

# Rosemount 2120

## Full-featured Vibrating Fork Liquid Level Switch



- Designed for operation in process temperatures of  $-40$  to  $302$  °F ( $-40$  to  $150$  °C)
- Electronic self-checking and condition monitoring
- Increased safety, SIL2 certified to IEC 61508 as required by IEC 61511
- Adjustable switching delay for turbulent or splashing applications
- “Fast Drip” fork design gives a quicker response time, especially with viscous liquids
- General area, explosion-proof/flameproof, and intrinsically safe options

**ROSEMOUNT**

  
**EMERSON**  
Process Management

# Overview of the Rosemount 2120



Adjustable Mode and Switching Delay



## Measurement principle

The Rosemount 2120 is designed using the principle of a tuning fork. A piezo-electric crystal oscillates the forks at their natural frequency. Changes to this frequency are continuously monitored. The frequency of the vibrating fork sensor changes depending on the medium in which it is immersed. The denser the liquid, the lower the frequency.

When used as a **low level alarm**, the liquid in the tank or pipe drains down past the fork, causing a change of natural frequency that is detected by the electronics and switches the output state.

When the 2120 is used as a **high level alarm**, the liquid rises in the tank or pipe, making contact with the fork which then causes the output state to switch.

## Key features and benefits

- Function virtually unaffected by flow, bubbles, turbulence, foam, vibration, solids content, coating products, liquid properties, and product variations
- The 2120 is designed for operation in process temperatures from  $-40$  to  $302$  °F ( $-40$  to  $150$  °C)
- A 'heartbeat' LED indicates its operating state. The LED also flashes when the switch output is 'off' and is constantly lit when 'on'
- Adjustable switching delay prevents false switching in turbulent or splashing applications
- 'Fast Drip' fork design gives quicker response time, especially with viscous liquids. Rapid wet-to-dry and dry-to-wet time setting for highly responsive switching
- Fork shape is optimized for hand polishing to meet hygienic requirements
- Magnetic test point makes functional test easy
- No moving parts or crevices for virtually no maintenance

## Contents

Overview of the Rosemount 2120 .....	page 2
Rosemount 2120 level switch ordering .....	page 4
Rosemount 2120 spare parts and accessories ...	page 7

Specifications .....	page 8
Product certifications .....	page 11
Dimensional drawings .....	page 13

## Fit and forget

- Once installed, the 2120 is ready to go. It needs no calibration and requires minimum installation
- The ‘heartbeat’ LED gives an instant visual indication that the unit is operational
- Functional testing of the instrument and system is easy with a magnetic test point
- You can install, and forget it

## Superior performance

- The 2120 is a popular choice for high and low level alarm and pump control duties for its simplicity, ease of use, and reliability
- Functionality is virtually unaffected by flow, turbulence, bubbles, foam, or vibration
- The ‘Fast Drip’ design allows the liquid to be quickly drawn away from the fork tip when mounted horizontally, making the 2120 quicker and more responsive in high density or viscous liquid applications
- With a user-selectable time delay feature, the risk of false switching is minimized in turbulent or splashing applications

## Applications

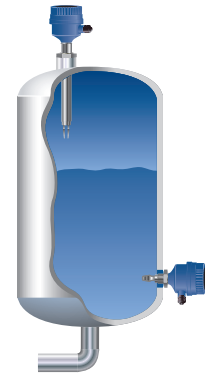
- Overfill protection
- High and low point level alarms
- Pump control or limit detection
- Run dry or pump protection
- Hygienic applications
- High-temperature applications
- Wireless applications



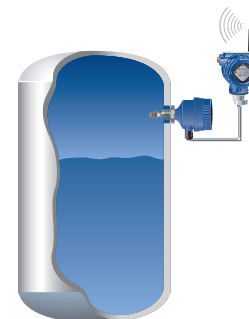
High And Low Level Alarm



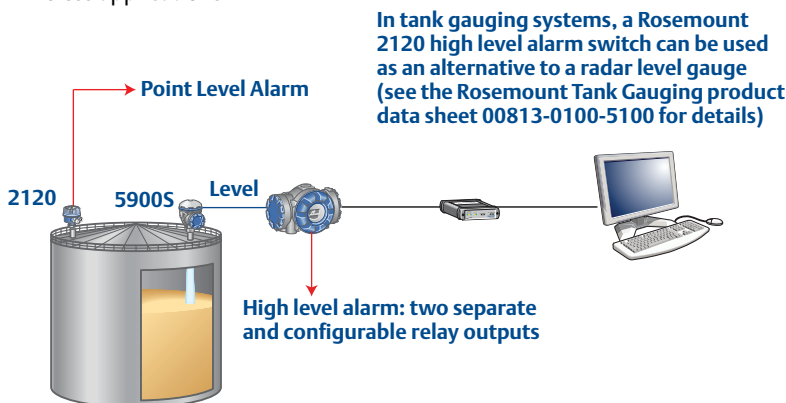
High-temperature Applications



Pump Control / Limit Detection



Wireless Applications using a Rosemount 702 Discrete Transmitter



# Rosemount 2120 level switch ordering

**Table 1. Rosemount 2120 ordering information**

★The Standard offering represents the most common models and options. These options should be selected for best delivery.  
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Model	Product Description	
2120	Vibrating Fork Liquid Level Switch / -40...302 °F (-40...150 °C)	
<b>Materials of Construction: Process Connection/Fork</b>		
<b>Standard</b>		<b>Standard</b>
D	316/316L Stainless Steel (1.4401/1.4404) dual certified	★
<b>Expanded</b>		
F <sup>(1)</sup>	ECTFE/PFA copolymer, coated 316/316L SST (1.4401/1.4404)	
C <sup>(2)</sup>	Alloy C (UNS N10002), Alloy C-276 (UNS N10276), Solid	
<b>Process Connection Size / Type</b>		
<b>Standard</b>		<b>Standard</b>
0A	3/4-in. BSPT (R) Thread	★
0B	3/4-in. BSPP (G) Thread	★
0D	3/4-in. NPT Thread	★
1A	1-in. BSPT (R) Thread	★
1B	1-in. BSPP (G) Thread	★
1D	1-in. NPT Thread – (2-in. NPT Thread available by adding “R2105” to the model number <sup>(3)</sup> )	★
1P	1-in. BSPP (G), O-ring, Hygienic Fitting	★
5R	1 1/2-in. (38 mm) Tri-Clamp, Hygienic Fitting	★
2R	2-in. (51 mm) Tri-Clamp, Hygienic Fitting	★
1G	1-in. ASME B16.5 Class 150 Raised Face (RF) Flange	★
1H	1-in. ASME B16.5 Class 300 Raised Face (RF) Flange	★
1J	1-in. ASME B16.5 Class 600 Raised Face (RF) Flange	★
5G	1 1/2-in. ASME B16.5 Class 150 Raised Face (RF) Flange	★
5H	1 1/2-in. ASME B16.5 Class 300 Raised Face (RF) Flange	★
2G	2-in. ASME B16.5 Class 150 Raised Face (RF) Flange	★
2H	2-in. ASME B16.5 Class 300 Raised Face (RF) Flange	★
3G	3-in. ASME B16.5 Class 150 Raised Face (RF) Flange	★
3H	3-in. ASME B16.5 Class 300 Raised Face (RF) Flange	★
4G	4-in. ASME B16.5 Class 150 Raised Face (RF) Flange	★
4H	4-in. ASME B16.5 Class 300 Raised Face (RF) Flange	★
1K	DN25, EN1092 PN 10/16 Flange	★
1L	DN25, EN1092 PN 25/40 Flange	★
1M	DN25, EN1092 PN 63 Flange	★
1N	DN25, EN1092 PN 100 Flange	★
5K	DN40, EN1092 PN 10/16 Flange	★
5L	DN40, EN1092 PN 25/40 Flange	★
2K	DN50, EN1092 PN 10/16 Flange	★
2L	DN50, EN1092 PN 25/40 Flange	★
7K	DN65, EN1092 PN 10/16 Flange	★
7L	DN65, EN1092 PN 25/40 Flange	★
3K	DN80, EN1092 PN 10/16 Flange	★
3L	DN80, EN1092 PN 25/40 Flange	★
4K	DN100, EN1092 PN 10/16 Flange	★
4L	DN100, EN1092 PN 25/40 Flange	★
<b>Expanded</b>		
5J	1 1/2-in. ASME B16.5 Class 600 Raised Face (RF) Flange	
2J	2-in. ASME B16.5 Class 600 Raised Face (RF) Flange	
3J	3-in. ASME B16.5 Class 600 Raised Face (RF) Flange	
4J	4-in. ASME B16.5 Class 600 Raised Face (RF) Flange	

