INSTRUCTIONS

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M-26, M-27, M-28 and M-29
SINGLE-REGULATOR MANIFOLDS
for Inert Gases and Fuel Gases

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## IMPORTANT

This booklet contains instructions for installing and operating the OXWELD M-26, M-27, M-28 and M-29 Manifolds. Read it and keep it for future use. If you are not familiar with the general principles of operation and safe practices, which should be understood before using this type of equipment, we recommend your reading Precautions and Safe Practices (in addition to these instructions) which you can obtain without charge from any Linde office.

Fuel Gas Manifolds should be installed and operated in accordance with National Fire Protection Association Standard No. 51 (available from National Fire Protection Association, 60 Battery March St., Boston 10, Mass.).

The terms LINDE, OXWELD and PYROGAX are registered trade marks of Union Carbide Corporation.
Introduction

Purpose

The OXWELD M-26, M-27, M-28 and M-29 Single-Regulator Manifolds are designed to furnish an almost continuous supply of Linde industrial gases to distribution piping systems in industrial shops, welding schools and other installations whose operations will not be hindered by the slight service interruption encountered in shutting down an empty bank of cylinders and cutting in a full bank.

M-26...Water-Pumped Inert Gas (argon, nitrogen) and helium supplied in cylinders having right-hand outlet threads.

M-27...Oil-Pumped Inert Gas (nitrogen, argon, helium).

M-28...High-Pressure Fuel Gas (hydrogen, methane).

M-29...Liquefied Petroleum Gas (propane, butane, and trade-marked gases such as PYROFAX, Philgas, Hopane, etc.).

These manifolds have two separate "headers" or cylinder banks, each of which can be cut in or out of service by opening or closing its header valve. The two banks can therefore be operated alternately or simultaneously, and the manifold can continue in operation even if one bank is cut out for repairs or maintenance.

Description

A complete manifold of this group consists of:

a. A manifold control assembly, consisting of two header valves, an inlet tee assembly, through which both headers feed gas into a two-stage regulator, and then into an outlet block assembly. These components and their interconnecting piping are mounted on a back plate which has slotted holes to fit over two mounting bolts.

The regulator is not furnished with the control assembly. It must be ordered separately along with suitable connection fittings (inlet adaptor, outlet tube) to meet the delivery pressure and flow rate requirements for which the manifold is intended. OXWELD R-60 Series Regulators (R-64, R-65, R-67, R-75) are normally used, but the OXWELD R-32 and R-44 can also be used where greater flow capacity is required. See page 14 for the correct combinations of manifolds and regulators.

An inlet connection on each side of the control provides for the connection of one cylinder lead and also for the addition of extensions to increase the manifold's capacity as desired.

b. Two "headers," each consisting of a number of threaded extensions determined by the number of cylinders to be manifled, and the type of layout desired. Each extension accommodates one cylinder lead; the last extension will also take another lead parallel to the mounting surface, but this requires careful rebending of the manifold-to-cylinder lead. If not used, the last connection is sealed with a plug assembly (provided).

Straight extensions are employed to build up rows of cylinders along the mounting surface; a curved extension is used to extend a header around a corner, as shown in Fig. 1. Where wall space is not available, a floor-type installation on an "A" frame can be set up, using "tee" extensions to establish a second row of cylinders parallel to the first. For further information on this type of arrangement, consult your Linde dealer.

c. Manifold to cylinder leads (one for each cylinder). The type of lead used depends upon the kind of cylinder to be manifled.

d. An H-12-3M Hydraulic Back-Pressure Valve must be used with the M-28 and M-29 Fuel Gas Manifolds in any installation where the fuel gas is used with oxygen for welding, cutting, heating and heat treating operations.

In this type of installation (Fig. 2), the hydraulic back-pressure valve is fastened to the wall, and the manifold control assembly is mounted on brackets in front of the hydraulic. Two "S" extensions are used to lead back from the inlet connection on the manifold control to the headers on the wall.

