gland threads and then insert the packing gland/valve assembly Armstrong Part No. 85255 into the valve body.
- Tighten the packing gland to 5 ft/lb.
- Place locking ring on packing gland and tighten to lock the bleed/test valve assembly in place.

If optional handwheel is included:

- Place a thread locking compound on threads of the handwheel’s hold down screw.
- Insert screw into handwheel.
- Place handwheel and screw assembly on to the hex shaft and tighten screw.
- Check the bleed/test valve for proper operation by opening and closing the valve one or two times and leaving them **closed.**
- **Open TVS-3000** inlet and outlet isolation valves and check for leaks.

Contact Armstrong International or your local representative if you have questions regarding the installation, use or repair of Armstrong Model TVS3000 Trap Valve Station.

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