

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Bently Nevada

PRODUCT MODEL

3300/16

3300/16 - Dual channel vibration monitor
Selected manufacturer pages; verify exact configuration.

OFFICIAL SOURCE

Operation manual 86830-01 Rev. P

[Open current manufacturer source](#)

AMIKON PRODUCT SUPPORT

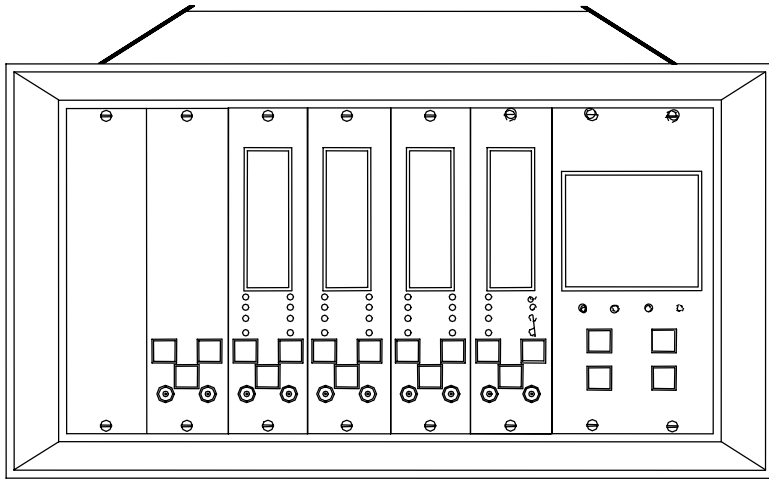
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Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

Operation Manual

Bently Nevada™ Asset Condition Monitoring



3300/16 Dual Vibration Monitor



imagination at work

Part Number 86830-01
Rev. P (08/07)

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Note:

In this document procedures are given only for channel A. Procedures for channel B are similar except for the obvious substitutions of corresponding switches, terminals, and indicators.

Additional Information

Notice:

This manual does not contain all the information required to operate and maintain the product. Refer to the following manuals for other required information.

3300 System Overview (Part Number 80171-01)

3300 System Installation Instructions (Part Number 80172-01)

3300 System Troubleshooting (Part Number 80173-01)

3300/12 AC Power Supply (Part Number 89602-01)

3300/14 DC Power Supply (Part Number 101256-01)

3300/03 System Monitor (Part Number 89604-01)

3300 Internal Barrier Manual (Part Number 88837-01)

RELATED PARTS

3300/16 Field Wiring Diagram Packet (Part Number 100311-01)

3300/16 Data Sheet (Part Number 141498-01)

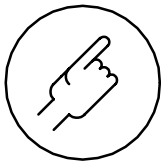
3300/16 Meter Scales (Part Number 84113-16)

Product Disposal Statement

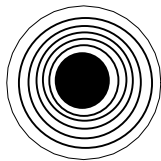
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SYMBOLS

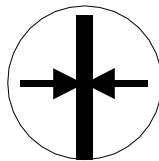
Special symbols are used in the manual to illustrate specifics in the step-by-step processes. For example:



