

LETTER OF TRANSMITTAL

TO THE HOLDERS OF

FLIGHT MANUAL E-AB212-PT6T-1

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Pages enclosed are Temporary Revisions applicable to the document No.:
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Please, follow the instruction:

- insert this letter with the Temporary Revisions record in the introduction of the subject manual;
- insert the content pages in the subject publication, facing corresponding page with the same number and/or insert additional pages in the relevant position.

Remove this Temporary Revision only when the content is included in a normal Revision / Change or in a New Issue.

1-13. EMERGENCY SYSTEM AND EQUIPMENT

1-13-1. WARNING SYSTEM

The warning system consists of individually illuminated warning lights mounted on the instrument panel (figure 1-9-1). The purpose of this system is to provide visual indication of the conditions that have occurred, as follows:

- **RPM:** Rotor drops below $92\% \pm 2$ or exceeds $103\% \pm 2$.
Rotor RPM below $92\% \pm 2$ also sets off the audio warning signal.
- **1 or 2 ENG OUT:** Either engine Ng speed drops below $53\% \pm 2$.
- **FIRE:** Fire in engine 1 or 2 compartment as indicated by light in FIRE 1 PULL or FIRE 2 PULL handles.
- **ROTOR BRAKE:** Indicates rotor brake on (if installed).
- **BAGGAGE FIRE:** Indicates fire in baggage compartment.

1-13-1-1. Fire detector/Warning system

A fire detector warning light is located on each FIRE PULL handle on the instrument panel (figure 1-9-1). The lights illuminate to inform the pilot of a fire in the associated engine compartment. To test the lights press fire detector PRESS TO TEST switch. Lights should illuminate when test button is pressed and extinguish when test button is released. The detectors are heat sensing elements connected in a series loop across the fire detector control unit. These heat sensing elements exhibit high electrical resistance at normal ambient temperatures, but their resistance drops rapidly when heated. The fire detector control unit senses this low resistance from any fire or overheat condition in the engine compartment and causes the appropriate FIRE PULL handle to illuminate. Power is supplied by the 28V DC essential bus.

1-13-2. FIRE EXTINGUISHING SYSTEM

1-13-2-1. Portable fire extinguishers

Two portable fire extinguishers are provided. One is located to the right of pilot's seat on the floor, and the other on the left side of the cabin between the hinged panel and copilot's doors. The mounting brackets are of the quick opening type for rapid extinguisher removal by pilot or crew.

1-13-2-2. Engine fire extinguishers

The engine fire extinguishing system includes the MAIN and RESERVE fire extinguisher bottles, engine No. 1 and engine No. 2 fire extinguisher relays, MAIN FIRE EXT and RESERVE FIRE EXT circuit breakers, a three-position level-lock FIRE EXT selector switch, FIRE 1 PULL handle and FIRE 2 PULL handle. The MAIN fire extinguisher bottle may be activated at any time by pulling either FIRE PULL handle and setting the selector switch to MAIN.

NOTE

The RESERVE bottle may be activated only when a fire is detected by one of the fire detector units and the appropriate FIRE PULL handle is pulled and the selector switch is then placed in the RESERVE position. The FIRE EXT selector switch must be pulled up in order to select RESERVE position.

1-13-2-3. Engine fire extinguisher controls

When a fire occurs in an engine compartment, the associated FIRE PULL handle illuminates. Pulling the FIRE PULL handle closes the respective particle separator door and engine fuel shut-off valve in preparation for firing the extinguisher bottles. FIRE EXT selector switch (figure 1-9-1) is then positioned to MAIN which fires the main bottle. If an indication of fire still exists, the reserve fire extinguisher bottle can be fired into the engine compartment by placing FIRE EXT selector switch to RESERVE. Power is supplied by the 28V DC essential bus and protected by circuit breakers MAIN FIRE EXT, RESERVE FIRE EXT, ENG 1 FIRE DET and ENG 2 FIRE DET on the circuit breaker panel.

