

4" Steel Model E4

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Smith Meter Rotary Vane PD Meter

The Smith Meter Model E4 meter is a 4-inch, double-case, straight-through-type, rotary vane, positive displacement flowmeter. The E4 incorporates 4" ANSI flanges and is applied in flow systems that handle rates typical of 3" systems but have 4" 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

- The 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.
- Streamlined flow path provides low pressure drop.

Features

- High torque drive calibrator with adjustment in 0.05 percent (%) increments ensures accurate registration.
- Low-friction ball bearings, fixed cam-type timing, and rugged construction for sustained accuracy and long service life.

Options

- High viscosity meter clearances to extend operation at maximum flow rate from 400 millipascal-second (mPa•s) to 2,000 mPa•s.
- High temperature clearances to extend operating temperatures from 150 degree Fahrenheit (°F) to 200 °F (65 degree Celsius (°C) to 93°C).
- All iron trim for operating temperatures above 200 °F (93 °C).
- Compliant with National Mechanical Engineers (NACE) International standard MR0175.

Operating Specifications

Maximum Flow Rate

	USGPM	L/min
Continuous rating with standard trim	420	1,600
Intermittent rating extended with standard trim	600	2,250
Continuous and Intermittent rating with all iron or LPG trim	315	1,200

Note: Intermittent rating applies to limited service at maximum flow rate on clean, refined products where continuous operation is not required and these include truck loading, rail loading, and other batching applications.

Minimum Flow Rate Typical Performance

Linearity	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

Note: Linearity is based on a maximum flow rate of 420 US gallons per minute (USGPM) (1,600 liters per minute (L/min) unless otherwise stated.

Repeatability

±0.02%

Viscosity

Viscosity is 1,000 mPa•s = 1,000 cP = 1 Pa•s.

- Standard viscosity is 400 mPa•s (2,000 seconds, Saybolt universal (SSU)) maximum.
- Optional viscosity is two pascal seconds (Pa•s) (10,000 SSU) maximum. Specify high viscosity meter clearances.
- For viscosity over two Pa•s, specify high viscosity meter clearances and derate maximum flow rate in direct proportion to viscosity over two Pa•s. For example, at four Pa•s, derate maximum flow rate to 50% of normal continuous rating 210 USGPM.

Temperature Ranges

Standard meter clearances with

- Buna-N and polytetrafluoroethylene (PTFE) is -20 to 150 °F (-29 to 65 °C).
- Fluoroelastomer (FKM) is 10 to 150 °F (-12 to 65 °C).

High temperature meter clearances with

- Buna-N and PTFE is -20 to 200 °F (-29 to 93 °C).
- FKM is 10 to 200 °F (-12 to 93 °C).

All iron trim with

- Buna-N -20 to 225 °F (-29 to 108 °C).
- PTFE is -20 to 400 °F (-29 to 205 °C).

- FKM is 10 to 400 °F (-12 to 205 °C).

For other temperature, consult factory.

Meter Gearing

One barrel or 50 dekaliters per revolution of meter calibrator output shaft. One barrel meter gearing is available on E4-S1.

Maximum Working Pressure

Model	Flange	PSI	kPa
E4-S3	150	285	1,965

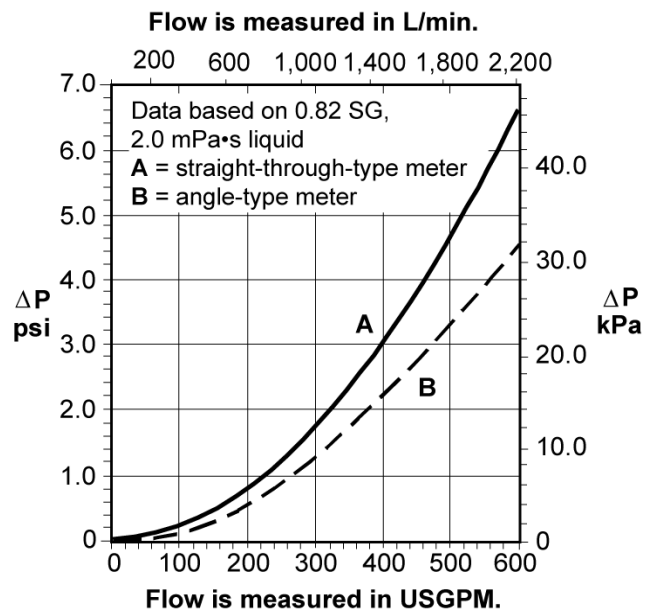
Note: Maximum working pressure at 100 °F (38 °C).

Note: Flange class per ANSI B16.5 raised face (RF).

