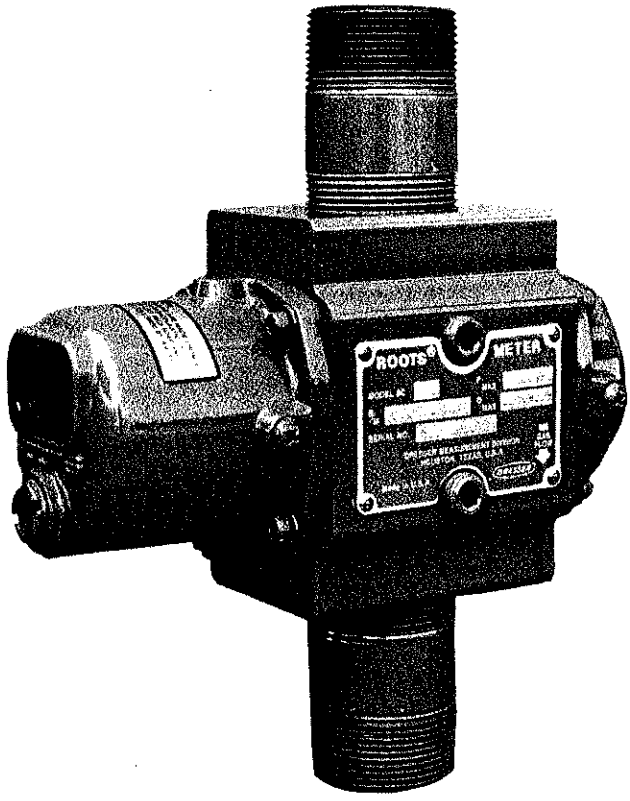
IRM-LM-8C

Rotary Positive Displacement

ROOTS® METERS

Installation, Operation, Drawings, Parts List



LINE-MOUNTED
MODEL 8C
(800 cfh - 22,6 m^3/h)
Aluminum Construction

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WARRANTY

Dresser Measurement (herein referred to as the Company) agrees to supply equipment of good design and of first class material and workmanship. In the event of any defect of material or workmanship, the Company will repair F.O.B. place of manufacture, or furnish without charge place of manufacture similar part or parts which, within one year after their shipment, are proven to have been so defective at the time of shipment, provided the Purchaser gives the Company immediate written notice of such alleged defects. Except as herein provided there are no other warranties, either expressed or implied (including without limitation, the implied warranties of merchantability and fitness for particular purpose) and any such warranties are hereby expressly disclaimed. The Company, except in case of gross or willful negligence, shall not be liable for any damages for cause or reason whatsoever, either direct, indirect, special or consequential, arising out of any contract or from the operation or failure properly to operate any apparatus or equipment sold. No allowance will be made for repair or alterations unless made with the written consent first obtained from the Company. Neither shall the Company be held liable or in any way responsible for work done, apparatus furnished, or repairs made by others. Auxiliary equipment supplied hereunder not manufactured by the Company and so identified by the Company is subject to the warranty of the manufacturer thereof and the Purchaser's recourse shall be limited to such other warranty.

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NOTE: Information in this manual is correct as of the date of publication. The manufacturer reserves the right to make design or material changes without notice, and without obligation to make similar changes on equipment of prior manufacture.

INTRODUCTION

Use and Limitations

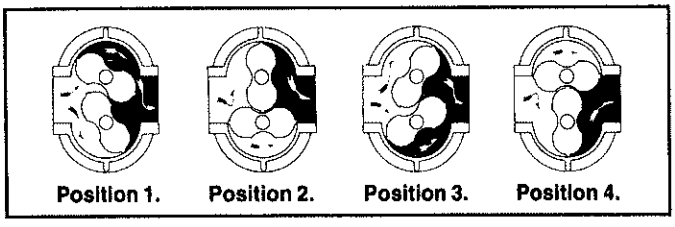
The 8C aluminum meter is a positive displacement, rotary type device for continuously measuring and indicating the volume flow of gas in a pipe line. It is suitable for handling most types of clean common gases, at either constant or widely varying flow rates. It is not suitable for handling liquids, and its operation can be impeded by excessive deposits of dirt or other foreign materials carried in the gas stream. The meter is not suitable for handling oxygen, hydrogen, acetylene or sewage gas because some of the materials of construction are not compatible with these gases. The operating temperature range is from −40°F. to +140°F. (−40°C. to +60°C.).

General Description

As shown by the diagram in Figure 1, the 8C rotary meter consists basically of two contrarotating impellers of two-lobe or "figure 8" contour, operating within a rigid casing. The casing (or cylinder) is arranged with inlet and outlet gas connections on opposite sides. Impeller contours are mathematically developed and accurately produced and are of such form that a continuous seal without contact can be obtained between the impellers at all positions during rotation. To accomplish this, the correct relative impeller positions are established and maintained by precision grade timing gears. Similar seals also exist between the tips of the impeller lobe and the two semicircular parts of the meter casing. Optimal operating clearances are provided between the flat ends of the impellers and the meter headplates.

As a result of this design, the gas at the inlet side of the meter is always effectively isolated from the gas at the outlet side by the impellers. Consequently, the impellers can be caused to rotate by a very small pressure drop across the meter. The rotation is in the direction indicated in Figure 1, and as each impeller reaches a horizontal position (twice in each revolution) it traps a known specific volume of gas between itself and the adjacent semi-circular portion of the meter casing at position (2) and (4). Thus, in one complete revolution the meter will measure and pass four similar gas volumes, and this total is the DISPLACEMENT of the meter per revolution. The displacement has been very precisely determined both by calculation and by test using a known volume of air or other gas.

