

# Rosemount 1199 Submersible Seal



The Rosemount Submersible Seal design uses innovative DP Level technology to measure level for top-down applications. For this design, the seal and capillary are submersed in the process and installation is made through a connection at the top of the tank. This differs from traditional DP Level installations which are side mounted to tanks via threaded or flanged connections, with only the diaphragm seal in contact with the process. The unique design of the Submersible Seal allows installation through small tank connections while at the same time providing excellent performance and sensitivity characteristics.



## Proven, reliable, and innovative remote seal technology for top down measurement

Unlike traditional DP Level systems that use flat diaphragm seals to measure process pressure, the Submersible Seal consists of a compressed bellows design. This design allows the seal to fit through small tank connections, a 1½ NPT threaded connection or a 2 to 3-in. flanged connection (DN 50 to DN 100), and be submersed into the fluid to provide a top-down level measurement. In addition, this seal design provides significantly better performance compared to a similar sized traditional DP Level diaphragm seal. The Rosemount 1199 Submersible Seal can be combined with any Rosemount In-Line Gage Transmitter including all output protocols and hazardous location approvals.

### Rosemount 1199 Submersible Seal

- Based on reliable and easy to use pressure based level technology
- Ideal for smaller top-down tank connections, from 1½ NPT threaded connections to 2-3 inch flanged connections (DN 50 to DN 100)
- Intended for vented or open tank applications



Rosemount 1199 Submersible Seal

### Assemble to any Rosemount In-Line Gage Transmitter



Submersible Seal System with Wireless Rosemount 3051T



#### Rosemount 3051S\_T

4-20 mA HART®, WirelessHART®, FOUNDATION™ fieldbus, PROFIBUS®



#### Rosemount 3051T

4-20 mA HART, WirelessHART, FOUNDATION fieldbus, PROFIBUS



#### Rosemount 2051

4-20 mA HART, WirelessHART, FOUNDATION fieldbus, PROFIBUS



#### Rosemount 2088

4-20 mA HART

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# Ordering Information

The Rosemount 1199 Submersible Seal can be ordered with any Rosemount In-Line Transmitter with the 1199 attach to option. Please refer to the desired Rosemount transmitter PDS for the desired configuration.



Ordering codes

Transmitter model	1 Seal
3051S_TG	B11
3051TG, 2051TG, 2088G	S1

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.

See [page 6](#) for more information on Material Selection.

**Table 1. Rosemount 1199 Submersible Seal**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.  
 The Expanded offering is subject to additional delivery lead time.

Model	Product description		
1199	Seal Systems		
Connection type		Seal system	Seal location
<b>All In-Line Transmitters (3051S_TG, 3051TG, 2051TG, 2088G)</b>			
W	All Welded	One Seal System	High Side of Transmitter ★
Seal fill fluid		Specific gravity at 77 °F (25 °C)	Temperature limits <sup>(1)</sup>
D	Silicone 200	0.93	-49 to 401 °F (-45 to 205 °C) ★
G	Glycerin and Water	1.13	5 to 203 °F (-15 to 95 °C) ★
Seal connection type/capillary ID, description			
B	0.03-in. (0.711 mm) ID ★		
C	0.04-in. (1.092 mm) ID ★		
E	0.03-in. (0.711 mm) ID, PVC Coated with Closed End ★		
F	0.04-in. (1.092 mm) ID, PVC Coated with Closed End ★		
Measurement length <sup>(2)</sup>			
01	1.7 ft (0.5 m) ★		
51	2.3 ft (0.7 m) ★		
52	3.9 ft (1.2 m) ★		
05	5.7 ft (1.7 m) ★		
54	7.2 ft (2.2 m) ★		
55	8.9 ft (2.7 m) ★		
10	10.7 ft (3.2 m) ★		
57	12.1 ft (3.7 m) ★		
58	13.8 ft (4.2 m) ★		
15	15.7 ft (4.7 m) ★		
59	17 ft (5.2 m) ★		
60	20.3 ft (6.2 m) ★		

