

2 Section Meter Tubes

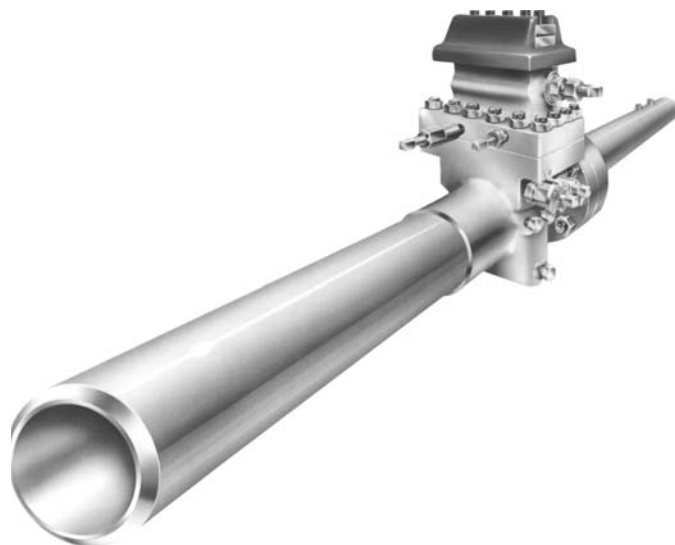
Instruments You Can Trust

Daniel Meter Tubes are more than just fabricated pipe with an orifice fitting. They are accurate, dependable instruments because of Daniel's dedicated approach to quality. Extra steps taken during every phase of meter tube design and production separate Daniel Meter Tubes from all the rest.

The Daniel two section meter tube is available with any style Senior or Junior orifice fitting, Simplex plate holder or orifice flange union. Each tube contains an upstream of the minimum length prescribed by API 14.3, with a line mounted 19 tube concentric tube bundle flow straightener per the standard. Each downstream has one each $\frac{1}{2}$ " and $\frac{3}{4}$ " branch connection for thermowell or other uses and is extra long to allow for the installation of additional branch connections in the field, if desired. Beveled ends are standard. Optional ends available on request.

Inspection/Testing: Daniel maintains rigid inspection procedures during manufacturing of meter tubes. Micrometer and internal surface roughness readings are recorded and supplied with each meter tube. Customer or third party inspectors are welcome to verify these readings. Other services, such as radiography of welds and hydrostatic testing are also available.

Fabrication: Fabrication of your instrument includes attaching the orifice fitting to the meter tube to make an integral primary measuring element. For welding operations, Daniel uses automatic welding machines and rotating positioners. Highly skilled, "code qualified" welders are employed to turn out highest quality on each job. Special internal jigs and fixtures are used to insure smooth inlet and outlet surfaces without steps or offsets. All welds receive expert grinding by experienced craftsmen.



Features:

- Dowel pin alignment, close tolerance male/female flange or knock out dowel pins insure that the bores of both tubes sections are matched without offsets.
- One $\frac{1}{2}$ " and one $\frac{3}{4}$ " branch connection on the downstream for thermowell or other uses standard.
- Beveled, flanged or reduced ends as well as any available weld fitting can be furnished on the ends of the tubes.
- Hydrostatically tested after manufacture.
- Each orifice fitting is tested for tap hole and orifice plate seal integrity after the meter tube has been pressure tested.

Material Selection: Daniel uses special cold drawn seamless tubing or honed pipe in the fabrication of meter tubes. The strict requirements for internal roundness and surface finish preclude the use of standard commercial pipe in most cases. Daniel maintains a large inventory of this special pipe to rapidly complete your order.

2 Section Meter Tube Catalog Numbers

2"-12" with Senior Fitting

Pressure Rating	Flange by Weld (Flangnek)	Flange by Flange (Flanged)	Weld by Weld (Weldnek)*
150#	M-011	M-101	N/A
300#	M-013	M-103	N/A
600#	M-015	M-105	M-185
High Pressure 2 Section Meter Tubes			
900#	M-016	M-106	M-106
1500#	M-017	M-107	M-107
2500#	M-018	M-108	M-188

10" & 12" with Junior Fitting

Flange by Weld (Flangnek)	Flange by Flange (Flanged)	Weld by Weld (Weldnek)*
M-021	M-201	N/A
M-023	M-203	N/A
M-025	M-205	M-285
High Pressure 2 Section Meter Tubes		
M-026	M-206	M-286
M-027	M-207	M-287
M-028	M-208	M-288

2"-8" with Simplex

Pressure Rating	Flange by Weld (Flangnek)	Weld by Weld (Weldnek)*
150#	M-071	N/A
300#	M-073	N/A
600#	M-075	M-705
High Pressure		
900#	M-076	M-706
1500#	M-077	M-707
2500#	M-078	M-708

2"-12" with Orifice Flanges

Raised Face	Weld Neck
	N/A
	M-30RW
	M-60RW
High Pressure	
	M-90RW
	M-150RW
	M-250RW