OPERATING PRINCIPLE



POSITION 1.—As bottom impeller rotates in a counterclockwise direction toward horizontal position, gas enters space between impeller and cylinder. **POSITION 2.**—At horizontal position, a definite volume of gas is contained in bottom compartment. **POSITION 3.**—As impeller continues to turn, the volume of gas is discharged. **POSITION 4.**—Concurrently, top impeller rotating in opposite direction has closed to its horizontal position, confining another known and equal volume of gas. Process is repeated four times for each complete revolution of impeller shafts. Flow of gas creates the rotation of impellers.

Figure 1

Actual volume measurement—displaced volume—is completely independent of the gas specific gravity, temperature and pressure. Volumetric accuracy of the measuring characteristics is established by the dimensions and machined contours of non-wearing fixed and rotating parts.

Definite maximum flow has been established for this meter model, and these flows should not be exceeded in operation. Factors involved are bearing life, shaft deflection, timing gear speed and loading, and engineering experience. For the 8C meter, the standard maximum flow rate results in a pressure drop of less than 0.8 inch (20.3 mm) water column based on air at atmospheric pressure.

The major components of the meter are fabricated of aluminum for strength and light weight. All of the aluminum parts are anodized and the measuring chamber and impellers are hard-coat anodized to be highly resistant to corrosion or abrasion from foreign materials.

The connections at the inlet and discharge of the cylinder are 1½ inch NPT male threads.

Maximum working pressure of a rotary meter is limited by casing design. Refer to meter nameplate for this maximum working pressure. (Note: The meter has been static pressure tested at the factory at twice its maximum working pressure). It should not be installed where line pressures can exceed the maximum working pressure. However, line pressure has no significant effect on accuracy of measurement, and the meter may be used satisfactorily on pressures down to a few ounces. Meter capacity ratings, listed in Table 1, are expressed in Standard Cubic Feet (SCF) or Standard Cubic Meters (m^3/h) per hour (at base conditions of 60°F and 14.73 PSIA. Metric base conditions are commonly 15°C and 101.325 kPa). When gas is being measured at a pressure and/or temperature other than Standard, the dial rate- in displaced volume- is easily converted to standard gas by simple PVT relations. Reference bulletin RM-135.

The unit contains a totalizing counter reading volume at line conditions in 100 cubic feet or cubic meter increments, located inside the pressurized counter end cover.

TABLE 1—METER CAPACITY RATINGS UP TO 175 PSIG (1200 kPa)

Corrected Capacity in SCFH*

Meter Model	Base Rating 14.73 (PSIA)	Metering Pressure—PSIG									
		1	5	15	25	50	75	100	125	150	175
8C	800	840	1050	1600	2140	3500	4860	6210	7570	8930	10300

*Maximum hourly flow rates in Standard Cubic Feet, corrected for metering pressure and 14.4 PSIA atmosphere to base conditions of 14.73 PSIA and 60°F.

Corrected Capacity in Sm^3/h*

Meter Model	101.325kPa Absolute	Metering Pressure—Gauge									
		15 kPa	50 kPa	100 kPa	200 kPa	400 kPa	500 kPa	700 kPa	860 kPa	1000 kPa	1200 kPa
8C	22,6	26	34	45	67	112	134	179	215	245	290

*Maximum hourly flow rates in Cubic Meters, corrected for metering pressure and 101.325 kPa absolute atmosphere to base conditions of 101.325kPa absolute and 15°C.

RECEIVING, HANDLING & STORAGE

The 8C Meter is a precision type measuring instrument, operating as described in this manual. Although of very rugged construction, it should be given care in handling and storage. It is highly important that a meter not be dropped, or have heavy objects fall on it. Therefore, to realize the maximum service and accuracy built into the meter, it is recommended that the general policies outlined here be followed.

1. Do not accept a shipment that shows evidence of mishandling in transit without making an immediate inspection for damage to the meter. File a claim with the carrier if damage is indicated and notify the nearest District Sales Office.
2. Since damage to internal working parts can exist without obvious external evidence, it is advisable to check all new meters for free rotation soon after arrival. This simple procedure is described under INSTALLATION.

3. When a meter is not to be tested or installed immediately, store it in a dry location and protect it against damage. Use the original shipping container, keeping it horizontal. *Do not put* oil in the two end cover sumps. Do not remove covers from meter openings. This is intended to provide a reasonable protection for internal surfaces against atmospheric moisture for about one year.
4. Should any serious trouble appear during installation or initial operation of a new unit, notify the nearest District Office. Do not attempt repairs or adjustments, since doing so will be a basis for voiding the warranty.
5. When contacting a Sales Office with a problem give meter Bill of Material Number, Model and Serial Number, location and brief outline of the problem. Include gas type, pressure and flow characteristics, as applicable.

INSTALLATION

Reference Figure 2, page 3.

Piping—The 8C ROOTS® Meter may be mounted in either a horizontal or a vertical position, if the gas is clean and dry. The preferred installation is top inlet in a vertical pipe line, gas flow being downward. Although the design of the impellers tends to make the meter inherently self-cleaning, the top inlet mounting also allows gravity to help pass dirt or scale through the meter.

A horizontal pipe line mounting is optional in most instances. Other piping layouts based on established practices and experience may be equally satisfactory.

The bottom inlet is only recommended on installations where all foreign material has been effectively removed from the gas prior to entering the meter.

This meter requires very little space, but there should be sufficient room so that end covers can be removed and the oil level gauges can be viewed for proper filling of the end covers.

A further recommendation is that the meter be installed in a side loop, with a bypass, going straight through. Test tees for transfer proving may be provided. The inlet piping should be completely free of excess pipe dope, dirt, scale, cuttings, and weld spatters. If the top inlet configuration is used, do not locate a lubricated gas inlet valve directly over the meter. Excess valve lubricant or other foreign material falling into the meter may stop or impede its operation.

