9200, 74712 Seismoprobe* Velocity Transducers

Product Datasheet

Bently Nevada* Asset Condition Monitoring

Description

Bently Nevada* Seismoprobe Velocity Transducer Systems are designed to measure absolute (relative to free space) bearing housing, casing, or structural vibration. The two-wire systems consist of a transducer and appropriate cable.

The Seismoprobe family of velocity transducers is a two-wire design that uses moving-coil technology and provides a voltage output directly proportional to the transducer's vibration velocity. Unlike solid-state velocity transducers (which are inherently accelerometers with embedded integration electronics), moving-coil transducers are less sensitive to impact or impulsive excitation, and can represent a good choice for certain applications. Also, because they require no external power, they are convenient for portable measurement applications.

Note: For most installations, Bently Nevada's Velomitor* family of velocity transducers, which incorporate solid-state technology, provide improved performance and ruggedness for casing velocity measurement applications.

Two types of Seismoprobe Velocity Transducer are available:

- **9200:** The 9200 is a two-wire transducer suitable for continuous monitoring or for periodic measurements in conjunction with test or diagnostic instruments. When ordered with the integral cable option, the 9200 has excellent resistance to corrosive environments without need of additional protection.
- **74712:** The 74712 is a high temperature version of the 9200.

Interconnect cables are available for connecting the 9200 and 74712 transducers to other instruments. These cables are available in various lengths with or without stainless steel armor.

The 9200 and 74712 Seismoprobe Velocity Transducers have an approximate six (6) week standard lead time. That lead time can vary based on component availability and configuration, Please contact your local Bently Nevada representative for projected lead times for your specific order.

CAUTION

If you are making housing measurements for overall protection of the machine, consider the usefulness of the measurement for each application. Most common machine malfunctions (imbalance, misalignment, etc.) originate at the rotor and cause an increase (or at least a change) in rotor vibration.

For any housing measurement alone to be effective for overall machine protection, a significant amount of rotor vibration must be faithfully transmitted to the bearing housing or machine casing, or more specifically, to the mounting location of the transducer.

In addition, care should be exercised in the physical installation of the transducer. Improper installation can result in a decrease of the transducer amplitude, degraded transducer amplitude and frequency response, and the generation of signals that do not represent actual machine vibration.

Upon request, we can provide engineering services to determine the appropriateness of housing measurements for the machine in question and to provide installation assistance.

Specifications

Specifications are at approximately +22°C (+72°F) with 25 mm/s (1 in/s) of machine casing vibration at 100 Hz (6000 cpm) with a 10 kΩ load unless otherwise specified.

Electrical

Sensitivity:

20 mV/mm/s (500 mV/in/s), ±5% when properly terminated and oriented at the angle of calibration.

Frequency Response:

From minimum operating frequency (see ordering information) to 1 kHz (60,000 cpm); +0, -3dB typical.

Please contact Bently Nevada LLC. for detailed calibration data.

Dynamic Operating Range:

2.54 mm (0.100 in) peak to peak maximum displacement.

Shock Resistance:

Withstands 50 g peak maximum acceleration along non-sensitive axis.

Transverse Sensitivity:

±10% maximum.

Polarity of Output Signal

Pin A goes positive with respect to Pin B when the transducer case velocity is towards the connector.

Leadwire Length:

305 meters (1,000 feet) maximum between Seismoprobe Velocity Transducer and 3300 or 3500 Monitor. Consult manual for frequency roll-off at longer lengths.

Environmental Limits

Operating and Storage Temperature:

9200: -29°C to +121°C

(-20°F to +250°F).

74712: -29°C to +204°C

(-20°F to +400°F).

Environment:

Dust and moisture resistant.

Note: Contact your Sales Professional regarding transducer operation in a radiation environment.

Relative Humidity:

To 95%, noncondensing.

100%, non-submerged, when ordered with integral cable.