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Model	Product description			
20	20.7 ft (6.3 m)			★
61	23.6 ft (7.2 m)			★
25	25.7 ft (7.8 m)			★
62	26.9 ft (8.2 m)			★
63	30.2 ft (9.2 m)			★
30	30.7 ft (9.3 m)			★
<b>Industry standard</b>				
A	ASME B16.5/ANSI B1.20.1 (American National Standards Institute/American Society of Mechanical Engineers)			★
D	EN 1092-1 (European Standard)			★
J	JIS B2238			★
<b>Process connection style</b>				
TSM	Threaded Submersible Seal			★
FSM	Flanged Submersible Seal			
<b>Process connection size</b>				
<b>Threaded (TSM)</b>				
	<b>ANSI B1.20.1</b>	<b>ISO 7-1, DIN 2999, BS 21 (BS EN 10226-1), JIS B0203</b>		
4	1 1/2 - 11.5 NPT	N/A		★
<b>Flanged (FSM)</b>				
	<b>JIS B2238</b>	<b>ASME B16.5/HG20615</b>	<b>EN 1092-1/ GOST 12815-80/HG20592</b>	
4	40 A	1 1/2 in.	N/A	
G	50 A	2 in.	DN 50	
7	80 A	3 in.	N/A	
J	N/A	N/A	DN 80	
9	100 A	N/A	DN 100	
F	N/A	N/A	DN 40	
<b>Pressure rating</b>				
<b>Threaded (TSM)</b>				
	<b>ANSI B1.20.1</b>	<b>ISO 7-1, DIN 2999, BS 21 (BS EN 10226-1), JIS B0203</b>		
0	60 psi	4.13 bar		★
<b>Flanged (FSM)</b>				
	<b>JIS B2238</b>	<b>ASME B16.5/HG20615</b>	<b>EN 1092-1/ GOST 12815-80/HG20592</b>	
1	10K	Class 150	N/A	★
2	20K	Class 300	N/A	★
4	40K	Class 600	N/A	★
G	N/A	N/A	PN 40	★
E	N/A	N/A	PN 10 / 16	★

**Table 1. Rosemount 1199 Submersible Seal**

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Model	Product description			
<b>Diaphragm, upper housing, flange material</b>				
	<b>Diaphragm</b>	<b>Upper housing</b>	<b>Flange</b>	
DG00	321 SST	316 SST	316 SST	★

**Other options (include with selected model number)**

<b>Process screen</b>			
0	No Filter		★
1	1/4 in. NPT Screen Insert		★
<b>Extended product warranty</b>			
WR3	3-year limited warranty		★
WR5	5-year limited warranty		★

(1) At ambient pressure of 14.7 psia (1 bar-a) and ambient temperature of 70 °F and must be further derated if ambient temperature exceeds 70 °F (21 °C).

(2) Length is measured from the bottom of the threaded connection or gasket surface of the flange to the bottom of the seal. Please refer to the TSM and FSM drawings.

# Specifications

## Functional specifications

### Maximum working pressure limits

**Table 2. Maximum Working Pressure Limits**

Range	Rosemount 3051S_TG, Rosemount 3051T, Rosemount 2051T and Rosemount 2088
1	30 psig (2,07 bar)
2	60 psig (4,14 bar)

### Temperature limits

#### Transmitter temperature limits

40 to 185 °F (-40 to 85 °C)

With LCD display<sup>(1)</sup>: -40 to 175 °F (-40 to 80 °C)

With option code P0: -20 to 185 °F (-29 to 85 °C)

(1) LCD display may not be readable and LCD updates will be slower at temperatures below -4 °F (-20 °C).

#### Fill fluid temperature limits

**Table 3. Fill Fluid Specifications**

Fill fluid	Specific gravity at 77 °F (25 °C)	Coeff. of therm. exp. (cc/cc/°C)	Viscosity at 77 °F (25 °C) (Centistokes)	Temperature limits
Silicone 200	0.93	0.00108	9.5	-49 to 401 °F (-45 to 205 °C)
Glycerin and Water	1.13	0.00034	12.5	5 to 203 °F (-15 to 95 °C)

## Physical specifications

### Materials of construction

Seal Diaphragm: 321 SST

Capillary: 316 SST

Capillary Armor: 304 SST or PVC-Coated 304 SST

Submersible Seal weight lbs. (kg.): 1.2 lbs. (0.54 kg.)

### Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product materials, options, and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product options, configuration, or materials of construction selected.

