

EC130B4

EMERGENCY CHECK LIST



ALLWAYS REFER TO AFM FOR MANUFACTURER PROCEDURES

3.1 GENERAL

Emergency procedures describe the actions that the pilot must take relative to the various possible failures that can occur.

Meanwhile, depending on the many variable external environment, such as the type of terrain overflown, the pilot may have to adapt to the situation according to his experience.

To help the pilot in his decision process, four recommendations are used :

LAND IMMEDIATELY

Self explanatory.

LAND AS SOON AS POSSIBLE

Emergency conditions are urgent and require landing at the nearest landing site at which a safe landing can be made.

LAND AS SOON AS PRACTICABLE

Emergency conditions are less urgent and in the pilot's judgement, he may proceed to the nearest airfield where he can expect appropriate assistance.

CONTINUE FLIGHT

Continue flight as planned. Repair at the destination according to the maintenance manual.

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WARNING LIGHTS

ENG FIRE

• **At start-up :**

- 1. Starting selector **OFF position**
- 2. Emergency fuel shut-off handle **AFT**
- 3. Booster pump **OFF**
- 4. [CRANK] **DEPRESS (10 s)**
- 5. [MASTER SW] or [EMER SW] **SHUT OFF**
- 6. Rotor brake **APPLY (170 rpm)**
- 7. Evacuate aircraft and fight fire from outside

• **Hover, Takeoff, Final:**

LAND IMMEDIATELY

Carry out a no hover, powered landing then, once on ground, apply same procedure as above.

• **In Flight:**

LAND IMMEDIATELY

- 1. Collective pitch **REDUCE**
- 2. IAS **Vy**
- 3. Autorotation procedure **APPLY**
- 4. Emergency fuel shut-off handle **AFT**
- 5. Starting selector **OFF position**

• **After landing:**

- 6. [MASTER SW] or [EMER SW] **SHUT OFF**
- 7. Rotor brake APPLY (..... **170 rpm)**
- 8. Evacuate aircraft and fight fire from outside.

GOV

• **IN FLIGHT:**

- 1. **Flight parameters** **CHECK**
Emergency mode automatically self-engages. **GOV** illuminates.
- 2. **Collective pitch** **AVOID abrupt changes**
..... **Maintain Ng > 80% Hp < 20000 ft**
..... **Maintain Ng > 85% Hp __ 20000 ft**

LAND AS SOON AS PRACTICABLE

Approach and Landing :

Make a powered approach.
Avoid steep angle.

After touch down, shut-down :

Collective pitch **SLOWLY** down to low pitch
Starting selector **OFF**

NOTE This failure can also results in loss of ΔNg and torque parameters on the VEMD.

• **DURING ENGINE STARTING :**

Starting selector **OFF position immediately**

ENG P

Oil pressure **CHECK gauge**
LOW OR NIL **LAND IMMEDIATELY**
Autorotation procedure **APPLY**
Shutdown engine time permitting

Oil pressure **CHECK gauge**
NORMAL **LAND AS SOON AS PRACTICABLE**

TWT GRIP

Twist grip **INCREASE to FLIGHT detent**
CONTINUE FLIGHT

MGB P

Collective **REDUCE power**

LAND AS SOON AS POSSIBLE

If a safe landing is not possible, continue flight to the nearest appropriate landing site, reduce power to fly at minimum power speed (Vy).

WARNING AT LOW POWER (Vy) A MAXIMUM OF 55 MIN. OF SIMULATED FLIGHT TIME HAS BEEN DEMONSTRATED DURING BENCH TEST

BATT TEMP

1. [EXT PWR BATT.] or [BAT/EPU] **OFF**

2. U bus voltage **CHECK**

NORMAL **LAND AS SOON AS PRACTICABLE**

ABOVE U max

1. [EXT PWR BATT.] or [BAT/EPU] **ON**

2. [GEN] or [GENE] **OFF**

3. Unnecessary equipment..... **OFF**

LAND AS SOON AS PRACTICABLE

GOV

• **Permanently lighted:**

Governing function degraded.

1. Collective **AVOID abrupt power changes.**

2. IAS **MAINTAIN below VNE power off**

LAND AS SOON AS PRACTICABLE

On ground: do not start the engine.

