330400 and 330425 Accelerometer Acceleration Transducers

Bently Nevada* Asset Condition Monitoring



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.

Caution

If housing measurements are being made for overall protection of the machine, thought should be given to 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. In order 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 degradation of the transducer's performance, and/or the generation of signals which do not represent actual machine vibration. Integration of the output to velocity can worsen this. Extreme caution should be exercised if integrating to velocity. For high quality velocity measurements the 330500 Velomitor* Sensor should be used.

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.



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Specifications

Parameters are specified from +20 to +30 °C (+68 to +86 °P) and 100 Hz unless otherwise indicated. Note: Operation outside the specified limits may result in false readings or loss of machine monitoring. Electrical 330400 Sensitivity: 10.2 mV/m/s ² (100 mV/g) ±5%. Acceleration range: 490 m/s ² (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. 41% to 490 m/ s ² (50 g) peak. Broadband Noise Floor (10 Hz to 15 kHz): 600 cpm to 600,000 cpm) ±10 Temperature Sensitivity: 41% to 490 m/ s ² (50 g) peak. Broadband Noise Floor (10 Hz to 15 kHz]: 6039 m/s2 (0.004 g) rms. 330425 Sensitivity: 2.5 mV/m/s ² (25 mV/g) ±5%. Acceleration Range: 735 m/s ² (75 g) peak overall acceleration within the 10 Hz to 15 kHz frequency span. Vibration at f	Parameters are specified from +20 to +30 °C (+68 to +86 °F) and 100 Hz unless otherwise indicated. Note: Operation outside the specified limits may result in false		Broadband Noise Floor (10 Hz to 15 kHz):	
Note: Operation outside the specified limits may result in folse readings or loss of machine monitoring. 0.098 m/s ² (0.01 g) rms. Electrical 330400 Sensitivity: 10.2 mV/m/s ² (100 mV/g) ±5%. Acceleration range: 10.12 mV/m/s ² (100 mV/g) ±5%. Acceleration autside the specified limits may result in folse 10 Hz to 15 kHz 400 m/s ² (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. -11% to +3% typical over the operating temperature range. #1% to 490 m/s ² (50 g) peak. Mounted Resonant Peak. Broadband 0.039 m/s2 (0.004 g) rms. Sensitivity: Greater than 30 kHz. 330425 20 dB maximum. Sensitivity: 20 dB maximum. asses Strain Sensitivity: 20 dB maximum. 2.5 mV/m/s ² (25 mV/g) ±5%. Sensitivity: Acceleration Range: 735 m/s ² (75 g) peak overall acceleration within the 10 Hz to 15 kHz, frequency span. Vibration at frequencies above 15 kHz, frequency span. Sensitivity: *1% to 490 m/s ² (50 g) peak overall acceleration within the 10 Hz to 15 kHz! Greater than 30 kHz. 330425 20 dB maximum. Base Strain Seconant Peak: 20 dB maximum.				
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49 mm/s²/µstrain (0.005 resonance, will significantly g/µstrain) decrease this range.	Amplitude	resonance, will significantly decrease this range.		49 mm/s²/µstrain (0.005 g/µstrain)

Linearity:

±1% to 735 m/s2 (75 g) peak.

Specifications and Ordering Information Part Number 141638-01 Rev. V (08/14)

For serial numbers

NOT preceded by the letter "G" (shipped prior to April 2004):

> 980 mm/s²/µstrain (0.100 g/µstrain) without Mounting Base (API adapter);

4.9 mm/s²/µstrain (0.0005 g/µstrain) with Mounting Base (API adapter) supplied with the accelerometer.

Note: Bently Nevada recommends installing with the Mounting base to minimize base strain sensitivity for serial numbers NOT preceded by the letter "G".

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.

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, and G Class III When installed per dwg 167538 T4 @ -40°C \leq Ta \leq 100°C Ex nL IIC T4 AEx nA IIC T4 Class I, Div 2 Groups A, B, C & D When installed per dwg 167538 T4 @ -40°C \leq Ta \leq 100°C

European/ATEX

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



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 \leq Ta \leq 121^{\circ}C

BRAZIL

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

Country specific approvals may be available. Please consult your local Customer Care Representative for more information.

Compliance and Certification

Physical Weight (no cable): EMC Standards: 99 g (3.5 oz), typical EN 61326-2-1 Test configurations, **Diameter:** operational conditions and performance criteria for sensitive 23 mm (0.93 in). test and measurement equipment Height: for EMC unprotected applications 59 mm (2.3 in), including EN 61326-2-3 Test configuration, mounting stud. operational conditions and performance criteria for Connector: transducers with integrated or 3-pin MIL-C-5015 Receptacle remote signal conditioning 316L stainless steel **European Community Directives: Mounting Surface:** EMC Directive 2004/108/EC 32 µinch rms. Mounting torque: 4.1 N•m (3.0 ft•lb). **Environmental Limits** Case material: Operating and 316L stainless steel storage Weight (no temperature: cable): -55°C to +121°C (-67°F to +250°F) 100 g (3.5 oz), typical Shock Mounting angle: Survivability: Any orientation 49,050 m/s² (5000 g) peak, maximum. **Ordering Information** Relative humidity: 330400 Accelerometer 330400-AA-BB 100% condensing, nonsubmerged. Case is hermetically 330425 Accelerometer sealed. 330425-AA-BB **Magnetic Field** Susceptibility: A: Mounting Thread Option 01 1/4-28 UNF integral stud <2.21 mm/s²/gauss (225 02 M8 X 1 integral stud µg/gauss) [50 gauss, 50-60Hz]. B: Agency Approval Option 00 **IP Rating:** None 05 Multiple approvals (CSA, ATEX, Equivalent to an IP 68 (Dust tight IECEx,) and watertight). Please note that this is for the sensor only and Country specific approvals may be available. does not apply to the cable. Please consult your local Customer Care

Representative for more information.

Interconnect Cables

Part Number-AA

A: Cable Length Option in feet For the cables listed below, order in increments of 1.0 ft (305 mm).

Examples: 1 5 = 15 ft (4.57 m) 2 0 = 20 ft (6.10 m)

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		

130539

3-conductor shielded 18 AWG (1.0 mm²) cable with 3-socket plug and fluorosilicone elastomer boot at one end, terminal lugs at the other end. Minimum length of 2.0 ft (0.6 m), maximum length of 99 ft (30 m). A manual is available to assist with installation of this cable (part number 133080-01).

16925

3-conductor shielded 22 AWG (0.5 mm²) cable with 3-socket plug at one end, terminal lugs at the other end. Minimum length of 2.0 ft (0.6 m), maximum length of 99 ft (30 m).

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

127088-01	
	330400 and 330425 Accelerometer Operations Manual.
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, p/n



Figure 1: Acceleration Transducer dimensional drawing Dimensions are in millimetres (inches)