# Dimensional Drawings

## Rosemount 1199 Submersible Seal

Figure 1. 2D Drawing

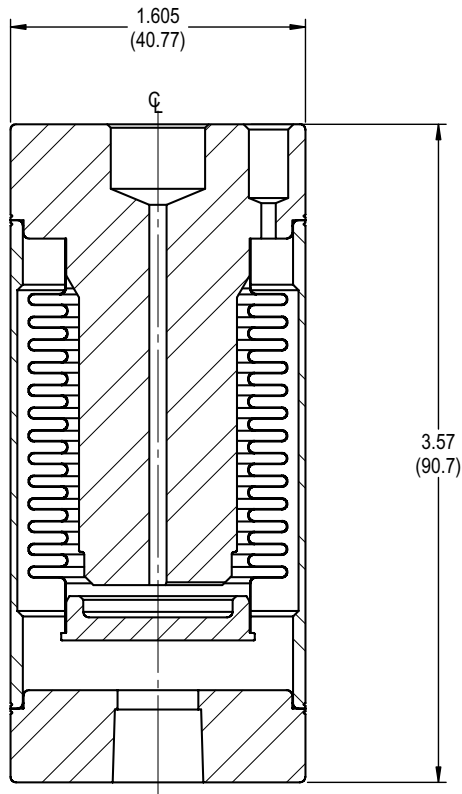


Figure 2. 3D Drawing



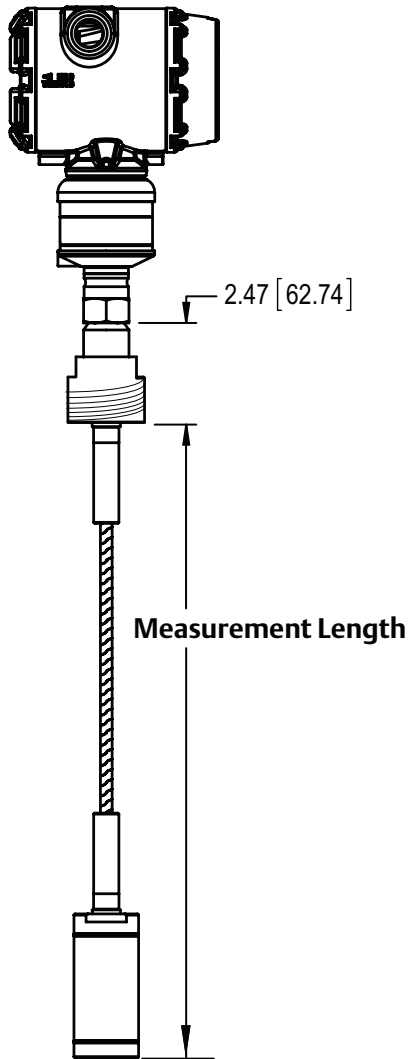
Dimensions are in inches (millimeters).

Figure 3. Rosemount 1199 Submersible Seal with Optional Screen Insert

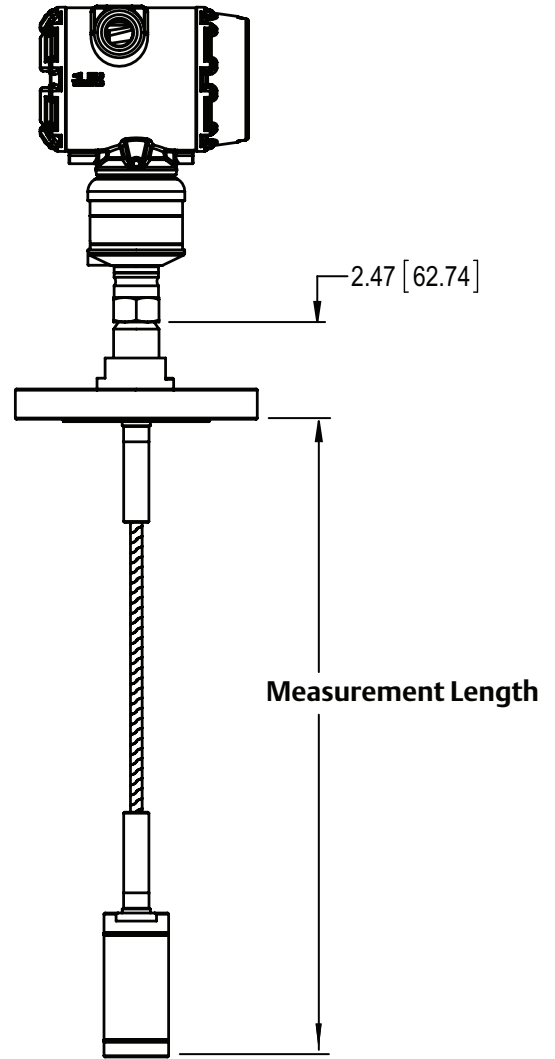


Figure 4. Rosemount Submersible Seal

**Threaded  
(TSM Process Connection)  
Side View**



**Flanged  
(FSM Process Connection)  
Side View**

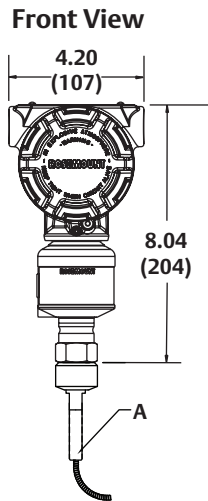


Dimensions are in inches (millimeters).