**Table 1. Rosemount 2120 ordering information**

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5M	DN40, EN1092 PN 63 Flange		
5N	DN40, EN1092 PN 100 Flange		
2M	DN50, EN1092 PN 63 Flange		
2N	DN50, EN1092 PN 100 Flange		
7M	DN65, EN1092 PN 63 Flange		
7N	DN65, EN1092 PN 100 Flange		
3M	DN80, EN1092 PN 63 Flange		
3N	DN80, EN1092 PN 100 Flange		
4M	DN100, EN1092 PN 63 Flange		
4N	DN100, EN1092 PN 100 Flange		
SA	25A, 10K, JIS B2220 Flange		
SB	25A, 20K, JIS B2220 Flange		
TA	40A, 10K, JIS B2220 Flange		
TB	40A, 20K, JIS B2220 Flange		
UA	50A, 10K, JIS B2220 Flange		
UB	50A, 20K, JIS B2220 Flange		
VA	80A, 10K, JIS B2220 Flange		
VB	80A, 20K, JIS B2220 Flange		
ZA	100A, 10K, JIS B2220 Flange		
ZB	100A, 20K, JIS B2220 Flange		
XX <sup>(4)</sup>	Customer Specific		
<b>Electronic Type</b>		<b>Available Certifications</b>	
<b>Standard</b>			<b>Standard</b>
T	Direct load switching (Mains 2-wire) 20 to 264 Vac 50/60Hz, 20 to 60 Vdc	NA, E*, G5, G6	★
G	PNP/PLC low voltage (3-wire) 20 to 60 Vdc	NA, E*, G5, G6	★
V	Relay DPCO – (9...30 Vdc version available by adding "R2257" to model number <sup>(3)(5)</sup> )	NA, E*, G5, G6	★
K	NAMUR	All	★
H	8/16 mA	All	★
<b>Surface Finish</b>		<b>Available Connections</b>	
<b>Standard</b>			<b>Standard</b>
1	Standard surface finish	All	★
2	Hand polished (Ra < 0.4 μm)	Hygienic Connection Only	★
<b>Product Certifications</b>		<b>Electronic Types Allowed</b>	<b>Available Housings</b>
<b>Standard</b>			<b>Standard</b>
NA	No Hazardous Locations Certifications	All except 9...30 Vdc Relay	All
G5 <sup>(6)</sup>	FM Ordinary Locations (unclassified, safe area)	All	Y, T
G6 <sup>(7)</sup>	CSA Ordinary Locations (unclassified, safe area)	All except 9...30 Vdc Relay	Y, T
E1	ATEX Flameproof	All except 9...30 Vdc Relay	X, S
E5 <sup>(6)</sup>	FM Explosion-proof	All	Y, T
E6 <sup>(7)</sup>	CSA Explosion-proof	All except 9...30 Vdc Relay	Y, T
E7	IECEX Explosion-proof	All except 9...30 Vdc Relay	X, S
I1	ATEX Intrinsic Safety	K, H	All
I5	FM Intrinsic Safety	K, H	All
I6	CSA Intrinsically Safe	K, H	All
I7	IECEX Intrinsic Safety	K, H	All
<b>Housing</b>		<b>Available for Certifications</b>	
<b>Standard</b>			<b>Standard</b>
A	Glass Filled Nylon, M20 conduits/cable threads	NA, I1, I5, I6, and I7	★
D	Glass Filled Nylon, 1/2-in. NPT conduits/cable threads	NA, I1, I5, I6, and I7	★
X	Aluminum Alloy, M20 conduits/cable threads	All except G5, G6, E5, E6	★
Y	Aluminum Alloy, 3/4-in. NPT conduits/cable threads	All except E1 and E7	★

**Table 1. Rosemount 2120 ordering information**

★The Standard offering represents the most common models and options. These options should be selected for best delivery.  
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

S	Stainless Steel, M20 conduits/cable threads	All except G5, G6, E5, E6	★
T	Stainless Steel <sup>3</sup> / <sub>4</sub> -in. NPT conduits/cable threads	All except E1 and E7	★
<b>Fork Length</b>		<b>Available Connection</b>	
<b>Standard</b>			<b>Standard</b>
A	Standard length 1.7 in. (44 mm)	All except flanged and 2-in. NPT	★
H <sup>(8)</sup>	Standard length flange 4.0 in. (102 mm)	All flanged models	★
E <sup>(9)</sup>	Extended, customer specified length in tenths of inches	All except 1-in. BSPP O-ring (1P)	★
M <sup>(9)</sup>	Extended, customer specified length in millimeters	All except 1-in. BSPP O-ring (1P)	★
<b>Specific Extended Fork Length</b>			
<b>Standard</b>			<b>Standard</b>
0000	Factory default length (only if Fork Length A or H is selected)		★
XXXX <sup>(9)</sup>	Specific customer specified length in tenths of inches, or millimeters (XXXX mm or XXX.X inches)		★
<b>OPTIONS</b>			
<b>Calibration Data Certification</b>			
<b>Standard</b>			<b>Standard</b>
Q4	Certificate of functional test		★
<b>Material Traceability Certification</b>			
<b>Standard</b>			<b>Standard</b>
Q8 <sup>(8)(10)</sup>	Material traceability certification per EN 10204 3.1		★
<b>Material Certification</b>			
<b>Standard</b>			<b>Standard</b>
Q15 <sup>(8)(10)</sup>	NACE MR0175 / ISO 15156		★
Q25 <sup>(8)(10)</sup>	NACE MR0103		★
<b>Special Procedures</b>			
<b>Standard</b>			<b>Standard</b>
P1 <sup>(11)</sup>	Hydrostatic testing with certificate		★
<b>Typical Model Number: 2120 D 0A K 1 I1 A 0000 Q8</b>			

