

10" Steel Model JA10

Bulletin SS01018 Issue/Rev. 1.2 (11/21)

Smith Meter® Crude Transportation (CT) Series Positive Displacement (PD) Meter

The Smith Meter® Model JA10 Meter is a 10", 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 design features including lightened blades, full-width wear strips, 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.



Generic Illustration

Options

- High-viscosity meter clearances extend operation at maximum flow rate from 200 to 2,000 millipascal-second (mPa·s).
- High-temperature clearances extend operating temperatures from 125 to 200 degrees Fahrenheit (°F) (52 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 MR-01-75.
- ASME Section VIII vessel construction is available for model JA10-S3.

Operating Specifications

Maximum Flow Rate

	BPH	m ³ /h
Continuous rating with standard trim	3,500	550
Continuous rating with all iron or LPG trim	2,600	420

Barrels per hour (BPH) and cubic meters per hour (m³/h)

Minimum Flow Rate Typical Performance

Linearity ¹	Units	Viscosity (Centipoise—mPa·s)				
		1	2	20	100	200
±0.15%	BPH	350	140	36.0	9.0	4.6
	m ³ /h	56	22	6.0	1.4	0.7
±0.25%	BPH	260	105	27.0	6.8	3.4
	m ³ /h	41	17	4.5	1.1	0.5
±0.50%	BPH	175	70	18.0	4.5	2.4
	m ³ /h	28	11	3.0	0.7	0.4

¹ Based on a maximum flow rate of 3,500 BPH (550 m³/h).

Repeatability

±0.02%

Viscosity

Standard: 200 mPa·s² (1,000 Seconds Saybolt Universal (SSU)) maximum

Optional: 2 pascal seconds (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. For example, at 4 Pa·s, derate maximum flow rate to 50% of normal continuous rating 1,750 BPH.

Temperature

Standard meter clearances with:

Buna N/PTFE³: -20 °F to 125 °F (-29 °C to 52 °C)

FKM⁸: 10 °F to 125 °F (-12 °C to 52 °C)

Low temp. FKM^{8, 9}: -50 °F to 125 °F (-46 °C to 52 °C)

High temperature meter clearances with:

Buna N/PTFE³: -20 °F to 200 °F (-29 °C to 93 °C)

FKM⁸: 10 °F to 200 °F (-12 °C to 93 °C)

Low temp. FKM^{8, 9}: -50 °F to 200 °F (-46 °C to 93 °C)

All iron trim with:

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

PTFE³: -20 °F to 400 °F (-29 °C to 205 °C)

FKM⁸: 10 °F to 400 °F (-12 °C to 205 °C)

Low temp. FKM^{8, 9}: -50 °F to 400 °F (-46 °C to 205 °C)

Meter Gearing

One barrel or 1 hectolitres per revolution of meter calibrator output shaft.

Five gallons—Special.

Maximum Working Pressure

Model	Flange	PSI	kPa
JA10-S3	150	285 ⁴	1,765 ⁴
JA10-S6	300	740 ⁴	5,102 ⁴
JA10-S7	600	1,480 ⁴	10,204 ⁴
JA10-S8	900	2,220 ⁴	15,306 ⁴

Flange class per ANSI B16.5 raised-face flange.

² 1,000 mPa·s = 1,000 cP = 1 Pa·s

³ Polytetrafluoroethylene (PTFE)

⁴ Maximum working pressure at 100 °F (38 °C)

⁵ All 10" meters with FKM trim have PTFE packing gland seals

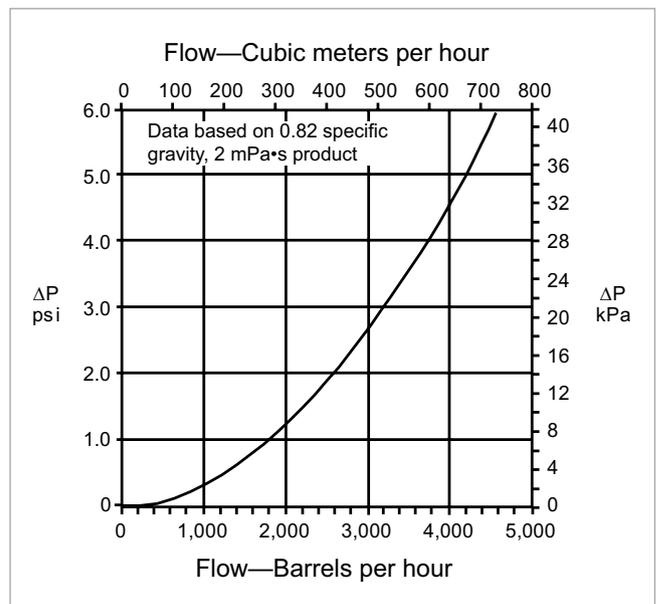
⁶ Standard

⁷ Specify minimum/normal/maximum

⁸ Fluoroelastomer (FKM)

⁹ Only available for JA10-S3 with low temperature material and Section VIII design. Low temperature FKM is the standard sealing material for meters with the ASME Section VIII design.

