INSTRUCTIONS
and
PARTS LIST
for
Oxyweld
Trade-Mark

M-5-3
OXYGEN MANIFOLD
for
HOSPITAL SERVICE

CONTENTS

Description  3
Installation Instructions  3
Extensions  4
Installation and Elevation Layouts  4-5
Operating Instructions  5
Maintenance Instructions  6
General Precautions  10
Principal Parts Drawing  8
Parts List  9-11

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

Linde Instruction Literature
IMPORTANT

This booklet contains instructions for installing and operating the OXWELD M-5-3 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.

Mount the cloth-backed Instruction chart supplied with this manifold in a convenient and prominent position on the wall behind the manifold. The wall chart contains step-by-step instructions covering the routine operation of the manifold, and corresponding to those given in this book under Part III.

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. 31.

The term "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.
DESCRIPTION

The OXWELD M-5-3 Oxygen Manifold consists of 2 high-pressure headers, 10 copper cylinder leads, 2 shutoff valves, 2 relief valves, 10 check valve adaptors and 2 OXWELD R-64 or R-65 Oxygen Regulators. Each high-pressure header can be extended by the addition of 5-cylinder extension assemblies.

The headers are mounted on a supporting rail, which is furnished with brackets for mounting on a wall as shown in Fig. 1. If it is desired to increase the capacity of the manifold, it can be augmented to accommodate additional groups of cylinders by five-cylinder extension sections which can be attached to both ends of the original unit. Also available are curved header tubes, which make it possible to extend the manifold along walls at right angles to that carrying the original unit, as shown in Fig. 1.

Each of the two headers of the M-5-3 unit is provided with header inlet tees and leads for connecting five oxygen cylinders. The two headers are separated by a blind fitting and are provided with separate regulators. The manifold operates in such a manner that one bank of cylinders acts as a reserve while the other bank is supplying oxygen to the service line. When the oxygen in the operating bank of cylinders is exhausted, the reserve bank will automatically supply oxygen to the service line.

PART I. INSTALLATION INSTRUCTIONS

The brackets supplied with the manifold are intended to be used in supporting the manifold from the wall. Use of these brackets will provide a space between the manifold support rail and the wall sufficient to clear the projections that occur on rough or uneven walls, and afford sufficient space back of the cylinders to permit the use of wall-type radiators behind them. If lack of space or some obstruction prevents their use, the manifold support rail may be fastened directly to the wall. (See also “Note” in Fig. 1.)

NOTE: The dimensions shown in Fig. 1 are to be used only as a guide for general layout. The joints in the manifold headers are pipe threads. Therefore, since the number of joints in each header is considerable, there is likely to be an appreciable variation in the length of the headers from those dimensions shown. After the manifold is received and is ready to be installed, it should be measured before any connecting piping and the boitholes or supports for the brackets are located.

1. Bolt the brackets to the wall, locating them as shown in Figs. 1 and 2. If the wall is concrete or brick, 1/2-in. expansion bolts or lag screws with metal shields should be used, but if the wall is hollow tile, the bolts should go through the entire wall and be fastened over a steel plate on the other side. If the brackets cannot be used, bolt the angle iron header support rail directly to the wall.

In setting up a manifold, or in adding extension sections, it is important that the wall brackets be located so that all sections of the manifold header will be level and in true horizontal alignment. To prevent misalignment, in locating by measurement from sloping floors or uneven wall surfaces, one bracket should be installed and the others leveled and aligned with it. The manifold header should be level irrespective of the floor surface; any differences in elevation between the cylinder valve outlets and the cylinder connections on the header tees will be taken up by the flexible cylinder leads. Use shims or spacing blocks behind the brackets for correcting any horizontal misalignment to avoid straining the joints of the manifold header.

2. After the brackets are in place, bolt the angle iron header support rail to the brackets.

3. Attach the yoke assembly to the manifold valves. Tighten the U-bolts that hold the headers in position on the angle iron.

4. Tighten the dust caps of the inlet connections on all the header tees of both headers except the last ones at the extreme ends of the manifold. Close the manifold valves. Remove the dust cap from the header tee at the far end of each header and connect an oxygen cylinder to these uncapped tees, using the cylinder leads. Tighten the nuts on the leads with a wrench. Then open both manifold valves and blow out each of the two headers through the open regulator connection tees by opening the valve of each cylinder for a few seconds.