2-8. ENGINE SHUTDOWN

2-8-1. ENGINE SHUTDOWN

1. Collective - Down.
2. Cyclic control and pedals - Centered and frictioned.
3. FORCE TRIM switch - ON.
4. Throttles - Idle.
5. ITT - Stabilize for one minute at idle prior to shut down.
6. Engine instruments - Within limits.
7. Radios - OFF.
8. IDLE STOP REL switch - ENG 1.
9. Engine 1 throttle - Closed. Check ITT and GAS PROD RPM (N_1) decreasing.
10. (On Code B and C). BATTERY BUS 1 switch - ON.
11. IDLE STOP REL switch - ENG 2.
12. Engine 2 throttle - Closed. Check ITT and GAS PROD RPM (N_1) decreasing.
13. GEN 1 and 2 switches - OFF.
14. All invertors - OFF.
15. ENGINE 1 FUEL switch - OFF.
16. ENGINE 1 BOOST PUMP switch - OFF.
17. ENGINE 2 FUEL switch - OFF.
18. ENGINE 2 BOOST PUMP switch - OFF.

CAUTION

Avoid rapid engagement of rotor brake if helicopter is on ice or other slippery or loose surface to prevent rotation of helicopter.

19. Rotor brake (if installed) - Apply at or below 40% ROTOR RPM (N_R), return to stowed position after main rotor stops.
20. Pilot - Remain at flight controls until rotor has come to a complete stop.
21. Lighting and miscellaneous switches - OFF.
22. BATTERY switch(es) - OFF.

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Table 3-1-1. Warning Lights (cont)

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
CHIP 90° BOX (On code A)	Metal particles in tail rotor gearbox.	Land as soon as practical.
CHI 42°/90° BOX (On code B, C)	Metal particles in intermediate and/or tail rotor gearbox.	Land as soon as practical.
HYDRAULIC (On code B, C)	Hydraulic pressure low or temperature above limit.	Verify fault from gage readings. If pressure is low or temperature is high, turn affected system off. Land as soon as practical.
FUEL XFEED (On code B, C) fuel crossfeed valve not fully open or closed, or FUEL XFEED circuit breaker open.	Check FUEL XFEED circuit breakers in. Cycle FUEL XFEED switch.	
HEATER AIR LINE	Heater mixing valve malfunction.	Turn heater off immediately.
RPM	ROTOR (N_r) RPM above or below operating limits.	Adjust collective and/or RPM INCR DECR switch as required.
EMERG FLOAT	Float safety switch to ARM.	Switch to SAFETY unless required.

- D) (On Code B and C). INV 3 switch - ON DC BUS 2.
- J) START switch - ENG 2.
- K) After 12% GAS PROD RPM (N_1) is attained and oil pressure is indicating, slowly open throttle until a rise is seen in ITT which indicates engine is self sustaining. Do not open throttle farther until GAS PROD RPM (N_1) and ITT are stabilized. Continue to open throttle slowly to complete start. Center START switch after 55% GAS PROD RPM (N_1) is attained. Adjust engine to desired power level. Care must be taken to make small adjustments with throttle as compressor stall may result.
- L) GEN 2 switch - ON.

3-2-1. DUAL ENGINE FAILURE

Indications:

- ENG 1 OUT and ENG 2 OUT warning lights illuminated.
- RPM caution light illuminated.
- ROTOR RPM audio on.
- GAS PROD RPM (N_1) below $61 \pm 1\%$ RPM and decreasing (both engines).
- ENG RPM (N_2) below 85% and decreasing (both engines).
- ITT below 400 °C and decreasing (both engines).
- ENG 1 and ENG 2 OIL PRESSURE, DC GENERATOR, and PART SEP OFF caution lights illuminated.

Corrective action:

WARNING

Do not allow rotor RPM to decay below minimum limits. If corrective action is not initiated immediately, rotor RPM could decrease excessively.

1. Collective pitch - Reduce. Establish autorotative glide at 65 KIAS.
2. Autorotative landing - Accomplish.
3. If time permits before landing and a restart will not be attempted, proceed as follows:
 - A) Throttles - Closed.
 - B) ENGINE 1 and ENGINE 2 FUEL switches - OFF.
 - C) ENGINE 1 and ENGINE 2 BOOST PUMP switches - OFF.
4. After landing:
 - A) Engine shutdown - Complete.
 - B) Helicopter - Exit.

