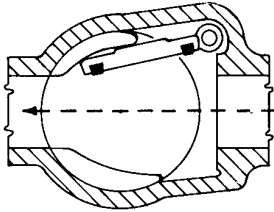


# HVAC TDV/TSV Valve Instructions

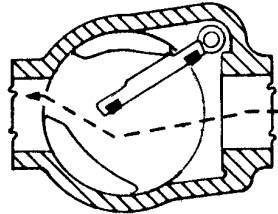
## Design and Operation

The principle of operation for the TDV/TSV valve is extremely simple. When in the open position, the clapper swings out of the flow. If the flow stops, the spring allows the clapper to close.



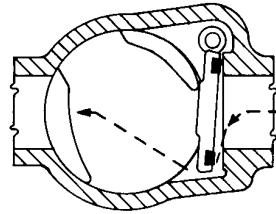
### Open Position

With the plug in the open position, the clapper operates as an efficient check valve. The clapper being hinged at an angle provides 90% less dead weight to minimize clapper slam and chatter.



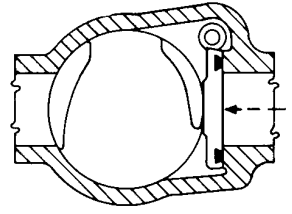
### Balancing

The plug holds the clapper at the selected flow requirement for balancing.



### Closed Downstream

As the plug is rotated toward the closed position, the downstream part closes first. This equalizes the pressure so the clapper closes with little resistance.



### Positive Seal Closure

Final closing is accomplished by the plug camming against the back of the clapper.

## Maintenance

The TDV/TSV valve requires no day-to-day maintenance or lubrication, but it is suggested that the valve be operated once a month to assure it is in operable condition.

If at any time it is suspected that the valve is leaking, either in the plug position or as a check, it is possible that foreign particles are trapped between the mating faces of the seal and seat, and are preventing tight seal action. Cycling the valve from full open to full close causes a jetting action that will wash away foreign particles that may be trapped. Also, cycling the valve will usually squeeze any build-up away from the seat mating faces and allow tight shut-off again.

It is not uncommon to discover that when a TDV/TSV valve has been reported leaking in the closed position, that the valve is actually not completely closed. The cam-based design of the TDV/TSV valve makes it almost impossible to over-close. The TDV/TSV is designed to

close at an approximate ninety degree rotation of the plug stem. To close the valve, rotate the stem one quarter turn and tighten.

The TDV/TSV wrench is specially suited for the cam-based design of the valve to assure a positive closure. The most satisfactory closure is accomplished by turning the plug to a tight fit and then “bumping” the plug lightly using the TDV/TSV wrench. The use of cheater or a handwheel should not be necessary.

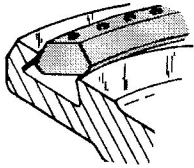
If these procedures have been completed and a tight seal is still not apparent, the valve should be disassembled and inspected for damage of the clapper seal and seat face, or for excessive wear of the clapper pin and pin hanger supports.

For balancing procedures, please refer to the TDV/TSV Submittal Data Sheet

## Repair Clapper Seal

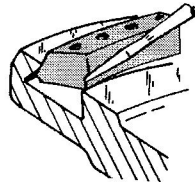
HVAC TDV/TSV (Plugaroo) valves are equipped with Buna-N clapper seals. If the clapper seal is damaged,

they can be replaced by removing the clapper and installing a new seal (see steps 1-3 below).



### Step 1

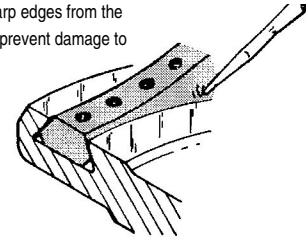
Place the outer edge of the seal into the clapper groove as shown.



### Step 2

Using a blunt screwdriver, force the inside lower edge of the seal into the clapper groove.

Remove all sharp edges from the Screwdriver to prevent damage to the seal



### Step 3

As you work the seal in, maintain force on the portion of the seal that has been installed. This will prevent elongation and excessive build-up of closing portion.

## Replacement Procedure

- (1.) Position clapper firmly against the seat face.
- (2.) Pre-load spring and bind using filament tape (see Figure #1 at right).
- (3.) Take the clapper pin with the extension screw and insert the pin into the spring and support hangers (see Figure #2 at right).
- (4.) When holding the clapper firmly against the seat, the clapper pin must move freely into position.
- (5.) Remove the extension screw, replace the clapper pin plug, and cut the filament tape to free the spring.
- (6.) Check the clapper for free movement by opening and closing the clapper by hand.
- (7.) If movement is free, complete the valve assembly.

Figure #1

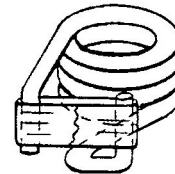


Figure #2

