21000, 24701 Proximity Probe Housing Assemblies
Bently Nevada™ Asset Condition Monitoring

Description

Proximity Probe Housing Assemblies

Bently Nevada offers two all-metal Proximity Probe Housing Assemblies for external mounting of proximity probes: the 21000 aluminum probe housing assembly, and the 24701 stainless steel probe housing assembly. These housings consist of a dome cover that screws into the body of the housing, threaded ports for conduit connections, a probe sleeve of optional length, O-rings, a reverse mount proximity probe, a thread seal, optional conduit fittings and an optional standoff adapter. 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.

Note: A newer 31000/32000 proximity probe housing assembly is available with more flexible mounting options, better environmental resistance, and other improved features. It is recommended for installations where an explosion proof housing is not required. Consult specifications and ordering information (p/n 141610-01).

Both the 21000 and the 24701 housing assemblies are available in a Canadian Standards Association (CSA) approved version that is rated explosion proof in hazardous areas. In addition, CSA and BASEEFA approved proximity probes can also be ordered with both 21000 aluminum and 24701 stainless steel housings for intrinsically safe applications. Both housings are certified as CSA Type 4 enclosures, and both are fully compliant with the American Petroleum Institute's (API) 670 Standard for externally mounted proximity probe housings.

Sleeve length is determined by the location in which the probe and housing will be installed. The probe lead must be longer than the sleeve. Sleeve lengths longer than 304 mm (12 inches) require additional sleeve support in order to reduce the vibration associated with unsupported long sleeve lengths. A probe support/oil seal, P/N 37948-01, is available to support long sleeves going through an inner bearing housing, or the customer or BNC can provide a custom sleeve support (see Figure 1. "Proximity Probe Housing Assemblies Dimensions are in millimetres (inches)" on page 7).

Related Documents

For probe information, refer to the following manuals:

- 3300 XL 8 mm Proximity Transducer System 141078-01
- 3300 XL NSv Proximity Transducer System 147357-01
- 3300 XL 11 mm Proximity Transducer System 146255-01
- Radiation Resistant Probe & Proximitor System TW8029407
Specifications

Electrical

Classification:

Complies with the CE mark for Europe.

Intrinsically Safe Applications:

Multiple approvals for hazardous areas certified by Canadian Standards Association (CSA/NRTL/C) in North America and by BASEEFA/CENELEC in Europe for hazardous applications when used with an approved Proximitor® Sensor, extension cable, and either intrinsically safe or galvanically isolated barriers.

CSA/NRTL/C:

Class 1, Divisions 1 and 2: Groups A, B, C, and D.
Class 2, Divisions 1 and 2: Groups E, F, and G.

BASEEFA/ CENELEC:

Zones 0, 1, and 2: Groups I, MA, MB, and IIC.

Explosion Proof Applications:

CA housings certified by CSA for explosion-proof applications in the following applications -
Class I, Divisions 1 and 2: Groups C and D.
Class II, Divisions 1 and 2: Groups E, F, and G.
Class III.

Environmental

Temperature Range

3300 XL 8 mm and 3300 XL 11 mm probes:

-51°C to +177°C (-60 T to +351°F).

3300 NSV™ probe:

Operating:

-34°C to +177°C (-30 T to +351°F).

Storage:

-51°C to +177°C (-60 T to +351°F).

Note: Exposing 3300 XL or 3300 NSV™ probes to temperatures below -34°C (-30°F) may cause premature failure of their pressure seals.

Mechanical

Material

21000:

Aluminum body with 304 stainless steel sleeve.

24701:

303 stainless steel body, with 304 stainless steel sleeve.

Mass (weight)

21000:

1.1 kg (2.4 lb) typical, without fittings.

24701:

1.8 kg (4.1 lb) typical, without fittings.
Ordering Information

Proximity Probe Housing Assemblies
21000-AXX-BXX-CXX-DXXX-EXX-F02
24701-AXX-BXX-CXX-DXXX-EXX-FXX

Explosion-Proof Housing Assemblies
CA21000-AXX-BXX-CXX-DXXX-EXX-F02
CA24701-AXX-BXX-CXX-DXXX-EXX-FXX

A:  Probe Option, With Connector:
    0 0  Probe not required
    1 6  3300 XL 8 mm probe
    2 6  3300 NSV probe
    2 7  3300 NSV probe, multiple approvals
    2 8  3300 XL 8 mm probe, multiple approvals
    2 9  3300 XL 11 mm probe
    3 0  3300 XL 11 mm probe, multiple approvals
    3 1  3300 NSV probe with connector protector
    3 2  3300 NSV probe with connector protector, multiple approvals
    3 3  3300 XL 8 mm probe with connector protector
    3 4  3300 XL 8 mm probe with connector protector, multiple approvals
    3 5  3300 XL 11 mm probe with connector protector
    3 6  3300 XL 11 mm probe with connector protector, multiple approvals

Note:  If option -00 (probe not required) is selected for Option A, then Option B (Probe Cable Length Option) must also be -00.
Order only multiple approvals probes for CA21000 or CA24701 housings.

