MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

## Bently Nevada

PRODUCT MODEL

## 31000-28-05-15-032-03-02

31000-28-05-15-032-03-02 - External proximity probe housing
Selected manufacturer pages; verify exact configuration.

OFFICIAL SOURCE

Datasheet 141610 Rev. R

**Open current manufacturer source**

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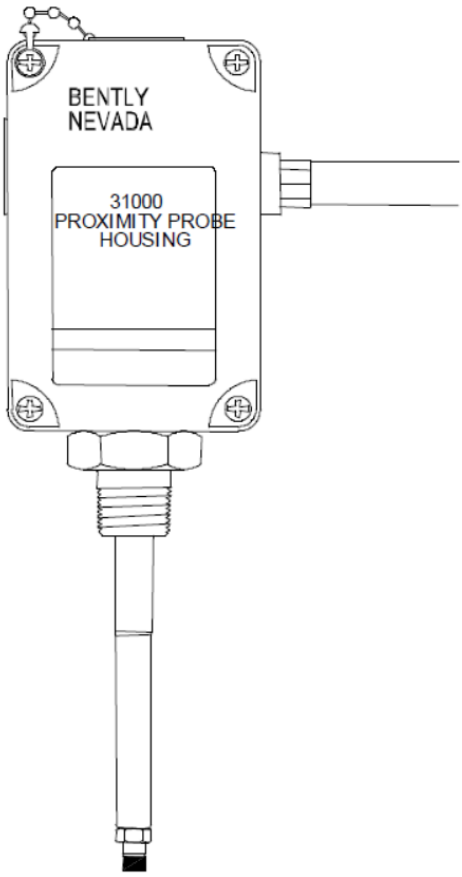
Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

# 31000 and 32000 Proximity Probe Housing Assemblies

## Datasheet

Cordant™

141610 Rev. R




## Description

The 31000/32000 Proximity Probe Housing Assemblies are recommended when mounting proximity probes through the machine case and are typically used for radially mounted transducers, whether vibration or Keyphasor measurements.

When using these housings to measure radial vibration, ensure that the machine casing is affixed to the bearing in order to get an accurate relative vibration signal.

When measuring shaft axial position with dual proximity probes, use housing 21022 instead. Consult datasheet (document 141601).

Use of a Proximity probe housing allows external access to the proximity probe and its extension cable, permitting gap adjustment or probe replacement without disassembly of the machine. The 31000/32000 Proximity Probe Housing Assembly is made of polyphenylene sulfide (PPS), an advanced, high-strength, thermoplastic with excellent corrosion resistance. Other elements of the housing assembly are made of corrosion-resistant stainless steel. The housing can be ordered with installed 3300 XL Proximity Probes and a variety of conduit fittings.

The 31000/32000 Proximity Probe Housing Assembly is fully compliant with the American Petroleum Institute's (API) 670 Standard for externally mounted proximity probe housings.

When installed in conjunction with an approved transducer system and appropriate I.S. barriers, the 31000/32000

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Proximity Probe Housing Assembly can be used in intrinsically safe hazardous area applications.



The 31000/32000 Housing is intended to provide mechanical and environmental protection only, and is not an explosion-proof housing. When an explosion proof proximity probe housing assembly is required, use housing CA21000 or CA24701. Consult the datasheet (document 141600).

## Related Documents

For probe information, refer to the following manuals:

- *3300 XL 8mm & 3300 5mm Proximity Transducer System User Guide* (document 141078)
- *3300 XL NSv Proximity Transducer System User Guide* (document 147357)
- *3300 XL 11mm Proximity Transducer System Installation* User Guide (document 146255)
- *Radiation Resistant Probe and Proximitor System* (document TW8029407)

# Specifications

## Environmental

| 3300 XL 8 mm Probe | |
|---|---|
| Operating and storage | -51°C to +177°C (-60°F to + 351°F) |
| **3300 XL 11 mm Probe** | |
| Operating and storage | -51°C to + 177°C (-60°F to + 351°F) |
| **3300 NSV Probe** | |
| Operating | -34°C to +177°C (-30°F to + 351°F) |
| Storage | -51°C to +177°C (-60°F to +351°F) |

