INSTRUCTIONS for OXWELD
TRADE MARK

R-32
OXYGEN REGULATOR
AND
R-44
FUEL GAS REGULATOR
(FOR HYDROGEN AND METHANE)

Listed under Re-examination Service of Underwriters' Laboratories, Inc.
Approved and Listed by Factory Mutual Laboratories

R-32 Regulator

I. Operating Instructions

The instructions contained in this booklet are for experienced operators. They assume that the operator knows the general principles of operation and safe practices to be followed in operating oxy-acetylene equipment. If you are not sure that you understand these principles fully, we urge you to read Linde's booklet "Precautions and Safe Practices," in addition to these instructions. You can get a copy of "Precautions and Safe Practices" (F-2035) without charge from any Linde office. (The same basic information on operating principles and safe practices is also found in Chapters 5, 6, and 7 of "The Oxy-Acetylene Handbook." This handbook of more than 500 pages contains many valuable chapters on welding, cutting, and other uses of oxy-acetylene welding equipment. It may be purchased from any Linde office or from any Linde Distributor.)

While intended primarily for use with manifolds, the R-32 and R-44 may also be employed as line or cylinder regulators. A filter must always be installed ahead of the R-32, and is also recommended for use with the R-44. When the regulators are used with a manifold or cylinder, filter 20X75 is required for the R-32 and filter 20X76 is recommended for the R-44. When employed as line regulators, both the R-32 and R-44 use filter 22X06. See Fig. 1 and 2 for illustration of connections for various types of installations.

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

1. Before connecting the regulator to a manifold, open the valve of one or more cylinders connected to the manifold; then open the manifold valve slightly, for only an instant, to blow dust or dirt from the manifold header.

IMPORTANT: Hydrogen will sometimes ignite spontaneously upon expading into the atmosphere. Therefore, "cracking" the cylinder valve, as commonly practiced with other gases is generally avoided with hydrogen cylinders. If cracking of the valve is deemed necessary, be ready to close the valve immediately in case spontaneous ignition should occur.

2. Attach the regulator to the manifold yoke and to the outlet block by means of the regulator lead of the manifold.

3. Make sure the regulator pressure-adjusting screw is released by turning it to the left (counter-clockwise) until it spins freely.

4. Open the manifold valve slowly a fraction of a turn, then open it fully. Do not stand directly in front of the regulator gauges when opening the manifold valve and do not open fuel gas manifold valves near welding or cutting work, or near sparks, flames or any possible source of ignition.

5. Make sure that all connections are gas-tight.

B. To Adjust Pressure

Open the service valve above the manifold. Turn the pressure-adjusting screw to the right (clockwise) until the delivery pressure gauge indicates the desired pressure.

C. Operating Hints

1. Do not turn the pressure-adjusting screw to the left (counter-clockwise) to decrease the delivery pressure except when oxygen or fuel gas is being drawn from the piping system.

2. When the work is stopped and the manifold is to remain idle with pressure in the piping system, close the manifold valve and cylinder valves but leave the regulator pressure-adjusting screw in its normal operating position — that is, do not turn it to the left. (Note that this is contrary to the practice usually employed when regulators are used on cylinders.) If the pressure-adjusting screw is in the operating position, the pressure-adjusting spring will counterbalance the oxygen or fuel gas pressure against the diaphragm.

NOTE: If the regulator delivers oxygen or fuel gas to a hose, or to a piping system in which the pressure is reduced to zero when work is stopped or the manifold is idle, the manifold valve and cylinder valves should be closed, the pressure released from the hose or piping system, and the regulator pressure-adjusting screw released by turning it to the left (counter-clockwise).

3. Before disconnecting the regulator from a manifold or cylinder, close the manifold valve or cylinder valve and release the pressure in the regulator.

II. Maintenance Instructions

For all repairs and replacements other than those mentioned below, send the apparatus to the nearest Linde repair station or Linde Distributor. The specific repair information shown on the drawing is provided for experienced and qualified persons engaged in the repair of this apparatus. Improperly repaired apparatus may be hazardous. Economical repair service is offered through Linde Region Offices or through your nearest Linde Distributor.

