

OXWELD®

H-11 & H-12 HYDRAULIC BACK-PRESSURE VALVES

CAUTION

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. 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.

The hydraulic valves covered by these Instructions are listed by Underwriter's Laboratories only when using parts manufactured by ESAB Welding & Cutting Products to the specifications on file with Underwriter's Laboratories, Inc., and when they are used in the gas service for which they are designed and listed. The use of other parts that cause damage or failure to the equipment will void the manufacturer's warranty.

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.

Table 1 - Specifications

Hydraulic Back-Pressure Valve Model Part No.		Liquid Relief Valve	Capacity pints (liters)	Maximum Recommended Gas Flow Rate Capacity @ Various Inlet Pressures in Cubic Feet per Hour*.								
				3 psi (0.2 bars)	5 psi (0.35 bars)	10 psi (0.7 bars)	15 psi (1.0 bars)	25 psi (1.7 bars)	50 psi (3.5 bars)	75 psi (5.2 bars)	100 psi (6.9 bars)	
For Acetylene												
H-11-6M	06P53	RV-28 (11P63)	8.5 (4.0)	3600	4000	5000	6000	—	—	—	—	
For Fuel Gases other than Acetylene												
H-12-6M	11P98	RV-28 (11P63)	8.5 (4.0)	3600	4000	5000	6000	—	—	—	—	
H-12-6M	09P70	22X56	8.5 (4.0)	3600	4000	5000	6000	8000	13000	18000	23000	

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

F-9082-H

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



SAFETY PRECAUTIONS

WARNING

These Safety Precautions are for your protection. They summarize precautionary information from the references listed in Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.



PROTECT YOURSELF AND OTHERS - Some welding, cutting and gouging processes are noisy and require ear protection. Hot metal can cause skin burns and heat rays may injure eyes. Training in the proper use of the processes and equipment is essential to prevent accidents. Also:

1. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields, or goggles are also required.
2. Wear flameproof gauntlet type gloves, heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap for hair protection, to protect against hot sparks and hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
3. Hot sparks or metal can lodge in rolled up sleeves, trousers cuffs, or pockets. Sleeves and collars should be kept buttoned, and open pockets eliminated from the front of clothing.
4. Protect other personnel from hot sparks with a suitable non-flammable partition or curtains.
5. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can travel considerable distances. Bystanders should also wear goggles over safety glasses.



FIRES AND EXPLOSIONS - Heat from a flame can act as an ignition source. Hot slag or sparks can also cause fires or explosions. Therefore:

1. Remove all combustible materials well away from the work area or completely cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings, paper, etc.
2. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire on the floor below. Make certain that such openings are protected from hot sparks and metal.
3. Do not weld, cut, or perform any other hot work on materials, containers, or piping until it has been completely cleaned so that no substances on the material can produce flammable or toxic vapors. Do not do hot work on closed containers. They may explode.
4. Have fire extinguishing equipment handy for instant use, such as a garden hose, a pail of water or sand, or portable fire extinguisher. Be sure you are trained in its use.
5. After completing operations, inspect the work area to be sure that there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.
6. For additional information, refer to NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", which is available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.



FUMES AND GASES - Fumes and gases, particularly in confined spaces, can cause discomfort or injury. Do not breathe fumes or gases from welding or cutting. Therefore:

1. Always provide adequate ventilation in the work area by natural or mechanical ventilation means. Do not weld, cut, or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead, beryllium, or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes and gases from these materials.
2. If you develop momentary eye, nose, or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work at once and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.

3. Refer to ANSI/ASC Standard Z49.1 listed below for specific ventilation recommendations.
4. **WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code §25249.5 et seq.)



EQUIPMENT MAINTENANCE - Faulty or improperly maintained equipment, such as torches, hoses and regulators, can result in poor work, but even more important, it can cause injury or death through fires. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting, and maintenance work. Do not operate or repair any equipment unless you are qualified to do so.
2. Keep all oxy-fuel equipment free of grease or oil. Grease, oil, and other similar combustible materials, when ignited, can burn violently in the presence of oxygen.
3. Do not abuse any equipment or accessories. Keep equipment away from heat and wet conditions, oil or grease, corrosive atmospheres and inclement weather.
4. Keep all safety devices in position and in good repair.
5. Use equipment for its intended purpose. Do not modify it in any manner.



