



Work Execution

WE291

Aeroengine Bearing Inspection: Level I

Recommended for

Bearing room inspectors, bearing removal and installation personnel, and engineering staff responsible for engine reliability of commercial or military flight hardware, and land & marine engine and gearbox equipment. Anyone interested in aeroengine and derivative engine bearing inspection and performance.

Course objective

To equip students with the knowledge to identify and recognize characteristics and defects that render bearings unserviceable and/or unacceptable upon engine operation. Student will learn the basics of visual and dimensional inspection, nondestructive testing, and bearing preservation. Students will also be informed of the cleanliness requirements for final preservation and the oil lubrication system and will be taught proper handling techniques, methods, and practices to minimize the opportunity for premature bearing failures.

2009 course schedule

Oct. 21-23	Charleston, SC
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2009 tuition

Public classes	\$1,095
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On-site

per class	\$12,995
# people	16
17+ people	\$395 per person

3 days

A written examination is included with this course and is conducted on the afternoon of the final day of class.

Course description

Bearings are among the most important components in aeroengine and land and marine engine and gearbox applications; therefore, exacting demands are made on their carrying capacity and reliability. Unfortunately, not all bearings reach their intended design life. Reasons for the causes that make bearings unserviceable and/or unrepairable will be discussed.

Bearing fundamentals:

- Basic bearing types
- Bearing terminology
- Bearing functions
- Disassembly and cleaning for inspection

Classroom participation in analysis of samples of defects, including:

- Dents and nicks
- Scratches and scuffs
- Scoring
- Hard particle contamination
- True brinelling
- False brinelling
- Corrosion pitting
- Fretting corrosion
- Galling
- Spalling

Level I inspection criteria:

- Demagnetization and cleaning
- Visual inspection
- Dimensional inspection
- Surface profile and finish inspection
- Non-destructive testing
- Noise analysis
- Lubrication, preservation and packaging

Level I dimensional inspection:

- Inner and outer diameter
- Axial end play
- Width measuring
- Internal radial clearance
- Flushness
- Contact angle
- Surface profile and finish

Classroom participation in dimensional measurement techniques and non-destructive testing/inspection of actual bearings:

- Hardness testing
- Eddy current
- Fluorescent penetrant
- Magnetic particle
- Noise analysis

Bearing preservation, packaging, and handling:

- Demagnetization
- Fingerprint neutralization
- Bearing preservation
- Cleaning
- Drying
- Preservation / lubrication
- Intimate bagging or wrapping
- Unit packaging

Key learning outcomes:

- Students will understand the importance of bearing cleanliness and preservation
- Students will become confident in performing Level I inspection and bearing serviceability
- Students will be equipped with tools to assist them in resolving problems and in thinking laterally to fully explore possible causes of a problem