**Hot Water and Steam Exposure Effects**

(Specification not guaranteed). Brief periods (up to one week) of contact with hot water (95°C [203°F]) and/or condensing steam should not significantly affect the strength of the plastic housing. Contact with these beyond this length of time may eventually cause the strength of the plastic housing to permanently decrease during the first 6 to 8 weeks of exposure, and then level at approximately half of its initial value. Tests of actual housing performance after contact with hot water and condensing steam have not been conducted.

**Probe Pressure**

The 31000/32000 Proximity Probe Housing Assembly is designed to seal differential pressure between the probe tip and the housing main body when used with a 3300 XL 8 mm probe. The sealing material internal to the probe case consists of a Viton O-ring; the O-ring between the sleeve and the housing is a Neoprene O-ring. The plastic housing is certified to seal against hose-directed water according to NEMA 4X and IP66 standards but is not designed to resist internal or external pressure. Probes are not pressure tested prior to shipment. Contact our custom design department if you require a test of the pressure seal for your application.

It is the responsibility of the customer or user to ensure that all liquids and gases are contained and safely controlled should leakage occur from a Proximity Probe Housing Assembly. Solutions with high or low pH values may erode the tip assembly of the probe, causing media leakage into surrounding areas. Bently Nevada, LLC, does not be held responsible for any damages resulting from leaking Proximity Probe Housing Assemblies. In addition, Proximity Probe Housing Assemblies and 3300 XL 8 mm proximity probes does not be replaced under the service plan due to probe leakage.

## Mechanical

| | |
|---|---|
| Protection Ratings | Type 4X rating certified by Canadian Standards Association (CSA). IP66 rating verified by SC115582-1 (e) 106. CENELEC standard EN50014 rating for electrostatic dissipation of a plastic material located in a hazardous area. |
| Housing Material | Glass-reinforced Polyphenylene Sulfide (PPS) thermoplastic containing conductive fibers |
| Sleeve Material and Retaining Chain | AISI 304 stainless steel |
| Outer Sleeve and Exterior Screws | AISI 303 stainless steel |

| | |
|---|---|
| O-Ring Material | Neoprene |
| Recommended Torque(retaining nut) | 29.4 N·m (260 in·lb) |
| Housing Strength (typical) | Outer sleeve was mounted on a test stand with its axis parallel to horizontal and the housing mounted on the outer sleeve through an end hole. The housing supported 912 N (205 lb) placed approximately 38 mm (1.5 inches) from the unsupported end with the cover fastened in place and grounding liner installed. |
| Housing Impact Strength | Certified by BASEEFA to withstand two separate 4 Joule (3.0 ft·lb) impacts at -39°C (-38°F) and at 115°C (239°F). Samples of the housing and cover were verified by CSA to withstand a 7 Joule (5.2 ft·lb) impact at ambient room temperature. |
| Weight | 1.2 kg (2.6 lb) typical |

# Ordering Information

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

**Table 1: Maximum "C" Option plus "D" Option for different "B" Options (probe cable length)**

| Probe Cable Length | Maximum C plus D |
|---|---|
| 0.5 meter | 394 mm (15.5 in) |
| 1.0 meter | 760 mm (30.0 in) |

**Table 2: Maximum "C" Option plus "D" Option for different "B" Options (probe cable length) where P/N and S/N Label on Probe Cable is visible outside of probe sleeve**

| Probe Cable Length | Maximum C plus D with Visible P/N and S/N Label |
|---|---|
| 0.5 meter | 64 mm (2.5 in) |
| 1.0 meter | 483 mm (19.0 in) |

Conduit fittings are necessary when hardline conduit or metal tubing is brought into the housing. Flexible conduit should be ordered with integral 3/4-14 NPT fittings and do not require additional conduit fittings with the housing. If using flexible conduit, order the "E" = 00 option.

