10" Steel Model JB10

Bulletin SS01019 Issue/Rev. 1.1 (11/21)

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

The Smith Meter Model JB10 Meter is a 10”, double-case, straight-through type, rotary vane, positive displacement flow meter and is part of the 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.

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 115 to 200 degrees Fahrenheit (°F) (46 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 JB10-S3.

Operating Specifications

<table>
<thead>
<tr>
<th>Maximum Flow Rate</th>
<th>BPH</th>
<th>m³/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous rating with standard trim</td>
<td>4,700</td>
<td>740</td>
</tr>
<tr>
<td>Continuous rating with all iron or LPG trim</td>
<td>3,525</td>
<td>550</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Minimum Flow Rate Typical Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity (Centipoise—mPa•s)</td>
</tr>
<tr>
<td>Linearity¹</td>
</tr>
<tr>
<td>BPH</td>
</tr>
<tr>
<td>1.5, 2.0, 5.0</td>
</tr>
<tr>
<td>m³/h</td>
</tr>
<tr>
<td>470, 29</td>
</tr>
<tr>
<td>180, 7.0</td>
</tr>
<tr>
<td>46.0, 2.0</td>
</tr>
<tr>
<td>12.0, 0.9</td>
</tr>
<tr>
<td>6.0, 0.5</td>
</tr>
<tr>
<td>BPH</td>
</tr>
<tr>
<td>330, 135</td>
</tr>
<tr>
<td>290, 9.0</td>
</tr>
<tr>
<td>135, 4.6</td>
</tr>
<tr>
<td>9.0, 1.5</td>
</tr>
<tr>
<td>4.6, 0.7</td>
</tr>
<tr>
<td>BPH</td>
</tr>
<tr>
<td>220, 90</td>
</tr>
<tr>
<td>90, 3.0</td>
</tr>
<tr>
<td>35, 1.0</td>
</tr>
<tr>
<td>14, 0.5</td>
</tr>
</tbody>
</table>

¹ Based on a maximum flow rate of 4,700 BPH (740 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 2,350 BPH.

Temperature
Standard meter clearances with:
- Buna N/PTFE²: -20 °F to 125 °F (-29 °C to 52 °C).
- FKM⁶: 10 °F to 200 °F (-12 °C to 93 °C).
- Low temp. FKM⁶,⁷: -50 °F to 200 °F (-46 °C to 93 °C)

High temperature meter clearances with:
- Buna N/PTFE²: -20 °F to 225 °F (-29 °C to 108 °C).
- FKM⁶: 10 °F to 400 °F (-12 °C to 205 °C).
- Low temp. FKM⁶,⁷: -50 °F to 400 °F (-46 °C to 205 °C)

All iron trim with:
- Buna N: -20 °F to 255 °F (-29 °C to 124 °C).
- PTFE³: -20 °F to 400 °F (-29 °C to 205 °C).
- FKM⁶: 10 °F to 400 °F (-12 °C to 205 °C).
- Low temp. FKM⁶,⁷: -50 °F to 400 °F (-46 °C to 205 °C)

Meter Gearing
One barrel or 10 dekalitres per revolution of meter calibrator output shaft.
Five gallons—Special.

<table>
<thead>
<tr>
<th>Maximum Working Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>JB10-S3</td>
</tr>
<tr>
<td>JB10-S6</td>
</tr>
<tr>
<td>JB10-S7</td>
</tr>
<tr>
<td>JB10-S8</td>
</tr>
</tbody>
</table>

Note: Flange class per ANSI B16.5 raised face.

Pressure Drop (ΔP)

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.