- (1) ECTFE/PFA copolymer coating is only available for a flanged 2120 but excludes 1-in./DN25/25A flanges. Flanges are dual certified 316 and 316L Stainless Steel (1.4401 and 1.4404).
- (2) Available for threaded process connection codes 0A, 0D, 1A, and 1D and flanged process connections as standard, other upon request.
- (3) For a combination of 2-in. threaded process connection and 9 to 30 Vdc (12 Vdc nominal) version of the Relay electronics, add "R2258" to the model code.
- (4) Other process connections available upon request.
- (5) The 9 to 30 Vdc (12 Vdc nominal) version of the Relay electronics is available with Product Certification codes G5 or E5.
- (6) See "Product certifications" on page 11. E5 includes G5 requirements. G5 is for use in unclassified, safe area locations only.
- (7) See "Product certifications" on page 11. E6 includes G6 requirements. G6 is for use in unclassified, safe area locations only.
- (8) Not available for hand polished wet side.
- (9) Minimum length available for <sup>3</sup>/<sub>4</sub>-in. threaded connection is 3.8 in. (95 mm); for 1-in. and 2-in. threaded, it is 3.7 in. (94 mm); for flanged, it is 3.5 in. (89 mm); and for Tri-Clamp, it is 4.1 in. (105 mm). Maximum length is 157.5 in. (4000 mm), except for ECTFE/PFA copolymer coating and hand-polished process where the maximum length is 59.1 in. (1500 mm) and 39.4 in. (1000 mm) respectively. Examples: Code E1181 is 118.1 inches. Code M3000 is 3000 millimeters.
- (10) Only available for wetted parts.
- (11) Option limited to units with extended lengths up to 59.1-in. (1500 mm). Option is not available for ECTFE/PFA coating.

## Safety Integrity Level (SIL) certification

The Rosemount 2120 has been independently certified to IEC 61508 as required by IEC 61511. Certification was conducted by Exida.

## Overfill approval option

The Rosemount 2120 has been TÜV-tested and approved for overfill protection according to the German DIBt/WHG regulations. This option is not selectable in the ordering information table. If required, add "R2259" to the end of the model code. For example, 2120 D 0A K E1 X A0000 **R2259**.

## Rosemount 2120 spare parts and accessories

**Table 2. Rosemount 2120 spare parts and accessories**

★The Standard offering represents the most common models and options. These options should be selected for best delivery. The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Spares and Accessories <sup>(1) (2)</sup>		
Standard		Standard
02100-1000-0001	Seal for 1-in. BSPP (G1A). Material: Non-asbestos BS7531 grade X carbon fiber with rubber binder	★
02100-1040-0001	Seal for 3/4-in. BSPP (G3/4A). Material: Non-asbestos BS7531 grade X carbon fiber with rubber binder	★
02100-1010-0001	Hygienic adaptor boss 1-in. BSPP. Material: 316 SST fitting, FPM/FKM O-ring	★
02100-1020-0001	2-in. (51 mm) Tri-clamp kit (vessel fitting, clamp ring, and seal). Material: 316 SST, NBR Nitrile	★
02100-1030-0001	Telescopic test magnet	★
02120-2000-0001 <sup>(3)</sup>	1 1/2-in. BSPP adjustable 316 SST clamp gland for 1-in. extended lengths. Silicone (Si) rubber seal	★
02120-2000-0002 <sup>(3)</sup>	1 1/2-in. NPT adjustable 316 SST clamp gland for 1-in. extended lengths. Silicone (Si) rubber seal	★
02120-7000-0001	Replacement Cassette: Direct load switching (2 Wire) (Red)	★
02120-7000-0002	Replacement Cassette: PNP/PLC, low voltage (Yellow)	★
02120-7000-0003	Replacement Cassette: NAMUR (Light Blue)	★
02120-7000-0004	Replacement Cassette: Relay (DPCO), standard version (Green)	★
02120-7000-0005	Replacement Cassette: 8/16 mA output (Dark Blue)	★
02120-7000-0007	Replacement Cassette: Relay (DPCO), 9...30 Vdc (12 Vdc nominal) version (Green)	★

(1) Check the Electronic Type and Product Certification sections in Table 1 on page 4 for availability conditions.

(2) Intrinsically Safe (IS) approved cassettes can only be replaced with the same type of IS cassette. Non-IS cassette types can be interchanged with other non-IS cassettes, but the new label must be fitted and the original part number transferred to the new label.

(3) The adjustable clamp gland is not explosion-proof.

# Specifications

## General

### Product

- Rosemount 2120 Full-featured Vibrating Fork Liquid Level Switch

### Measuring principle

- Vibrating Fork

### Applications

- Most liquids including coating liquids, aerated liquids, and slurries

## Mechanical

### Housing / Enclosure

Table 3. Housing / Enclosure specification

Housing Code	A	D	X	Y	S	T
Housing Material	Nylon PA66 30%GF		Al alloy ASTM B85 A360.0		316C12 SST	
Rotational	Yes		No		No	
Housing Paint	Not Applicable		Polyurethane Paint		Not Applicable	
LED Window	Nylon PA12		None		None	
Conduit Entry	M20	1/2-in. NPT	M20	3/4-in. NPT	M20	3/4-in. NPT
Ingress Protection	IP66/67 to EN60529		IP66/67 to EN60529, NEMA 4X		IP66/67 to EN60529, NEMA 4X	

### Connections

- Threaded, hygienic, and flanged process connections.  
See “[Process Connection Size / Type](#)” on page 4 for a complete list

### Extended lengths

- The maximum extended length is 157.5 in. (4000 mm) except for ECTFE/PFA copolymer coating and hand-polished process connection options which have a maximum length of 59.1 in. (1500 mm) and 39.4 in. (1000 mm) respectively

Table 4. Minimum extended lengths

Process Connection	Minimum Extended Length
3/4-in. Threaded	3.8 in. (95 mm)
1-in. and 2-in. Threaded	3.7 in. (94 mm)
Flanged	3.5 in. (89 mm)
Tri-Clamp	4.1 in. (105 mm)

### Process connection materials

- 316/316L Stainless Steel (1.4401/1.4404 dual certified)
- Alloy C (UNS N10002) and Alloy C-276 (UNS N10276)  
– available for flanged, and BSPT and NPT threaded process connections (3/4-in. and 1-in. BSPT (R), and 3/4-in. and 1-in. NPT)
- ECTFE/PFA co-polymer coated 316/316L Stainless Steel (1.4401/1.4404 dual certified)  
– only available for a flanged 2120 but excludes 1-in./DN25/25A flanges
- Hand-polished to better than 0.4 µm option for hygienic connections

- Gasket material for 3/4-in. and 1-in. BSPP (G) is non-asbestos BS7531 Grade X carbon fiber with rubber binder

### Dimensional drawings

- See “[Dimensional drawings](#)” on page 13

## Performance

### Hysteresis (water)

- ±0.039-in. (±1 mm) nominal

### Switching point (water)

- 0.5 in. (13 mm) from tip (vertical) / from edge (horizontal) of fork (this will vary with different liquid densities)

## Functional

### Maximum operating pressure

- The final rating depends on the selected process connection
- Threaded connection: see [Figure 1](#) for operating pressures  
**Note:** Clamp glands 02120-2000-0001 and 02120-2000-0002 ([page 7](#)) limit the maximum pressure to 18.85 psig (1,3 bar g)
- Hygienic connection: 435 psig (30 bar g)
- Flanged connection:  
See [Figure 1](#) or [Table 5](#) (whichever gives the lowest pressure)