Mechanical

Case and Adapter Material:

Anodized aluminum A204

Gasket Material

9200: Neoprene

74712: Silicone

Connector Material:

Top and Side Mount Options:

Cadmium-plated aluminum, neoprene, and silver-plated copper

Terminal Block Option:

Polyphenylene Sulfide with nickel-plated copper contacts.

Mounting Torque:

½-20, ¼-20, ¼-28, 5/8-18, or M10x1 mounting base options:

5.6 N•m (50 in•lb)

8-32 threaded studs:

1.41 N•m (12.5 in•lb)

Physical

Height:

102 mm (4 in) typical

(depends on connector option).

Diameter:

41 mm (1.6 in) typical.

Weight:

9200 = 300 grams (10.5 ounces) typical.

74712 = 480 grams (17 ounces) typical.

Seismoprobe Velocity Transducer Orientation:

All Seismoprobe Velocity Transducers are specified for mounting orientations as shown in Figure 1.

Compliance and Certifications

Electromagnetic Compatibility

Standards
EN 61326-1 Electrical equipment for measurement, control and laboratory use

European Community Directives
EMC Directive 2014/30/EU

Hazardous Area Approvals

For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

ATEX/IECEx (Agency Approval Option 04)

II 1 G Ex ia IIC T6 Ga
II 3 G Ex nL IIC T6 Gc

T6 @ -20 °C ≤ Ta ≤ +40 °C
(-4 °F ≤ Ta ≤ +104 °F)

Ordering Information

For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

Two-wire Transducer

9200-AXX-BXX-CXX-DXX

A: Transducer Mounting Angle/Minimum Operating Frequency Option

- **0 1** 0 ±2.5, 4.5 Hz (270 cpm)
- **0 2** 45 ±2.5, 4.5 Hz (270 cpm)
- **0 3** 90 ±2.5, 4.5 Hz (270 cpm)
- **0 6** 0 ±100, 10 Hz (600 cpm)
- **0 9** 0 ±180, 15 Hz (900 cpm)

B: Connector/Cable Option

- **0 1** Top Mount (no cable)
- **0 2** Side Mount (no cable)
- **0 5** Terminal block top mount (no cable)
- **1 0 through 5 0**

Integral hardline cable (see Figure 7 for example). Option number corresponds to cable length in feet. Standard cable lengths are shown below. Other cable lengths between 7 feet and 50 feet may be available through custom products. When ordering for hazardous area approvals, the maximum cable length is 32 feet (9.8 metres).

- **1 0** 10 feet (3.0 metres)
- **1 5** 15 feet (4.6 metres)
- **2 2** 22 feet (6.7 metres)
- **3 2** 32 feet (9.8 metres)
- **5 0** 50 feet (15.2 metres)

C: Mounting Base Option

- **0 1** Circular; 1/4-in 20 UNC stud
- **0 2** Circular; 1/4-in 28 UNF stud
- **0 3** Rectangular flange
- **0 4** Circular; with three 8-32 threaded studs on a 44 mm (1.75 in) diameter bolt circle
- **0 5** No base; 1/2-in 20 UNF-3A stud
- **0 6** Isolated circular 1/4-in 20 UNC stud
- **0 7** Isolated circular 1/4-in 28 UNF stud
- **0 8** Isolated rectangular flange
- **0 9** Isolated circular 5/8-in 18 UNF stud
- **1 0** Circular; M10X1 stud
- **1 1** Isolated circular M10X1
- **1 2** Isolated circular ½-in 20 UNF-2A

D: Agency Approval Option

- **0 0** No Approvals
- **0 4** ATEX/IECEx

High-temperature Two-wire Transducer

74712-AXX-BXX-CXX DXX

A: Transducer Mounting Angle/Minimum Operating Frequency Option

- **0 1** 0 ±2.5, 4.5 Hz (270 cpm)
- **0 2** 45 ±2.5, 4.5 Hz (270 cpm)
- **0 3** 90 ±2.5, 4.5 Hz (270 cpm)
- **0 6** 0 ±100, 10 Hz (600 cpm)
- **0 7** 0 ±180, 15 Hz (900 cpm)

