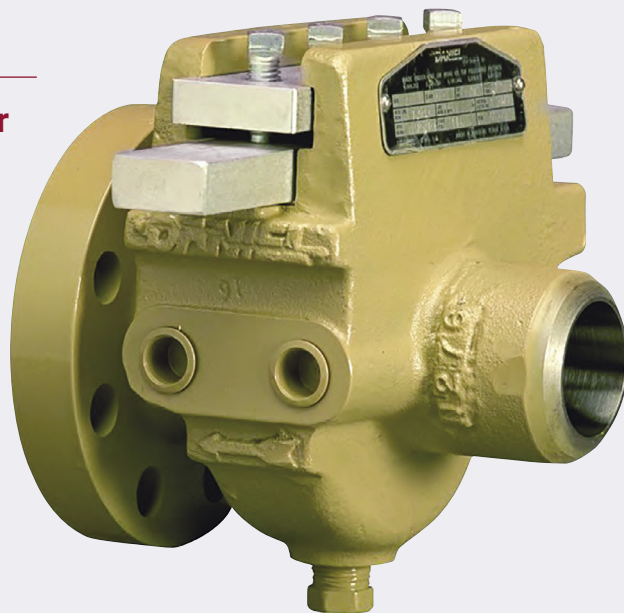


DANIEL®  
**SIMPLEX™ ORIFICE FITTING**  
PRODUCT GUIDE

**Differential Pressure Flow Meter**



**DANIEL®**  
Decades Proven. Field Chosen.™

# SIMPLEX ORIFICE FITTING OVERVIEW

The Daniel Simplex Orifice Fitting allows for the inspection and replacement of an orifice plate without removing the fitting from the flow line, which saves on down-time and operational cost. Simplex fittings reduce spillage that could occur in liquid service, by not having to remove the fitting from the flow line.

Operation of the Simplex Orifice Fitting is also simple because of its few parts. The plate carrier ring is permanently attached to the sealing bar so that the bar, ring, plate and seal unit can all be removed at the same time. The only other parts are the gasket, clamping bar with set screws and pipe plugs for taps and drain.

## Standard specifications

Please consult an Emerson product specialist if requirements are outside of the listed specifications. Other product and material offerings may be available depending on the application.

### Mechanical ratings

#### Pressure rating by line size

- Standard: 2-in to 4-in, ANSI 600
- Optional: 2-in to 4-in, ANSI 900-2500

### End connections

#### Body styles

- Flangnek raised face (FN/RF), Flangnek ring-type joint (FN/RTJ), and Weldnek (WN)

### Differential pressure taps

#### Internal tap holes sizes

- Standard: In accordance with API 14.3 (AGA3)
- Optional: In accordance with ISO 5167

#### Process connection

- Standard: .50-in NPT standard
- Optional: Consult factory for other options

#### Telemetry taps

- Standard on ANSI 600
- Not available in other ANSI classes

### Line bore tolerances

- Standard size: Sch 40 and Sch 80
- Optional: Consult factory for other options

### Quality assurances

- Hydrostatic test 1.50 times rated CWP
- Meets or exceeds API 14.3 requirements for positive plate seal, pressure tap integrity, seal protrusion and eccentricity

**Temperature range**

- Standard: -20°F to +200°F (-29°C to +93°C)
- Standard (low temperature): -50°F to +200°F (-46°C to +93°C)
- Consult factory for other options

**Material specifications (body casting)**

- Standard: A126 GR. WCB
- Standard (low temperature applications): A352 GR. LCC
- Consult factory for other options

**Trim material**

- Standard: NACE trim on 2-8-in 600#. A trim in all others.
- Consult factory for other options