The piping should be solid and properly aligned. The meter does not require any direct means of support, but the piping on either side should be supported to eliminate any unnecessary piping strains on the meter body. As a final note concerning piping, a meter should preferrably be installed so that it is not lower than the discharge pipe runs. Such a condition would cause the meter to become a sump for condensate and foreign material.

Figures 6 and 7, page 4, illustrate piping, materials with sizes, to install the 8C meter when existing 20, 30, and 60 LT meters are being removed. *Note:* Some items are marked N/A (not applicable). Most of the required items should be available through your local dealers. The 8C is supplied with male 1½"-11½ NPT x 3" nipples. Reference dimensional drawing on page 7.

MOUNTING & LEVELING

Item # Reference Drawing DO49848-001, page 8 and 9.

Before mounting the meter, check it for free rotation, after removing inlet and outlet covers. The meter should rotate by only blowing into the inlet side of the cylinder.

Step 1—*Top Inlet* (reference Figure 3). The meter will have the nameplate and ¼ inch differential plugs on the right side of the cylinder when viewed from the counter end of the meter. The nameplate flow direction arrow should be pointing downward. Proceed to Step 2.

Side Inlet (reference Figure 4). The meter should have the nameplate and ¼ inch differential pipe plugs on the top. When viewing the counter end of the meter, the proper flow direction is from left to right. Proceed to Step 2.

Bottom inlet (reference Figure 5). *Caution:* Bottom inlet is only recommended on installations where all foreign material has been effectively removed from the gas prior to entering the meter. The meter should have the nameplate and ¼ inch differential pipe plug on the left side of the cylinder when viewing the counter end of the meter. The nameplate flow direction arrow should be pointing upward in the direction of flow or the counter will subtract. The gear end cover (#28) opposite the counter end must be rotated 180° by removing the four cap screws and washers. Hold the cover so it will not move outward, and rotate it 180°. The cap screws with washers should be reinstalled and tightened securely. This rotation of the cover will allow the proper oil level gauge location. Proceed to Step 2.

Step 2—The counter digits should always be right-side-up and horizontal. The counter position should be changed from the vertical or upside-down position by removing the four cap screws and washers on the counter end cover (#22). Hold the cover so it will not move outward and 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.

Step 3—Make sure the meter inlet is connected to the gas supply line. Set the meter in the piping level within 1/16 inch per foot (5mm/m). *Note:* Do not pressurize the meter at this time.

Step 4—The #2 Phillips head recessed seal screw (#410) should be removed from the counter end cover (#22) so that the cover can be filled with oil to the center of the oil level gauge (#40). The oil should be added *slowly* to prevent over-filling. (Reference Lubrication and Table #2). After sufficient oil has been added to locate the oil level in the center of the gauge, replace the Phillips head seal screw and tighten securely.

The gear end cover (#28) should be filled in the same manner. The fill plug (#410) must be removed (located on the side of the cover). The drain plug is at the bottom of the cover. The cover should be filled until the oil level is in the center of the oil level gauge (#40). Replace the fill plug (#410) and tighten securely. Check to verify that the oil is in the center of the oil level gauges at both ends of the meter.

The ¼ inch dry seal pipe plugs (#162) on the nameplate side of the cylinder can be utilized for differential testing. If differential testing is utilized in your maintenance program, two valves can be installed at the two ¼ inch pipe plug location at this time. Use caution and do not get any foreign material in the meter if valves are to be installed.

The bypass valve should be used to pressurize the system.

The meter should be pressurized very slowly to prevent possible overspeed which could damage the meter. (5 PSIG/second or, 35 kPa/second max.).

The installation should be checked for leaks.

Slowly open the downstream valve to start flow through the meter. An oil slinger on the gear end can be viewed through the oil level gauge (#40) to indicate when the impellers start to rotate. Continue to open the valve completely and close the bypass valve slowly. The meter is now ready to measure flow within its rated capacity.

On the English version, the counter indicates correct flow direction when the right digit wheel is rotating downward. One revolution indicates that 10 cubic feet have passed through the meter at line condition. The counter digits are reading in 100 cubic feet. On the metric version, the counter indicates correct flow direction when the digits on the right hand digit wheel are advancing. One revolution represents one cubic meter. See typical "metric" version counter on drawing DO49848-001, page 8.

