

# Rosemount™ 2555 Solids Level Switch

## Capacitance Probe



- Very high sensitivity (dielectric constant,  $DK \geq 1.5$ )
- Supports high mechanical loads of up to 10 kN
- Simple to install and set-up
- Robust version for overpressure up to 363 psi (25 bar)
- Temperature from -40 to 932 °F (-40 to 500 °C)

# Introduction

## Measurement principles

The Rosemount™ 2555 Solids Level Switch uses the principle of measuring capacitance through RF (Radio Frequency) to detect the presence or absence of a solids medium and monitors the change in capacitance between the probe and the silo wall.

When the solids medium in the vessel (silo) falls away from the probe level, it causes an increase in capacitance that is detected by the electronics and the output switches to indicate an 'uncovered' state.

When the solids medium in the vessel (silo) rises and covers the rod, it causes a decrease of capacitance that is detected by the electronics and the output switches to indicate a 'covered' state.

The electrical output will vary depending on the electronics selected.

## Key features and benefits

- Flexible, robust solids switch - suitable for point level measurement of nearly all types of bulk materials
- Reliable measurement of materials with low dielectric constants (DK from 1.5)
- Designed for operation in high temperatures and pressures of up to 932 °F (500 °C) and 363 psi (25 bar)
- Simple and quick automatic calibration for easy commissioning
- Special probe design with high resistance to material build-up for safe maintenance-free operation
- Continuous self-checking diagnostics for condition monitoring with easy-to-read display and push buttons
- Approvals for hazardous locations (gas and dust)
- Versatile installation options:
  - rod version: vertical, horizontal, and angled installation
  - cable version: vertical installation

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### Note

A listing of dielectric (DK) values for solids materials can be in the [Dielectric Values \(DK Values\) Data Sheet](#) on-line document.

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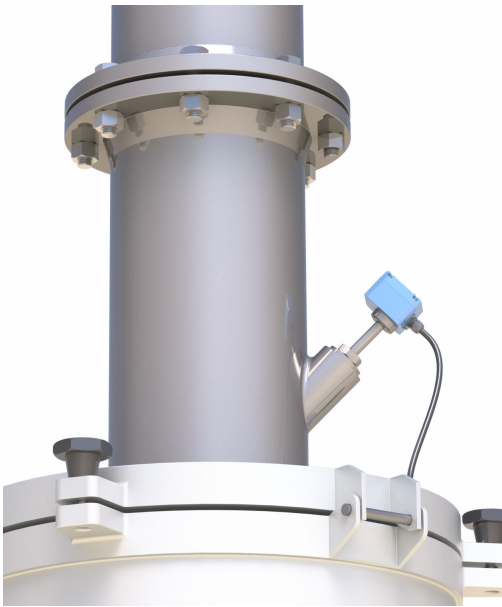
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## Applications

- Level measurements of most bulk solids materials, including:
  - Flour, grains, sugar, cement, granulate, carbon black, and materials with coating properties
- All types of vessel from small process silos to large storage silos
- Extreme-temperature and high-pressure applications
- Environments with heavy vibration
- High-reliability and high-safety
- Approvals for hazardous and explosive environments



## Ordering information

The specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See [Materials selection](#) for more information.

**Table 1: Rosemount 2555 Ordering Information**

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

| Model  | Product description  |         |                 |
|--|--|---------|-----------------|
| 2555   | Rosemount Solids Level Switch - Capacitance Probe  |         | ★               |
| <b>Probe thermal profile</b>   |  |         |                 |
| S  | Standard 10-mm diameter probe (T <sub>process</sub> = -40 to +464 °F (-40 to +240 °C), P <sub>op</sub> -14.5 to 363 psi (-1 to +25 bar)) |         | ★               |
| M  | Medium 22-mm diameter probe (T <sub>process</sub> = -40 to +464 °F (-40 to +240 °C), P <sub>op</sub> -14.5 to 363 psi (-1 to +25 bar))   |         | ★               |
| E  | Extreme 22-mm diameter probe (T <sub>process</sub> = -40 to +932 °F (-40 to +500 °C), P <sub>op</sub> -14.5 to 145 psi (-1 to +10 bar))  |         | ★               |
| R  | Standard 4-mm diameter rope (T <sub>process</sub> = -40 to +464 °F (-40 to +240 °C), P <sub>op</sub> -14.5 to 363 psi (-1 to +25 bar))   |         | ★               |
| P  | Medium 8-mm diameter rope (T <sub>process</sub> = -40 to +464 °F (-40 to +240 °C), P <sub>op</sub> -14.5 to 363 psi (-1 to +25 bar))     |         | ★               |
| V  | Extreme 8-mm diameter rope (T <sub>process</sub> = -40 to +932 °F (-40 to +500 °C), P <sub>op</sub> -14.5 to 145 psi (-1 to +10 bar))    |         | ★               |
| <b>Materials of construction: process connection/active probe and inactive extension rod</b> |  |         | <b>Profiles</b> |
| D  | 303/304/321 Stainless steel (1.4301/1.4305/1.4541)   | All     | ★               |
| E  | 303/304/321 Stainless steel (1.4301/1.4305/1.4541), PFA coating to active probe only   | S       | ★               |
| F  | 303/304/321 Stainless steel (1.4301/1.4305/1.4541), PFA coating to rope only   | R       | ★               |
| G  | 303/304/321 Stainless steel (1.4301/1.4305/1.4541), PFA coating  | S       | ★               |
| S  | 316/316L Stainless steel (1.4404/1.4401)   | All     | ★               |
| T  | 316/316L Stainless steel (1.4404/1.4401), PFA coating to active probe only   | S       | ★               |
| U  | 316/316L Stainless steel (1.4404/1.4401), PFA coating to rope only   | R       | ★               |
| V  | 316/316L Stainless steel (1.4404/1.4401), PFA coating  | S       | ★               |
| <b>Conduit entry / cable threads</b>   |  |         |                 |
| 1  | M20 x 1.5, 1 off screwed cable gland + 1 off blind plug for CE, ATEX, and IECEx  |         | ★               |
| 2  | M20 x 1.5, 2 off screwed cable glands  |         | ★               |
| 3  | M20 x 1.5, 1 off screwed cable gland + 1 off blind plug for FM   |         | ★               |
| 4  | NPT ½-in. tapered ANSI B1.20.1 (1 off conduit + 1 off Ex-d blind plug)   |         | ★               |
| <b>Process connection size</b>   |  |         | <b>Profiles</b> |
| 9 <sup>(1)</sup>   | ¾-in./19 mm (DN25)/25A   | S and R | ★               |
| 1 <sup>(1)</sup>   | 1-in./25 mm (DN25)/25A   | S and R | ★               |
| A <sup>(1)</sup>   | 1.25-in./32 mm   | All     | ★               |
| 5  | 1.5 in./((DN38)/40A  | All     | ★               |
| 2 <sup>(1)</sup>   | 2 in./50 mm (DN50)/50A   | All     | ★               |
| 3 <sup>(1)</sup>   | 3 in./80 mm (DN80)/80A   | All     | ★               |
| 4 <sup>(1)</sup>   | 4 in./100 mm (DN100)/100A  | All     | ★               |

**Table 1: Rosemount 2555 Ordering Information (continued)**

|  |  |                      |   |
|--|--|----------------------|---|
| B <sup>(1)</sup>                             | M30 x 1.5 mm   | S and R              | ★ |
| C <sup>(1)</sup>                             | M32 x 1.5 mm   | S and R              | ★ |
| <b>Process connection rating</b>             |  | <b>Sizes</b>         |   |
| AA   | ASME B16.5 Class 150 flange  | 2, 3, and 4          | ★ |
| DZ   | EN 1092-1 PN6 flange   | 4                    | ★ |
| DA   | EN 1092-1 PN16 flange  | 4                    | ★ |
| NN   | For use with non-flange process connection type  | All except 3 and 4   | ★ |
| <b>Process connection type</b>               |  | <b>Ratings</b>       |   |
| F  | Flat-face flange   | DZ and DA            | ★ |
| R  | Raised-face flange   | AA                   | ★ |
| G  | BSPP (G) thread  | NN                   | ★ |
| N  | NPT thread   | NN                   | ★ |
| M  | Metric thread  | NN                   | ★ |
| C  | Tri Clamp (ISO 2852)   | NN                   | ★ |
| <b>Electronic type</b>                       |  |                      |   |
| V  | Relay DPDT 21 to 230 Vac/Vdc   |                      | ★ |
| <b>Active probe length</b>                   |  | <b>Profiles</b>      |   |
| A <sup>(2)</sup>                             | Standard length 3.94-in. (100 mm)  | S, M, and E          | ★ |
| B <sup>(2)</sup>                             | Standard length 7.87-in. (200 mm)  | S, M, and E          | ★ |
| C <sup>(2)</sup>                             | Standard length 11.8-in. (300 mm)  | S, M, and E          | ★ |
| E  | Extended, customer-specified length in tenths of inches  | All                  | ★ |
| M  | Extended, customer-specified length in millimeters   | All                  | ★ |
| <b>Specific extended active probe length</b> |  | <b>All</b>           |   |
| 00000  | Factory default length (only if active probe length A, B, or C is selected)                      |                      | ★ |
| XXXXX  | Specific customer-specified length in tenths of inches (XXXX.X inches) or millimeters (XXXXX mm) |                      | ★ |
| <b>Inactive extension length</b>             |  |                      |   |
| A <sup>(3)</sup>                             | No inactive extension  |                      | ★ |
| E  | Inactive extension, customer-specified length in tenths of inches                                |                      | ★ |
| M  | Inactive extension, customer-specified length in millimeters                                     |                      | ★ |
| <b>Specific inactive extension length</b>    |  |                      |   |
| 0000   | Factory default length (only if inactive extension length A is selected)                         |                      | ★ |
| XXXX   | Specific customer-specified length in tenths of inches (XXX.X inches) or millimeters (XXXX mm)   |                      | ★ |
| <b>Product certifications</b>                |  | <b>Conduit entry</b> |   |
| NA   | No hazardous locations certifications  | 1, 2, and 4          | ★ |
| ND <sup>(4)</sup>                            | ATEX, Dust Certification   | 1, 2, and 4          | ★ |

