



DEPARTMENT OF AEROSPACE ENGINEERING

19ASB303 AIRCRAFT MAINTENANCE ENGINEERING

UNIT - 3 - INSPECTION

Inspection intervals – Techniques

1. Introduction to Inspection Intervals

Inspection intervals are predetermined periods at which aircraft undergo maintenance checks to ensure continued airworthiness and safety. These intervals are established based on factors such as flight hours, calendar time, or flight cycles, and are designed to detect and address potential issues before they compromise aircraft performance.

2. Purpose of Establishing Inspection Intervals

- **Safety Assurance:** Regular inspections help in identifying wear and potential failures, thereby preventing accidents.
- **Regulatory Compliance:** Adhering to mandated inspection schedules ensures compliance with aviation authorities like the FAA, EASA, or DGCA.
- **Operational Efficiency:** Scheduled maintenance minimizes unexpected breakdowns, leading to smoother operations and reduced downtime.
- **Cost Management:** Timely inspections can prevent minor issues from escalating into major, costly repairs.

3. Common Inspection Intervals in Aircraft Maintenance

Aircraft maintenance checks are typically categorized into the following intervals:

A Check

- **Frequency:** Approximately every 400-600 flight hours or 200-300 flights.
- **Scope:** Basic checks including fluid levels, lubrication, and visual inspections of key components.
- **Duration:** Typically performed overnight, requiring about 50-70 man-hours.
- **Location:** Usually conducted in an airport hangar.

B Check

- **Frequency:** Every 6-8 months.
- **Scope:** More detailed inspections than A checks, focusing on systems and components.
- **Duration:** Takes 1-3 days, requiring approximately 160-180 man-hours.
- **Location:** Performed in a hangar.

Note: Modern aircraft maintenance programs often integrate B check tasks into successive A checks over a 6-8 month period, reducing the need for a standalone B check.

C Check

- **Frequency:** Approximately every 20-24 months or after a specific number of flight hours.
- **Scope:** Comprehensive inspection involving a large portion of the aircraft's components and systems.
- **Duration:** Aircraft is typically out of service for 1-4 weeks, requiring up to 6,000 man-hours.
- **Location:** Conducted at a maintenance base with appropriate facilities.

D Check

- **Frequency:** Every 6-10 years.
- **Scope:** The most extensive check, involving complete disassembly and inspection of the aircraft.
- **Duration:** Can take up to 50,000 man-hours and may keep the aircraft out of service for several months.
- **Location:** Performed at specialized maintenance facilities.

4. Techniques for Determining Inspection Intervals

- **Manufacturer Recommendations:** Original Equipment Manufacturers (OEMs) provide maintenance schedules based on extensive testing and analysis.
- **Regulatory Requirements:** Aviation authorities set mandatory inspection intervals to ensure safety standards are met.
- **Operator Experience:** Airlines may adjust intervals based on operational data, environmental conditions, and historical performance.
- **Reliability-Centered Maintenance (RCM):** A systematic approach that assesses the reliability and performance of components to establish optimal maintenance schedules.

5. Conclusion

Establishing and adhering to appropriate inspection intervals is vital for maintaining aircraft safety, reliability, and efficiency. By understanding the various checks and the techniques used to determine their frequency, maintenance engineers can ensure compliance with regulations and enhance the operational lifespan of the aircraft.