NOTE: The H-12-3M cannot be used for installations in which delivery pressures exceed 75 psi. The R-67 (200) Regulator has a maximum delivery capacity in excess of 75 psi and therefore should not be used when the manifold is equipped with the H-12-3M Hydraulic.

e. A globe-type pipeline shutoff valve and an RV-29 Pressure Relief Valve, as described in Secs. 1-A-3 and 1-B-4 and 5. The RV-29 Pressure Relief Valve is supplied with the H-12-3M Hydraulic Back-Pressure Valve, and an additional relief valve is not required.
FIG. 1 – Wall Mounting of M-26, and M-27 Single-Regulator Manifolds; also M-28 and M-29 Without Hydraulic Back-Pressure Valve
I. Installation Procedure

A. Wall Mounting of M-26, M-27 Manifolds; Also M-28 and M-29 When Used Without H-12-3M Hydraulic Back Pressure Valve (Refer to Figure 1)

1. Mount the control assembly on the wall.

(a) Mark the position of the mounting bolts on the wall, as shown in Fig. 1. Work from floor level to establish the position of one bolt, and align the other one with it, using a level.

(b) Drill holes of appropriate size in the wall for the mounting bolts. In concrete or brick walls, use 3/8-in. bolts and expansion shields. In hollow tile walls, use 3/8-in. bolts extended through the entire wall, secured with a nut which bears against a steel plate on the far side of the wall.

(c) Take up the slack in the bolts until only about 1/4-inch of shank length is visible on the panel side.

(d) Carefully lift the control assembly into the position at which the enlarged portion of each of the slotted holes in the control back plate can pass cleanly over the bolt heads. Allow the control assembly to slide gently down into place so that the shanks of the mounting bolts are in the narrow part of the mounting slots, supporting the entire weight of the control assembly.

(e) Secure the control assembly firmly to the wall by tightening each bolt with a wrench.

2. Attach the inlet adaptor to the inlet tee on the manifold control, and attach the outlet tube to the outlet block, in the position indicated in Figs. 5 and 6 by broken lines. Tighten the connection nuts with a wrench. Now attach the regulator to the inlet adaptor and the outlet tube, following the procedure described in the Maintenance Instructions, Sec. III-D, on page 10.

Although Figs. 5 and 6 actually show the mounting arrangement for the R-60 Series Regulators, the mounting for the R-32 and R-44 regulators is equally simple; they use a straight inlet adaptor to connect the inlet tee to the inlet fitting at the back of the regulator body, rather than the 90° inlet adaptor used to engage the inlet fitting on the side of the R-60 series bodies, as shown in Figs. 5 and 6. See page 14 for the part numbers of the appropriate inlet adaptors and outlet tubes for the various regulators.

3. Connect the manifold outlet block to the distribution piping system. A pressure relief valve and a globe-type shut-off valve must be installed in the piping system at the manifold outlet block. The pressure relief valve should be located between the manifold outlet and the pipeline shut-off valve.

4. On the M-28 and M-29, connect a vent pipe to the outlet of the pressure relief valve, and run this piping to a point outside of the building. This piping must be good quality, standard weight, galvanized steel pipe with galvanized fittings; must be of the same size as the relief valve vent outlet for its entire length; must terminate not less than 12 feet above the ground at a location remote from windows or openings into buildings, and as far as possible from flues or chimneys. The end must be fitted with a return bend or elbow opening downward, preferably screened or otherwise protected from obstruction by snow, ice, birds, and insects, and be located at least 3 feet from combustible construction. The vent pipe must be installed without traps, and is not to be connected to any other piping. It is recommended that a long screw or malleable iron union be installed in the vent pipe just above the relief valve.

5. Mount the required extensions and manifold-to-cylinder leads.

(a) Insert the nipped end of the first wall extension in each bank as far as it will go into the manifold inlet connection on the side of the control assembly. Tighten the connection nuts with a wrench. Mark the location of the extension mounting holes, and then disconnect the extensions.

(b) Drill mounting holes in the wall for the extension mounting bolts.

(c) Reassemble the extensions to the manifold control, and bolt them firmly to the wall.

(d) Follow the same procedure with all subsequent extensions; never connect another extension until the previous one has been firmly bolted to the wall. Seal the last extension in each header with the plug provided.

(e) Attach the manifold-to-cylinder leads to the connections on each header, and tighten the connection nuts with a wrench.

CAUTION: Do not use excessive force in tightening extension or cylinder lead connection nuts with a wrench. The connections have metal-to-metal seats; too much torque may distort their threads or seats.