**Flow measurement code**

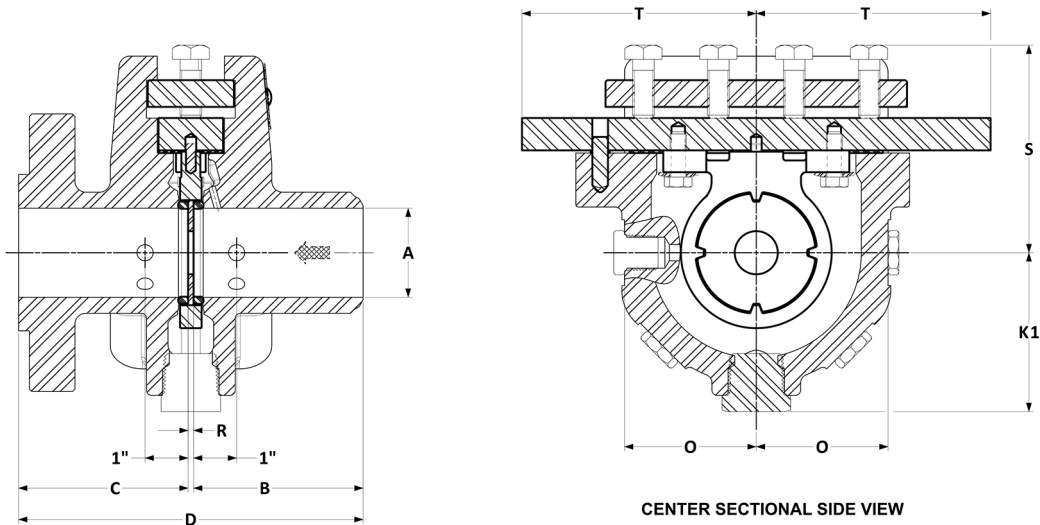
- Standard: API 14.3
- Optional: ISO-5167

**Seal optionse**

- DSC Dual Seal (NBR, HNBR, or Viton)
- TSC PTFE seal
- SSR Snap Seal Ring (Zinc plated carbon steel, 316SS, or Duplex)

# SIMPLEX PARTS AND DIMENSIONS

## Flangnek Raised Face



Class 600 - Flangnek with Raised Face Flange				
Size (in)		2	3	4
Weight (lb)		46	70	100
Diameter internal line bore (in) <sup>(1)</sup>	A	2.07	3.07	4.03
Upstream face orifice plate to face of end (in)	B	3.94	4.44	4.94
Downstream face of orifice plate to face of flange (in)	C	3.94	4.44	4.94
Overall face to face (in)	D	8.00	9.00	10.00
Centerline to bottom (in)	K1	3.56	4.25	4.11
Number, diameter of studs per flange (in)		8, 0.63	8, 0.75	8, 0.88
Length of studs with 2 Hex Nuts (in)		4.25	5.00	5.75
Center to face of meter tap hole (in)	O	3.06	3.62	4.28
Orifice plate thickness (in)	R	0.13	0.13	0.13
Centerline to top (in)	S	4.75	5.25	5.75
Operating clearance from center (in)	T	5.44	6.00	6.44

(1) Other bores available on special request.

<b>Class 900 - Flangnek with Raised Face Flange</b>				
<b>Size (in)</b>		<b>2</b>	<b>3</b>	<b>4</b>
<b>Weight (lb)</b>		<b>70</b>	<b>80</b>	<b>125</b>
<b>Diameter internal line bore (in)<sup>(1)</sup></b>	<b>A</b>	<b>1.939</b>	<b>2.900</b>	<b>3.826</b>
<b>Upstream face orifice plate to face of end (in)</b>	<b>B</b>	<b>5.31</b>	<b>5.44</b>	<b>5.81</b>
<b>Downstream face of orifice plate to face of flange (in)</b>	<b>C</b>	<b>5.31</b>	<b>5.44</b>	<b>5.81</b>
<b>Overall face to face (in)</b>	<b>D</b>	<b>10.75</b>	<b>11.00</b>	<b>11.75</b>
<b>Centerline to bottom (in)</b>	<b>K1</b>	<b>3.19</b>	<b>4.38</b>	<b>4.88</b>
<b>Number, diameter of studs per flange (in)</b>		<b>8, 0.88</b>	<b>8, 0.88</b>	<b>8, 1.13</b>
<b>Length of studs with 2 Hex Nuts (in)</b>		<b>5.75</b>	<b>5.75</b>	<b>6.75</b>
<b>Center to face of meter tap hole (in)</b>	<b>O</b>	<b>3.44</b>	<b>3.75</b>	<b>4.38</b>
<b>Orifice plate thickness (in)</b>	<b>R</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
<b>Centerline to top (in)</b>	<b>S</b>	<b>4.75</b>	<b>5.25</b>	<b>5.75</b>
<b>Operating clearance from center (in)</b>	<b>T</b>	<b>5.75</b>	<b>6.25</b>	<b>7.25</b>

(1) Other bores available on special request.