3-2-2. ENGINE UNDERSPEED

NOTE

Normal deviations of ROTOR RPM (N_R) from the governed setting may occur when large collective changes are made but should not be confused with fuel control failure, unless a large steady-state TORQUE split occurs.

If there is a low power demand (less than single engine power available) at time of low side failure, ROTOR RPM (N_R) and ENG RPM (N_2) of affected engine will decrease and stabilize, at or slightly below governed value. TORQUE, ITT, and GAS PROD RPM (N_1) of affected engine will also decrease. As ROTOR RPM (N_R) decreases, normal engine will increase TORQUE output to assume load. If power demand is near zero, there might not be a significant TORQUE split.

value, normal engine will reduce power to keep itself from overspeeding and will indicate significantly lower TORQUE, ITT, and GAS PROD RPM (N_1) than affected engine.

If there is a high power demand (greater than single engine power available at time of high side failure, ROTOR RPM (N_R) and ENG RPM (N_2) (of affected engine will surge initially along with TORQUE, ITT, and GAS PROD RPM (N_1). As ENG RPM (N_2) and ROTOR RPM (N_R) increase, normal engine will reduce power to keep itself from overspeeding. Affected engine then tries to assume all of load, which is beyond its capability due to high power demand. ENG RPM (N_2) of affected engine and ROTOR RPM (N_R) will then decrease and rejoin ENG RPM (N_2) of normal engine, stabilizing at or slightly above governed value as normal engine adjusts power output to share load.

Indications:

- High ENG RPM (N_2) and ROTOR RPM (N_R), possibly with RPM caution light.
- Definite TORQUE split (proportional to power demand).
- High GAS PROD RPM (N_1), ITT, and TORQUE on affected engine.
- Return of ENG RPM (N_2) and ROTOR RPM (N_R) to governed value (if power demand is very high).

Corrective action:

CAUTION

Rotor RPM can overspeed excessively if corrective action is not immediately initiated.

1. Collective - Adjust as necessary to maintain ROTOR RPM (N_R).
2. Affected engine - Identify.
3. Throttle (affected engine) - Reduce to maintain TORQUE at or slightly below TORQUE of normal engine.
4. Throttle friction - Tighten on normal engine, reduce on affected engine.
5. Throttle (affected engine) - Reduce to idle.
6. GOV switch (affected engine) - MANUAL.

CAUTION

When operating in manual fuel control mode, make slow, smooth throttle movements to avoid compressor stall, overtemperature, over-speed, and possible drivetrain damage.

Coordinate throttle and collective changes to avoid overloading normal engine.

7. Throttle (affected engine) - Increase slowly. Adjust throttle and collective, as required, to maintain TORQUE of affected engine slightly below TORQUE of normal engine.
8. MASTER CAUTION light - Reset.
9. Land as soon as possible

- Decreasing or erratic N_1 and N_2 RPM.
- Torque oscillations.

Corrective action:

1. Collective - Reduce: maintain slow cruise flight.
2. HEATER switch - Reposition.
3. ITT and N_1 - Check for normal indications.
4. SEAT BELT and no smoking signs - ON.

If an audible compressor stall is noted, refer to maintenance to determine cause.

3-2-8. ENGINE HOT START/SHUTDOWN

Indications:

A hot start is caused by a combination of excessive fuel in combustion chamber and delayed fuel ignition. A hot start may be evidenced by a rapid rise in ITT which exceeds ITT limitations. External indications may be flames or smoke emitting from exhaust.

Corrective action:

Abort start of affected engine as follows:

1. Throttle - Closed, keep START switch engaged.
2. ENGINE (1 or 2) FUEL switch - OFF.
3. ENGINE (1 or 2) BOOST PUMP switch - OFF.
4. START switch - Engaged until ITT decreases to within limits.
5. Engine shutdown - Complete.
6. Helicopter - Exit, check for damage.