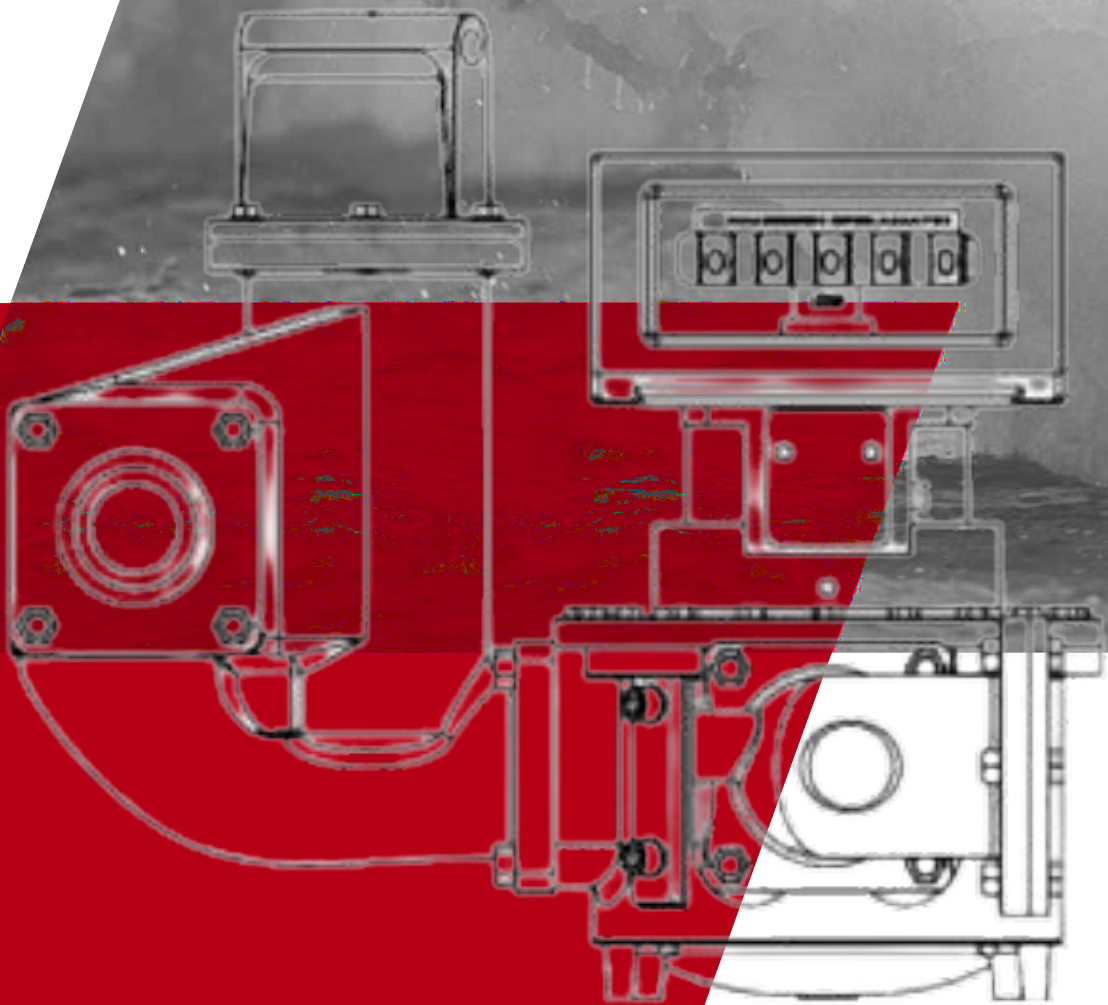




# flow meter





## 3" Model

Bulletin SS01016 Issue/Rev. 1.3 (11/21)

### PetroPompSad Meter® PD Meters

The Smith Meter Model E3 is a 3", double-case, straight-through (S3 through S8), rotary vane type positive displacement meter. Applications for the E3 include blending, batching, dispensing, inventory control, and custody transfer of oils, solvents, chemicals, paints, fats and fertilizers.

