MIDLAND™

Pressure Relief Valves

Instructions for INTERNAL-STYLE Valve

A-2000

Installation
Operation
Inspection
Maintenance

Doc. No. A-2000, Rev. 1. , 01/21
Replaces: A-2000, Rev. 1. , 0 /18

3.0 Valve Inspection (cont.)

WARNING: Valve Sticking
If the spring follower binds in the guide tube (nozzle), the valve may stick in the open position or be prevented from opening. Ensure free travel of the follower before reassembling the valve.

3.1.8 O-Rings

These must be replaced at the time of the periodic valve retest and when the valve is disassembled.

CAUTION: O-Ring Degradation
O-rings develop micro cracks, can swell or shrink, and become harder or softer with age and chemical exposure. An O-ring that fi s loosely in the cap, or can only be pushed into the O-ring retainer with difficult, is quite likely not the correct size. Many of Midland's O-rings are made in special molds to nonstandard sizes and are obtainable only from Midland.

CAUTION: Defective Components
If any parts appear defective, it is recommended they be replaced, or consult with Midland for recommended repair techniques when applicable.

3.2 Special Inspection Considerations

3.2.1 Previous procedures may not cover all conditions encountered in the field. Therefore, it is the responsibility of the repair agency to obtain approval from Midland for inspection, evaluation, repair and maintenance procedures not covered herein.

3.2.2 Facilities performing recommended dye-penetration and magnetic-particle testing must carry out such testing according to a qualified procedure conducted by certified trained personnel.

3.2.3 Evaluation of critical component metal surfaces of the valves after cleaning, inspection and specialized testing performed by agencies other than the repair facility are the responsibility of the repair facility.

3.2.4 Where numerical tolerances cannot be provided, the disposition of the part or parts is under the jurisdiction of the repair facility and dependent on its experience and judgement.

4.0 Maintenance

NOTE: It is essential to establish a periodic retesting and preventive maintenance program for pressure relief valves. The DOT and AAR have set forth a retesting interval that should be considered the maximum length of time between tests. However, if your company's experience indicates that a shorter interval is advisable, a program with more frequent retesting should be implemented.

NOTE: It is an AAR requirement (refer to D4.04) that new O-rings be installed when a valve is retested.

4.1 Retesting of Valves in Storage

Midland valves are factory set and sealed. If they have been left in their original shipping containers, are undamaged, and are not more than six months old, they may be installed without being retested.

4.2 Precautions for Mounted-Valve Repair

When performing maintenance on a pressure relief valve that is mounted on a railcar, observe the following precautions.

- Wear protective clothing and equipment suitable for withstanding the materials to which you may be exposed.
- Position yourself on the upwind side of the valve when possible.
- Work with a partner who can help you in the event of an emergency.
- Follow approved safety precautions for hazardous or toxic materials.

4.3 Required Tools

Obtain the required tools and supplies before attempting maintenance procedures.

4.0 Maintenance (cont.)

Recommended Wrenches

SAE	METRIC	Component
3/4"	19 mm	1/2" top guide nut
7/8"	23 mm	5/8" top lock nut
15/16"	24 mm	3/4" top lock nut
1-1/16"	27 mm	Flats on small valve O-ring retainer, 5/8" mounting-stud nuts
1-1/4"	32 mm	Flats on large valve O-ring retainer, 3/4" mounting-stud nuts
1-7/16"	37 mm	7/8" mounting-stud nuts

Other Tools and Supplies

Screwdrivers	Vise Grips
Wheel puller	Lint-free cloth
Silicone grease (or eqiv. lube.)	Emery paper (400 grit, cut in 1" strips)
O-ring retainer cap with O-rings epoxied in place.	

4.4 Leak Repair on a Mounted Valve

It is possible to replace only the retainer cap O-rings on an internal-style valve mounted on a pressurized tank car. This procedure may be conducted to stop minor leakage when valve rebuilding or replacement must be delayed.

CAUTION: The repair procedure for a mounted valve is intended only as a temporary repair. Once the product is unloaded and pressure is relieved, the valve should be removed for further repairs and full requalification

NOTE: Conducting this procedure may be hazardous (depending on the material in the tank car). Maintenance personnel should be carefully trained before being permitted to perform the procedure below on a pressure relief valve mounted on a pressurized tank.