5. Attach the regulators to the regulator-connection tees on the yoke that connects the two headers of the manifold. Connect the regulator outlets to the low-pressure shutoff block by means of the regulator leads.

When the M-5-3 Manifold (with R-64 or R-65 Regulators) is installed, a Part No. 10Y59 Regulator Adaptor is used to attach each regulator to the regulator-connection tee on the manifold yoke. A Part No. 4203 Regulator Lead Adaptor is used between the regulator outlet and the regulator lead.

When connecting the regulator outlet to the adaptor, exert just enough force to bring the end of the outlet connection up snugly against the fiber washers. When tightening the regulator leads to the adaptor, support the hex section of the adaptor with a wrench to prevent further tightening of the adaptor on the regulator outlet.)

6. Close both manifold valves and open the valves on both of the connected cylinders. Open both low-pressure shutoff valves. Release the pressure-adjusting screws (turn left -- counter-clockwise -- until they turn freely) on both regulators and open both manifold valves to subject the manifold headers, yoke, and regulators to full cylinder pressure. Leave the valves on the connected cylinders open to maintain this pressure and test all joints up to the regulators with soapy water. (Use only a grease-free soap, such as Ivory soap.)
NOTE: Where the wall-space dimensions of an existing room do not permit making up the manifold in the standard five-cylinder units as illustrated, dimensions A, B, and C can be increased or reduced by adding or removing individual cylinder-connection units. Allow about 11-3/8-in. for each cylinder-connection unit added or removed. (Where necessary, dimensions A and B can be reduced 4-5/8-in. by fastening the manifold support rail directly to the wall without using the brackets furnished.)

FIG. 1 - INSTALLATION LAYOUT FOR "OXWELD" M-5-3 OXYGEN MANIFOLD, WITH M-5-3-X EXTENSIONS

PART II. EXTENSIONS

To extend a manifold header in the same direction along a wall, use an M-5-3-X Five-Cylinder Extension Assembly and the bracket furnished with it. (See "Note" in Fig. 1 for adding or removing more or less cylinder connections than the standard five-cylinder unit.)

To extend a manifold at right angles, use an M-5-3-X Five-Cylinder Extension Assembly and the bracket furnished with it, a curved header tube (Part No. 4657), and an additional bracket (Part No. 4656).

Extensions, as furnished, are assembled for use on the right-hand side of the manifold. If they are to be used on the left-hand side, the position of the header and the tie plate on the angle iron should be reversed.

Before adding extensions to a manifold that has been in service, disconnect all oxygen cylinders from the manifold, leaving the cylinder connections on the manifold uncapped.

NOTE: It is extremely important that cylinder-connection tees be held rigid while tubing or plugs are being added or removed.

To add an extension, first remove the plug from the end cylinder connection tee, by heating the soft soldered joint carefully to avoid melting the joint at the other end of the connection. Allow the joint to cool and retap the tee with a 1/2-in. - 14 ANPT pipe tap. Be sure to remove all chips of loose soft solder from the manifold. Apply a good grade of acid flux to the joint. Then completely tin the joint threads with soft solder. Then screw in the extension-header tubing into the end tee, holding the fitting with a wrench to avoid straining other joints. Reflow soft solder on both ends of the tee after the joint is made adding more solder if necessary.

If the extension is to be placed along an intersecting wall, remove the manifold header from the angle iron, or remove the manifold assembly from the wall brackets to permit swinging of the curved header tube into the end tee of the manifold and replace the manifold. Check the unconnected leg of the curved header for alignment; remove the piece of header tubing from the end connection tee on the extension; screw and soft solder this end of the extension on to the curved header.

Before replacing U-bolts, check the position of the manifold header to be sure that no strain will be placed on the joints when the U-bolts are tightened.
PART III. OPERATING INSTRUCTIONS

NOTE: When the manifold regulators are adjusted as described in the following instructions, the manifold operates in such a manner that one bank of cylinders acts as a reserve while the other bank is supplying oxygen to the service line. When the oxygen in the operating bank of cylinders is exhausted, the reserve bank will automatically supply oxygen to the service line.

These instructions are identical to those on the wall chart supplied with the M-5-3 Manifold, except for the style used. The limited space on the wall chart requires a more condensed type of instruction than we use in this booklet, where space is not restricted.