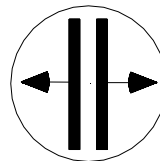
Press



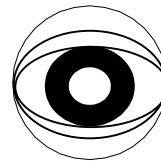
Flashing



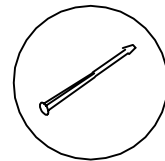
Connect



Disconnect



Observe



Screwdriver

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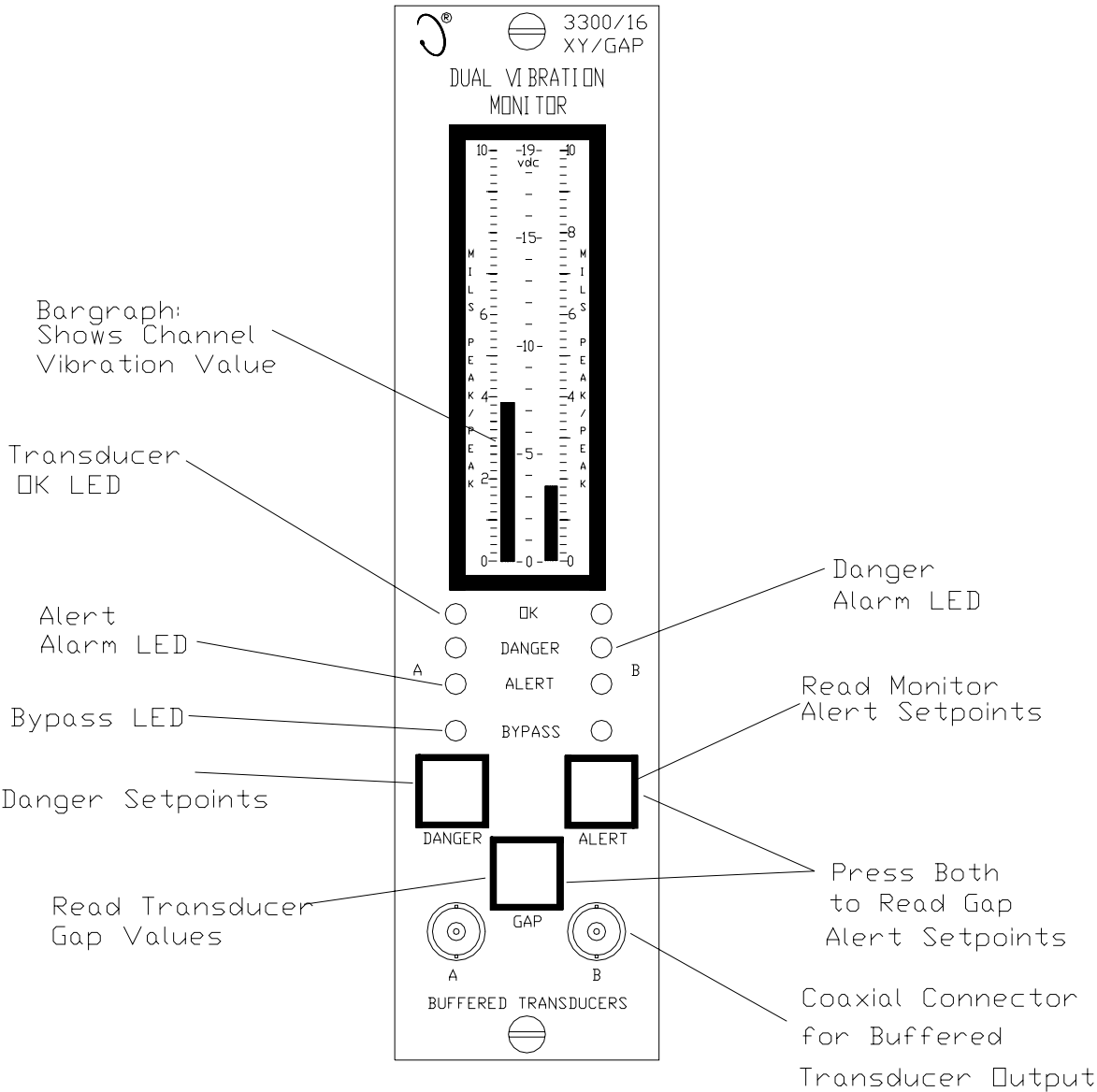
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2. Front Panel Features



3. Monitor Functions

RADIAL VIBRATION - Radial vibration is defined as shaft dynamic motion in a direction perpendicular to the shaft centerline. The Dual Vibration Monitor displays values for two channels (Channel A and B).

PROBE GAP VOLTAGE - Probe gap is measured as a negative dc voltage that is directly proportional to the gap distance between the face of a proximity probe and the surface being monitored. Probe gap value for each channel is displayed on the front panel meter by pressing the GAP switch.

OK - When the Proximity output voltage is within its upper/lower limits, the transducer is defined as OK. The OK detection circuit controls the channel **OK** LED and the monitor relay drive to the system Relay.

OK RELAY - The OK Relay is located on the Power Input Module. Every channel in the rack must be OK or bypassed to energize the OK Relay.