**Table 1: Rosemount 2555 Ordering Information (continued)**

|   |  |                 |   |
|---|--|-----------------|---|
| NK <sup>(4)</sup>                                   | IECEX, Dust Certification  | 1, 2, and 4     | ★ |
| NL <sup>(4)</sup>                                   | American, DIP  | 2, 3, and 4     | ★ |
| E5 <sup>(4)(5)</sup>                                | American, Flameproof/Dust certification  | 4               |   |
| E7 <sup>(4)(5)</sup>                                | IECEX, Flameproof/Dust certification   | 4               |   |
| E8 <sup>(4)(5)</sup>                                | ATEX, Flameproof/Dust certification  | 4               |   |
| EM <sup>(4)(5)</sup>                                | Technical Regulations Customs Union (EAC), Dust Certification  | 1, 2, and 4     |   |
| K1 <sup>(4)(5)</sup>                                | ATEX, Flameproof/Increased Safety/Dust Certification   | 1, 2, and 4     |   |
| K7 <sup>(4)(5)</sup>                                | IECEX, Flameproof/Increased Safety/Dust Certification  | 1, 2, and 4     |   |
| KM <sup>(4)(5)</sup>                                | Technical Regulations Customs Union (EAC), Flameproof/Increased Safety/Dust certification                                  | 1, 2, and 4     |   |
| KY <sup>(4)(5)</sup>                                | American, Flameproof/Dust certification  | 4               |   |
| KZ  | American and Canadian Ordinary Location (unclassified, safe area)  | 2, 3, and 4     | ★ |
| <b>Options (include with selected model number)</b> |  |                 |   |
| <b>Calibration data certification</b>               |  |                 |   |
| Q4  | Certificate of functional test   |                 | ★ |
| <b>Weather protection</b>                           |  |                 |   |
| P2  | Weather protection cover   |                 | ★ |
| <b>Electronics sensitivity configuration</b>        |  |                 |   |
| V1  | Calibrate to 0.5 pF  |                 | ★ |
| V2  | Calibrate to 1 pF  |                 | ★ |
| V3  | Calibrate to 4 pF  |                 | ★ |
| V4  | Calibrate to 10 pF   |                 | ★ |
| <b>Active probe extension</b>                       |  | <b>Profiles</b> |   |
| R0  | Rigid, 316L (1.4404) stainless steel, 15.7 in. (400 mm) long, ø10-mm probe   | S               | ★ |
| R1  | Rigid, 316L (1.4404) stainless steel, 15.7 in. (400 mm) long, ø10-mm probe, includes fixing hole                           | S               | ★ |
| R2  | Rigid, 316L (1.4404) stainless steel, 15.7 in. (400 mm), ø22-mm probe  | M, E, P, V      | ★ |
| R3  | Flexible, 304/303 (1.4301/1.4305) stainless steel, 39.4 in. (1000 mm) long, ø10-mm probe                                   | S               | ★ |
| R4  | Flexible, 304/303 (1.4301/1.4305) stainless steel, 39.4 in. (1000 mm) long, ø10-mm probe, includes fixing hole             | S               | ★ |
| R5  | Rope, 304/303 (1.4301/1.4305) stainless steel, 78.7 in. (2000 mm) long, ø10-mm probe and ø4-mm rope                        | S               | ★ |
| R6  | Rope, 304/303 (1.4301/1.4305) stainless steel, 78.7 in. (2000 mm) long, ø10-mm probe, includes fixing hole and ø4-mm rope  | S               | ★ |
| R7  | Rope, 316L/316 (1.4404/1.4401) stainless steel, 78.7 in. (2000 mm) long, ø10-mm probe and ø4-mm rope                       | S               | ★ |
| R8  | Rope, 316L/316 (1.4404/1.4401) stainless steel, 78.7 in. (2000 mm) long, ø10-mm probe, includes fixing hole and ø4-mm rope | S               | ★ |

**Table 1: Rosemount 2555 Ordering Information (continued)**

|  |   |                 |   |
|--|---|-----------------|---|
| R9   | Rope, 316L/316 (1.4404/1.4401) stainless steel, 78.7 in. (2000 mm) long, ø22-mm probe, ø8-mm rope | M, E, P, V      | ★ |
| <b>Sliding sleeve<sup>(6)</sup></b>                                |   | <b>Profiles</b> |   |
| S1   | Sliding sleeve  | S, M, R, P      | ★ |
| <b>Extended product warranty</b>                                   |   |                 |   |
| WR5  | 5-year limited warranty   |                 | ★ |
| <b>Typical model number: 2555 S D 1 5 NN G V A 00000 A 0000 NA</b> |   |                 |   |

- (1) This process connection size is not available when Materials of Construction codes G or V is selected.
- (2) This active probe length is not available when Materials of Construction codes F or U are selected.
- (3) The No Inactive Extension option is not available when Materials of Construction codes G or V is selected.
- (4) This product certification is available when Materials of Construction codes D or S are selected.
- (5) Contact your local Emerson representative for the availability of this option code.
- (6) The Sliding Sleeve option is not available when Materials of Construction codes G or V are selected.

## Spares and accessories

The specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See [Materials selection](#) for more information.

The starred offerings (★) represent the most common options and should be selected for best delivery. The non-starred offerings are subject to additional delivery lead time.

**Table 2: Spares**

| Part number     | Description   |   |
|-----------------|---|---|
| 02500-1000-0106 | Electronics board: Relay DPDT, universal voltage  | ★ |
| 02500-7000-0001 | Extension: Rigid 316L SST (1.4404), 15.7 in. (400 mm) long, Ø10 mm probe                      | ★ |
| 02500-7000-0002 | Extension: Rigid 316L SST (1.4404), 15.7 in. (400 mm) long, Ø22 mm probe                      | ★ |
| 02500-7000-0003 | Extension: Flexible 304/303 SST (1.4301/14305), 39.4 in. (1000 mm) long, Ø10 mm probe         | ★ |
| 02500-7000-0004 | Extension: Rope 304/303 SST (1.4301/14305), 78.7 in. (2000 mm) long, Ø10 mm probe, Ø4 mm rope | ★ |
| 02500-7000-0005 | Extension: Rope 316L SST (1.4404), 78.7 in. (2000 mm) long, Ø10 mm probe, Ø4 mm rope          | ★ |
| 02500-7000-0006 | Extension: Rope 316L SST (1.4404), 78.7 in. (2000 mm) long, Ø10 mm probe, Ø8 mm rope          | ★ |
| 02500-1000-0109 | Standard Ø4 mm rope, 316 SST (1.4401), not coated, price per 39.4 in, (1000 mm)               | ★ |
| 02500-1000-0110 | Standard Ø4 mm rope, 316 SST (1.4401), coated, price per 39.4 in, (1000 mm)                   | ★ |
| 02500-1000-0111 | Weight Ø22 mm for 4 mm rope, 304/303 SST (1.4301/14305), including fixings                    | ★ |
| 02500-1000-0112 | Weight Ø22 mm for 4 mm rope, 316L SST (1.4404), including fixings                             | ★ |
| 02500-1000-0113 | Rope holder Ø22 mm for 4 mm rope, 304/303 SST (1.4301/14305), including fixings               | ★ |
| 02500-1000-0114 | Rope holder Ø22 mm for 4 mm rope, 316L SST (1.4404), including fixings                        | ★ |
| 02500-1000-0115 | Medium Ø8 mm rope, 316 SST (1.4401), not coated, price per 39.4 in, (1000 mm)                 | ★ |
| 02500-1000-0116 | Weight Ø35 mm for 8 mm rope, 304/303 SST (1.4301/14305), including fixings                    | ★ |
| 02500-1000-0117 | Weight Ø35 mm for 8 mm rope, 316L SST (1.4404), including fixings                             | ★ |
| 02500-1000-0118 | Rope holder Ø22 mm for 8 mm rope, 304/303 SST (1.4301/14305), including fixings               | ★ |
| 02500-1000-0119 | Rope holder Ø22 mm for 8 mm rope, 316L SST (1.4404), including fixings                        | ★ |
| 02500-1000-0056 | 1 off M32 x 1½ mm hexagon nut (kit), 303 SST (1.4305),  | ★ |
| 02500-1000-0121 | 1 off ¾-in. BSPP hexagon nut (kit), 303 SST (1.4305)  | ★ |
| 02500-1000-0058 | 1 off 1-in. BSPP hexagon nut (kit), 303 SST (1.4305)  | ★ |
| 02500-1000-0060 | 1 off M30 x 1½ mm hexagon nut (kit), 303 SST (1.4305)   | ★ |
| 02500-1000-0063 | 1 off 1½ in. BSPP hexagon nut (kit), 303 SST (1.4305)   | ★ |
| 02500-1000-0064 | 1 off 1¼ in. BSPP hexagon nut (kit), 303 SST (1.4305)   | ★ |
| 02500-1000-0126 | Weather protection for housing  | ★ |