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, and aluminum	Standard is Buna-N. Optional is FKM and
LPG		Iron, steel, stainless steel, aluminum, rulon, and nylon	PTFE.
All iron		Iron, steel, and stainless steel	

Weights and Measures Approvals

USA: NTEP CC 95-054

Canada: NOA S.WA-0756

European Union: MID Certificate (upon request)

Russia: GOST (upon request)

Australia: NMI (5-6B-55B)

Malaysia: SIRM (upon request)

Brazil: INMETRO (upon request)

Others: Consult factory

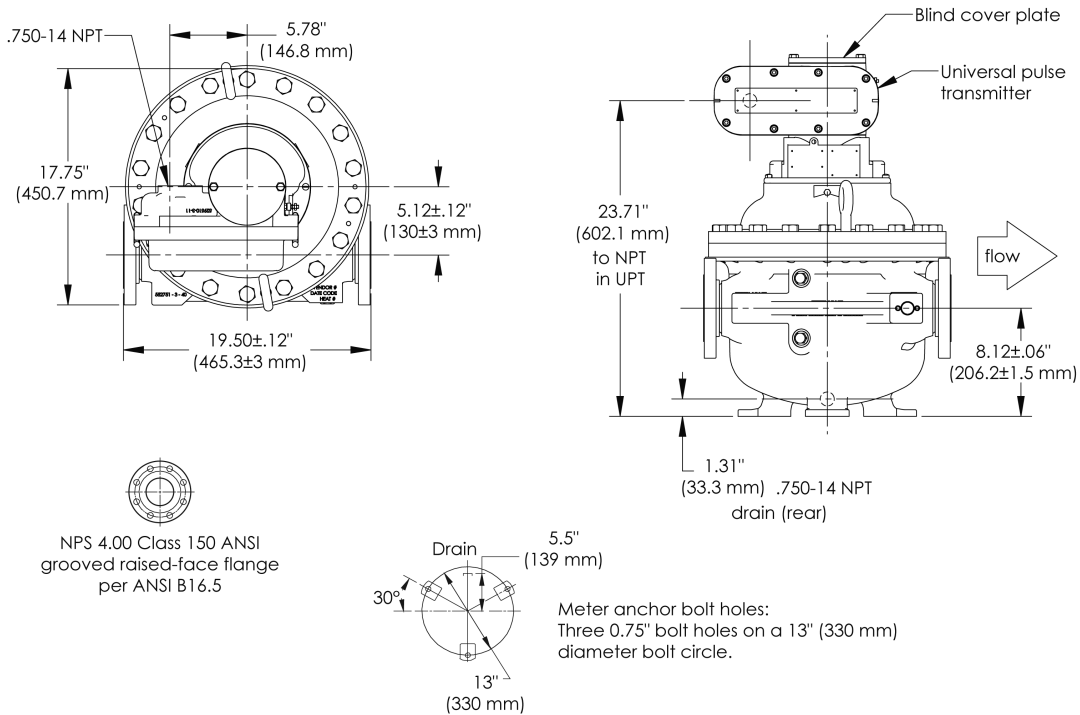
Pressure Safety Approvals

Canada: CRN (upon request)

European Union: PED (upon request)

Dimensions

The dimensions of model E4-S3 are in inches (") to the nearest tenth (millimeters (mm) to the nearest whole millimeter), each independently dimensioned from respective engineering drawings.



Weight

The weight of model E4-S3 is 280 lb (127 kg).

Ordering Information	
Application	Batching, loading, blending, inventory, custody transfer, etc.
Operating Conditions	Liquid's name and SG, flow range, temperature range, viscosity range, maximum working pressure
Seals	Buna-N, FKM, or PTFE
Units of Registration	Gallons, liters, dekaliters, pounds, and kilograms
Direction of Flow	Left to right flow 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, raised-face (RF) flanged, 4 mesh or finer screen

Mechanical Preset Valves

- 4" straight-through-type, steel, RF flanged

Hydraulic Valves

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

Air Eliminator

- 4" steel, RF flanged, 300 pound-force per square inch (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 is optional.

Electronic Pulse Transmitters

The large numeral counter (LNC) pulse transmitter adapts to 600 Series counters. Pulses are per revolution of LNC right hand wheel.

- Low resolution 1 or 10 pulses
- High resolution (HR) 50 or 100 pulses

The universal pulse transmitter (UPT) is a quad-channel, infrared, security pulse transmitter in an explosion-proof housing with up to 1,000 pulses per revolution. It is used to provide pulse inputs to optional electronic indicators, controllers, and flow computers that may perform electronic temperature compensation.

Flow Rate Indicator

- Direct mount mechanical
- Remote electronic

Remote Registration

- Electromechanical counters
- Electronic totalizers

Publication Revisions

The flange to flange dimensions have been updated.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacture 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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