GAS CYLINDER HANDLING - Gas cylinders, if mishandled, can rupture or explode violently. Sudden rupture of a cylinder, valve or relief device can injure or kill you. Therefore:

1. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adaptors to mount the regulator on the cylinder. Maintain hoses and fittings in good condition. Follow manufacturer's operating instructions for mounting the regulator to the gas cylinder.
2. Always secure cylinders in an upright position by chain or strap to suitable hand trucks, benches, walls, post, or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
3. When not in use, keep cylinder valves closed. Have the valve protection cap in place on top of the cylinder if no regulators is installed. Secure and move cylinders by using suitable hand trucks. Avoid rough handling of cylinders.
4. Locate cylinders away from heat, sparks, or flame of a welding, cutting, or gouging operation. Never strike an arc on a cylinder.
5. For additional information, refer to CGA Standard P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders", which is available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.



ADDITIONAL SAFETY INFORMATION - For more information on safe practices for oxy-fuel welding and cutting equipment, ask your distributor for a copy of "Precautions and Safe Practices for Gas Welding, Cutting, and Heating", Form 2035. Gas apparatus safety guidelines are also available on video cassettes from your distributor.

The following publications, which are available from the American Welding Society, 550 N.W. LeJuene Road, Miami, FL 33126, are recommended to you:

1. ANSI/AWS Z49.1 - "Safety in Welding and Cutting".
2. AWS F4.1 - "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances".
3. AWS SP - "Safe Practices" - Reprint, Welding Handbook.



MEANING OF SYMBOLS - As used throughout this manual: Means Attention! Be Alert! Your safety is involved.



DANGER

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



WARNING

Means potential hazards which could result in personal injury or loss of life.



CAUTION

Means hazards which could result in minor personal injury.

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.

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 in Fig. 1. 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 automotive type, ethylene glycol 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-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. If the hydraulic is used for a dry gas, use concentrated or undiluted 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 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 occurs, 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" should be replaced. If any other parts require replacement, contact your ESAB representative.

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 clean out 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 antifreeze as covered in the Installation section. Be sure to test for leaks before returning the hydraulic to service.