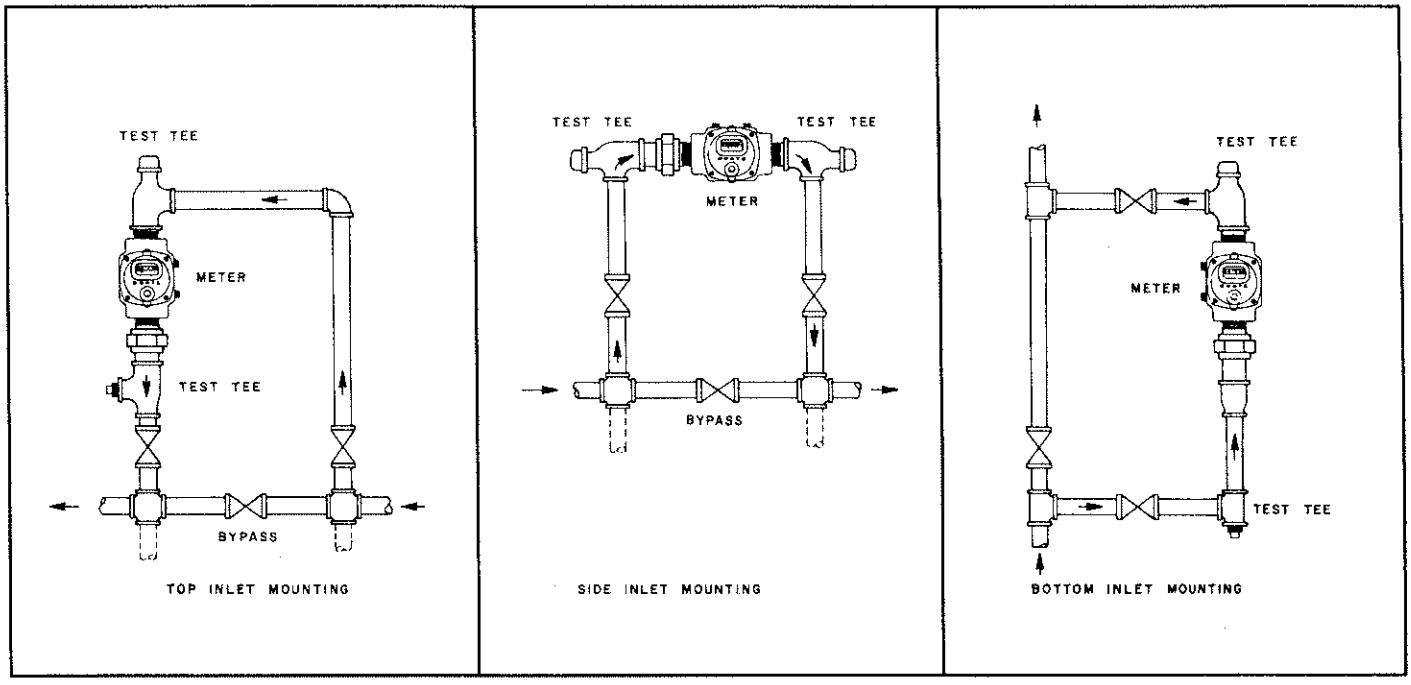


Figure 2—SUGGESTED INSTALLATIONS FOR 8C METER

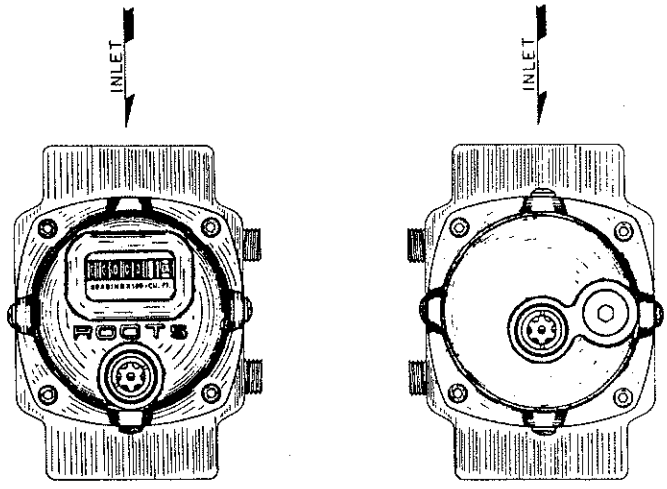


Figure 3—TOP INLET

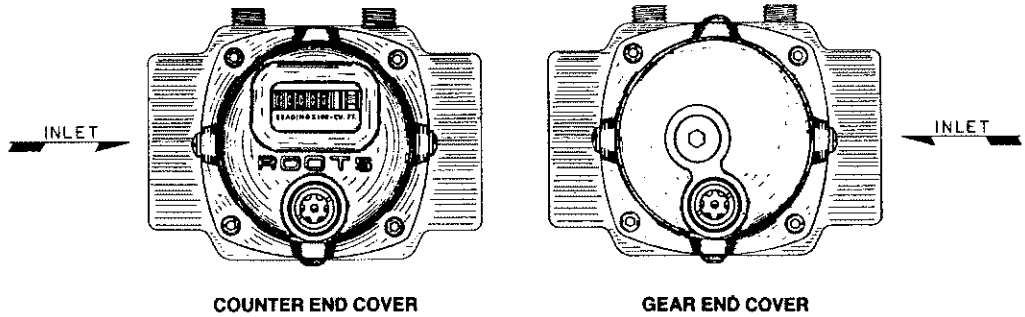
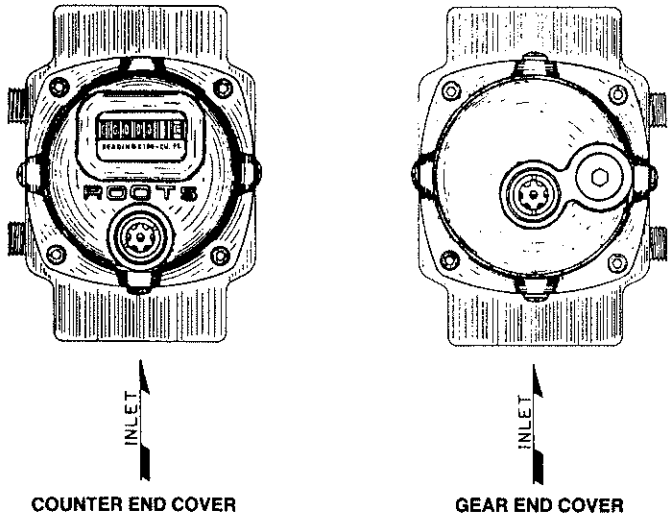


