

4" Steel Model E4

Bulletin SS01011 Issue/Rev. 0.9 (10/18)

Smith Meter® PD Meters Rotary Vane Meter

The **Smith Meter® Model E4 Meter** is a double-case, straight-through positive displacement meter. It incorporates 4-inch ANSI flanges and should be applied in flow systems that handle rates typical of 3-inch systems, but have 4-inch piping due to pumps and pressure loss considerations. Applications include: blending, batching, dispensing, inventory control, and custody transfer. The relatively high intermittent rating is for use on systems that would require this flow rate infrequently.



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 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	420	1,600
Intermittent Rating (Extended) ¹ – Standard Trim	600	2,250
Continuous/Intermittent Rating – All Iron or LPG Trim	315	1,200

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

Minimum Flow Rate Typical Performance

Linearity ²	Units	Viscosity (mPa*s)					
		0.5	1	5	20	100	400
±0.15%	USGPM	80	50	20	5.0	1.0	0.25
	L/min	303	190	75	19.0	4.0	1.00
±0.25%	USGPM	50	35	15	4.0	0.8	0.20
	L/min	190	132	57	15.0	3.0	0.80
±0.50%	USGPM	40	25	10	2.5	0.5	0.13
	L/min	150	95	38	10.0	2.0	0.50

Repeatability

±0.02%

Viscosity³

Standard: 400 mPa*s (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 direct proportion to viscosity over 2 Pa*s (e.g., at 4 Pa*s, derate maximum flow rate to 50% of normal continuous rating - 210 USGPM).

Temperature

Standard Meter Clearances, with –

- Buna N/PTFE⁷: -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/PTFE⁷: -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).
- PTFE⁷: -20°F to 400°F (-29°C to 205°C).
- Viton: 10°F to 400°F (-12°C to 205°C).

Other Temperatures: consult factory.

Meter Gearing

Five U.S. Gallons or one Dekalitre per revolution of meter calibrator output shaft.

1 Barrel meter gearing available on E4-S1.

² Linearity based on a maximum flow rate of 420 USGPM (1,600 L/min) unless otherwise stated.

³ 1,000 mPa*s = 1,000 cP = 1 Pa*s. 10 Per revolution of LNC Right-Hand Wheel.

⁴ Maximum W.P. at 100°F (38°C).

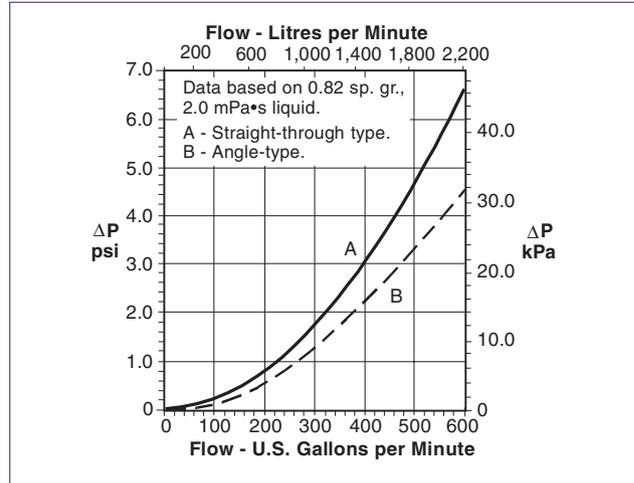
⁷ Polytetrafluoroethylene (PTFE).

Maximum Working Pressure

Model	Flange	PSI	kPa
S1	150	150	1,034
S3	150	285 ⁴	1,965 ⁴

Flange Class per ANSI B16.5 Raised Face Flange.

Pressure Drop (ΔP)



Materials of Construction

Trim	Housing	Internals	Seals
Standard		Iron, Steel, Stainless Steel, Aluminum	
LPG	Steel	Iron, Steel, Stainless Steel, Aluminum, Rulon and Nylon	Std. – Buna N Opt'l. – Viton PTFE ⁷
All Iron		Iron, Steel, Stainless Steel	

Installation

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

Weights & Measures Approvals

USA: NTEP CC 95-054

Canada: NOA S.WA-0756

European Union: MID Certificate (upon request)

Russia: GOST (upon request)

Australia: NMI (upon request)

Malaysia: SIRM (upon request)

Brazil: INMETRO (upon request)

Others: Consult Factory

Pressure Safety Approvals

CANADA: CRN (upon Request)

European Union: - PED (upon Request)

Meter Ordering Information

Application	Batching, Loading, Blending, Inventory, Process Control, etc.
Operating Conditions	Liquid – Name and sp. gr., Flow Range ⁵ , Temp. Range ⁵ , Viscosity Range ⁵ , Maximum Working Pressure
Seals	Buna N ⁶ , Viton, or PTFE ⁷
Units of Registration	Gallons, Liters, Dekaliters, Pounds, Kilograms
Direction	Left-to-right flow (as viewed from above) is standard and will be supplied unless right-to-left flow is specified
Style	Straight-through
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, R.F. flanged.

Hydraulic Valves

4" globe-type, steel R.F. flanged (spool piece or smaller orifice plate is required for rate of flow control).