B: Mounting Base Option

- **0 1** Circular; 1/4-in 20 UNC stud
- **0 2** Circular; 1/4-in 28 UNF stud
- **0 3** Rectangular flange
- **0 4** Circular base with three 8-32 studs
- **0 5** No base; 1/2-in 20 UNF-3A stud
- **0 6** Isolated circular ¼-in 20 UNC-2B
- **0 7** Isolated circular ¼-in 28 UNF-2B
- **0 8** Isolated rectangular flange
- **0 9** Isolated circular 5/8-in 18 UNF-2A
- **1 0** Circular M10X1
- **1 1** Isolated circular base M10X1
- **1 2** Isolated circular base ½-in 20

C: Connector Option

- **0 2** Top mount
- **0 3** Terminal block top mount
- **0 4** Side mount

D: Agency Approval Option

- **0 0** No Approvals
- **0 4** ATEX/IECEx

Interconnect Cables

Standard Cables

9571

2-conductor twisted, shielded 22 AWG (0.5 mm^2) cable with 2-socket moisture-resistant female connector at one end, terminal lugs at the other end. (Used with monitors or vibration data collectors). Minimum length of 2.0 ft (0.6 m), maximum length of 99 ft (30 m).

84661

2-conductor twisted, shielded 22 AWG (0.5 mm^2) armored cable with 2-socket moisture-resistant female connector at one end, terminal lugs at the other end. (Used with monitors or vibration data collectors). Minimum length of 3.0 ft (0.9 m), maximum length of 99 ft (30 m).

9755

2-wire shielded 22 AWG (0.5 mm^2) cable with 2-pin female connectors at each end. (Connects 9200 or 74712 Seismoprobe Velocity Transducers to Bently Nevada test kits). Minimum length of 1.0 ft (0.3 m), maximum length of 99 ft (30 m).

83968

2-wire straight cable with 2-pin female connector at one end and coaxial connector in the other end (used with instruments with BNC connector input jacks). Minimum length of 2.0 ft (0.6 m), maximum length of 99 ft (30 m).

High-Temperature cables

84508

2-wire shielded 22 AWG (0.5 mm^2) cable with terminal lugs at each end. Minimum length of 1.0 ft (0.3 m), maximum length of 99 ft (30 m).

84509

2-wire shielded 22 AWG (0.5 mm^2) armored cable with terminal lugs at each end. Minimum length of 3.0 ft (0.9 m), maximum length of 70 ft (21 m).

84660

2-wire shielded 22 AWG (0.5 mm^2) cable with 2-socket female connector at one end, terminal lugs at the other end. Minimum length of 3.0 ft (0.9 m), maximum length of 99 ft (30 m).

84510

2-wire shielded 22 AWG (0.5 mm^2) armored cable with 2-socket female connector at one end, terminal lugs at the other end. Minimum length of 3.0 ft (0.9 m), maximum length of 70 ft (21 m).

87143

2-wire shielded 18 AWG (1.0 mm^2) cable with terminal lugs at each end. Withstands 200 °C (392 °F). Minimum length of 3.0 ft (0.9 m), maximum length of 99 ft (30 m).

Cable

The following are standard lengths	
Feet	**Meters (approx.)**
6	1.8
8	2.4
10	3.0
12	3.6
15	4.5
17	5.0
20	6.0
25	7.6
30	9.0
33	10.0
50	15.2
99	30.0
NOTE: Non-standard/custom lengths can also be ordered at additional cost	

Part Number-AXX

A: Cable Length Option in feet

For all the above cables, order in increments of 1.0 ft (305 mm).

Example

0 9 = 9 ft

1 2 = 12 ft

Accessories

80705-01

Coiled 2-conductor cable with 2-pin connector at one end and BNC connector at the other end (used with instruments with BNC connector input jacks). Coiled length of 0.5 metre (19.6 inches), stretched length of 2 metres (6.5 feet).

