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Find the *GE / Bently Nevada 330500-03-00* at our website: *Click HERE*

330500 Velomitor* Piezo-velocity Sensor

Bently Nevada* Asset Condition Monitoring



Description

Velomitor* Piezo-velocity Sensors measure absolute (relative to free space) bearing housing, casing, or structural vibration. Unlike moving-coil velocity transducers, such as the Bently Nevada Seismoprobe* family of velocity transducers, Velomitor Piezo-velocity sensors are specialized piezoelectric accelerometers that incorporate embedded integrated electronics in a solid-state design. Because they incorporate solid-state electronics and have no moving parts, they do not suffer from mechanical degradation and wear, and can be mounted vertically, horizontally, or at any other angle of orientation.

Application Advisory

If you plan to make housing measurements for overall machine protection, 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 to be effective for overall machine protection, the machine must faithfully transmit a significant amount of rotor vibration to the bearing housing or machine casing, or more specifically, to the mounting location of the transducer. In addition, you should exercise care in the physical installation of the transducer. Improper installation can degrade the transducer's performance, and/or generate signals that do not represent actual machine vibration. Integration of the output to displacement can make this worse. Exercise extreme caution if integrating to displacement *in any case*.

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

imagination at work

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Specifications

Parameters are specified from +20 °C to +30 °C (+68 °F to +86 °F) and at 100 Hz unless otherwise indicated.

Note: Operation outside the specified limits may result in false readings or loss of machine monitoring.

Electrical

Sensitivity

3.94mV/mm/s (100 mV/in/s) ±5%.

Frequency Response

4.5 Hz to 5 kHz (270 cpm to 300 kcpm) ±3.0 dB.

6.0 Hz to 2.5 kHz (360 cpm to 150 kcpm) ±0.9 dB.

Temperature Sensitivity

-14% to +7.5% typical over the operating temperature range.

Velocity Range

1270 mm/s (50 in/s) peak.

Transverse Sensitivity

Less than 5% of sensitivity.

Amplitude Linearity

±2% to 152 mm/s (6 in/s) peak.

Mounted Resonant Frequency

Greater than 12 kHz.

Broadband Noise Floor (4.5 Hz to 5 kHz)

0.004 mm/s (160 µin/s) rms, nominal

Maximum Cable Length

305 metres (1,000 feet) of cable, part number 02173006, with no degradation of signal.

Hazardous Area Approvals

Multiple approvals for hazardous areas certified by Canadian Standards Association (CSA) in North America and by LCIE in Europe.

North America

Ex ia IIC T4
AEx ia IIC T4
Class I, Div 1, Groups A, B, C, D
Class II, Groups E, F, G
Class III
when installed per dwg 167537
T4 @ -40°C ≤ Ta ≤ 100°C
Ex nL IIC T4
AEx nA IIC T4
Class I, Div 2, Groups A, B, C, D
when installed per dwg 167537
T4 @ -40°C ≤ Ta ≤ 100°C

European/ATEX

II 1 G
Ex ia IIC T4 Ga
T4 @ -55°C ≤ Ta ≤ 121°C

II 3 G
Ex nA IIC T4 Gc
T4 @ -55°C ≤ Ta ≤ 121°C

IECEx

Ex ia IIC T4 Ga
Ex nA IIC T4 Gc

T4 @ -55°C ≤ Ta ≤ 121°C

Brazil

Ex ia IIC T4 Ga
T4 @ -40°C ≤ Ta ≤ 100°C

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Environmental Limits

Operating Temperature Range

−55 °C to +121 °C (−67 °F to +250 °F).

Shock Survivability

5000 g peak, maximum

Relative Humidity

To 100% non-submerged; case is hermetically-sealed.

Base Strain Sensitivity

0.005 in/s/μstrain.

Magnetic Field Susceptibility

<51 μin/s/gauss (50 gauss, 50-60Hz).

Physical

Weight

142 grams (5.0 oz), typical.

Diameter

25.3 mm (0.995 in).

Height

63.2 mm (2.49 in).

Case Material

316L stainless steel.

Connector

2-pin Mil-C-5015 hermetically-sealed, 316L stainless steel shell.

Mounting Torque

46 kg cm (40 in-lb) max.

Polarity

Pin A goes positive with respect to pin B when the sensor case motion is toward the connector.

Ordering Information

Velomitor Piezo-velocity Sensor

330500-AXX-BXX

A: Mounting Thread Adapter Option

0 0	No adapter
0 1	1/2 - 20 UNF
0 2	M8 x 1
0 3	1/4 - 28 UNF
0 4	1/4 - 20 UNC
0 5	Unavailable for 330500. For 1/4-18 NPT mounting, order 330525.
0 6	5/8 – 18 UNF
0 7	3/8 – 16 UNC
0 8	1/2 – 13 UNC

B: Agency Approval Option

0 0	Not required
0 1	CSA/US/C
0 2	ATEX (European)
0 4	Multiple approvals (CSA, ATEX)

Note: Country specific approvals may be available. Contact your local customer care representative.