Figure 1. Process pressure

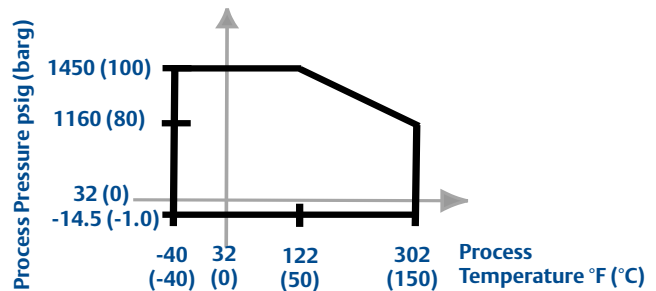


Table 5. Maximum flange pressure rating

Standard	Class/Rating	SST Flanges
ASME B16.5	Class 150	275 psig <sup>(1)</sup>
ASME B16.5	Class 300	720 psig <sup>(1)</sup>
ASME B16.5	Class 600	1440 psig <sup>(1)</sup>
EN1092-1	PN 10	10 barg <sup>(2)</sup>
EN1092-1	PN 16	16 barg <sup>(2)</sup>
EN1092-1	PN 25	25 barg <sup>(2)</sup>
EN1092-1	PN 40	40 barg <sup>(2)</sup>
EN1092-1	PN 63	63 barg <sup>(2)</sup>
EN1092-1	PN 100	100 barg <sup>(2)</sup>
JIS B2220	10K	14 barg <sup>(3)</sup>
JIS B2220	20K	34 barg <sup>(3)</sup>

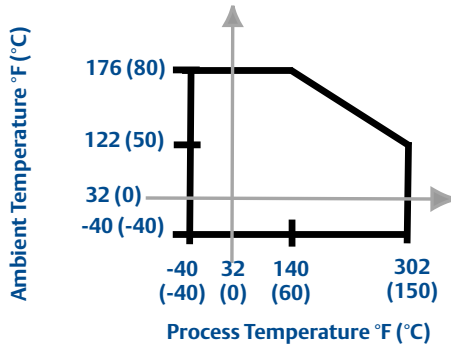
- (1) At 100 °F (38 °C), the rating decreases with an increasing process temperature.
- (2) At 122 °F (50 °C), the rating decreases with an increasing process temperature.
- (3) At 248 °F (120 °C), the rating decreases with an increasing process temperature.



### Minimum and maximum operating temperatures

- See Figure 2 for operating temperatures
- Clamp glands 02120-2000-0001 and 02120-2000-0002 (page 7) limit the maximum temperature to 257 °F (125 °C)
- The ambient temperature for a 8/16 mA cassette is limited to 158 °F (70 °C) in dust applications

Figure 2. Operating temperatures



### Liquid density requirement

- Minimum 37.5 lb/ft<sup>3</sup> (600 kg/m<sup>3</sup>)

### Liquid viscosity range

- 0.2 to 10000 cP (centiPose)

### Solids content and coating

- Maximum recommended diameter of solid particles in the liquid is 0.2 in. (5 mm)
- For a coating product, avoid bridging of forks

### Switching delay

- User selectable 0.3, 1, 3, 10, 30 seconds delay for dry-to-wet and wet-to-dry switching

### CIP (Clean In Place) and SIP (Steam In Place) cleaning

- Withstands cleaning routines up to 275 °F (135 °C)

### NACE

- NACE compliance to MR0175 / ISO 15156 or MR0103, depending on the option code selected for the model number

### Safety integrity level (option codes QS and QT)

- The Rosemount 2120 FMEIDA is certified for SIL2
- For more information, go to:  
<http://www.emersonprocess.com/rosemount/safety/>

## Electrical

### Switching mode

User selectable switching mode (Dry=on or Wet=on)

### Protection

- Polarity insensitive
  - Relay (except 12 Vdc nominal version) and Direct Load electronics
- Over-current protection – Direct Load and PNP/PLC electronics
- Short-circuit protection – Direct Load and PNP/PLC electronics
- Load-missing protection – Direct Load and PNP/PLC electronics
- Surge protection (to IEC61326) – Available on all versions of the 2120

### Heartbeat LED

- The 2120 has a status-indicating heartbeat LED, which can be seen at all times and from all angles through a lens in the cover (no lens in metal housings)
- The LED flashes when the output is 'off' and is constantly lit when it is 'on'. The LED gives a constant indication that the 2120 is functioning correctly (different flash rates are used to indicate a product malfunction) and gives a local indication of the process state

### Magnetic test point

- A magnetic test point is located on the side of the housing, allowing a functional test of the 2120 and a system connected to it. By holding a magnet to the target, the 2120 output changes state for as long as the magnet is held there

### Terminal connection (wire diameter)

- Minimum 26 AWG, Maximum 14 AWG (0.13 to 2.5 mm<sup>2</sup>). Note national regulations.

### Conduit plugs/cable gland

- Metal housing:
  - Conduit entries for explosion-proof areas are shipped with one Exd plug (loose in bag) and two dust caps fitted. Use suitably rated cable glands. Unused conduit entries must be sealed with a suitably rated blanking plug
- Glass-filled nylon housing with direct load, PNP/PLC and IS electronics are shipped with one PA66<sup>(1)</sup> cable gland and one blanking plug
- Glass-filled nylon housing with relay electronics are shipped with two PA66<sup>(1)</sup> cable glands

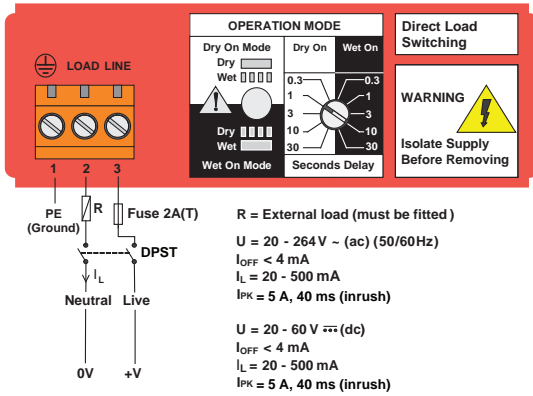
### Grounding

- The 2120 must always be grounded either through the terminals or using the external ground connection provided.