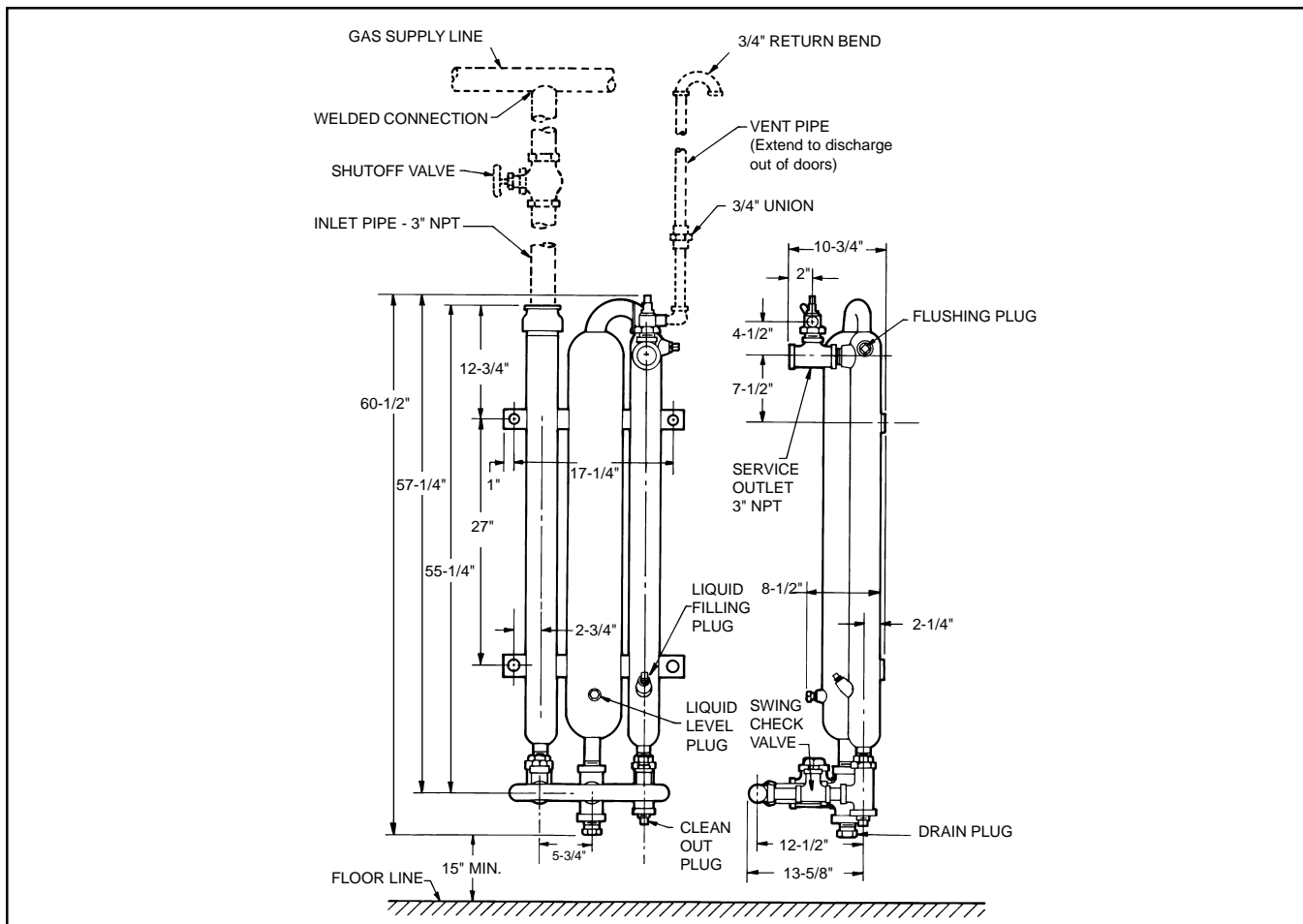


Fig. 1 - Installation & Dimensions

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.

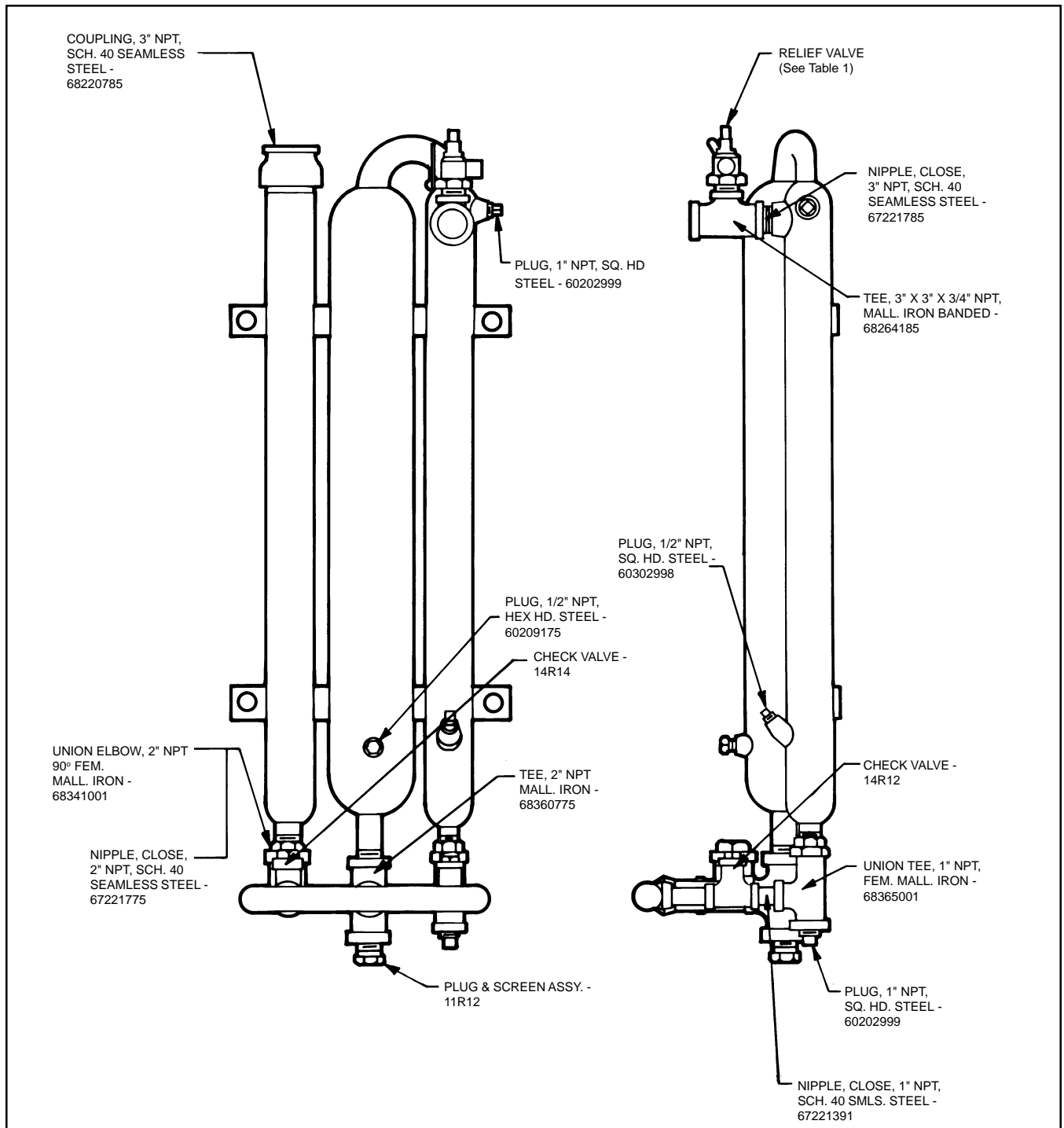
Clean and inspect the Relief Valve regularly. Follow the instructions given in F-9373, "Instructions for RV-27, -28 and -29 Relief Valves" which is packed with the H-11 and H-12. Also check for leakage through the