46000-01

Magnetic Base for portable mounting of Seismoprobe Velocity Transducers.

46122-01

Quick connect for semi-permanent mounting of Seismoprobe Velocity Transducers.

02173006

Bulk cable; 2-conductor, twisted, shielded. 18 AWG (1.0 mm^2) cable without connectors or terminal lugs. Specify number of feet. Withstands +200°C (+392°F).

00531061

Mating connector for 9200 and 74712 Seismoprobe Velocity Transducers.

00530574

Cable Mounting Clamp

Graphs and Figures...

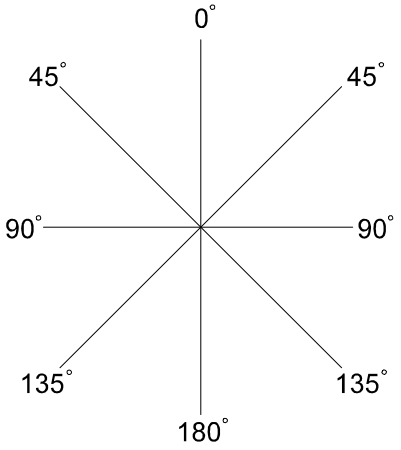

Figure 1: Seismoprobe Orientation

All Seismoprobe Velocity Transducers are specified for mounting orientations as shown above. 0° is vertical, as viewed from driver end of the monitored machine.

