Relief valves are an important part of your gas generating or distributing system. You must keep them in good working order at all times.

These instructions describe how to adjust and service your valves. Read and follow these instructions carefully.

Be Sure This Booklet Reaches the Operator.
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I. Description

The RV-27 Relief Valve is used to vent the generating chamber of medium-pressure generators should any excess pressure develop. It is set to relieve at a pressure of 15 lb. per sq. in.

The RV-28 is used on back-pressure valves to prevent excessive line pressures from entering the generators or other acetylene or fuel gases supply systems. The RV-28 is set to relieve at a pressure of 20 lb. per sq. in.

The RV-29, for the same purpose as the RV-28, is for use with fuel gases other than acetylene. It can be set to relieve at pressures of from 25 to 75 lb. per sq. in.

Relief valves on generators are unseated automatically by an interference mechanism during each recharging of the generator. This mechanism is attached to the operating lever. When the interference mechanism is operated, the relief valves open. When the interference mechanism is returned to its normal position, the valves close.

Relief valves on branch lines and station hydraulic back-pressure valves should be manually operated once a week by turning the operating lever. This regular periodic checking will keep the valves in good working order and insure instant operation in the presence of excessive pressure.

The operating lever can be attached to the shaft in any of sixteen different positions and if desired, can be easily removed to discourage unauthorized venting of the valve.

II. How They Operate

The compression of the valve spring determines the operating setting of the valve — that is, the pressure at which the valve will start to relieve. The valve will remain sealed as long as the pressure in the generator or hydraulic back-pressure valve does not exceed the pressure for which the valve is set. When the gas pressure exceeds the valve setting the valve will start to leak, then any increased pressure will cause it to pop open and vent at a higher discharge rate. This occurs at pressures slightly above the valve setting. When the gas pressure decreases to slightly below the valve setting, the valve spring overcomes the gas pressure and forces the valve closed.

To change the valve setting: refer to instructions III-D on page 5.
III. Maintenance Instructions

During the operation of relief valves, parts may become worn. Furthermore, foreign particles and dirt present in the generators and piping may be deposited on the upper and lower "O" rings of the poppet. These things will eventually cause a continuous gas leakage. To prevent this, the relief valves should be inspected and cleaned periodically. If parts become worn, they should be replaced.

Relief valves on branch lines and station back-pressure valves should be operated at least once a week by turning the operating shaft for an instant to raise the poppet. This prevents the valves from becoming clogged or stuck. The shaft should be turned slowly so that an abnormally high rush of gas will not pick up liquid from the hydraulic back-pressure valve and force it into the relief valve.

A. TO DISASSEMBLE

1. It is not necessary to drain the acetylene generator before disassembling the RV-27 Relief Valve. Simply close the generator service valve and the carbide feed valve. Then release all pressure in the generator by operating the interference mechanism linked to the relief valves. NOTE: To remove the complete valve from the generator, it is necessary to remove the interference rod.

To inspect the RV-28 and RV-29 Relief Valves, close the inlet and outlet valves at the back-pressure valve. Then relieve any pressure by turning the lifting shaft of the relief valve.

2. Rotate the pressure-adjusting cap three or four times in a counter-clockwise direction to reduce spring pressure on the poppet. To turn the cap, insert a piece of 3/32-in. drill rod into the hole in the cap and use the rod as a handle.

3. Unscrew the bonnet assembly from the body and remove the spring from the bonnet. The spring can be spiraled out by turning it from the bottom, counter-clockwise.

4. Lift out the poppet, being careful not to lose the spacer which rests inside it.

5. Remove the operating lever by first removing the screw and washer which hold it in position and then sliding the lever off the lifting shaft.

6. Remove the lifting shaft by first removing the screw and washer which hold it in position and then sliding the shaft out of the relief valve body.
B. TO CLEAN AND INSPECT

All parts of the relief valve should be cleaned and inspected often. For cleaning all parts, a clean damp cloth is all that you need. The cleaning and inspection must be thorough.

1. Disassemble the valve according to instructions in III-A above.

2. Body

Wipe away any foreign material from the inside of the body. Pay particular attention to the poppet seat and the bore for the lifting shaft. Examine these two places as well as the threads for nicks and scratches. If the body is excessively marred or damaged, the whole valve should be replaced.

3. Operating Shaft

Remove the "O" ring from the shaft and clean both the ring and the shaft. Clean the "O" ring groove well. Lubricate the groove and reset the "O" ring. Lubricate the outside of the "O" ring.

4. Poppet

Remove the "O" rings from the poppet and clean both the rings and the poppet. Clean the "O" ring grooves well. Lubricate the groove of the upper "O" ring. After the rings have been placed back in their grooves, lubricate the outside of the upper "O" ring. Do NOT

(Continued on page 5.)

LUBRICATION

Use Standard Oil Company of Indiana No. L-4762 Grease or Freedom Valvoline Barium Grease #5. In case of emergency, a good grade of water insoluble cup grease may be temporarily used.