TIMED OK/CHANNEL DEFEAT - Timed OK/Channel Defeat prevents faulty transducer wiring from causing false alarms. If the probe input signal level on a given channel is not within upper/lower OK limits, that channel **OK** LED goes off, the **BYPASS** LED goes on, the channel is disabled, and the OK Relay deenergizes. Once the channel input signal level is restored within the upper/lower OK limits for at least 30 seconds, the channel **OK** LED will start flashing at 1 Hertz (Hz) to indicate the OK state is restored, the **BYPASS** LED goes off, and monitoring is enabled. You must press the **RESET** switch on the front panel of the System Monitor to stop the **OK** LED from flashing (it will then remain on steadily). If the channel remains in the not OK state, set the Channel Bypass switch on the monitor circuit board to put the channel "out of service". You can then operate the monitor as a single-channel monitor, and the OK Relay will return to an OK state (energized). Without this feature, the OK Relay could not be reactivated. In the Timed OK/Channel Defeat and Channel Bypass modes, the recorder output is clamped to zero vibration value and the display is clamped to zero.

VIBRATION ALARM - Pressing the **ALERT** or **DANGER** switches on the front panel of the monitor displays the Alert (first-level alarm) or Danger (second-level alarm) vibration setpoints on the front panel meter. When the radial vibration signal level is equal to or exceeds preset Alert setpoints for the selected time delay, the **ALERT** LEDs come on and the appropriate Alert Alarm relay contacts are activated. When the radial vibration signal level exceeds preset Danger setpoints, the **DANGER** LEDs come on and the appropriate Danger alarm relay contacts are activated.

GAP ALARM - Pressing the GAP and **ALERT** switches simultaneously displays the Gap Alert setpoints. When the gap level is equal to or outside the over and under setpoint window limits for 6 seconds, the **ALERT** LEDs come on and the appropriate Alert Alarm relay contacts are activated.

FIRST OUT - Separate First Out circuits exist for the Alert and Danger alarms. A monitor with First Out option selected flashes a channel alarm LED if that channel was the first channel in the rack to go into alarm since the last rack power up or reset. Pressing the **RESET** switch on the System Monitor acknowledge the First Out.

ALARMS RELAYS - Monitor alarms can operate in a latching or nonlatching mode. In the nonlatching mode, the alarm resets automatically when the alarm no longer exists. In the latching mode, you must reset the alarm condition manually by pressing the RESET switch on the front panel of the System Monitor (or by closing external Reset contacts). The alarm will not reset if the alarm condition still exists.

DANGER BYPASS - When you maintain machinery, you can set a Danger Bypass switch on the monitor circuit board behind the front panel to inhibit the Danger relay drive. This function causes the BYPASS LEDs to come on, but other front panel functions are not affected. You can enable this switch by installing a jumper on the circuit board in the monitor.

CHANNEL BYPASS - If a channel remains not OK, you can set the Channel Bypass switch on the monitor circuit board to put the channel "out of service".

ZERO POSITION - A reference gap value that you can set when the Gap Full Scale Range is in engineering units (mils or micrometers). You can then read gap on the meter scale relative to this zero position on the center of the gap meter scale. Selecting a Gap Full Scale Range in engineering units increases gap resolution on the display because only a selected area within the transducer's OK limits is displayed.

BUFFERED OUTPUT - The coaxial cable connectors on the front panel of the monitor and the terminals on the Signal Input Relay Module provide buffered signals from the respective channel transducers. Use these connectors to attach external equipment to the monitor.

TRIP MULTIPLY - The Trip Multiply function multiplies setpoints by 2X or 3X in response to an external contact closure through terminals on the Power Input Module. The front panel meter and recorder outputs could saturate in this mode.

RECORDER OUTPUTS - The recorder output is proportional to the measured vibration signal over the monitor full-scale range. The output range is user selectable to be 0 to -10Vdc, +1 to +5Vdc, or +4 to +20 mA.

The recorder clamping option, available when the +4 to +20 mA recorder output is selected, allows the user to choose the recorder output level used to annunciate a transducer not OK condition. With this option, the recorder output will clamp to either +2 mA or +4 mA (user selectable) when a transducer is not OK.

SELF-TEST - The monitor has three categories of self-test: Power-up, Cyclic, and User-invoked.

