

4" Steel Model F4-V1 / V3

Bulletin SS01013 Issue/Rev. 0.7 (4/18)

Smith Meter® Rotary Vane PD Meter

The **Smith Meter® Model F4-V Meter** is a 4", double-case, vertical-type (V1 and V3), rotary vane, positive displacement meter. Applications include: blending, batching, dispensing, inventory control, and custody transfer of oils, solvents, chemicals, paints, fats, and fertilizers.



Features

- **Superior Accuracy** – The Smith Meter Rotary Vane Meter principle, combined with the meter's uniquely designed (offset) inlet and outlet nozzles, minimizes pressure drop across the measuring chamber, which reduces flow through meter clearances (slippage), to maximize accuracy.
- **Low Pressure Drop** – Streamlined flow path provides low pressure drop.
- **Positive and Accurate Registration** – High torque drive calibrator with adjustment in 0.05% increments ensures accurate registration.
- **Long Service Life** – Low friction ball bearings, fixed cam-type timing, and rugged construction give sustained accuracy and long service life.

Options

- **High Viscosity Meter Clearances** – To extend operation at maximum flow rate from 400 mPa·s to 2,000 mPa·s.
- **High Temperature Clearances** – To extend operating temperatures from 150°F to 200°F (65°C to 93°C).
- **All Iron Trim** – For operating temperatures above 200°F (93°C).
- **LPG Trim** – For low lubricity liquids such as LPG.
- **NACE Construction** – Special components available to meet requirements of NACE Standard MR-01-75.

Operating Specifications

Maximum Flow Rate

	USGPM	L/min
Continuous Rating – Standard Trim	600	2,250
Intermittent Rating¹ – Standard Trim	720	2,750
Continuous/Intermittent Rating – All Iron or LPG Trim	450	1,700

Minimum Flow Rate – Typical Performance

		Viscosity (Centipoise – cP)					
Linearity ²	Units	0.5	1	5	20	100	400
±0.15%	USGPM	100	60	25	6	1.25	0.30
	L/min	375	227	95	23	4.75	1.14
±0.25%	USGPM	74	45	18	4	1.00	0.25
	L/min	284	170	68	15	3.80	0.95
±0.50%	USGPM	50	30	12	3	0.60	0.15
	L/min	190	114	45	11	2.25	0.57

1 Intermittent rating applies to service on clean, refined products where continuous operation is not required (e.g., truck loading, rail loading, and other batching operations).

2 Linearity based on a maximum flow rate of 600 USGPM (2,250 L/min) unless otherwise stated.

3 1,000 mPa·s = 1,000 cP = 1 Pa·s.

4 Polytetrafluoroethylene (PTFE).

Repeatability

±0.02%

Viscosity

Standard: 400 mPa•s³ (2,000 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 direction proportion to viscosity over 2 Pa•s (e.g., at 4 Pa•s, derate Maximum Flow Rate to 50% of Normal Continuous Rating - 300 USGPM).

Temperature

Standard Meter Clearances With:

Buna N/EPR/PTFE⁴: -20°F to 150°F (-29°C to 65°C).

Viton: 10°F to 150°F (-12°C to 65°C).

High Temperature Meter Clearances With:

Buna N/EPR/PTFE⁴: -20°F to 200°F (-29°C to 93°C).

Viton: 10°F to 200°F (-12°C to 93°C).

All Iron Trim With:

Buna N: -20°F to 225°F (-29°C to 108°C).

EPR: -20°F to 300°F (-29°C to 149°C).

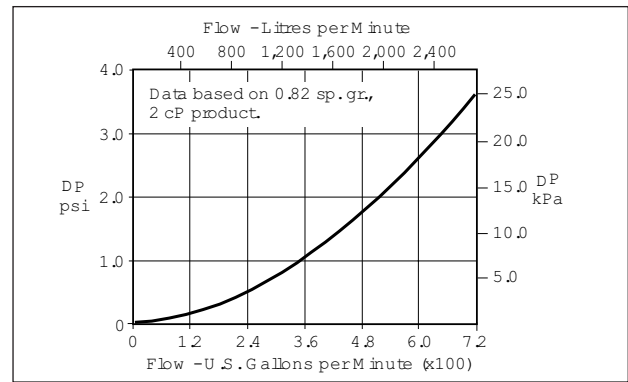
PTFE⁴: -20°F to 400°F (-29°C to 205°C).

Viton: 10°F to 400°F (-12°C to 205°C).

