

L-32 FLOWMETER



These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for gas regulation equipment, we urge you to read our booklet "Precautions and Safe Practices for Arc Welding, Cutting and Gouging," Form 52-529. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information.

I. DESCRIPTION AND SPECIFICATIONS

The L-32 flowmeter (P/N 639751) is calibrated to operate with an upstream (inlet) pressure of 50 psig \pm 1 and to meter four different gases in cubic feet per hour (cfh): argon, helium, nitrogen, carbon dioxide, and C-25 (75% argon - 25% carbon dioxide). Each of the four faces of the square plastic tube has a calibrated scale for one of the above gases. The tube can be rotated by hand in either direction so that any scale can be read from a convenient position. The flow readings are accurate within \pm 5% of the maximum calibrated scale reading for each gas. The range of each calibrated scale is as follows:

Argon	10 to 70 CFH
Helium	0 to 220 CFH
Nitrogen	0 to 80 CFH
CO ₂ /C-25	10 to 65 CFH

The L-32 is equipped with standard "B"-size inert gas connections (5/8-in.— 18 R.H. threads, male inlet and female outlet). The L-32 will connect directly to the latest manufactured inert gas or carbon dioxide regulators. If pipeline installation is desired, install a suitable commercially cleaned shut-off valve and a 1/4-in. NPT (male) x "B" inert gas (female) connection (P/N 74S76) for each L-32 flowmeter to be used.

Also available for pipeline installations are L-32 and CO₂ flowmeters with 1/4-in. NPT female connections (P/N's 639749 and 998843, respectively). The CO₂ flowmeter is calibrated for 80 psig which reduces "freeze-up" possibilities of CO₂ at high flows (up to 85 cfh).

Accessory: Flowmeter Guard, P/N 17459 - Tough plastic guard mounts over the calibrated tube for greater protection from rough handling in service.

II. PRESSURE AND FLOW CONVERSIONS

If operating at pressures other than 50 psig you will not be reading the actual rate from the scale. The true flow rate is determined by multiplying the indicated flow reading by the pressure correction factor (see table).

Example: If you are operating a 50 psig calibrated L-32 flowmeter from a 30 psig pipeline and you are reading 40 cfh from the flowmeter scale, the actual flow rate is 40 x 0.83 - 33.2cfh.

Other Conversions:

- To convert flow to liters per minute (L/min) multiply indicated flow reading by 0.47.
- The CO₂/C-25 scale is actually calibrated for CO₂. Actual C-25 flow is 1.036 greater than the scale reading. For inert gas mixtures other than the C-25, consult your gas supplier for the conversion factor that will apply to one of the calibrated scales.

Inlet Pressure psig	Pressure Correction Factor 50 psig Calibrated Flowmeter
10	0.62
20	0.73
30	0.83
40	0.92
50	—
60	1.07
70	1.14
80	1.21
90	1.27
100	1.33

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





WARNING

INERT GAS OR CARBON DIOXIDE can cause suffocation in confined spaces.

- Always work in well ventilated area.
- Prevent leaks.
- Do not change CGA inlet connection from number stamped on regulator body.
- Follow operating instructions on this sheet.
- This regulator must be installed, operated, and maintained only by trained servicemen.
- For complete safety information on welding and cutting equipment, read form 2035 (oxy-fuel gas) and 52-529 (arc welding). For safety information on gases, see your supplier.

III. INSTALLATION

Using Cylinder Gas: An inert gas or a carbon dioxide regulator must be used. The regulator should be equipped with a delivery pressure gauge graduated in increments of 1 or 2 psi so that the pressure to the flowmeter can be set to 50 psig \pm 1. Be sure to read the complete instructions packed with the regulator before connecting. Position the regulator so that the flowmeter will end up in a vertical position. Connect hose to the outlet connection of the flowmeter. Tighten all connections firmly with a wrench.

Using Pipeline Gas: Connect the flowmeter to regulator or station valve. Be sure to align the flowmeter in a vertical position. Connect delivery line to the flowmeter outlet connection and tighten all connections firmly with a wrench.