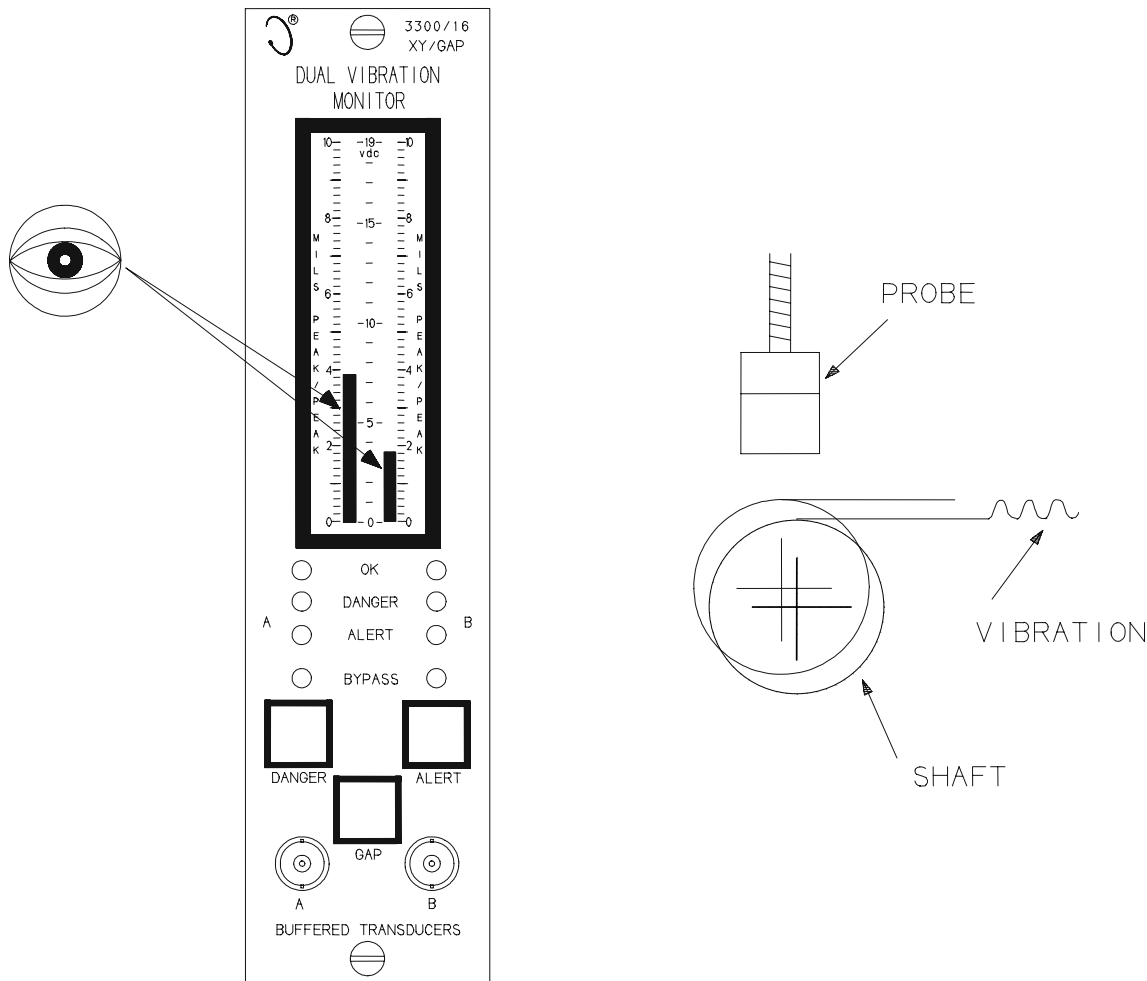
Power-up self-test is performed automatically each time the monitor power is turned on. A series of basic tests and transducer OK tests are performed.

Cyclic self-test is performed automatically during monitor operation. Errors encountered during cyclic tests disable the monitor and flash the error code on the LCD bargraph. If the error is intermittent, the monitor will resume operating, but the error codes will be stored for retrieval during a User-invoked self test. Stored error codes are indicated by the **OK** LEDs flashing at 5 Hz provided that the channel is OK.

