INSTRUCTIONS and PARTS LIST
for
Oxweld

L-23 (SERIES 3)
ARGON FLOWMETER

L-28 (SERIES 3)
HELIUM FLOWMETER

IMPORTANT: The L-23 Flowmeter is for use with argon supplied at a constant pressure of 20 lb. per sq. in. (plus or minus 1 lb. per sq. in.). The L-28 Flowmeter is for use with helium supplied at the same pressure. The pressure must be kept constant at 20 lb. per sq. in. on the upstream side (pipeline or regulator side) of the flowmeter to assure accurate readings on the calibrated scale of the flowmeter.

I. OPERATING INSTRUCTIONS

A. To Connect the Flowmeter

DO NOT GRASP THE FLOWMETER BY THE PLASTIC TUBE GUARD OR USE THE TUBE GUARD AS A HANDLE.

L-23 FLOWMETER
1. When argon is supplied from an individual cylinder, Attach the L-23 Flowmeter to the outlet connection of the argon (oxygen) regulator. Position the regulator on the cylinder so that the flowmeter can be connected in a vertical position.

If the welding torch is not equipped with a shut-off valve for on and off operation, the L-23 should be attached to the argon outlet connection of an Oxweld V-30 Argon-Water Shutoff Valve (16X21), using a 90-deg. Adaptor (18X55) for connection in a vertical position. Connect the argon inlet connection of the V-30 Valve to the regulator with 1/4-in. oxygen hose.

2. When argon is supplied from a pipeline, Open the station valve momentarily to blow out any dust or dirt that might otherwise clog the flowmeter filter. Then connect the L-23 to the outlet of the station valve. (The Oxweld V-9 Valve is recommended.) If preferred, the L-23 may be connected on the outlet side of a V-30 Valve, which in turn is connected to the station valve.

3. Attach the torch argon hose to the outlet connection of the L-23.

4. Tighten the connection nut with a wrench.

L-28 FLOWMETER
1. Attach the L-28 Flowmeter to the outlet connection of a helium (hydrogen) regulator, such as the Oxweld R-67 Two-Stage Hydrogen Regulator. (Note that the L-28 has a left-hand inlet

Be sure this information reaches the operator. You can get extra copies through any Linde office.
nut.) Position the regulator on the cylinder so that the flowmeter can be connected in a vertical position.

2. Connect the outlet of the L-28 to the torch, or to the shutoff control valve (such as the OXWELD V-30 Valve), using hose equipped with standard "B"-size acetylene fittings at the flowmeter end.

B. To Adjust the Flow

All changes in flow must be made by adjustment of the flowmeter flow-adjusting valve. TO INCREASE FLOW, turn the valve handle to the left (counterclockwise). TO DECREASE FLOW, turn the valve handle to the right (clockwise).

1. Open the L-23 flow-adjusting valve about a quarter of a turn. Then turn in the pressure-adjusting screw of the regulator until the regulator delivery-pressure gauge reads exactly 20 lb. per sq. in.

2. Adjust the flowmeter flow-adjusting valve until the flowmeter float indicates the exact flow desired. Always read the scale across the top of the ball float.

NOTE: Former designs of flowmeters operated on a variable upstream pressure and constant downstream pressure. The L-23 and the L-28 work on a constant upstream and variable downstream pressure. Therefore, it is not necessary to make correction of readings for back-pressure on the downstream side, such as might be created by restrictions in torch passages or by long lengths of hose.

CONVERSION TABLE

Argon flow is sometimes specified in terms of liters per minute. The conversion table following, permits quick conversion of the flowmeter scale reading into liters per minute.

<table>
<thead>
<tr>
<th>L-23 Flowmeter</th>
<th>EQUIVALENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale Reading</td>
<td>IN</td>
</tr>
<tr>
<td>cu.ft. of Argon</td>
<td>liters per minute</td>
</tr>
<tr>
<td>per hr.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>5</td>
<td>2.4</td>
</tr>
<tr>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>20</td>
<td>9.4</td>
</tr>
<tr>
<td>30</td>
<td>14.1</td>
</tr>
<tr>
<td>40</td>
<td>18.9</td>
</tr>
<tr>
<td>50</td>
<td>23.6</td>
</tr>
<tr>
<td>60</td>
<td>27.8</td>
</tr>
</tbody>
</table>

NOTE: A flow of 1 liter per minute is equivalent to a flow of 2.12 cubic feet per hour.

II. MAINTENANCE INSTRUCTIONS

For all replacements or repairs other than those mentioned below, the flowmeter should be sent to the nearest apparatus repair station of Linde Air Products Company.

The specific repair information shown on the drawing is provided for experienced and qualified persons engaged in the repair of oxy-acetylene apparatus. Improperly repaired apparatus may be hazardous. Linde Air Products Company offers economical repair service through its district offices.

This flowmeter is designed so that it can be easily taken apart and put together again.

A. To Replace Parts Located Within Plastic (Outside) Tube

1. Hold the flowmeter upright in a vise by placing the flat sides of the body between wooden or fiber jaws.

2. Remove the screw and lock washer located in the flowmeter body at the base of the plastic tube. Unscrew the tube by hand and remove it from the flowmeter body.

3. Unscrew the gland (82Z43)® (A special wrench (Tool No. 522065) designed for this purpose is available from LINDE.) Lift out the calibrated tube, gland, and sealing washer (78Z60). Slide the gland and washer off the calibrated tube.

4. With one hand, tilt the flowmeter carefully, to permit the ball float and screens (05Z38) to drop into the other hand. Be sure all 5 screens drop out.

5. Examine all parts, and discard any that are worn or damaged.

6. To reassemble the parts, first insert the screens (5), carefully fitting them into place. Slide the gland over the bottom end of the calibrated tube with the small diameter of the gland toward the...