**Table 3: Accessories**

| Part number     | Description  |   |
|-----------------|--|---|
| 02500-7500-0003 | Mounting kit 1 for DN100 PN6 and EN1092-1 flange with $\varnothing$ 18 mm holes, containing:<br>4 off M16 x 60 mm screws (304-grade stainless steel)<br>4 off M16 nuts<br>4 off washers<br>1 off seal (non-food grade) for up to 464 °F (240 °C)   | ★ |
| 02500-7500-0006 | Mounting kit 2 for DN100 PN6 and EN1092-1 flange with M16 threaded holes, containing:<br>4 off M16 x 40 mm screws (A2-grade stainless steel)<br>4 off M16 washers (A2-grade stainless steel)<br>1 off seal (non-food grade) for up to 464 °F (240 °C)  | ★ |
| 02500-7500-0009 | Mounting kit 3 for DN100 PN16 and EN1092-1 flange with $\varnothing$ 18 mm holes, containing:<br>8 off M16 x 60 mm screws (A2-grade stainless steel)<br>8 off M16 nuts (A2-grade stainless steel)<br>8 off M16 washers (A2-grade stainless steel)<br>1 off seal (non-food grade) for up to 464 °F (240 °C) | ★ |
| 02500-7500-0012 | Mounting kit 4 for DN100 PN16 and EN1092-1 flange with M16 threaded holes, containing:<br>8 off M16 x 40 mm screws (A2-grade stainless steel)<br>8 off M16 washers (A2-grade stainless steel)<br>1 off seal (non-food grade) for up to 464 °F (240 °C)   | ★ |
| 02500-7501-0001 | Flat sealing gasket for 1-in. threaded process connection<br>Maximum operating temperature of 464 °F (240 °C)  | ★ |

## Specifications

### Electrical data

|                               |   |
|-------------------------------|---|
| Connection terminals          | 0.14 - 2.5 mm <sup>2</sup> (AWG 26-14)  |
| Cable entry                   | M20 × 1.5 screwed cable gland<br>½-in. NPT conduit connection<br>Clamping range (diameter) of the factory provided cable glands:<br>0.24 to 0.47-in. (6 to 12 mm) for M20 × 1.5 |
| Signal output delay           | Configurable from 0.5 to 60 seconds.  |
| Safety operation (FSL or FSH) | Configurable switches for each signal output. Select Fail Safe High (FSH) or Fail Safe Low (FSL) depending on application.  |
| Operation frequency           | 100 kHz   |
| Overvoltage category          | II  |
| Pollution degree              | 2 (inside housing)  |

### Electronics

|                                |  |
|--------------------------------|--|
|                                | <b>Universal voltage Relay DPDT</b>  |
| Power supply                   | 21 to 230 Vac (50/60 Hz) or Vdc ±10%*<br>*includes ±10% from EN 61010  |
| Maximum ripple of power supply | 7 V <sub>ss</sub> for dc supply  |
| Maximum installed load         | 1.5 VA or 1.5 W  |
| Signal output                  | Floating relay DPDT<br>Maximum 250 Vac, 8 A (non-inductive)<br>Maximum 30 Vdc, 5 A (non-inductive)   |
| Display                        | Four digit LCD<br>Displays actual measured capacitance, signal output state, and self diagnostics<br>Lowest operating temperature: -22 °F (-30 °C) |
| Status indication              | Tri-color built-in LED (according to NE44): Power on, signal output, failure/maintenance   |
| Data storage                   | Non-volatile EPROM for configuration settings and calibration data.  |
| Isolation                      | Power supply to signal output: 2225 Vrms<br>Signal output to signal output: 2225 Vrms  |
| Protection class               | I  |

## Mechanical data

|                                      |  |
|--------------------------------------|--|
| <b>Housing</b>                       | <p>Aluminum housing, powder coated</p> <p>Seal between housing and lid: NBR</p> <p>Seal between housing and process connection: NBR</p> <p>Nameplate: polyester film</p>   |
| <b>Ingress protection</b>            | IP67 (EN 60529), NEMA® Type 4X   |
| <b>Process connection/probes</b>     | <p><b>Rosemount 2555S and 2555R</b></p> <p>Materials:</p> <p>Stainless steel 303/304 (1.4301/1.4305) or 316/316L (1.4401/1.4404) for rope</p> <p>Reinforced-PPS probe isolation</p> <p>FKM or FFKM probe gaskets</p> <p>PFA coating of probe/rope (optional)</p> <p>Thread: G (¾-in., 1-in., 1¼-in., or 1½-in.) DIN 228; M30 x 1.5, M32 x 1.5; NPT (¾-in. 1-in., 1¼-in., or 1½-in.) tapered ANSI B 1.20.1</p> <p>Tri Clamp: 1-in. (DN25), 1½-in. (DN40), or 2-in. (DN50) ISO 2852</p> <p><b>Rosemount 2555M and 2555P</b></p> <p>Materials:</p> <p>Stainless steel 303/304 (1.4301/1.4305) or 316/316L (1.4401/1.4404) for rope</p> <p>Reinforced-PPS probe isolation</p> <p>FKM or FFKM probe gaskets</p> <p>Thread: G (1¼-in. or 1½-in.) DIN 228; NPT (1¼-in. or 1½-in.) tapered ANSI B 1.20.1</p> <p><b>Rosemount 2555E and 2555V</b></p> <p>Materials:</p> <p>Stainless steel 303/304 (1.4301/1.4305) or 316/316L (1.4401/1.4404) for rope</p> <p>Ceramic probe isolation</p> <p>Graphite probe gaskets</p> <p>Thread: G (1¼-in. or 1½-in.) DIN 228; NPT (1¼-in. or 1½-in.) tapered ANSI B 1.20.1</p> <p><b>Other:</b></p> <p>Flanges according to selection, stainless steel 321 (1.4541) or 316L (1.4404)</p> <p>All materials are food grade.</p> |
| <b>Maximum noise level</b>           | 40 dBA   |
| <b>Overall weight (approximated)</b> | See <a href="#">Table 4</a> .  |

**Table 4: Overall Weight (Approximated)**

Total weight = Basic weight + active probe length L1 + inactive length L2.

All weights with 1¼-in. NPT process connection and without flanges.

|                             | Standard housing            |   |  |
|-----------------------------|-----------------------------|---|--|
|                             | Basic weight <sup>(1)</sup> | Active probe length:<br>L1 <sup>(2)</sup> | Inactive length:<br>L2 <sup>(2)</sup>    |
| Rosemount 2555S rod version | 3.7 lbs<br>(1.7 kg)         | 1.37 lbs per 39.3 in.<br>(+0.62 kg per m) | 2.65 lbs per 39.3 in.<br>(+1.2 kg per m) |

**Table 4: Overall Weight (Approximated) (continued)**

|                                 | Standard housing            |   |   |
|---------------------------------|-----------------------------|---|---|
|                                 | Basic weight <sup>(1)</sup> | Active probe length:<br>L1 <sup>(2)</sup> | Inactive length:<br>L2 <sup>(2)</sup>     |
| Rosemount 2555R<br>rope version | 5.1 lbs<br>(2.3 kg)         | 0.13 lbs per 39.3 in.<br>(+0.06 kg per m) | 2.65 lbs per 39.3 in.<br>(+1.2 kg per m)  |
| Rosemount 2555M<br>rod version  | 6.2 lbs<br>(2.8 kg)         | 6.61 lbs per 39.3 in.<br>(+3.0 kg per m)  | 7.19 lbs per 39.3 in.<br>(+3.26 kg per m) |
| Rosemount 2555P<br>rope version | 8.8 lbs<br>(4.0 kg)         | 0.57 lbs per 39.3 in.<br>(+0.26 kg per m) | 7.19 lbs per 39.3 in.<br>(+3.26 kg per m) |
| Rosemount 2555E<br>rod version  | 8.0 lbs<br>(3.6 kg)         | 6.61 lbs per 39.3 in.<br>(+3.0 kg per m)  | 7.19 lbs per 39.3 in.<br>(+3.26 kg per m) |
| Rosemount 2555V<br>rope version | 11 lbs<br>(4.8 kg)          | 0.57 lbs per 39.3 in.<br>(+0.26 kg per m) | 7.19 lbs per 39.3 in.<br>(+3.26 kg per m) |

(1) Rod version with shortest length L1=3.9 in. (100 mm), and rope version without rope.