LEAK TESTING of all manifold connections is carried out after the manifold-to-cylinder leads have been attached to the cylinders (see Sec. II-C-4). A detailed description of leak testing procedure is included in the Maintenance Instructions (Sec. III-A, B).
B. Wall Mounting of M-28 or M-29 Manifolds with H-12-3M Hydraulic Back-Pressure Valve (Refer to Figure 2)

Note: This arrangement cannot be used for installations in which delivery pressures exceed 75 psi.

1. Mount the hydraulic valve and the control assembly brackets on the wall.
   (a) Mark the position of the mounting bolts for the hydraulic valve and the control assembly mounting brackets on the wall. Note that the top mounting bolts for each of these units lie in the same horizontal line.
   (b) Drill holes of appropriate size in the wall for the mounting bolts. In concrete or brick walls, the bolts should be secured with expansion shields. In hollow tile walls, the bolts should extend through the wall and be secured with a nut which bears against a steel plate on the far side of the wall.

   (c) Bolt the hydraulic valve and the control assembly brackets firmly in place on the wall.

2. Mount the control assembly on its mounting brackets by passing two 3/8-in. bolts through the narrow portion of the mounting slots in the control back plate and into the top hole in the control mounting brackets. Secure the bolts in place by running a hex nut onto each bolt until it locks against the back of the bracket.
3. Attach the inlet adaptor and the outlet tube to the manifold control, and then attach the regulator to the inlet adaptor and outlet tube. Refer to Sec. I-A-2 on page 5 for a complete description of this procedure.

4. Connect the manifold outlet block to the inlet pipe on the hydraulic valve, inserting the pressure relief valve as shown, and using the arrangement and pipe fittings specified in Figure 2. Connect a vent pipe to the outlet of the pressure relief valve as shown in the instruction booklet supplied with the hydraulic valve, and as described in Sec. I-A-4.

5. Connect the outlet on the hydraulic back-pressure valve to the distribution piping system. A globe-type shutoff valve must be installed in the piping system at the hydraulic outlet.

6. Mount the required extensions and manifold-to-cylinder leads in the manner described in Sec. I-A-5; however, the first two extensions mounted will be "S" extensions, as shown in Fig. 2.

7. Fill the hydraulic back-pressure valve (see the instruction booklet supplied with the hydraulic valve).

LEAK TESTING of all manifold connections is carried out after the manifold-to-cylinder leads have been attached to the cylinders (see Sec. IIA-7). In addition, all cylinder connections in a bank are tested after each change of cylinders (see Sec. II-C-4). A detailed description of leak testing procedure is included in the Maintenance Instructions (Sec. III-A, B).

II. Operating Instructions
(Refer to Figs. 3 & 4)

Each of the two manifold banks feeds through a separate header valve into the regulator, which controls the pressure delivered to the distribution piping system. Either bank may be cut out of service by merely closing its header valve; and the tow banks may therefore be used either alternately or simultaneously.

The instructions given here are for alternate operation, in which the service interruption is limited to the time needed to shut down the empty bank and cut in the full bank. Simultaneous use of both banks will provide longer periods of uninterrupted service, but the manifold will be out of service completely while both empty banks of cylinders are replaced.

A. Initial Starting

A-1. Before attaching the manifold-to-cylinder leads to the cylinders, open or "crack" each cylinder valve (except hydrogen cylinders) slightly for an instant, to blow out any dirt which may be lodged in the cylinder valve outlet; then close the valve. Place the cylinders in position with their valve outlets facing outward.

A-2. Connect the cylinders to the extensions by means of the manifold-to-cylinder leads. Tighten the connection nuts at both ends of the leads with a wrench.

A-3. Release the pressure-adjusting screw on the regulator by turning it counter-clockwise until it turns freely.

A-4. Fully open one of the header valves.

A-5. Close the pipeline shutoff valve.

A-6. Slowly open the valves on all cylinders in both banks of the manifold, starting with the valves on the cylinders nearest the regulator.

A-7. Test both banks of the manifold for leaks, as described in Maintenance Instructions, Secs. III-A and B.

