

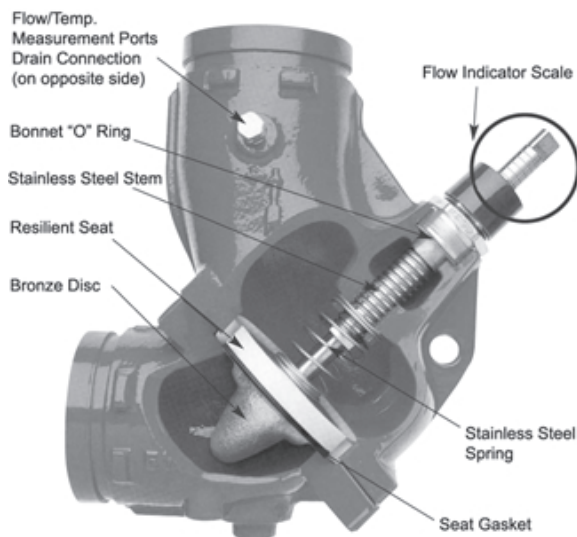
## TRIPLE DUTY VALVES

### INSTALLATION & OPERATING INSTRUCTIONS

#### 1.0 INTRODUCTION

1.1 The EnviroSep Model TDV Triple Duty Valves are designed for installation on the discharge side of centrifugal pumps. The Model TDV Triple Duty Valve incorporates three functions in one valve:

- Drip-tight, shut-off valve ·
- Spring closure design. Non-slam check valve ·
- Flow throttling valve



#### 2.0 INSTALLATION

2.1 The valve should be mounted to a spool piece on the discharge side of the pump. Spool piece required is based on a minimum recommended space of 12" for pump sizes 2" to 6" and 24" for pump sizes 8" to 12".

2.2 It is not recommended to mount a valve directly to the pump as this could cause undesirable noise in the system.

2.2 Sufficient clearance around the valve should be left for valve removal or repair.

2.3 Install valve in the direction of the flow arrows on the valve body.

2.5 The valve body has been designed to handle the weight of the pump on vertical in-line installations. The body is not designed to support the piping weight. It is recommended that the piping be supported by hangers. Pipe supports should be provided under the valve and strainer bodies.

#### 3.0 FLANGE BOLT TIGHTENING - Recommended Bolt Tightening Procedure

3.1 Tighten nuts evenly so that the flange faces remain parallel. Flange bolts should be tightened to 70 ft/lbs. Torque minimum to assure firm metal-to-metal contact. When raised face flanges are used, there will be a gap between the faces of the outer diameter

4.0 PRESSURE TEMPERATURE LIMITS – See Product Data Sheet.

#### 5.0 FIELD CONVERSION (Angle to Straight pattern valve)

5.1 Open valve at least one complete turn.

5.2 Remove the body bolts from valve body using Allen Key.

5.3 Rotate one half of the valve body 180° making sure the lower valve seat and "O" Ring stay in position. Inspect the "O" Ring for any cuts or nicks and replace if necessary.

5.4 Replace body bolts and torque evenly to 70 ft/lbs.

#### 6.0 FLOW MEASUREMENT

6.1 Where approximate indication of flow is acceptable the Model TDV Triple Duty Valve can be used.

#### 6.2 FLOW MEASUREMENT VALVE IN WIDE OPEN POSITION

6.2.1 Measure and record the differential pressure across the valve using pressure gauges with Pete's Plug adapters.

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**Caution:** The probe should not be left inserted into fittings for prolonged periods of time (overnight, etc), as leakage from the Pete's Plug may occur when probe is removed.

6.2.2 Refer to Model TDV Triple Duty Valve Performance Curves with valve in full open position. Locate Pressure Differential on left hand side of chart and extend line horizontally across to valve size being used. Drop line vertically down and read flow rate from bottom of chart.

### 6.3 ESTIMATING FLOW RATE WITH VALVE IN THROTTLED POSITION

6.3.1 Determine the percentage open of the Model TDV Triple Duty Valve.

6.3.2 This may be calculated by dividing the number of rings in the throttled position of the valve stem by the total number of rings of the stem in the fully open position.

6.3.3 To calculate flow rate of valve in the throttled position, multiply the flow rate from Step 6.2.2 by the percentage estimated from Step 6.3.2.

**Note:** To prevent premature valve failure it is not recommended that the valve operate in the throttled position with more than 25 ft. pressure differential. Instead the pump impeller should be trimmed or valves located elsewhere in the system be used to partially throttle the flow.

#### Flow Indicator Scale

Valve Size	2 1/2	3	4	5	6	8	10	12
Number of Rings (valve full open)	5	5	6	9	10	12	18	28

The valve stem with its grooved rings and positioning sleeve indicates the throttled position of the valve. The quarter turn graduations on the sleeve, with the scribed line on the stem provides for approximate flow measurement. Note: The valve is shipped in the closed position. The indicator on the plastic sleeve is aligned with the vertical scribed line on the stem.

### 7.0 OPERATION

7.1 To assure tight shut off the valve must be closed using a wrench with 25 to 30 ft/lbs. of torque.

7.2 To assure trouble-free check valve operation and shut off operation, the valve should be periodically opened and closed to keep valve seat and valve disc guide stem free of build up of system contaminants.

### 8.0 REPACKING OF VALVE

8.1 Should it be necessary, stem "O" Ring can be changed under full system pressure.

**Caution:** Safety glasses should be worn.

8.2 Record the valve setting.

8.3 Turn the valve stem counter-clockwise until the valve is fully open and will not turn any further. Torque to a maximum force of 45 ft/lbs. This will ensure good metal-to-metal contact and minimum leakage.

8.4 The valve bonnet may now be removed. There may be a slight leakage. As the metal-to-metal back seating

does not provide a drip-tight seal.

8.5 Clean exposed portion of valve stem (Do not scratch).

8.6 Remove and replace the 'O' Ring and gasket.

8.7 Install the valve bonnet.

8.8 Tightening valve bonnet is necessary to stop any leaks.

8.9 Open valve to balance set point as recorded in 8.2.

### 9.0 MAXIMUM NUMBER OF TURNS FULL OPEN VALVE

**Note:** On valve sizes 2-1/2" and 3", full open position of valve is 5 turns. However valve will open to 5-1/2 turns which is just back of seating of valve.

### 10.0 SEAT REPLACEMENT

10.1 Drain system and remove valve from piping.

10.2 Remove the body bolts from the body using an Allen Key.

10.3 Remove seat and "O" Ring.

10.4 Inspect and clean 'O' Ring cavity and install new "O" Ring and seat. Valve disc stem also should be inspected and replaced if worn. Valve stem 'O' Ring should be replaced at this time. Refer to section 8.