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-9873 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.



**Fig. 2 - H-11 & H-12 Hydraulic Back-Pressure Valves
(See Table 1 for assembly part numbers and proper relief valve.)**

**ESAB Welding & Cutting Products, Florence, SC Welding Equipment
COMMUNICATION GUIDE - CUSTOMER SERVICES**

A. CUSTOMER SERVICE QUESTIONS:

Order Entry	Product Availability	Pricing	Delivery
Order Changes	Saleable Goods Returns	Shipping Information	

Eastern Distribution Center

Telephone: (800)362-7080 / Fax: (800) 634-7548

Central Distribution Center

Telephone: (800)783-5360 / Fax: (800) 783-5362

Western Distribution Center

Telephone: (800) 235-4012/ Fax: (888) 586-4670

B. ENGINEERING SERVICE: Telephone: (843) 664-4416 / Fax : (800) 446-5693

Welding Equipment Troubleshooting	Hours: 7:30 AM to 5:00 PM EST
Warranty Returns	Authorized Repair Stations

C. TECHNICAL SERVICE: Telephone: (800) ESAB-123/ Fax: (843) 664-4452

Part Numbers	Technical Applications	Hours: 8:00 AM to 5:00 PM EST
Performance Features	Technical Specifications	Equipment Recommendations

D. LITERATURE REQUESTS: Telephone: (843) 664-5562 / Fax: (843) 664-5548

Hours: 7:30 AM to 4:00 PM EST

E. WELDING EQUIPMENT REPAIRS: Telephone: (843) 664-4487 / Fax: (843) 664-5557

Repair Estimates	Repair Status	Hours: 7:30 AM to 3:30 PM EST
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F. WELDING EQUIPMENT TRAINING:

Telephone: (843)664-4428 / Fax: (843) 679-5864	Hours: 7:30 AM to 4:00 PM EST
Training School Information and Registrations	

G. WELDING PROCESS ASSISTANCE:

Telephone: (800) ESAB-123 / Fax: (843) 664-4454	Hours: 7:30 AM to 4:00 PM EST
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H. TECHNICAL ASST. CONSUMABLES:

Telephone : (800) 933-7070	Hours: 7:30 AM to 5:00 PM EST
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IF YOU DO NOT KNOW WHOM TO CALL

Telephone: (800) ESAB-123/ Fax: (843) 664-4452/ Web:<http://www.esab.com>

Hours: 7:30 AM to 5:00 PM EST