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.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>JB</td>
<td>10</td>
<td>S</td>
<td>3</td>
<td>G</td>
<td>B</td>
<td>S</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Position 1:** Code  
K—Catalog Code

**Positions 2 and 3:** Model/Flange Size  
JB10—10”

**Position 4:** Flow Path  
S—Straight

**Positions 5:** Pressure Class and End Connections  

<table>
<thead>
<tr>
<th>Standard (Raised-Face Flanges)</th>
<th>PED (Raised-Face Flanges)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3—Class 150, 285 psig/1,965 kPa</td>
<td>3—Class 150, 285 psig/1,965 kPa</td>
</tr>
<tr>
<td>6—Class 300, 740 psig/5,102 kPa</td>
<td>6—Class 300, 740 psig/5,102 kPa</td>
</tr>
<tr>
<td>7—Class 600, 1,480 psig/10,204 kPa</td>
<td>7—Class 600, 1,480 psig/10,204 kPa</td>
</tr>
<tr>
<td>8—Class 900, 2,220 psig/15,306 kPa</td>
<td>8—Consult factory</td>
</tr>
</tbody>
</table>

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

**Position 6:** Meter Gearing  
G—Gallons (5:1 - S1)  
B—Barrels (1:1 - S3 through S8)  
D—Dekaliters (1:1 - S1 through S8)  
I—Imperial gallons  
P—Pound

**Position 7:** Seals  
B—Buna N  
L—Low temperature FKM  
T—PTFE  
V—FKM

**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 material  
L—Low temperature material  
P—PED (consult factory)

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3 Polytetrafluoroethylene (PTFE).  
6 Fluoroelastomer (FKM).  
7 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.  
8 Consult factory for model number when selecting imperial or pound gearing.  
9 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.

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>Weight lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB10-S3</td>
<td>33.0&quot;</td>
<td>22.0&quot;</td>
<td>44.0&quot;</td>
<td>29.8&quot;</td>
<td>2.3&quot;</td>
<td>1.1&quot;</td>
<td>21.0&quot;</td>
<td>13.4&quot;</td>
<td>2,095 (952)</td>
</tr>
<tr>
<td>JB10-S3 Low Temp. Material</td>
<td>33.0&quot;</td>
<td>22.0&quot;</td>
<td>49.7&quot;</td>
<td>32.3&quot;</td>
<td>3.5&quot;</td>
<td>1.1&quot;</td>
<td>20.7&quot;</td>
<td>13.4&quot;</td>
<td>2,061 (935)</td>
</tr>
<tr>
<td>JB10-S6</td>
<td>41.0&quot;</td>
<td>21.9&quot;</td>
<td>44.8&quot;</td>
<td>31.9&quot;</td>
<td>4.5&quot;</td>
<td>1.5&quot;</td>
<td>26.0&quot;</td>
<td>13.0&quot;</td>
<td>2,605 (1,184)</td>
</tr>
<tr>
<td>JB10-S7</td>
<td>44.3&quot;</td>
<td>21.9&quot;</td>
<td>46.4&quot;</td>
<td>34.0&quot;</td>
<td>4.5&quot;</td>
<td>1.1&quot;</td>
<td>26.0&quot;</td>
<td>13.0&quot;</td>
<td>3,985 (1,811)</td>
</tr>
<tr>
<td>JB10-S8</td>
<td>62.7&quot;</td>
<td>28.0&quot;</td>
<td>58.5&quot;</td>
<td>46.4&quot;</td>
<td>8.4&quot;</td>
<td>1.8&quot;</td>
<td>34.0&quot;</td>
<td>8.8&quot;</td>
<td>9,577 (4,353)</td>
</tr>
</tbody>
</table>

**Ordering Information**

**Application**
Batching, loading, blending, inventory, process control, etc.

**Operating Conditions**
Liquid—Name and specific gravity, flow range\(^{11}\), viscosity range\(^{11}\), maximum working pressure

**Seals**
Buna N\(^{10}\), FKM\(^{6}\), low temperature FKM\(^{6,7}\), 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.

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\(^3\) Polytetrafluoroethylene (PTFE).

\(^6\) Fluoroelastomer (FKM).

\(^7\) 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.

\(^8\) Consult factory for model number when selecting imperial or pound gearing.

\(^9\) PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.

\(^10\) Standard seals supplied unless optional material specified.

\(^11\) Specify minimum/normal/maximum.
**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 pulses\(^{12}\)
- High resolution (HR)—50 or 100 pulses\(^{12}\)

**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

\(^{12}\) Per revolution of LNC right-hand wheel
Revision to SS01019 Issue/rev. 1.1 (11/21): Approvals updated. Accessories section added. 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.