User-invoked self-test performs the Power-up self test and lets you read and clear error codes stored during cyclic tests. Stored errors are annunciated by flashing the **OK** LEDs at 5 Hz and displaying the error codes on the front panel LCD bargraph.

4. Channel Vibration

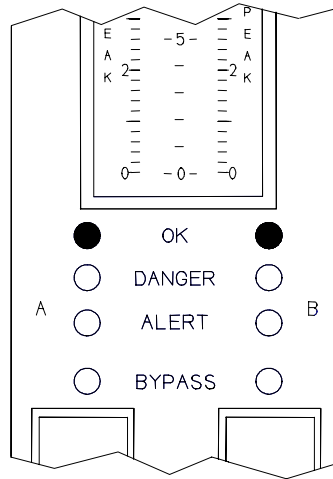
The monitor continuously indicates measured vibration for channels A and B.



5. LED Functionality

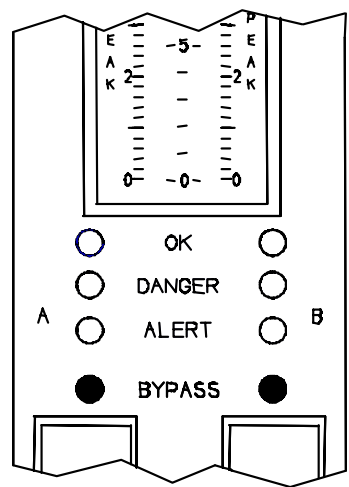
5.1 OK LEDs

Note: Since each channel in the system controls the OK Relay, either channel can cause a Not OK Relay condition (deenergized relay).



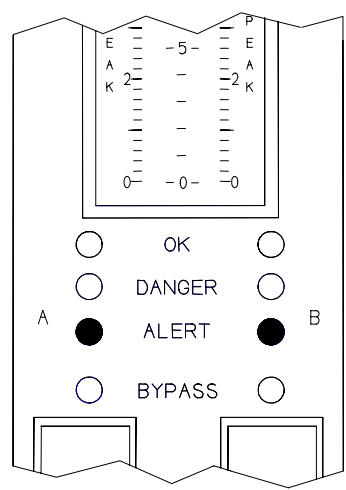
LED Display		Condition	OK Relay Drive
A	B		
● OK ●		Channel A and B in operating range.	ON
● OK ○ ○ OK ●		Respective channel A or B transducer in Not OK condition or bypassed.	OFF
○ OK ○		Monitor in self-test, or both transducers in Not OK condition or bypassed.	OFF
⊙ OK ⊙		Flashing at 5 Hz means that an error was encountered during cyclic test. To read the error message, see section 19.	ON
⊙ OK ⊙ ⊙ OK ● ● OK ⊙		Flashing at 1 Hz means that the transducer has been Not OK since the last reset.	ON

5.2 Bypass LEDs



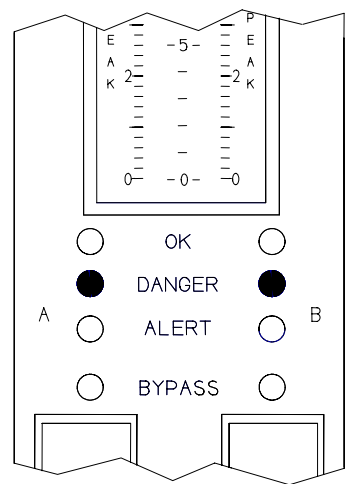
LED Display		Condition
A	B	
● BYPASS ●		Monitor in Danger Bypass mode or System in Power-Up mode or User-invoked self-test in progress or Timed OK/Channel Defeat or both Channels bypassed or Monitor has detected an active error or Rack Inhibit Contacts at back of rack closed.
○ BYPASS ●		Channel A or B bypassed or Timed OK/Channel Defeat
● BYPASS ○		
● BYPASS ●		Trip Multiply activated Flashing overridden by:
● BYPASS ●		
● BYPASS ●		