A. Initial Starting of the Manifold

A-1. Release the pressure-adjusting screws (turn left -- counter-clockwise -- until they turn freely) of both regulators.

A-2. Open both service valves on the low-pressure shutoff valve block.

A-3. Open both manifold valves.

A-4. Connect full cylinders to all cylinder connections on both headers of the manifold. Before attaching the cylinders, "crack" each cylinder valve (open the valve slightly for an instant, then close) to blow any dust or dirt from the cylinder-valve outlet. Connect the cylinders to the header inlet tees by means of the cylinder connection leads firmly with a wrench. The connection nuts of each lead are equipped with anti-friction washers to minimize the possibility of twisting the lead when tightening the nuts.

A-5. Slowly open the cylinder valves of all cylinders on both banks of the manifold, one by one, starting with the cylinders nearest the manifold valves.

A-6. Open a station valve and flowmeter in the piping system. There must be some oxygen flow through the regulators while adjusting them according to steps A-7 and A-8 that follow.

A-7. Turn the regulator pressure-adjusting screw of the regulator for one bank of cylinders to the right (clockwise) until the line pressure gauge of the regulator registers a pressure 5 or 10 lb. per sq. in. below the desired normal line pressure. (If the line pressure is to be 50 lb. per sq. in., adjust to a gauge reading of 45 lb. per sq. in.; if the line pressure is to be 100 lb. per sq. in. adjust to a reading of 90 lb. per sq. in.) This will now be the reserve bank.

A-8. Turn the regulator pressure-adjusting screw of the other regulator to the right (clockwise) until the line pressure gauge of the regulator indicates the normal operating pressure.

The manifold is now supplying oxygen to the distribution piping system.


B. To Replace Empty Cylinders While Manifold is in Operation

When the oxygen pressure in the service line drops to the pressure set on the regulator on the reserve bank of cylinders, the reserve bank will
supply oxygen to the service line. When this occurs, proceed as follows:

B-1. Close the valve of each cylinder on the  ‘empty’ bank.

B-2. Release the pressure-adjusting screw (turn left — counter-clockwise — until it turns freely) of the regulator for the ‘empty’ bank.

B-3. Disconnect the empty cylinders from the cylinder connection leads by backing off the lead connection nuts from the cylinder valve outlets.


B-5. Turn the pressure-adjusting screw of the regulator for the operating bank of cylinders to the left (counter-clockwise) one-eighth turn.

B-6. Adjust the bank of newly-connected cylinders for reserve services as described in paragraph III-A-7.

B-7. Slowly turn the pressure-adjusting screw of the regulator for the operating bank to the right (clockwise) until the line pressure gauge of the regulator indicates normal operating pressure.

NOTE: There must be some oxygen flow through the regulators while adjusting them. If oxygen is not being withdrawn from the distribution piping system, open a station valve and flowmeter, permitting oxygen to flow while adjusting the regulators.

PART IV. MAINTENANCE INSTRUCTIONS

Never use oxygen equipment that is in need of repair. For repair and replacement purposes, use only standard replacement parts as listed in this book. For repairs and replacements other than those mentioned below, communicate with the nearest office of Linde Air Products Company.

A. Repairing Leakage in Manifold Header or Valve

Should a leak develop in any of the soft soldered header connections, or should it be necessary to disassemble either manifold valve, close the service valve and release the pressure-adjusting screw of the regulator on the side of the manifold on which work is to be done. Close all cylinder valves and release pressure from the manifold header by loosening the connections between one of the cylinder leads and the header tee to which it is attached. After all pressure has been relieved (as shown by the header pressure gauge on the regulator), tighten this connection again. Then proceed as follows:

A-1. TO REPAIR A LEAK between soft soldered joints of the manifold, disconnect the union above the manifold valve and remove the header assembly in which the leak is found from the manifold. Thoroughly clean the leaky joint, making sure to remove all paint. Apply a coating of a good grade of soft solder flux and heat the joint to reflow the solder. If necessary, add more soft solder to the fillet. Care should be exercised so as not to melt adjacent soft soldered joints. Test all joints with a water solution of grease-free soap (such as Ivory soap) applied with a new or clean brush. (See paragraph 6 under ‘Installation Instructions.’)