• **Flashing at idle or during starting or shut down:**

Governor redundancy failure, no impact on governing function.

- Start-up procedure: abort, report to Maintenance Manual.
- Autorotation training: cancel training, return to base.

ENG CHIP

Collective pitch **REDUCE power**

LAND AS SOON AS POSSIBLE

Low power approach and landing

Be prepared in case of an engine loss of power.

NOTE Takeoff is prohibited until specified checks in TURBOMECA Maintenance Manual have been performed.

MGB TEMP

IAS **SET TO Vy**

CWP **CHECK MGB P**

MGB TEMP light goes out **LAND AS SOON AS PRACTICABLE**

MGB TEMP light stays on **LAND AS SOON AS POSSIBLE**

MGB CHIP

Collective **REDUCE power**

MGB P & MGB TEMP **MONITOR**

LAND AS SOON AS POSSIBLE

TGB CHIP

Avoid prolonged hovering **CONTINUE FLIGHT**

HYDR + SERVO

Keep aircraft to a more or less level attitude

- Avoid abrupt maneuvers
- Maintain angle of bank lower than 30°
- Maintain IAS below 110 kt (or VNE if lower)
- Normal approach and landing

NOTE: - **LIMIT** light may be on if LH circuit failed or during load factor maneuvers

One remaining circuit allows continued safe flight and landing

LAND AS SOON AS PRACTICABLE

SERVO

CONTINUE FLIGHT

BATT

[EXT PWR BATT.] or [BAT/EPU]..... **CHECK ON**
 YES CHECK voltage on VEMD

LAND AS SOON AS PRACTICABLE

NO – [EXT PWR BATT.] or [BAT/EPU]ON

BATT light out

CONTINUE FLIGHT

GENE

1. U bus on VEMD **CHECK**

2. [GEN] or [GENE] **CHECK ON**

NO [GEN] or [GENE]ON

YES [GENE RESET] or [GENE RST]ON

GENE light out **CONTINUE FLIGHT**

GENE light on Unnecessary equipment.....OFF

LAND AS SOON AS PRACTICABLE

FUEL

Fuel quantity < 48 kg

LAND AS SOON AS POSSIBLE

NOTE: - 15 mn of flight time remain at MCP

WARNING: - AVOID LARGE ATTITUDE CHANGES

FUEL P

• **IN FLIGHT:**

1. Collective pitch..... **REDUCE POWER**

2. Booster pump.....**ON**

LAND AS SOON AS POSSIBLE

Low power approach and landing

WARNING: - BE PREPARED IN CASE OF AN ENGINE FLAME-OUT.

FUEL FILT

Collective pitch **REDUCE POWER**

FUEL FILT ON

LAND AS SOON AS POSSIBLE

FUEL FILT OFF

Continue flight at reduced power.

LAND AS SOON AS PRACTICABLE

MONITOR Ng.

If Ng oscillations occur **LAND IMMEDIATELY**

Autorotation procedure **APPLY.**

PITOT

[PITOT] or [PITOTS] **CHECK ON**

YES Monitor airspeed indicator

NO [PITOT] or [PITOTS] ON

CONTINUE FLIGHT

HORN

[HORN] **CHECK ON**

YES Aural warning failure

NO [HORN] ON

CONTINUE FLIGHT

DOOR

Airspeed REDUCE to 70 kt max

LAND AS SOON AS PRACTICABLE

descent and approach at low sink rate

LIMIT

In high speed cruise flight or steep maneuvers :

- 1. **Collective** **Reduce power**
- 2. **Cyclic**.....**Reduce speed or load factor.**

At rearward speed or hovering in high tail wind :

- 1. **Cyclic**..... **Reduce rearward speed**
- **Reduce tailwind component.**

CONTINUE FLIGHT

ROTOR BRAKE INOPERATIVE

If wind operation:

- 1. Aircraft HEADWIND.
- 2. Cyclic stick slightly into wind.

WARNING wait for full shut down before leaving the aircraft

BLEED VALVE FAILURE

The bleed valve flag above the FLI  disappears when the bleed valves closes.

The bleed valve is normally open when then the engine is shut down, during starting and at low power settings.

