WILLAMETTE VMC-2200
CONE VALVES

Instruction D12002
February 2015

DeZURIK | APCO | HILTON | WILLAMETTE

Instructions

These instructions provide installation, operation and maintenance information for Willamette VMC-2200 Cone Valves. They are for use by personnel who are responsible for installation, operation and maintenance of Willamette VMC-2200 Cone Valves.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death. Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your Willamette VMC-2200 Cone Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime. Order parts from your local DeZURIK sales representative, or directly from DeZURIK. When ordering parts please choose from the following:

If the valve has a DeZURIK APCO nameplate please include the 7-digit part number and 4-digit revision number (example: 9999999R000) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any nameplate visible on the valve, please include Valve Model number, the part name, and item number from the assembly drawing. You may contact your local DeZURIK APCO Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at www.dezurik.com.

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Description

General

Willamette VMC-2200 Cone Valve is a plug type valve with a full circular waterway through the body and plug in the open position. Basically, the valve consists of a body, plug, cover, operating mechanism and actuating unit. The plug is tapered and fits into the tapered body; it has a central bore of the same nominal diameter as the connecting pipe. The plug lifts, rotates 90 degrees and then lowers into position when the valve is operated. This lifting action minimizes seat wear and ensures a long life.

Body & Plug

The valve body has integral Monel seats around the bore. The plug has seats of the same material as the body seats. This construction provides positive protection for the seats at all times, assuring a long, maintenance-free life.

Torque Unit (Valve Operating Mechanism)

The operating mechanism, totally enclosed in a separate housing outside of the valve, is easily accessible for shaft packing adjustment, inspection, maintenance or replacement without shutdown of the pipeline. The operator is equipped with an external valve position indicator. Bearings are provided on the top and bottom of the plug to fully support the plug away from the body seats during rotation. During the operating cycle, the valve operator lifts the plug until it is clear of the body seats, rotates the plug 90 degrees and finally lowers the plug into full seating contact. The axial movement of the plug on opening and closing practically eliminates all sliding contact between seating surfaces and reduces wear to an absolute minimum.

Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to the actuator, plug or through the seat opening of the body. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, place valve indoors in secure, weather tight storage. If temporary outside storage is unavoidable, make sure a vermin proof rain cover (water shedding tarp, etc.) is secured around/over the equipment to keep off rain and mud. Skid and set the assembly on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water.

Installation

- Before starting installation, the contractor must have an approved drawing showing the side of the line on which the operator is to be installed.
- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used.

CAUTION!

Do not deflect the pipe-valve joint. Minimize bending stresses in the valve end connection with pipe loading.

If excessive seat leakage occurs during start-up, recheck the installation and eliminate any distortion to the valve body.

- Ensure the valve and pipeline flanges are concentric to ensure proper flange sealing and seat leakage control.
- Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.
- The valve is suitable for any orientation with flow from either direction. A base is provided for floor mounting.
- Valves that are fitted with limit switches, hydraulic controls, or an electronic motor operator may need further adjustment and/or set-up. Refer to the appropriate instruction manual for further details.

Fusion/Powder Coated Valves

CAUTION!

Valves with fusion/powder coated exterior paint require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange to prevent the paint from cracking or chipping.

Maintenance

General

The only regular maintenance that the Willamette VMC-2200 cone valve requires is to be lubricated once after the first 50 cycles and then on a yearly basis afterwards. See the lubrication section for instructions. Whenever the valve is being lubricated, visually inspect the valve for any leakage. If there is any leakage, see the troubleshooting section at the end of this manual.

Perform any periodic maintenance on the cylinder and hydraulic system as called for in their respective instruction manual.

Seating in the close position is externally adjustable. However, the seating should not be adjusted until long term component wear or component replacement requires it.

Lubrication

Lubrication of the valve should be done once after the first 50 cycles of operation. Afterwards, the valve should be lubricated on a yearly basis. Lubricate at the supplied lubrication points on the valve assembly and torque unit using a hand-pump grease gun. **Caution!** Do not use air-operated grease guns. Use Mobilgrease™ FM 222, manufactured by Mobil.

Valve Assembly (18" & Larger)

For valve sizes 18" & larger, the valve body and cover is fitted with two lubrication points for the lower and upper body bushings. Lubricate at the "Upper Bushing Grease Point" on the cover and the "Lower Bushing Grease Point" located on the body as shown Figure 1.

The lower bushing grease point may not be easily accessible in vertical valve shaft applications depending on the installation. If required, the grease fitting supplied with the valve can replaced with an extension.