## English Proximity Probe Housing Assemblies

### 31000 - AA-BB-CC-DDD-EE-FF

| | |
|---|---|
| **A: Probe with Connector** | |
| **00** | Probe not required |
| **16** | 3300 XL 8 mm probe |
| **26** | 3300 XL NSv probe |
| **27** | 3300 XL NSv probe, multiple approvals |
| **28** | 3300 XL 8 mm probe, multiple approvals |
| **29** | 3300 XL 8 mm probe, with connector protector |
| **30** | 3300 XL 8 mm probe, with connector protector, multiple approvals |
| **31** | 3300 XL NSv probe with connector protector |
| **32** | 3300 XL NSv probe with connector protector, multiple approvals |
| **33** | 3300 XL 11 mm probe |
| **34** | 3300 XL 11 mm probe, multiple approvals |
| **35** | 3300 XL 11 mm probe with connector protector |
| **36** | 3300 XL 11 mm probe with connector protector, multiple approvals |
| **B: Probe Cable Length** | |
| **00** | Probe cable not required (Option A must also be 00) |
| **05** | 0.5 m (20 in) |
| **10** | 1.0 m (39 in) |
| **C: Standoff Adapter Length (Option C Dimension)** | |

| | |
|---|---|
| | Must be ordered if Standoff Adapter Length option is not 00. |
| **15** | Minimum length 1.5 in (38 mm) |
| **75** | Maximum length 7.5 in (191 mm) |
| | **Recommendation**<br>Order in increments of 0.5 in (13 mm) |
| | **Examples**<br>1.5 in (38 mm) = **15**<br>No standoff adapter = **00** |

| **D: Probe Penetration Option (Option D Dimension)** | |
|---|---|
| **10** | Minimum length 1.0 in (25.4 mm) |
| | **Recommendation**<br>Order in increments of 0.1 in (3 mm) |
| | **Examples**<br>No probe sleeve = **000**<br>3.7 in (94 mm) = **037**<br>22.4 in (569 mm) = **224** |

"C" plus "D" dimensions greater than 12 in (305 mm) require additional sleeve support near the probe to prevent resonance from occurring. Sleeve adjustment range of Probe Penetration Option "D" is ±0.5 in (13 mm).

For probe penetration lengths between 1.0 and 2.0 inches, it may be necessary to counter bore the machine case to reduce probe side view or rear view effects.

| **E: Fittings** | |
|---|---|
| **00** | Without fittings |
| **01** | One 3/4-14 NPT fitting, two plugs. |
| **02** | Two 3/4-14 NPT fittings, one plug. |
| **03** | Two plugs, one 3/4-14 NPT fitting<br>One 3/4-14 to 1/2-14 NPT SST reducer<br>One cable seal grip with grommets for the following cable sizes:<br>• 1/8 to 3/16 inches<br>• 1/4 to 5/16 inches<br>• 5/16 to 3/8 inches |
| **06** | One 3/4-14 NPT fitting<br>One 3/4-14 NPT to 1/2-14 NPR SST reducer<br>Two plugs |

| **F: Mounting Thread Option** | |
|---|---|
| **00** | No outer sleeve, retainer, or retaining nut |
| **02** | 3/4-14 NPT (Required if ordering Standoff Adapter Option). |
| **05** | 7/8-14 UNF 2A |