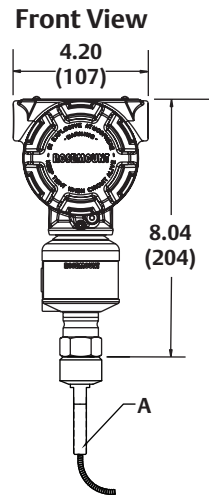


Figure 5. Rosemount 3051S\_T with Submersible Seal Threaded Connection

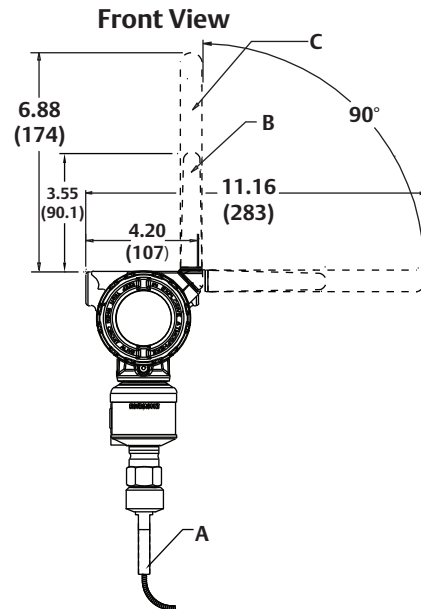
PlantWeb Housing



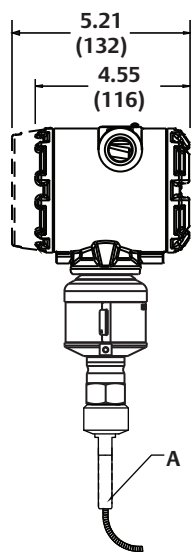
Junction Box Housing



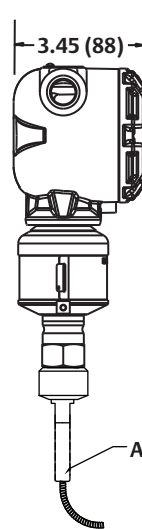
Wireless Housing



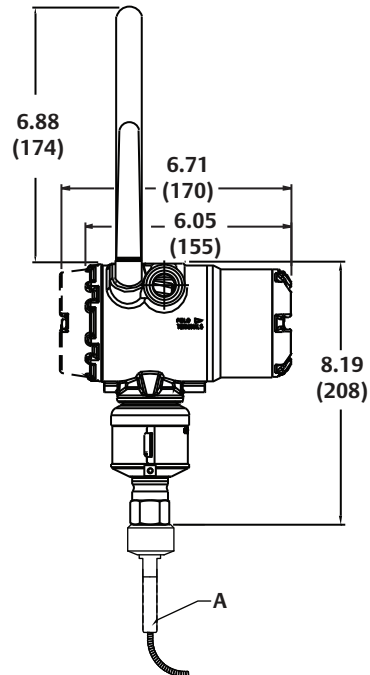
Side View



Side View



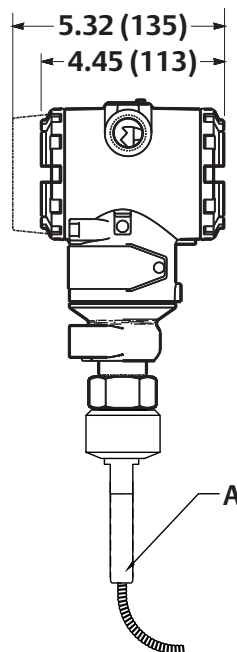
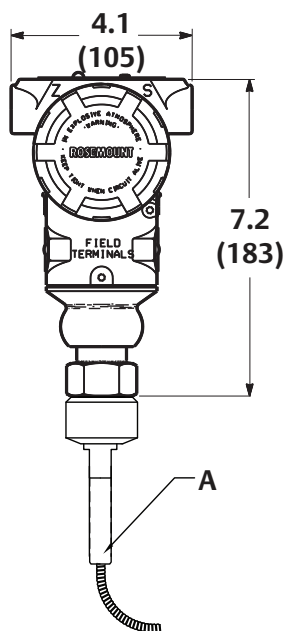
Side View



