16" Steel Model M16

Bulletin SS01021 Issue/Rev. 1.1 (10/18)

Smith Meter® CT Series PD Meter For Crude Transportation

The **Smith Meter® Model M16 Meter** is a 16", double-case, straight-through type, rotary vane, positive displacement flow meter and is part of the Crude Transportation (CT) Series of large PD meters.

The Crude Transportation Series PD meters incorporate updated design features including lightened blades, full-width wear strips, Armalloy coated rollers and cam and tungsten carbide roller pins to provide extended service in harsh crude applications.

The Crude Transportation Series is suitable for both crude oil and refined product applications such as blending, batching and leak detection as well as traditional custody transfer applications.

Options

- » High Viscosity Meter Clearances – To extend operation at maximum flow rate from 200 mPa•s to 2,000 mPa•s.
- » High Temperature Meter Clearances – To extend operating temperatures from 105°F to 200°F (41°C to 93°C).
- » All Iron Trim – For operating temperatures above 200°F (93°C).
- » NACE Construction – Special components available to meet requirements of NACE Standard MR-01-75.

Operating Specifications

Maximum Flow Fate		
	BPH	m³/h
Continuous Rating - Standard Trim	12,500	2,000
Continuous Rating - All Iron Trim	9,375	1,500

Minimum Flow Fate Typical Performance						
Linearity[1]	**Units**	**Viscosity (Centipoise – mPa•s[2])**				
		1	**5**	**20**	**100**	**200**
±0.15%	BPH	1,400	560	140	36	18.0
	m³/h	222	89	22	6	2.9
±0.25%	BPH	1,050	420	105	27	14.0
	m³/h	167	67	17	4	2.2
±0.50%	BPH	700	280	70	18	10.0
	m³/h	111	45	11	3	1.6

1 Based on a maximum flow rate of 12,500 bph (2,000 m³/h).
2 1,000 mPa•s = 1,000 cP = 1 Pa•s.

Repeatability

±0.02%

Viscosity

Standard: 200 mPa•s2 (1,000 SSU) maximum.

Optional: 2 Pa•s (10,000 SSU) maximum – specify "High Viscosity Meter Clearances."

Over 2 Pa•s: Specify "High Viscosity Meter Clearances" and derate maximum flow rate in direct proportion to viscosity over 2 Pa•s (e.g., at 4 Pa•s, derate Maximum Flow Rate to 50% of normal continuous rating – 6,250 BPH).

Temperature Ranges

Operating:

Standard Trim, Standard Meter Clearances:
-20°F to 105°F (-29°C to 41°C).

Standard Trim, High Temperature Meter Clearances:
-20°F to 200°F (-29°C to 93°C).

All Iron Trim, Standard Meter Clearances:
-20°F to 400°F (-29°C to 205°C).

Elastomers:

Buna N: -20°F to 255°F (-29°C to 108°C).
Viton: 10°F to 400°F (-12°C to 205°C).

Meter Gearing

One barrel or 50 dekalitres per revolution of meter calibrator output shaft.

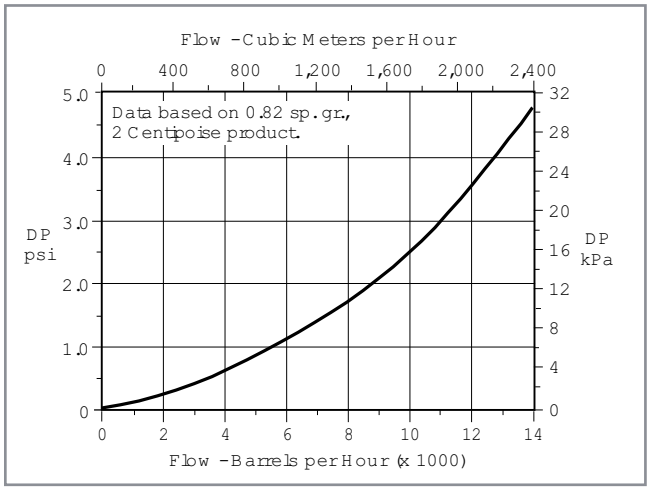
Maximum Working Pressure			
Model	**Flange**	**PSI**	**kPa**
M16-S3	150	285[4]	1,965[4]
M16-S5	300	300	2,068
M16-S6	300	740[4]	5,102[4]

Note: *Flange Class per ANSI B16.5 Raised Face.*

Installation

It is recommended that the meter be protected with a suitable mesh strainer.