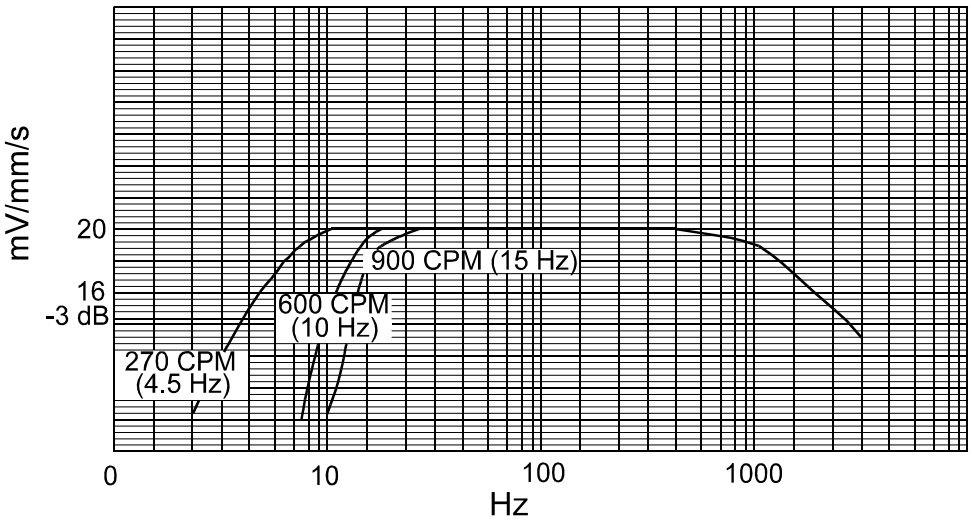

Figure 2: Theoretical Velocity Seismoprobe Frequency Response

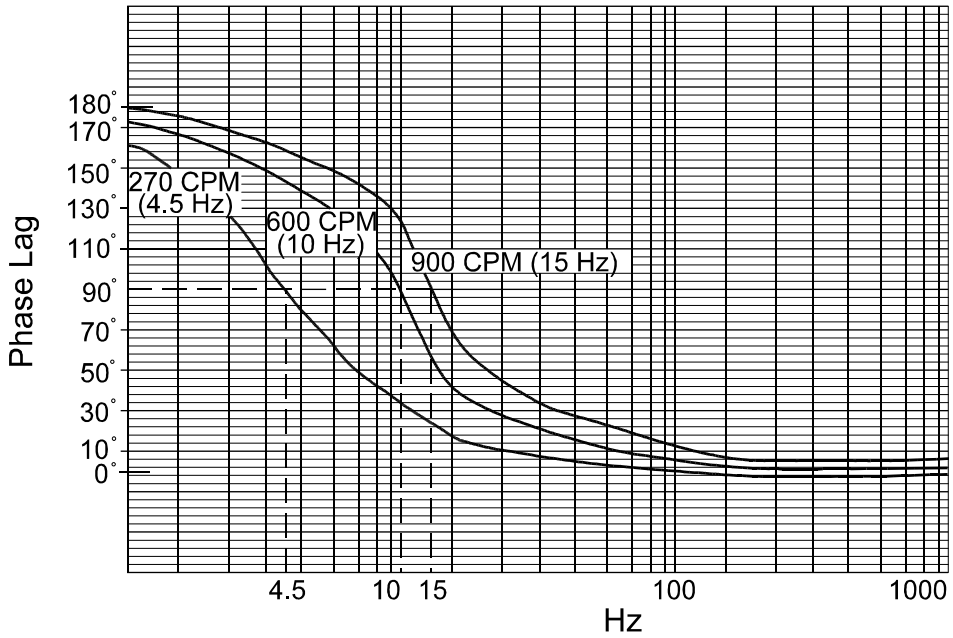

Figure 3: Theoretical Phase Shift between Output and Case Velocity

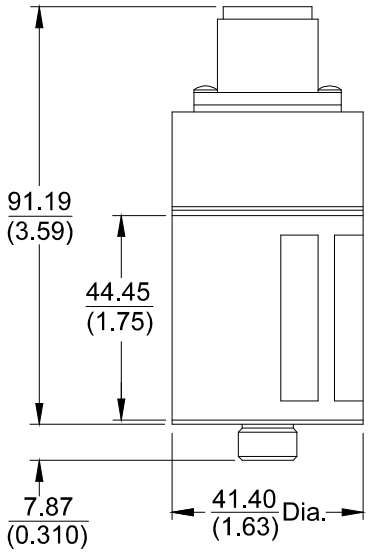

Figure 4: Top Mounted Connector
(9200 Option B-01 or 74712 Option C-02)

Note: All dimensions are shown in millimeters (inches)

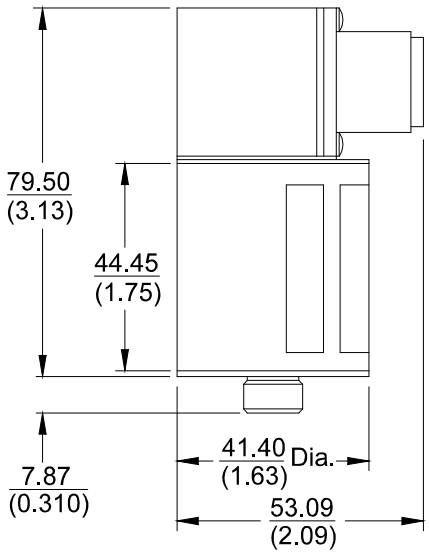

Figure 5: Side Mounted Connector
(9200 Option B-02 or 74712 Option C-04)

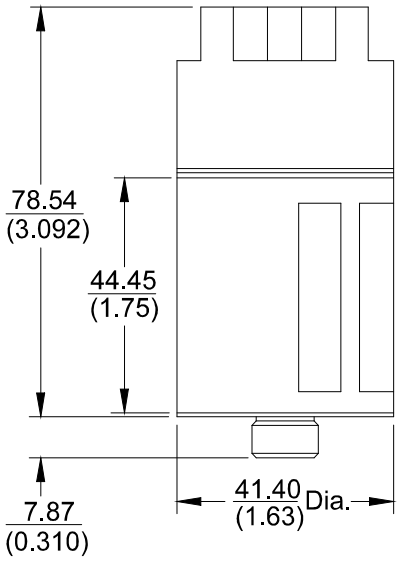

Figure 6: Terminal Block Connector
(9200 Option B-05 or 74712 Option C-03)

