INSTRUCTIONS and PARTS LIST
for
M-25
SINGLE-REGULATOR OXYGEN MANIFOLD

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Be Sure this Information Reaches the Operator. You Can Get Extra Copies Through Any LINDE Office.
IMPORTANT

This booklet contains instructions for installing and operating the OXWELD M-25 Oxygen Manifold. 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 oxy-acetylene equipment, we recommend your reading the OXWELD Instruction Manual (in addition to these instructions) which you can obtain without charge from any LINDE office.

Use no oil or grease on this manifold. Oil or grease, if subjected to oxygen under pressure, may ignite and burn with explosive violence. Oxy-acetylene apparatus does not require lubrication.

Oxygen manifolds should be installed and operated in accordance with the "Standards of The National Board of Fire Underwriters for the Installation and Operation of Gas Systems for Welding and Cutting," NBFU Pamphlet No. 51.

For complete information covering the design and installation of oxygen piping and distribution systems, we recommend that you see Form 5110, "Instructions for Design and Installation of Oxygen Distribution and Piping Systems." This booklet is available without charge from any LINDE office.
INTRODUCTION

Purpose

The OXWELD M-25 Single-Regulator Oxygen Manifold is designed to furnish an almost continuous supply of LINDE oxygen 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.

The M-25 has 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 oxygen 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.

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 manifolded, 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 manifolded.

d. A globe-type pipeline shutoff valve and a safety relief valve, as described in Sec. 1-C.

I. INSTALLATION PROCEDURE

NOTE: The procedure described here is for a simple wall mounting as shown in Fig. 1. Where sufficient wall space is not available, consult your LINDE dealer for information on a floor-type mounting on an “A” frame.

A. Mount the Control Assembly on the Wall

1. 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.

2. 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, the 3/8-in. bolts should pierce the entire wall, and be anchored with a nut behind a steel plate on the far side.

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

4. 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.

5. Secure the control assembly firmly to the wall by tightening each bolt with a wrench.

B. Connect the manifold regulator to the control assembly as shown in Fig. 3 (see Maintenance Instructions, Sec. III-D).

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

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

1. Insert the nippled end of the first wall extension in each bank as far as it will go into the manifold inlet connections on each side of the control assembly. Tighten the connection nuts with a wrench. Mark the location of the

(Continued on page 5)
extension mounting holes, and then disconnect the extensions.

2. Drill mounting holes in the wall for the extension mounting bolts.

3. Reassemble the extensions to the manifold control, and bolt them firmly to the wall.

4. 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.

5. 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.

II. OPERATING INSTRUCTIONS (Refer to Fig. 2)

A. Initial Starting

A-1. Roll the cylinders into place, with their valve outlets facing outward. Before attaching the cylinders, open each cylinder valve slightly for an instant, to blow out any dirt which may be lodged in the cylinder valve outlet, and then close the valve.

A-2. Connect the cylinders to the extensions by means of the cylinder-to-manifold 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.

FIG. 2 – Operating Controls of M-25 Single-Regulator Oxygen Manifold
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. 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-8. Make sure all outlet valves on the distribution piping system are closed.
A-9. When operations are ready to begin, open the pipeline shutoff valve.

The manifold is now ready to deliver oxygen. The operating bank will feed oxygen to the piping system until the pressure in its cylinders becomes insufficient to supply the piping system at the required pressure. The reserve bank must then be cut in, and the empty cylinders replaced with full ones.

B. To Set the Reserve Bank in Operation
B-1. Close the header valve on the empty bank.
B-2. Leave the pressure-adjusting screw in its normal operating position.
B-3. 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 cylinder-to-manifold leads.
C-3. Connect full cylinders to the cylinder-to-manifold leads, as described in Secs. II-A-1 and 2.

C-4. Open the cylinder valves. This is now the reserve bank.

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 oxygen, 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 oxygen-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 oxygen 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 all the cylinder valves on both sides of the manifold.
3. Open both header valves.
4. Turn the 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. 5)
To test the valves for leaks, apply OXWELD No. 23 Leak Test Solution or a solution of Ivory soap and water at the junction of the valve stem and the nut assembly. A bubbling of the solution indicates leakage and possible damage to the diaphragm. To check the diaphragm, the valve must be disassembled. Since it must be taken apart, check the rest of the valve and make replacements where necessary.

