330400 and 330425 Accelerometer Acceleration Transducers

Datasheet

Cordant™

141638 Rev. AB



Description

These accelerometers are intended for critical machinery applications where casing acceleration measurements are required, such as gear mesh monitoring. The 330400 is designed to address the requirements of American Petroleum Institute Standard 670 for accelerometers. It provides an amplitude range of 50 g peak and a sensitivity of 100 mV/g. The 330425 is identical except it provides a larger amplitude range (75 g peak) and a sensitivity of 25 mV/g.

Most common machine malfunctions (unbalance, misalignment, etc.) occur on the rotor and originate as an increase (or at least a change) in rotor vibration. For any individual casing measurement to be effective for overall machine protection, the system must continually transmit a significant amount of rotor vibration to the machine casing, or mounting location of the transducer.

In addition, be careful to install the accelerometer transducer on the bearing housing or machine casing. Improper installation may decrease the transducer amplitude and frequency response and/or generate false signals that do not represent actual vibration. Refer to the appropriate instruction manuals and Application Notes.

Upon request, Bently Nevada provides engineering services that can identify the appropriate machine housing measurements and installation assistance if needed.

Baker Hughes

Specifications

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

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

Electrical

330400

Sensitivity	10.2 mV/m/s2 (100 mV/g) ±5%.
Acceleration range	490 m/s2 (50 g) peak overall acceleration within the 10 Hz to 15 kHz frequency span. Vibration at frequencies above 15 kHz, especially at the transducers resonance will significantly decrease this range.
Amplitude Linearity	±1% to 490 m/ s2 (50 g) peak.
Broadband Noise Floor (10 Hz to 15 kHz)	0.039 m/s2 (0.004 g) rms.

330425

Sensitivity	2.5 mV/m/s2 (25 mV/g) ±5%.
Acceleration Range	735 m/s2 (75 g) peak overall acceleration within the 10 Hz to 15 kHz frequency span. Vibration at frequencies above 15 kHz, especially at the transducer's resonance, will significantly decrease this range.
Amplitude Linearity	±1% to 735 m/s2 (75 g) peak.
Broadband Noise Floor (10 Hz to 15 kHz)	0.098 m/s2 (0.01 g) rms.

Both Units

Frequency Response	10 Hz to 15 kHz (600 cpm to 900,000 cpm) ±3dB; 30 Hz to 10 kHz (1800 cpm to 600,000 cpm) ±10%
Temperature Sensitivity	-11% to +3% typical over the operating temperature range.
Transverse Sensitivity	Less than 5% of axial.
Mounted Resonant Frequency	Greater than 30 kHz.
Amplitude of Resonant Peak	20 dB maximum.
Base Strain Sensitivity	
For serial numbers preceded by the letter "G" (including all new sensors	49 mm/s²/mstrain (0.005 g/mstrain)
For serial numbers NOT preceded by the letter "G" (shipped prior to April 2004)	980 mm/s²/mstrain (0.100 g/mstrain) without Mounting Base (API adapter); 4.9 mm/s²/mstrain (0.0005 g/mstrain) with Mounting Base (API adapter) supplied with the accelerometer. For units bearing serial numbers NOT preceded by the letter "G", Bently Nevada recommends installing with the Mounting Base to minimize base strain sensitivity.
Maximum cable length	305 metres (1000 ft) with no degradation of signal.
Power requirements	
Input Voltage	-24 ± 0.5 Vdc.
Bias Current	2 mA nominal.
Output Bias Voltage:	-8.5 ± 0.5 Vdc.
Grounding	Case isolated.

Environmental Limits

Operating and storage temperature	-55°C to +121°C (-67°F to +250°F)
Shock Survivability	49,050 m/s2 (5000 g) peak, maximum.
Relative humidity	100% condensing, non-submerged. Case is hermetically sealed.
Magnetic Field Susceptibility	<2.21 mm/s2/gauss (225 mg/gauss) [50 gauss, 50-60Hz].
IP Rating	Equivalent to an IP 68 (Dust tight and watertight). Please note that this is for the sensor only and does not apply to the cable.
Maximum Use Altitude	2000 meters above sea level
Outdoor Use	Standard installation for these sensors is in a protected enclosure with wiring protected in conduit. Splash boots can be added for additional protection if needed by customer's requirements.

Physical

Weight (no cable)	99 g (3.5 oz), typical
Diameter	23 mm (0.93 in).
Height	59 mm (2.3 in), including mounting stud.
Connector	3-pin MIL-C-5015 Receptacle 316L stainless steel
Mounting Surface	32 minch rms.
Mounting Torque	4.1 N·m (3.0 ft·lb).
Case Material	316L stainless steel
Weight (no cable)	100 g (3.5 oz), typical
Mounting Angle	Any orientation

16710	3-conductor shielded 22 AWG (0.5 mm^2) armored cable with 3-socket plug 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).