- If the flag does not disappear at high power setting (i.e. near MCP or above), the maximum available engine power is reduced, specifically by cold weather.
- If the flag does not reappear at low power settings, the engine may surge. Avoid abrupt changes in power settings.
- Bleed valve failure results in **GOV** illumination.

LAND AS SOON AS PRACTICABLE

AUDIO WARNINGS

On the Systems Control Unit (SCU), a [**HORN**] pushbutton is used to activate the audio warning.

When pressed in : **HORN**

NOTE The pilot at the controls shall wear an adequate radio / ICS audio headset to monitor the audio warning through the ICS system.

- **GONG**

A gong is generated each time a **red** warning appears on the warning panel.

• **CONTINUOUS TONE**

Two continuous tone can be heard :

- a 310 Hz tone when NR is below 360 rpm.
- a 285 Hz tone when maximum take-off limitations are exceeded:
 - * After 1.5 sec. delay if power remains within transient power limitations.
 - * Immediately when transient power limitations are exceeded.

1. Collective pitch **REDUCE** to maintain NR in green arc or power within limitations.

2. Engine parameters **CHECK.**

• **INTERMITTENT TONE**

An intermittent tone (310 Hz) is heard when the NR is above 410 rpm.

Collective pitch **INCREASE** to maintain NR in green arc
Apply applicable procedure according to the situation.

ENGINE FLAME-OUT

CRUISE FLIGHT

AUTOROTATION PROCEDURE OVER LAND

- 1. Collective pitch** **REDUCE** to maintain NR in green arc.
- 2. IAS** **SET to Vy.**

• If relighting impossible or after tail rotor control failure

- 3. Twist grip** **IDLE detent.**
- 4. Maneuver the aircraft into the wind on final approach.**

• At height approx 70 ft

- 5. Cyclic** **FLARE.**

• At 20/25 ft and at constant attitude

- 6. Collective pitch** **GRADUALLY INCREASE** to reduce the rate of descent and forward speed.
- 7. Cyclic** **FORWARD** to adopt a slightly nose-up landing attitude (< 10°).
- 8. Pedal** **ADJUST** to cancel any sideslip tendency.
- 9. Collective pitch** **INCREASE** to cushion touch-down.

• After touch-down

- 10. Cyclic, collective, pedal** **ADJUST** to control ground run.

• Once the aircraft has stopped

- 11. Collective pitch** **FULL DOWN.**
- 12. Rotor brake** **APPLY** below 170 rotor rpm.

AUTOROTATION PROCEDURE OVER WATER

- Apply same procedure as over land, except items 10, 11 and 12,
- maneuver to head the aircraft equally between the wind and waves direction on final approach.
- Ditch with minimum forward (IAS < 30 kt) and vertical speed. Then apply following check list for items 10, 11. 12.

• After touch-down

10. Collective pitch MAINTAIN
 11. Door emergency handles PULL-UP
 12. Rotor brake APPLY

13. Abandon aircraft once the rotor has stopped.

• After relighting

4. [FUEL PUMP] or [FUEL P] OFF.

At least 1000 ft are necessary to complete relighting procedure after flame-out.

HOVER-IGE

1. Collective MAINTAIN
 2. Pedals CONTROL YAW
 3. Collective INCREASE as needed to cushion touch-down.

HOVER-OGЕ

1. Collective pitch FULLY DOWN.

• When NR stops decreasing

2. Cyclic **FORWARD** to gain airspeed according to available height
 3. Autorotation procedure. **APPLY.**

IN FLIGHT RELIGHTING

According to available height and cause of flame-out :

1. Starting selector OFF position
 2. [FUEL PUMP] or [FUEL P] ON
 3. Starting selector ON position.

The relighting sequence will therefore be automatically carried out as soon as Ng < 17%.

TAIL ROTOR CONTROL FAILURE

HOVER-IGE (or OGE in HV diagram)

LAND IMMEDIATELY

- 1. Twist Grip IDLE detent
- 2. Collective INCREASE to cushion touch-down

HOVER-OGE (Clear area, out of HV diagram)

Simultaneously,

- 1. Collective REDUCE depending on available height
- 2. Cyclic FORWARD to gain speed
- 3. Cyclic ADJUST to set IAS to Vy and control yaw

LAND AS SOON AS POSSIBLE

If a go-around has been performed, carry out an autorotative landing on a suitable area as landing procedure.

