FMC Technologies

Smith Meter® Turbine Meters

# *High Performance Flow Conditioning Assemblies*

Specifications

Issue/Rev. 1.0 (8/10) Bulletin SS02018

***Smith Meter® High Performance Flow Conditioning Assemblies*** *include a flow conditioning element and flanged pipe spool. It optimizes turbine meter performance by reducing fluid swirl and velocity profile distortions caused by valves, pumps, strainers, thermal-wells and other piping configurations.*

## *Features*

- **Superior Flow Conditioning** – substantially better than standard API designed flow conditioning assemblies.
- **316 Stainless Steel** – flow conditioning element.
- **Low Pressure Drop** – reduces pumping cost.
- **Non-Obstructive Design** – does not collect debris.
- **Dowel Pin Alignment** – provides repeatable alignment and performance as factory tested.

## *Specifications*

***Maximum Working Pressure[1] – PSI (kPa):***

| Class | Carbon Steel Flanges | Stainless Steel Flanges |
|---|---|---|
| 150 ASME | 285 (1,965) | 275 (1,896) |
| 300 ASME | 740(5,102) | 720 (4,964) |
| 600 ASME | 1,480 (10,205) | 1,440 (9,929) |

## *Materials of Construction*

***Pipe Spool and Flanges***

Standard – Carbon Steel.
Optional – Stainless Steel.

***Flow Conditioning Element***

316 Stainless Steel.

## *Applications*

***Pressure Drop Correction***

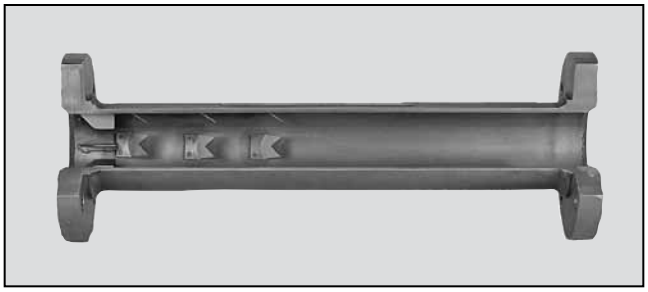
For liquids with other than 1.0 cP viscosity and 1.0 specific gravity, the flow conditioning assembly pressure drop can be estimated by the following equation:

$$\Delta P = PD \times \mu^{1/4} \times (\text{sp. gr.})^{3/4}$$

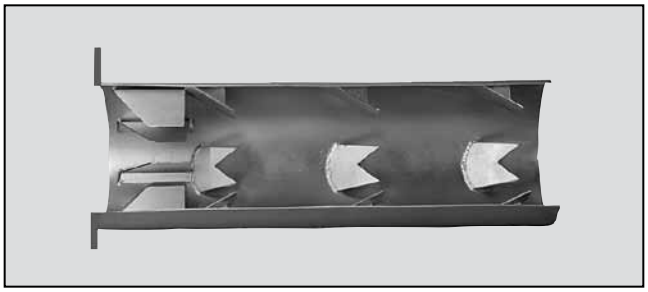
Where: PD = Pressure drop from chart at desired flow rate.

$\mu$ = Absolute viscosity (cP or mPa•s)

sp. gr. = Specific Gravity



***Upstream Assembly with Conditioning Element***



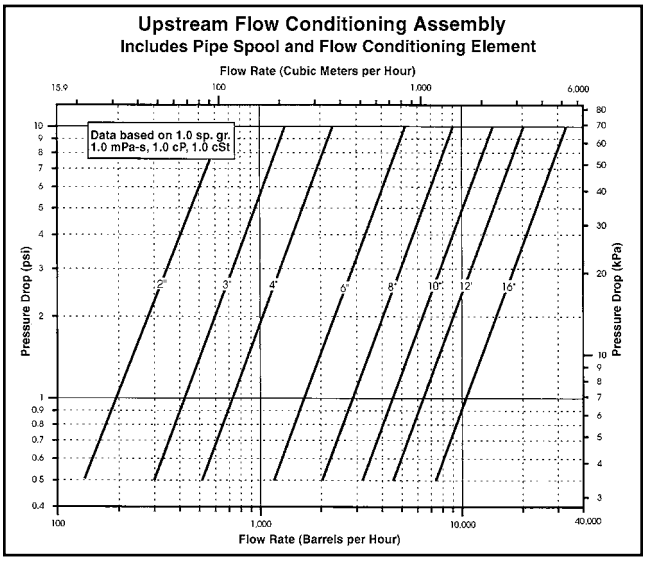
***Captive Flange Insert***

Example: 6" flow conditioning assembly at 4,000 BPH, 50 cP, 0.9 sp. gr.

