

ANTI-FRICTION BEARING INSTALLATION, TROUBLESHOOTING AND FAILURE ANALYSIS AFB-102

Description: The course covers all aspects of industrial bearings. Choosing them, alignment, installation, lubrication, inspection, fitting and failure analysis. The attendee uses shop equipment to remove and install bearings as well as calculating the correct fits for machine reliability. Best practices are shown and hands-on portions of the course cement the learning. Troubleshooting with acoustic instruments as well as bearing disassembly for diagnosis and failure analysis are critical to the learning situation. The attendee will leave the class as a field bearing expert able to do both troubleshooting and failure analysis.

TYPES OF BEARINGS and HOW THEY ARE MADE

- Plain bearings and where they are used
 - Construction
 - o Metal — bronze, brass, oilite
 - o Plastic — nylon, polypropylene, TFE, exotic
 - o Babbitt — poured and bored
- Antifriction bearings and where they are used
 - Ball bearings
 - Roller bearings
 - Spherical bearings
 - Special bearings: ceramic bearings, split bearings, pillow block bearings

BEARING NUMBERING SYSTEMS

- Series numbers - Basic numbers
- Internal clearance numbers

BEARING CLASSES OF FIT

- Determining the correct fit for your application
- Fitting bearing for pumps, blowers, and motors (the most common machinery)

MEASUREMENT OF BEARINGS, SHAFTS AND HOUSINGS AGAINST SPECS

- Measurement using vernier micrometers and transferring measurement using telescope gauges
- Use of fitting tables
- Checking bores and shaft journals for bearing fit

UNMOUNTED BEARINGS—DEMOUNTING AND MOUNTING

- Removing a bearing when normal methods can be used
- Damaged bearing removal—burning with a torch vs. small cutting wheel
- Preparing the bearing for inspection
- Mechanical mounting and thermal mounting of bearings (what defines the method)
- Tools for mechanical mounting and tools for thermal mounting

MOUNTED BEARINGS—REMOVAL AND INSTALLATION

- Pillow block bearings (plummer blocks)
 - o Using the eccentric lock and the set screw
- Split pillow block bearings — simple do's and don't's
 - o Using the feeler gauge to reduce internal clearance.
- New technology mounted bearings—special cases for special problems

BEARING LUBRICATION

- Oil lubrication methods vs. Grease lubrication
 - o Choosing the correct lubricant
 - o Calculating the correct amount of grease
 - o Calculating the re-greasing interval

HANDS-ON ACTIVITIES

More than 50% of the course will be "hands-on" and each student will receive work books and supervised instruction as well as individual one-on-one assistance to make sure they can accomplish the tasks assigned. It is expected that an attendee will leave the class with the basic knowledge and skill to handle any bearing situation. Class books can be used on the job site in the future to assist with alignment steps and refresh the tasks that need to be done.

DURATION AND ATTENDANCE

Two day duration (8 hours each day) and up to 12 students may attend. Minimum of 6 students.