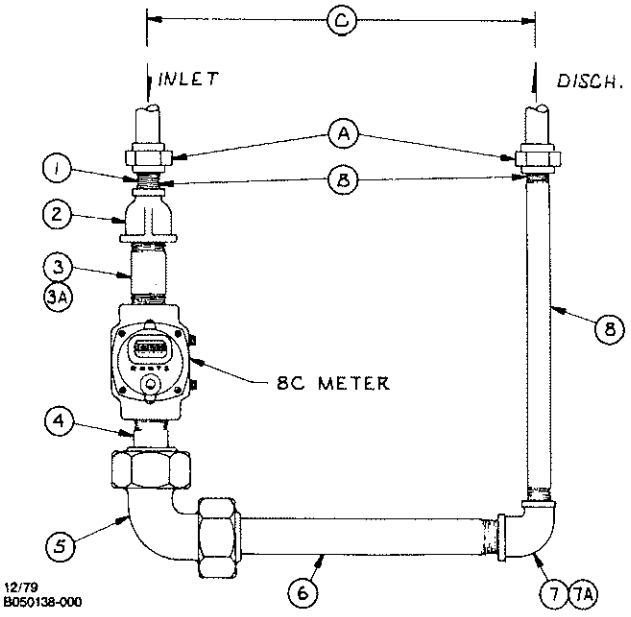
Figure 4—SIDE INLET



COUNTER END COVER GEAR END COVER

Figure 5—BOTTOM INLET

**PREFERRED INSTALLATION 20, 30 & 60 Lt.
TIN METER REPLACEMENT***



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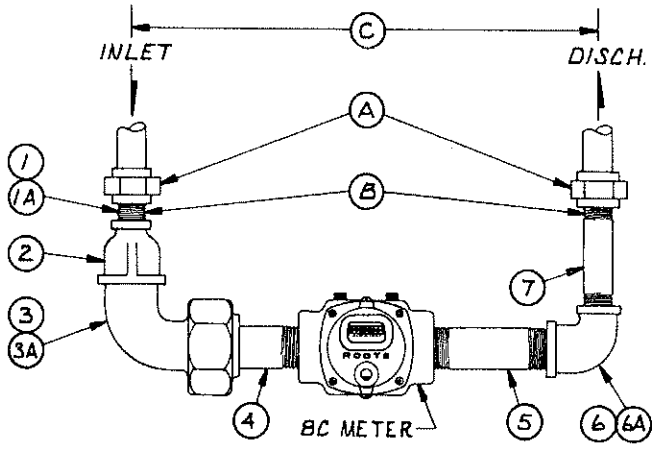
BILL OF MATERIAL

		20LT	30LT	60LT
A	Customer Union NPT	1"	1¼"	1½"
B	Thread Engagement	.683"	.707"	.724"
C	℄ to ℄	16½"	18½"	25⅜"
1	Std. Close Nipple	1" x 2"	1¼" x 2"	N/A
2	Std. Reducer	1½" x 1"	1½" x 1¼"	N/A
3	Std. Close Nipple	1½" x 4"	1½" x 4"	N/A
3A	Std. Nipple	N/A	N/A	N/A
4	Std. T.O.E. Nipple	1½" x 4"	1½" x 4"	1½" x 4"
5	DMD Style 90 Locking 90° ELL	1½"	1½"	1½"
6	Std. T.O.E. Nipple	1½" x 14"	1½" x 16"	1½" x 22"
7	Std. 90° Reducing ELL	1½" x 1"	1½" x 1¼"	N/A
7A	Std. 90° ELL	N/A	N/A	N/A
8	Std. Nipple	1" x 15"	1¼" x 15"	1½" x 15"

*Top Inlet (Recommended)

Figure 6

**TYPICAL INSTALLATION—20, 30 & 60 Lt.
TIN METER REPLACEMENT***



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BILL OF MATERIAL

	ITEM	20LT	30LT	60LT
A	Customer Union NPT	1"	1¼"	1½"
B	Thread Engagement	.683"	.707"	.724"
C	℄ - ℄	16½"	18½"	25⅜"
1	Std. Close Nipple	1" x 2"	1¼" x 2"	N/A
1A	Std. T.O.E. Nipple	N/A	N/A	1½" x 4"
2	Std. Reducer	1½" x 1"	1½" x 1¼"	N/A
3	DMD Style 90 Locking 90° Street ELL	1½"	1½"	N/A
3A	DMD Style 90 Locking 90° ELL	N/A	N/A	1½"
4	Std. T.O.E. Nipple	1½" x 5¼"	1½" x 5¼"	1½" x 5¼"
5	Std. Nipple	1½" x 5½"	1½" x 7½"	1½" x 13"
6	Std. 90° Reducer	1½" x 1"	1½" x 1¼"	N/A
6A	Std. 90° ELL	N/A	N/A	1½"
7	Std. Nipple	1" x 4½"	1¼" x 4½"	1½" x 4½"

*Side-Inlet (Optional), Requires clean, dry gas.

Figure 7

LUBRICATION

General

Timing gears, counter assembly gears, and bearings on both ends of the meter body are continuously lubricated with oil by dip and splash. The oil sumps in each end cover are independent of one another and each must be filled to the proper level. Each end cover is provided with visual type oil level gauges and plugged filling and draining holes. CAUTION: THESE TWO END COVERS ARE PRESSURIZED DURING OPERATION. Bleed off the line pressure before removing the plugs.

Oil Type & Grade

Successful operation of this lubricating system depends not only on maintaining the specified oil levels in the sumps, but also on using the correct grade of oil. The total quantity of oil provided is relatively small, as shown in Table 2, and is considerably less when the meter is mounted in a horizontal pipe line than when it is in the vertical position. Because of this small supply and the requirement for distribution to bearings by splash, plus the necessity to eliminate drag in rotating parts, use of an instrument grade oil is required for satisfactory operation.

High quality lubricating oil can be obtained in convenient small quantities from the company. Specify "ROOTS® Versa-Temp Meter Oil" and indicate the meter model number. Versa-Temp Oil is an high grade aircraft hydraulic fluid with excellent thermal and lubricating properties.

Oil Filling

The 8C oil dispenser can be used to add oil to both counter end and gear end covers as indicated on the dispenser. Oil levels at both ends of the meter are to be maintained within 1/16 inch (1.5mm) of the center of the oil level gauges. Initial filling of the two end cover sumps should be done while the meter is not operating. The oil level may change slightly during operation, but it should not go below the bottom edge of the gauging hole. *Caution:* Do not pressurize or depressurize these meters at a rate exceeding 5 PSI per second (35kPa/sec.).

