

SHOP MAINTENANCE

Page 5-8 to 5-12

KEY POINTS

1. Heavy engine maintenance is accomplished _____ the wing.
 - A. Off
 - B. On
2. The _____ would not normally be overhauled during a limited heavy maintenance procedure.
 - A. Compressor
 - B. Turbine
3. The engine time can be returned to zero after _____ heavy maintenance procedure.
 - A. A limited
 - B. An unlimited
4. The modular maintenance concept provides for changing major engine assemblies as a single unit to prevent removal of the _____ from the aircraft.
 - A. Engine
 - B. Module
5. Under 14 CFR Part 43, replacement of a module is considered a _____ repair.
 - A. Minor
 - B. Major
6. Disassembly of a module is considered a _____ repair.
 - A. Minor
 - B. Major

RESEARCH QUESTIONS

1. What is another name for shop maintenance?
 - A. Heavy maintenance
 - B. Progressive maintenance
 - C. Unscheduled maintenance
2. Refer to Figure 5-13 in the textbook. To remove a combustor case during shop maintenance, from where would you unbolt its front flange?
 - A. Front flange of the compressor stator case
 - B. Front flange of the turbine stator case
 - C. Rear flange of the compressor case
3. Modules can be installed in what category of engines?
 - A. "High operating time" engines
 - B. "Low operating time" engines
 - C. Engines with any amount of operating time

NONDESTRUCTIVE INSPECTIONS AND REPAIRS

Page 5-12 to 5-17

KEY POINTS

1. Internal compressor inspection of installed engines is routinely accomplished with a probe-shaped device called a _____-scope.
 - A. Bore
 - B. View
2. The general term to describe dye, ultra-sound, eddy current, and X-ray inspections of engines is a/an _____ inspection.
 - A. Electronic
 - B. Nondestructive

COLD SECTION INSPECTION AND REPAIR

Page 5-17 to 5-24

KEY POINTS

1. The hand-filing method of recontouring damaged compressor blades is called _____.
 - A. Blending
 - B. Burnishing
2. Welding and straightening of _____ airfoils in the cold section is generally accomplished only at an overhaul facility.
 - A. Rotating
 - B. Stationary
3. Special welding techniques are used on removed airfoils such as fan blades. One such method—electron beam welding—is done in a special _____ chamber.
 - A. Pressurized
 - B. Vacuum
4. A newer method of restoring worn surfaces to compressor vanes and blades is called _____ coating.
 - A. Barrier
 - B. Plasma

RESEARCH QUESTIONS

1. What is usually required after damage to a single compressor blade is blended out?
 - A. Blend the blade opposite of the damaged blade.
 - B. Rebalance the compressor.
 - C. Identify the reworked area with layout dye.
2. How are cracked outer engine cases repaired?
 - A. Welded then plasma sprayed
 - B. Weld repaired
 - C. Plasma coated

HOT SECTION INSPECTION AND REPAIR

Page 5-25 to 5-33

KEY POINTS

1. The most common hot section discrepancy found during visual inspection is thermal _____.
 - A. Cracking
 - B. Stretching
2. _____ is an important inspection method used to discover internal cracking of installed engine hot sections.
 - A. Borescoping
 - B. Dye checking
3. Stress rupture cracking is most closely associated with the _____.
 - A. Combustion liner
 - B. Turbine rotor
4. Permanent elongation of turbine blades through centrifugal loading and heat loading is called _____.
 - A. Creep
 - B. Warping
5. When a need arises to replace one turbine blade of an odd-numbered set and no blade of equal moment weight is available, then replace _____ blades.
 - A. Three
 - B. Two

RESEARCH QUESTIONS

1. What causes fuel hot streaking?
 - A. Rich mixture
 - B. Lean mixture
 - C. Clogged fuel nozzle
2. If a single turbine blade is damaged beyond repair limits, what procedure is most appropriate?
 - A. Change the damaged blade.
 - B. Change the damaged blade and the blade 180° opposite.
 - C. Change the damaged blade and the two blades 120° from it.
3. Where is creep most commonly found?
 - A. Combustors
 - B. Turbine blades
 - C. Turbine vanes
4. Moment-weight of blades accounts for both mass-weight and what?
 - A. Creep
 - B. Length
 - C. Center of balance

MAIN BEARINGS AND SEALS

Page 5-33 to 5-42

KEY POINTS

1. The _____ bearing absorbs radial loads best.
 - A. Ball
 - B. Roller
2. The _____ bearing absorbs both radial and axial loads.
 - A. Ball
 - B. Roller
3. Another name for axial loading is _____ loading.
 - A. Radial
 - B. Thrust
4. The two most common types of main bearing oil seals are carbon and _____.
 - A. Labyrinth
 - B. Laminated

RESEARCH QUESTIONS

1. Why is the roller bearing outer race grooved and the inner race ungrooved?
 - A. To accommodate axial engine growth
 - B. To accommodate radial engine growth
 - C. To accommodate radial engine loads
2. Where is a plain bearing most likely to be found in a turbine engine?
 - A. At main bearing locations
 - B. At main bearing locations within the hot section
 - C. At locations within the accessory gearbox
3. Where does an “oil-damped” roller bearing have an extra cushion of oil?
 - A. Between the inner race and roller
 - B. Between the outer race and roller
 - C. Between the outer race and bearing housing
4. What is the rotating portion of a labyrinth seal called?
 - A. Land
 - B. Ring
 - C. Face
5. What type of sealing arrangement does a carbon seal have?
 - A. Full contact with its race
 - B. Full contact with its labyrinth
 - C. Full contact with its bearing

TORQUE WRENCH USE

Page 5-42 to 5-44

KEY POINTS

- When using an extension that lengthens the torque arm, the true torque being applied will be _____ than the indicated value.
 - Higher
 - Lower
- To prevent loss of calibration, micrometer torque wrenches must be stored at their _____ setting.
 - Highest
 - Lowest

RESEARCH QUESTIONS

- What is the corrected torque wrench setting or dial reading when a 12 inch torque wrench is fitted with a 3-inch extension and the required torque is 800 in.lbs?

$$R = \frac{12}{12 + 3} \times 800$$

$$R = \underline{\hspace{2cm}} \times 800$$

$$R = \underline{\hspace{2cm}}$$

- What type of torque wrenches require the most frequent calibration?
 - Dial
 - Beam
 - Micrometer
- What is the correct procedure if the correct combination of torque and alignment cannot be found when torque-tightening a castellated nut?
 - Select another torque wrench
 - Select another castellated nut
 - Select another cotter key

LOCKING METHODS

Page 5-44 to 5-46

KEY POINTS

- Refer to Example 1 in Figure 5-65A of the textbook. To keep the first loop locked down around a bolthead, the first leg is twisted in a _____ direction.
 - Clockwise
 - Counterclockwise
- Refer to Example 1 in Figure 5-65A of the textbook. To keep the second two loops locked down, the second leg and tail end are twisted in a _____ direction.
 - Clockwise
 - Counterclockwise