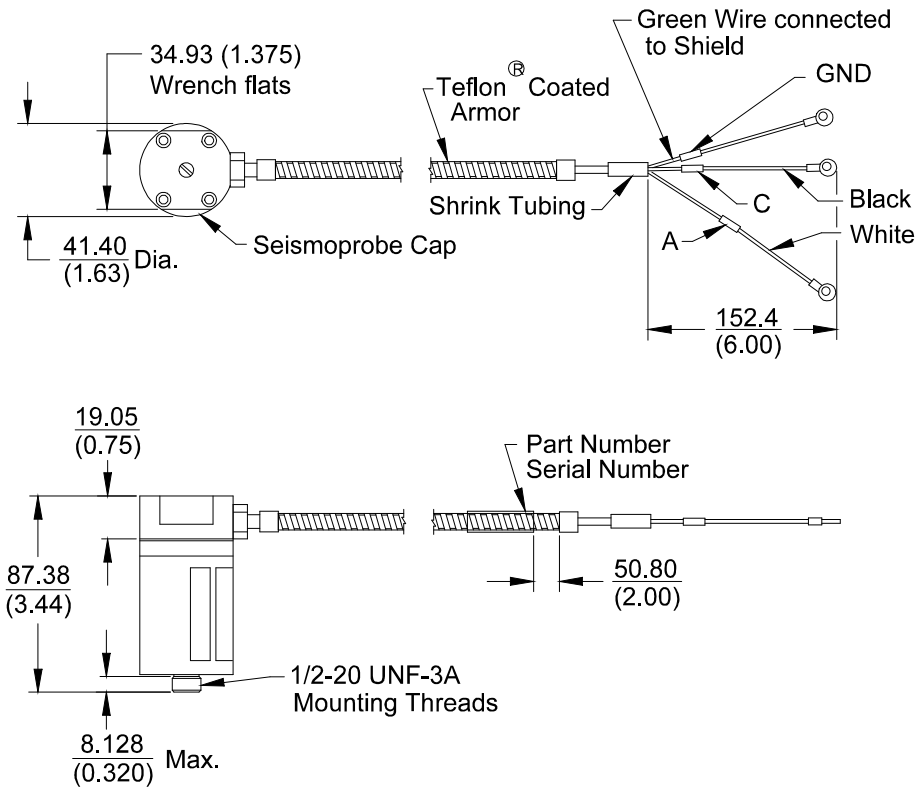

Figure 7: 9200 Standard Integral Cable Options B-10 through B-50

Integral cable is not available with the 74712 High Temperature Seismoprobe.

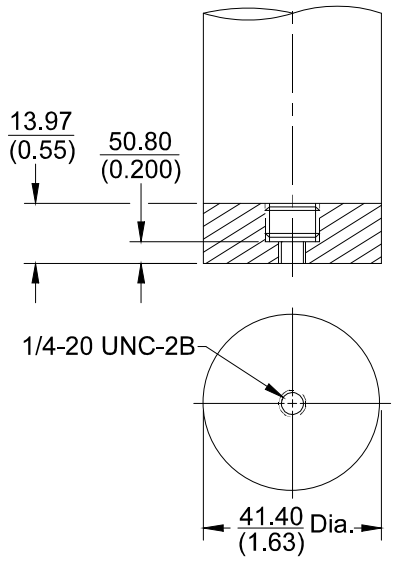

Figure 8: 9200 (C) and 74712 (B) Mounting Base

Option -01 Circular base for 1/4-20 UNC-2B stud, or
Option -06 Isolated circular base for 1/4-20 UNC-2B stud