A-2. TO REPACK THE MANIFOLD VALVE, dismantle the valve as follows:

a. Loosen the packing screw and open the valve stem (turn the handwheel to the left) fully.

b. Unscrew the stuffing box from the valve body.
c. Screw in the valve stem (handwheel) until the valve tip can be removed. Then remove the tip.

d. Unscrew the packing screw from the stuffing box.

e. Unscrew the valve stem (handwheel) from the stuffing box.

f. Remove the cap nut, washer and handwheel.

g. Slide the packing screw, packing and washers off the valve stem.

h. Remove the gasket from the valve body.

A-3. REASSEMBLE THE VALVE

a. Place the valve packing between the packing washers and install this assembly and the packing screw on the valve stem.

b. Attach the handwheel, washer, and cap nut to the valve stem.

c. Screw the valve stem into the stuffing box and push the washers and packing into the stuffing box.

d. Loosely screw the packing screw into the stuffing box.

e. Insert a new gasket in the recess in the valve body. Always replace the gasket you remove with another of the same type. (See Fig. 4.)

f. Attach the valve tip to the valve stem and back out the valve stem as far as possible.

g. Assemble the stuffing box and valve stem assembly to the valve body.

h. Tighten the packing screw very tight with a crescent or monkey wrench; then back it off just enough so that the valve handle turns readily. After this is done, there is no further need to adjust the packing screw unless tests show leakage.

A-4. TEST THE VALVE

With normal pressure at the valve, and with the valve open, test for leakage around the threads of the stuffing box and the packing nut. Also test for leakage around the valve stem. Use only a water solution of grease-free soap (such as Ivory) applied with a new or clean brush.

Usually the initial adjustment will serve for the life of the valve. Where the valve is subject to wide temperature variations, it may be necessary to tighten the packing nut under colder conditions to effect a seal, or to release the packing nut slightly so that the handle may be readily turned under warmer conditions.
B. Removal of Regulator for Repair

B-1. Close the service valve (on the low-pressure shutoff valve block) nearest the regulator to be removed.

B-2. Close the manifold valve on the bank controlled by the regulator to be removed.

B-3. The regulator to be repaired may now be removed by detaching the regulator head from the low-pressure shutoff valve block and from the regulator outlet, and then by backing off the inlet nut from the regulator connection tee on the yoke assembly. The adjusting screw of this regulator should now be released (turn it to the left -- counter-clockwise -- until it turns freely).

B-4. Attach the dust plug to the low-pressure shutoff valve block where the regulator lead was removed.

To reinstall the regulator, proceed as follows:

B-5. Install the regulator as described in Part I Installation Instructions, paragraph 5.

B-6. Open the service valve and the manifold valve closed in steps B-1 and B-2.

B-7. Turn the pressure-adjusting screw of the regulator for the operating bank to the left (counter-clockwise) one-eighth turn.

B-8. Adjust the reinstalled regulator for reserve service as described in paragraph III-A-7.

B-9. Slowly turn the pressure-adjusting screw of the regulator for the operating bank to the right (clockwise) until the line pressure gauge of the regulator indicates normal operating pressure.

NOTE: For repair and maintenance instructions for the R-64 or R-65 Regulator, refer to the booklet packed with the regulator:

F-3224 Instructions and Parts List for OXWELD R-64 Oxygen Regulator; F-3225 Instructions and Parts List for OXWELD R-65 Oxygen Regulator.

C. To Set Relief Valves

The M-5-3 Manifold is equipped with two quick-acting relief valves, one for each bank, on the low-pressure shutoff valve block. They are preset at the factory to relieve at a pressure of 75 lb. per sq. in. for a normal operating pressure of 50 lb. per sq. in. on the supply system.

Where installations require an operating pressure greater than 50 lb. per sq. in., the relief valves should be reset to begin relieving at a pressure 50 percent greater than the operating pressure. Adjustment of the relief valves should be performed as follows:

C-1. Close the service valve for the reserve bank of cylinders.

C-2. Loosen the adjusting nut of the relief valve for the reserve bank. Turn the nut slightly to the left (counter-clockwise).

C-3. Turn the adjusting screw to the right (clockwise) until it just bottoms.

C-4. Turn the pressure-adjusting screw of the regulator for the reserve bank to the right (clockwise) until the line pressure gauge of the regulator registers a pressure 50 percent greater than the desired system supply pressure.

C-5. Slowly turn the relief valve adjusting screw to the left (counter-clockwise) until oxygen starts to vent from the outlet ports. Use soapy water (Ivy soap only) about the ports to determine when the oxygen starts to vent.

