

Series B3 ROOTS® Meter

1M300 and 3M300 High Pressure Rotary Meters



3M300 High Pressure Meter

General Information

The Series B3 ROOTS® High Pressure meter is a positive displacement, rotary type gas meter designed for continuously measuring and indicating the accurate measurement of gas in a pipeline. ROOTS® High Pressure meters are suitable for handling most types of clean, dry, common gases at either constant or varying flow rates.

Volumetric accuracy of the ROOTS® meter is permanent, non-adjustable, and is not affected by low or varying line pressure. Series B3 meters may be used satisfactorily for pressure ranging from a few ounces to full MAOP. Displaced volume measurement is completely independent of the gas specific gravity, temperature, and pressure.

ROOTS® meters are manufactured in accordance with the ANSI/ASC-B109.3 for Rotary Type Gas Displacement Meters. Series B3 ROOTS® meter sizes 1M and 3M have flanged inlet and outlet connections conforming dimensionally with ANSI/ASME standards. The meter operating temperature range is from -40°F to +140°F (-40°C to +60°C).

The 1M/3M300 ROOTS® meters have a Maximum Allowable Operating Pressure (MAOP) of 300 psig (2068kPa). Every Series B meter body is static pressure tested at the factory at twice its MAOP and leak tested at 125 percent of MAOP in accordance with ASME Boiler Pressure Vessel Codes.

Description

1M/3M300 Series B3 High Pressure rotary meters employ the same positive displacement operating principle in other ROOTS® rotary meters where gas volumes are displaced by two figure 8 impellers rotating in a chamber of known volume. The 300 psig rated meters are designed to measure low volume - high pressure gas flow with a high degree of accuracy.

Applications

The 1M300 and 3M300 models are well suited for production wellhead, gathering applications, gas transmission, farm taps, grain dryers, irrigation and compressed fuel taps.

Accurate Low Flow Performance

Low start/stop rates extend the rangeability (gas measured) over a wider range of flow conditions.

Series 3 Accessory Units

Oil-Free Design

Series 3 accessories feature high quality and long-term reliability with an oil-free, permanently lubricated design, using Polymer bushings and pre-lubricated, shielded ball bearings, equating to easier installation and less maintenance.

Durable, Weather Resistant Cover

Optical Quality Lexan® covers on the Series 3 accessories offer optimal Ultraviolet protection while the cylindrical design allows the unit to easily shed rain, snow, ice, and dirt. The single piece cover design provides added protection against leakage under extreme conditions.

Solid State Pulsers and Transmitters Available

ROOTS® meters with factory installed Solid State Pulser and Transmitter are the low cost solution for your AMR requirements. Pulsers and transmitters mount directly to CTR/TC units, generating pulses representing volumetric information for remote reading.

Non-Moving Odometer Masking System

A unique and versatile odometer masking design using opaque or semi-transparent covers offers configurable, trouble-free masking.

Universal Instrument Drive Assembly

One size fits all with the Series 3 Instrument Drive assembly. Inventory costs are reduced by stocking one ID Assembly.

Performance Table

Model	1M300	3M300
Base Rating (ACFH)	1000	3000
Meter Operating Pressure psig	Corrected Capacity @ Metering Pressure in MSCFH	
125	9.5	28.4
150	11.2	33.5
175	12.9	38.6
200	14.6	43.7
250	17.9	53.8
300	21.3	64.0

All performance figures are based on Pb=14.73 psia (101.325 kPa), Tb=60°F (15°C), with Air as test medium.

Technical Specifications

	1M300	3M300
Maximum Capacity	1000 cfh	3000 cfh
Minimum Capacity	33 cfh	65 cfh
Rangeability ±1%	30:1	50:1
Oil Capacity	Side = 1.25 oz. Top = 7.6 oz.	Side = 1.25 oz. Top = 7.6 oz.
Pressure Rating	300 PSIG	300 PSIG
Nominal Pipe Size	1-1/2" (38mm)	2" (50mm)
Flange Connection	ANSI 300#FF	ANSI 300#FF
Flange to Flange	6-3/4" (171,5)	6-3/4" (171,5)
Temperature Rating	-40°F to +140°F	-40°F to +140°F
Piping Configuration	Top or Side inlet	Top or Side inlet
Drive Rate	10 cf (0,1 m³)	10 cf (0,1 m³)

Dimensions

1M300				
Version	Overall Length	Width Flange/Flange	Centerline to Accessory End (CL-AU)	Drawing No.
CTR	15 31/32	6 3/4	10 5/16	054722-000
CD	19 25/32	6 3/4	14 1/8	054439-000
CPS	18 1/16	6 3/4	12 13/32	056121-000

3M300				
Version	Overall Length	Width Flange/Flange	Centerline to Accessory End (CL-AU)	Drawing No.
CTR	17 5/32	6 3/4	10 29/32	054722-000
CD	20 31/32	6 3/4	14 23/32	054439-000
CPS	19 1/4	6 3/4	13	056121-000

How to Order:

Specify Series B3 ROOTS® meter, 1M300 or 3M300 plus the Accessory Type.

Accessory Types: Series 3 Counter (CTR), Counter with Instrument Drive (CD), or Counter with Solid State Pulser (CPWS – Single Connector, CPWD – Dual Connectors, or CPWX – Conduit Connection), or Counter with Electronic Transmitter (CEX) with either Conduit or M/S Circular connection. For the CD option, specify Top or Side Inlet and Clockwise (B) or Counter Clockwise (A) rotation.

For compatible ROOTS® accessories, see brochures TS:CEX, TS:RA100, and TS:SSP.

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