#### Features

- Superior accuracy—Smith Meter's rotary-vane meter principle, combined with the meter's uniquely designed (offset) inlet and outlet nozzles, maximizes accuracy by minimizing pressure drop across the measuring chamber reducing slippage (flow through meter clearances).
- Low pressure drop—Streamlined flow path provides low pressure drop.
- Positive and accurate registration—High-torque drive calibrator with adjustment in 0.05 percent (%) increments ensures accurate registration.
- Long service life—Low-friction ball bearings, fixed cam-type timing, and rugged construction provide sustained accuracy and long service life.

#### Options

- High-viscosity meter clearances extend operation at maximum flow rate from 400 to 2,000 millipascal-second (mPa·s).
- High-temperature clearances extend operating temperatures from 150 to 200 degrees Fahrenheit (°F) (65 to 93 degrees Celsius (°C)).
- All iron trim option for operating temperatures above 200 °F (93 °C).
- Liquefied petroleum gas (LPG) trim option for low-lubricity liquids, such as LPG.
- Compliant with NACE standard MR0175.
- ASME Section VIII vessel construction is available for model E3-S3.



Generic Illustration

### Operating Specification

#### Maximum Flow Rate

	USGPM	L/min
<b>Continuous rating with standard trim</b>	420	1,600
<b>Intermittent rating<sup>1</sup> with standard trim</b>	500	1,900
<b>Continuous/intermittent rating with all iron or LPG trim</b>	315	1,200

#### Minimum Flow Rate (Typical Performance)

Linearity <sup>2</sup>	Units	Viscosity (Centipoise—mPa·s)					
		.5	1	5	20	100	400
±0.15%	USGPM	80	50	20	5	1	0.25
	L/min	303	190	75	19	4	1
±0.25%	USGPM	50	35	15	4	0.8	0.20
	L/min	190	132	57	15	3	0.8
±0.50%	USGPM	40	25	10	2.4	.05	0.13
	L/min	150	95	38	10	2	0.5

US gallons per minute (USGPM) and liters per minute (L/min)



### Repeatability

±0.02%

### Viscosity

Standard: 400 mPa·s<sup>3</sup> (2,000 Seconds Saybolt Universal (SSU)) maximum

Optional: 2 pascal seconds (Pa·s) (10,000 SSU) maximum and 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. For example, at 4 Pa·s, derate maximum flow rate to 50% of normal continuous rating 210 USGPM.

### Temperature

Standard meter clearances with:

- Buna-N/PTFE<sup>8</sup>: -20 to 150 °F (-29 to 65 °C)
- FKM<sup>9</sup>: 10 to 150 °F (-12 to 65 °C)
- Low temp. FKM<sup>9,10</sup>: -50 to 150 °F (-46 to 65 °C)

High temperature meter clearances with:

- Buna-N/PTFE<sup>8</sup>: -20 to 200 °F (-29 to 93 °C)
- FKM<sup>9</sup>: 10 to 200 °F (-12 to 93 °C)
- Low temp. FKM<sup>9,10</sup>: -50 to 200 °F (-46 to 93 °C)

All iron trim with:

- Buna-N: -20 to 225 °F (-29 to 108 °C)
- PTFE<sup>8</sup>: -20 to 400 °F (-29 to 205 °C)
- FKM<sup>9</sup>: 10 to 400 °F (-12 to 205 °C)
- Low temp. FKM<sup>9,10</sup>: -50 to 400 °F (-46 to 205 °C)

### Meter Gearing

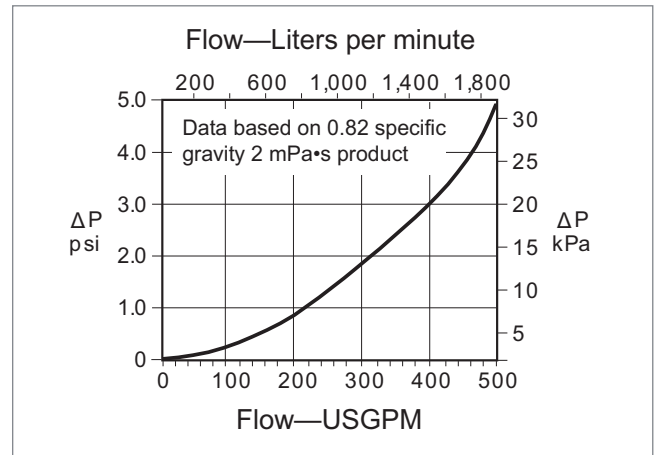
Five US gallons or 1 dekaliter per revolution of meter calibrator output shaft.