C-6. Tighten the relief valve adjusting nut (turn it to the right -- clockwise) against the valve body to fix the setting.

C-7. Release the pressure-adjusting screw (turn it left -- counter-clockwise -- until it turns freely) of the regulator for the reserve bank.

C-8. Open the service valve for the reserve bank of cylinders. The pressure registering on the line pressure gauge of the regulator will escape into the service line.

C-9. Put the reserve bank into operation. Turn the pressure-adjusting screw of the regulator to the right (clockwise) until the line pressure gauge hand starts to move slightly above the operating pressure.

C-10. Repeat steps C-1 to C-8 for the other bank of cylinders and set it for reserve service as described in paragraph III-A-7.

D. Cleaning of Filter Assembly

The filters are on this manifold to remove particles of scale or rust that may be carried from the cylinders to the regulator seats, thereby causing faulty regulation due to seat damage. Occasionally, it may become necessary to replace a filter unit that has become clogged. This condition will be indicated by a gradual drop in line pressure when the consumption rate of oxygen is high. If this occurs, observe the cylinder pressure gauge. When the consumption rate is being increased, the gauge reading will probably decrease quite rapidly. When the consumption is decreased, the gauge reading will probably increase slightly.

To replace the filter unit, remove the body plug, sealing gasket, spacer and adaptor spring. Carefully pull out filter and replace with a new unit. These units are made of fine granules of metal shot molded together under heat; and pressure and when they once become clogged, cannot be cleaned. Replace the spring and spacer, install a new filter body gasket and retighten body plug. Test plug for leakage, using a water solution of grease-free soap (such as Ivory soap) applied with a new or clean brush.

(Continued on Page 10.)
FIG. 3 - PRINCIPAL PARTS FOR "OXWELD" M-5-3 OXYGEN MANIFOLDS
## REPLACEMENT PARTS

**FOR**

"OXWELD" M-5-3 OXYGEN MANIFOLD — PART NO. 21X37
(Equipped with OXWELD R-64 Regulators);