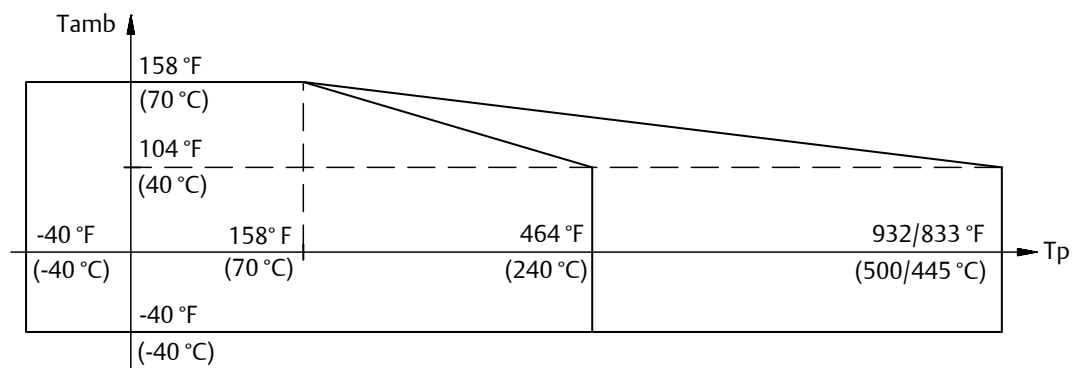
(2) See *Dimensional drawings*.

## Operating conditions

**Ambient temperature (housing)** -40 to +158 °F (-40 to +70 °C)

**Process temperature** Rosemount 2555S, 2555R, 2555M and 2555P: -40 to +464 °F (-40 to +240 °C)

Rosemount 2555E or 2555V: -40 to +932 °F (-40 to +500 °C); versions with Ex-approvals: +833 °F (+445 °C)



For versions with Ex-approvals: see also [Product Certifications](#).

**Ventilation** Ventilation is not required.

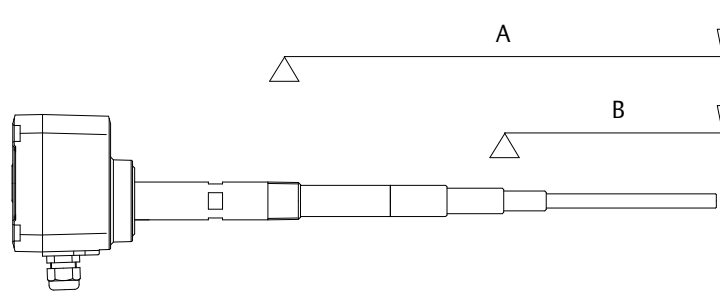
**Maximum range and sensitivity** 3 to 100 pF, 0.5 pF  
3 to 400 pF, 2 pF

**Spark protection** Robust built-in protection against static-electricity discharge from the bulk materials.

**Bulk material restrictions**

Dielectric constants (DK values) > 1.5

**Maximum mechanical load**

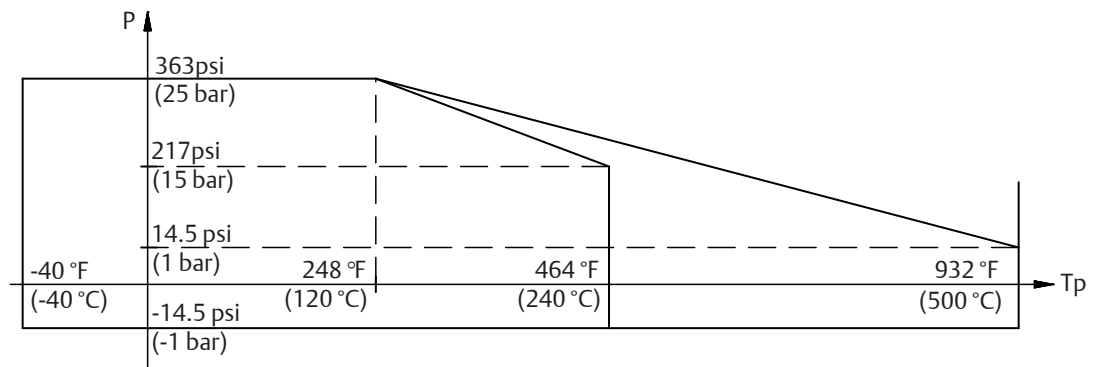


**Note**

All ratings are for 104 °F (40 °C).

|                 |               |                    |          |
|-----------------|---------------|--------------------|----------|
| Rosemount 2555S | Rod version:  | A: 125 Nm          | B: 20 Nm |
| Rosemount 2555R | Rope version: | 4 kN tensile load  |          |
| Rosemount 2555M | Rod version:  | A: 525 Nm          | B: 90 Nm |
| Rosemount 2555P | Rope version: | 40 kN tensile load |          |
| Rosemount 2555E | Rod version:  | A: 525 Nm          | B: 20 Nm |
| Rosemount 2555V | Rope version: | 10 kN tensile load |          |

**Maximum process pressure**



The maximum process pressure may be reduced when flanges are used. Refer to the flange standards for pressure ratings and pressure de-ratings with higher temperatures.

For versions with Ex-approvals: see also [Product Certifications](#).

**Vibration**

1.5 (m/s<sup>2</sup>)<sup>2</sup>/ Hz according to EN 60068-2-64

**Relative Humidity**

0 to 100%, suitable for outdoor use

**Maximum altitude**

6562 ft. (2000 m)

**Expected product lifetime**

The following parameters have a negative influence on the expected product lifetime:

High ambient- and process temperatures, corrosive environments, high plant vibrations, and high flow rate of abrasive bulk.

## Transport and storage

### Transport

Refer to the instructions as stated on the transport packaging, otherwise the products may get damaged.

Transport temperature: -40 to +176 °F (-40 to +80 °C)

Transport humidity: 20 to 85%

Always inspect the received goods for any damage occurred during shipment from the factory. Notify Emerson of damaged goods as soon as possible.

### Storage

Products must be stored at a dry and clean place. They must be protected from influence of corrosive environments, vibrations, and exposure to direct sunlight.

Storage temperature: -40 to +176 °F (-40 to +80 °C)

Storage humidity: 20 to 85%

# Product certifications

## European Union directive information

A copy of the EU Declaration of Conformity can be found at the end of the Rosemount 2555 [Product Certifications document](#). The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](http://Emerson.com/Rosemount).

## Ordinary location certification

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

## Installing equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

## U.S.A.

### U.S.A. Dust certification

#### NL

##### Summary of product certification

|            |  |
|------------|--|
| Protection | Dust-ignition proof  |
| Project ID | 3053298  |
| Standards  | FM Class 3600:2011<br>FM Class 3616:2011<br>FM Class 3810:2005<br>ANSI/ISA 61010:2012<br>ANSI/ISA 60079-0:2013<br>ANSI/ISA 60079-11:2013<br>ANSI/NEMA® 250:1991<br>ANSI/IEC 60529:2004 |
| Markings   | DIP-IS Class II,III Division 1 Groups E, F, G T4A<br>T <sub>(amb)</sub> = -40 °C to +70 °C<br>Enclosure IP67, Type 4 or Type 4X  |

## U.S.A. Ordinary Location certification

### KZ

#### Summary of product certification:

|            |   |
|------------|---|
| Protection | Ordinary location (unclassified, safe area)   |
| Project ID | 3053298   |
| Standards  | FM Class 3810:2005<br>ANSI/ISA 61010:2012<br>ANSI/ISA 60079-11:2013<br>ANSI/NEMA® 250:1991<br>ANSI/IEC 60529:2004 |
| Markings   | Type 4/4X, IP67   |

## Canada

### Canada Ordinary Location certification

### KZ

#### Summary of product certification

|            |   |
|------------|---|
| Protection | Ordinary location (unclassified, safe area)                                       |
| Project ID | 3053298   |
| Standards  | CSA-C22.2 No. 94:R2011<br>CSA-C22.2 No. 60529:R2010<br>CSA-C22.2 No. 61010-1:2012 |
| Markings   | Type 4/4X, IP67   |

## Europe

### ATEX Dust certification

### ND

#### Summary of product certification

|             |   |
|-------------|---|
| Protection  | By enclosure  |
| Certificate | BVS 19 ATEX E 073   |
| Standards   | EN60079-0:2012/A11:2013<br>EN 60079-11:2012<br>EN 60079-31:2014 |
| Markings    | ⊕ II 1/2 D Ex ia/tb IIIC T* Da/Db                               |
| Temperature | See <a href="#">Table 5</a>                                     |



**Table 5: Thermal data**

| Maximum ambient temperature | Maximum process temperature | Maximum surface temperature |
|-----------------------------|-----------------------------|-----------------------------|
| 70 °C                       | <= 80 °C                    | 120 °C                      |
|                             | <= 120 °C                   | (1)                         |
|                             | <= 240 °C                   | (1)                         |
|                             | <= 445 °C <sup>(2)</sup>    | (1)                         |

(1) Maximum surface temperature is identical to the maximum process temperature.