Caution! If a grease extension is required, ensure pressure is relieved from the pipeline & valve before replacing the grease fitting.

Torque Unit

Lift Nut (All Torque Units)
Grease at "Lift Nut Grease Point" in Figure 2.

T22-18, T68-50, T140-80, & T390-140 Torque Units
Lubrication of the moving parts on the crosshead, crosshead roller, guide rods, link, and lever is accomplished by applying grease at the "Crosshead Grease Point" and "Lever Grease Point" in Figure 2.

T8-9 Torque Unit
The T8-9 size torque unit is lubricated differently than all the other torque units because of its small size. Lubrication of the crosshead, crosshead roller, guide rods and link moving parts is accomplished by greasing through the supplied fitting connected to the top of the crosshead. To access the grease fitting, remove one of the two pipe plugs in the torque unit cover shown in Figure 3 depending on whether the valve is in the closed or open position.

Shaft Packing Adjustment

Removal of the valve from the line for shaft packing adjustment is not required as long as the shaft is accessible.

1. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.

WARNING!

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. Tighten packing gland screws evenly only until leaking stops, see Figure 4.

   Caution! Do not exceed 22 ft lbs of torque on the screws. Overtightening screws can damage the shaft packing and cause excessive shaft torque.

Shaft Packing Replacement

Removal of the valve from the line for shaft packing replacement is not required as long as the shaft is accessible.

WARNING!

Servicing the valve while the pipeline is under pressure can cause personal injury or equipment damage. Relieve pipeline pressure before servicing the valve.

1. Relieve the pressure in the pipeline and close the valve.
2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.

WARNING!

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

3. Remove the hex head cap screws from the packing gland studs and move the gland upward. Remove the packing with a flexible packing hook or similar tool. Clean the packing area, being careful not to damage it.
4. Obtain the new packing. The type of packing used in the Willamette VMC-2200 cone valve is v-packing. V-packing consists of a male and female adapter ring and several v-rings, see Figure 4. Make sure it is clean, and has not picked up any dirt in handling before installing it. Lubricate I.D. of each packing ring.
5. Cut the rings to fit around the shaft. Joints of successive rings should be staggered at least 90 degrees apart when being installed. First, install male adapter. Secondly, install the v-rings one at a time with the opening of the “v” facing down. After all v-rings are installed, install the female adapter. Each ring should be firmly seated with a tamping tool. Do not depend on the packing gland entirely to seat the set of rings properly. This practice will jam the last rings installed but leave the first ones loose in the box.

Closed Stop Adjustment

The Willamette VMC-2200 cone valve is a metal seated valve. Once the seats make contact, additional travel in the closed position is not possible. The closed stop is set at the factory in the optimal position and should not be adjusted unless long term component wear or component replacement requires it. The closed stop can be adjusted externally adjusted. If the valve is fitted with limit switches, adjustment of the switches may be required after the closed stop is adjusted.

1. The closed stop cannot be adjusted when the valve is in the closed position. Actuate valve to an intermediate or open position.
2. After the valve has been moved to either an intermediate or open position, power down, disconnect, and/or lockout any electric, hydraulic or pneumatic power to prevent accidental operation of the actuator during the adjustment.

WARNING!

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

3. Loosen the locknut on the closed stop
4. Turning the stop counter clockwise “backs off” the stop and allows the valve to close further, if possible. Turning the stop clockwise moves in the stop and decreased the travel of the valve. It is good practice to rotate the stop in ¼ turn increments.
5. After adjustments have been made, tighten the locknut.
6. Actuate the valve to the closed position to check if the valve is seated properly. If not, repeat process until the valve is properly seated.

