

# GEARBOXES

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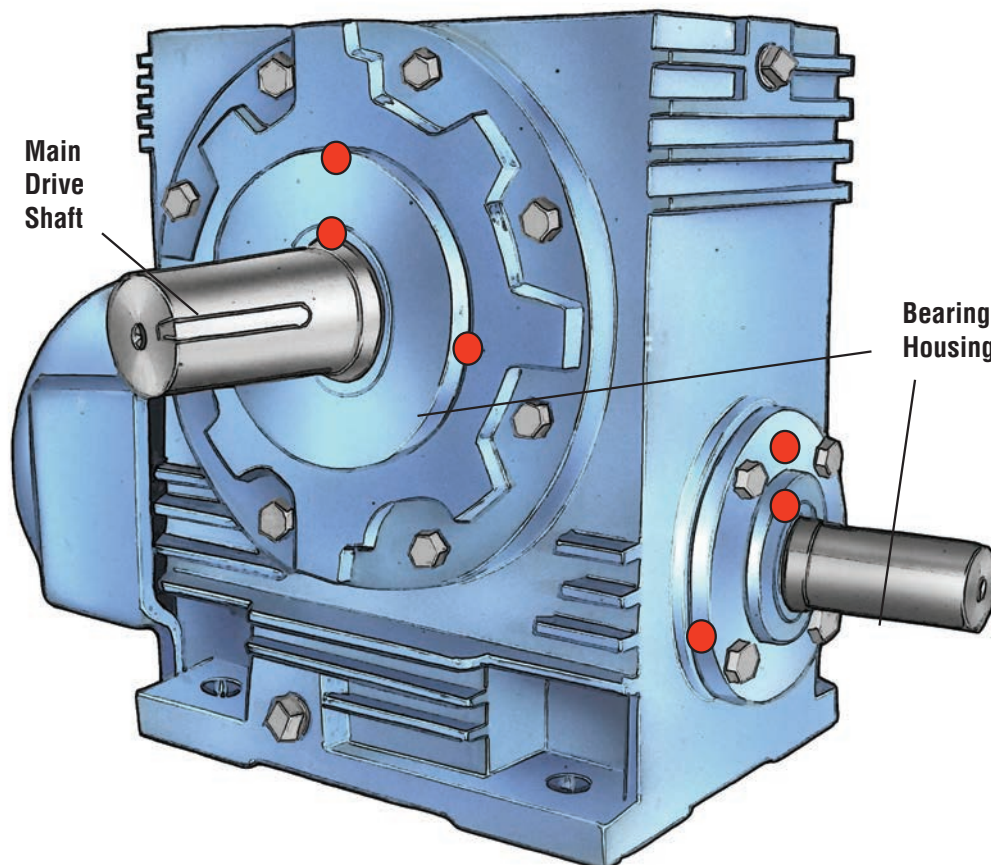
 **IMI SENSORS**  
A PCB DIVISION

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# GEARBOXES

The sensor has to be chosen based on calculated gear mesh frequency and bearing defect frequencies. The gear mesh frequency is easily determined by multiplying the number of teeth on a gear by the rotational frequency. For example, a motor with 1800 rpm (30 Hz) and a gear with 50 teeth results in a gear mesh frequency of 1500 Hz. This result multiplied by a factor of 3.25 will provide the maximum frequency the sensor should be able to measure for best results. If the number of teeth on a gear is unknown, as a rule of thumb, the maximum sensor frequency should be assumed to be 200 times rpm (in Hz). Typically high speed input and low speed output frequencies need to be measured near shaft bearings. Sensors should not be mounted on resonance frequency prone housing locations to improve accuracy of the readings. Sensors can be placed in radial, ideally two sensors with a 90 degree angle and axial locations. Radial sensors can be used to spot imbalance and axial sensors will best analyze gear mesh and bearing faults.

Most IMI® sensors can be offered with an option to safely affix them inside of the gear housing for best measurement results. Sensors can be pressure tested, can withstand oils and chemicals inside of the case and are available in high temperature versions. Advanced vibration monitoring systems in combination with experienced analysis can deliver a broad range of results. Tooth wear, gear eccentricity & misalignment, damaged teeth and other potential problems can be spotted instantly while the transmission is in service.