5.3 Alert LEDs



LED Display		Condition	Alert Relay Drive
A	B		
● ALERT ○		Vibration signal has exceeded the channel A alert level (see section 7.1).	ON
○ ALERT ●		Vibration signal has exceeded the channel B alert level (see section 7.1).	ON
● ALERT ●		Vibration signal has exceeded the channel A and B alert level (see section 7.1).	ON
⊙ ALERT ○		First out condition for vibration signal which has exceeded the channel A alert level.	ON
○ ALERT ⊙		First out condition for vibration signal which has exceeded the channel B alert level.	ON

5.4 Danger LEDs



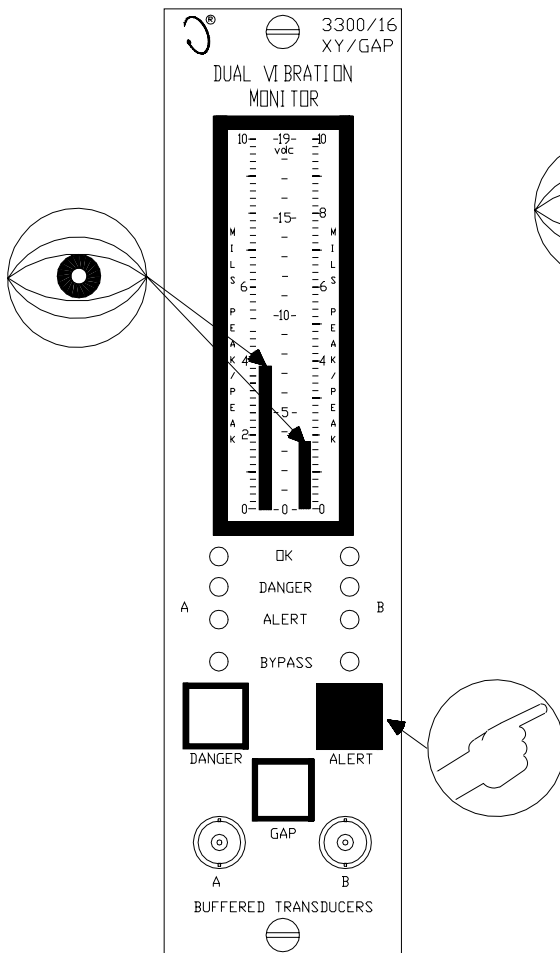
LED Display		Condition	Danger Relay Drive	
A	B		"or" voting	"and" voting
● DANGER ○		Vibration has exceeded the channel A danger level (see section 7.2).	ON	OFF
○ DANGER ●		Vibration has exceeded the channel B danger level (see section 7.2).	ON	OFF
● DANGER ●		Vibration has exceeded the channel A and channel B danger level (see section 7.2).	ON	ON
○ DANGER	●	First out condition for vibration signal which has exceeded the channel B danger level.	ON	OFF
●	○ DANGER	First out condition for vibration signal which has exceeded the channel A danger level.	ON	OFF

7. Read Setpoint Values

7.1 Read Alert Setpoints

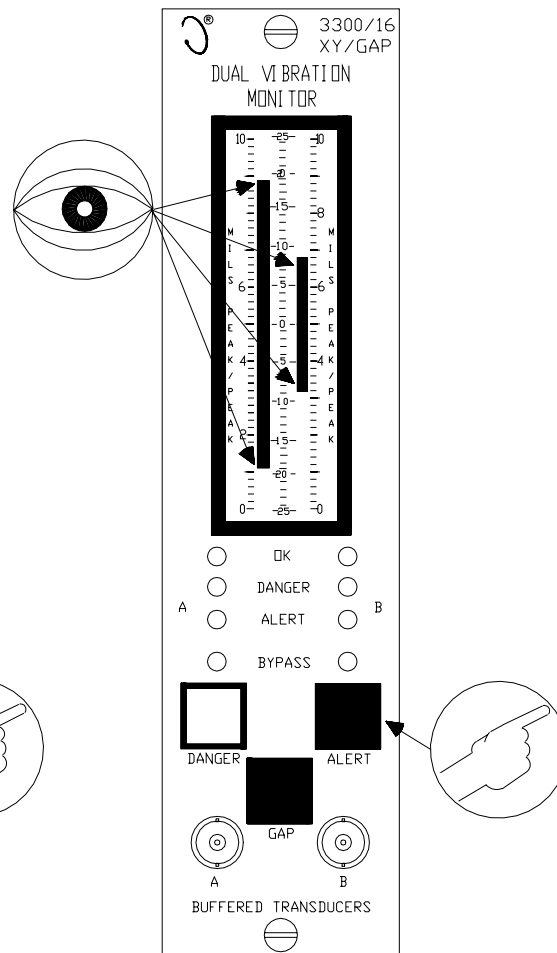
Press the **ALERT** switch to read the Alert setpoint for both channel A and B on the meter scale.

