SMITH METER® PD METERS

The **Smith Meter Model ST-40** is a DN50 (2") single case, straight-through, rotary vane positive displacement meter commonly used on tank trucks and as a line meter. Applications include: blending, batching, dispensing, inventory control and custody transfer of oils, solvents, chemicals, paints, fats, and fertilizers.

### FEATURES

- **Superior Accuracy** – The Smith Meter rotary vane meter principle and unique offset, inlet, and outlet nozzles combine to minimize pressure drop across the measuring chamber for reduced flow through the meter clearances for maximum accuracy.
- **Low Pressure Drop** – Streamlined flow path provides low pressure drop.
- **Positive and Accurate Registration** – High torque drive calibrator with adjustments in 0.05% increments ensures accurate registration.
- **Long Service Life** – Low friction ball bearings, fixed cam timing, and rugged construction give sustained accuracy and long life.
- **Ductile Iron Housing** – For a maximum working pressure at 16 bar.
- **PED1** – Liquid Compliant.

### OPTIONS

- **High Viscosity Meter Clearances** – To extend operation at maximum flow rate from 400 mPa•s to 2,000 mPa•s.
- **High Temperature Meter Clearances** – To extend operating temperatures from 65°C (150°F) to 93°C (200°F).

### OPERATING SPECIFICATIONS

#### MAXIMUM FLOW RATE

<table>
<thead>
<tr>
<th></th>
<th>USGPM</th>
<th>L/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Rating – Standard Trim</td>
<td>85</td>
<td>320</td>
</tr>
<tr>
<td>Intermittent Rating2 – Standard Trim</td>
<td>105</td>
<td>400</td>
</tr>
<tr>
<td>Continuous/Intermittent Rating – All Iron Trim</td>
<td>75</td>
<td>285</td>
</tr>
</tbody>
</table>

#### MINIMUM FLOW RATE

| Viscosity (mPa•s) | Linearity1 | Units | 0.5 | 1 | 5 | 20 | 100 | 400 |
|-------------------|------------|-------|-----|---|---|----|-----|-----|-----|
| 400               | ±0.15%     | USGPM | 15  | 10| 4 | 1  | 0.2 | 0.05|
|                   | L/min      | 56.5  | 37.5| 15| 3.8| 0.75| 0.19|
| 200               | ±0.25%     | USGPM | 10  | 7.5| 3 | 0.75| 0.15| 0.04|
|                   | L/min      | 37.5  | 28.5| 11| 2.9| 0.6 | 0.15|
| 100               | ±0.50%     | USGPM | 7.5 | 5  | 2  | 0.5 | 0.1 | 0.03|
|                   | L/min      | 28.5  | 19  | 7.5| 1.9| 0.4 | 0.1 |

1 PED required for all European countries. Equipment must be manufactured by Ellerbek, Germany facility.
2 Intermittent rating applies to service on clean, refined products where continuous operation in not required (e.g., truck loading, rail loading, and other batching applications).
3 Linearity based on a maximum flow rate of 85 USGPM (320 L/min).
Repeatability
±0.02%

Viscosity
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 - 160 L/min).

Temperature
Standard Meter Clearances, with –
- Buna-N: -20°C to 65°C (-4°F to 150°F)
- Viton seals: -12°C to 65°C (10°F to 150°F)

High Temperature Meter Clearances, with –
- Buna-N: -20°C to 93°C (-4°F to 200°F)
- Viton seals: -12°C to 93°C (10°F to 200°F)

All Iron Trim, with –
- Buna-N seals: -20°C to 108°C (-4°F to 225°F)
- Viton seals: -12°C to 150°C (10°F to 300°F)

Optional Low Temperature:
-29°C (-20°F) at reduced working pressure of 10 bar (1,000 kPa), with Buna-N Seals. Special low temperature of ~-40°C (~-40°F) on request.

Meter Gearing
One dekalitre per revolution of meter calibrator output shaft.

INSTALLATION
It is recommended that the meter be protected with a 40 mesh strainer.