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Interconnect Cables

AXX

A: Cable length Option in feet

For the cables listed below, order in increments of 1.0 ft (305 mm).

Example: **0 9** = 9 ft

1 2 = 12 ft

The following are standard lengths	
Feet	**Metres (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	

9571

2-conductor twisted, shielded 22 AWG cable with 2-socket moisture-resistant female connector at one end, terminal lugs at the other end.

Used with monitors. Not for use with 21128 Velocity Transducer Housing.

Minimum length: 2.0 ft (0.6 m)

Maximum length: 99 ft (30 m)

84661

2-conductor twisted, shielded 22 AWG armored cable with 2-socket moisture-resistant female connector at one end, terminal lugs at the other end.

Used with monitors. Not for use with 21128 Velocity Transducer Housing.

Minimum length: 3.0 ft (0.9 m)

Maximum length: 96 ft (29 m).

89477

2-conductor 18 AWG twisted, shielded cable with right angle 2-socket plug at one end, terminal lugs at the other end.

Used with monitors and with 21128 Velocity Transducer Housing.

Minimum length: 2.0 ft (0.6 m)

Maximum length: 99 ft (30 m).

125065

2-conductor 18 AWG twisted, shielded cable with 2-socket plug and fluorosilicone elastomer boot at one end, terminal lugs at the other.

Used with monitors. Not for use with 21128 Velocity Transducer Housing.

Minimum length: 2.0 ft (0.6 m)

Maximum length: 99 ft (30 m).

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Velocity Transducer Housing Assembly

21128-AXX-BXX

A: Mounting Thread Option

0 1	Unthreaded
0 2	3/4 - 14 NPT
0 3	1/2 - 14 NPT
0 4	1/2 - 12 BSP

B: Cable Exit Fitting Option

0 1	1/2 - 14 NPT plug
0 2	1/2 -14 NPT explosion-proof
0 3	1/2 -14 NPT explosion-proof with cable gland seal

Note: When using the 21128 housing, cable part number 89477-AA is necessary to connect the Velomitor Sensor to a monitor.

Velocity Transducer Housing – CENELEC approved

107770-AXX-BXX

This version is a combination of the 330500 Velomitor Sensor and a 21128 Housing **pre-installed** at the factory. It is also rated for CENELEC Zone 1, Group IIC hazardous area applications.

A: Mounting Thread Option

0 1	Unthreaded
0 2	3/4 - 14 NPT
0 3	1/2 - 14 NPT
0 4	1/2 - 14 BSP

B: Cable Exit Fitting Option

0 1	1/2 - 14 NPT plug
0 2	1/2 - 14 NPT explosion-proof
0 3	1/2 - 14 NPT explosion-proof with cable gland seal

Accessories

100076-01

330500 Velomitor Sensor and Velomitor XA Sensor Manual.

02173006

Bulk cable; 2 conductor 18 AWG twisted, shielded cable without connectors or terminal lugs. Specify number of feet.

46000-01

Magnetic Base for temporary mounting of Velomitor Sensors. Used with 1/4 - 28 UNF mounting thread adapters.

46122-01

Quick Connect for semi-permanent mounting of Velomitor Sensors. Used with 1/2 - 20 UNF mounting thread adapters.

89409-01

Individual 1/2 - 20 UNF mounting adapter.

89410-01

Individual M8 x 1 mounting adapter.

89411-01

Individual 1/4 - 28 UNF mounting adapter.

89412-01

Individual 1/4 - 20 UNC mounting adapter.

89413-01

Individual 1/4 - 18 NPT mounting adapter. Spares only. For new installations, order 330525 velometer.

04300015

Individual 5/8 - 18 UNF mounting adapter.

161191

Individual 1/2 - 13 UNC mounting adapter.

Note: The Velomitor Sensor is shipped with an adapter. Individual adapters are available as spares.

101212-01

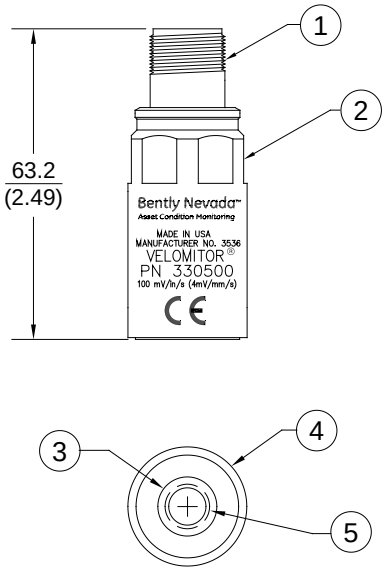
Velomitor Sensor connector kit. Used with housings and retrofits.

