

## INSTALLATION:

- A. Make certain all shipping plugs are removed from the inlet, outlet and vent of any regulator before installation.
- B. During product installation, do not clamp the valve body in a vice, this may lead to permanent damage rendering a ROOTS Regulator that is not fit for service.
- C. Keep the piping interior (inner diameter), ROOTS regulator inlet, and regulator outlet free of dirt, chemical sealant (pipe dope), Teflon tape, or other debris. Materials in piping or Roots regulator inlet or outlet creating a loss of pressure control.
- D. Apply a gas resistant pipe joint sealant on the male (exterior) pipe threads. Do not use any type of Teflon tape on ROOTS Regulator installations. Do not apply pipe joint sealant on the female (interior) pipe threads of the ROOTS Regulator as joint materials could lodge in the regulator creating a loss of pressure control.
- E. During product installation, use of excessive force and unsafe practices can lead to permanent damage rendering a ROOTS Regulator that is not fit for service. It is recommended to not exceed 3 full turns past hand tight into the ROOTS Regulator valve body per SAE standard AS71051. Do not use oversized pipe wrenches and/or "Cheater" bars during the installation of ROOTS Regulators which can damage valve body from an over torque situation.
- F. Gas must flow through the valve body of the regulator in the same direction as the arrow cast on the body, or the outlet side of the regulator may be over pressured and damaged.
- G. For CL regulators, the pilot diaphragm casing may be mounted in any position relative to the body through a full 360° angle.
- H. When the regulator is installed OUTDOORS, the Pilot vent must always be positioned so that rain, snow, moisture or foreign particles cannot enter the vent opening. It is recommended that the pilot vent be positioned to face downward to avoid entry of water or other matter which could interfere with the proper operation of the regulator. The pilot vent should be located away from building eaves, windows opening, building air intakes and above the expected snow level at the site. The vent opening should be inspected periodically to insure it does not become blocked by foreign material as outlined in DOT PHMSA-RSPA-2004-19856.
- I. When the regulator is installed INDOORS, the pilot vent must be piped to the outside atmosphere while using the shortest length of pipe, the least number of elbows, and having as large a pipe diameter as the vent size or larger. USING VENT PIPE ANY SIZE SMALLER THAN THE VENT CONNECTION WILL LIMIT THE PILOT'S INTERNAL RELIEF VALVE CAPACITY. The outlet end of the pipe must be protected from moisture and the entrance of foreign particles. The regulator should be specified by the user with the size vent and pipe threads desired to make the vent pipe connection.

## START-UP PROCEDURE

- A. A pressure gauge should be mounted downstream of the regulator to monitor the downstream pressure.

- B. With the downstream valve closed, SLOWLY open the inlet valve. The outlet pressure should rise to slightly greater than the set-point.
- C. Be sure there are no leaks, and all connections are tight.
- D. The regulator has been preset at the factory to match specifications given when it was ordered. The outlet pressure may be adjusted by removing the seal cap on top of the PILOT spring housing and adjusting the ferrule or screw inside the pilot spring housing using a large flat-head screwdriver. With a small amount of gas flowing through the regulator, rotate the pilot ferrule clockwise to raise the outlet pressure and counterclockwise to lower the outlet pressure.
- E. After the desired outlet pressure is achieved, replace the seal cap, recheck for leaks, and the regulator is ready for operation.

## DIAPHRAGM CASE REMOVAL (see Figure 1)

The following instructions should be adhered to when assembling or disassembling the main diaphragm case and the valve body, otherwise damage may occur to the valve seat or body gasket:

Be certain that the gas has been shut off to and from the regulator:

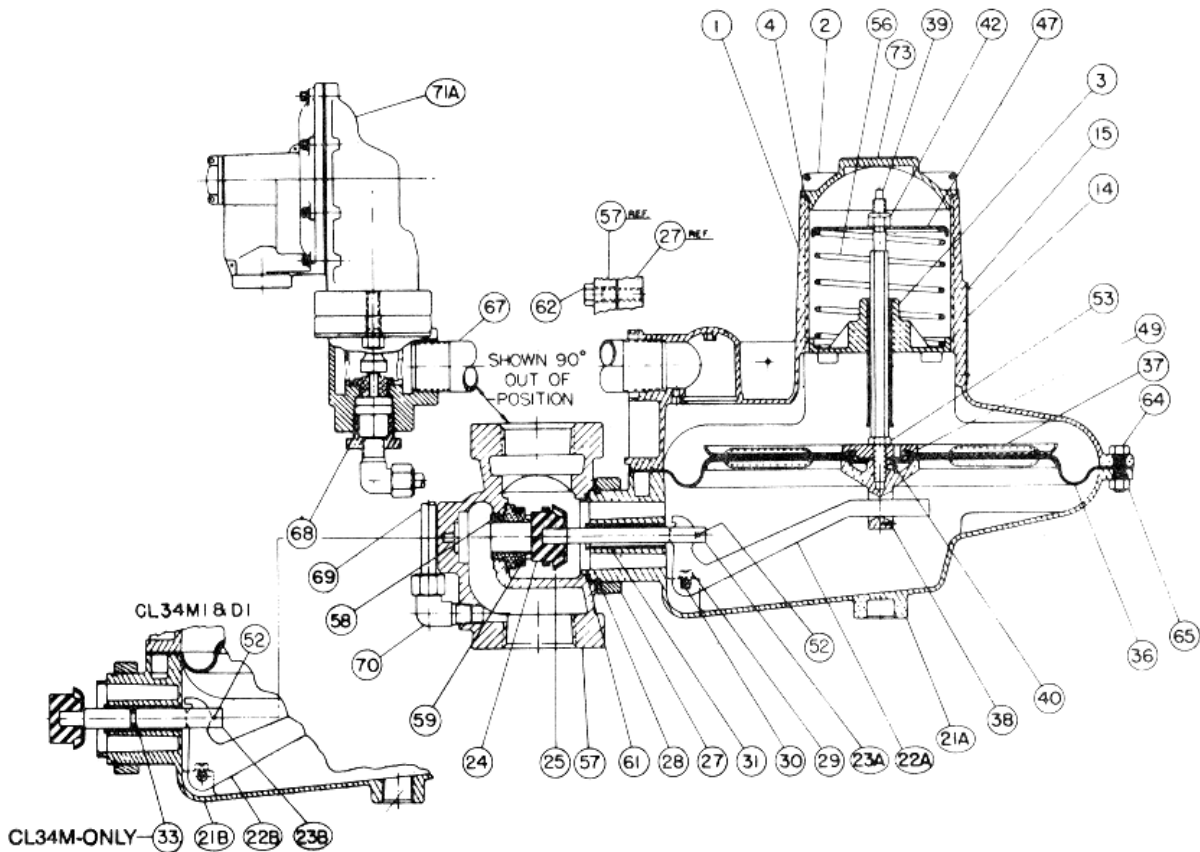
- A. Remove the seal cap (item 2) from the main diaphragm case.
- B. Unscrew the locknut (item 42). Be sure to grasp the flats on the end of the top stem (item 39) with an open end wrench to prevent the stem from turning while removing the lock nut.
- C. Remove the closing spring (item 56).
- D. Remove the control line assembly (item 69) from the valve body and pilot regulator
- E. Unscrew the retainer plate screws, (item 62).
- F. The diaphragm case assembly may now be safely removed from the valve body.

Proper reassembly is the reverse of the six steps listed above; making certain that the valve body gasket (item 61) is positioned properly before inserting the diaphragm case into the valve body.

## SAFETY NOTES:

- A. The maximum inlet pressure for this regulator is dependent upon the size of the orifice and model designation. The non-relief models are limited to 60 psig maximum inlet pressure unless addition safety devices are used as outlined in DOT code, OPS, Part 192, section 192.197.
- B. When these models are used on liquid petroleum gases, they should be restricted to second-stage pressure reduction in the gaseous phase.
- C. This product, as of the date of manufacture, is designed and tested to conform to all governmental or industry safety standards then existing as may apply to the manufacturer. The use of this product, and further, that all area fire control, building codes or other safety regulations established under public laws which regulate or concern the

application, installation, operation or general use of this product should be complied with. In order to insure the safe and proper operation of this product, the manufacturer recommends that this product be installed by a qualified installer.



### ROOTS Regulators

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ROOTS Regulator Installation CL Series (Models CL31, CL231, CL34, CL38, CL838) DUS.ROOTS.031  
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