"OXWELD" M-5-3 OXYGEN MANIFOLD — PART NO. 21X38
(Equipped with OXWELD R-65 Regulators)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>410 6</td>
<td>Dust Plug Nut (Included in 10Y02)</td>
<td>45A25 C</td>
<td>Dust Plug Washer (Included in 10Y02)</td>
</tr>
<tr>
<td>3508</td>
<td>Hex Nut (12 Used) (Also 2 Included in 4306)</td>
<td>53A61</td>
<td>Ball (Included in 18X30)</td>
</tr>
<tr>
<td>4108 C</td>
<td>Header Yoke Elbow (Included in 4670)</td>
<td>72A16</td>
<td>Valve Ball (Included in 56Y09)</td>
</tr>
<tr>
<td>4111 C</td>
<td>Union Stud Nut (Included in 4670 and (2) included in 4671)</td>
<td>73A20 A</td>
<td>U-Bolt (Included in 4306)</td>
</tr>
<tr>
<td>4112 C</td>
<td>Union Stud (Included in 4670 and (2) included in 4671)</td>
<td>03X91 C</td>
<td>R-64 Oxygen Manifold Regulator (2 Used) (21X37 Manifold Only) (For Parts Information Refer to Booklet F-3224 Packed with the Regulator)</td>
</tr>
<tr>
<td>4135 C</td>
<td>Safety Cross Plug (Included in 4175)</td>
<td>03X92</td>
<td>R-65 Oxygen Manifold Regulator (2 Used) (21X38 Manifold Only) (For Parts Information Refer to Booklet F-3225 Packed with the Regulator)</td>
</tr>
<tr>
<td>4136 C</td>
<td>Safety Cross Plug Nut (Included in 4175)</td>
<td>18X30 L</td>
<td>Check Valve Adaptor (10 Used) (Includes 38A72, 40A44, 53A81 and 29231)</td>
</tr>
<tr>
<td>4152 C</td>
<td>Straight Anti-Friction Manifold Lead Assembly (10 Used) (Includes (2) 38229)</td>
<td>21X39 L</td>
<td>Valve Block Assembly (Includes (2) 33Y06, (2) 56Y09, 70267, M-BU-P-16 and (2) M-BU-P-B-9</td>
</tr>
<tr>
<td>4159 C</td>
<td>Chain for Safety Cross Plug (Included in 4175)</td>
<td>05Y06 C</td>
<td>Dust Plug Chain (Included in 10Y02)</td>
</tr>
<tr>
<td>4164 C</td>
<td>Ring for Safety Cross Plug Chain (Included in 4175)</td>
<td>10Y02</td>
<td>Dust Plug Chain and Ring Assembly (10 Used) (Includes 410, 4165, 32A28, 45A25, 05Y06, and S-D-PK-U-15) (5) Included in 4670) (See Note on page 10.)</td>
</tr>
<tr>
<td>4165 C</td>
<td>Safety Cross Plug and Chain Support Ring (Included in 4175 and 10Y02)</td>
<td>10Y57</td>
<td>Right-Hand Regulator Lead</td>
</tr>
<tr>
<td>4169 C</td>
<td>Header and Header Yoke Tube (Included in 4670 and (2) included in 4671)</td>
<td>10Y58</td>
<td>Left-Hand Regulator Lead</td>
</tr>
<tr>
<td>4175 C</td>
<td>Safety Cross Plug and Chain Assembly (Includes 4135, 4136, 4159, 4164, and 4165)</td>
<td>10Y59</td>
<td>Manifold to Regulator Inlet Adaptor (2 Used)</td>
</tr>
<tr>
<td>4203</td>
<td>Oxygen Regulator Outlet to Service Line Lead Adaptor (2 Used) (Includes (2) 6985)</td>
<td>33Y06 C</td>
<td>Valve Stem Assembly (2 Used) (Includes 78204) (Included in 21X39)</td>
</tr>
<tr>
<td>4210 C</td>
<td>V-4 Manifold Valve (2 Used) (See Valve Illustration for Parts)</td>
<td>50Y46</td>
<td>Manifold Filter Adaptor Assembly (Includes 28285, 31265, 71274, 71727, 77280, and 80253)</td>
</tr>
<tr>
<td>4248 C</td>
<td>T-Outlet Connection (2 Used) (Included in 4671)</td>
<td>56Y09 L</td>
<td>Relief Valve Assembly (2 Used) (Included in 21X39) (Includes 72A1B, 29240, 32278, 34271, 37Z245, 48Z36, 52223, and 83206)</td>
</tr>
<tr>
<td>4305</td>
<td>Header Tube (4) (Included in 4670)</td>
<td>28Z85 L</td>
<td>Filter Spring (Included in 50Y46)</td>
</tr>
<tr>
<td>4306 C</td>
<td>U-Bolt Assembly (4 Used) (Includes (2) 3508 and 73A20)</td>
<td>29Z23 L</td>
<td>Vibration Damper (Included in 18X30)</td>
</tr>
<tr>
<td>4307 C</td>
<td>U-Bolt Liner (4 Used)</td>
<td>29Z40 L</td>
<td>Safety Valve Spring (Included in 56Y09)</td>
</tr>
<tr>
<td>4652 C</td>
<td>Header Yoke Tube (2 Used) (Included in 4671)</td>
<td>31Z65 C</td>
<td>Filter Body Cap (Included in 50Y46)</td>
</tr>
<tr>
<td>4658</td>
<td>Bracket (3 Used) (Supplied)</td>
<td>32Z78 L</td>
<td>Safety Valve Seat (Included in 56Y09)</td>
</tr>
<tr>
<td>4658 C</td>
<td>Pipe Plug (Included in 4670)</td>
<td>34Z71 L</td>
<td>Safety Valve Adjusting Screw (Included in 56Y09)</td>
</tr>
<tr>
<td>4664 C</td>
<td>T-Inlet Connection (5) (Included in 4670)</td>
<td>37Z45 L</td>
<td>Safety Valve Adjusting Nut (Included in 56Y09)</td>
</tr>
<tr>
<td>4670 C</td>
<td>Header Assembly (2 Used) (Includes 4108, 4111, 4112, 4169, (4) 4305, 4661, (5) 4664, and (5) 10Y02)</td>
<td>38Z22 C</td>
<td>Straight Anti-Friction Manifold Lead Snap Ring (2 Used) (Included in 4.52)</td>
</tr>
<tr>
<td>4671 C</td>
<td>Yoke Assembly (Includes (2) 4111, (2) 4112, (2) 4169, (2) 4248, (2) 4652, 4673, and (2) 50Y46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4673 C</td>
<td>Coupling (Included in 4671)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6985 C</td>
<td>Washer (2 Used) (Included in 4203)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32A28 C</td>
<td>Dust Plug Nipple (Included in 10Y02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38A72 C</td>
<td>Ball and Spring Locking Screw (Included in 18X30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40A44 C</td>
<td>Spring (Included in 18X30)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Part No. 32278 replaces old-style valve seat Part No. 32274.
The new-style seat does not require the spring and washers used with the old-style seat. If replacing old-style seat spring and washers only, order; 29241 Spring; 82221 Slip Ring; 82223 Backup Spring Washer. Do not order the old-style seat 32274 - replace it with Part No. 32278.