B:  Probe Cable Length Option (see Table 2, "Maximum Length of C and D Dimension for Proximity Probes," on page 6):
    0 0  Probe cable not required
    0 5  0.5 metre (20 in)
    1 0  1.0 metre (39 in)

Note:  3300 XL 11 mm probes only available in 1.0 metre length.
Excessive cable lengths should be avoided to reduce the possibility of damaging the cable when the housing lid is screwed onto the housing.

C:  Standoff Adapter (Option C Dimension):
Order in increments of 0.5 in (13 mm).
Minimum length: 1.5 in = 1 5 (38 mm).
Maximum length: 7.5 in = 7 5 (191 mm).
Example:
1.5 in (38 mm) = 1 5.
No standoff adapter = 0 0.

D:  Probe Penetration (Option D Dimension):
Order in increments of 0.1 in (3 mm).
Minimum length: 1.0 in = 0 1 0 (25.4 mm).
Maximum length: See Table 2, "Maximum Length of C and D Dimension for Proximity Probes," on page 6.
Example:
3.7 in (94 mm) = 037.
22.4 in (569 mm) = 224.

For Probe Penetration Lengths between 1.0 and 2.0 inches, counter bore may be required in machine case to reduce probe side view and/or rear view effects.
“C” plus “D” lengths greater than 300 mm (12 in) require additional sleeve support near the probe to prevent resonance from occurring.
Adjustment range of Probe Penetration Option "D" is 13 mm (± 0.5 in). For maximum “C” plus “D” see Table 2, "Maximum Length of C and D


**E: Fittings Option:**

- **0 0** Without fittings
- **0 1** One Explosion-proof fitting and one plug
- **0 2** Two Explosion-proof fittings
- **0 3** One 3/4-14 NPT plug; one 3/4-14 to 1/2-14 NPT reducer; one cable seal grip with grommets for cable sizes: 1/8 to 3/16, 1/4 to 5/16, and 5/16 to 3/8-in
- **0 4** One 3/4-14 NPT plug only

**Note:**

Explosion-proof fittings are available for all housings. However, only CA versions of the housing are rated as explosion-proof by CSA when ordered with the E:00, E:01, E:02, or E:04 options.

**F: Mounting Thread Option:**

- **0 1** As cast, without threads
- **0 2** 3/4-14 NPT (Must be ordered if Standoff Adapter Length Option is not-00.)
- **0 3** 1-11 1/2 NPT
- **0 4** 1/2-14 BSP
- **0 5** 7/8-14 U N F - 2 A

**Note:**

For 21000 and CA21000 housings, Option F must be - 02.

**Accessories**

- **37948-01**
  - Probe Support/Oil Seal
  - Recommended for sleeves longer than 305 mm (12 in).

- **44382-AXXX**
  - Individual Probe Sleeve for 21000/24701

  **Proximity Probe Housings A:**

  Probe sleeve length This is the measured probe sleeve length. Order in increments of 0.1 in (3 mm). Note that 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:

<table>
<thead>
<tr>
<th>AXXX</th>
<th>= Standoff Adapter Option from original housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>045</td>
<td>(21000, CA21000,24701, or CA24701 option C) + probe penetration option from original housing (21000, CA21000, 24701, or CA24701 option D) + 0 4 5.</td>
</tr>
</tbody>
</table>

Example: original part number is 21000-16-10-15-035-03-02. AXXX: option for replacement sleeve is (015 + 035 + 045) = 0 9 5.

<table>
<thead>
<tr>
<th>AXXX</th>
<th>= Standoff Adapter Option from original housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>095</td>
<td>(21000, CA21000,24701, or CA24701 option C) + probe penetration option from original housing (21000, CA21000, 24701, or CA24701 option D) + 0 9 5.</td>
</tr>
</tbody>
</table>

Example: original part number is 24701-31-10-40-053-02-02. AXXX: option for replacement sleeve is (040 + 053 + 096) = 151.

<table>
<thead>
<tr>
<th>AXXX</th>
<th>= Standoff Adapter Option from original housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>(21000, CA21000,24701, or CA24701 option C) + probe penetration option from original housing (21000, CA21000, 24701, or CA24701 option D) + 0 3 7.</td>
</tr>
</tbody>
</table>

Example: original part number is CA24701 -36-10-40-053-02-02. AXXX: option for replacement sleeve is (040 + 053 + 037) = 130.
Housing AXX options for 7200 Series 11 mm probe options (A: 06 or A: 12)

AXXX: = Standoff Adapter Option from original housing (21000, CA21000, 24701, or CA24701 option C) + Probe penetration option from original housing (21000, CA21000, 24701, or CA24701 option D) = 039.

