

BOTTOM OPERATED CLAPPER

MAINTENANCE BULLETIN

Only AAR class F facilities are certified to recondition, repair, retest and qualify tank car angle valves. Personnel performing inspection and test must be certified Level I per AAR Manual of Standards and Recommended Practices, M-1002, Appendix T, 1.4.3.

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Operation

Safely clean and remove the valve from the car and place on a suitable work surface. A thorough visual inspection should be made for any signs of abnormalities including leakage, damage or missing components.

Disassembly - Outlet Chamber & Operating Assembly

- With the valve in the closed position, remove the handle and stop bar from the shaft.
- Remove the cap and plug.
- Remove the discharge body (outlet chamber) assembly from the mounting flange. Discard the O-ring seal. Care should be taken not to mar the mating surfaces.
- Remove the packing gland retainer and the packing gland.
- Remove the operating linkage retainer plate; discard the nut and bolt. **Note: Remove the nut first. The bolt threads into both the lifter and the nut serves as a back up.** The operating shaft can now be removed. Care should be taken to protect the shaft from scoring or other damage.
- Using a small hook tool, remove and discard the shaft packing.
- Remove and discard the outlet cap gasket.

Disassembly - Stem & Flange Assembly

- Remove and discard the mounting flange O-ring.
- Cut the safety wire. Alternately loosen the two stem retaining posts until the spring pressure is relieved. The two guide posts, those without wrench flats, do not have to be removed. **Note: Do not remove the cotter pin prior to loosening the retaining posts.** The posts can now be removed along with the guideposts.
- Using a suitable clamping fixture slightly compress the spring, remove the cotter pin and slowly relieve the clamping force until the spring is completely relaxed. Remove the plate and spring.
- Measure and record the distance from the end of the stem to the top of the plug so that the plug can be reinstalled in the same location.
- Remove the stem to disc cotter pin. Unscrew the disc from the stem. Discard the O-ring seal.
- Remove the safety lock wire from the seal retaining plate bolts. Remove the bolts and the retaining plate. Discard the seal.

Cleaning & Inspection

- **Outlet Cap:** Visually inspect the threads and gasket surfaces. Clean these areas with a wire brush. Visually inspect cap chain. Replace cap if threads are worn or damaged or if gasket surface is in poor condition. The cap threads can be inspected using the thread gauge that is recommended in AAA M-1002, appendix E.
- **Outlet Chamber:** Visually inspect the male outlet cap threads and clean with a wire brush. Inspect the sealing surfaces of the packing area and mounting flange seal. These areas can be cleaned with fine emery cloth. Inspect and clean the packing gland retainer threads. Inspect the operating shaft bearing area. Lightly polish with emery cloth.
- **Operating Shaft and Linkage:** Visually inspect all operating surfaces and packing area. Polish lightly with emery cloth. Replace if excessive wear is noted.
- **Mounting Flange:** Inspect all mating surfaces and clean with emery cloth. All mating surfaces should be free of deep scratches and pitting. Lightly polish the seat area. Non-mating surfaces can be cleaned with a wire brush.
- **Spring:** Inspect for damage or pitting. If required, clean with stiff non-metallic brush.
- **Retaining & Guide Posts:** Visually inspect for straightness. Inspect and clean threads.
- **Stem and Disc Assembly:** Polish seal and O-ring surfaces with emery cloth. Clean all other surfaces with a wire brush.

Re-Assembly

- Install a new O-ring onto the stem with a light coat of silicon spray. Thread the disc onto the stem until the stem/plug dimension recorded at disassembly is achieved. Install the cotter pin at this time. See "Testing" section for instructions on confirming the closing force. Install a new gasket seal, seal retainer and bolts. Tighten bolts to 30 - 35 ft-lbs. Install safety lock wire and twist until slightly taut.
- Place stem assembly in clamping fixture, apply spring and spring retainer. Compress the spring and install cotter pin.
- Install the two guide posts, if removed, with Loctite® 242 applied to the threads. Place stem/spring assembly onto mounting flange and install the retaining post with Loctite® 242 applied to the threads.
- Install a new O-ring on the discharge body and bolt the outlet chamber to the mounting flange. Tighten the bolts to 150 ft-lbs +/- 10.
- Install the operating shaft with the lifter, link and link retainer, connecting the link to the stem. Install the link/lifter retaining bolt and tighten, apply lock nut and tighten, chisel check the exposed end of the bolt.
- Apply Loctite® 242 to the packing retainer stud and install. Install new packing, with a light coat of a non-reactive lubricant, the packing gland and retainer. Do not tighten the packing gland at this time. **Note: The packing is oriented with the concave side toward the inside of the valve.**
- Install a new gasket in the outlet cap and reapply the cap.
- With the valve in the closed position install the stop bar. Insure that the position of the stop bar allows for the valve stem to be rotated counter-clockwise to the open position.

Testing

- Check closing force with a spring gauge. The closing force applied at the end of the handle should be 30# +/- 5#. Adjust, if required, by rotating the plug on the stem with a large screwdriver. When proper closing force is achieved, install cotter pin in the plug/stem assembly. At this time alternately tighten the packing gland retainer nuts to 150 in-lbs. Recheck the tightness in 24 hours.
- After installation to the car the valve should be pressure tested in accordance with internal shop procedures.