

# 3" Angle Valve Repair Kit Instruction Manual

## 1 Preparation

These instructions are specific to the installation of repair kits. For more extensive maintenance instructions, please refer to Midland's Installation, Operation and Maintenance Instructions for A-730 and A-734 angle valves.

- Exercise normal safety precautions for the commodity involved.
- Disassemble the angle valve completely per Midland's Installation, Operation and Maintenance Instructions for 3" angle valves.
- Discard all soft parts being replaced.
- Inspect and clean all parts thoroughly per Midland's Installation, Operation and Maintenance Instructions for 3" angle valves.

## 2 Valve Details

ITEM	PART NAME
1	Handwheel
2	Stem
3	Gasket Retainer
4	Body
5	Spring
6	Retainer Cover
7	Outlet Flange
8	Packing Screw with Insert
9	Packing Washer (Top & Bottom)
10	Seat Seal
11	Packing
12	Stem Seal
13	O-Ring Outlet
14	Handwheel Nut, Washer
15	Bolt & Lock Washer
16	Outlet Plug
17	Chain
18	Stem Retainer, Two (x2) Nuts
19	Cover Retainer
20	Retainer Nut
21	Packing Locknut
22	Name Plate

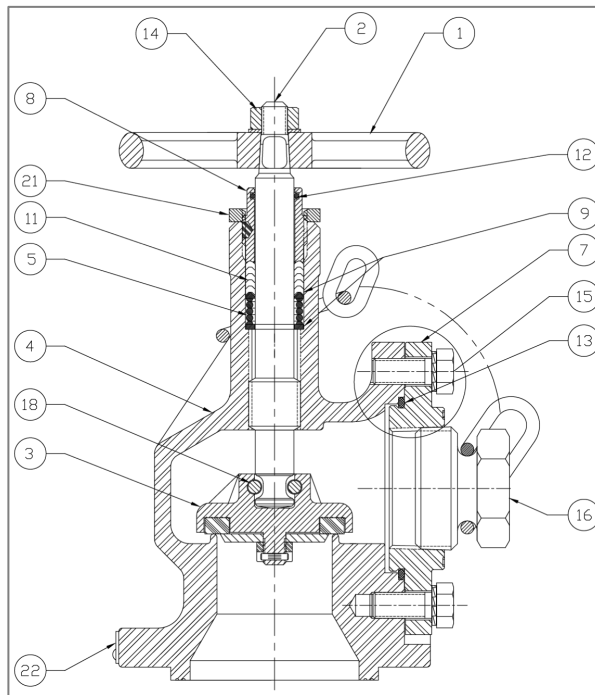


Figure 2-1 Valve Component Identification

## 3 Reassembly Procedure

Refer to **Valve Details** for valve component identification during the repair kit reassembly process.

- 3.1.1 Install the flat, bottom packing washer (item 9), the spring (item 5) and the beveled top packing washer (item 9) in the valve body. The beveled side of the top packing washer should face upward when installed.
- 3.1.2 Stack the five (x5) packing rings (item 11) together with all pieces facing the same direction. Holding them together, lightly lubricate the inside and the outside diameter of the packing rings with a lubricant suitable for use with the tank car commodity.



**CAUTION:** Assembling "dry" will result in increased torque.

- 3.1.3 Place the set of packing rings (item 11) in the valve with the open side of the packing set fitting over the beveled side of the top packing washer (item 9).
- 3.1.4 Install the new stem seal quad-ring (item 12) in the appropriate groove of the packing screw (item 8).
- 3.1.5 Lubricate the bottom threads on the packing screw (item 8) and place on the valve. Depress the packing screw and turn until thread engagement is achieved.
- 3.1.6 Loosely fasten the packing locknut (item 21) on the packing screw (item 8).
- 3.1.7 Lightly lubrication the stem (item 2) threads and surface area that comes into contact with the packing rings (item 11).
- 3.1.8 Insert and push the stem (item 2) through the bottom of the body (item 4) into the bonnet until the threads meet the valve body (item 4).
- 3.1.9 By double-nutting the stem (item 2) with two (x2) 1/2" jam nuts at the top after being inserted into the body (item 4), a wrench can be used to lift and rotate the stem into the valve. Then, remove the double nuts.
- 3.1.10 Place the new retainer assembly (see NOTICE below) in the valve with the retainer holes facing out and the seat seal facing down.



**NOTICE:** Retainer assembly consisting of the gasket retainer (item 3), retainer cover (item 6), seat seal (item 10), cover retainer (item 19) and retainer nut (item 20) can be purchased as as assembly, e.g., 720-301-CS/SS or 720-302-CS/724-301-CS-SS.

- 3.1.11 If the retainer assembly is assembly with individual parts, follow these steps. Otherwise, proceed to step 3.1.12.
  - 3.1.11.1 Place seat seal (item 10) in the seal retainer (item 3).
  - 3.1.11.2 Place retainer cover (item 6) over the seat seal (item 10) and install the retainer nut (item 20) hand-tight.
  - 3.1.11.3 Using a torque wrench with a 11/16" socket, tighten the retainer nut (item 20) to 30-35 ft-lb and leave for 24 hours to allow the seat material to preset.
  - 3.1.11.4 After 24 hours, retighten nut (item 20) to 30-35 ft-lb. If necessary, tighten this nut until the slots align with the pin hole in the center.
  - 3.1.11.5 Insert the retainer pin and press pin to the center.
- 3.1.12 Lower the stem (item 2) until it contacts the retainer (item 3) and holds it in position in the seating area of the valve body.
- 3.1.13 Insert the stem retainer U-bolt (item 18) and tap into position.
- 3.1.14 Rotate retainer assembly by a half-turn to allow for the stem retainer locknuts (item 18) to be installed.
- 3.1.15 Install and tighten the two (x2) stem retainer locknuts (item 18).
- 3.1.16 Tighten the packing screw (item 8) to to 65 ft-lb.
- 3.1.17 Tighten the packing locknut (item 21) to 65 ft-lb.
- 3.1.18 Install the handwheel (item 1) and the handwheel washer and nut (item 14).
- 3.1.19 Verify that the valve stem (item 2) travels up and down smoothly.
- 3.1.20 Install the outlet flange (item 7) making sure that the O-ring groove is clean. Install a new outlet flange O-ring (item 13) suitable for the commodity.



**NOTICE:** No lubricant is required for the flange O-ring. To prevent twisting, do not "roll" into place.

- 3.1.21 Insert clean cap screws and lock washers (item 15) using a small amount of lubricant and tighten in a diagonally alternating sequence. Take care to not shift or offset the flange.