IN CRUISE FLIGHT

- 1. Cyclic ADJUST to set IAS to Vy and control yaw
- 2. Collective REDUCE to avoid sideslip

LAND AS SOON AS POSSIBLE

APPROACH AND LANDING

Carry out an autorotative landing on a suitable area as landing procedure.

SMOKE IN THE COCKPIT/CARGO

SOURCE NOT IDENTIFIED

Heating, Demisting OFF

- smoke clears

YES CONTINUE FLIGHT depending on weather condition

NO

- 1. [MASTERSWITCH] or [EMERSW] SHUTOFF
- 2. [DIRECT BATT.] or [DCT BAT] OFF
- 3. [EXT PWR BATT.] or [BAT/EPU] OFF
- 4. [GEN] or [GENE] OFF
- 5. [MASTER AVIONIC] or [AVIONIC] OFF
- 6. Ventilate the cabin.

- When smoke clears :

- 1. All consumers..... OFF
(visually or via [SCU TST])
- 2. [MASTER SWITCH] or [EMER SW]..... ON
- 3. [EXT PWR BATT.] or [BAT/EPU] ON, check DC parameters
- 4. [DIRECT BATT.] or [DCT BAT] ON, check parameters
- 5. [GEN] or [GENE] ON, check DC parameters

- If DC parameters not correct :

- 6. [GEN] or [GENE]..... OFF
- 7. Unnecessary equipment..... OFF

LAND AS SOON AS PRACTICABLE

- If DC parameters correct and no smoke detected :

- 6. [MASTER AVIONIC] or [AVIONIC].....ON
- 7. All consumers.....ON,
one by one to identify the failed system; then keep it off.

CAUTION: - When battery and generator are off line, the VEMD goes out and only the NR gauge remains. Apply both screen failure procedure (VEMD SCREEN FAILURE SECTION 3)

SOURCE IDENTIFIED

- 1. Corresponding system OFF
- 2. Ventilate the cabin

CONTINUF FIGHT depending on system failed.

NOTE After DC had been switched-off and on in flight, **GOV** light will remain on until the next normal full engine and battery switch-off on the ground.

VEMD FAILURE

VEMD SCREEN FAILURE

- Failure of one screen

Failed Screen OFF.

- Failure of both screens

To avoid any power over limit. the maximum authorized power will be the power needed to establish level flight with the following law :

$$IA S \text{ kt} = 100 \text{ kt at } Hp = 0 - (2 \text{ kt} / 1000 \text{ ft Hp})$$

LAND AS SOON AS PRACTICABLE

Landing procedure : carry out a no hover landing.

CAUTION MESSAGES ON VEMD

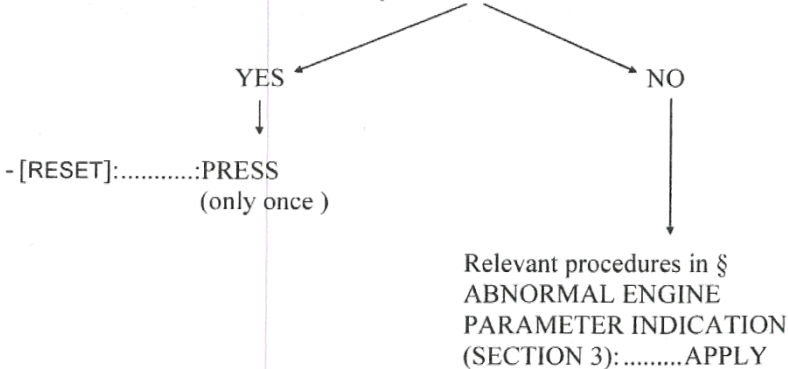
- LANE 1 (or 2) FAILED**
-----> **PRESS OFF 1 (or 2)** : Self explanatory
- VEH PARAM OVER LIMIT** } : Abnormal vehicle parameter
- * **VEH PARAM OUT RANGE** }
- ENG PARAM OVER LIMIT** } : Abnormal engine parameter
- * **ENG PARAM OUT RANGE** }

These messages appear when a parameter usually displayed on this page reaches a limitation, as the relevant (vehicle or engine) pages are not displayed.