To Disassemble Header Valves:
1. Unscrew the valve stem (48Z42) from the nut assembly (36Y01).
2. Unscrew the nut assembly from the body.
3. Remove the diaphragm plate (30Z20). The friction spring (28Z41) around the diaphragm plate should be slightly oval-shaped, with the spring ends in the flatter part of the oval, so that the spring surface (but not the end corners) rubs against the body wall.
4. Remove the diaphragm (L5061).
5. Remove the valve spindle (50Z65) and the spindle spring (28Z42).

To Reassemble:
1. Reset the valve spindle and the spindle spring so that the spindle forms a gas-tight seat at the inlet.
2. Check the diaphragm for wear and place it back on the body seat. Coat the side of the diaphragm which faces the diaphragm plate with Ivory soap suds.
3. Reset the diaphragm plate.
4. Apply OXWELD anti-friction compound (Part No. 78Z52) to the threads of the nut assembly, and screw it into the body.
5. Apply OXWELD anti-friction compound to the threads of the valve stem, and screw it into the nut assembly as far as it will go without being forced.

C. Removal of Regulator for Repair (Fig. 3)
1. Close the header valves.
2. Turn in the regulator pressure-adjusting screw.
3. Close the pipeline shutoff valve.
4. Slowly loosen the connection nut near the regulator on the outlet tube (60Y14) to relieve the pressure inside the regulator; then remove the outlet tube from the regulator.
5. Loosen the connection nut between the 90 degree 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 nippled ends of the outlet tube (60Y14) 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. NEVER, NEVER use oxygen for compressed air, or as a source of pressure.

B. Oxygen should NEVER be used in pneumatic tools, in oil preheating burners, to start internal combustion engines, to blow out pipelines, to “dust” clothing or work, as a substitute for air in ventilation, or for head pressure in a tank of any kind.

C. Always call oxygen by its proper name - “oxygen.” Oxygen should never be called “air” and should never be confused with compressed air.

D. Never lubricate any part of the manifold. Oil or grease, if subjected to oxygen under pressure, may ignite and burn with explosive force.

E. Do not attempt to operate an oxygen manifold which is in need of repair. For repairs and replacements other than those mentioned in the M-25 Instruction Booklet, send the apparatus to the nearest repair station of Linde Air Products Company.
# Replacement Parts List

FOR

"OXWELD" M-25 SINGLE-REGULATOR OXYGEN MANIFOLD

Manifold Control Assembly (Fig. 3)

- Part No. 25X17 (U.S.)
- Part No. 25X41 (Canada)