Pressure Drop (ΔP)



Materials of Construction

Trim	Housing	Internals	Seals ⁵
Standard	Steel	Iron, steel, stainless steel, aluminum	Buna N ⁶ , FKM ⁸ , low temp. FKM ^{8, 9} , or PTFE ³
LPG	Steel	Iron, steel, stainless steel, aluminum, rulon, nylon	Buna N ⁶ , FKM ⁸ , low temp. FKM ^{8, 9} , or PTFE ³
All Iron	Steel	Iron, steel, stainless steel	Buna N ⁶ , FKM ⁸ , low temp. FKM ^{8, 9} , or PTFE ³

Installation

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

Weights and Measures Approvals

Canadian Notice of Approvals (NOA) S.WA-0615

Brazil—INMETRO Dimel No. 0148

EU—PTB Issued MID (Measuring Instrument Directive)

PTB Issued OIML R117 Test report

Russia—GOST

For other, consult factory.

Pressure Safety Requirements

PED—Pressure Equipment Directive (EU)

CRN—Canadian Registration Number

For other, 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	JA	10	S	3	G	B	S	0	0

Position 1: Code

K—Catalog Code

Positions 2 and 3: Model/Flange Size

JA10—10"

Position 4: Flow Path

S—Straight

Positions 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)

3—Class 150, 285 psig/1,965 kPa

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 gallons¹⁰

P—Pound¹⁰

Position 7: Seals

B—Buna N

L—Low temperature FKM^{8,9}

T—PTFE³

V—FKM⁸

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

C—CRN and low temperature material⁹

L—Low temperature material⁹

P—PED (consult factory)¹¹

³ Polytetrafluoroethylene (PTFE).

⁸ Fluoroelastomer (FKM).

⁹ Only available for JA10-S3 with low temperature material and Section VIII design. Low temperature FKM is the standard sealing material for meters with the ASME Section VIII design.

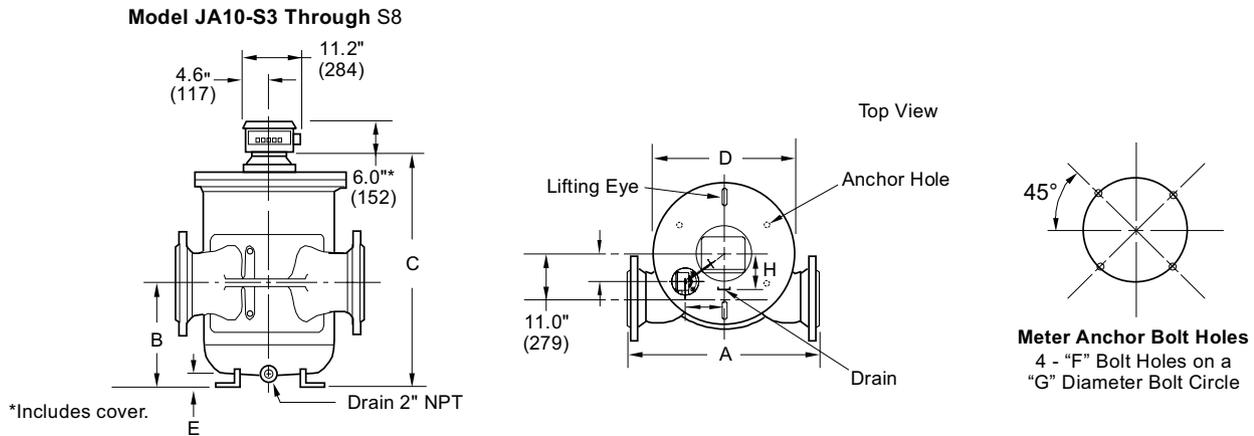
¹⁰ Consult factory for model number when selecting imperial or pound gearing.

¹¹ PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.

Dimensions

Inches (millimeters)

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



Model	A	B	C	D	E	F	G	H	Weight lb (kg)
JA10-S3	33.0" (838)	22.0" (559)	44.0" (1,118)	29.8" (757)	2.3" (58)	1.1" (28)	21.0" (533)	13.4" (340)	2,075 (941)
JA10-S3 Low Temp. Material ⁹	33.0" (838)	22.0" (559)	49.7" (1,262)	32.3" (820)	3.5" (89)	1.1" (28)	20.7" (526)	13.4" (340)	2,061 (1,935)
JA10-S6	41.0" (1,041)	21.9" (556)	44.8" (1,138)	31.9" (810)	4.5" (114)	1.5" (38)	26.0" (660)	13.0" (330)	2,585 (1,173)
JA10-S7	44.3" (1,125)	21.9" (556)	46.4" (1,179)	34.0" (864)	4.5" (114)	1.1" (28)	26.0" (660)	13.0" (330)	3,965 (1,799)
JA10-S8	62.7" (1,590)	28.0" (711)	58.5" (1,486)	46.4" (1,178)	8.4" (212)	1.8" (44)	34.0" (863)	8.8" (222)	9,542 (4,337)

Ordering Information

Application	Batching, loading, blending, inventory, process control, etc.
Operating Conditions	Liquid—Name and specific gravity, flow range ⁷ , viscosity range ⁷ , maximum working pressure
Seals	Buna N ¹² , FKM ⁸ , low temperature FKM ^{8,9} , or PTFE ³
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).

⁷ Specify minimum/normal/maximum.

⁸ Fluoroelastomer (FKM).

⁹ Only available for JA10-S3 with low temperature material and Section VIII design. Low temperature FKM is the standard sealing material for meters with the ASME Section VIII design.

¹⁰ Consult factory for model number when selecting imperial or pound gearing.

¹¹ PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.

¹² Standard seals supplied unless optional material specified.

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 pulses¹³
- High resolution (HR)—50 or 100 pulses¹³

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

¹³ Per revolution of LNC right-hand wheel

Revisions included in SS01018 Issue/Rev. 1.2 (11/21):

JA10-S3 ASME Section VIII low temperature material information added.

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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