(2) Available only when Probe Thermal Profile code E is selected.

Permitted ambient temperature at the electronics enclosure:

- $-40\text{ °C} \leq T_{\text{Amb}} \leq +70\text{ °C}$

The maximum surface temperature is limited to 120 °C by a thermal fuse.

Permitted temperature at sensor extension, process connection:

- -40 to 240 °C (when Probe Thermal Profile code S, M, R or P is selected.)
- -40 to 445 °C (when Probe Thermal Profile code E or V is selected.)

## International

### IECEX Dust certification

#### NK

##### Summary of product certification

|             |                             |
|-------------|-----------------------------|
| Protection  | By enclosure                |
| Certificate | IECEX BVS 19.0069           |
| Standards   | IEC 60079-0:2011            |
|             | EN 60079-11:2011            |
|             | IEC 60079-31:2013           |
| Markings    | IEC Ex ia/tb IIIC T* Da/Db  |
| Temperature | See <a href="#">Table 6</a> |

**Table 6: Thermal data**

| Maximum ambient temperature | Maximum process temperature | Maximum surface temperature |
|-----------------------------|-----------------------------|-----------------------------|
| 70 °C                       | <= 80 °C                    | 120 °C                      |
|                             | <= 120 °C                   | (1)                         |
|                             | <= 240 °C                   | (1)                         |
|                             | <= 445 °C <sup>(2)</sup>    | (1)                         |

(1) Maximum surface temperature is identical to the maximum process temperature.

(2) Available only when Probe Thermal Profile code E is in the model number.

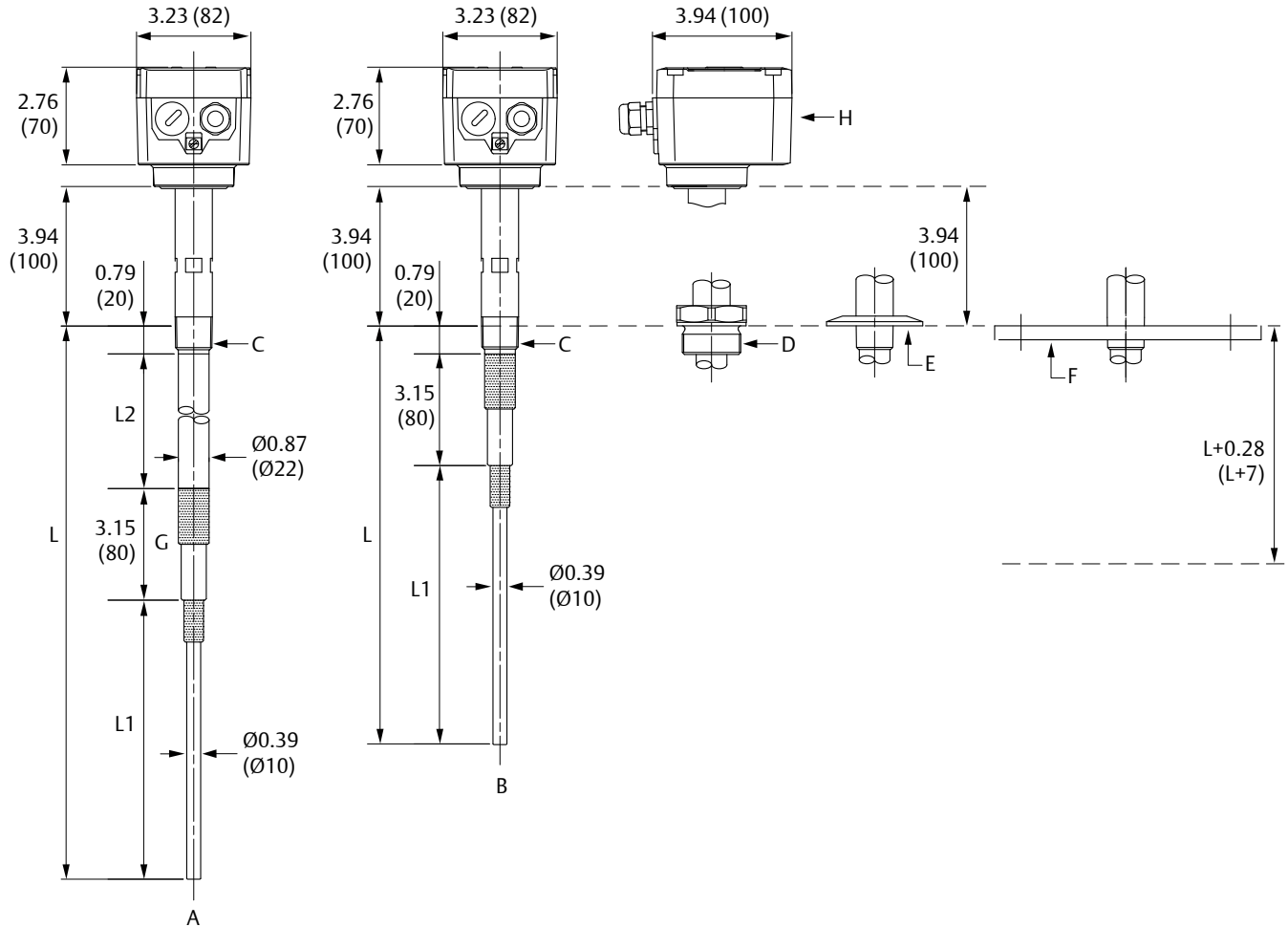
The maximum surface temperature is limited to 120 °C by a thermal fuse.

Permitted temperature at sensor extension, process connection:

- -40 to 240 °C (when Probe Thermal Profile code S, M, R or P is selected.)
- -40 to 445 °C (when Probe Thermal Profile code E or V is selected.)

# Dimensional drawings

Figure 1: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code S)



- A. Rod version, inactive extension
- B. Rod version, shortest length
- C. G $\frac{3}{4}$ -in. or  $\frac{3}{4}$ -in. NPT threaded process connection
- D. G1 $\frac{1}{2}$ -in., G1 $\frac{1}{4}$ -in., G1-in., M32x1.5, M30x1.5, 1 $\frac{1}{2}$ -in. NPT, 1 $\frac{1}{4}$ -in. NPT, 1-in. NPT threaded process connection
- E. 1-in. or 2-in. Tri Clamp process connection
- F. Flanged process connections - various sizes
- G. Active shield
- H. Aluminum housing with M20 or  $\frac{1}{2}$ -in. conduit/cable entries

Dimensions are in inches (millimeters).

See Table 7 for L, L1, and L2 dimensions.