<table>
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<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>21X59</td>
<td>Inlet Valve Assembly - R.H. (2 used)</td>
</tr>
<tr>
<td></td>
<td>- see Fig. 5</td>
</tr>
<tr>
<td>Includes:</td>
<td>L-5061 Diaphragm (6 used)</td>
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<tr>
<td></td>
<td>36Y01 Nut Assembly</td>
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<tr>
<td></td>
<td>Includes:</td>
</tr>
<tr>
<td></td>
<td>36Z28 Diaphragm Clamping Nut</td>
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<tr>
<td></td>
<td>53Z240 Washer</td>
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<td></td>
<td>53Z241 Felt Washer</td>
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<tr>
<td></td>
<td>28Z41 Spring</td>
</tr>
<tr>
<td></td>
<td>28Z42 Spindle Spring</td>
</tr>
<tr>
<td></td>
<td>30Z220 Diaphragm Plate</td>
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<tr>
<td></td>
<td>48Z42 Stem</td>
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<td>50Z265 Spindle</td>
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<tr>
<td>25X01</td>
<td>Inlet Connection Assembly (2 used)</td>
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<td></td>
<td>- see Fig. 4</td>
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<tr>
<td>Includes:</td>
<td>03Z98 Nipple</td>
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<tr>
<td></td>
<td>11Z25 Connection (R.H.)</td>
</tr>
<tr>
<td></td>
<td>37Z32 Nut (R.H.)</td>
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<td>83Z30 Valve Connection Block</td>
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<td>83Z31 Connection Body (R.H.)</td>
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<td>11Y01 Dust Plug, Chain and Ring Assembly (2 used)</td>
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<tr>
<td>Includes:</td>
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<td></td>
<td>45A36 Washer</td>
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<td></td>
<td>05Y06 Chain</td>
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<td>37Z72 Nut (R.H.)</td>
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<td>93Z04 Ring</td>
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<tr>
<td>S-D-PK-U-15</td>
<td>#6 x 3/8-in. Parker-Kalon Type</td>
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<td>&quot;U&quot; Drive Screw</td>
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<td>60Y01</td>
<td>Outlet Block Assembly</td>
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<td>Includes:</td>
<td>10Z55 Inlet Connection</td>
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<td>60Y02 Inlet Tee Assembly</td>
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<td>Includes:</td>
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<td>03Z94 Nipple (2 used)</td>
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<td>11Z41 Connection (R.H.)</td>
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<td>37Z72 Nut (R.H.) (2 used)</td>
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<td></td>
<td>47Z26 Tubing (long)</td>
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<td>47Z27 Tubing (short)</td>
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<tr>
<td>60Y11</td>
<td>90-deg. Inlet Adaptor Assembly (for 25X17 only)</td>
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<tr>
<td>60Y33</td>
<td>90-deg. Inlet Adaptor Assembly (for 25X41 only)</td>
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<td>Included in 60Y11 and 60Y33:</td>
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<tr>
<td>410</td>
<td>Nut (R.H.)</td>
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<tr>
<td>03Z98</td>
<td>Nipple</td>
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<tr>
<td>60Y14</td>
<td>Outlet Tube Assembly</td>
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<td>Includes:</td>
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<td>3360 &quot;B&quot; Oxy. Hose Connection Nut</td>
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<tr>
<td></td>
<td>33A22 &quot;C&quot; Oxy. Hose Connection Nut</td>
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<tr>
<td></td>
<td>03Z53 Nipple (&quot;B&quot; Size Nut)</td>
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<tr>
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<td>04Z06 Nipple (&quot;C&quot; Size Nut)</td>
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<tr>
<td>24Z87</td>
<td>Hand Wheel (2 used)</td>
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<td>68Z22</td>
<td>Valve Mounting Block (2 used)</td>
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<tr>
<td>68Z41</td>
<td>Spacer (2 used)</td>
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<tr>
<td>92Z98</td>
<td>Mounting Plate</td>
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## HARDWARE

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<tr>
<td>N-SE-E-51</td>
<td>1/4-in.-20 Steel Elastic Stop Nut (Cad. Pl.) Cat. No. 21E040 (2 used)</td>
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<tr>
<td>N-SE-E-53</td>
<td>5/16-in.-24 Steel Elastic Stop Nut (Cad. Pl.) Cat. No. 42E054 (12 used)</td>
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<td>S-FL-308</td>
<td>5/16-in.-24 x 3/4-in. Ig. Flat-Head Machine Screw (4 used)</td>
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<tr>
<td>S-FL-310</td>
<td>5/16-in.-24 x 1-in. Ig. Flat-Head Machine Screw (4 used)</td>
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<tr>
<td>S-FL-311</td>
<td>5/16-in.-24 x 1-1/8-in. Ig. Flat-Head Machine Screw (4 used)</td>
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<tr>
<td>S-H-55</td>
<td>5/16-in.-24 x 2-1/4-in. Ig. Hex-Head Steel Cap Screw (4 used)</td>
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## SUPPLY PART

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<td>71Z51</td>
<td>No. 85 Wrench</td>
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## Regulator

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<th>OXWELD Oxygen Regulator</th>
<th>Max. Delivery Pressure, psi</th>
<th>Instruction Booklet</th>
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<tr>
<td>03X05</td>
<td>R-64</td>
<td>75</td>
<td>F-3224</td>
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<td>03X13</td>
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<tr>
<td>03X06</td>
<td>R-65</td>
<td>150</td>
<td>F-3225</td>
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<td>03X14</td>
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## Header Extensions