<b>Class 1500 - Flangnek with Raised Face Flange</b>				
<b>Size (in)</b>		<b>2</b>	<b>3</b>	<b>4</b>
<b>Weight (lb)</b>		<b>65</b>	<b>125</b>	<b>208</b>
<b>Diameter internal line bore (in)<sup>(1)</sup></b>	<b>A</b>	<b>1.939</b>	<b>2.900</b>	<b>3.826</b>
<b>Upstream face orifice plate to face of end (in)</b>	<b>B</b>	<b>5.18</b>	<b>6.44</b>	<b>7.00</b>
<b>Downstream face of orifice plate to face of flange (in)</b>	<b>C</b>	<b>5.81</b>	<b>6.44</b>	<b>7.00</b>
<b>Overall face to face (in)</b>	<b>D</b>	<b>11.75</b>	<b>13.00</b>	<b>14.13</b>
<b>Centerline to bottom (in)</b>	<b>K1</b>	<b>3.38</b>	<b>4.56</b>	<b>5.00</b>
<b>Number, diameter of studs per flange (in)</b>		<b>8, 0.88</b>	<b>8, 1.13</b>	<b>8, 1.25</b>
<b>Length of studs with 2 Hex Nuts (in)</b>		<b>5.75</b>	<b>7.00</b>	<b>7.75</b>
<b>Center to face of meter tap hole (in)</b>	<b>O</b>	<b>3.50</b>	<b>4.22</b>	<b>4.75</b>
<b>Orifice plate thickness (in)</b>	<b>R</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
<b>Centerline to top (in)</b>	<b>S</b>	<b>5.56</b>	<b>6.06</b>	<b>6.56</b>
<b>Operating clearance from center (in)</b>	<b>T</b>	<b>6.25</b>	<b>6.88</b>	<b>8.00</b>

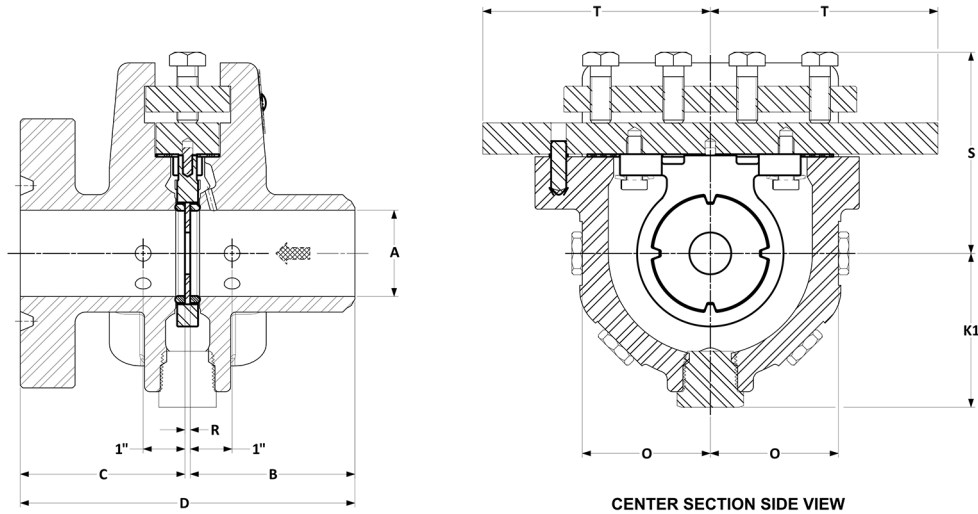
(1) Other bores available on special request.