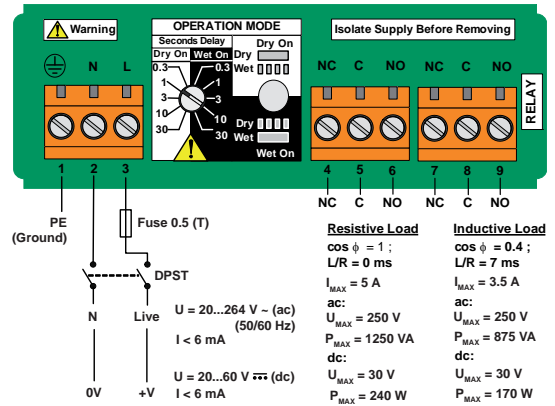
(1) Cable diameter 0.2 to 0.3 in. (5 to 8 mm)

Electrical connections

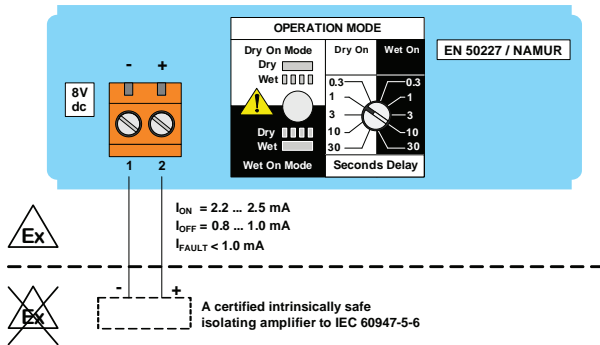
■ Direct load switching (mains two wire) cassette



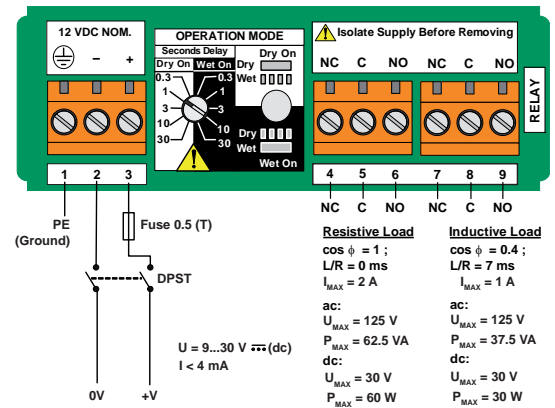
■ DPCO dual relay cassette (standard version)



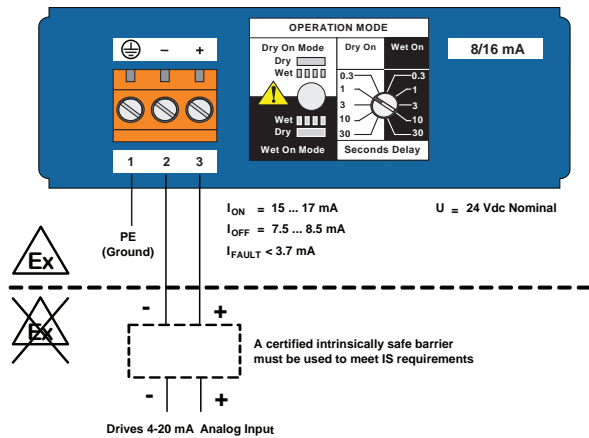
■ NAMUR (light blue) cassette



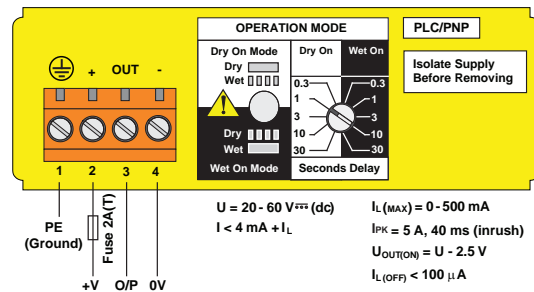
■ DPCO dual relay cassette (12 Vdc nominal version)



■ 8/16 mA (dark blue) cassette



■ Solid state PNP output for direct interface to a PLC



# Product certifications

## European directive information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at [www.rosemount.com](http://www.rosemount.com).

### ATEX Directive (94/9/EC)

Complies with the ATEX Directive.

### Pressure Equipment Directive (PED) (97/23/EC)

The Rosemount 2120 is outside the scope of PED Directive.

### Low Voltage Directive

EN61010-1 Pollution degree 2, Category II (264 V maximum),  
Pollution degree 2, Category III (150 V maximum)

### Electro Magnetic Compatibility (EMC) Directive

EN61326 Emissions to Class B.  
Immunity to industrial location requirements.  
NAMUR NE21.

### CE-mark

Complies with applicable directives (EMC, ATEX, and LVD).

## NAMUR approval

NAMUR NE95 type test is available upon request.  
Complies with NAMUR NE21.

## Overfill approval

Certificate: Z-65.11-522.  
TÜV-tested and approved for overfill protection according to the German DIBt/WHG regulations. Certified under safety devices for tanks and piping related to water pollution control.

## Marine approvals

**ABS** American Bureau of Shipping  
**GL** Germanischer Lloyd

## Drinking water approval

Mobrey Ltd. (Slough, United Kingdom) confirms that the wetted parts of the Rosemount 2120 vibrating fork level switch are suitable and approved for drinking water usage. The wetted parts of the vibrating fork level switches executed in stainless steel (option code D) and Alloy C/Alloy C-276 (option code C). These materials are toxicological and microbiological classified as safe and in accordance with DIN 50930-6.

## Ordinary location certification for FM

**G5** Project ID: 3021776

The switch has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA)

## Ordinary location certification for CSA

**G6** Certificate Number: 06 CSA 1805769

The switch has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by CSA, a nationally recognized testing laboratory as accredited by the Standards Council of Canada (SCC). **Single seal**

## Canadian Registration Number

CRN 0F04227.2C

### NOTE

The requirements of CRN are met when a Rosemount 2120 CSA IS-approved (I6 code) vibrating fork level switch model is configured with 316/316L stainless steel (1.4401/1.4404) wetted parts and either NPT threaded or 2 to 8-in. ASME B16.5 flanged process connections.

## Hazardous locations certifications

### North american approvals

#### Factory Mutual (FM) explosion-proof approval

**E5** Project ID: 3012658  
Explosion-proof for Class I, Div. 1, Groups A, B, C, and D  
Temperature Class: T6 ( $T_{amb}$  -40 to 75 °C)  
Enclosure: Type 4X

#### Factory Mutual (FM)

#### intrinsically safe approval and non-incendive

**I5** Project ID: 3011456  
Intrinsically Safe for Class I, Div. 1, Groups A, B, C, and D  
Class I, Zone 0, AEx ia IIC  
Non-incendive for Class I, Div. 2, Groups A, B, C, and D  
Class I, Zone 2, IIC  
Temperature Code: T5 ( $T_{amb}$  -40 to 80 °C,  $T_{proc}$  < 80 °C)  
Control Drawing: 71097/1154 (with NAMUR electronics)  
Control Drawing: 71097/1314 (with 8/16 mA electronics)

**NOTE**

A certified isolating amplifier or barrier must be used for intrinsic safety.

**Canadian approvals****Canadian Standards Association (CSA) explosion-proof**

- E6** Project ID: 1786345  
Explosion-proof for Class I, Div. 1, Groups A, B, C, and D  
Temperature Class: T6 ( $T_{amb}$  -40 to 75 °C)  
Enclosure: Type 4X  
**Single seal**


**Canadian Standards Association (CSA) intrinsically safe and non-incendive**

- I6** Certificate Number: 06 CSA 1786345  
Intrinsically Safe for Class I, Div. 1, Groups A, B, C, and D  
Class 1, Zone 0, Ex ia IIC  
Non-Incendive for Class I, Div. 2, Groups A, B, C, and D  
Temperature Code: T5 ( $T_{amb}$  -40 to 80 °C,  $T_{proc}$  < 80 °C)  
Control Drawing: 71097/1179 (*with NAMUR electronics*)  
Control Drawing: 71097/1315 (*with 8/16 mA electronics*)  
**Single seal**


**NOTE**

A certified isolating amplifier or barrier must be used for intrinsic safety.

