

This document applies to all ROOTS CL31/CL231 R and N regulators.



**Warning** Follow your company's standard operating procedures regarding the use of personal protection equipment (PPE). Adhere to guidelines issued by your company in addition to those contained in this document when installing or repairing natural gas regulators.

This product, as of the date of manufacture, is designed and tested to conform to all governmental and industry safety standards as they may apply to the manufacturer. The purchaser/user of this product must comply with all fire control, building codes, and other safety regulations governing the application, installation, operation, and general use of this regulator to avoid leaking gas hazards resulting from improper installation, startup or use of this product.

To ensure safe and efficient operation of this product, ROOTS strongly recommends installation by a qualified professional.

## Recommended Tools and Materials

Tool Description	Part Number	Part Description	Part Number
7/8" Thin wall Orifice wrench-socket	799017	Orifice	As required
Torque Wrench	N/A	Valve body gasket	765753
Loading Ring Position Tool	799081	Valve seat	As required
		Loading ring	761753

### To change the orifice

1. Disconnect the control line. Loosen the two ferrules in an alternating fashion.
2. Locate and remove the two bolts holding the diaphragm case to the valve body.
3. Carefully pull the diaphragm case away from the valve body. Inspect the valve seat, valve body and valve body gasket for any debris or damage. Replace the valve body gasket.
4. Note the loading ring's position. The loading ring must be replaced in the same position. Use a marker to note the position of the loading ring's notch on the valve body (see the following image.)



- Place your thumbs in the neck of loading ring. Gently open the loading ring and remove.



- Remove the orifice using a 7/8-inch thin wall socket wrench.
- Apply pipe thread sealant (Rector Seal #5) on the orifice threads. Begin threading the orifice by hand, using the ratchet to finish tightening. Torque to 450 to 500 inch-pounds. Do not over-tighten the orifice.




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**Warning** Over tightening the orifice can cause irreparable damage. Torque to 450 to 500 inch-pounds.

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- Replace the loading ring to its original position. Verify the orifice ridge seats against the orifice (see the following Loading Ring Position table.)



- Reattach the diaphragm case to the valve body. Tighten the bolts in an alternating fashion; tighten each bolt one-half way. Tighten both screws completely; torque to 85 to 115-inch pounds
- Slowly pressurize the system. Verify the regulator locks up and regulates properly.

### Loading Ring Position Table

Inlet Pressure	Outlet Pressure	Setting
Various	Various	0 degrees



## Changing a Regulator Orifice: CL31/CL231 R and N Model Regulators

### **ROOTS Regulators**

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Models DUS.ROOTS.020  
04.22*