

Dresser Model LM-8C Meter



Receiving, Handling, and Storage

Although of very rugged construction, reasonable care should be given during handling and storage.

At time of delivery

1. Check the packing list to account for all items received.
2. Inspect each item for damage.
3. Record any visible damage or shortages on the delivery record.
 - File a claim with the carrier.
 - Notify your Roots Meter supplier immediately.

Important Notes

- Do not attempt repairs or adjustments, as doing so may be a basis for voiding all claims for warranty.
- Do not add oil to the two meter end cover oil reservoirs until after the meter has been permanently installed and is ready for service. The Series 3 Accessory Units do not require lubrication.

Introduction

Use and Limitations

The 8C aluminum Dresser meter is a positive displacement, rotary type gas meter designed for continuously measuring and indicating the accurate measurement of gas flow in a pipeline. It is suitable for handling most types of clean, dry, common gases at either constant or varying flow rates. It is not suitable for handling liquids. Measurement accuracy and life expectancy can be impeded by excessive deposits of dirt or other types of foreign material present in the gas stream. A filter or strainer may be used for added protection of the meter and other downstream equipment.

Meter Installations

Piping configurations

The 8C175 LM-MA Line mounted Dresser meter is supplied with 1-1/2" – 11-1/2" NPT x 3" nipples. It may be installed in either a Top Inlet (vertical) or a Side Inlet (horizontal) configuration. The preferred or recommended installation is top inlet in a vertical pipeline with gas flow downward. Dresser Natural Gas Solutions (NGS) offers the Dresser gasket strainer to protect the meter from contamination entering the measuring chamber.

An additional recommendation is to install the meter in a side loop with a bypass adjacent to the main line. Piping should be solid and properly aligned. Eliminate piping strains on the meter body. The installation of tees upstream and downstream of the meter provides a means for transfer proving a meter still mounted in the pipeline.

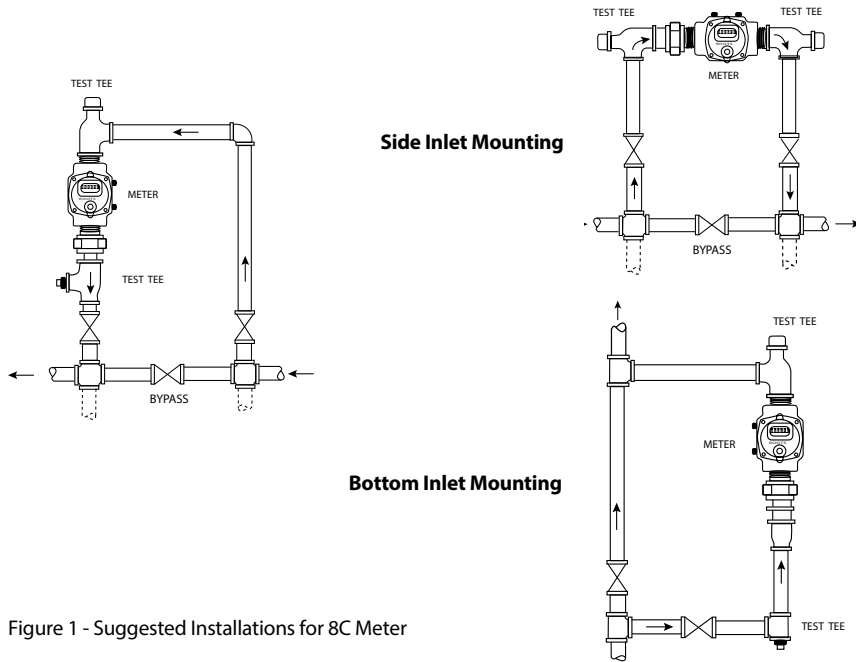


Figure 1 - Suggested Installations for 8C Meter

Meter Pressure Rating

The maximum working pressure of a rotary meter is limited by case design. Refer to the meter nameplate for the maximum allowable operating pressure (MAOP). A meter should not be installed where line pressure can exceed the meter MAOP.