123135-01

Velomitor Sensor Power Module.

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Graphs and Figures



1. 2-pin, MIL-C-5015 receptacle
2. 15/16 inch hexagonal
3. 12.7 (0.500) diameter, 0.8 (0.030) deep counterbore
4. 25.3 (0.995) diameter
5. 3/8-24 UNF-2B, 6.4 (0.250) minimum threaded depth, 14.0 (0.550) maximum drill depth

Figure 1: Velomitor Piezo-Velocity Sensor Dimensional Drawing

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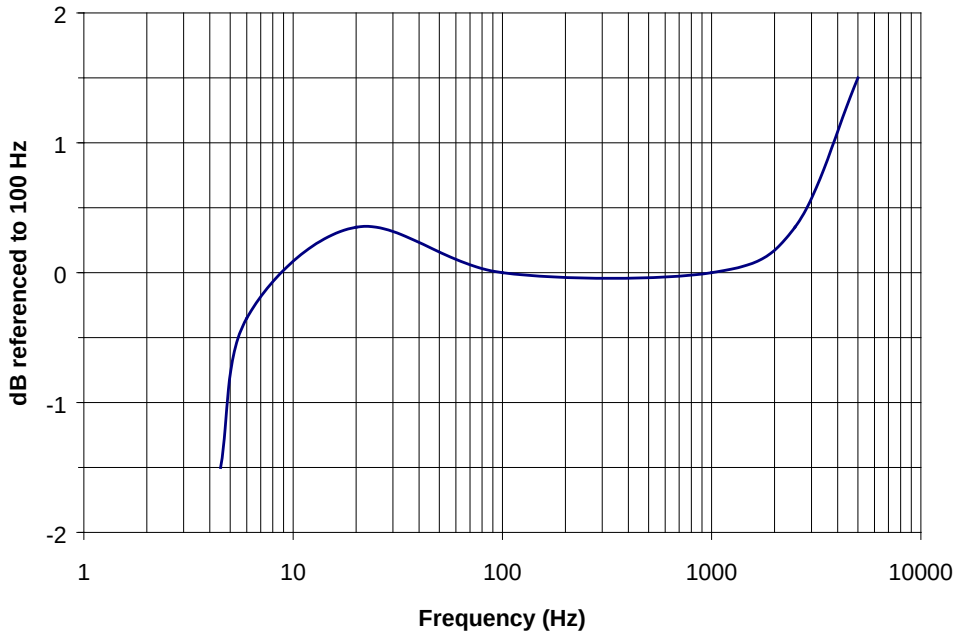


Figure 2: Typical Amplitude Response

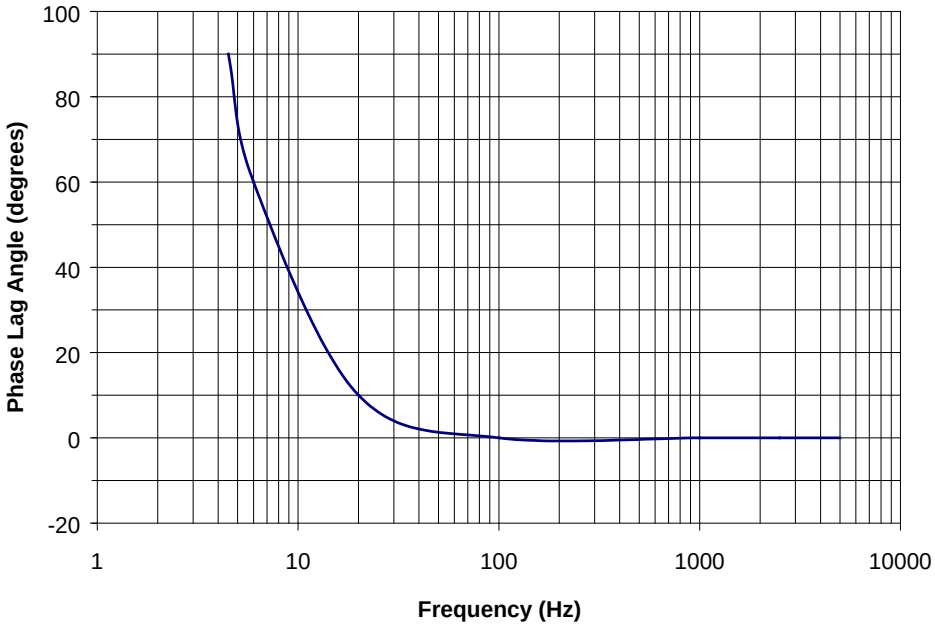


Figure 3: Typical Phase Response

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