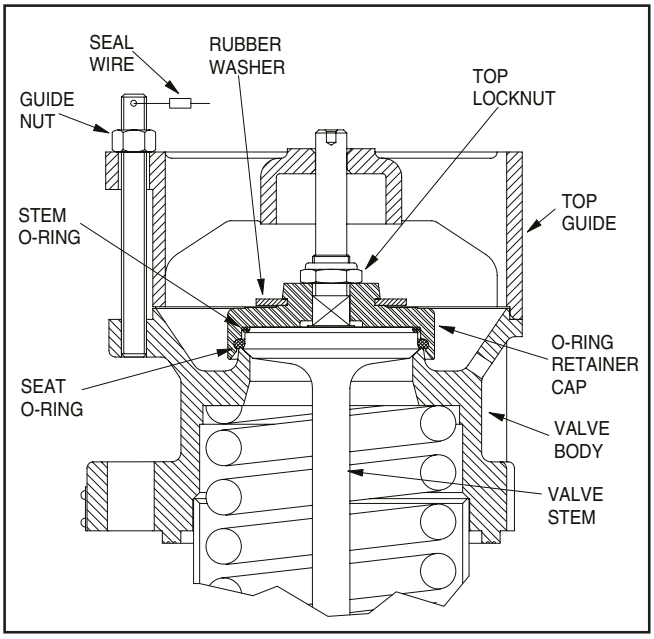

Figure 18 - Internal-style Valve Components

4.4.1 Remove the top seal wire (Fig. 18).

4.4.2 Remove the four top-guide nuts and situate them so they won't be dropped or lost.

4.4.3 Mark the top guide and body with a vertical line to allow the top guide to be reinstalled in the same orientation.

4.4.4 Pry up and remove the top guide.

4.4.5 Put a wrench on the flats of the O-ring retainer and another wrench on the top locknut (see Fig. 19, next page). Hold the retainer in place to prevent it from rotating while backing off and removing the top locknut.

CAUTION: Valve Discharge
When the O-ring retainer cap is raised up, there will be a signifi ant amount of product discharging. Have the emery paper, cleaning cloth, replacement O-ring retainer cap (with epoxied O-rings) and silicone grease close at hand. Use a wheel puller, or two screwdrivers 180° apart, to quickly dislodge the O-ring retainer (Fig. 20, next page).

4.4.6 Remove the O-ring retainer. Remove the two O-rings from the retainer and inspect the

4.0 Maintenance (cont.)

how much pressure change occurred when the adjusting nut was rotated two turns. Based upon this calculation, re-compress the valve spring and alter the valve adjustment for the midpoint in the STD tolerance range.

4.6.2.9 Retest the valve.

4.6.2.10 If the test results are erratic, trouble-shooting is more complex. Consult with your supervising engineer or a Midland repre-sentative.

4.6.2.11 When the test results are acceptable, tighten the lock-nut against the adjusting nut (while holding the adjusting nut stationary) to the applicable torque value shown below. Then install a new wire seal.

A-2000: 150 ±10 ft-lbs.

4.6.2.12 Perform the Post-test Procedures shown below.

Post-test Procedures

4.6.2.13 After testing the valve, close the test stand pressure inlet valve to the test chamber, relieve the pressure in the test chamber and remove the valve from the test fixture

4.6.2.14 Drain off any water that may have accumulated and wipe or blow away any soap suds and water used in the testing.

4.6.2.15 Install a plastic protector over the valve body tongue to prevent damage to it.

4.6.2.16 Apply an appropriate preservative or paint to the exterior of the valve. Be sure to mask the nameplate so that it will be readable afterward.

CAUTION: Paint Interference
DO NOT paint the sealing surfaces of the valve that will contact the mounting cover plate surfaces. Failure to follow this precaution may result in a cocked valve mounting and leakage.

4.6.2.17 Permanently attach a metal tag to the valve body with date of repair and repair facility identification

5.0 NOTICES AND WARRANTY

5.1 Regulations

The Midland valves are used in contact with a variety of commodities, many of which are hazardous materials. The acceptance and transportation of products are regulated by the DOT and AAR in the U.S.A., and in Canada by CTC and Transport Canada. Regulations of other governmental bodies must be complied with for stationary and mobile applications. All personnel should be familiar with and follow these regulations. Nothing in these instructions is intended to conflic with or supersede these regulations.

The information in this document was gathered from knowledgeable sources, but Midland Manufacturing Corporation makes no representations or guarantees about its accuracy or completeness and assumes no liability for this information. Specifications are subject to change without notice.

5.2 Obtaining Product Drawings

Assembly drawings of Midland pressure relief valves are available at no charge, and will be mailed upon request. Address any questions concerning valve maintenance or usage to the Engineering Dept., Midland Manufacturing Corp.

5.3 Warranty

Midland warrants the products of its own manufacture to be free of defects in material and workmanship for a period of one (1) year from the date of invoice. Furnished materials and accessories purchased from other manufacturers are warranted only by and to the extent of those manufacturers' warranties, if any.

MIDLAND MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED HERE. MIDLAND MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR USE. Midland's obligation under this warranty is strictly limited, at its option, to 1) repair or replacement at its factory of a like quantity of product: 2) refunding to purchaser money paid to Midland for its product: or 3) issuance of written authorization for the Purchaser to repair or replace, at costs comparable to Midland's normal manufacturing costs, those parts proven defective; provided that Purchaser has given to Midland immediate notice upon discovery of such defect. Merchandise claimed to be defective shall not be returned without first obtaining Midland's written consent. The undertaking of repair or replacement by the Purchaser, or its agents, without Midland's written consent, shall void Midland's warranty and relieve Midland of all responsibility. Under no circumstances shall Midland be liable for any direct, incidental, consequential or other damages of any kind in connection with the installation, operation, maintenance, repair, inspection or other use of any product purchased from it.

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