A-8. Turn the regulator pressure-adjusting screw clockwise until the delivery pressure gauge indicates a pressure 5 lb. per sq. in. above the desired delivery pressure. (Because this regulator adjustment is made under no-flow conditions, it is not possible to set up the exact delivery pressure desired. In practice, a 5 lb. oversetting will give approximately the desired delivery pressure when flow is established.)

A-9. Make sure all outlet valves on the distribution piping system are closed.

A-10. When operations are ready on valves on the distribution piping system are closed.

B. To Set the Reserve Bank in Operation

B-1. Close the header valve on the empty bank. Leave the pressure-adjusting screw in its normal operating position.

B-2. Open the header valve on the full bank.

C. To Replace the Empty Cylinders

C-1. Close the valves on all empty cylinders.

C-2. Disconnect the cylinders from the manifold-to-cylinder leads.

C-3. Connect full cylinders to the cylinder-to-manifold leads, as described in Sec. II-A-1 and 2.

(Continued on page 7)
FIG. 3 - Schematic Diagram of M-26 to M-29 Single-Regulator Manifolds

* NOT SUPPLIED WITH MANIFOLD CONTROL ASSEMBLY

WITHOUT HYDRAULIC BACK-PRESSURE VALVE  WITH HYDRAULIC BACK-PRESSURE VALVE

FIG. 4 - Operating Controls of M-26 to M-29 Single-Regulator Manifolds (See Fig. 3 for details of H-12-3M Hydraulic Back-Pressure Valve as used on M-28 and M-29 Fuel Gas Manifolds)
D. Shutting Down the Manifold

D-1. Close the header valves. Leave the pipeline shutoff valve open.

D-2. Leave the regulator pressure-adjusting screw in its normal operating position. If the pressure-adjusting screw is released for a long period of time while pressure remains in the chamber of the regulator, the regulator valve seat may become distorted.

D-3. For long shutdowns (those over one day) close the cylinder valves.

D-4. Tag the operating bank so that it can be identified as the bank which is supplying gas, when service is resumed.

E. To Start the Manifold Up Again

Before proceeding to place the manifold in service, make sure that all station outlet valves on the piping system are closed, and that no one will attempt to supply gas-consuming equipment from them until normal operating conditions are re-established.

E-1. Be sure that the pipeline shutoff valve is open.

E-2. Slowly open the header valve on the operating (tagged) bank only.

E-3. Slowly open the valves on all cylinders in both banks of the manifold, starting with the valves on the cylinders nearest the regulator.

E-4. When the piping system has been filled to normal pressure, give notice that the system is in operating condition.

E-5. After use of gas has begun, check the reading on the delivery pressure gauge for the regulator, to make sure the regulator is adjusted to supply the piping system at the desired pressure. Disregard any small increase in delivery pressure, but if it has decreased, slowly turn the regulator pressure-adjusting screw clockwise until the gauge indicates the desired delivery pressure.

III. Maintenance Instructions

A. Checking the Manifold for Leaks

1. Close all outlet valves on the distribution piping system.

2. Open the valves of all cylinders in both banks of the manifold.

3. Make sure the header valve is open for the bank which is in operation.

4. Turn the regulator pressure-adjusting screw clockwise about 1/8 of a turn.

5. Apply OXWELD No. 23 Leak Test Solution or a solution of Ivory soap and water to all connections on the cylinders, leads, extensions, and to all connections on the manifold control, and examine them closely for leaks.

6. If a leaking connection is found, release all pressure from the bank. Then tighten the connection without using excessive force. Retest. If the connection still leaks, disconnect the parts, and wipe the metal seating surfaces of each half of the connection with a clean, grease-free, lint-free rag. If either of the seating surfaces is scored, replace the damaged part. Make up the connection again and retest as described above.

B. Header Valves (see Fig. 8)

1. Test both header valves for leakage by applying OXWELD No. 23 Leak Test Solution or a solution of Ivory Soap and water to the threaded connections between the valve body and the stuffing box (Part No. 52277), between the stuffing box and the packing screw (Part No. 4215), and between the packing screw and the valve stem (Part No. 33Y84). Bubbling of the solution indicates leakage.