## Metric Proximity Probe Housing Assemblies

## 32000 - AA-BB-CC-DDD-EE-FF

| **A: Probe with Connector** | |
|---|---|
| **00** | Probe not required |
| **16** | 3300 XL 8 mm probe |
| **26** | 3300 XL NSv probe |
| **27** | 3300 XL NSv probe, multiple approvals |
| **28** | 3300 XL 8 mm probe, multiple approvals |
| **29** | 3300 XL 8 mm probe, with connector protector |
| **30** | 3300 XL 8 mm probe, with connector protector, multiple approvals |
| **31** | 3300 XL NSv probe with connector protector |
| **32** | 3300 XL NSv probe with connector protector, multiple approvals |
| **33** | 3300 XL 11 mm probe |
| **34** | 3300 XL 11 mm probe, multiple approvals |
| **35** | 3300 XL 11 mm probe with connector protector |
| **36** | 3300 XL 11 mm probe with connector protector, multiple approvals |
| **B: Probe Cable Length** | |
| **00** | Probe cable not required (Option A must also be 00) |
| **05** | 0.5 m (20 in) |
| **10** | 1.0 m (39 in) |
| **C: Standoff Adapter Length (Option C Dimension)** | |
| | Must be ordered if Standoff Adapter Length option is not 00. |
| **04** | Minimum length 40 mm |
| **20** | Maximum length 200 mm |
| | **Recommendation**<br>Order in increments of 10 mm |
| **D: Probe Penetration Option (Option D Dimension)** | |
| **760** | Maximum length 760 mm |
| **025** | Minimum length 25 mm |
| | **Recommendation**<br>Order in increments of 1.0 mm |
| | **Examples**<br>No probe sleeve = **000**<br>50 mm = **050**<br>760 mm = **760** |

"C" plus "D" dimensions greater than 12 in (305 mm) require additional sleeve support near the probe to prevent resonance from occurring. Sleeve adjustment range of Probe Penetration Option "D" is ±0.5 in (13 mm).

For probe penetration lengths between 25 and 50 millimeters, it may be necessary to counter bore the machine case to reduce probe side view or rear view effects.

| **E: Fittings** | |
|---|---|
| **00** | Without fittings; two plugs and two washers. |
| **01** | One M25 fitting, two plugs. |
| **02** | Two M25 fittings, one plug. |

| | |
|---|---|
| **03** | Two plugs, one M20 fitting<br>One cable seal grip with grommets for armored probe cable |
| **05** | One DIN PG11 fitting, two plugs |
| **07** | One PG21 x M20 fitting<br>Two plugs |
| **08** | Two PG21 x M20 fittings<br>One plug |

| **F: Mounting Thread Option** | |
|---|---|
| **00** | No outer sleeve, retainer, or retaining nut |
| **01** | M24 X 3 |
| **02** | 3/4-14 NPT (Required if ordering Standoff Adapter Option.) |

## Terminal Housing

## 106769-AA

The 106769 housing consists of a 31000-style PPS housing with two terminal mounting blocks (each terminal block has four terminals) mounted in each housing. Sixteen ring lugs are supplied loose inside the housing for connecting transducer cables. Conduit fittings are 3/4-14 NPT chrome-plated zinc fittings.

| **A: Conduit Fitting Option** | |
|---|---|
| **00** | No fittings |
| **01** | One fitting |
| **02** | Two fittings |

## Accessories

| Part Number | Description |
|---|---|
| 37948-01 | Probe Support / Oil Seal Recommended for sleeves longer than 305 mm (12 in) |
| 124200 | 31000 and 32000 User Guide |

## English Probe Sleeve for 31000 Proximity Probe Housings 108883-AAA

| **A: Measured Probe Sleeve Length** | |
|---|---|
| | Recommendation<br>Order in increments of 0.1 in (3 mm) |

The individual probe sleeve length does **not** include the distance from the end of the sleeve to the probe tip or the gap from the probe tip to the target material. If only the part number of the original housing is known, and the sleeve cannot be measured, use the following table to determine the sleeve length:

| AAA Option for 31000 Prox Probe Housing | Description |
|---|---|
| Housing AAA option for 3300 XL 8 mm probe option (A: 16 or A: 28) | Standoff adapter option from original housing (31000 option C) + Probe penetration option from original housing (31000 option D) + 0 2 5. |
| | **Example**<br>Original part number 31000-16-10-15-035-03-02<br>**AAA** option for replacement sleeve (015 + 035 + 025) = **075** |
| Housing AAA option for 3300 XL NSv probe option (A: 26 or A: 27) | Standoff adapter option from original housing (31000 option C) + Probe penetration option from original housing (31000 option D) + 0 2 6. |
| | **Example**<br>Original part number 31000-27-10-20-035-03-02<br>**AAA** option for replacement sleeve (020 + 035 + 026) = **0 8 1**. |
| Housing AAA option for 3300 XL 11 mm probe option (A: 33 or A: 34) | Standoff Adapter Option from original housing (31000 option C) + Probe penetration option from original housing (31000 option D) + 0 1 7. |
| | **Example**<br>Original part number 31000-33-10-30-113-01-02<br>**AAA** option for replacement sleeve (030 + 113 + 017) = **1 6 0.** |

| Minimum Probe Sleeve Length | |
|---|---|
| 3300 XL 8 mm probes | 3.5 in (89 mm) = **0 3 5** |
| 3300 XL NSv probe | 3.6 in (91 mm) = **0 3 6** |
| 3300 XL 11 mm probe | 2.7 in (69 mm) = **0 2 7** |
| **Maximum Probe Sleeve Length** | |
| 3300 XL 0.5 meter 8 mm probe | 18.0 in (457 mm) = **180** |
| 3300 XL NSv 0.5 meter probe | 18.1 in (460 mm) = **181** |

## Spare 3300 XL 8 mm Reverse Mount Probe, 3/8-24 UNF threads

## 330105-02-12-CC-DD-EE

## Spare 3300 XL 8 mm Reverse Mount Probe, M10 X1 threads

## 330106-05-30-CC-DD-EE

| **C: Total Length** | |
|---|---|
| **05** | 0.5 meter (1.6 feet) |
| **10** | 1.0 meter (3.3 feet) |
| **15** | 1.5 meter (4.9 feet) |
| **20** | 2.0 meters (6.6 feet) |
| **50** | 5.0 meters (16.4 feet) |
| **90** | 9.0 meters (29.5 feet) |
| **D: Connector** | |
| **00** | Connector not installed |
| **02** | Miniature ClickLoc coaxial connector |
| **E: Agency Approval** | |
| **00** | Not required |
| **05** | Multiple approvals |

## Spare 3300 NSV Reverse Mount Probe, 3/8-24 UNF threads

## 330906-02-12-CC-DD-EE

## Spare 3300 NSV Reverse Mount Probe, M10 X1 threads

## 330907-05-30-CC-DD-EE

| **C: Total Length** | |
|---|---|
| **05** | 0.5 meter (1.6 feet) |
| **10** | 1.0 meter (3.3 feet) |
| **50** | 5.0 meters (16.4 feet) |
| **90** | 9.0 meters (29.5 feet) |
| **D: Connector** | |
| **00** | Connector not installed |
| **02** | Miniature ClickLoc coaxial connector |
| **E: Agency Approval** | |
| **00** | Not required |
| **05** | Multiple approvals |

## Sleeve and Blanking Plugs

| | |
|---|---|
| 104968-01 | English Sleeve Plug, threaded, 303 stainless steel |
| 104968-02 | Metric Sleeve Plug, threaded, 303 stainless steel. |

**Plugs fill opening when sleeve is removed from machine case.**

| | |
|---|---|
| 104288-01 | English Blanking Plug |
| 104288-02 | Metric Blanking Plug |

**Plugs fill extra holes in plastic housing where needed.**

## Heavy Duty Conduit and Cable Fittings

| | |
|---|---|
| 03813103 | Chrome-plated Zinc Conduit Fitting, 3/4-14 NPT |
| 03818100 | AISI 316 Stainless Steel Conduit Fitting, 3/4-14 NPT |
| 03818101 | AISI 316 Stainless Steel Conduit Fitting, PG21 x M25 |
| 03818102 | AISI 316 Stainless Steel Conduit Fitting, PG21 x M20 |
| 03818103 | AISI 316 Stainless Steel Conduit Fitting, PG21 x PG11 |
| 03818104 | AISI 303 Stainless Steel Cable Gland, PG11 |
| 03818105 | AISI 316 Stainless Steel Cable Gland, M20 |
| 03818111 | Nickel-plated Brass Conduit Fitting, PG21 x M20 |
| 26650-01 | AISI 303 Stainless Steel Reducer, 3/4-14 NPT to 1/2-14 NPT |