(Parts List Continued on Page 10.)
(Continued from Page 9.)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>48Z36</td>
<td>Safety Valve Seat Holder (Included in 56Y09)</td>
<td>82223</td>
<td>Safety Valve Ball Retainer (Included in 56Y09)</td>
</tr>
<tr>
<td>70Z67</td>
<td>Valve Block Body (Included in 21X39)</td>
<td>83206</td>
<td>Safety Valve Body (Included in 56Y09)</td>
</tr>
<tr>
<td>71Z47</td>
<td>Filter (Included in 50Y46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77Z79</td>
<td>Filter Adaptor Body Gasket (Included in 50Y46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77Z80</td>
<td>Filter Adaptor Body Spacer (Included in 50Y46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78Z04</td>
<td>Valve Packing Washer (Included in 33Y06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78Z52</td>
<td>Anti-Friction Compound</td>
<td>71Z52</td>
<td>No. 86 Wrench (Supplied)</td>
</tr>
<tr>
<td>80Z53</td>
<td>Filter Adaptor Body (Included in 50Y46)</td>
<td>68Z04</td>
<td>No. 129 Wrench (Supplied)</td>
</tr>
<tr>
<td>82221</td>
<td>Safety Valve Sealing Washer (Included in 56Y09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>82222</td>
<td>Safety Valve Backup Spring Washer (Included in 56Y09)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HARDWARE

All the items which follow are either:

a. Standard hardware (screws, bolts, nuts, washer, pipe fittings, etc.) made by many manufacturers, which can be purchased locally by the description given, or

b. Standard parts or assemblies which we purchase complete from specific manufacturers. For these we give the manufacturer’s name, catalog number, etc.

It will save you time and money to purchase these items through local outlets, or directly from the specified manufacturer. If no other source of supply is available, you may order these from us.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-H-3</td>
<td>3/8-in.—16 Hex Nut (2 Used)</td>
<td>S-D-PK-U-15</td>
<td>No. 6 x 3/8-in. Parker-Kalon Type</td>
</tr>
<tr>
<td>M-BU-P-16</td>
<td>1-1/4-in. x 1/2-in. Galvanized Reducing Bushing</td>
<td></td>
<td>&quot;U&quot; Drive Screw (Included in 10Y02)</td>
</tr>
<tr>
<td>M-BU-P-19</td>
<td>3/4-in. x 1/4-in. Outside Hex Brass Bushing (2 Used) (Included in 21X39)</td>
<td>S-H-35</td>
<td>5/16-in.—18 x 1-in. Hex Head Cap Screw (12 Used)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S-H-65</td>
<td>3/8-in.—16 x 1-in. Hex Head Cap Screw (2 Used)</td>
</tr>
</tbody>
</table>

**NOTE:** Instead of 10Y02, Part No. 10Y12 which includes all parts listed for 10Y02 except Ring, Part No. 4165, may be ordered if desired.

(Continued from Page 7.)

**PART V. GENERAL PRECAUTIONS**

A. Oxygen manifolds do not need lubrication. DO NOT USE OIL OR GREASE on any part of the manifold, including the regulators and valves. Oil and grease, if subjected to oxygen under pressure, may ignite and burn with explosive violence.

B. Never attempt to perform any repair on the manifold or regulators unless all pressure in the bank to be repaired has been released.

C. Both manifold valves should be left open at all times except when used as an emergency shut off. Both service valves on the low-pressure shutoff valve block should be left open at all times except when one of the regulators is to be removed.

D. Always call oxygen by its proper name —"oxygen." Oxygen should never be called "air" and should never be confused with compressed air.