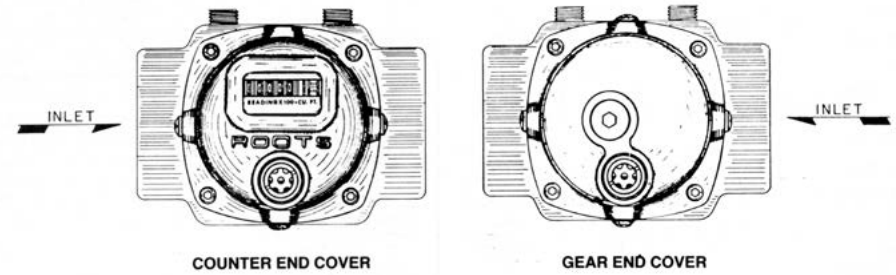


Figure 2 - Top Inlet

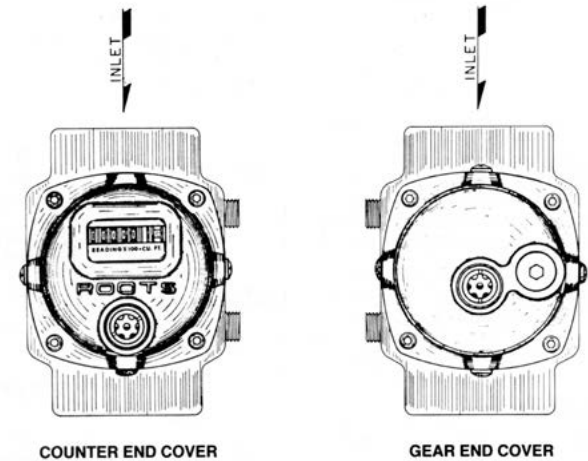


Figure 3 - Top Inlet

Placing Meter in Line

IMPORTANT: Remove the plastic protective caps from both meter nipples prior to meter installation

1. Before installing a meter:
 - Make sure the upstream piping is clean by using extreme caution and following recommended company procedures when venting to atmosphere
 - Insure the impellers turn freely and no objects or contaminants are in the measuring chamber. Depending upon meter condition, it may be necessary to flush the meter with an approved solvent. After flushing, drain all solvent from both end covers. Make sure the measuring chamber is clean and dry and the impellers turn freely. Refer to IRM-LM-8C.
2. Meter Orientation:
 - Connect meter inlet to the gas supply side of the line, insuring the gas flow will be in the same direction as the arrow on the meter body nameplate (i.e. arrow pointing downward for Top Inlet).
 - Connect meter inlet to the gas supply side of the line, insuring the gas flow will be in the same direction as the arrow on the meter body nameplate (i.e. arrow pointing downward for Top Inlet).
 - In a correct installation, both meter oil level gauges are parallel to the ground. The counter digits should always be right-side-up and horizontal. The counter position should be changed from the vertical or horizontal position by removing the four cap screws and washers on the counter end cover. Hold the end cover against the meter body so it will not move outward and disengage from the index drive shaft. Rotate it into the proper reading position, as required. Reinstall the cap screws with washers and tighten securely. With the counter in the normal horizontal plane, the oil level gauge will be in the proper position.
3. Install the meter without piping strain to prevent a binding of the impellers. Use pipe supports as required. Level meter to within 1/16" per running foot (5mm/m), side-to-side and front-to-back.
4. Be cautious not to introduce pipe dope or tape into the measuring chamber.
5. **DANGER: The meter must NOT be under pressure for the procedure.** After the meter is installed, remove the socket head plug in the timing gear and cover using an Allen wrench. Depending on meter type, insert an Allen driver into the socket head gear clamp and slowly turn the impellers, checking for free rotation. If binding is present, do not attempt to disengage the impellers. Remove the meter from the set and clear all obstructions or piping strain prior to reinstallation. Replace the plug after verifying free impeller rotation.

6. There are two oil reservoirs in the Dresser 8C175 LM-MA meter. Oil is shipped with each new meter in a quantity sufficient to fill the reservoirs in either a Top Inlet or a Side Inlet configuration.
 - a. Remove the #2 Phillips head recessed seal screw in the meter counter end cover. Slowly add oil until the oil level is to the center of the oil gauge (sight glass). Repeat on the gear end cover. **DO NOT OVERFILL.**

Meter Start-Up

Slowly pressurize the meter in accordance with the following recommendations:

IMPORTANT: Do not exceed 5 psig/second (35 kPa/second) maximum when pressurizing. Rapid pressurization can cause an over-speed condition which may damage the meter. Resulting damage is not covered by warranty.