If the shaft is damaged, a new one should be ordered along with mated "O" ring. If the ring is nicked or scratched, replace it with a new one.
<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>23R86</td>
<td>Valve Bonnet Assembly</td>
<td>M BR-6</td>
<td>Spacer (Riveting Burr) #5 Wrought Steel, 5/8-in. O.D. x 15/16-in. I.D. x 3/64-in. thick</td>
</tr>
<tr>
<td>66S17</td>
<td>Operating Lever</td>
<td>S R-42</td>
<td>#4-40 x 3/16-in. Long Round-Head Steel Machine Screw (Plated)</td>
</tr>
<tr>
<td>66S18</td>
<td>Lifting Shaft</td>
<td>S R-103</td>
<td>#5-32 x 1/4-in. Long Round-Head Steel Machine Screw (Plated)</td>
</tr>
<tr>
<td>66S19</td>
<td>Poppet (RV-29)</td>
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<tr>
<td>66S20</td>
<td>Poppet (RV-27 and RV-28)</td>
<td>W-2</td>
<td>#4 SAE Standard Plain Steel Washer (Plated)</td>
</tr>
<tr>
<td>66S22</td>
<td>Pressure Spring (RV-29)</td>
<td>W-3</td>
<td>#8 SAE Standard Plain Steel Washer (Plated)</td>
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<tr>
<td>66S23</td>
<td>Pressure Spring (RV-27 and RV-28)</td>
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<tr>
<td>70S02</td>
<td>Spring Tension Pin</td>
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<tr>
<td>70S03</td>
<td>&quot;O&quot; Ring</td>
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<td>70S04</td>
<td>&quot;O&quot; Ring</td>
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<td>70S05</td>
<td>&quot;O&quot; Ring</td>
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</table>
(Continued from page 3.)

lubricate the lower groove or its "O" ring. If the poppet is excessively damaged a new one should be ordered along with new "O" rings. If the "O" rings are damaged, replace them.

5. **Bonnet Assembly**
   
   Wipe the threads and the inside of the bonnet where the upper "O" ring of the poppet rubs. If the bonnet is excessively nicked or damaged it must be replaced.

6. **Spring**
   
   If the spring has acquired a permanent "set" it should be replaced.

C. TO REASSEMBLE

1. Insert the shaft into the body so that the flat section of the shaft will be in a position to receive the poppet. **NOTE:** Be sure the "O" sealing ring is in place on the shaft. Secure the shaft in place with the washer (No. 4) and screw (S-R-42) provided.

2. Replace the operating lever and secure it to the shaft with the No. 6 washer and screw (S-R-103).

3. Insert the spacer in the poppet and place the poppet in the body so that the lower "O" ring is resting snugly on the seat.

4. Replace the spring in the bonnet. Turn it a few times until the bonnet can be placed on the body without too much spring pressure against the poppet.

5. Screw the bonnet into the body of the valve.

6. Replace the interference rod on generator relief valves. Open the inlet and outlet valves on back-pressure valve relief valves.

7. After the valve is adjusted (see below) test for leakage around the end of the shaft which protrudes from the body.

D. TO RESET RELIEF PRESSURES

1. To reset the generating chamber relief valve (RV-27):
   
   (a) Charge the generator if necessary (see the generator instructions for charging) until the pressure is built to 13 psi. Insert a pin in the pressure-adjusting cap and turn it clockwise or counter-clockwise until the valve just starts to relieve when 13 psi shows on the generator pressure gauge.

   (b) Close the carbide feed valve and reduce the generator pressure to about 10 psi by burning acetylene through a blowpipe. Then open the carbide feed valve and slowly raise the pressure again to make sure the valve starts to relieve at 13 psi.

   (c) Then by turning the pressure-adjusting cap one-half turn clockwise, the pressure setting will be increased to 15 psi. This is the maximum pressure allowed by the National Board of Fire Underwriters.

2. To set the back-pressure valve relief valve (RV-28):
   
   (a) Allow the pressure in the back-pressure valve to rise to 13 psi, and adjust the relief valve to just start to relieve at this pressure. Check this setting as in the preceding instructions.

   (b) Then by turning the pressure-adjusting cap two (2) additional turns clockwise, the pressure setting will be increased to 20 psi (the maximum pressure allowed by the National Board of Fire Underwriters).

3. To set the back-pressure valve relief valve (RV-29):
   
   (a) Open the back-pressure valve inlet valve. Turn the pressure-adjusting screw on the regulator controlling the pressure to the back-pressure valve to 1-1/4 to 3 times the usual operating pressure. Do not adjust the relief valve below 25 lb. or above 75 lb.

   (b) Turn the relief valve pressure-adjusting cap until the valve just starts to relieve.

   (c) Close the inlet valve, and vent the fuel gas through the relief valve.

   (d) Again open the inlet valve to see if the relief valve relieves at the correct pressure.

   (e) Close the inlet valve and turn the regulator pressure-adjusting screw to its original setting. Reopen the inlet valve. Before opening the outlet valve and returning the back-pressure valve to service, be sure that all valves at gas consuming outlets are closed.
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