Accessories

127088	330400 and 330425 Accelerometer User Guide
00531080	Mating connector for 330400 and 330425 Accelerometers.
37439-01	For use with serial numbers NOT preceded with the letter “G”. Mounting Base, ¼-28 to ¼-28. Reduces base strain sensitivity.
37439-02	For use with serial numbers NOT preceded with the letter “G”. Mounting Base, M8X1 to M8X1. Reduces base strain sensitivity.
43217	Accelerometer Mounting Kit used with extension part number 108576-01 and O-ring part number 04290422 to allow room for the 330400 or 330425 accelerometer. (See separate datasheet, document 141630.)

Graphs and Figures

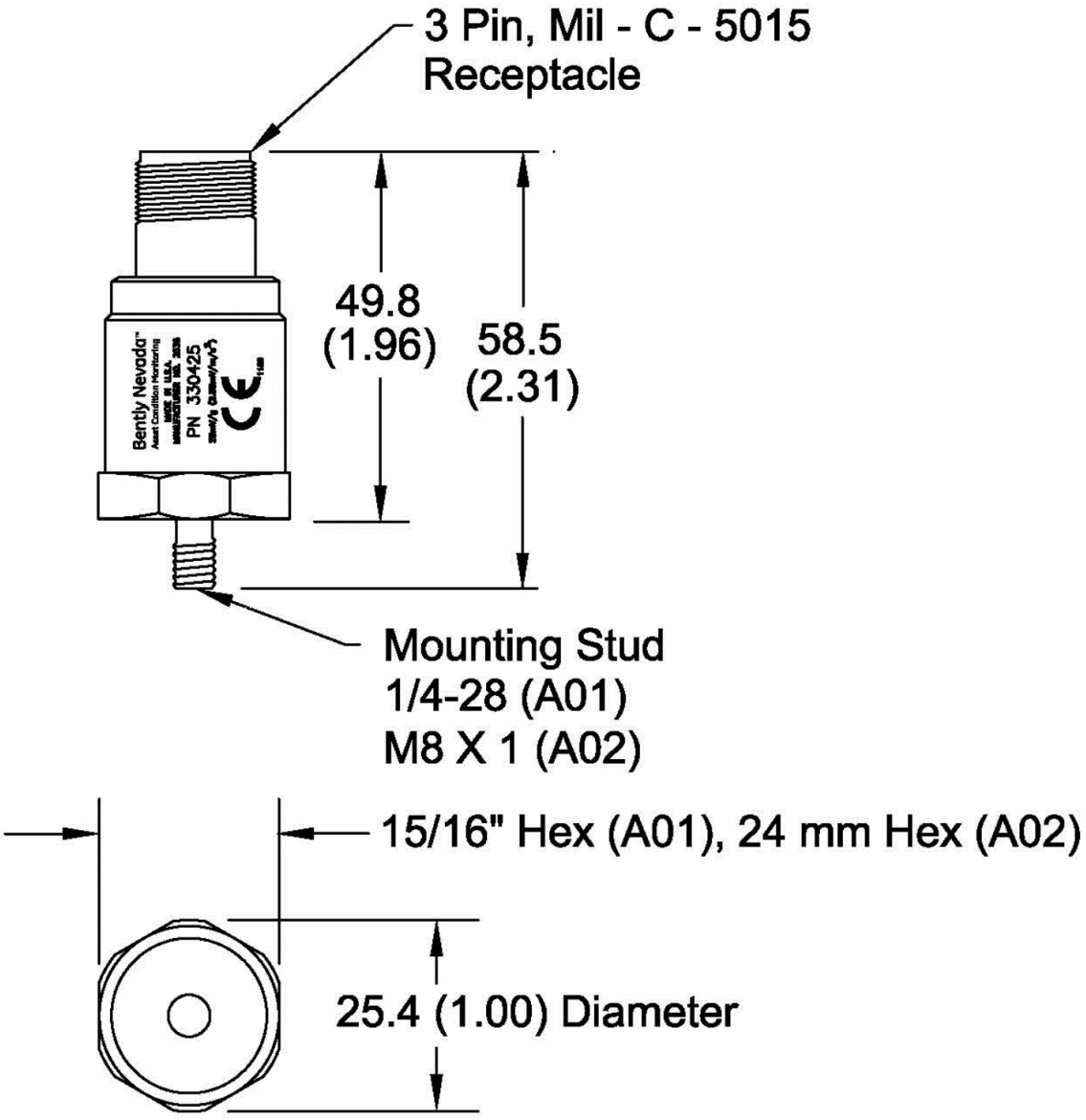


Figure 1: Acceleration Transducer Dimensional Drawing

Dimensions are in millimetres (inches)