<table>
<thead>
<tr>
<th>STRAINER SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>E-20</td>
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</table>

<table>
<thead>
<tr>
<th>METER ORDERING INFORMATION</th>
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<tr>
<td>Application</td>
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<tr>
<td>Operating Conditions</td>
</tr>
<tr>
<td>Flow Range</td>
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<td>Temperature Range</td>
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<tr>
<td>Maximum Working Pressure</td>
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<tr>
<td>Units of Registration</td>
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<tr>
<td>Options</td>
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<td>Internal Construction</td>
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<td>Clearances</td>
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<tr>
<td>End Connections</td>
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<td>Accessories</td>
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<tr>
<th>END CONNECTIONS AND MAXIMUM WORKING PRESSURE</th>
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<tr>
<td>End Connections</td>
</tr>
<tr>
<td>Class 150 ANSI B16.42 raised face flanges</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MATERIALS OF CONSTRUCTION</th>
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<tbody>
<tr>
<td>Housing</td>
</tr>
<tr>
<td>Ductile Iron</td>
</tr>
<tr>
<td>Optional: All Iron</td>
</tr>
</tbody>
</table>

4 1,000 mPa•s = 1,000 cP = 1 Pa•s.
PRESSURE DROP

A - Strainer - 40 Mesh
B - Meter
C - Preset Valve

To approximate pressure drop for strainers with other than 40 mesh baskets, multiply chart reading by the appropriate factor.

<table>
<thead>
<tr>
<th>Mesh</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>.65</td>
</tr>
<tr>
<td>10</td>
<td>.75</td>
</tr>
<tr>
<td>20</td>
<td>.85</td>
</tr>
<tr>
<td>80</td>
<td>1.25</td>
</tr>
</tbody>
</table>

ACCESSORIES

Strainers
Housing Material – Ductile Iron.
Seals – Buna-N (standard), or Viton.
Liner – 40 (standard), 4, 10, 20, or 80 mesh.
Options – RB Type Air Release Kit.

Deaerator
Type – Vertical or Horizontal.
Housing Material – Steel.
Seals – Buna-N (standard), Viton.

Hydraulic Valves
Type – Globe-Type.
Housing Material – Cast Steel.

Mechanical Set Stop Valves
Type – Straight-through.
Housing Material – Steel.
Seals – Buna-N (standard), Viton.

Automatic Temperature Compensation
Model ATC – Factory-set for a given product.
Model ATG – Field-adjustable for different products.

Counters
200 Series – Accumulative, nine-digit, non-reset type.
600 Series – Five large-digit reset, eight small-digit non-reset.

Printers
Seven-digit accumulative.
Optional six-digit zero-start.

Preset Counters
300C Series – Five-digit mechanical pushbutton preset with valve linkage. Microswitch package for pump control or other interlock optional.

Pulse Transmitters
GPST-2 – Dual-channel, photoelectric transmitter to ATEX (EEEx) d IIB T6. Output 100 pulses/revolution.
LNC Transmitter (Adapts to new-style 600 Series Counter)
– Low Resolution: 1 or 10 pulses/revolution of counter R.H. Wheel. ATEX approved (EEEx)d IIA T6.
High Resolution (HR): 100 or 50 pulses/revolution of counter R.H. Wheel. ATEX approved (EEEx)d IIA T6.
UPT – Universal Pulse Transmitter. ATEX approved (EEEx)d IIB T6. Max output 1000 pulses/revolution

Flow Rate Indicators
Direct mount mechanical.
Remote electronic.

Remote Registration
Electromechanical counters.
Electronic totalizers.
Load printer.
We put you first.
And keep you ahead.

Revisions included in SS01062E Issue/Rev. 0.5 (1/15):

Page 2: Strainer type now E-20
Page 3: Revised information on Pulse Transmitters

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.

Contact information is subject to change. For the most current contact information, visit our website at www.fmctechnologies.com/measurementsolutions and click on the “Contact Us” link in the left-hand column.

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

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