**Table 7: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code S**

| L1: Active probe (standard length) | L1: Active probe (customer length) |                     | L2: Inactive extension length |                          |
|------------------------------------|------------------------------------|---------------------|-------------------------------|--------------------------|
|                                    | Minimum                            | Maximum             | Minimum                       | Maximum                  |
| 3.94 in. (100 mm)                  | 1.97 in. (50 mm)                   | 78.74 in. (2000 mm) | 1.97 in. (50 mm)              | 94.49 in. (2400 mm) - L1 |
| 7.87 in. (200 mm)                  |                                    |                     |                               |                          |
| 11.81 in. (300 mm)                 |                                    |                     |                               |                          |

**Note**

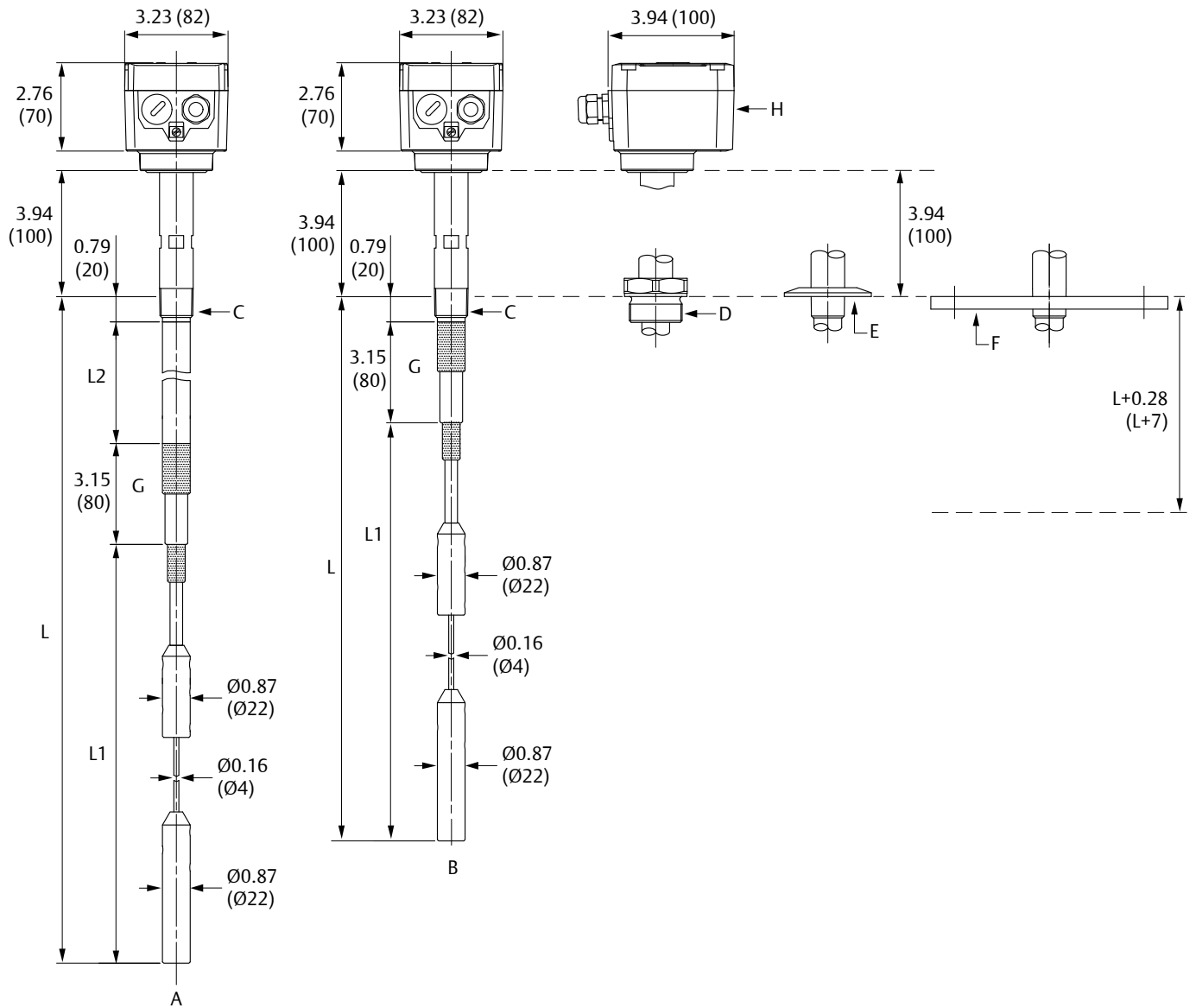
Length L = L1 + L2 + 3.94-in. (100 mm)

Minimum L length is 5.91-in. (150 mm)

Maximum L length is 98.4-in. (2500 mm)

Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.

Figure 2: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code R)



- A. Rope version, inactive extension
- B. Rope version, shortest length
- C. G $\frac{3}{4}$ -in. or  $\frac{3}{4}$ -in. NPT threaded process connection
- D. G1 $\frac{1}{2}$ -in., G1 $\frac{1}{4}$ -in., G1-in., M32x1.5, M30x1.5, 1 $\frac{1}{2}$ -in. NPT, 1 $\frac{1}{4}$ -in. NPT, 1-in. NPT threaded process connection
- E. 1-in. or 2-in. Tri Clamp process connection
- F. Flanged process connections - various sizes
- G. Active shield
- H. Aluminum housing with M20 or  $\frac{1}{2}$ -in. conduit/cable entries

Dimensions are in inches (millimeters). See Table 8 for L, L1, and L2 dimensions.

**Table 8: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code R**

| L1: Active probe (customer length) |                      | L2: Inactive extension length |                    |
|------------------------------------|----------------------|-------------------------------|--------------------|
| Minimum                            | Maximum              | Minimum                       | Maximum            |
| 13.77 in. (350 mm)                 | 787.4 in. (20000 mm) | 1.97 in. (50 mm)              | 74.8 in. (1900 mm) |

**Note**

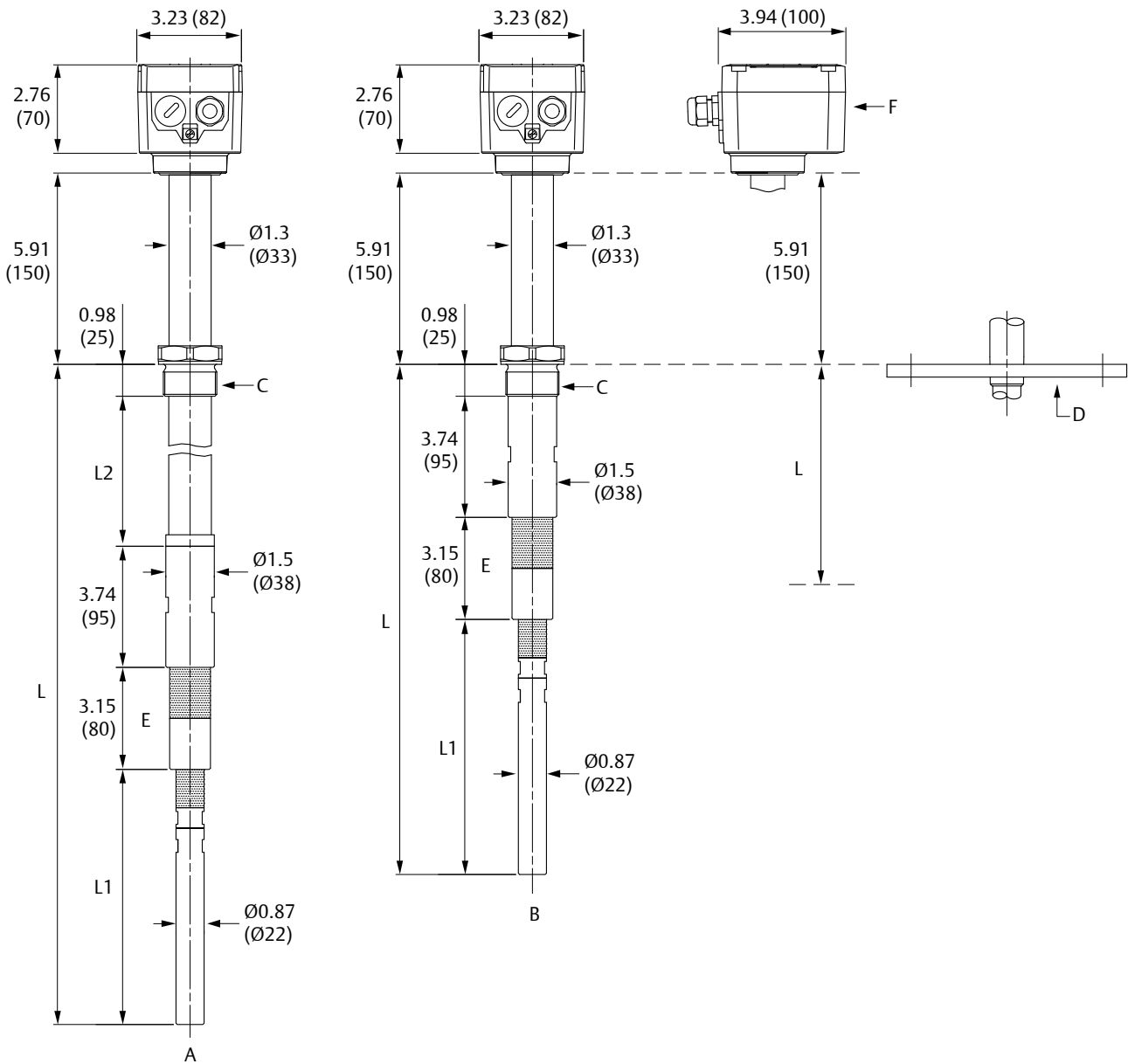
Length L = L1 + L2 + 3.94-in. (100 mm)

Minimum L length is 17.7-in. (450 mm)

Maximum L length is 866.1-in. (22000 mm)

Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.