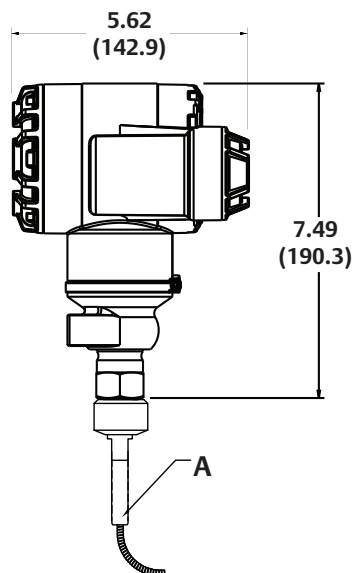
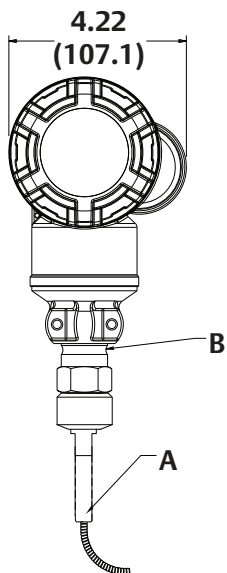
Dimensions are in inches (millimeters).

- A. Capillary Connection
- B. External Antenna
- C. External Range External Antenna

Figure 6. Rosemount 3051T with Submersible Seal Threaded Connection  
Standard

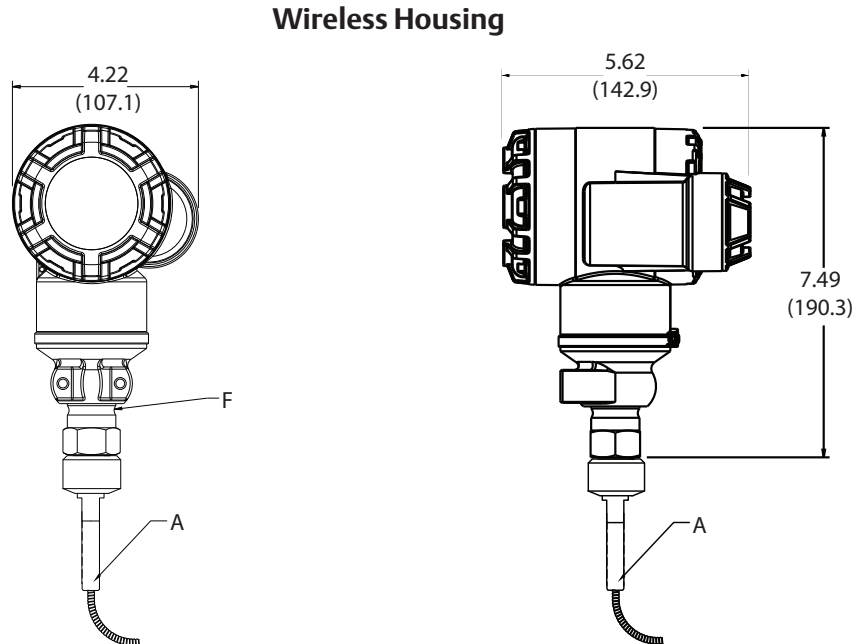
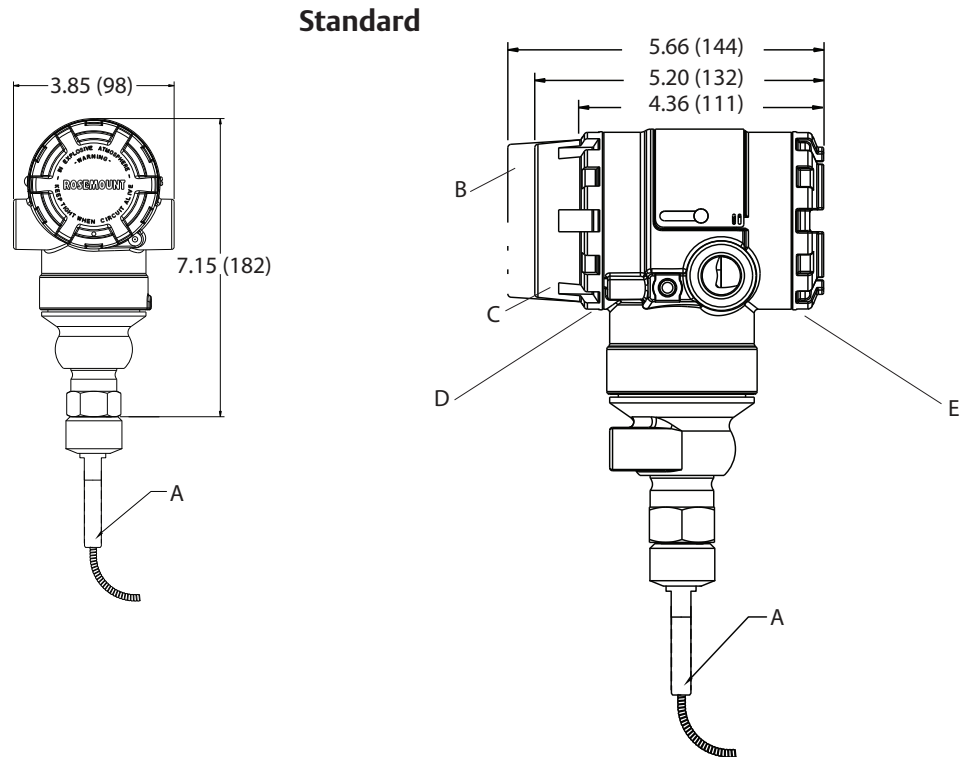


