

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Reference package for procurement and maintenance review

BENTLY NEVADA

330425-01-05

HIGH-TEMPERATURE ACCELEROMETER

Used with the applicable 330400 and 330425 Accelerometers system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official 330400 and 330425 Accelerometers system configuration. Includes Acceleration Transducers Datasheet 141638 Rev. AB, relevant specification, ordering and installation pages

# 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.

Broadband  
Noise Floor (10  
Hz to 15 kHz)

0.098 m/s<sup>2</sup> (0.01 g) rms.



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

## Electrical

### 330400

|                                         |                                                                                                                                                                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensitivity                             | 10.2 mV/m/s <sup>2</sup> (100 mV/g) ±5%.                                                                                                                                                                                |
| Acceleration range                      | 490 m/s <sup>2</sup> (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/s <sup>2</sup> (50 g) peak.                                                                                                                                                                                |
| Broadband Noise Floor (10 Hz to 15 kHz) | 0.039 m/s <sup>2</sup> (0.004 g) rms.                                                                                                                                                                                   |

### 330425

|                     |                                                                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensitivity         | 2.5 mV/m/s <sup>2</sup> (25 mV/g) ±5%.                                                                                                                                                                                    |
| Acceleration Range  | 735 m/s <sup>2</sup> (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/s <sup>2</sup> (75 g) peak.                                                                                                                                                                                  |

## Both Units

|                                                                           |                                                           |
|---------------------------------------------------------------------------|-----------------------------------------------------------|
| Frequency Response                                                        | 10 Hz to 15 kHz                                           |
|                                                                           | (600 cpm to 900,000 cpm)<br>±3dB;                         |
|                                                                           | 30 Hz to 10 kHz                                           |
|                                                                           | (1800 cpm to 600,000 cpm)<br>±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.                                            |
| <b>Base Strain Sensitivity</b>                                            |                                                           |
| For serial numbers preceded by the letter "G" (including all new sensors) | 49 mm/s <sup>2</sup> /mstrain (0.005 g/mstrain)           |

For serial numbers NOT preceded by the letter "G" (shipped prior to April 2004)

980 mm/s<sup>2</sup>/mstrain (0.100 g/mstrain) without Mounting Base (API adapter);

4.9 mm/s<sup>2</sup>/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/s <sup>2</sup> (5000 g) peak, maximum.                                                                                                                                                 |
| Relative humidity                 | 100% condensing, non-submerged. Case is hermetically sealed.                                                                                                                                    |
| Magnetic Field Susceptibility     | <2.21 mm/s <sup>2</sup> /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. |

|                   |                         |
|-------------------|-------------------------|
| Case Material     | 316L stainless steel    |
| Weight (no cable) | 100 g (3.5 oz), typical |
| Mounting Angle    | Any orientation         |

## 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<br>316L stainless steel |
| Mounting Surface  | 32 minch rms.                                       |
| Mounting Torque   | 4.1 N·m (3.0 ft·lb).                                |

## Ordering Information



For the detailed listing of country and product-specific approvals, refer to the [Approvals Quick Reference Guide \(108M1756\)](#).

For additional technical documentation, please log in to [bntechsupport.com](http://bntechsupport.com) and access the Bently Nevada Media Library.

### 330400 Accelerometer

### 330425 Accelerometer

#### Part Number-AA-BB

##### A: Mounting Thread Option

|            |                        |
|------------|------------------------|
| <b>0 1</b> | ¼-28 UNF integral stud |
| <b>0 2</b> | M8 X 1 integral stud   |

##### B: Agency Approval Option

|            |                                        |
|------------|----------------------------------------|
| <b>0 0</b> | None                                   |
| <b>0 5</b> | Multiple approvals (CSA, ATEX, IECEx,) |

## 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  |
| 50 | 15.2 |
| 99 | 30.0 |



Non-standard/custom lengths can also be ordered at additional cost.

#### Cable Part Numbers

|        |                                                                                                                                                                                                                                                                                                                      |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 130539 | 3-conductor shielded 18 AWG (1.0 mm <sup>2</sup> ) 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 mm <sup>2</sup> ) 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).                                                                                                                            |