*Single Section Meter Tube When Using Weldnek Fittings

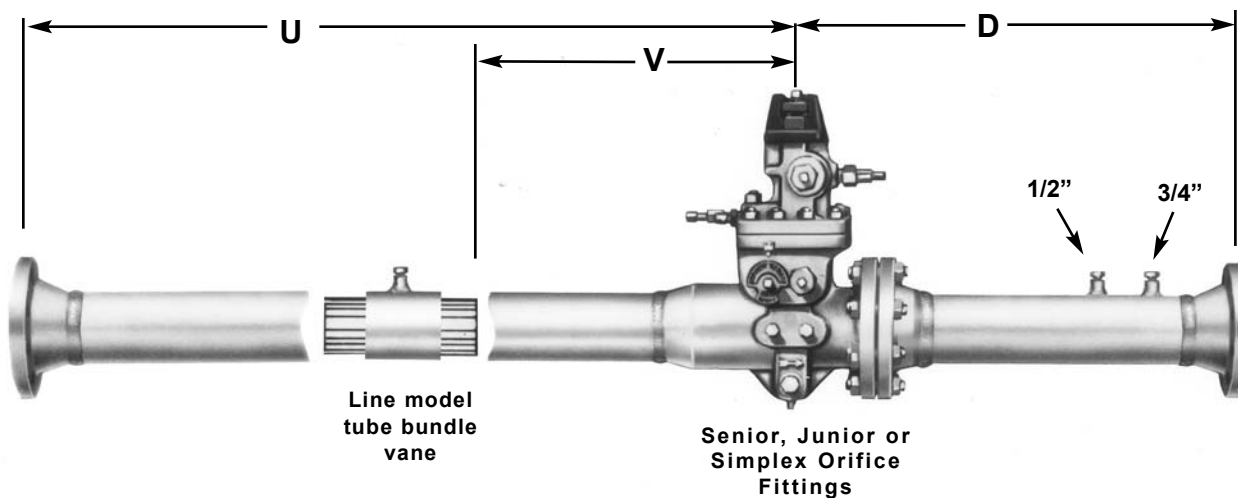
Senior and Simplex fittings are also available in 10,000 psi rating in some sizes. All units are also available with Ring Type Joint (RTJ) flanges on request. Sizes larger than 12" are available on request.

Packing/Shipping: Daniel bolts together all meter tubes, when size permits, before shipment. This saves the user time and field labor costs. Fittings are protected by heavy lumber, and the tube flanges by special-cut protectors.

Painting/Coating: The Daniel standard paint is a basic enamel type. Special coatings such as multi-coat offshore systems are available on request.

A SPECIAL NOTE: The use of factory original Daniel parts will assure your Senior, Junior and Simplex Orifice fittings will stay within original specifications and operate properly.

2-Section Meter Tube With Tube Bundle



Standard Lengths

Size	"U" Upstream	"D" Downstream	"V" (vane location)
2*	N/A	N/A	N/A
3	7'-5"	4'-0"	13 D
4	9'-9"	4'-0"	13 D
6	14'-8"	5'-0"	13 D
8	19'-8"	5'-0"	13 D
10	24'-10"	6'-0"	13 D
12	29'-8"	7'-0"	13 D

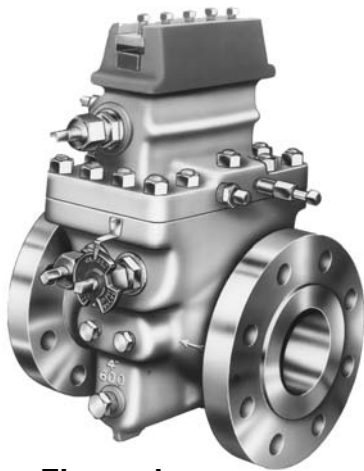
***Note: Straightening vanes are not available in 2" line size. (See Daniel Profiler - DAN-1852-2M)**

Lengths shown are suitable for any piping configuration and up to .67 beta ratio. Daniel meter tubes can be supplied in many combinations and configurations. Any of the Senior, Junior, Simplex or orifice flanges can be included in a meter tube. Each standard meter tube is equipped with a tube bundle straightener* in accordance with April 2000 API 14.3. Downstreams are longer than minimum required to allow for field installation of additional branch connections if required.

To specify a meter tube, use the designation "M" followed by the type orifice holding device. Ex. 4" 600# meter tube with beveled ends using a Senior fitting, flangneck style is specified as 4"-M-015. The same unit with a weldneck style Simplex is 4"-M-705. When ordering, specify pipe schedule and end configuration. Larger size and custom meter tube designs are available upon request.

*Not available in some sizes/schedules.

Orifice Fitting Styles



Flanged



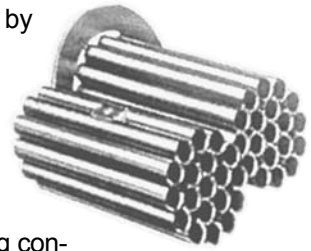
Flangnek



Weldnek

19 Tube Concentric Bundle

Available in either line mounted or flange mounted styles. These units effectively remove swirl that has been introduced by upstream piping components. Individual tubes and bundle diameter are sized to meet the requirements of API 14.3 April 2000. These units allow the use of a 29D upstream meter tube section in any piping configuration with a .67 beta ratio limit.



Meter Tube End Modifications

Several common and frequently used end modifications are shown here to illustrate types available. Daniel will custom build risers, flanges, ells, reducers and couplings, expertly fabricated to meet your specifications. When ordering special end-tube modifications, please specify full information for both upstream and downstream tube sections.



Daniel Division Headquarters

Houston, Texas, USA, T: (713) 467-6000, F: (713) 827-3880
Calgary, Alberta, Canada, T: (403) 279-1879, F: (403) 236-1337
Stirling, Scotland - UK, Mid-East & Africa, T: +44 01786 433400, F: +44 01786 433401
Singapore - Asia Pacific, T: +65-6777-8211, F: +65-6770-8001

USA Toll Free 1-888-FLOW-001 www.daniel.com

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