<b>Class 2500 - Flangnek with Standard Flange</b>				
<b>Size (in)</b>		<b>2</b>	<b>3</b>	<b>4</b>
<b>Weight (lb)</b>		<b>80</b>	<b>185</b>	<b>285</b>
<b>Diameter internal line bore (in)<sup>(1)</sup></b>	<b>A</b>	<b>1.687</b>	<b>2.624</b>	<b>3.438</b>
<b>Upstream face orifice plate to face of end (in)</b>	<b>B</b>	<b>6.44</b>	<b>7.31</b>	<b>8.06</b>
<b>Downstream face of orifice plate to face of flange (in)</b>	<b>C</b>	<b>6.44</b>	<b>7.31</b>	<b>8.12</b>

<b>Class 2500 - Flangnek with Standard Flange</b>				
<b>Size (in)</b>		<b>2</b>	<b>3</b>	<b>4</b>
<b>Overall face to face (in)</b>	<b>D</b>	<b>13.00</b>	<b>14.75</b>	<b>16.11</b>
<b>Centerline to bottom (in)</b>	<b>K1</b>	<b>4.13</b>	<b>4.50</b>	<b>5.44</b>
<b>Number, diameter of studs per flange (in)</b>		<b>8, 1</b>	<b>8, 1.25</b>	<b>8, 1.5</b>
<b>Length of studs with 2 Hex Nuts (in)</b>		<b>7.00</b>	<b>8.75</b>	<b>10.00</b>
<b>Center to face of meter tap hole (in)</b>	<b>O</b>	<b>3.75</b>	<b>4.44</b>	<b>5.00</b>
<b>Orifice plate thickness (in)</b>	<b>R</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
<b>Centerline to top (in)</b>	<b>S</b>	<b>5.56</b>	<b>6.06</b>	<b>6.56</b>
<b>Operating clearance from center (in)</b>	<b>T</b>	<b>6.25</b>	<b>6.88</b>	<b>8.00</b>

(1) *Other bores available on special request.*

## Flangnek Ring-Joint



Class 600 - Flangnek with Ring-Joint Face Flange					
Size (in)		2	3	4	6
Weight (lb)		46	70	100	155
API Ring number		R-23	R-31	R-37	R-45
Diameter internal line bore (in) <sup>(1)</sup>	A	2.067	3.068	4.026	5.76
Upstream face of orifice plate to face of end (in)	B	4.00	4.50	5.00	5.72
Downstream face of orifice plate to face of flange (in)	C	4.00	4.50	5.00	5.72
Overall face to face (in)	D	8.13	9.13	10.13	11.56
Centerline to bottom (in)	K1	4.00	4.25	4.69	5.75
Number, diameter (in) of studs per flange		8, 0.63	8, 0.75	8, 0.88	12, 1
Length of studs with 2 hex nuts (in)		4.50	5.25	6.00	7.00
Center to face of meter tap hole (in)	O	3.06	3.62	4.13	5.56
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	4.75	5.25	5.75	6.88
Operating clearance from center (in)	T	5.44	6	6.44	7.11

(1) Other bores available on special request.

Class 900 - Flangnek with Ring-Joint Face Flange					
Size (in)		2	3	4	6
Weight (lb)		70	95	135	275

Class 900 - Flangnek with Ring-Joint Face Flange					
Size (in)		2	3	4	6
API Ring number		R-24	R-31	R-37	R-45
Diameter internal line bore (in) <sup>(1)</sup>	A	1.939	2.900	3.826	5.761
Upstream face of orifice plate to face of end (in)	B	5.38	5.50	5.88	6.31
Downstream face of orifice plate to face of flange (in)	C	5.38	5.50	5.88	6.44
Overall face to face (in)	D	10.88	11.13	11.88	12.88
Centerline to bottom (in)	K1	3.81	4.38	4.88	6.13
Number, diameter (in) of studs per flange		8, 0.88	8, 0.88	8, 1.13	12, 1.13
Length of studs with 2 hex nuts (in)		6.00	6.00	7.00	8.00
Center to face of meter tap hole (in)	O	3.31	3.75	4.38	6.00
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	4.75	5.25	5.75	6.88
Operating clearance from center (in)	T	5.75	6.25	7.25	8.38

(1) Other bores available on special request.