2. To disassemble a header valve, first back off the valve stem slightly by turning the handwheel counterclockwise. Then remove the handwheel and unscrew the entire valve stem unit by unscrewing the stuffing box (Part No. 52277) from the valve body.

3. Examine the gasket (Part No. 94Z06) for defects, and replace it if necessary.

4. Now unscrew the packing screw (Part No. 4215) from the stuffing box. The valve stem (Part No. 33Y84) can now also be unscrewed from the stuffing box, thereby removing the packing (Part No. 4217) and the two washers (Part No. 4216) with it. Examine the packing and washers for defects, and replace them if necessary.

5. To reassemble a header valve, first seat the gasket (Part No. 94Z06) in the valve body. Then screw in the stuffing box (Part No. 52277) and tighten it in place.
6. Sandwich the packing (Part No. 4217) between the two washers (Part No. 4216) and slip all three parts onto the handwheel end of the valve stem (Part No. 33Y84). Now screw the valve stem into the stuffing box.

7. Slipping the packing screw (Part No. 4215) onto the valve stem, screw it into the stuffing box, and tighten it in place.

8. Retest the header valves for leakage, as previously described in Step #1.

C. Removal of Regulator for Repair

1. Close the header valves.

2. Close the pipeline shutoff valve.

3. Turn the regulator pressure-adjusting screw in.

4. Slowly loosen the connection nut near the regulator on the outlet tube to relieve the pressure inside the regulator; then remove the outlet tube from the regulator.

5. Loosen the connection nut between the inlet adaptor assembly and the regulator, and lift the regulator off.

6. For regulator repair instructions, see the booklet supplied with the regulator.

D. To Replace the Regulator After It Has Been Repaired

1. Position the regulator so that the nipped ends of the outlet tube and the inlet adaptor assembly can be inserted into the matching connections of the regulator. Run the connection nuts onto the regulator connection threads by hand as far as possible. Tighten both nuts with a wrench.

IV. General Precautions

A. Keep all flames, sparks, and lights away from fuel gas manifolds and cylinders; do not permit smoking in the vicinity of the manifold.

B. Many fuel gases have no characteristic odor to warn of their escape. Therefore, if the manifold should be subject to any force that might damage it, immediately test the manifold for leaks with OXWELD No. 23 Leak Test Solution or a solution of Ivory soap and water. The manifold should be shut down and the necessary repairs made to the system before operation is resumed.

C. Never "crack" a cylinder near an open flame or other possible source of ignition. Never "crack" the valve any wider nor leave it open any longer than is necessary to clear the valve of dust or dirt. DO NOT "CRACK" HYDROGEN CYLINDER VALVES.
FIG. 5 - M-26 Single-Regulator Manifold Control Assembly - Part No. 25X18
FIG. 7 – Inlet Connection Assembly
Part No. 25X01 (R.H.)
Part No. 25X02 (L.H.)

NOTE:
IN VALVES OF EARLIER DESIGN, REPLACEMENT OF ANY PART (EXCEPT DIAPHRAGM PART NO. 5061-L) REQUIRES CONVERSION TO CURRENT DESIGN. CONVERSION KIT PART NO. 33Y83 INCLUDES ALL PARTS KEYED IN THE PARTS PICTURE.
DIAPHRAGM 5061-L IS STILL AVAILABLE FOR REPLACEMENT IN VALVES OF EARLIER DESIGN.

FIG. 8 – Inlet Valve Assembly
Part No. 21X59 (R.H.)
Part No. 21X60 (L.H.)

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<tr>
<td>24287</td>
<td>HANDWHEEL</td>
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<td>6331-1100</td>
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<td>1/4&quot;-20</td>
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<td>GASKET-94Z06</td>
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Replacement Parts List

FOR

"OXWELD" M-26, M-27, M-28 and M-29
SINGLE-REGULATOR MANIFOLDS

Control Assembly | Part No. | Description
--- | --- | ---
M-26 | 25X18 | (Fig. 5)
M-27 | 25X19 | (Fig. 6)
M-28 | 25X20 | (Fig. 6)
M-29 | 25X21 | (Fig. 6)