Meter Gearing

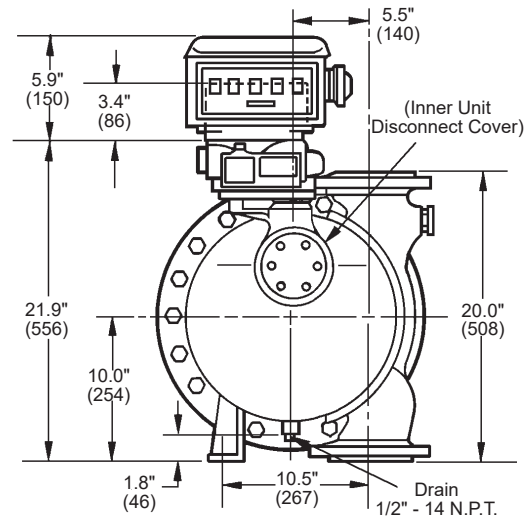
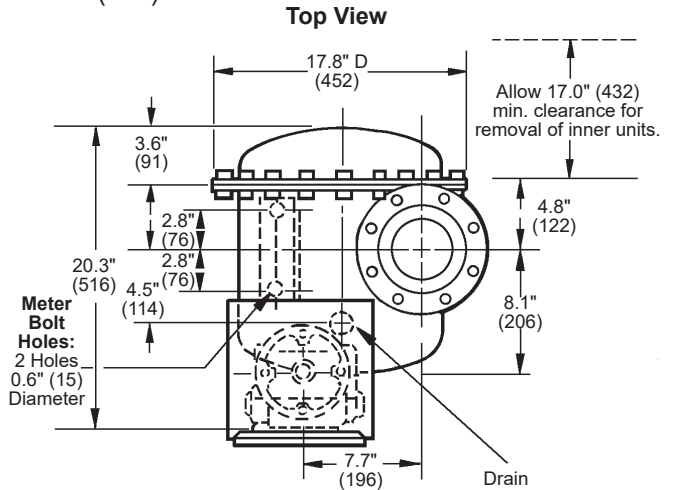
5 U.S. Gallons or 1 dekalitre per revolution of meter calibrator output shaft.

Pressure Drop (ΔP)



Dimensions

Inches (mm)



Maximum Working Pressure

Model	Flange	PSI	kPa
F4-V1	150	150	1,034
F4-V3	150	285 ⁵	1,965 ⁵

Flange Class per ANSI B16.5 Raised Face Flange.

Materials of Construction

Trim	Housing	Internals	Seals
Standard	Steel	Iron, Steel, Stainless Steel, Aluminum	Buna N ⁶ , Viton, EPR, or PTFE ⁴
LPG All Iron	Steel	Iron, Steel, Stainless Steel, Rulon, Nylon	Buna N ⁶ , Viton, EPR, or PTFE ⁴

Installation

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

Note:

1. When supplied with Single-Head "Stack-Up" and a 299 or 296 Set-Stop Valve, a minimum 15" rigid extension between meter and accessories is required.
2. When supplied with a Mechanical Set-Stop Valve, an 18" rigid extension is required.

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

⁴ Polytetrafluoroethylene (PTFE).
⁵ Maximum W.P. at 100 °F (38 °C).
⁶ Standard.

Ordering Information

Application	Batching, Loading, Blending, Inventory, Process Control, etc.
Operating Conditions	Liquid – Name and sp. gr., Flow Range ⁷ , Temp. Range ⁷ , Viscosity Range ⁷ , Maximum Working Pressure.
Seals	Buna N, Viton, EPR, or PTFE ⁴
Units of Registration	Gallons, litres, pounds, kilograms
Direction	Up or down.
Options and Accessories	As required.

Accessories

Strainer

4" steel, R.F. flanged, 4 mesh or finer screen.

Mechanical Preset Valves

4" straight-through type, steel, flanged, 275 psi maximum working pressure.

Hydraulic Valves

4" globe-type, steel, R.F. flanged, 275 psi maximum working pressure.

Counters

200 Series - Accumulative, nine-digit, non-reset type.
600 Series - Five large-digit reset, eight small-digit non-reset.

Printer

Seven-digit accumulative.
Optional six-digit zero start.

Preset Counter

300C Series - Four-digit (five-digit optional) mechanical pushbutton preset with valve linkage. Microswitch package for hydraulic package for hydraulic valve, pump control, or other interlock optional.

Pulse Transmitters

Type "E" - SPDT Mercury Wetted Switch.

LNC Pulse Transmitter (adapts to 600 Series Counters).

Low Resolution - 1 or 10 pulses⁹.

High Resolution (HR) - 50 or 100 pulses⁹.

PEXP - Photoelectric pulse generator in an explosion-proof case (up to 1,000 pulses/rev.).

PPS - Dual-channel, photoelectric, security pulse transmitter in an explosion-proof housing (up to 1,000 pulses/rev.).

Flow Rate Indicator

Direct mount mechanical.

Remote electronic.

Remote Registration

Electromechanical counters.

Electronic totalizers.

Automatic Temperature Compensation

Model ATC - Factory-set for a given product.

Model ATG - Field-adjustable for different products.

Model LEATC - Electronic, field-programmable for different products.

⁴ Polytetrafluoroethylene (PTFE).

⁷ Standard seals supplied unless optional material specified.

⁸ Specify: minimum/normal/maximum.

⁹ Per revolution of LNC right-hand wheel.

Revisions included in SS01013 Issue/Rev. 0.7 (4/18):

New company branding.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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