**European approvals****ATEX flameproof and dust-proof approval**

- E1** Certificate: Sira 05ATEX1129X  
Flameproof and dust-proof:  
ATEX Marking  II 1/2 G D  
Ex d IIC T6...T2 Ga/Gb  
Ex tb IIIC T85 °C...T265 °C Db

**ATEX intrinsically safe approval**

- I1** Certificate: Sira 05ATEX2130X  
Intrinsic Safety for gas and dust environments:  
ATEX Marking  II 1 G D  
Ex ia IIC T5...T2 Ga  
Ex ia IIIC T85 °C...T265 °C Da

**NOTE**

A certified isolating amplifier or barrier must be used for intrinsic safety.

**Rest of the world approvals****International Electrotechnical Commission (IEC) flameproof and dust-proof approval**

- E7** Certificate: IECEx SIR 06.0051X  
Flameproof and dust-proof:  
Ex d IIC T6...T2 Ga/Gb  
Ex tb IIIC T85 °C...T265 °C Db

**International Electrotechnical Commission (IEC) intrinsically safe approval**

- I7** Certificate: IECEx SIR 06.0070X  
Intrinsically Safe for gas and dust atmospheres:  
Ex ia IIC T5...T2 Ga  
Ex ia IIIC T85 °C...T265 °C Da

**NOTE**

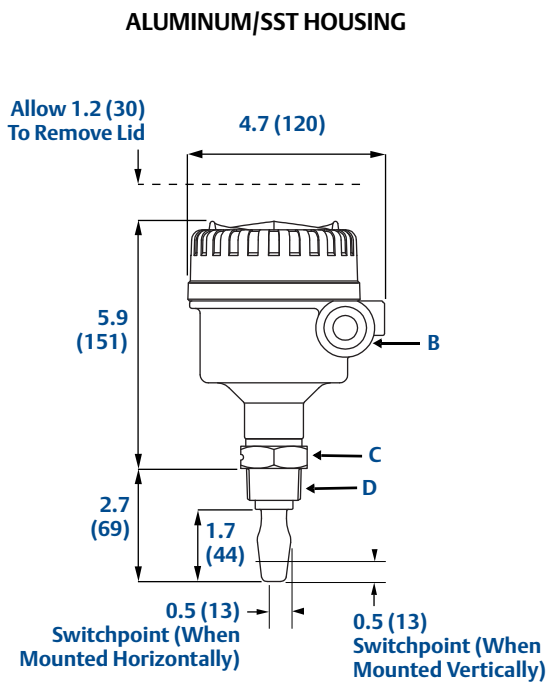
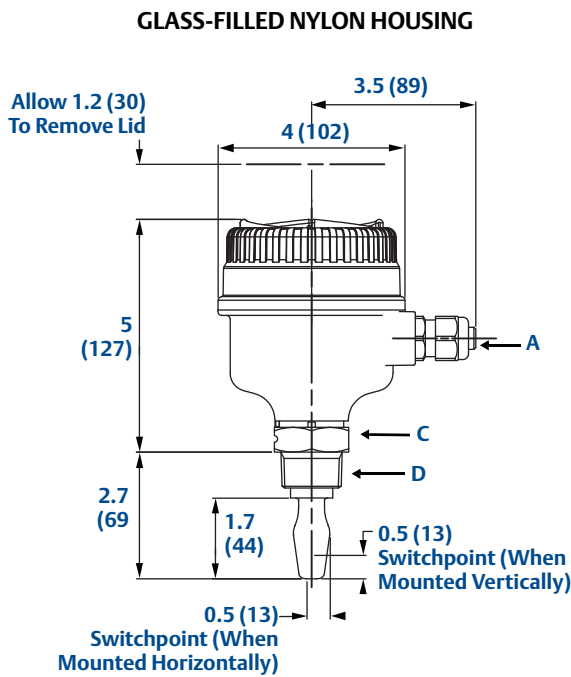
A certified isolating amplifier or barrier must be used for intrinsic safety.

# Dimensional drawings

3/4 and 1-in. threaded mounting (standard length) ..... page 13  
 3/4 and 1-in. thread mounting (extended length) ..... page 14  
 2-in. thread mounting ..... page 15  
 Flange mounting (standard length) ..... page 16  
 Flange mounting (extended length) ..... page 17

## 3/4 and 1-in. threaded mounting (standard length)

Note: Dimensions are in inches (millimeters)