PART NO. | DESCRIPTION
--- | ---
21X59 | Inlet Valve Assembly (R.H.) M-26 only (2 used)
21X60 | Inlet Valve Assembly (L.H.) M-27, M-28, M-29 only (2 used)
Included in 21X59 and 21X60 (see Fig. 8)
4215 | Packing Screw
4216 | Packing Washer (2 used)
4217 | Valve Packing
33Y84 | Valve Stem Assembly
52Z77 | Stuffing Box
94Z06 | Stuffing Box Gasket
25X01 | Inlet Connection Assembly (R.H.) M-26 only (2 used)
25X02 | Inlet Connection Assembly (L.H.) M-27, M-28, M-29 only (2 used)
Included in 25X01 and 25X02 (see Fig. 5)
11Z25 | Connection - R.H. (25X01 only)
11Z28 | Connection - L.H. (25X02 only)
83Z31 | Connection Body - R.H. (25X01 only)
83Z32 | Connection Body - L.H. (25X02 only)
11Y01 | Dust Plug, Chain and Ring Assembly for M-26 only (2 used)
11Y02 | Dust Plug, Chain and Ring Assembly for M-27, M-28, M-29 only (2 used)
Included in 11Y01 and 11Y02:
32A28 | Nipple
45A28 | Washer
05Y06 | Chain
37Z72 | Nut - R.H. (11Y01 only)
37Z75 | Nut - L.H. (11Y02 only)
93Z04 | Ring
6102-0847 | #6 x 3/8-in. Parker Kalon Type "U" Drive Screw (Brass Plated)

PART NO. | DESCRIPTION
--- | ---
60Y01 | Outlet Block Assembly
Includes:
10Z55 | Inlet Connection
60Y02 | Inlet Tee Assembly (M-26 only)
60Y12 | Inlet Tee Assembly (M-27, M-28, M-29 only)
Included in 60Y02 and 60Y12:
03Z94 | Nipple (2 used)
11Z41 | Connection - R.H. (60Y02 only)
11Z42 | Connection - L.H. (60Y12 only)
37Z72 | Nut - R.H. (60Y02 only) (2 used)
37Z75 | Nut - L.H. (60Y12 only) (2 used)
47Z26 | Tubing (Long)
47Z27 | Tubing (Short)
60Y11 | 90-deg. Inlet Adaptor Assembly (M-26 only)
24Z87 | Handwheel (2 used)
68Z22 | Valve Mounting Block (2 used)
68Z41 | Spacer (2 used)
82Z98 | Mounting Plate

HARDWARE

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<tr>
<th>Part No.</th>
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6130-3168 | 5/16-in. - 24 x 3/4-in. Lg. Flat Head, Machine Screw, Cad. Plated (4 used)
6130-3171 | 5/16-in. - 24 x 1 in. Lg. Flat Head, Machine Screw, Cad. Plated (4 used)
6130-3172 | 5/16-in. - 24 x 1-1/8-in. Lg. Flat Head, Machine Screw, Cad. Plated (4 used)
6134-1173 | 5/16-in. - 24 x 2-1/4-in. Lg. Hex. Head, Cap Screw, Cad. Plated (4 used)
6331-1100 | 1/4-in. - 20 Elastic Stop Nut, Cat. #42E04, Cad. Plated (2 used)
6331-1122 | 5/16-in. - 24, Elastic Stop Nut, Cat. #42E054, Cad. Plated (12 used)

SUPPLY PART

11Z251 | No. 85 Wrench

Regulators and Required Connection Fittings

(For regulator replacement parts and maintenance instructions, see the instruction booklet supplied with the regulator)

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<th>For Manifold Control Assembly</th>
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<th>Outlet Tube Assembly</th>
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<td>Max. Delivery Pressure, psi</td>
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<td>M-28</td>
<td>25X20</td>
<td>75</td>
<td>R-67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
<td>R-67(200)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>R-44</td>
</tr>
<tr>
<td>M-29</td>
<td>25X21</td>
<td>30</td>
<td>R-75</td>
</tr>
</tbody>
</table>

