**INSTRUCTIONS for**

**H-11 & H-12**

**HYDRAULIC BACK-PRESSURE VALVES**

**IMPORTANT**

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for oxy-fuel gas equipment, we urge you to read our booklet “Precautions and Safe Practices for Gas Welding, Cutting and Heating,” Form 2035. The same information appears in the “Oxy-Acetylene Handbook” which may be purchased from any L-TEC distributor. Do NOT permit untrained persons to operate this equipment. Do NOT attempt to operate this equipment until you have read and fully understand these Instructions. If you do not fully understand these Instructions, contact your supplier for further information.

**INTRODUCTION**

The H-11 and H-12 are triple-tube constructed hydraulic back-pressure valves (commonly called “hydraulics”) designed for station or main line use. The H-11 is for acetylene use only. The suffix 6M indicates the capacity of 6000 cubic feet per hour (cfh) at an inlet pressure of 15 psi. The H-11 is equipped with the RV-28 relief valve which can be adjusted to relieve pressures from 10 to 20 psi.

The H-12 is for use with any fuel gas except acetylene, which are available in two different operating pressure ratings. Like the H-11, one is equipped with the RV-28 relief valve with maximum operating pressure of 15 psi. The other is rated to operate up to 100 psi. It is equipped with the 22X56 relief valve which can be set to relieve at pressures from 50 to 125 psi.

**IMPORTANT:** In addition to this booklet (F-9082) you will find another booklet “Cold Weather Care for Acetylene Generating and Distributing Equipment” (F-3088) packed with your hydraulic back-pressure valve. Although it deals primarily with the installation and maintenance of acetylene equipment, the information also applies to similar equipment for use with fuel gases other than acetylene. You are urged to read it carefully before attempting to install your hydraulic back-pressure valve.

**Table 1 - Specifications**

<table>
<thead>
<tr>
<th>Hydraulic Back-Pressure Valve Model</th>
<th>Part No.</th>
<th>Relief Valve</th>
<th>Liquid Capacity</th>
<th>Maximum Recommended Gas Flow Rate Capacity @ Various Inlet Pressures in Cubic Feet per Hour*</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Acetylene</td>
<td></td>
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</tr>
<tr>
<td>H-11-6M</td>
<td>06P53</td>
<td>RV-28 (11P63)</td>
<td>8.5 (4.0)</td>
<td>3 psi (21 kPa) 5 psi (35 kPa) 10 psi (69 kPa) 15 psi (103 kPa) 25 psi (172 kPa) 50 psi (345 kPa) 75 psi (517 kPa) 100 psi (690 kPa)</td>
</tr>
<tr>
<td>For Fuel Gases other than Acetylene</td>
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</tr>
<tr>
<td>H-12-6M</td>
<td>11P98</td>
<td>RV-28 (11P63)</td>
<td>8.5 (4.0)</td>
<td>3 psi (21 kPa) 5 psi (35 kPa) 10 psi (69 kPa) 15 psi (103 kPa) 25 psi (172 kPa) 50 psi (345 kPa) 75 psi (517 kPa) 100 psi (690 kPa)</td>
</tr>
<tr>
<td>H-12-6M</td>
<td>09P70</td>
<td>22X56</td>
<td>8.5 (4.0)</td>
<td>3 psi (21 kPa) 5 psi (35 kPa) 10 psi (69 kPa) 15 psi (103 kPa) 25 psi (172 kPa) 50 psi (345 kPa) 75 psi (517 kPa) 100 psi (690 kPa)</td>
</tr>
</tbody>
</table>

*To convert cubic feet per hour (CFH) to cubic meters per hour (m³/h), multiply the given flow rates by 0.0283.

Be sure this information reaches the operator. You can get extra copies through your supplier.
INSTALLATION

VENT PIPE

This pipe must be galvanized and have galvanized fittings. It must be at least 3/4-in. in diameter. A 3/4-in. street elbow (galvanized) should be used to connect the vent pipe to the outlet on the side of the relief valve. The vent pipe must extend to the outside of the building and terminate not less than 12-ft. above the ground, remote from windows or openings in the building, and as far as possible from sources of ignition such as flues or chimneys. Its end must be fitted with a return bend or elbow opening downward, preferably screened to prevent obstructions. The vent pipe must be installed without traps so that any liquid or condensation will drain back to the hydraulic. Where used for station outlet service, the vent pipes from two or more hydraulics supplied through a common branch of the service line may be connected to a common vent pipe header. Where installed in the service piping system for branch line service, the vent line from each hydraulic must be run separately to the outside of the building.

TO INSTALL HYDRAULIC

IMPORTANT: Before connecting the hydraulic to a supply line which has previously contained gas, the supply line must first be isolated (completely shut off) from the source of gas supply, vented, and then purged of all traces of gas. Nitrogen or carbon dioxide should be used for purging.