Pressure Drop (ΔP)



Materials of Construction			
Trim	**Housing**	**Internals**	**Seals**
Standard	Steel	Iron, Steel, Stainless Steel, Aluminum	Buna N, Viton, or PTFE[3]
Iron	Steel	Iron, Steel, Stainless Steel	Buna N, Viton, or PTFE[3]

Weights & Measures Approvals

European Union: MID
INMETRO/DIMEL No. 0148
Consult Factory for other certifications.

Ordering Information	
Application	Batching, Loading, Blending, Inventory, Custody Transfer, etc.
Operating Conditions	Liquid – Name and sp. gr., Flow Range[5], Temp Range[5], Viscosity Range[5], Maximum Working Pressure.
Seals	Buna N or Viton
Units of Registration	Gallons, Barrels, Cubic Meters, Tons.
Direction of Flow	Left to right flow (as viewed above) is standard and will be supplied unless right to left flow is specified.
Options and Accessories	As required.

3 Polytetrafluoroethylene (PTFE)
4 Maximum working pressure at 100°F (38°C).
5 Specifiy: minimum / normal / maximum.

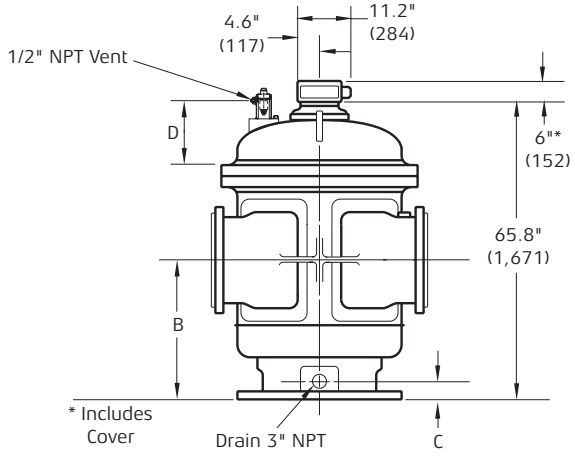
Dimensions

Inches (Millimeters)

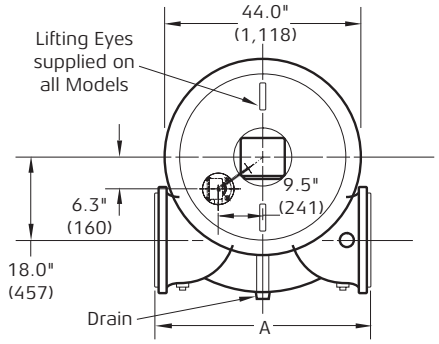
Note: Dimensions – Inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.

Model	A	B	C	D	Weight – lb (kg)
M16-S3	46.0" (1,168)	30.5" (775)	3.5" (89)	14.0" (355)	6,505 (2,927)
M16-S5	46.0" (1,168)	30.5" (775)	3.5" (89)	14.0" (355)	7,400 (3,330)
M16-S6	47.0" (1,194)	30.5" (775)	4.0" (102)	14.4" (366)	9,600 (4,320)

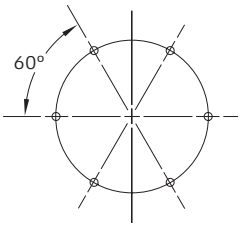
Model M16-S3 through S6



Top View



Bottom View (Base)



Meter Anchor Bolt Holes
6 - 1-1/8" (29) Bolt Holes on a
33.0" (838) Diameter Bolt Circle

Accessories

Counters

200 Series - Accumulative, 9-digit, non-reset type.
600 Series - Large 5 digit reset, small 8 digit non-reset.

Electronic Pulse Transmitters

LNC Pulse Transmitter (adapts to 600 Series Counters).
Low-Resolution - 1 or 10 pulses[10].
High-Resolution (HR) - 50 or 100 pulses[10].

UPT

Universal Pulse Transmitter – High Resolution dual pulse quadrature output in a weather-tight explosion-proof enclosure (up to 1000 pulses/rev) used to provide pulse inputs to optional electronic indicators/controllers/flow computers which may perform electronic temperature compensation.

Flow Rate Indicator

Direct Mount Mechanical.
Remote Electronic.

Remote Registration

Electronic Totalizers.

Mechanical Automatic Temperature Compensation

Model ATC - Factory-set for a given product.
Model ATG - Field-adjustable for different products.

Revisions included in SS01021 Issue/Rev. 1.1 (10/18):
W&M Approvals updated; Accessories section added.

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