

# CFM56-7B AW4 FADEC 3

## Recommended Overhaul Actions

### Reasons to overhaul AW4 MCB based FADEC 3 (P/N 2042M67P02 / 2044M16P02)

- In service since 2005
- Continued on wing reliability is at risk after 30,000 flight hours
- Stabilizes and increases electronic engine controls (EEC) reliability

### Benefits of base overhaul

- Refreshes product and provides three-year extended warranty on covered items
- Incorporates lessons learned from investigations and repair history
- Replaces at risk components and parts
- Provides expanded test coverage (sub-assembly test), complete tear down, and detailed inspections
- Allows for software updates

### Scope

- Details in FADEC International Service Bulletin S/B 73-0232
- Recommended soft time interval of 30,000 hours or 26,100 cycles
- Key reliability service bulletins and replacements included in overhaul:
  - Front panel control K1/K2 ignition relay replacement
  - Power supply module T2/T4 transformer and CR1/CR14 rectifier replacement
  - Main control board (MCB) MN4 and MN76 ball grid array (BGA) replacement
  - MCB MN82 inspection and replacement if necessary
  - MCB SOT23 package devices solder joints reflowed
  - Upgrades AW4 MCB to the most current AW4 configuration



# A FADEC overhaul performed by FADEC International will extend the life of your unit.

FADEC International designs, develops, and manufactures highly reliable full authority digital engine controls (FADEC) and supports them to ensure optimal performance throughout the technology's life cycle. Our robust overhaul process has been developed based upon extensive knowledge of severe engine environments, design attributes, and repair history to increase the reliability of aging FADEC.

## Why overhaul?

- Extends the serviceable lifetime
- Lowers maintenance costs and fleet disruptions
- Minimizes unscheduled removals and future major failures
- Updates hardware and software for enhanced system performance, efficiency, and reliability
- Preemptive repairs lessen expensive in-service failures

## What have we learned?

Through regularly conducted reliability reviews, we focus on gathering and analyzing field performance data to understand how the harsh engine environment and cycling affect operation. This process allows us to identify any potential aging or reliability issues that need to be addressed during an electronics overhaul.

- Expected failure times and rates are calculated using original configuration data, shop history repair information, and fleet hour data
- Analyzing gathered data using Six Sigma tools allows us to identify strategies to extend product life cycle

Knowledge gained from critical investigations of repetitive failures, system verification request, and age related deterioration allows us to identify:

- Failure root causes (cracked solder joints, sub-assemblies) can be determined by correlating data from systems with common failures
- Sub-assembly circuit verification and inspection have uncovered issues undetectable at the system level
- Passive front-panel circuitry verification of the shielding/grounding systems allow us to identify any missing resistive paths or paths that should not be present

We develop a tailored overhaul scope of work by collecting, analyzing, and investigating data to develop value added reliability and life extension solutions. The scope of work is reviewed, approved, and recommended by the original engine manufacturer type certificate holder.

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