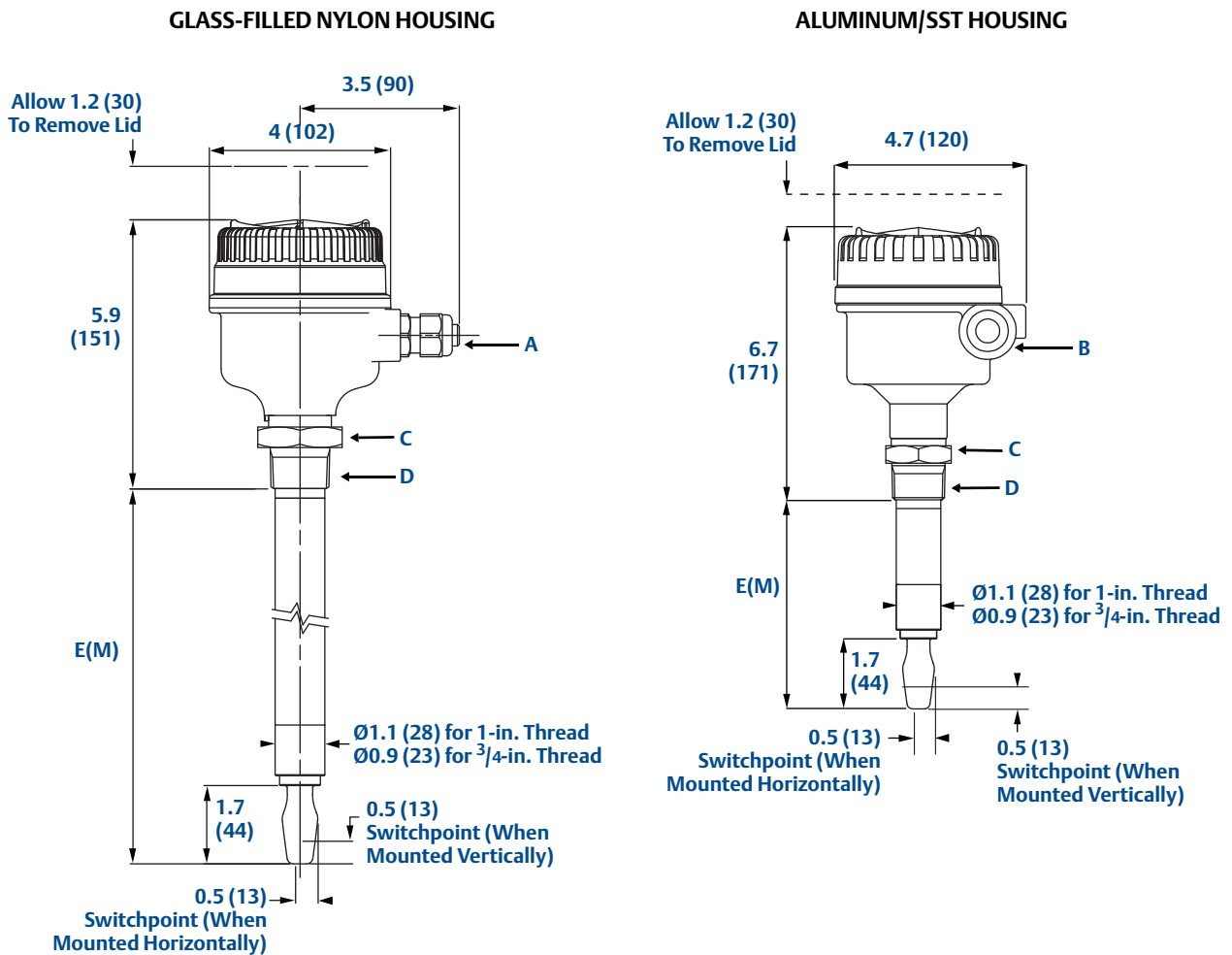


NOTE: FOR HYGIENIC 2120 DIMENSIONS, SEE TYPE 1 DRAWING DOWNLOADS ON WEB SITE

- A. Cable Entry M20x1.5 or 1/2-in. NPT
- B. Cable Entry M20x1.5 or 3/4-in. NPT
- C. 1.6 (40) A/F Hexagon
- D. 3/4-in. or 1-in. Thread

**3/4 and 1-in. thread mounting (extended length)**

Note: Dimensions are in inches (millimeters)



**NOTE: FOR HYGIENIC 2120 DIMENSIONS, SEE TYPE 1 DRAWING DOWNLOADS ON WEB SITE**

- A. Cable Entry M20x1.5 or 1/2-in. NPT
- B. Cable Entry M20x1.5 or 3/4-in. NPT
- C. 1.6 (40) A/F Hexagon
- D. 3/4-in. or 1-in. Thread

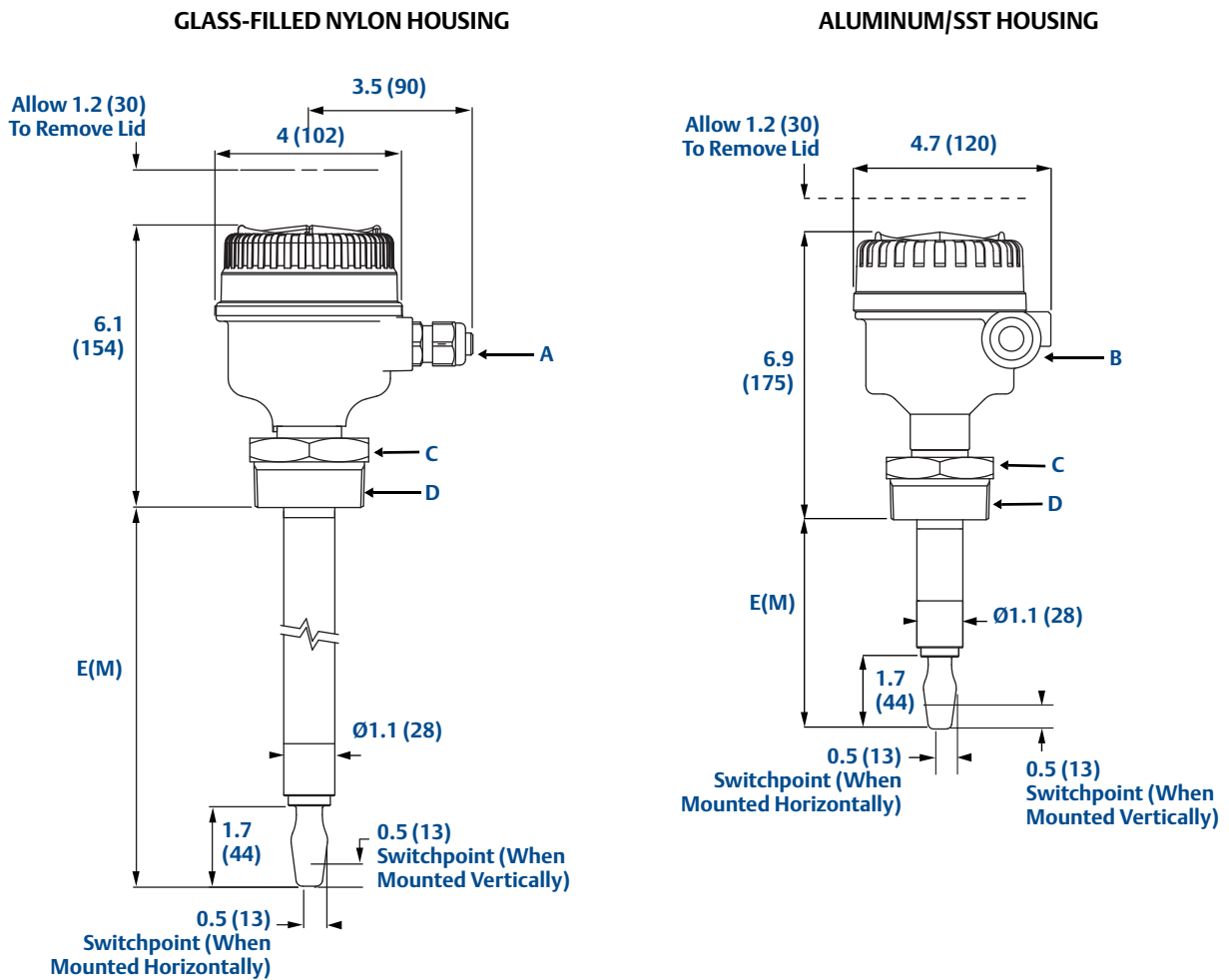
**Table 6. Fork length for 3/4 and 1-in. threaded 2120**

Process Connection	Standard Length Fork Length Code A	Minimum Length Fork Length Code E (M)	Maximum Length Fork Length Code E (M) <sup>(1)</sup>
3/4-in. Thread	1.7 in. (44 mm)	3.75 in. (95 mm)	157.5 in. (4000 mm)
1-in. Thread	1.7 in. (44 mm)	3.74 in. (94 mm)	157.5 in. (4000 mm)

(1) Maximum extended length of fork with hand-polished option is 39.4 in. (1000 mm).