1. Install the hydraulic in a true vertical position as illustrated. Allow at least 15-in. between drain plug and floor so that plug and screen assembly can be removed when necessary.
2. Make up the necessary gas connections between the hydraulic service outlet tee and the inlet connection on the apparatus to which gas is to be supplied. If this connecting gas line is of considerable length, a shutoff valve should also be provided near the hydraulic service outlet.
3. Remove the liquid-filling plug and the liquid-level plug. Fill the hydraulic with PRESTONE anti-freeze through the filling plug opening, until there is an overflow from either the liquid-level opening or the filling plug opening. Reinstall the plugs.
4. Open the service valve at the hydraulic outlet and close the fuel gas supply valve at the consuming device. Open the station shutoff valve and any other valves on the supply line serving the hydraulic, to fill the hydraulic and the newly installed service connection piping with the fuel gas at working pressure.
5. Test all joints for leaks on the hydraulic and service connecting piping. These should include the hydraulic filling plug and outlet connections. Use soapy water and maintain operating pressure in the hydraulic and service connection piping. Never test for leaks with an open flame. Eliminate all leaks before putting the hydraulic into service.

OPERATION

FILLING THE HYDRAULIC

First close the station shutoff valve and the hydraulic outlet valve. Operate the relief valve to vent any gas pressure in the hydraulic through the vent pipe. Remove the liquid-filling plug and the liquid-level plug. Fill through the filling plug opening until there is an overflow from either the liquid-level or filling plug opening. Replace the plugs. The liquid level should be checked regularly, and the correct level maintained at all times.

CHECKING THE LIQUID LEVEL

The frequency with which the level should be checked depends upon the conditions of service and the liquid used in the hydraulic. PRESTONE brand anti-freeze is a very satisfactory liquid. If the hydraulic is used for a dry gas, use concentrated or undiluted PRESTONE brand anti-freeze unless the hydraulic may be exposed to temperatures below 5° F. Where anti-freeze protection at lower temperatures must be provided, use a water solution of PRESTONE anti-freeze as directed in the booklet “Cold Weather Care of Acetylene Generating and Distributing Equipment,” (Form 3088) which is packed with this hydraulic.

If the hydraulic is used for a fuel gas that contains a considerable amount of water vapor, it is desirable to have a solution which will neither absorb, nor give up, any moisture as the gas passes through it. Such solution is said to be in “equilibrium” with the gas and reduces the necessity of frequently checking liquid levels. Full instructions for obtaining the correct concentration are given in F-3088.

If a Flashback Should Occur, check the liquid level immediately. Before resuming service, make sure that the liquid is at the correct level. Refill the hydraulic if necessary.

MAINTENANCE

CAUTION: Before Making Any Adjustments or Repairs to the Hydraulic, shut off the supply of gas to the hydraulic, and close the station shut off valve. Then operate the relief valve to relieve any pressure in the hydraulic through the vent pipe.

No repairs should be made to the hydraulic back-pressure valve except those which can be made merely by replacing parts. Only parts listed in this booklet as “replacement parts” of this booklet should be replaced. If any other parts require replacement, contact your L-TEC representative or nearest L-TEC office.

CLEANING THE HYDRAULIC AFTER REPEATED FLASHBACKS.

After stopping a number of flashbacks, carbon may accumulate to the point where proper flow of fuel gas is restricted. When this occurs, proceed as follows:

1. Close the station shutoff valve; close the hydraulic outlet
service line valve; and lift the relief valve lever to relieve any acetylene pressure in the hydraulic through the vent pipe.

2. Remove the drain plug at the bottom of the central hydraulic chamber, and drain the hydraulic.

3. Remove the clean-out plug in the fitting at the bottom of the hydraulic outlet chamber.

4. Attach a water line to the fitting below the central chamber from which the drain plug was removed. To be properly effective in cleaning, a water line pressure having at least 25 to 30 psi should be available.

5. Run water through the central and outlet hydraulic chambers for several minutes, or until the stream discharging from the cleanout opening is clear.

6. Remove the water line from the drain plug opening, and attach it to the flushing connection near the top of the hydraulic outlet chamber after removing the plug from this connection.

7. Run water through the hydraulic outlet chamber for several minutes, or until the stream discharging from the clean-out opening is clear.

8. Remove the water line. Make sure that the drain plug screen is clean and then reinstall all plugs.

9. Clean and inspect the relief valve.

The hydraulic can now be filled with PRESTONE antifreeze as covered in the Installation section. Be sure to test for leaks before returning the hydraulic to service.

**RELIEF VALVE**

Operate the Relief Valve regularly at least once a week by lifting the relief valve operating lever for an instant to permit acetylene to escape through the vent pipe. This guards against sticking of the valve.

Clean and inspect the Relief Valve regularly. Follow the instructions given in F-9373, "Instructions for RV-27, -28 and -29 Relief Valves" which is packed with the H-12. Also check for leakage through the relief valve by disconnecting the vent pipe union and using a soapy water solution at this opening.

**NOTE:** Relief valve P/N 22X56 is used in place of RV-29. Since the two valves are similar, instructions for RV-29 contained in F-9373 will apply also to P/N 22X56.

**SWING CHECK VALVES**

Clean and inspect the two swing check valves at regular intervals. If necessary, replace them.

**LITERATURE CHANGES**

F-9082-G edition covers the H-11 and H-12 hydraulics as currently manufactured in which weld-type fittings replaced several pipe components.

F-9082-H edition deleted the discontinued H-11 and H-12 valves with lower capacities (1M and 3M).
Fig. 2 - H-11 & H-12 Hydraulic Back-Pressure Valves
(See Table 1 for assembly part numbers and proper relief valve.)