

**MODELS AFFECTED:** 407

**SUBJECT:** **ENGINE FADEC ELECTRONIC CONTROL UNIT (ECU), REPLACEMENT OF.**

**HELICOPTERS AFFECTED:** 407, Serial Numbers 53000 through 53237.  
  
[Helicopter Serial Numbers 53238 and subsequent will have the intent of this bulletin completed before delivery.]

**COMPLIANCE:** As given in Allison Commercial Engine Bulletin CEB A-73-6017.

**DESCRIPTION:** The Engine FADEC electronic control unit (ECU) is replaced to make sure of the security of the airtight seal of the unit. Although made to be environmentally sealed, Chandler Evans told Bell Helicopter and the Allison Engine Company that ECUs in use can leak. Moisture leakage can cause corrosion in the PC board circuitry in time, and if it is not repaired can decrease the performance of the ECU.  
  
The CEB A-73-6017, which requires an ECU replacement, also replaces CEB A-73-6011, CEB A-73-6014 and CEB A-73-6015. Because these CEBs are included in CEB A-73-6017, it is very important to make sure that all required airframe and Flight Manual changes are also included.

Although the accomplishment instructions of this bulletin include the steps required to make sure all airframe and Flight Manual changes are included, operators must refer to the bulletins that follow for more information on the specific system and Flight Manual changes:

ASB 407-96-5/CEB A-73-6011

ASB 407-96-6/CEB A-73-6014

ASB 407-97-8/CEB A-73-6015

or

ASB 407-97-9/CEB A-73-6015.

Compliance with this ASB and CEB A-73-6017 will make sure that all 407 helicopters have a new HMU that includes a minimum flow overspeed solenoid valve, a more corrosion resistant ECU and a functional Engine Overspeed Test Switch.

Thus, CEB A-73-6017 applies to those operators who did not get the new min-flow overspeed configured ECUs and HMUs as referred to in ASB 407-97-8 or ASB 407-97-9 and CEB A-73-6015.

The Allison Engine Company have made a rotatable pool of ECUs and HMUs to make compliance with this bulletin easier and to make sure that operators are provided with the required replacement units. Allison will contact all operators affected by this bulletin to schedule when they will send the required units.

To make sure that all affected operators are sent replacement units before the compliance date, the removed ECUs and HMUs must be sent to Chandler Evans for repair as quickly as possible. To make this procedure easier, Allison has supplied a letter with each ECU/HMU that gives details on how to send the parts back and other information related with CEB A-73-6017.

If you need to phone or fax the Allison Engine Company Customer Support Department for more information, use the numbers that follow:

Phone: 1-888-255-4766 (International customers use USA direct)  
or 1-317-230-6400.

Fax: 1-317-230-4243.

**APPROVAL:**

The engineering design aspects of this Service Bulletin are Transport Canada approved.

**MANPOWER:**

Approximately 1.0 man-hour is necessary to replace the ECU. Approximately 6.0 man-hours are necessary to replace the ECU and HMU, and approximately 7.0 man-hours are necessary to replace the ECU, HMU and to connect the Overspeed Test Switch. Man-hours are based on hands-on time and can change because of the personnel and facilities available.

**MATERIAL:**

Not applicable.

**WEIGHT AND BALANCE:**

Not affected.

**ELECTRICAL LOAD DATA:**

Not affected.

**REFERENCES:**

Allison Commercial Engine Bulletin CEB A-73-6017;

Allison 250-C47B Operation and Maintenance Manual, CSP 21001;

ASB 407-96-5/CEB A-73-6011, ASB 407-96-6/CEB A-73-6014,  
ASB 407-97-8/CEB A-73-6015, or ASB 407-97-9/CEB A-73-6015;

BHT-407-MM-5, rev. 4- 16 December 1996:

Chapter 53, Cowls and fairings;

BHT-407-MM-9, rev. 4- 16 December 1996:

Chapter 76, Engine Controls; and

BHT-407-MM-10, rev. 4- 16 December 1996:

Chapter 96, Electrical.

