### Sensor Placement and Orientation

#### Measurement Locations

- **Top/Bottom**: RPM, Hz, Bearing Type
- **Side**: RPM, Hz, Bearing Type
- **End**: RPM, Hz, Bearing Type

#### Mounting Options

- **Adhesive**
- **Magnetic**

#### Measurement Tips

- If the driving motor has >40 HP (29.8 kW) and is >40 inches (101.6 cm), take two measurements from each component in the drive train. If not, one measurement per component is sufficient.
- Place the triaxial Sensor on a solid metal surface (not fan shrouds or cooling fins) as close to the machine bearings as possible. Use the same locations and Sensor orientations over time to ensure consistent diagnoses.
- Attach the Sensor to a clean, flat, bare metal surface if possible.
- Sensor position should be parallel or perpendicular to the floor whenever possible.
- Hold the Sensor firmly and carefully roll the Sensor onto the test surface to minimize the potential for impact.

#### Severity Scale

- **Slight**: (Weeks) – No immediate repair action is required. Consider shutting down the equipment and taking repair action now to avoid failure.
- **Moderate**: (Months, even up to a year) – No immediate repair action is required. Increase the frequency of measurements and monitor the condition of the machine.
- **Serious**: (Days) – Take maintenance action during the next planned downtime or maintenance period.
- **Extreme**: No repair action is recommended. Relate the machine and monitor the condition after maintenance.

---

**PN 356478** January 2010 © 2010 Fluke Corporation. All rights reserved. Printed in USA.
Motor Input (Driver)

Coupled Motors

- If Motor >40 HP (29.8 kW), Yes
- Place at 1 and 2 if possible
- Place at 2 if possible

Motor Close-Coupled Pumps and Fans

- If Motor >40 HP (29.8 kW), Yes
- Measure 1 and 2

• Motor input (Driver)

Motor Input (Driver)

Belt/Chain Driven Machines

Locate Sensor on each pillow block fan bearing or bearing housing (pump) at 3 and 4.

Gearbox

- Double-Reduction Gear
  - Internal View
  - Preferred locations:
    - 1st bearing on the input shaft, preferably thrust bearing at 3.
    - 2nd bearing on the output shaft at 5.

Locate Sensor at 4.

- Note: Thrustened or unload thrust bearing the inner and the outer should extend
  on the structural rods or shafts.

Typical Axial Flow Fan

- If locations 1 or 2 are not available, move the Sensor down the side 90° from the top of the motor to 1A and 2A.

- If 1A or 2A is not available, move the Sensor to the end of the motor on 1B or 2B if possible.

Locate Sensor at 4.

Transmission

Belt/Chain Driven Machines

Locate Sensor at 4.

Gearbox

- Preferred locations:
  - 1st bearing on the input shaft, preferably thrust bearing at 3.
  - 2nd bearing on the output shaft at 5.

Locate Sensor at 4.

- Note: Thrustened or unloaded thrust bearing at 4 is critical to access or to secure the shaft. Also locate Sensor at 3.

Driven Components

Centrifugal Pumps

- Typical Horizontal Pump
  - Pump running >2000 GPM?
  - Locate Sensor at 3.

- Locate Sensor at 4.

- Typical Vertical Pump
  - Pump running >3000 GPM?
  - Locate Sensor at 3.

- Locate Sensor at 4.

- Note: If pump free end thrust bearing at 4 is difficult to access or covered in system fluid, locate Sensor at 3.

Overhung Coupled Pumps - Horizontal

Preferred pump locations:
- Place the Sensor as close to the bearing as possible, preferably on top at 3 and 4.
- If it is not accessible, then measure at 4.

- If 3 is not accessible, move Sensor down the side of the motor to 2A.

Fans

- Typical Gland Exhaust Fan
  - Predictive condition 2 to 4.
  - Note: Greater vibration isolation due to longer shaft and potential bearings requires measurement at both fan bearing locations.

- Typical ventilation fan / forced shaft blower
  - Preferred location: top of each pillow block at 2 and 4.

- Typical ventilation fan / forced shaft blower
  - Preferred location: top of each pillow block at 2 and 4.

- Preferred location: top of each pillow block at 3 and 4.

- Preferred location: top of each pillow block at 3 and 4.

Compressor Single Stage (Screw)

- Preferred location at 3 and 4 between screw bearing at each end.