Wireless Housing



Dimensions are in Inches (millimeters).  
A. Capillary Connection  
B. U-Bolt Bracket

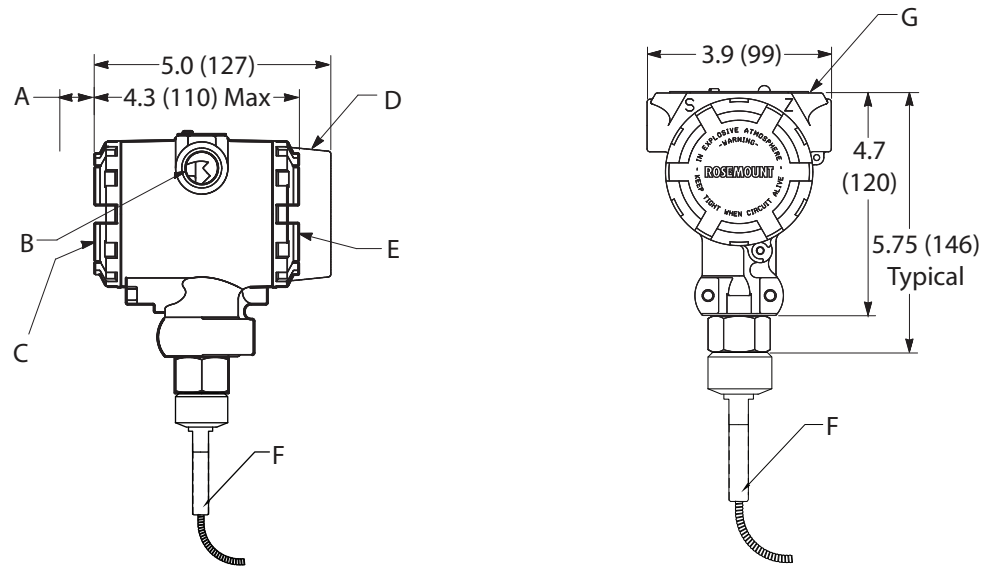
Figure 7. Rosemount 2051T with Submersible Seal Threaded Connection



A. Capillary Connection  
 B. Fieldbus Display Cover  
 C. HART Display Cover  
 D. Transmitter Circuitry

E. terminal Connections  
 F. U-Bolt Bracket  
 Dimensions are in Inches (millimeters).

Figure 8. Rosemount 2088 with Submersible Seal Threaded Connection



- A. 0.75 (20) Clearance for Cover Removal
- B. 2 X 1/2 - 14 NPT Conduit Connection
- C. Terminal Connection
- D. Optional Display Cover

- E. Transmitter Circuitry
  - F. Capillary Connection
  - G. Certifications Tag
- Dimensions are in Inches (millimeters).



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