**PUBLICATIONS AFFECTED:**

BHT-407-FM-1, Flight Manual; and

BHT-407-MD-1, Manufacturer's Data.

**ACCOMPLISHMENT INSTRUCTIONS:**

1. Remove the forward transmission fairing to get access to the FADEC ECU (BHT-407-MM-5, Chapter 53).

**- NOTE -**

It is recommended that you examine the history information kept in the ECU for faults and exceedances before you remove the ECU and after you replace it. This will make sure that you do the applicable maintenance steps if necessary, before you remove the ECU. Use the Chandler Evans developed Maintenance Terminal Software to do this procedure. This procedure will also make sure that the ECU information is correct after installation. It is also recommended that you make a Log Book entry after you install the ECU to show that there are no faults or exceedances. For more information on "ECU HISTORY VERIFICATION", please refer to the enclosed Allison Commercial Service Letter CSL 6063.

2. Do the tasks as given in the Allison CEB A-73-6017. Only install FADEC (ECU) P/N 23070254 which includes software version 5.1 (Bell Helicopter does not have approval for ECU P/N 23070255 which includes software version 5.201). Refer to BHT-407-MM-9, Chapter 76, for the instructions to remove and install the FADEC ECU. If you will replace the HMU, get

access to the HMU, and do the applicable procedures given in the Allison 250-C47B Operations and Maintenance Manual.

3. Install the forward transmission fairing removed in Step 1 (BHT-407-MM-5, Chapter 53).
4. If applicable, connect the Overspeed Test Switch (disconnected in ASB 407-96-5 on FAA regulated helicopters only) as follows:
  - a. Remove the decal 407-799-016-115, OVSPD SYSTEM INOP, from the instrument panel.
  - b. Find and remove the end cap from the wire E44B22 (for the location of 10J1, refer to BHT-407-MM-10, Chapter 96, Page 87, View A). Use finger pressure to install the wire to the connector 10J1 at position q.
5. Do the Check Run procedure given in Allison Operations and Maintenance Manual, Chapter 72, Engine - Adjustment/Test and the operational check given in CEB A-73-6017.
6. If you have not completed ASB 407-97-8/CEB A-73-6015 or ASB 407-97-9/CEB A-73-6015, do the 407 Flight Manual changes that follow:

**- NOTE -**

BHT-407-FM-1, Rev. 5, 24 June 1997, and BHT-407-MD-1, Rev. 2, 24 June 1997, were supplied to all 407 operators with ASB 407-97-8 or ASB 407-97-9. For those helicopters that the FAA Airworthiness Directives apply to, remove the pages added by Paragraph (f) of AD 96-24-09, and include BHT-407-FM-1, Rev. 5, to do the revision of the BHT-407-FM-1 as given in AD 97-21-09.

- a. Include the BHT-407-FM-1, Rev. 5, dated 24 June 1997, in the Flight Manual. BHT-407-FM-1, Rev. 5, replaces the temporary revision 1, dated 3 December 1996, "Temporary

Revision for FADEC FAULT ANNUNCIATION INTERPRETATION" and temporary revision 3, dated 3 December 1996, "Temporary Revision for NP OVERSPEED TRIP INCREASE".

- b. Include BHT-407-MD-1, Rev. 2, dated 24 June 1997, in the Flight Manual Manufacturer's Data section. BHT-407-MD-1, Rev. 2, gives an operational description of the minimum fuel flow overspeed system.
7. Make an entry in the helicopter historical records to show that you have completed this Alert Service Bulletin.
8. Make an entry in the Record of Alert Service Bulletins in the Maintenance Manual to show that you have completed this Alert Service Bulletin.
9. Make an entry in the Engine Log Book, FADEC ECU Assembly (yellow pages) or HMU Assembly (yellow pages), Part III, Modification Record, as applicable.
10. Send the removed units to Chandler Evans. Please send the units back as quickly as possible. Refer to CEB A-73-6017 for the instructions on how to send the units back.