## FOR REDUCER / SLOW SPEED GEARS



### PRECISION ICP® ACCELEROMETER

MODEL 625B01

- Side exit, ring-style
- Ceramic sensing element
- 100 mV/ips integrated velocity output option available



### PRECISION ICP® ACCELEROMETER

MODEL 626B01

- High sensitivity
- Low frequency response starting at 12 cpm
- Available with temperature output

## FOR HIGH SPEED GEARS & GEAR MESH FAILURES



### LOW COST ICP® ACCELEROMETER

MODEL 603C00

- 10 mV/g sensitivity
- 500 g measurement range
- Small footprint
- Intrinsically safe options available



### LOW COST ICP® ACCELEROMETER

MODELS 607A11, 607A11/030BZ, & M607A11

- Unique 360° swivel design
- Allows for easy cable orientation
- Intrinsically safe options available



### PRECISION ICP® ACCELEROMETER

MODEL 622B01

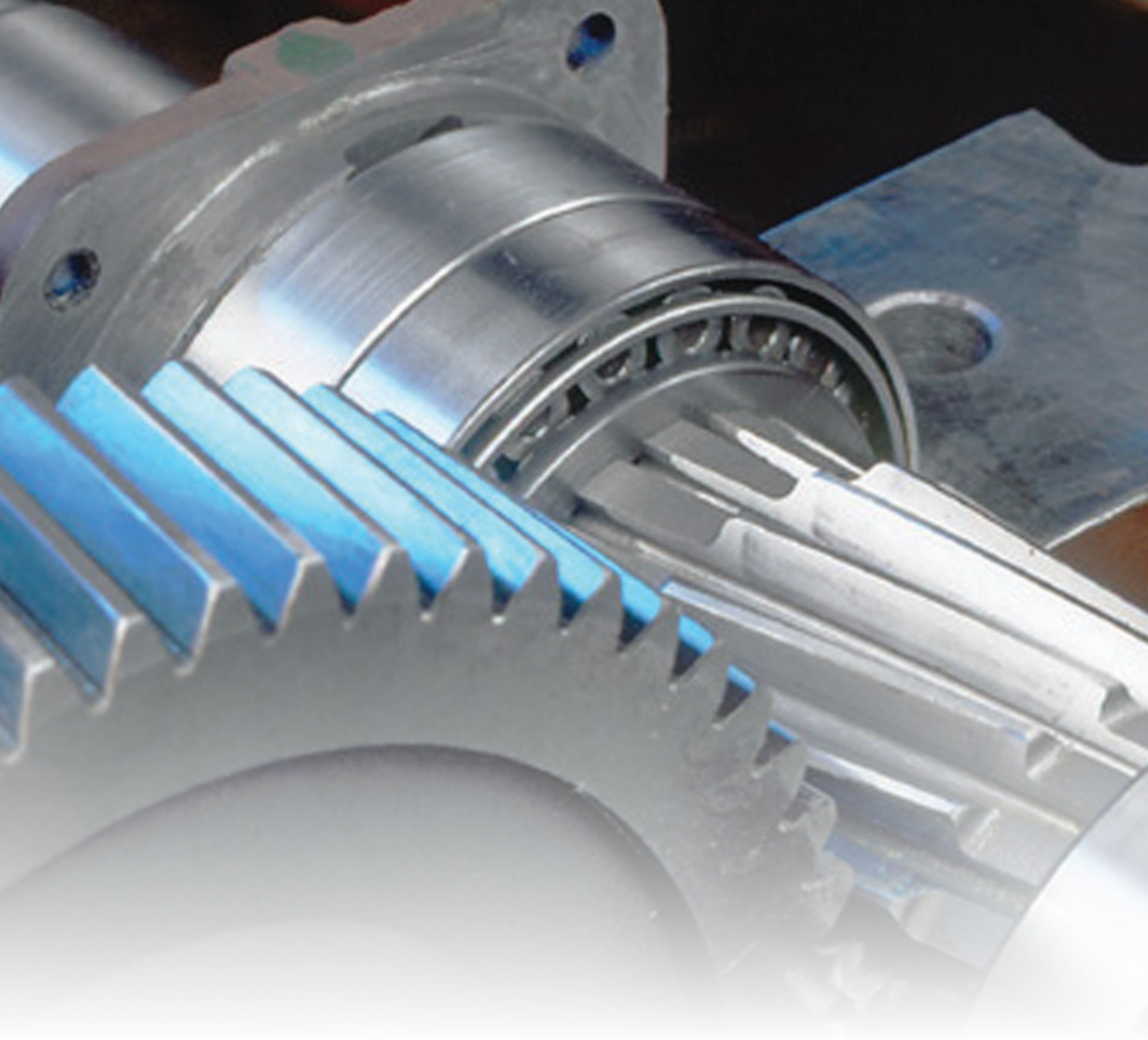
- Full frequency sweep calibration with 5% sensitivity deviation tolerance
- 15 kHz high frequency response ideal for early detection of bearing fluting conditions
- Intrinsically safe options available



### HIGH FREQUENCY ICP® ACCELEROMETER

MODEL 621C40

- High frequency response to 30 kHz, even when mounted magnetically
- Intrinsically safe option available
- Available as kit (model 600A12A) with 5ft cable & magnet



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IMI Sensors offers a wide range of industrial vibration sensors, bearing fault detectors, mechanical vibration switches, panel meters, cables, and accessories for predictive maintenance and equipment protection. For power generation and energy applications requiring precision measurements, IMI also offers pressure sensors and accelerometers.

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