One barrel—special.

Maximum Working Pressure			
Model	Flange	PSI	kPa <sup>7</sup>
E3-S3	150	285 <sup>4</sup>	1,965 <sup>4</sup>
E3-S6	300	740 <sup>4</sup>	5,102 <sup>4</sup>
E3-S7	600	1,480 <sup>4</sup>	10,204 <sup>4</sup>
E3-S8	900	2,220 <sup>4</sup>	15,306 <sup>4</sup>

**Note:** Flange class per ANSI B16.5 raised-face flange.

### Pressure Drop (ΔP)



### Materials of Construction

Trim	Housing	Internals	Seals
Standard	Steel	Iron, steel, stainless steel, aluminum	Buna-N <sup>6</sup> , FKM <sup>5,9</sup> , PTFE <sup>8</sup> , low temp. FKM <sup>10</sup>
LPG	Steel	Iron, steel, stainless steel, aluminum, rulon, and nylon	Buna-N <sup>6</sup> , FKM <sup>5,9</sup> , PTFE <sup>8</sup> , low temp. FKM <sup>10</sup>
All Iron	Steel	Iron, steel, stainless steel	Buna-N <sup>6</sup> , FKM <sup>5,9</sup> , PTFE <sup>8</sup> , low temp. FKM <sup>10</sup>

### Installation

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

### Weights and Measures Approvals

NTEP Certificate of Conformance 95-054  
 Canadian Notice of Approval (NOA) S.WA-0615  
 Australia—NMI 5-6B-55B  
 Brazil INMETRO Dimel No. 0148  
 PTB Issued MID (Measuring Instrument Directive)  
 PTB Issued OIML R117 Test Report  
 Russia—GOST  
 For others, consult factory.

### Pressure Safety Requirements

PED—Pressure Equipment Directive (Europe)  
 CRD—Canadian Registration Number  
 For others, consult factory.



## Catalog Code

The following guide defines the correct PD meter for a given application and the respective catalog code. This code is part of the ordering information and should be included on the purchase order.

1	2	3	4	5	6	7	8	9	10
K	E	3	S	1	G	B	S	0	0

### Position 1: Code

K—Catalog Code

### Positions 2 and 3: Model/Flange Size

E3—3"

### Position 4: Flow Path

S—Straight

### Position 5: Pressure Class and End Connections

#### Standard (Raised-Face Flanges)

- 3—Class 150, 285 psig/1,965 kPa
- 6—Class 300, 740 psig/5,102 kPa
- 7—Class 600, 1,480 psig/10,204 kPa
- 8—Class 900, 2,220 psig/15,306 kPa

#### PED (Raised-Face Flanges)

- 1—Class 150, not available
- 3—Class 150, 285 psig/1,965 kPa
- 5—Class 300, not available
- 6—Class 300, 740 psig/5,102 kPa
- 7—Class 600, consult factory

All Flanges designed to ANSI B16.5, pressure ratings maximum working pressure at 100 °F.