- a. Open the bypass and outlet (downstream of meter) gas valves.
- b. Partially open the meter inlet gas valve until the meter starts operating at low speed. Throttling of the bypass valve may be necessary to initiate gas flow through the meter. Verify gas is flowing through the meter by watching for movement of the black-and-white wheel on the accessory unit. If movement is present, go to step c.
If the odometer test wheel is not turning, verify gas is being delivered to the meter.
If gas is flowing to the meter inlet and the wheel is not moving, go to step e.
- c. Let the meter operate at low speed for several minutes. Listen closely for unusual scraping or knocking sounds.
- d. If operation is satisfactory, go directly to step f.
- e. If unusual sounds are present or the odometer test wheel is not turning, place the meter in bypass. Slowly depressurize and vent all pressure from the meter set before checking for piping misalignment, piping strain, torsion, or other related problems. Once the problem has been resolved, repeat the start-up procedure beginning with step a.

DANGER: Slowly depressurize and vent all pressure from the meter set before working on meter.

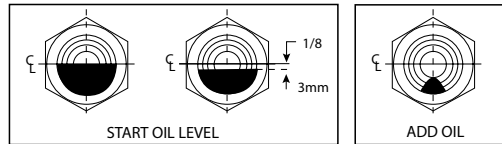
- f. Gradually open the inlet valve until full line flow is passing through the meter and the inlet valve is fully open.
- g. Slowly close the bypass valve.
- h. Follow your company authorized procedure or common practice to leak test the meter and all connections. Soapy water, Snoop® and gas analyzers are commonly used for this procedure.

Inspection and Maintenance

Lubrication

Meters installed and maintained in accordance with factory recommendations can be expected to operate dependably for many years. Proper oil level and cleanliness have the greatest effect on meter life expectancy. The two oil reservoirs in the meter end covers should be visually inspected for proper mid-gauge oil levels once a month until a practical interval is determined. Add oil as necessary.

Use only the instrument grade oils approved or service by the manufacturer. (i.e. Dresser Meter Oil).



No scheduled lubrication maintenance is required.

Meter oil change frequency will depend upon the cleanliness of the gas being measured. Change oil when the color darkens or when the level increases, indicating an accumulation of moisture. Under favorable conditions, these periods may be from 3 to 5 years, or longer.

CAUTION: THE METER END COVER IS PRESSURIZED.

Bleed off the line pressure before removing the oil fill or drain plug from the meter.

Meter Level

Since the meter is supported entirely by the gas pipe line, movement of the piping due to settling of the ground or other causes can impede meter operation and accuracy. Refer to "INSTALLATION" procedures. Make sure the meter remains level within 1/16" per foot (5mm/m) in any direction, side to side, front to back.

Installation Differential Testing

A change in the meter's internal resistance can affect rotary meter accuracy. Any significant increase on the meter's internal resistance to flow will increase the pressure drop between the inlet and outlet of the meter, thus increasing the differential. Therefore, the meter differential pressure appears as a prime indicator of meter condition.

Establishing Base Line Curves - developing an original differential or baseline curve is recommended at the time of meter initial installation. At least (3) test points are required at gas flow rates from 25% to 100% of meter capacity. Plot the points on a graph and then connect the points to form a curve. This provides baseline data for comparison to later tests.

Troubleshooting Checklist

Trouble	Item	Possible Cause	Remedy
No Flow Registered	1	Obstruction in piping meter	Check pipe and valve to assure an open flow path. Check for impeller rotation. Refer to Step #5 "Placing meter in line."
	2	Index or RPM wheel does not return.	No gas flow. Open valve or remove obstruction per item 1.
High Differential	3	Build-up of deposits in measuring chamber.	Flush meter.
	4	Worn bearings or gears.	Replace or Return to our Product Service Department.
	5	High oil level or heavy oil	Check oil level and cleanliness.
	6	Impellers rubbing cylinder or headplates, or meter out of time	Rotate impellers manually to check for binding or rubbing. Remove obstructions and/or time the meter. Check the meter level.
Vibration/ Noise	7	Piping misalignment or strain.	Remove piping strain. Level meter.
	8	Impellers rubbing	See items #4 & #6.
	9	Contaminants in measuring chamber	See item #3.

Dresser Meters & Instruments

16240 Port Northwest Drive

Houston, TX 77041

T: 1-800-521-1114

F: 1-800-335-5224