Class 1500 - Flangnek with Ring-Joint Face Flange					
Size (in)		2	3	4	6
Weight (lb)		85	135	190	440
API Ring number		R-24	R-35	R-39	R-46
Diameter internal line bore (in) <sup>(1)</sup>	A	1.939	2.900	3.826	5.761
Upstream face of orifice plate to face of end (in)	B	5.88	6.50	7.06	8.94
Downstream face of orifice plate to face of flange (in)	C	5.88	6.50	7.06	8.94
Overall face to face (in)	D	11.88	13.13	14.25	18.00
Centerline to bottom (in)	K1	3.81	4.44	5.00	6.50
Number, diameter (in) of studs per flange		8, 0.88	8, 1.13	8, 1.25	12, 1.38
Length of studs with 2 hex nuts (in)		6	7.25	8	10.5
Center to face of meter tap hole (in)	O	3.50	4.00	4.75	6.25
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	5.56	6.06	6.56	7.69
Operating clearance from center (in)	T	6.25	6.88	8	9.11

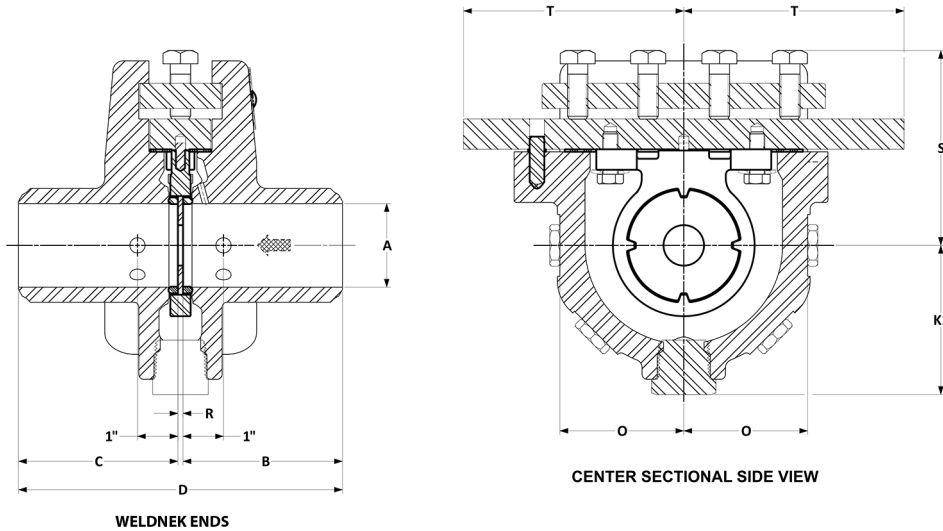
(1) Other bores available on special request.



<b>Class 2500 - Flangnek with Ring-Joint Face Flange</b>					
<b>Size (in)</b>		<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>Weight (lb)</b>		<b>85</b>	<b>135</b>	<b>190</b>	<b>440</b>
<b>API Ring number</b>		<b>R-26</b>	<b>R-32</b>	<b>R-38</b>	<b>R-47</b>
<b>Diameter internal line bore (in)<sup>(1)</sup></b>	<b>A</b>	<b>1.687</b>	<b>2.900</b>	<b>3.826</b>	<b>5.187</b>
<b>Upstream face of orifice plate to face of end (in)</b>	<b>B</b>	<b>6.50</b>	<b>7.44</b>	<b>7.06</b>	<b>11.00</b>
<b>Downstream face of orifice plate to face of flange (in)</b>	<b>C</b>	<b>6.50</b>	<b>7.44</b>	<b>7.06</b>	<b>11.00</b>
<b>Overall face to face (in)</b>	<b>D</b>	<b>13.13</b>	<b>15.00</b>	<b>14.25</b>	<b>22.13</b>
<b>Centerline to bottom (in)</b>	<b>K1</b>	<b>4.25</b>	<b>4.75</b>	<b>5.00</b>	<b>6.50</b>
<b>Number, diameter (in) of studs per flange</b>		<b>8, 1.00</b>	<b>8, 1.25</b>	<b>8, 1.5</b>	<b>8, 2.00</b>
<b>Length of studs with 2 hex nuts (in)</b>		<b>7.00</b>	<b>9.25</b>	<b>10.50</b>	<b>14.25</b>
<b>Center to face of meter tap hole (in)</b>	<b>O</b>	<b>3.75</b>	<b>4.44</b>	<b>4.63</b>	<b>6.44</b>
<b>Orifice plate thickness (in)</b>	<b>R</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
<b>Centerline to top (in)</b>	<b>S</b>	<b>5.56</b>	<b>6.06</b>	<b>6.56</b>	<b>7.69</b>
<b>Operating clearance from center (in)</b>	<b>T</b>	<b>6.25</b>	<b>6.88</b>	<b>8</b>	<b>9.11</b>

(1) Other bores available on special request.