$\Delta P$ = 5.8 psi (from chart) $(50)^{1/4} \times (0.9)^{3/4}$

$\Delta P$ = 14.3 psi

## *Pressure Drop*




1 *Maximum working pressures are for temperatures of -20°F to 100°F (-28°C to 38°C). Consult factory for maximum working pressures at other temperatures.*

## *Catalog Code – Flow Straightening Assemblies*

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| K | 2 | 2 | H | | | | | |

**Positions 1 and 2: Product Line**

K2 - Turbine Meter

**Position 3: Item**

2 - Flow Straightening Assembly

**Position 4: Type**

H - Upstream Section with High Performance Flow Conditioner
J - Captive Flange Insert Only - Standard Flange
K - Captive Flange Insert Only - Serrated Flange

**Position 5: Size**

C - 2"
E - 3"
F - 4"
G - 6"
H - 8"
J - 10"
K - 12"
M - 16"

## *Installation*

A customer supplied gasket must be installed both in front of and behind the insert's flange.

**Position 6: Pressure Class**

A - Class 150 ASME
B - Class 300 ASME
D - Class 600 ASME

T - Captive Flange Insert for Schedule 40 Pipe*
S - Captive Flange Insert for Other Pipe Schedules

**Positions 7 and 8: End Connections/Tube Material**

00 - RF, CS Flanges/CS Tubes
A1 - RF, SS Flanges/SS Tubes
XX - Not Req'd. for Captive Flange Insert

**Position 9: Specials**

0 - None
X - Special-Specify

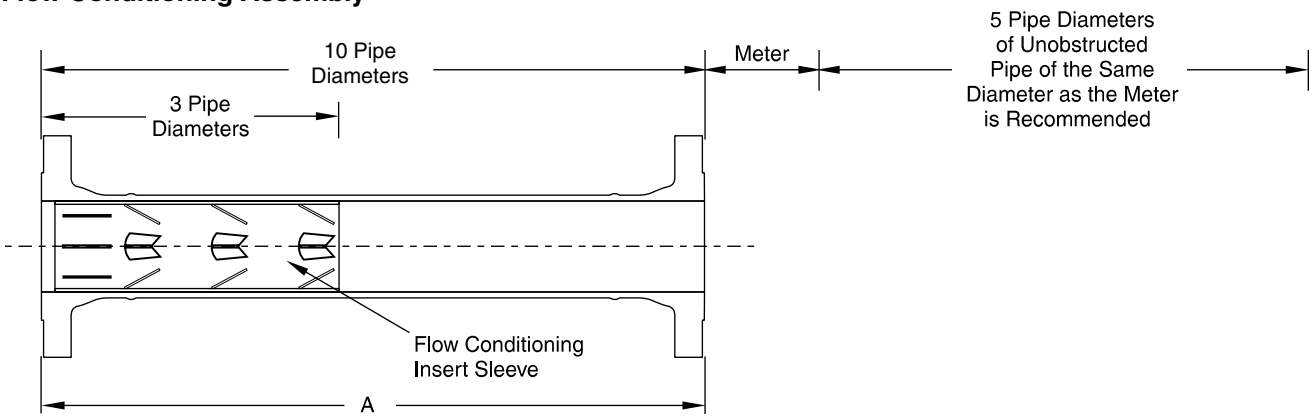
**** Upstream Assembly Pipe Schedules***

| Pipe Size | Pipe Schedule | | |
|---|---|---|---|
| | 150 | 300 | 600 |
| 2" | Sch. 40 | Sch. 40 | Sch. 40 |
| 3" | Sch. 40 | Sch. 40 | Sch. 40 |
| 4" | Sch. 40 | Sch. 40 | Sch. 40 |
| 6" | Sch. 40 | Sch. 40 | Sch. 40 |
| 8" | Sch. 40 | Sch. 40 | Sch. 80 |
| 10" | Sch. 40 | Sch. 40 | Sch. 80 |
| 12" | Sch. Std. | Sch. Std. | Sch. 80 |
| 16" | Sch. 30 | Sch. 40 | Sch. 80 |