- [SCROLL]..... : DEPRESS to reach the relevant page and check
..... the parameter.

- CROSSTALK FAILED**
-----> **PRESS OFF 1 (or 2)** : Self explanatory.
- BRT CNTRL FAILED** : Brightness control failed.
- FLI FAILED**
-----> **CHECK PARAM** : One power parameter (Ng, T4 or Tq) not consistent.

- Parameters consistency..... : CHECKED



* For VEMD after embodiement of modification 07-3195 only.

- * **GEN PARAM OVER LIMIT** } : Abnormal generator parameter
- * **GEN PARAM OUT RANGE** }
- * **BAT PARAM OVER LIMIT** } : Abnormal battery parameter
- * **BAT PARAM OUT RANGE** }

These messages appear when the relevant parameter is not displayed on the vehicle page and when an electrical limitation is reached.

- * **GPS NOT AVAILABLE** : GPS system not available (no absolute time reference).
- GPS navigation system (if fitted).....: CHECK ON.
If no GPS on board, check VEMD configuration.

- * **OVERLIMIT DETECTED** : Engine / vehicle overlimit recorded.

This message appears as soon as one power parameter overlimit have been recorded in the VEMD. It will be displayed on the FLI or engine page until 40 % Ng during the next engine start.

ABNORMAL NR/Nf INDICATION

• **NR indication Failure:**
Collective**MAINTAIN Tq > 10 %**
NR reading is given by Nf pointer.

LAND AS SOON AS PRACTICABLE

• **Nf indication Failure:**
NR gauge.....**CHECK in green range with Tq > 0.**
CONTINUE FLIGHT

ABNORMAL ENGINE PARAMETER INDICATION

- Engine oil temperature over 115° C

Airspeed SET to 80 kt

Temperature reduces,

YES **LAND AS SOON AS PRACTICABLE**

NO **LAND AS SOON POSSIBLE** Check cooler fan operation

- Low engine oil pressure:

Caution and warning panel **CHECK ENG P**

NO

CWP light test COMPLETED

ENG P LAND IMMEDIATELY

Autorotation procedure APPLY

Shutdown engine time permitting.

ENG P LAND AS SOON AS PRACTICABLE

Caution and warning panel CHECK ENG P

YES

LAND IMMEDIATELY

Autorotation procedure APPLY

Shutdown engine time permitting.

Loss of Ng, Tq or T4 parameters:

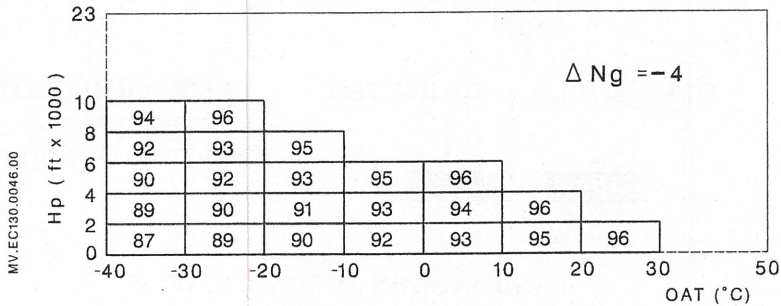
When a parameter is off line, the parameter value is not displayed on the VEMD upper screen and the parameter scale symbology is displayed in yellow. The First Limitation Indicator (FLI) is replaced by the 3 data symbology (Ng/ Δ Ng, T4 and Tq) and a failure message is displayed.

Ng/ Δ Ng Indicator Failure:

Respect the maximum Tq value and T4 below 810°C.

Torquemeter Failure:

Respect the Ng given in the following table :



ΔNg and Torquemeter indications Failure:

GOV warning can also cause loss of ΔNg and Tq indications. The VEMD switches to 3-data symbology with only T4 and numeric Ng as valid parameter. Comply with Ng limitations in the above table, substituting the ΔNg = - 4 limit by a T4 limit of 810°C.

T4 Indicator Failure:

Respect Ng and Tq limitations. On ground : do not try to start the engine.
For all these failures : **LAND AS SOON AS PRACTICABLE**