TABLE 2—METER OIL CAPACITIES

APPROX. OIL CAPACITY	
GEAR END	CTR. END
TOP INLET 0.54 fl. oz. (16 ml.)	0.41 fl. oz. (12 ml)
SIDE INLET 0.17 fl. oz. (5 ml)	0.41 fl. oz. (12 ml)

Cleaning

Although oil is drained from these meters at the factory, a small quantity will remain on various surfaces and collect in the sumps. When the meters are not kept horizontal during shipment or general handling, the oil in the meter sumps can pass along the impeller shafts and enter the metering chamber. A meter with a depressed accuracy and increased differential pressure may be the result. It is recommended that prior to performance testing or installation each meter be properly filled with oil (do not install the fill plugs) and windmilled for about two minutes at a speed near the maximum rating. This may be achieved by injecting controlled dry compressed air from a nozzle into the open meter inlet connection. During this operation, flushing about 3 ounces (89 ml) of an approved non-toxic and non-flammable solvent through the meter will remove any lubricating oil or dirt which may have entered the metering chamber. Typical solvents are listed in Table 3. *Note:* During the flushing operation (if required) some of the solvents can enter the end covers. The end covers should be drained to remove any of the solvent, prior to installing the meter. Then add oil to the proper level in each end cover after installation.

During in-testing or before installation, a starting differential test may be performed. Connect an inclined water gauge to the two meter pressure taps, and pipe a controlled supply of dry low pressure air to the meter inlet. Observe the differential pressures required to start the meter rotating, making tests with the impellers starting from six different positions. Any reading above .03 inch (.75 mm) W.C. indicates there is either a bind from dirt or the meter needs to be windmilled further and flushed again with solvent.

Following these operations, drain the oil if the meter is to go into storage. The oil may remain if a proof test is to follow, but make sure the meter is not tipped during handling.

TABLE 3—SOLVENTS

Purpose	Solvent
Clean or Flush Meter	Mineral Spirits, Kerosene, Isopropyl Alcohol

CAUTION: Aromatics, Ketones, and Chlorinated Hydrocarbons will damage the plastic windows. Do not use acetone, carbon tetrachloride, paint thinner, etc.

TESTING

General

A differential pressure manometer is an optional meter accessory useful in providing an indication of a meter's operating condition at any time after installation. Pressure taps (¼ inch pipe thread) are provided near the meter inlet and outlet connections for attaching a manometer, which may be supported by adjacent piping if permanently installed. A suitable instrument for this purpose should have an indicating scale range of about 6 inches (150 mm) W.C., should be provided with inlet, outlet and bypass valving, and must be pressure rated for maximum metering pressure. A portable type manometer may be used to check a number of meters periodically.

If a differential pressure manometer is permanently installed at the meter, or is available for temporary connection, a few initial operating tests should now be made. Data from these tests—if recorded and retained—will furnish the simplest and most accurate basis for checking meter condition in the future by comparison with the original "standard" of operation. In addition to the differential manometer, only a stopwatch and pressure gauge are required for the tests.

The differential rate test under the line operating conditions will provide data for the most reliable future checks on general mechanical condition of a meter. This test is based on the principle that as the rotating resistance of a meter increases, more energy is absorbed from the flowing gas in turning the impellers, and the gas will then show an increased pressure drop—or differential—in passing through the meter. It is advisable to establish original differential pressure readings for three or more gas flow rates from about 25% to 100% of meter capacity, along with gas pressure and temperature conditions during the test. For further details, reference bulletin RM-90.

As soon as the test data is completed, the meter may be placed in full service. Check its operation closely during the first hour with particular reference to oil levels, casing temperature, and increase in differential pressure. If possible, make several additional checks during the first day of operation. Thereafter the meter will be able to operate unattended for long periods under normal operating conditions.

INSPECTION AND MAINTENANCE

ROOTS® Meters are simple in construction and operation. If they are installed properly, operated within their pressure and capacity limitations, and receive the required minimum of care, they can be expected to operate dependably for many years.

Period inspection and maintenance servicing should cover the following important points:

1. *Lubrication*—It is very essential to maintain the oil in good condition and at the proper levels in the two end covers. Change periods will depend on the cleanliness of the gas being measured. Under favorable conditions these periods may be from three to ten years. Oil levels should be checked often until a practical interval is determined. Add oil as necessary to maintain the level specified under "Lubrication." Remember that the meter must be depressurized slowly before removing fill or drain plugs and use instrument grade oil of the specified viscosity.

2. *Meter Level*—Since these meters are supported entirely by the gas pipe line, movement of the piping through accident or other causes can affect the operation of the meter. At each inspection period make sure the meter is not out of level more than 1/16 inch per foot (5.0 mm/m) in any direction.

3. *Differential Rate Test*—The differential rate test is an accurate and convenient method of comparing a rotary meter's performance at any time with its original performance. It is accepted by many state utility commissions as a means of periodically substantiating that the original accuracy of a meter has remained unchanged.

   A differential rate test consists of a series of pressure readings taken across the meter at several gas flow rates within the meter's range of capacity. It should be performed when the meter is first installed and under the actual conditions of gas line pressure and specific gravity that will exist in service.

   This is particularly important when line pressure will be higher than 15 PSIG (100kPa Gauge) so that direct comparison with later tests can be made. Below 15 PSIG (100 kPa Gauge) the field tests on gas can, for all practical purposes, be compared directly with the factory test results on air obtained either from an individual prover test curve or a characteristic accuracy curve.

   To make a differential rate test, pressurize the meter by slowly opening the inlet and discharge valves. Adjust the bypass and the discharge valves until the meter is operating at some selected flow rate in the lower range of its capacity. See the nameplate for maximum flow rating of the particular meter. With flow stabilized, time the passage of a predetermined volume of gas as registered on the counter and record the differential pressure reading. Repeat the test several times to obtain an accurate average reading. Also record line pressure and temperature readings.