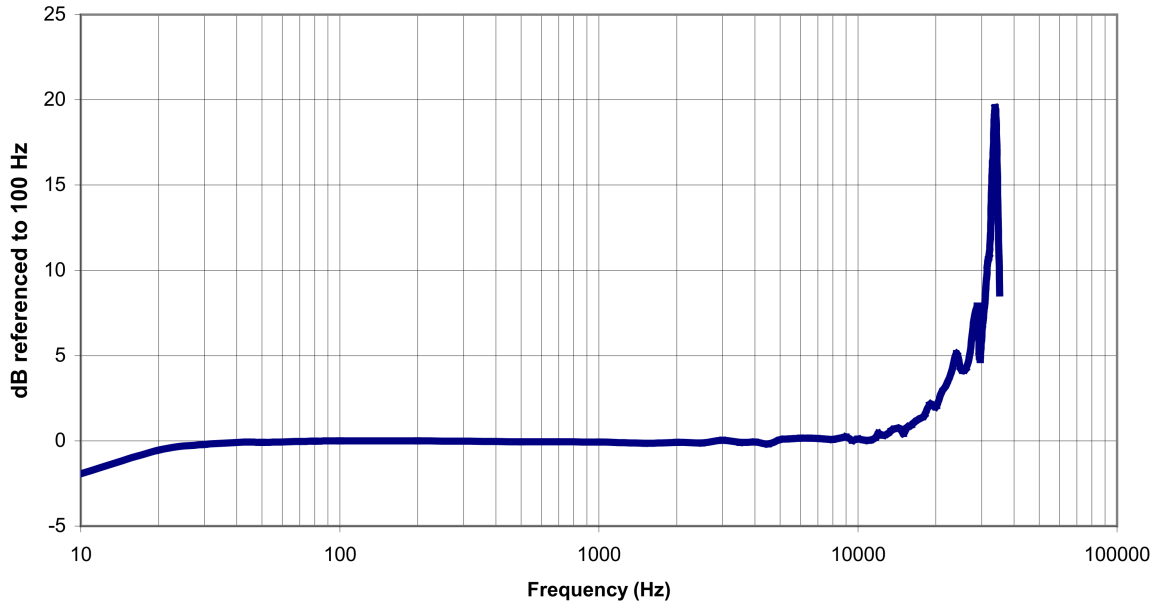


Figure 2: Typical Amplitude Response

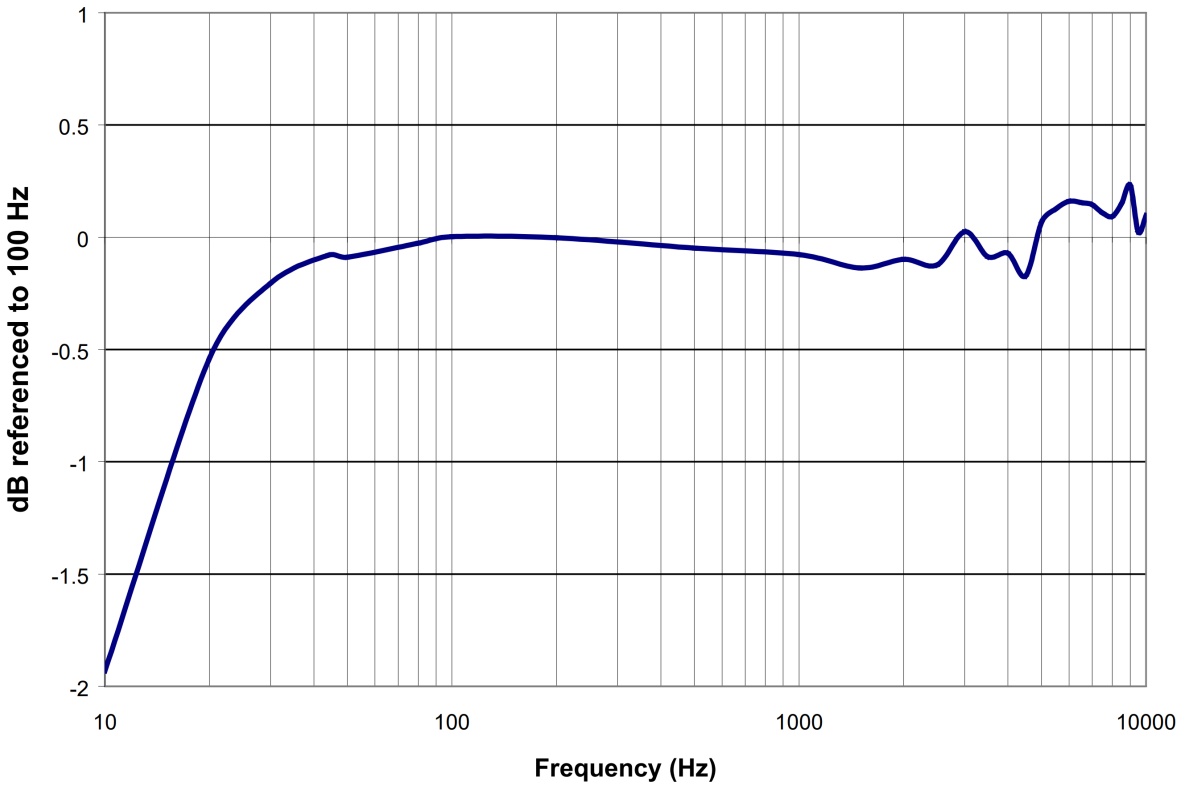


Figure 3: 10 – 10,000 Hz Typical Amplitude Response Detail