NOTE: If operating the flowmeter with solenoid valve operation and the solenoid valve must be located upstream, it is recommended to connect at least a 10ft. long, 5/16- or 3/8-in. I.D. hose between solenoid valve and flowmeter. The hose should cushion the sudden release of gas pressure when the valve opens to prevent breaking the glass metering tube and other parts.

IV. OPERATION

From Regulator:

1. Close the flowmeter valve and then SLOWLY open the cylinder valve.
2. Turn in the regulator pressure-adjusting screw until the regulator delivery pressure gauge reads 52 - 55 psig.
3. Open valve (torch or other gas-using device) downstream of the flowmeter.
4. Open flowmeter valve to the desired flow and re-adjust regulator to deliver exactly 50 psig. It may be necessary to manipulate both the regulator pres-

sure-adjusting screw and the flowmeter valve to get the exact pressure and flow conditions.

5. Close the downstream valve.

After setting up and before starting operations, test all connections for leakages using Leak Test Solution (P/N 998771) or a soap-and-water solution. Bubbling of the solution will indicate leakage and should be corrected before starting work.

From Pipeline:

1. If pipeline pressure is not delivering a pressure of 50 psig \pm 1 determine the desired flow by using the correction table on the front page. Correction factors for in between supply pressures can be interpolated.
2. With flowmeter valve closed, SLOWLY open the station valve.
3. Open valve (torch or other gas-using device) downstream of flowmeter and then open flowmeter valve and adjust to the corrected flow reading.
4. Close downstream valve and leak-test the entire set-up as described above.

V. MAINTENANCE

If equipment does not operate properly, stop work immediately and investigate the cause of the malfunction. Maintenance work must be performed by an experienced person. Do not permit untrained persons to inspect, clean, or repair this equipment. Use only recommended replacement parts.

Test for Leakage

Periodically, all joints of a flowmeter should be tested for leakage. Wipe the metal-to-metal seating surfaces of the inlet nipple and outlet connection with a clean grease-free cloth. Connect flowmeter as directed by the installation procedures, making sure flowmeter valve is closed, and apply at least 50 psig pressure to the flowmeter. Using Leak Test Solution (P/N 998771), or a soap-and-water solution, check flowmeter for leakage as follows:

1. Apply leak test solution on all flowmeter joints including the inlet connection. Also, place a film of leak test solution over the opening of the outlet connection. Leakage will be indicated by bubbling of the solution.
2. Close gas supply valve and open flowmeter valve to release all gas from flowmeter. If leakage was noted, have the flowmeter repaired. Wipe off the leak test solution thoroughly with a clean oil-free cloth.

Safety Relief Device

A safety relief device is mounted on top of the flowmeter which will pop and release gas in case of overpressure. It is not a resealable relief device. If the safety

relief device does pop, close the cylinder valve or inlet supply valve immediately. Gas remaining in the regulator will be released through the relief device. Have the regulator supplying the gas repaired and checked over thoroughly.

NOTE: The safety relief device is designed for protecting the flowmeter; not hose or equipment downstream.

General

The following are recommended for maintaining the L-32 in good working condition:

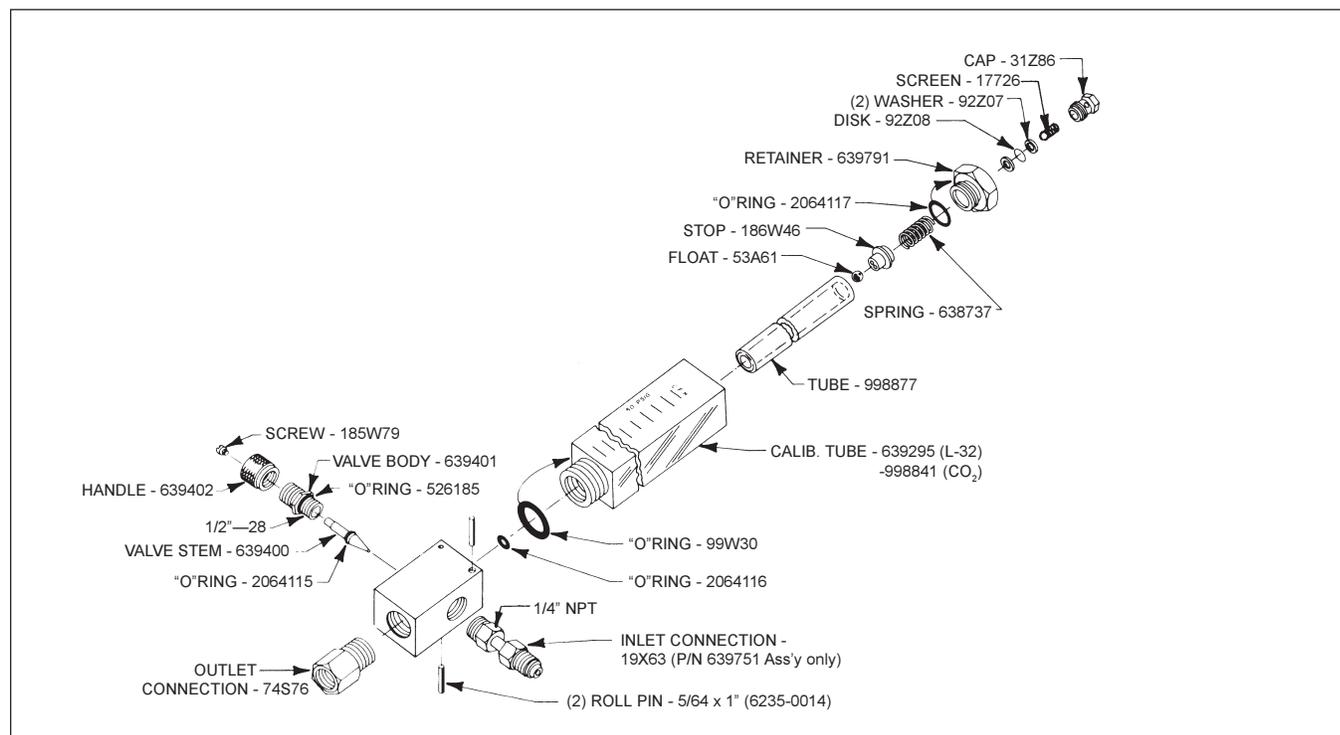
1. Replace "O"-rings periodically or whenever there are signs of leakages. Before installing new "O"-rings, lubricate lightly with silicone lubricant P/N 17672 (1 oz. tube).
2. Wipe the metal seating surfaces on the inlet and outlet connections (19X63 and 74S76). Replace if seats are scored. When replacing, apply a single turn of 1/4-in. wide Teflon tape on the male 1/4-in. NPT threads.
3. Clean the polycarbonate metering tube (998877) with water or alcohol and dry thoroughly. To remove

tube, unscrew hex retainer and remove spring. Carefully tilt the flowmeter to slide the tube out. Pull off the float stop (186W46) and remove ball float (ball should not pass through the bottom of the tapered tube). Make sure holes through float stop are clear.

4. Clean the calibrated plastic square tube with mild soap and water only and dry thoroughly. The tube is secured by two roll pins which can be driven out from either side.
5. Clean dirt, chips, or any other foreign matter from valve stem (639400) with alcohol or mild soap-and-water or wipe off with a clean lint-free, oil-free cloth.
6. The bursting-disk (92Z08) and the two washers (92Z07) should be replaced whenever the flowmeter is overhauled and, of course they must be replaced whenever the disk has ruptured due to overpressure. Handle the replacement disk carefully. It is a very thin copper foil that will crinkle easily. Use only one disk and it must be sandwiched between the two washers. Do not tighten the cap (31Z86) more than 20 in.-lbs.; overtightening may damage the disk.
7. Leak test the reassembled flowmeter as described above.

VI. REPLACEMENT PARTS

Replacement parts for L-32 flowmeter as currently manufactured are keyed in the illustration below. When ordering, supply both part number and description. **DO NOT ORDER BY PART NUMBER ONLY.** Parts can be ordered from your welding equipment distributor or from ESAB Welding & Cutting Products, Customer Service Department, Florence, SC.



L-32 Flowmeter Assembly with "B"-size (CGA-032) Male Inlet Connection - P/N 639751
L-32 Flowmeter Assembly with 1/4-in. NPT Female Inlet Connection - P/N 639749
CO₂ Flowmeter Assembly with 1/4-in. NPT Female Inlet Connection - P/N 998843