Figure 3: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code M)



- A. Rod version, inactive extension
- B. Rod version, shortest length
- C. G1½-in., G1¼-in., 1½-in. NPT or 1¼-in. NPT threaded process connection
- D. Flanged process connections - various sizes
- E. Active shield
- F. Aluminum housing with M20 or ½-in. conduit/cable entries

Dimensions are in inches (millimeters). See Table 9 for L, L1, and L2 dimensions.

**Table 9: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code M**

| L1: Active probe (standard length) | L1: Active probe (customer length) |                     | L2: Inactive extension length |                          |
|------------------------------------|------------------------------------|---------------------|-------------------------------|--------------------------|
|                                    | Minimum                            | Maximum             | Minimum                       | Maximum                  |
| 3.94 in. (100 mm)                  | 3.94 in. (100 mm)                  | 78.74 in. (2000 mm) | 3.94 in. (100 mm)             | 90.55 in. (2300 mm) - L1 |
| 7.87 in. (200 mm)                  |                                    |                     |                               |                          |
| 11.81 in. (300 mm)                 |                                    |                     |                               |                          |

**Note**

Length L = L1 + L2 + 7.87-in. (200 mm)

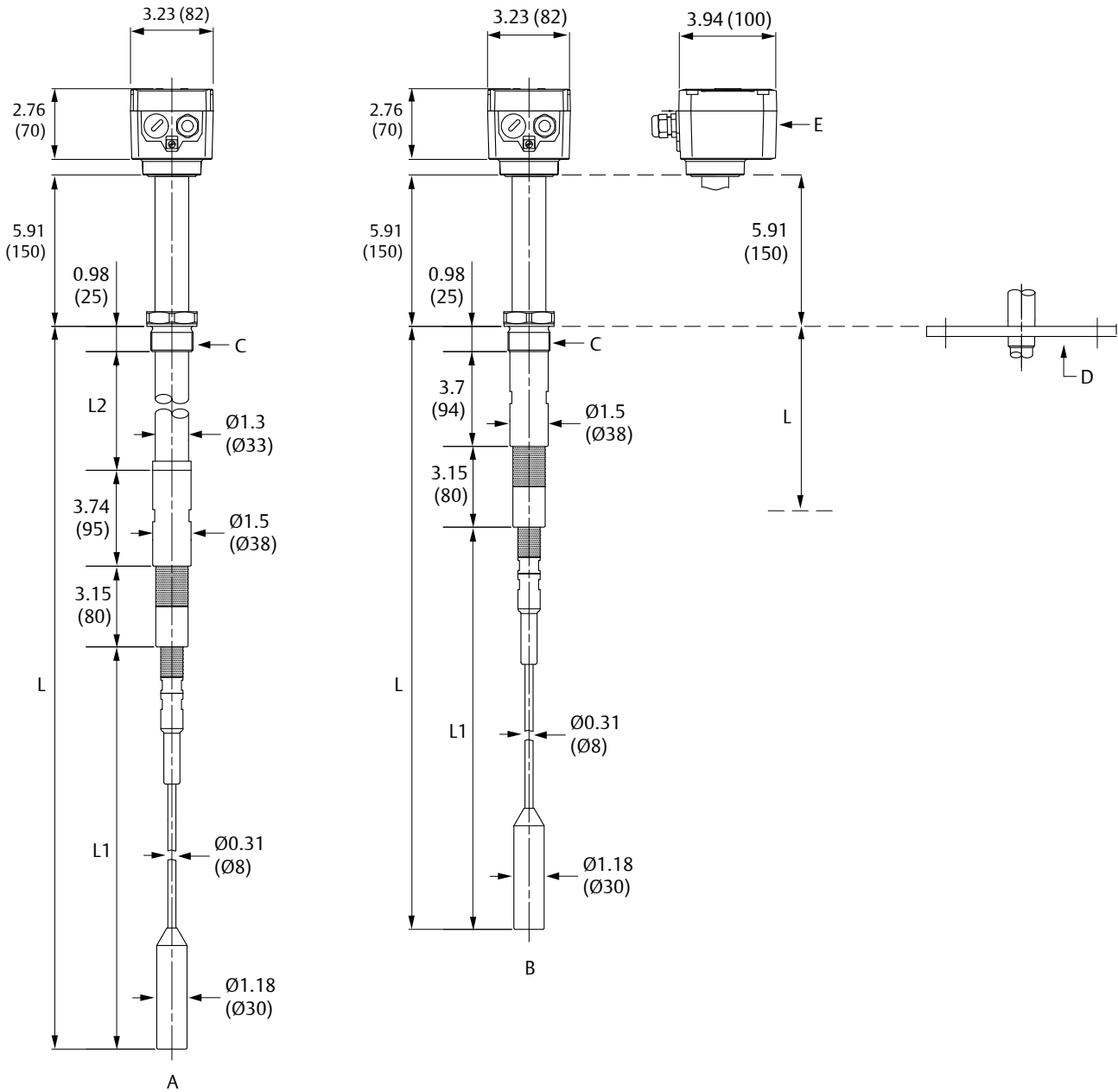
Minimum L length is 11.81-in. (300 mm)

Maximum L length is 98.4-in. (2500 mm)

Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.



Figure 4: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code P)



- A. Rope version, inactive extension
- B. Rope version, shortest length
- C. G1½-in., G1¼-in., 1½-in. NPT or 1¼-in. NPT threaded process connection
- D. Flanged process connections - various sizes
- E. Aluminum housing with M20 or ½-in. conduit/cable entries

Dimensions are in inches (millimeters). See Table 10 for L, L1, and L2 dimensions.

**Table 10: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code P**

| L1: Active probe (customer length) |                      | L2: Inactive extension length |                     |
|------------------------------------|----------------------|-------------------------------|---------------------|
| Minimum                            | Maximum              | Minimum                       | Maximum             |
| 13.78 in. (350 mm)                 | 787.4 in. (20000 mm) | 3.94 in. (100 mm)             | 70.87 in. (1800 mm) |

**Note**

Length L = L1 + L2 + 7.87-in. (200 mm)

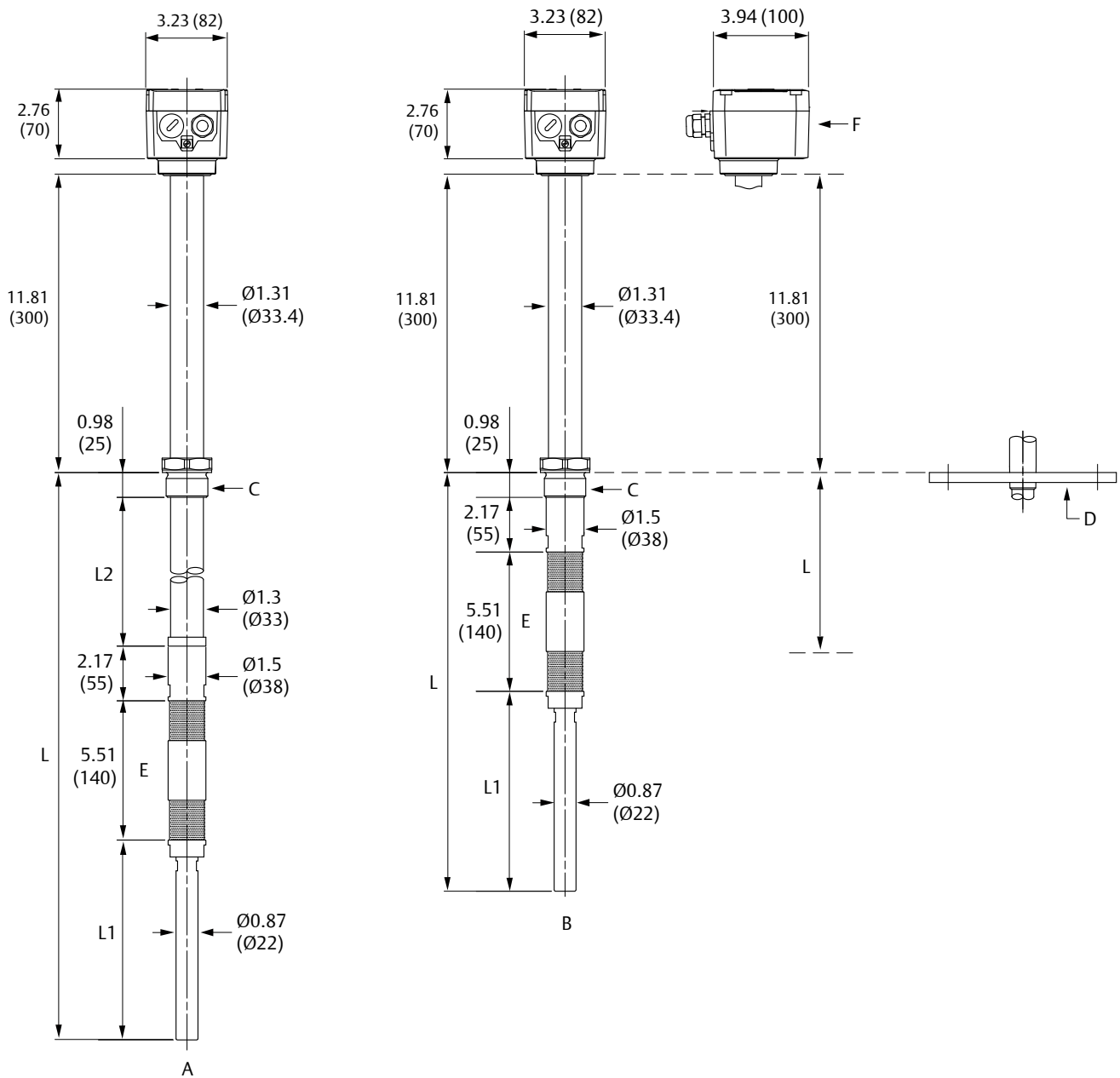
Minimum L length is 21.65-in. (550 mm)

Maximum L length is 866.1-in. (22000 mm)

Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.