(Continued on Page 4.)

*NOTE: The unthreaded gland (77Z70) and longer outside tube (27Z60) used in Series 1 and 2 (the first digit of the serial number is the series number) flowmeters, are no longer available. Replacement of either of these parts requires the installation of both (gland and tube) current parts (see parts picture) at a LINDE repair station.

The unthreaded gland can be lifted out on the end of the plastic tube, and is further distinguishable by eight small (1/16-in.) holes drilled in a circle through its upper surface. The threaded gland is locked into position and has two elongated slots in its upper surface.

The term "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.
# Replacement Parts List

FOR
L-23 (SERIES 3) ARGON FLOWMETER (Part No. 21X24)
L-28 (SERIES 3) HELIUM FLOWMETER (Part No. 21X55)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3380 (L-23)</td>
<td>&quot;B&quot; Size Hose Connection Nut</td>
<td>78Z60</td>
<td>Sealing Washer (Included in 56Y08 and 55Y44)</td>
</tr>
<tr>
<td>3381 (L-28)</td>
<td>84W84</td>
<td>78Z62</td>
<td>Retainer (Included in 27Z84)</td>
</tr>
<tr>
<td>84W85</td>
<td>&quot;O&quot; Ring</td>
<td>80Z50</td>
<td>Body</td>
</tr>
<tr>
<td>85W37**</td>
<td>&quot;O&quot; Ring</td>
<td>82Z43*</td>
<td>Packing Gland</td>
</tr>
<tr>
<td>33Y48</td>
<td>&quot;O&quot; Packing Ring (Included in 33Y48)</td>
<td>92Z01**</td>
<td>Sleeve (Included in 33Y48)</td>
</tr>
<tr>
<td>55Y44 (L-23)</td>
<td>Flow-Adjusting Valve Stem Assembly (Includes 85W37 and 92Z01)</td>
<td>71253</td>
<td>NOT ILLUSTRATED No. 87 Wrench</td>
</tr>
<tr>
<td>56Y08 (L-28)</td>
<td>Calibrated Tube Assembly (Includes 78Z15 and 78Z60)</td>
<td>03Z69</td>
<td>Inlet Nipple</td>
</tr>
<tr>
<td>05Z36</td>
<td>Screen</td>
<td>Part No.</td>
<td>Description</td>
</tr>
<tr>
<td>11Z01 (L-23)</td>
<td>Outlet Connection</td>
<td>61700087</td>
<td>1/4-20 x 1/2 in. Lg. Phillips Fillister Head Brass Machine Screw</td>
</tr>
<tr>
<td>11Z02 (L-28)</td>
<td>External Transparent Tube (Includes 52Z34 and 78Z62)</td>
<td>61700851</td>
<td>No. 6 - 32 x 3/8 in. Lg. Fillister Head Steel Machine Screw</td>
</tr>
<tr>
<td>27Z84</td>
<td>Bumper (Included in 27Z84)</td>
<td>61700878</td>
<td>No. 8 - 32 x 3/8 in. Lg. Fillister Head Steel Machine Screw</td>
</tr>
<tr>
<td>52Z34</td>
<td>Inlet Nipple Flange</td>
<td>64303938</td>
<td>1/4 in. Shakeproof Lockwasher Type 12 Cat. No. 1214</td>
</tr>
<tr>
<td>78Z15</td>
<td>Ball Float (Included in 56Y08 and 55Y44)</td>
<td>78Z60</td>
<td>Sealing Washer (Included in 56Y08 and 55Y44)</td>
</tr>
</tbody>
</table>

* See Note on Page 2.
** These parts cannot be installed in Series 1 Flowmeters unless the flowmeter body has been previously counter-bored at a LINDE repair station to receive the "O" ring.
(Continued from Page 2)

7. Position the calibrated tube in the flowmeter so that the calibrations are in line with the flow-adjusting valve. Tighten the gland, but do not use excessive force.

8. Drop the ball float gently into the tube from the top.

9. Place the "O" ring on the plastic tube and screw the tube into place, tightening it firmly by hand.

10. Replace the retaining lock washer and screw in the flowmeter body.

B. To Clean External Tube

Use only a mild solution of soap and water (or detergent and water) to clean the plastic external tube. Do not use organic solvents such as alcohol, carbon tetrachloride, and ether.

C. Valve Leakage

1. If the flow-adjusting valve will not shut off tight, turn the valve handle out all the way (counter-clockwise) and loosen the valve assembly packing nut using No. 87 Wrench (supplied with the flowmeter). The valve can then be screwed out by hand. Clean the seating surface with a clean cloth. If the seat is marred, the valve should be replaced. If the old valve assembly was packed with a plastic washer, the flowmeter must be sent to a LINDE repair station, where the body will be counterbored to receive the new "O" packing ring.

2. If a packing leak develops (around the outside threads) tighten the valve stem packing nut with a wrench (OXWELD No. 87). If this does not stop the leakage, remove the valve stem assembly and replace the "O" packing ring.

D. Testing for Leaks

When all repairs are complete, test all connections for leaks with soapy water. Proceed as follows:

1. Connect the L-23 to an argon regulator attached to a cylinder of argon. (Connect the L-28 to a hydrogen regulator attached to a cylinder of helium.) Close the flow-adjusting valve of the flowmeter and turn in the pressure-adjusting screw of the regulator until the gauge indicates a pressure of from 20 to 30 lb. per sq. in.

2. Test the regulator-to-flowmeter connection and the base of the flowmeter tube for leaks with soapy water.

3. Open the flow-adjusting valve of the flowmeter slightly and cap the flowmeter outlet or close it off with the finger. Test for leaks around the packing nut and stem of the flowmeter flow-adjusting valve.