## Graphs and Figures

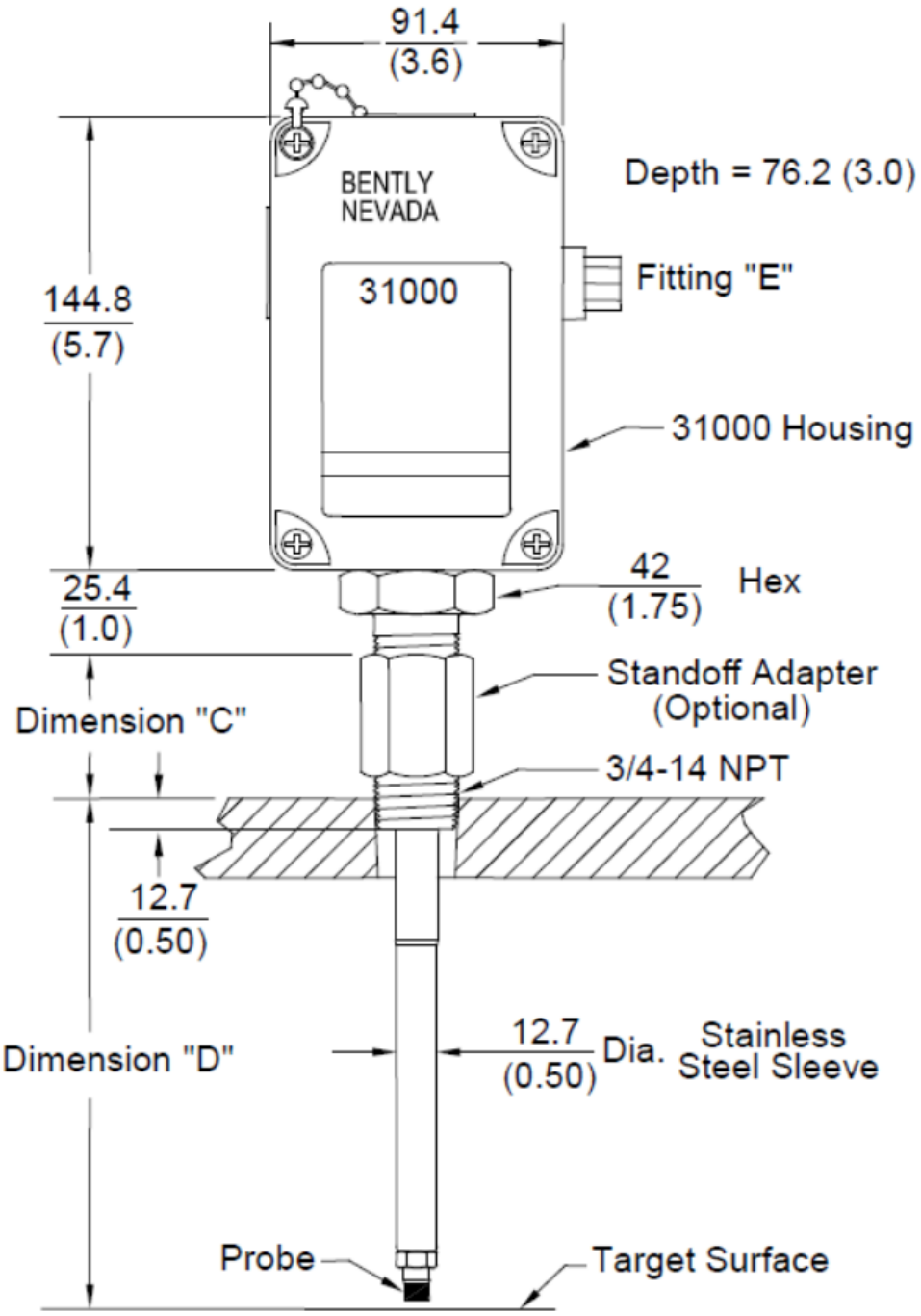
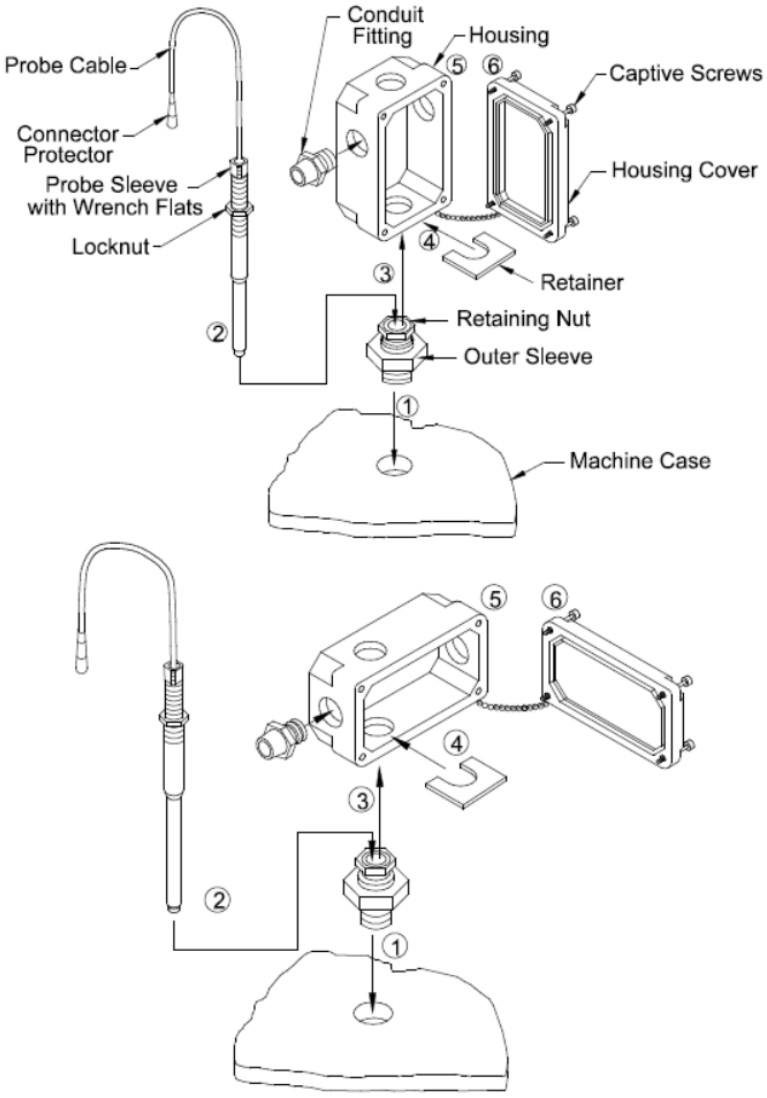



**Figure 1: Dimensions for 31000 and 32000 Proximity Probe Housings**

Dimensions are in millimeters (inches).

All 4 holes in housing base, 1 per side, will accept sleeve or conduit fittings and cable glands.
Fittings are supplied with housing depending on English, metric or DIN type.
Hole plugs are provided to seal unused holes.




**Installation Procedures**

1. Install outer sleeve into machine case.
2. Insert probe sleeve and adjust probe gap.
3. Disconnect probe cable and fit housing over outer sleeve.
4. Slide retainer under retaining nut. Tighten nut.
5. Re-connect probe cable and Connector Protector.
6. Place housing cover on housing and tighten captive screws.
7. If hole plugs are used, tighten hole plug nuts to 0.5 N-m (5 in-lbs).

**Figure 2: Vertical and Horizontal Profile Views of the 31000 and 32000 Proximity Probe Housings**

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