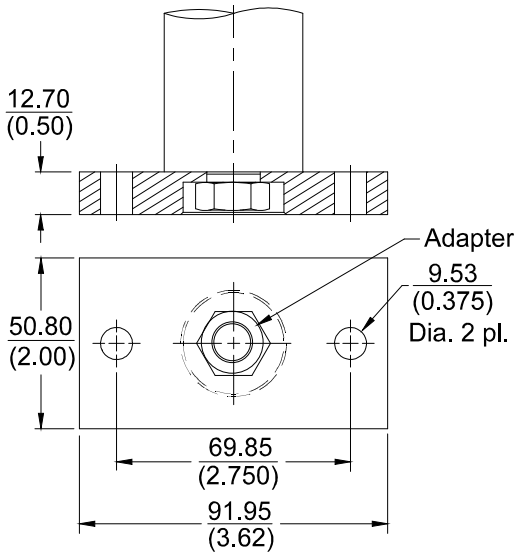

Figure 9: 9200 (C) and 74712 (B) Mounting Base
Option -03 Rectangular Flange, or
Option -08 Isolated Rectangular Flange

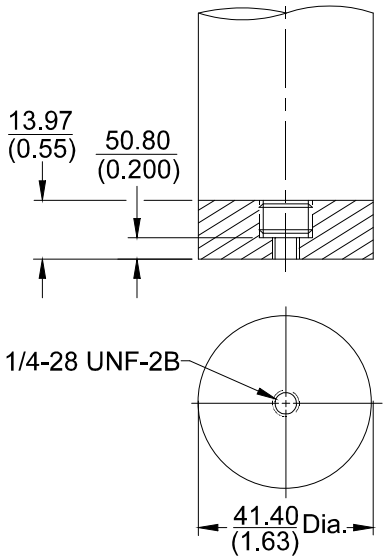

Figure 10: 9200 (C) and 74712 (B) Mounting Base
Option -02 Circular base for 1/4-28 UNF-2B stud, or
Option -07 Isolated circular base for 1/4-28 UNF-2B stud

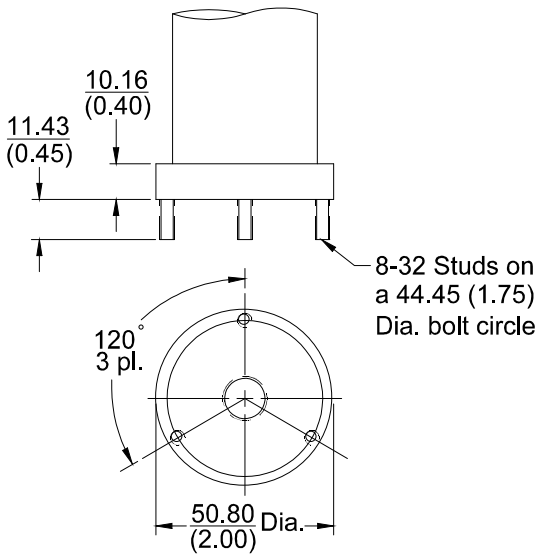

Figure 11: 9200 (C) and 74712 (B) Mounting Base
Option -04: Circular base with three 8-32 studs

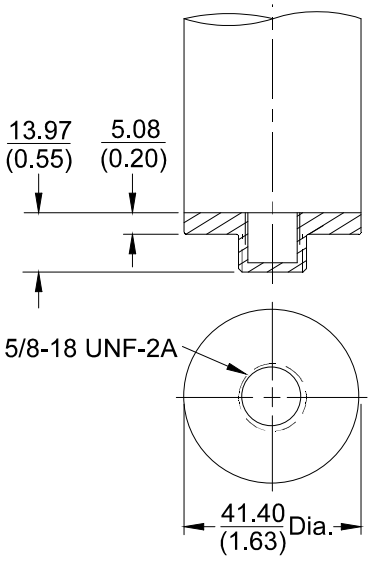

Figure 12: 9200 (C) and 74712 (B) Mounting Base
Option -09 Isolated circular base with 5/8-18 UNF-2A stud

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