Air Eliminator

4" steel, R.F. flanged, 300 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 valve, pump control, or other interlock optional.

Electronic Pulse Transmitters

LNC Pulse Transmitter (adapts to 600 Series Counters).

Low Resolution – 1 or 10 pulses⁸.

High Resolution (HR) – 50 or 100 pulses⁸.

UPT – Quad-channel, infrared, security pulse transmitter in an explosion-proof housing (up to 1,000 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

Electromechanical counters.

Electronic totalizers.

Mechanical Automatic Temperature Compensation

Model ATC – Factory-set for a given product.

Model ATG – Field-adjustable for different products.

⁵ Specify: minimum/normal/maximum.

⁶ Standard seals supplied unless optional material specified.

⁷ Polytetrafluoroethylene (PTFE).

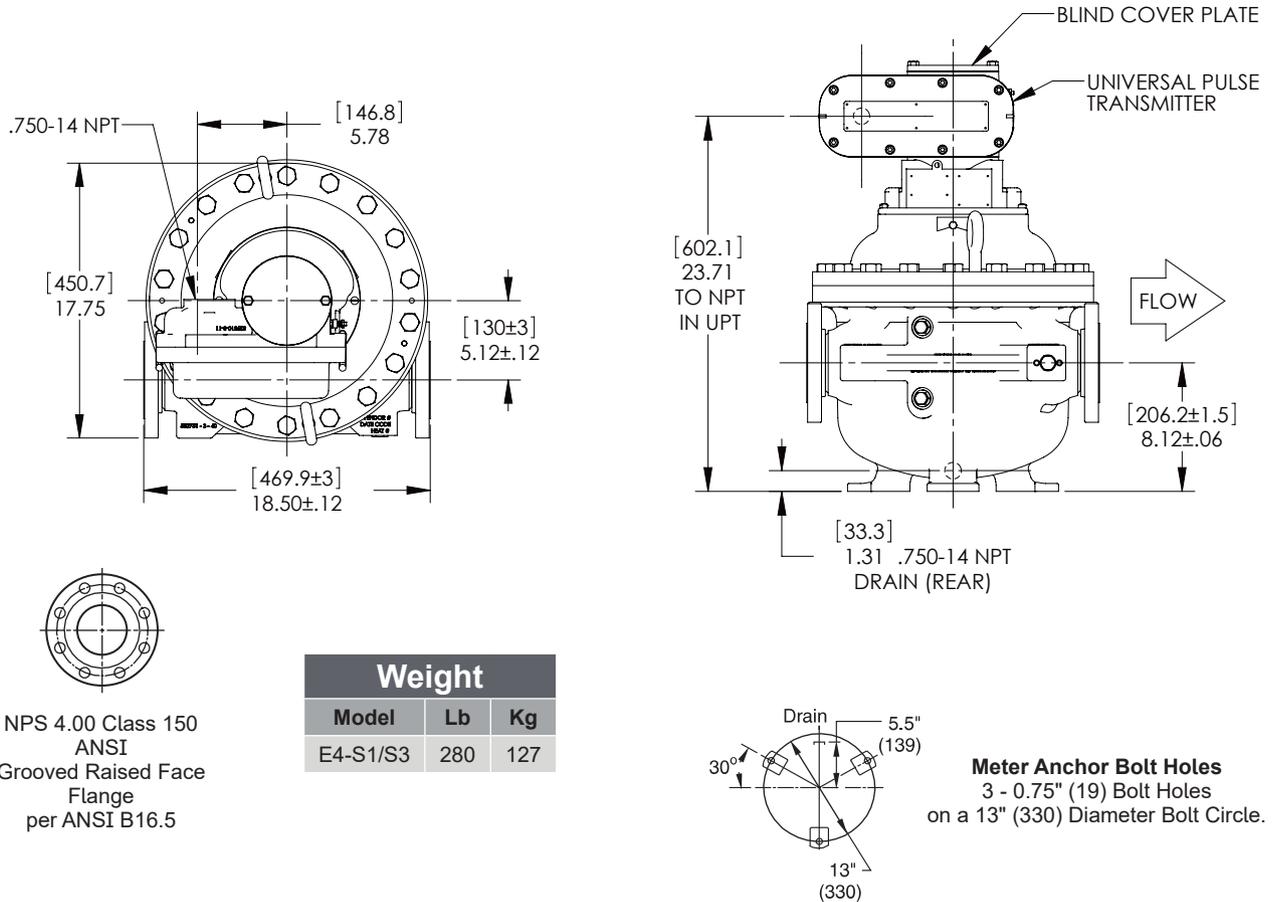
⁸ Per revolution of LNC Right Hand Wheel.

Dimensions

Inches (Millimeters)

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

Model E4-S1/S3



NPS 4.00 Class 150
ANSI
Grooved Raised Face
Flange
per ANSI B16.5

Weight		
Model	Lb	Kg
E4-S1/S3	280	127

Meter Anchor Bolt Holes
3 - 0.75" (19) Bolt Holes
on a 13" (330) Diameter Bolt Circle.

Revisions included in SS01011 Issue/Rev. 0.9 (10/18):

Weights & Measures information added. Pressure safety approvals added. Dimensional drawing made up to date.

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.