   Obtain similar differential readings at as many different flow rates as possible within the meter's range. At least three points are required within the 25% to 100% range to establish data for an accurate curve. Now, from the registered volumes and times, convert the gas flow to displaced CFH (m3/h) and plot a curve of differential pressure versus flow rate. A sample data sheet is shown.

The meter condition and performance can be checked periodically by running a similar differential rate test at a single selected point. If the differential pressure has increased by 50% or more over the original reading at this rate, check the meter for causes of increased resistance. Principal causes are binding of impellers, worn bearings, and too heavy or too much oil.

Note: When checking the differential pressure, make sure the test conditions are in close agreement with original conditions. An increase in line pressure or in specific gravity will cause an increase in the differential.

PARTS LIST AND DRAWINGS

On the following pages a sectional drawing and parts list covering the Series 8C meter can be found. Replacement parts are grouped into three (3) classifications.

Class A— Parts replacement as an assembly only.

Class B—Parts replacement is beyond the average shop capacity. Care must be taken and a good working knowledge of the meter would be helpful.

Class C— Parts replacement is within the average shop capacity by individuals with average mechanical and instrument skills.

NOTE: Individual parts ordered that are part of an assembly will be supplied as an assembly only.

TO ORDER PARTS or assemblies, it is necessary to specify the following:

The following parts are for:

Model No. (i.e. 8C) _____

Bill of Material No. _____

or Serial Number _____

Parts prices are available upon request.

REPAIR for any model ROOTS METER is available from the factory. When returning a meter for repair, or estimate to repair, the following should be done:

1. Remove oil from meter,
2. Package meter carefully and seal inlet and outlet connections.
3. Ship with freight prepaid to:

In USA
Dresser Measurement
10201 Westheimer Road—Bldg. #9
Houston, Texas 77042

In Europe
Dresser Manufacturing Operations
Dresser U.K., Ltd.
29-31 Rufford Court, Hardwick Grange
Warrington, Cheshire WA1, 4RF, England

DIFFERENTIAL-RATE TEST DATA

Meter Model _____ Mfg. Serial No. _____ Utility Serial No. _____

Location _____ Date Installed _____ Register Reading _____

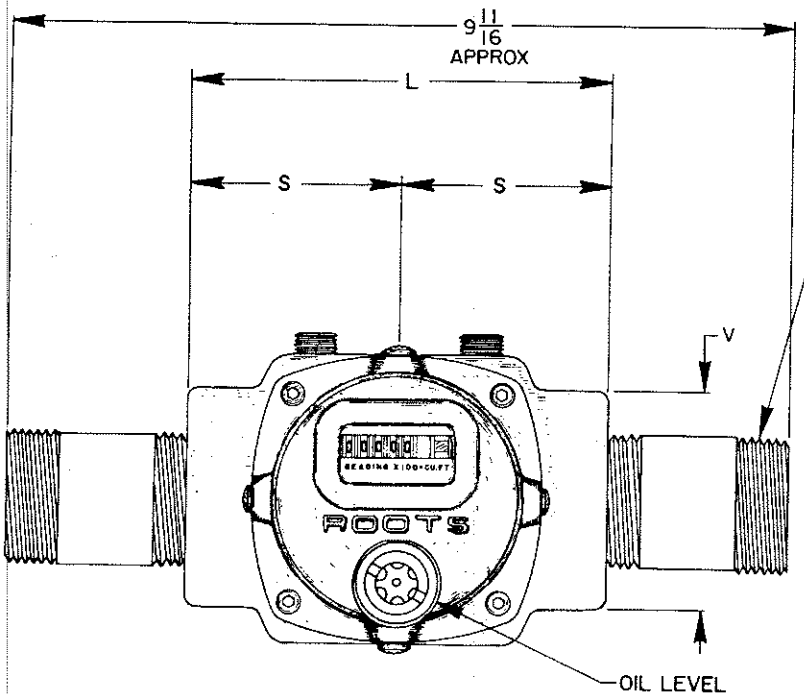
Line Press	Gas Temp.	Sp. Grav.	Volume Measured	Run Time	Rate CFH	Diff. Pressure ins. W.C.	Diff. Pressure % Chg.	Date	Tester