This monitor shows Alert setpoints of the 6.0 mil for channel A and 5.2 mil for channel B.



Press the **GAP** and **ALERT** switches simultaneously to read the Gap Alert setpoint windows for both channel A and B on the meter scale using the center scale.

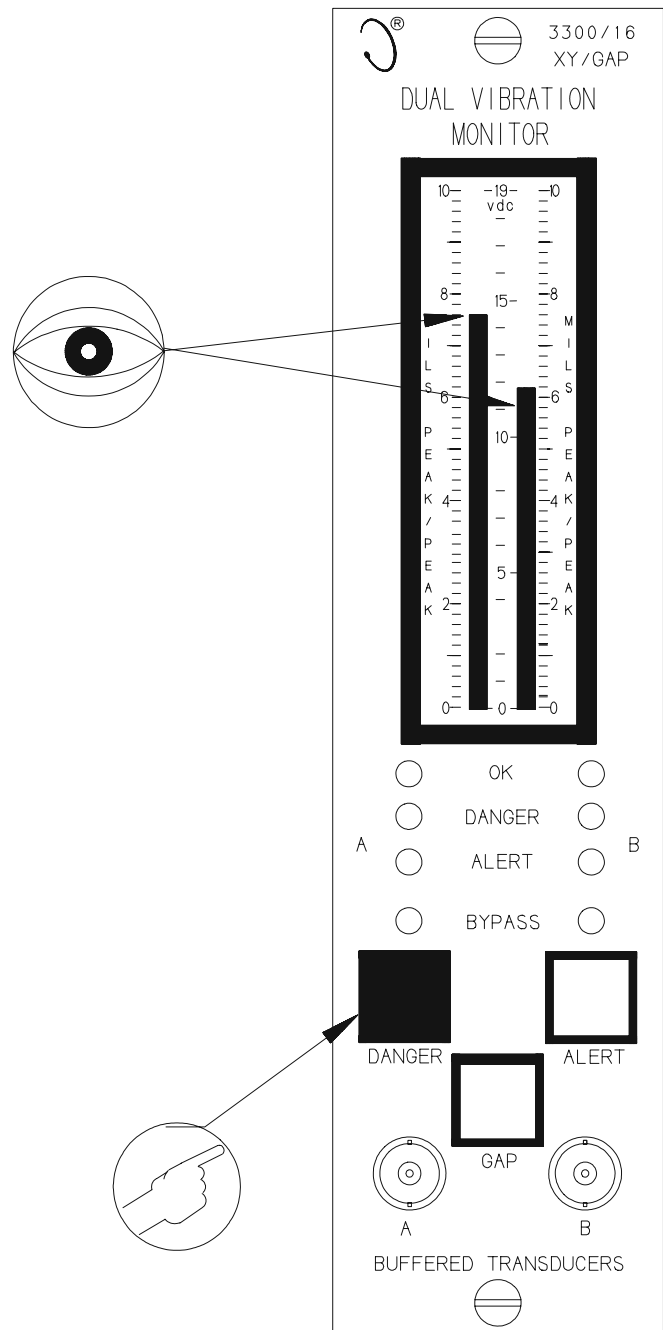
This monitor shows over and under Alert setpoints of 18 mil toward and 9 mil away for channel A and 15 mil toward and 5 mil away from channel B.



7.2 Read Danger Setpoints

Press the **DANGER** switch to read the Danger setpoints for both channel A and B on the meter scale.

This monitor shows a Danger setpoint of 7.6 mil for channel A and 6.2 mil for channel B.



8. Monitor Removal



Caution

Improper rack operation may occur.

Power down rack or inhibit rack alarms when installing or removing a monitor.

1. Loosen two screws.

2. Pull monitor from rack.