## Weldnek



Class 600 - Weldnek					
Size (in)		2	3	4	6
Weight (lb)		40	50	65	100
Diameter internal line bore (in) <sup>(1)</sup>	A	2.067	3.068	4.026	6.065
Upstream face of orifice plate to face of end (in)	B	3.94	4.44	4.94	5.06
Downstream face of orifice plate to face of flange (in)	C	3.94	4.44	4.94	5.06
Overall face to face (in)	D	8.00	9.00	10.00	10.25
Centerline to bottom (in)	K1	3.56	4.25	4.69	5.75
Center to face of meter tap hole (in)	O	3.18	3.69	4.28	5.56
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	4.75	5.25	5.75	6.87
Operating clearance from center (in)	T	5.44	6.00	6.44	7.11

(1) Other bores available on special request.

Class 900 - Weldnek					
Size (in)		2	3	4	6
Weight (lb)		50	70	90	156
Diameter internal line bore (in) <sup>(1)</sup>	A	1.939	2.900	3.826	5.761
Upstream face of orifice plate to face of end (in)	B	5.31	5.44	5.81	6.31
Downstream face of orifice plate to face of flange (in)	C	5.31	5.44	5.81	6.31

Class 900 - Weldnek					
Size (in)		2	3	4	6
Overall face to face (in)	D	10.75	11.00	11.75	12.75
Centerline to bottom (in)	K1	3.81	4.37	4.87	6.12
Center to face of meter tap hole (in)	O	3.31	3.93	4.50	6.00
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	4.75	5.11	5.75	6.88
Operating clearance from center (in)	T	5.75	6.25	7.25	8.38

(1) Other bores available on special request.

Class 1500 - Weldnek					
Size (in)		2	3	4	6
Weight (lb)		65	100	120	300
Diameter internal line bore (in) <sup>(1)</sup>	A	1.939	2.900	3.826	5.761
Upstream face of orifice plate to face of end (in)	B	5.81	6.44	7.00	8.81
Downstream face of orifice plate to face of flange (in)	C	5.81	6.44	7.00	8.81
Overall face to face (in)	D	11.75	13.00	14.13	17.75
Centerline to bottom (in)	K1	3.81	4.44	5.00	6.50
Center to face of meter tap hole (in)	O	3.50	4.22	4.75	6.25
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	5.56	6.06	6.56	7.69
Operating clearance from center (in)	T	6.25	6.88	8.00	9.11

(1) Other bores available on special request.

Class 2500 - Weldnek					
Size (in)		2	3	4	6
Weight (lb)		75	120	175	480
Diameter internal line bore (in) <sup>(1)</sup>	A	1.688	2.62	3.44	5.19
Upstream face of orifice plate to face of end (in)	B	6.44	7.31	8.06	10.75
Downstream face of orifice plate to face of flange (in)	C	6.44	7.31	8.06	10.75
Overall face to face (in)	D	13.00	14.75	16.25	21.63
Centerline to bottom (in)	K1	4.38	4.81	5.44	7.31
Center to face of meter tap hole (in)	O	4.44	4.44	6.06	6.50
Orifice plate thickness (in)	R	0.13	0.13	0.13	0.13
Centerline to top (in)	S	5.56	6.06	6.56	7.69
Operating clearance from center (in)	T	6.25	6.88	8.00	9.50

(1) Other bores available on special request.

January 2022

With over 90 Years of experience, Daniel is the only manufacturer that has the knowledge and experience to engineer and offer superior products that are trusted to provide the most reliable and accurate measurements in the global oil and gas industry.

**Contact Us**

Email: [info@daniel.com](mailto:info@daniel.com)

Phone: 713-467-6000



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