## 2-in. thread mounting

Note: Dimensions are in inches (millimeters)



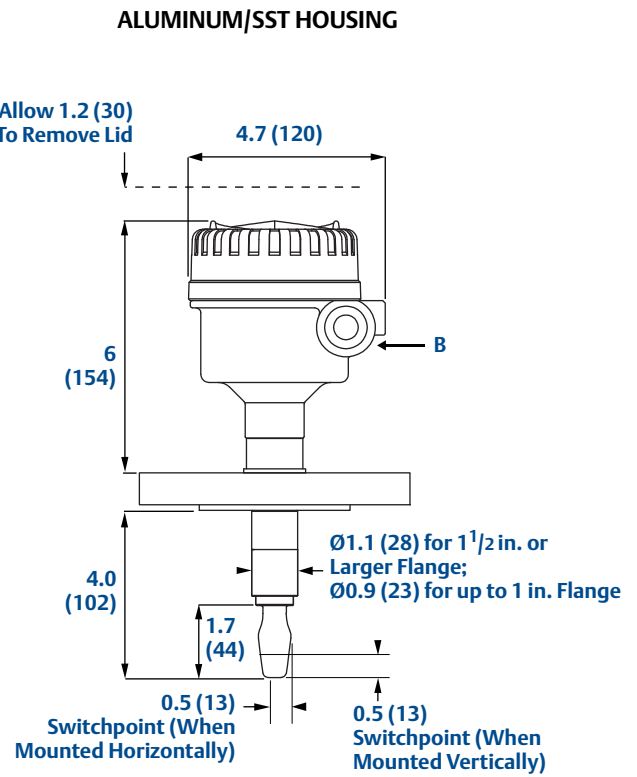
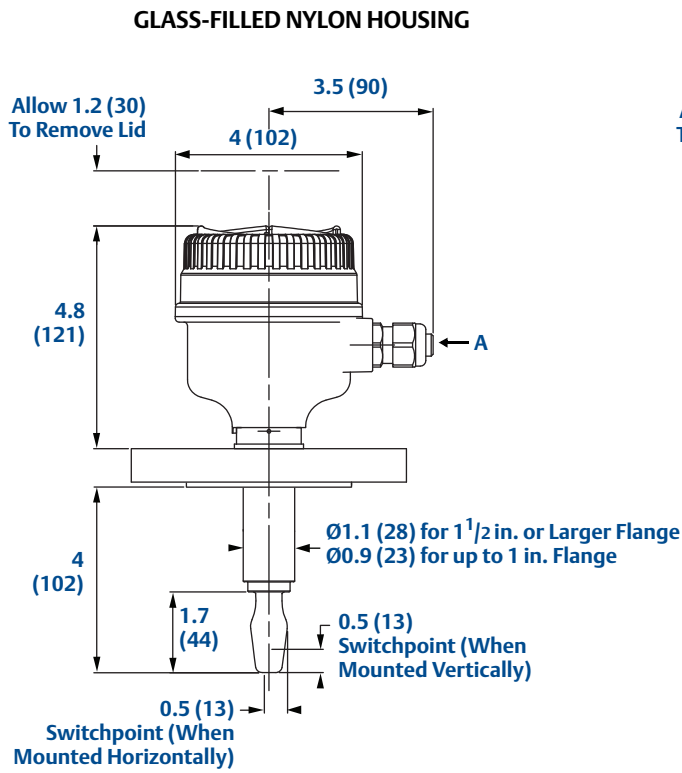
- A. Cable Entry M20x1.5 or 1/2-in. NPT
- B. Cable Entry M20x1.5 or 3/4-in. NPT
- C. 2.6 (65) A/F Hexagon
- D. 2-in. Thread

Table 7. Fork length for 2-in. threaded 2120

Process Connection	Minimum Length Fork Length Code E (M)	Maximum Length Fork Length Code E (M)
2-in. Thread	3.74 in. (94 mm)	157.5 in. (4000 mm)

**Flange mounting (standard length)**

Note: Dimensions are in inches (millimeters)



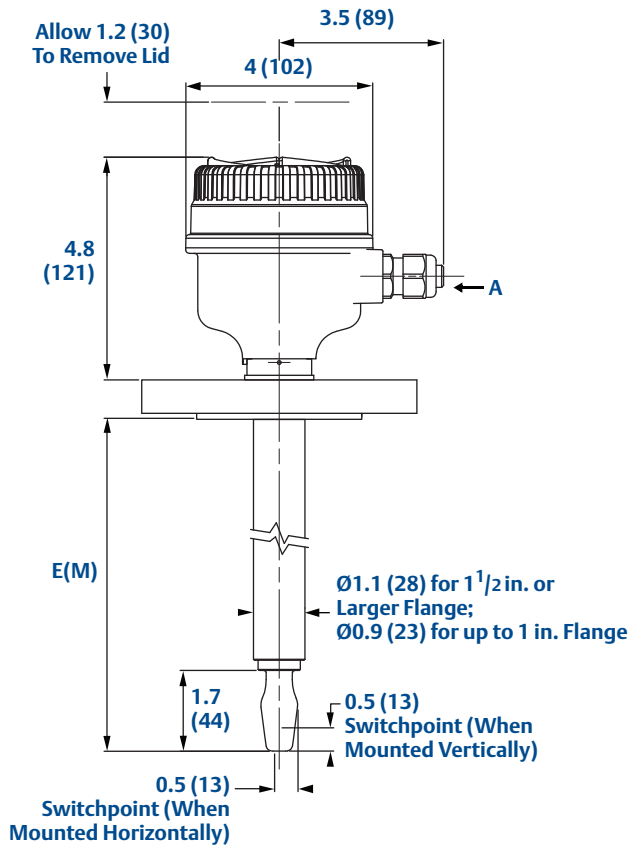
- A. Cable Entry M20x1.5 or 1/2-in. NPT
- B. Cable Entry M20x1.5 or 3/4-in. NPT



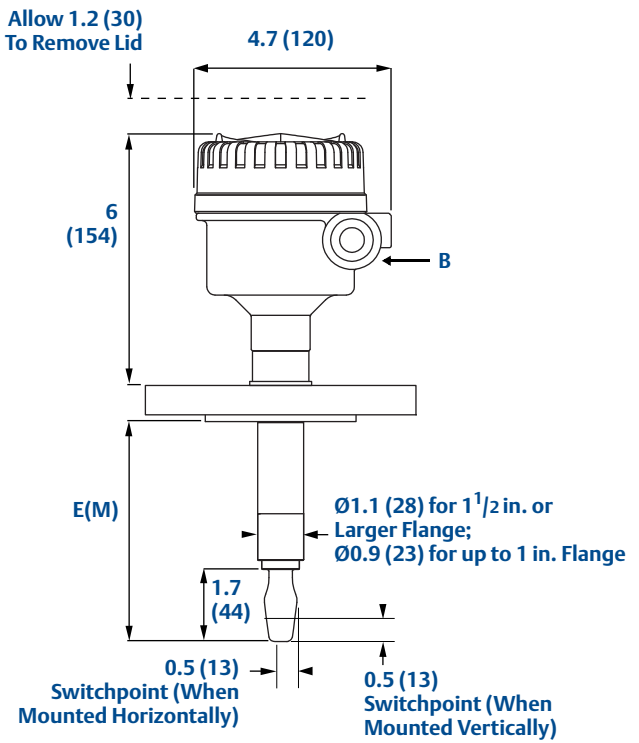
### Flange mounting (extended length)

Note: Dimensions are in inches (millimeters)

#### GLASS-FILLED NYLON HOUSING



#### ALUMINUM/SST HOUSING



A. Cable Entry M20x1.5 or 1/2-in. NPT

B. Cable Entry M20x1.5 or 3/4-in. NPT

Table 8. Fork length for flanged 2120

Process Connection Material	Standard Length Model Code H	Minimum Length Model Code E (M)	Maximum Length Model Code E (M)
Stainless steel <sup>(1)</sup>	4 (102)	3.5 (89)	157.5 (4000)
ECTFE/PFA co-polymer coated	4 (102)	3.5 (89)	59.1 (1500)
Alloy C and Alloy C-276	4 (102)	3.5 (89)	157.5 (4000)

(1) Maximum extended length of fork with hand-polished option is 39.4 in. (1000 mm).

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