### Position 6: Meter Gearing

- G—Gallons (5:1 - S3)
- B—Barrels (1:1 - S3 through S8)
- D—Dekaliters (1:1 - S3 through S8)
- I—Imperial Gallons<sup>11</sup>
- P—Pound<sup>11</sup>

### Position 7: Seals

- B—Buna-N
- V—FKM<sup>9</sup>
- T—PTFE<sup>8</sup>
- L—Low temp. FKM<sup>9,10</sup>

### Position 8: Trim

- S—Standard
- A—All Iron
- L—LPG

### Position 9: Temperature Compensation

- 0—None
- A—ATC
- B—ATG

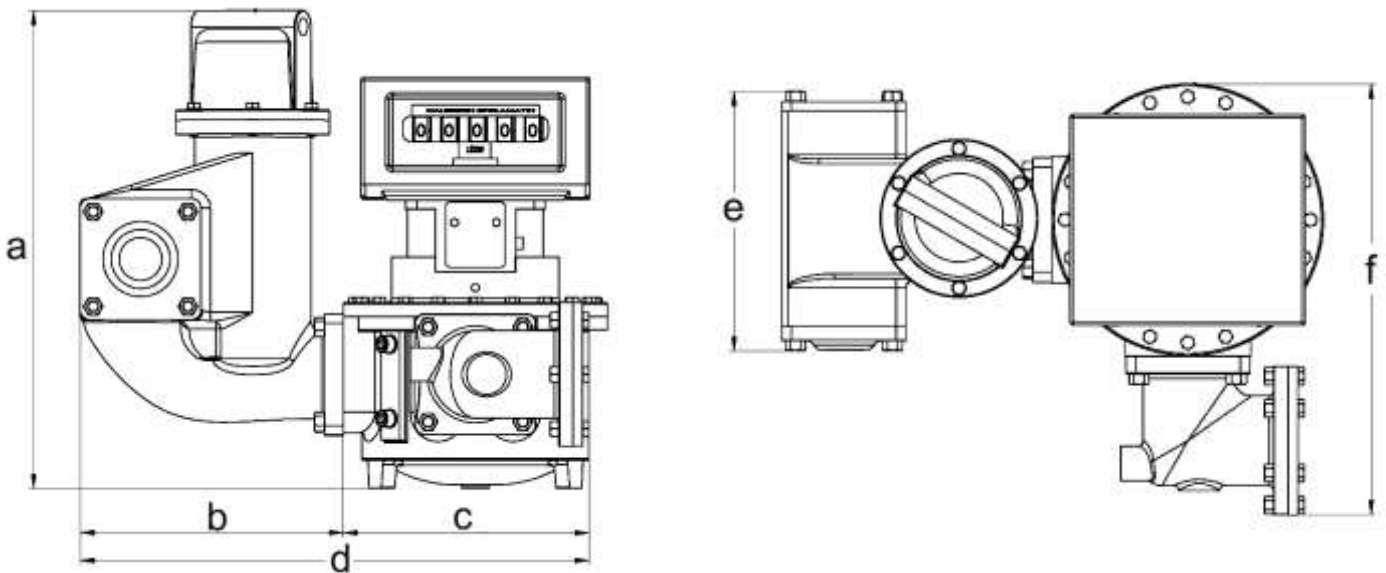
### Position 10: Special Requirements

- 0—Standard
- P—PED (consult factory)<sup>12</sup>
- C—CRN and low temp. material<sup>10</sup>
- L—Low temp. material<sup>10</sup>

## Dimensions

Inches (millimeters)

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



Boyutiar (m m )	A	B	C	D	E	F
	480	270	295	565	265	450

## Ordering Information

<b>Application</b>	Batching, Loading, Blending, Inventory, Process Control, etc.
<b>Operating Conditions</b>	Liquid—Name, Specific Gravity or API Gravity, Flow Range <sup>13</sup> , Temperature Range <sup>13</sup> , Viscosity Range <sup>13</sup> , Maximum Working Pressure
<b>Seals</b>	Buna-N <sup>14</sup> , FKM <sup>9</sup> , PTFE <sup>8</sup> , or Low temp. FKM <sup>9,10</sup> .
<b>Units of Registration</b>	Gallons, Barrels, Liters, Dekaliters, Pounds, Kilograms, etc.
<b>Direction of Flow</b>	Left-to-right (as viewed above) is standard and will be supplied unless right-to-left flow is specified.
<b>Style</b>	Straight-through
<b>Options and Accessories</b>	As required

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