A. To Disassemble the Valve Unit

1. Hold the regulator body in a vise, on the pads provided. Unscrew the regulator cap. When the cap is removed the following parts may be removed: Pressure-adjusting spring, pressure-adjusting spring cap, diaphragm ring, and diaphragm assembly.

2. Remove the complete valve assembly by unscrewing the valve seat clamping screw with a suitable socket wrench.

(Continued on Page 5.)
How To Order Replacement Parts

The drawing below shows all replacement parts for the R-32 and R-44 regulators (Part Nos. 6481 and 9040). To order, identify the required parts from the drawing and specify by part number.
FIG. 1 – Connection Sketch – R-32 Regulator

FIG. 2 – Connection Sketch – R-44 Regulator
3. Hold the valve seat clamping screw in a vise and unscrew the stem. Do not grip the stem; use the screwdriver slot provided. Examine the valve seat and the portion of the stem which closes against the valve seat. Compare the stem with a new stem to see whether it has been bent, or stretched due to leakage. Also compare the valve spring with a new spring to see whether it has acquired a permanent set. Replace the seat (always) and any other marred or deformed parts.

4. Check the friction drag on the stem guide by inserting it in its normal position in the valve seat clamping screw. The pressure of the stem guide drag sleeve fingers should be just sufficient to hold the weight of the stem guide when the seat clamping screw is inverted. The stem guide should slide free if the seat clamping screw is given a slight shake. If it is necessary to increase the pressure of the stem guide drag sleeve fingers to obtain proper friction drag insert a small screwdriver between the fingers and the side wall of the nipple, bending in each finger slightly making sure to bend all fingers the same amount.

B. To Reassemble the Valve Unit

1. Hold the valve seat clamping screw in a vise.

2. Place the valve spring in the valve stem guide and place the new valve seat on the face of the valve seat clamping screw.

3. Screw the valve stem into the valve stem guide taking care not to bend the stem. Do not grip the head of the stem; use a screwdriver in the slot provided.

4. Screw the valve unit tightly into the regulator body with a socket wrench.

C. Valve Unit Test

1. Connect the regulator to a full cylinder by means of an adaptor (see parts drawing) and open the cylinder valve slowly. Stand to one side of the regulator — not directly in front of it when opening the cylinder valve. Test the valve unit for leaks around the valve stem clamping screw and valve stem guide with soapy water (use Ivory soap only). If the valve leaks, close the cylinder valve and remove the valve unit by unscrewing it with a socket wrench.

D. To Reassemble the Regulator

1. If the diaphragm assembly and diaphragm ring are in good condition when the regulator cap is removed, just wipe them with a clean rag and proceed with the reassembly and testing of the regulator as described below.

2. If the diaphragm is marred: Unscrew the diaphragm locking screw from the diaphragm plate.

   Remove the diaphragm and diaphragm plate washer. Replace the worn diaphragm with a new one. Assemble the diaphragm, washer, and plate to the diaphragm locking screw.

3. Place the diaphragm assembly, then the diaphragm ring in the regulator cap.

4. Place the pressure-adjusting spring on the diaphragm plate. Place the pressure-adjusting spring washer assembly on top of the spring.

5. Screw the cap on the regulator and tighten with a wrench.

6. Replace the pressure-adjusting screw.

7. Attach the regulator to a full cylinder by means of an adaptor.

8. Open the cylinder valve slowly and test for leaks with soapy water (use Ivory soap only) at the outlet connection and the cap threads. In the event that no leakage is evident from the outlet connection, check for leakage around the cap threads and vent holes by plugging the outlet and increasing the delivery stage pressure until the delivery pressure gauge reads 50 pounds per square inch.

TO REPLACE THE SAFETY RELEASE DISK IN THE R-32 OXYGEN REGULATOR — Unscrew the safety release cap and remove the two fiber washers and the disk. Wipe clean the faces of the fiber washers, place a standard safety release disk (never more than one) between the fiber washers and reassemble. Tighten the safety release cap snugly but do not use excessive force which might distort the disk.

Do not use oil on this apparatus. Oil and grease are easily ignited and burn violently in the presence of oxygen under pressure.