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<th>PART NO.</th>
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<tr>
<td>25X03</td>
<td>MX-1 Straight One-Cylinder Extension</td>
</tr>
<tr>
<td>25X05</td>
<td>MX-3 Curved (90 deg.) One-Cylinder Extension</td>
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</tbody>
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## Manifold-to-Cylinder Leads

- For U.S. Oxygen Cylinders ( .903 in.-14 R.H, Connection Threads)  
- For Dominion Oxygen Cylinders ( .850 in.-14 R.H, Connection Threads)
FIG. 4 - Inlet Connection Assembly – Part No. 25X01

FIG. 5 - Inlet Valve Assembly – Part No. 21X59
LINDE Supplies These Quality Products to the Nation's Industries

INDUSTRIAL GASES
LINDE Oxygen, Nitrogen, Argon, Neon, Helium, Krypton, Xenon, Hydrogen
PREST-O-LITE Acetylene

CALCIUM CARBIDE
UNION Carbide
CARBIC Processed Carbide

OXY-ACETYLENE EQUIPMENT
OXWELD Apparatus for Cutting, Joining, Treating, and Forming Metals
Acetylene Generators
Manifolds, Regulators and Valves
Welding Rods and Supplies
PREST-O-WELD Welding and Cutting Apparatus
PUROX Welding and Cutting Apparatus
PREST-O-LITE Air-Acetylene Apparatus and Small Tanks
CARBIC Acetylene Flood Lights
Acetylene Generators

ELECTRIC WELDING EQUIPMENT
UNIONMELT Automatic Welding Apparatus and Supplies
HELIGAR Welding Torches
LINDE Sigma Welding Equipment

SPECIAL EQUIPMENT
LINDE Jet-Piercing Equipment
Plate-Edge Preparation Equipment
Polyethylene Powder and Flame-Spraying Equipment
Steel-Conditioning Machines
Sub-Zero Cold Treatment Equipment

OXWELD Oxy-Acetylene Cutting Machines
Pressure-Welding Machines

OXYGEN THERAPY SUPPLIES
LINDE Oxygen U.S.P.
Oxygen Therapy Regulators
Oxygen Therapy Manifolds and Valves

SYNTHETIC CRYSTALS
LINDE Synthetic Sapphire, Ruby, Spinel, and Titania
Synthetic Calcium- and Cadmium Tungstates
Fine Alumina Abrasive

SILICONE CHEMICALS
LINDE Silicone Oils and Resins
Silanes


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A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

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Charleston 1, W. Va.
2 Virginia Street
New York 17, N. Y.
205 East 40th Street
Philadelphia 22, Pa.
1424 North Broad Street
Pittsburgh 22, Pa.
644 Henry W. Oliver Bldg.

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Cincinnati 29, Ohio
709 Melish Avenue
Cleveland 14, Ohio
3533-37 Superior Avenue
Detroit 2, Mich.
6-240 General Motors Building
Indianapolis 4, Ind.
729 North Pennsylvania Street
Milwaukee 46, Wis.
1623 South 38th Street
Minneapolis 2, Minn.
827 Second Avenue, South
St. Louis 5, Mo.
4228 Forest Park Boulevard

Southwestern States
Dallas 1, Texas
2626 Commerce Street
Denver 9, Colo.
685 South Broadway
Houston 11, Texas
6139 Harrisburg Boulevard
Kansas City 6, Mo.
910 Baltimore Avenue
Tulsa 2, Okla.
614 National Bank of Tulsa Bldg.

Western States
Los Angeles 58, Calif.
2770 Leimert Boulevard
Phoenix, Ariz.
401 East Buchanan Street
Portland 9, Ore.
1205 Northwest Marshall Street
Salt Lake City 1, Utah
362 Pierpoint Avenue
San Francisco 6, Calif.
22 Battery Street
Seattle 4, Wash.
3404 Fourth Ave., South
Spokane 12, Wash.
2023 West Maxwell Avenue

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Winnipeg • Vancouver

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