## *Dimensions*

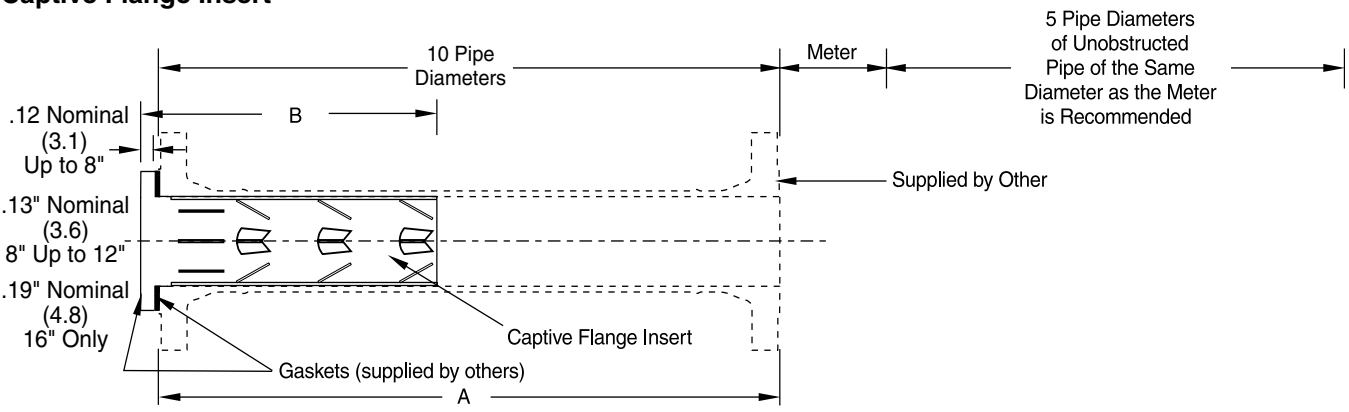
Inches (mm)

### Flow Conditioning Assembly




| Pipe Size | A | | Weight – ASME Flange Class | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 150 | | 300 | | 600 | |
| | Inch | mm | Pounds | kg | Pounds | kg | Pounds | kg |
| 2" | 20 | 508 | 17 | 8 | 21 | 10 | 27 | 12 |
| 3" | 30 | 762 | 40 | 17 | 53 | 23 | 58 | 25 |
| 4" | 40 | 1,016 | 67 | 29 | 86 | 37 | 117 | 52 |
| 6" | 60 | 1,524 | 140 | 61 | 177 | 78 | 271 | 121 |
| 8" | 80 | 2,032 | 284 | 116 | 336 | 139 | 503 | 215 |
| 10" | 100 | 2,540 | 463 | 189 | 550 | 229 | 823 | 353 |
| 12" | 120 | 3,048 | 697 | 287 | 800 | 334 | 1,102 | 471 |
| 16" | 160 | 4,064 | 1,223 | 483 | 1,429 | 577 | 2,125 | 892 |

### Captive Flange Insert




| Pipe Size | B | | | | | |
|---|---|---|---|---|---|---|
| | ASME 150 | | ASME 300 | | ASME 600 | |
| | Inch | mm | Inch | mm | Inch | mm |
| 2 | 6.0 | 152.4 | 6.0 | 152.4 | 6.0 | 152.4 |
| 3 | 9.0 | 228.6 | 9.0 | 228.6 | 9.0 | 228.6 |
| 4 | 12.0 | 304.8 | 12.0 | 304.8 | 12.0 | 304.8 |
| 6 | 17.93 | 455.4 | 17.93 | 455.4 | 17.01 | 432.1 |
| 8 | 23.67 | 601.2 | 23.67 | 601.2 | 23.17 | 588.5 |
| 10 | 29.79 | 756.7 | 29.79 | 756.7 | 28.42 | 721.9 |
| 12 | 35.73 | 907.5 | 35.73 | 907.5 | 33.85 | 859.8 |
| 16 | 45.36 | 1152.1 | 45.36 | 1133.1 | 42.55 | 1080.8 |

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

Revisions included in SS02018 Issue/Rev. 1.0 (8/10):
ANSI replaced with ASME.



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.

**Headquarters:**
500 North Sam Houston Parkway West, Suite 100, Houston, TX 77067 USA, Phone: +1 (281) 260 2190, Fax: +1 (281) 260 2191

***Measurement Products and Equipment:***
**Erie, PA USA** +1 (814) 898 5000
**Ellerbek, Germany** +49 (4101) 3040
**Barcelona, Spain** +34 (93) 201 0989
**Beijing, China** +86 (10) 6500 2251
**Buenos Aires, Argentina** +54 (11) 4312 4736
**Burnham, England** +44 (1628) 603205
**Dubai, United Arab Emirates** +971 (4) 883 0303
**Los Angeles, CA USA** +1 (310) 328 1236
**Melbourne, Australia** +61 (3) 9807 2818
**Moscow, Russia** +7 (495) 5648705
**Singapore,** +65 6861 3011
**Thetford, England** +44 (1842) 822900

***Integrated Measurement Systems:***
**Corpus Christi, TX USA** +1 (361) 289 3400
**Kongsberg, Norway** +47 (32) 286700
**San Juan, Puerto Rico** +1 (787) 772 8100
**Dubai, United Arab Emirates** +971 (4) 883 0303

***Visit our website at www.fmctechnologies.com/measurementsolutions***