Initial Tests—New Meter

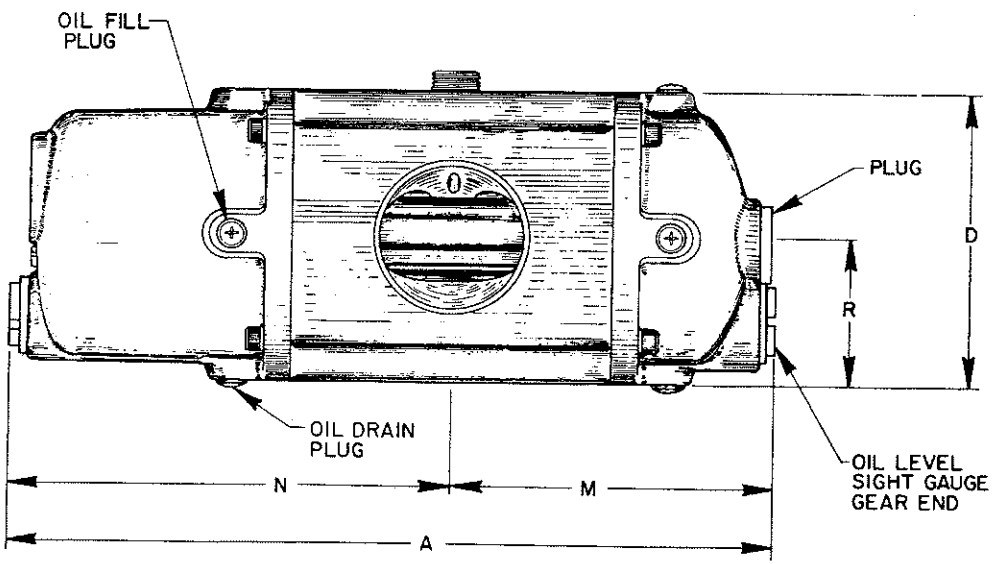
Periodic Check Tests

METER W/COUNTER
8C
ENGLISH

MODEL	DIMENSIONS IN INCHES								APPROX. OIL CAPACITY			APPROX. WEIGHT
	A	D	L	M	N	R	S	V	GEAR END (SIDE INLET)	GEAR END (TOP INLET)	CTR END (SIDE OR TOP)	
8C	8 9/16	3 5/16	4 3/4	3 5/8	4 15/16	1 21/32	2 3/8	2 1/2	.17 fl. oz. (5 ml)	.54 fl. oz. (16ml)	.41 fl.oz. (12ml)	6 lbs.



SHOWN IN SIDE INLET POSITION
FOR TOP INLET ROTATE COUNTER END ASSEMBLY 90° COUNTERCLOCKWISE AND EXCHANGE PLUG AND OIL LEVEL SIGHT IN GEAR END

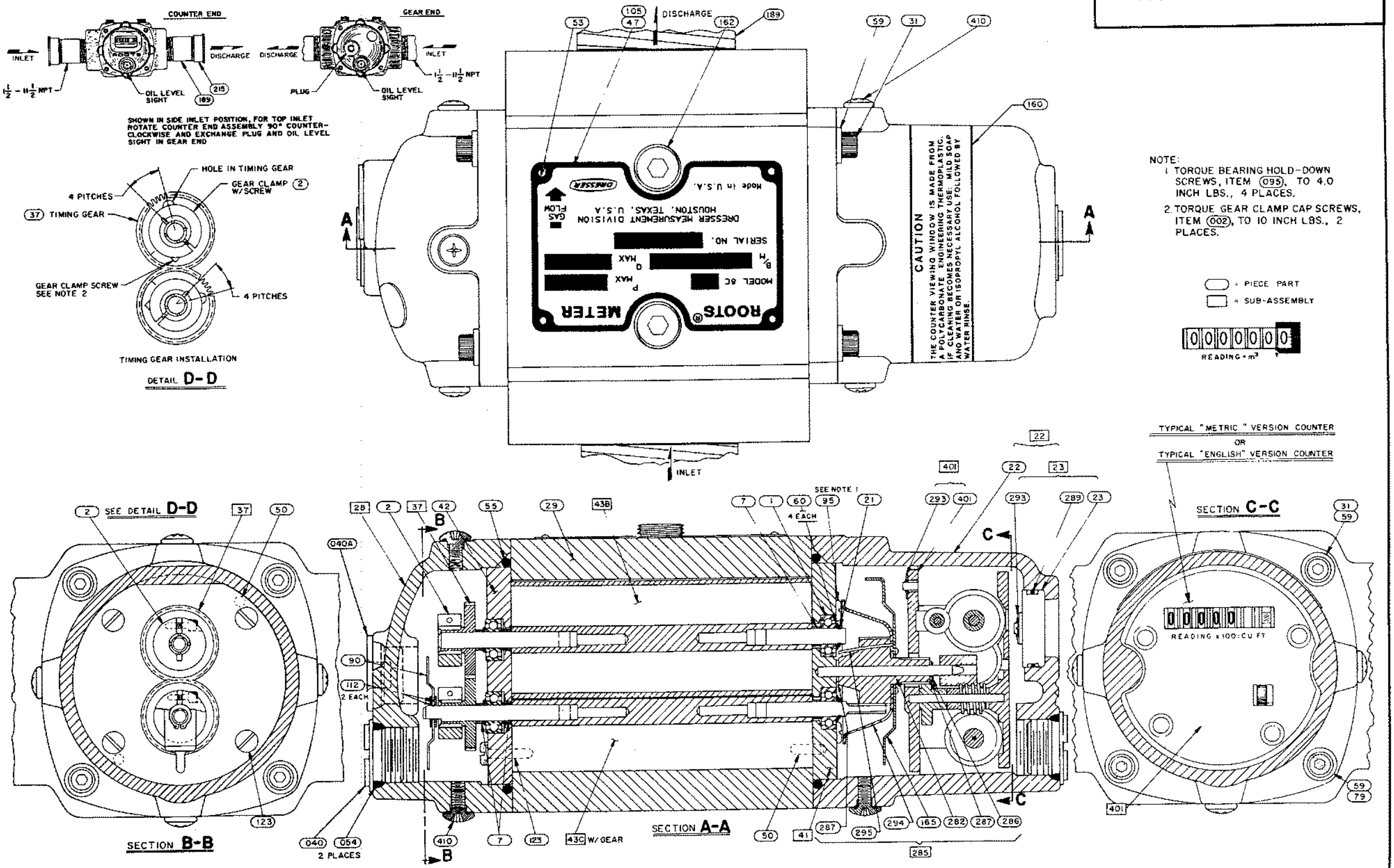


CUSTOMER _____
CUST. ORDER NO. _____ OUR ORDER NO.
DATE _____ BY _____

DRESSER MEASUREMENT DIVISION
DRESSER INDUSTRIES, INC.
HOUSTON, TEXAS, U.S.A.
8/86
PRINTED IN U.S.A.

C049844-000

MODEL 8C
ROOTS® METER



NOTE:
1. TORQUE BEARING HOLD-DOWN SCREWS, ITEM (095), TO 4.0 INCH LBS., 4 PLACES.
2. TORQUE GEAR CLAMP CAP SCREWS, ITEM (002), TO 10 INCH LBS., 2 PLACES.

( ) = PIECE PART
[ ] = SUB-ASSEMBLY

7/88 D049848-001