Maximum process temperature for Ex-approved versions is limited to 445 °C.

Figure 5: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code E)



- A. Rod version, inactive extension
- B. Rod version, shortest length
- C. G1½-in., G1¼-in., 1½-in. NPT or 1¼-in. NPT threaded process connection
- D. Flanged process connections - various sizes
- E. Active shield
- F. Aluminum housing with M20 or ½-in. conduit/cable entries

Dimensions are in inches (millimeters). See Table 11 for L, L1, and L2 dimensions.

**Table 11: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code E**

| L1: Active probe (standard length) | L1: Active probe (customer length) |                    | L2: Inactive extension length |                          |
|------------------------------------|------------------------------------|--------------------|-------------------------------|--------------------------|
|                                    | Minimum                            | Maximum            | Minimum                       | Maximum                  |
| 3.94 in. (100 mm)                  | 3.94 in. (100 mm)                  | 39.7 in. (1000 mm) | 3.94 in. (100 mm)             | 90.55 in. (2300 mm) - L1 |
| 7.87 in. (200 mm)                  |                                    |                    |                               |                          |
| 11.81 in. (300 mm)                 |                                    |                    |                               |                          |

**Note**

Length L = L1 + L2 + 8.66-in. (220 mm)

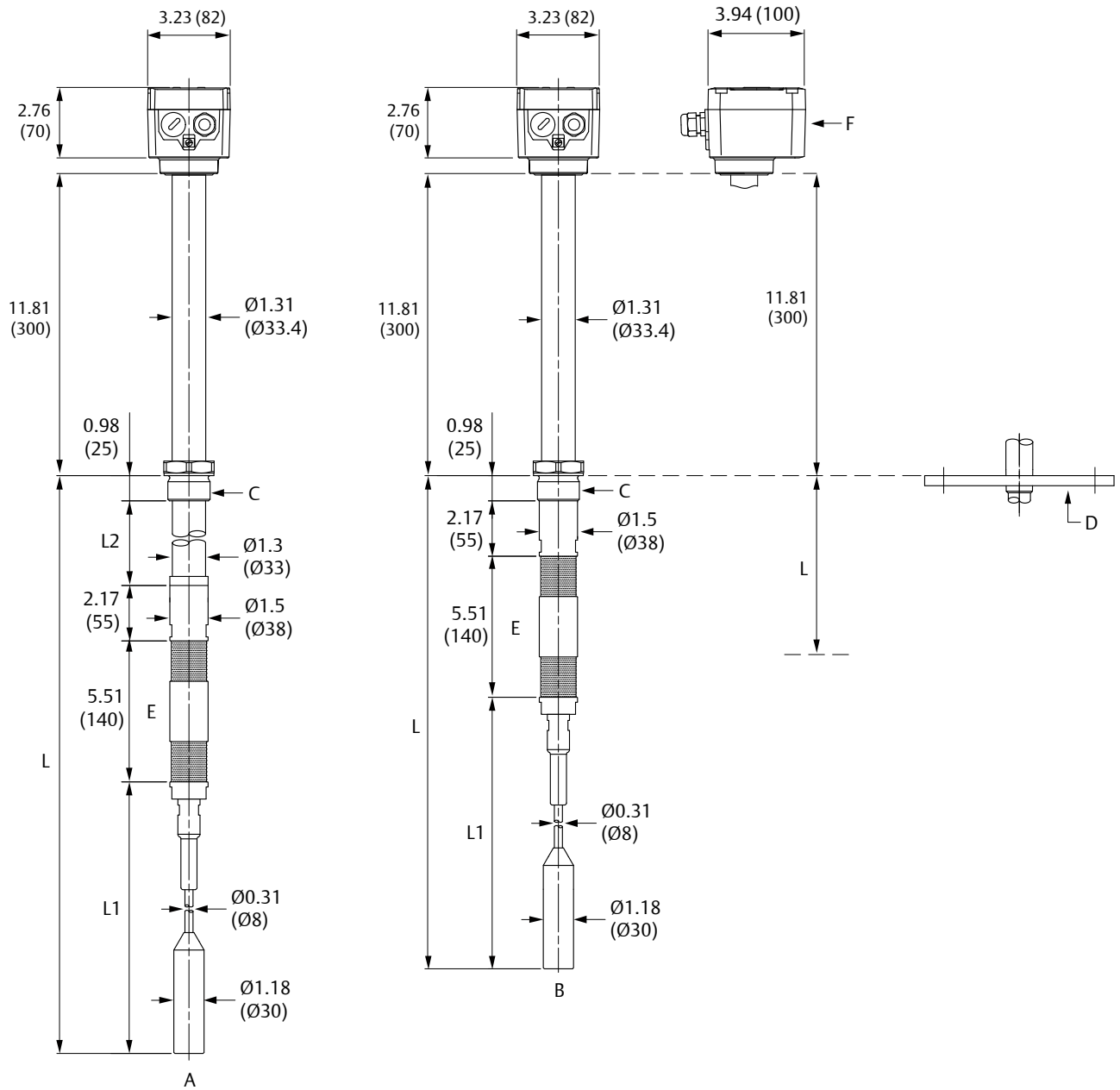
Minimum L length is 12.6-in. (320 mm)

Maximum L length is 99.2-in. (2520 mm)

Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.

Maximum process temperature for Ex-approved versions is limited to 445 °C.

Figure 6: Rosemount 2555 Capacitance Probe Level Switch (Thermal Profile code V)



- A. Rope version, inactive extension
- B. Rope version, shortest length
- C. G1½-in., G1¼-in., 1½-in. NPT or 1¼-in. NPT threaded process connection
- D. Flanged process connections - various sizes
- E. Aluminum housing with M20 or ½-in. conduit/cable entries

Dimensions are in inches (millimeters). See Table 12 for L, L1, and L2 dimensions.

**Table 12: Dimensions L1 and L2 for Rosemount 2555 with Thermal Profile code V**

| L1: Active probe (customer length) |                      | L2: Inactive extension length |                     |
|------------------------------------|----------------------|-------------------------------|---------------------|
| Minimum                            | Maximum              | Minimum                       | Maximum             |
| 13.78 in. (350 mm)                 | 787.4 in. (20000 mm) | 3.94 in. (100 mm)             | 70.87 in. (1800 mm) |

**Note**

Length L = L1 + L2 + 8.66-in. (220 mm)

Minimum L length is 22.4-in. (570 mm)

Maximum L length is 886.9-in. (22020 mm)

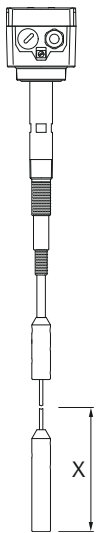
Inactive extension: the active probe shall have at least 1.97 in. (50 mm) distance to the silo wall.

Maximum process temperature for Ex-approved versions is limited to 445 °C.

### Selecting active probe length

The correct selection of an active probe length (L1) is necessary to get a satisfactory change of capacitance between an uncovered and covered probe (see recommendations in Table 13). If these recommendations are observed, the standard sensitivity of 2 pF can be achieved in most cases.

**Figure 7: Level Switch Switchpoint**



**Table 13: Active Probe Length Recommendations**

| DK   | Length L1 (horizontal mounting) <sup>(1)</sup> | Switchpoint X <sup>(2)</sup> |
|------|--|------------------------------|
| <1.5 | n.a.   | n.a.                         |
| ≥1.6 | ≥11.8 in. (300 mm)                             | ≤11.8 in. (300 mm)           |
| ≥1.8 | ≥7.9 in. (200 mm)                              | ≤7.9 in. (200 mm)            |
| ≥2.2 | ≥3.9 in. (100 mm)                              | ≤3.9 in. (100 mm)            |
| ≥10  | ≥2.0 in. (50 mm)                               | ≤2.0 in. (50 mm)             |

(1) With stated L1 the unit works with factory set sensitivity (2 pF).

(2) The table states the switchpoint with factory set sensitivity (2 pF).



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