14
**Header Extensions**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>For Manifold</th>
</tr>
</thead>
<tbody>
<tr>
<td>25X03</td>
<td>MX-1 Straight One-Cylinder Extension</td>
<td>M-26</td>
</tr>
<tr>
<td>25X04</td>
<td>MX-2 Straight One-Cylinder Extension</td>
<td>M-27, M-28, M-29</td>
</tr>
<tr>
<td>25X05</td>
<td>MX-3 Curved (90 deg.) One-Cylinder Extension</td>
<td>M-26</td>
</tr>
<tr>
<td>25X06</td>
<td>MX-4 Curved (90 deg.) One-Cylinder Extension</td>
<td>M-27, M-28, M-29</td>
</tr>
</tbody>
</table>

**Manifold-to-Cylinder Leads**

NOTE: The "For Use With" column in the table is merely a rough guide, and should never be used alone to determine the type of lead required for a given type of gas cylinder. At least two different types of cylinder valve connections are in use for each kind of fuel gas on the market.

The only sure way to order manifold-to-cylinder leads is to specify both the type of gas for which they will be used and the exact thread size and thread direction (R.H. or L.H.) of the valve connection on the cylinders. Leads other than those listed below can be supplied on special order.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>For Use With</th>
<th>Direction of Threads at Header End of Lead</th>
<th>Cylinder Correction Threads</th>
<th>For Manifold</th>
</tr>
</thead>
<tbody>
<tr>
<td>25X09</td>
<td>Argon and nitrogen in cylinders with oxygen valves</td>
<td>R.H.</td>
<td>.903 in.-14 R.H.Ext.</td>
<td>M-26</td>
</tr>
<tr>
<td>25X33</td>
<td>Oil-Pumped Inert Gas (LINDE)</td>
<td>L.H.</td>
<td>.903 in.-14 L.H.Ext.</td>
<td>M-28</td>
</tr>
<tr>
<td>25X35</td>
<td>† PYROFAX &quot;R&quot; (Vertical Outlet)</td>
<td>L.H.</td>
<td>.885 in.-14 L.H.Int.</td>
<td>M-29</td>
</tr>
<tr>
<td>25X36</td>
<td>Water-Pumped Inert Gas (CGA) and helium in cylinders with right-hand connections</td>
<td>R.H.</td>
<td>.965 in.-14 R.H.Int.</td>
<td>M-26</td>
</tr>
<tr>
<td>25X37</td>
<td>Oil-Pumped Inert Gas (CGA)</td>
<td>L.H.</td>
<td>.965 in.-14 L.H.Int.</td>
<td>M-27</td>
</tr>
<tr>
<td>25X38</td>
<td>Propane, butane (Horizontal Outlet) (CGA)</td>
<td>L.H.</td>
<td>.885 in.-14 L.H.Int.</td>
<td>M-29</td>
</tr>
<tr>
<td>25X39</td>
<td>Carbon Dioxide (Washer 53Z03 supplied)</td>
<td>L.H.</td>
<td>.825 in.-14 R.H.Ext. (Flat Seat)</td>
<td>M-27</td>
</tr>
<tr>
<td>25X40</td>
<td>Propane, butane (Horizontal Outlet)(Std.)</td>
<td>L.H.</td>
<td>.825 in.-14 R.H.Ext. (60-deg.conical seat)</td>
<td>M-29</td>
</tr>
</tbody>
</table>

† To permit use of cylinders larger than 12 inches in diameter, such as PYROFAX "R" cylinders, this lead is made with a double expansion loop. By straightening alternate leads to remove one loop, cylinders up to 15 inches in diameter can be used.

**Hydraulic Back-Pressure Valve and Mounting Accessories for M-28, M-29 Manifolds**

(cannot be used for installations in which delivery pressures exceed 75 psi)

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>06P67</td>
<td>H-12-3M Hydraulic Back-Pressure Valve (for replacement parts and maintenance instructions, see the instruction booklet supplied with the valve)</td>
</tr>
<tr>
<td>25X07</td>
<td>MX-5 One-Cylinder &quot;S&quot; Extension (2 used)</td>
</tr>
<tr>
<td>68Z46</td>
<td>Wall Mounting Brackets for Manifold Control Assembly (2 used)</td>
</tr>
</tbody>
</table>

**Parts Supplied (with H-12-3M Back Pressure Valve)**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>11P64</td>
<td>RV-29 Pressure Relief Valve (for replacement parts and maintenance instructions, see the instruction booklet supplied with the valve)</td>
</tr>
</tbody>
</table>