E. Never use oxygen for compressed air, or as a source of pressure. Oxygen should never be used in pneumatic tools, in oil preheating burners, to start internal combustion engines, to blow out pipe lines, to "dust" clothing or work, or for head pressure in a tank of any kind.
FIG. 4 - PARTS FOR "OXWELD" V-4 OXYGEN MANIFOLD VALVE

* Earlier models of the V-4 Valve have a tinned copper gasket. The tinned copper gasket must be replaced with a similar gasket Part Number 4219.

** On old style valves having a spoked packing screw, it is desirable to replace the spoked packing screw with the new hexagonal screw. This should be done so that a wrench can be used to tighten the screw sufficiently to compress the new packing material.

REPLACEMENT PARTS FOR "OXWELD" V-4 OXYGEN MANIFOLD VALVE

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4212</td>
<td>Body</td>
</tr>
<tr>
<td>4213</td>
<td>Valve Tip</td>
</tr>
<tr>
<td>4214</td>
<td>Handle</td>
</tr>
<tr>
<td>4215</td>
<td>Valve-Packing Screw</td>
</tr>
<tr>
<td>4216</td>
<td>Valve-Packing Washer</td>
</tr>
<tr>
<td>4217</td>
<td>Valve Packing</td>
</tr>
<tr>
<td>4222</td>
<td>Handle Washer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4223</td>
<td>Cap Nut</td>
</tr>
<tr>
<td>4225</td>
<td>Stuffing Box</td>
</tr>
<tr>
<td>4226</td>
<td>Valve Stem</td>
</tr>
<tr>
<td>78285</td>
<td>Stuffing Box Gasket (Plastic) (For Valves originally supplied with a tinned copper gasket, order copper gasket Part No. 4219)</td>
</tr>
</tbody>
</table>
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 PUXOX 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
HELARC 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

ORGANOSILICONS
LINDE Silane Monomers Polysiloxane Polymers and Resins


LINDE AIR PRODUCTS COMPANY
A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

General Office
30 East 42nd Street, New York 17, N. Y.

Eastern States
BOSTON 16, MASS.
411 Stuart Street
BUFFALO 2, N. Y.
230 Delaware Avenue
CHARLESTON 1, W. VA.
2 Virginia Street
NEW YORK 17, N. Y.
205 East 42nd Street
PHILADELPHIA 22, PA.
1421 North Broad Street
PITTSBURGH 19, PA.
312 Ross Street

Central States
CHICAGO 3, ILL.
230 North Michigan Avenue
CINCINNATI 29, OHIO
709 Matlach Avenue
CLEVELAND 14, OHIO
1513-17 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 9, MO.
4229 Forest Park Boulevard

Southern States
ATLANTA 5, GA.
310 Peachtree Street, N. E.
BIRMINGHAM 5, ALA.
1001-13 South 22nd Street
JACKSONVILLE 3, FLA.
2410 Dennis Street
MEMPHIS 5, TENN.
48 West McLemore Avenue
NEW ORLEANS 13, LA.
620-32 Howard Avenue

Southwestern States
DALLAS 1, TEXAS
2626 Commerce Street
DENVER 9, COLO.
625 South Broadway
HOUSTON 11, TEXAS
6319 Harrisburg Boulevard
KANSAS CITY 6, MO.
910 Baltimore Avenue
TULSA 3, OKLA.
634 National Bank of Tulsa Bldg.

Western States
EL PASO, TEXAS
810 Texas Street
LOS ANGELES 58, CALIF.
2724 Los Angeles Boulevard
PHOENIX, ARIZ.
401 East Buchanan Street
PORTLAND 9, ORE.
1200 Northwest Marshall Street
SALT LAKE CITY 1, UTAH
362 Patton Avenue
SAN FRANCISCO 6, CALIF.
22 Battery Street
SEATTLE 4, WASH.
2901 First Avenue, South
SPOKANE 12, WASH.
2023 West Maxwell Avenue

In Canada
Dominion Oxygen Company, Limited
TORONTO • MONTREAL
WINNIPEG • VANCOUVER

Linde

LINDE AIR PRODUCTS COMPANY
A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

In Canada
DOMINION OXYGEN COMPANY, LIMITED, TORONTO

Lithographed in U.S. A.
F-9233-A IMC J-2101-51

JUL 6 1951