Drawings

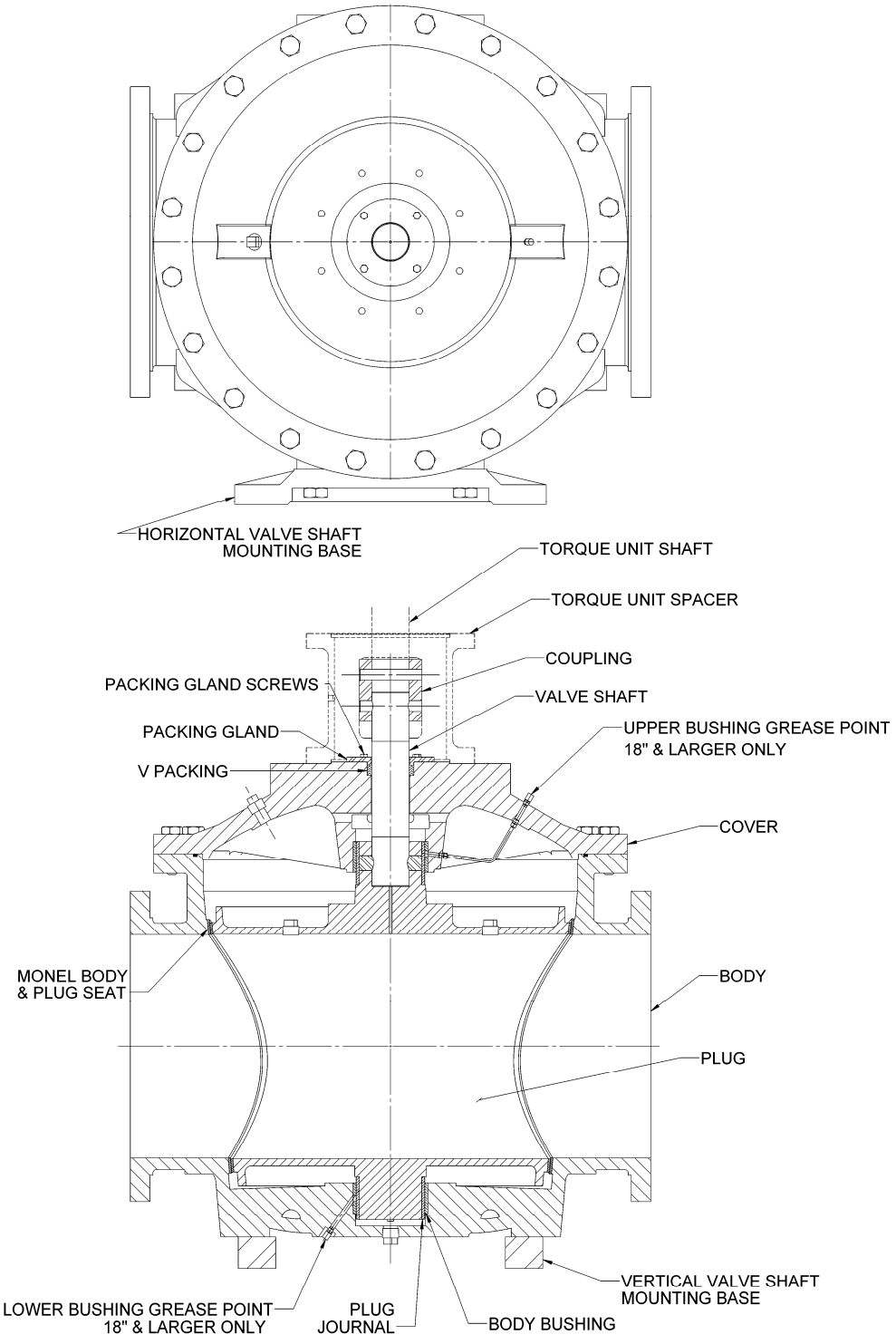

Figure 1 – Valve Assembly

Drawings *(Continued)*

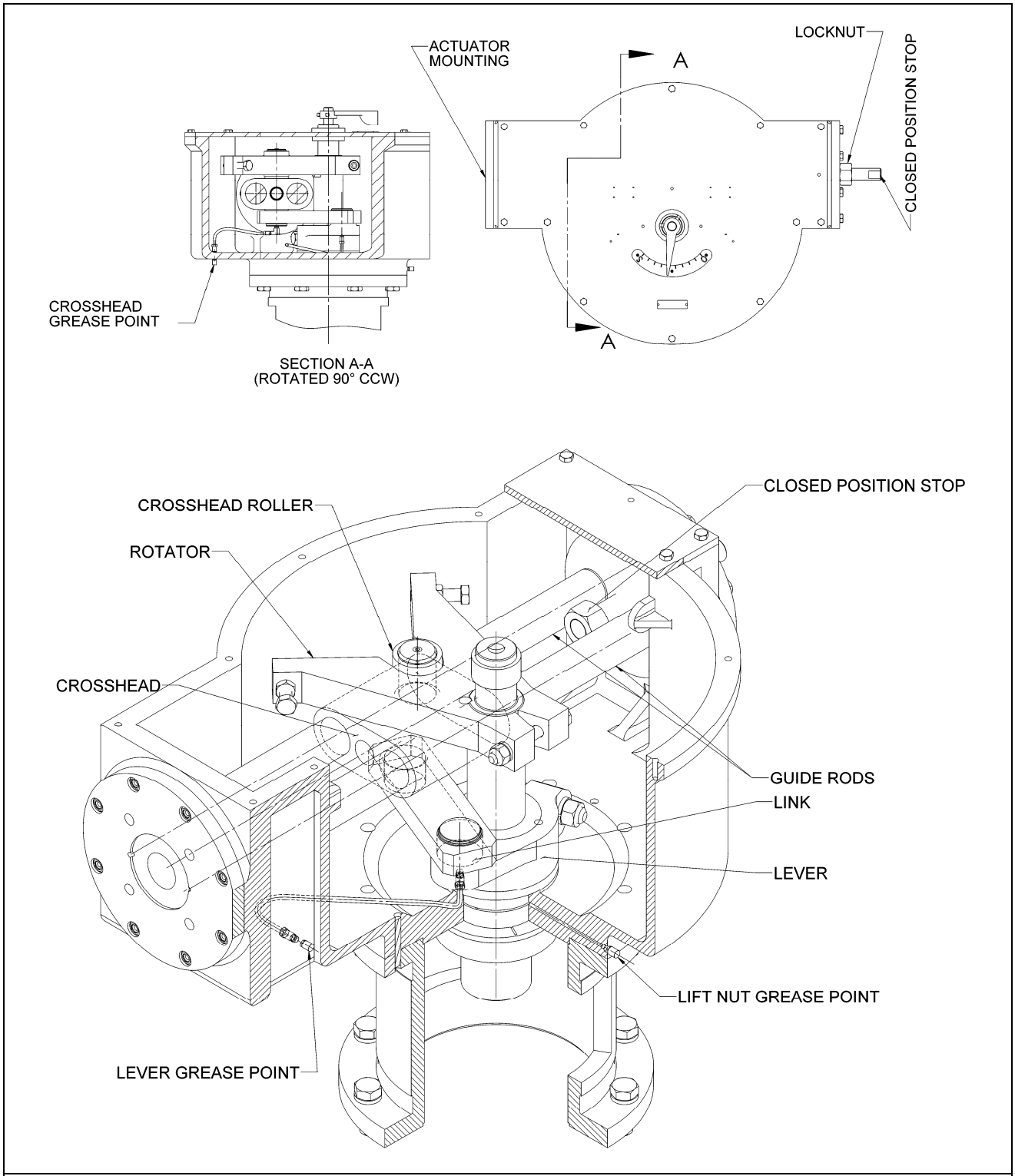

Figure 2 – Torque Unit Assembly Detail

Drawings *(Continued)*

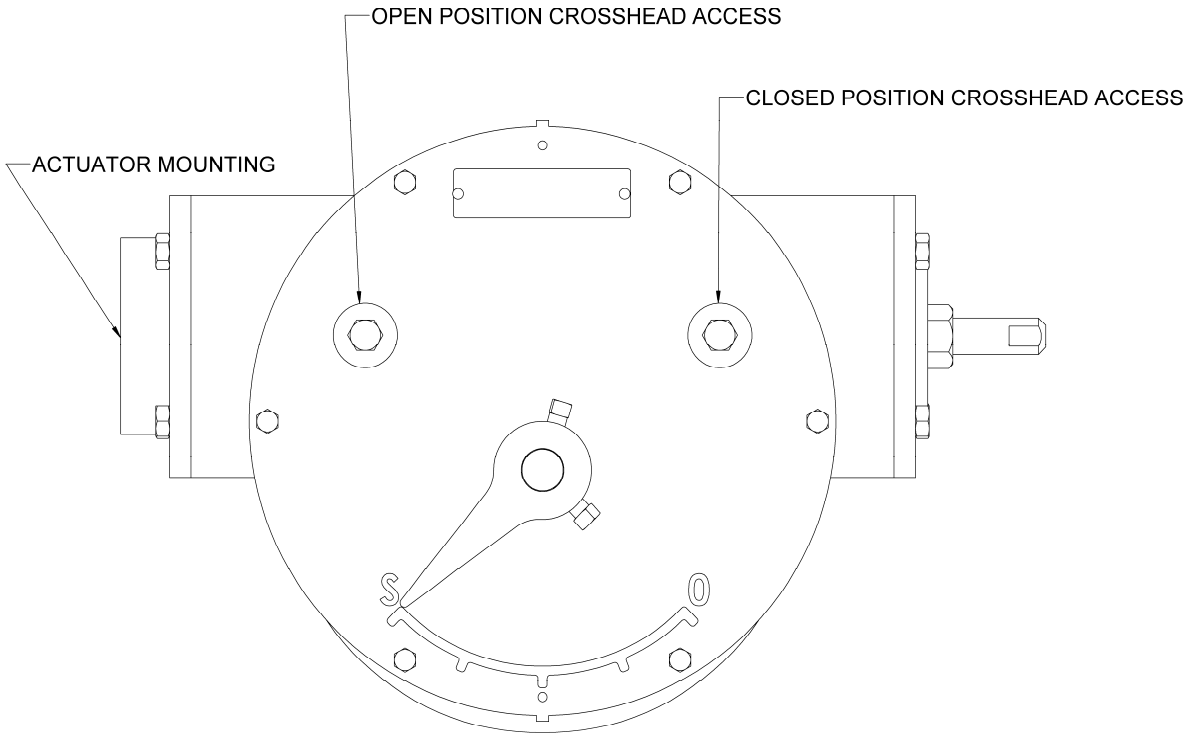

Figure 3 – T8-9 Torque Unit Assembly Detail

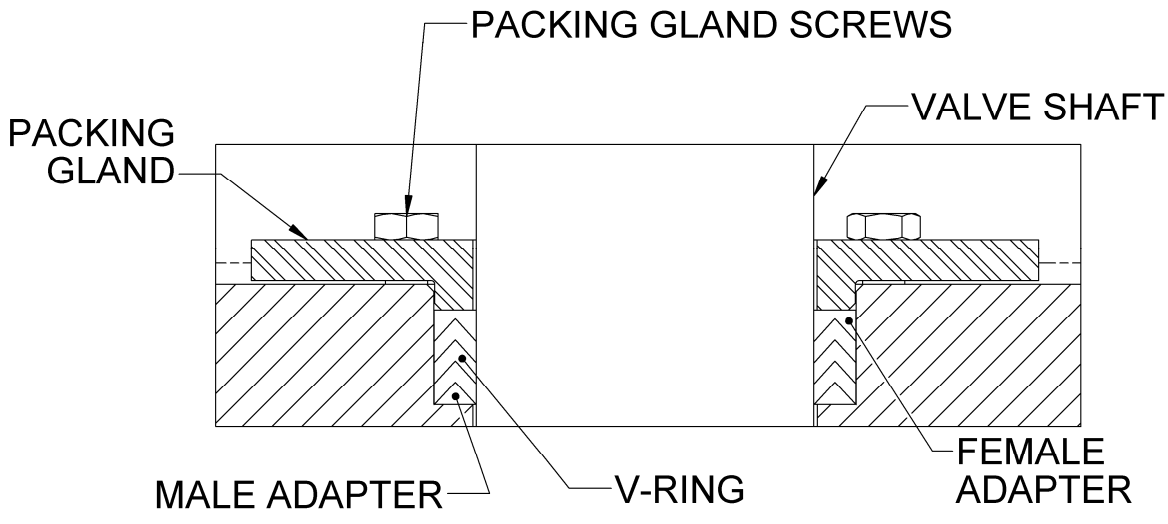

Figure 4 – Packing Detail

Troubleshooting

Condition	Possible Cause	Corrective Action
Shaft seal leaks.	Packing is worn	Adjust packing gland.
	Packing is worn.	Replace Packing
Valve leaks excessively from one side of the plug to the other.	Foreign matter caught between seats	Fully open valve to remove object.
	Closed position stop is set incorrectly.	Adjust closed position stop.
	Valve body is distorted.	Remove stress to valve body.
	Loss of media's seating pressure.	Apply media pressure.
	Seat is worn or damaged.	Repair seat or replace valve.
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Miss-alignment or damage to field piping and supports.	Adjust miss-alignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.
Valve does not fully close.	Object is wedged between seat and plug.	Fully open valve to remove object.
	Closed position stop is not set correctly.	Adjust closed position stop.
Valve does not fully open.	Open position stop is not adjusted correctly.	Adjust open position stop.
Valve fails to operate from open to close position or from closed to open	Object is wedged between seat and plug.	Fully open or close valve to remove object.
	Torque unit low on lubricant.	Add lubricant.
	Torque unit component failure.	Repair or replace torque unit.
	Actuator component failure.	Repair or replace actuator.

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Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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