Example: original part number is CA24701-12-10-30-113-01-02. AXXX: option for replacement sleeve is (030 + 113 + 039) = 182.

Minimum Probe Sleeve Length:

For all probes except NSv™ and 11 mm probes: 5.5 in (140 mm) = 0.55
3300 NSv™ Probe: 5.5 in (142 mm) = 056
3300 XL 11 mm probe: 4.7 in (119 mm) = 047

Maximum Probe Sleeve Length:

All 0.5 metre probes except NSv and 11 mm probes: 18.0 in (457 mm) = 180
3300 NSv 0.5 metre probe: 18.1 in (460 mm) = 181
7200-series 0.5 metre 11 mm probe: 15.4 in (391 mm) = 154
All 1.0 metre probes except NSv and 11 mm probes: 33.7 in (856 mm) = 337
3300 NSv 1.0 metre probe: 33.8 in (859 mm) = 338
3300 XL 1.0 metre 11 mm probe: 32.9 in (836 mm) = 329
7200 Series 1.0 metre 11 mm probe: 33.1 in (841 mm) = 331

21003-AXXX

Individual Standoff Adapter:

Order in increments of 0.5 in (13 mm).
Minimum length: 1.5 in = 015 (38 mm).
Maximum length: 7.5 in = 075 (191 mm).

Example: 4.5 in (114 mm) = 045.

Note: For desired probe penetration lengths of less than 25 mm (1.0 in), order a separate Individual Standoff Adapter. The effective probe penetration length will then be reduced by the length of the Individual Standoff Adapter, plus an additional 13 mm (0.5 in) due to the NPT thread engagement.

Example: The customer desires a probe penetration length of 13 mm (0.5 in). To do this, they can order a 21000 housing with DXXX (probe penetration) option of 030 (76 mm [3 in]) and a separate individual standoff adapter that is 51 mm (2.0 in) in length (part number 21003-020). The standoff adapter would cover 38 mm (2.0 in) of the probe sleeve, plus an additional 13 mm (0.5 in). Therefore, the effective probe penetration length would drop to 13 mm (0.5 in). Note: Signal affects due to probe side view and/or rear view of metal components are likely when effective penetration lengths of less than 1.0 inch are used.

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

330105-02-12-CXX-DXX-EXX

C: Total Length Option:

05 0.5 metre (1.6 feet)
10 1.0 metre (3.3 feet)
15 1.5 metre (4.9 feet)
20 2.0 metres (6.6 feet)
50 5.0 metres (16.4 feet)
90 9.0 metres (29.5 feet)

D: Connector Option:

00 Connector not installed
02 Miniature ClickLoc™ coaxial connector

E: Agency Approval Option:

00 Not required
05 Multiple Approvals
Spare 3300 NSV Reverse Mount Probe, 3/8-24 UNF threads
330906-02-12-CXX-DXX-EXX

C: Total Length Option:

0 5 0.5 metre (1.6 feet)
1 0 1.0 metre (3.3 feet)
5 0 5.0 metres (16.4 feet)
7 0 7.0 metres (23.0 feet)

D: Connector Option:

0 0 Connector not installed
0 2 Miniature ClickLoc coaxial connector

E: Agency Approval Option:

0 0 Not required
0 5 Multiple Approvals

Spare 3300 XL 11 mm Reverse Mount Probe, 3/8-24 UNF threads
330705-02-18-CXX-DXX-EXX

C: Total Length Option:

1 0 1.0 metre (3.3 feet)
5 0 5.0 metres (16.4 feet)
9 0 9.0 metres (29.5 feet)

D: Connector Option:

0 0 Without connector
0 2 With miniature male coaxial connector

E: Agency Approval Option:

0 0 Not required
0 5 Multiple Approvals

Tables
Table 1. Part Dimensions in mm (inches)

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>21000</td>
<td>83.3 (3.28)</td>
</tr>
<tr>
<td>24701</td>
<td>78.2 (3.08)</td>
</tr>
</tbody>
</table>

Table 2. Maximum Length of C and D Dimension for Proximity Probes

<table>
<thead>
<tr>
<th>Probe Cable Length</th>
<th>Maximum C &amp; D Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 metre (3300 Series)</td>
<td>343 mm (13.5 in)</td>
</tr>
<tr>
<td>1.0 metre</td>
<td>742 mm (29.2 in)</td>
</tr>
</tbody>
</table>

Table 3. Maximum C and D Dimension with Visible Probe P/N and S/N

<table>
<thead>
<tr>
<th>Probe Cable Length</th>
<th>Maximum C &amp; D Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 metre</td>
<td>Not Visible</td>
</tr>
<tr>
<td>1.0 metre</td>
<td>432 mm (17.0 m)</td>
</tr>
</tbody>
</table>
Figure 1. Proximity Probe Housing Assemblies Dimensions are in millimetres (inches)