

HELI LAUSANNE



HB-ZLX

**Cabri G2 CHECKLIST
EMERGENCY CHECKLIST
LIMITATIONS
PERFORMANCES
PREFLIGHT CHECKLIST
ALERT CHECKLISTE
SECURITY AROUND**

The pilot is responsible for correct operation of the helicopter according AFM. This summary is provided only as additional material for preflight preparation. Heli-Lausanne declines all responsibility in case of non respect of official manufacturer limitations(AFM).

ALLWAYS REFER TO AFM FOR MANUFACTURER PROCEDURES

General Limitations

Minimum crew : 1 pilot on right seat

Aerobatic flights prohibited

Voluntary in-flight shutdown is prohibited

Day VFR only (*NVFR permitted according to onboard flight instruments*)

Icing conditions : flight prohibited

Snow :

- Flight under snow is allowed in non icing conditions and visibility more 1500 m
- Significant snow on windshield: land or acceleration (no hover flight)

Doors off or open :






- Operations approved with 1 or 2 doors off, unlocked or partially open (vent)
- No loose object in cabin
- Speed limitations : same as doors on and closed

Maximum operating altitude : 13'000 ft PA

VNE Power ON : 130 kts IAS - 2 kts / 1'000 ft PA

VNE Power OFF : 110 kts IAS - 2 kts / 1'000 ft PA

Color code for instrument markings

Red		Indicates operating limits. The pointer should not enter red zones or exceed red limits during normal operation.
Red cross-hatch		Indicates power-off V _{NE}
Yellow or amber		Precautionary or special operating procedure range
Green		Normal operating range
White or Blue		Other indications

On the EPM, related numerical values are marked with the same color code.

UNSUALE FUEL : 1,5 litres

Do not rely on fuel quantity when **LOW FUEL Caution light or EPM warning is active : land as soon as possible!**

NORMAL PROCEDURES / CHECKLISTS

Cockpit Preparation

Before starting engine

Harnesses	Both fastened
Cockpit	All objects correctly secured
Pedals	Full travel free
Collective	Friction released, full travel free
Cyclic	Full travel free
Breakers	In
Hourmeter	Checked
Fuel shut-off valve	Checked ON
Collective	Down, friction on
Altimeter	Set
All switches	OFF
Carburetor heating switch	Auto
MASTER switch	ON
NR switch	Backup
NR green light	Checked ON
Lights and NR horn automatic check	Monitored, all working
.....	except STARTER

EPM starts

Watch flight log

Push #2 key to enter configuration page.
 Set configuration as desiredrefer to page 7-13
 Push #1 key to freeze flight log page, push again to carry on.

Watch self-test

If a parameter is failed, the page stays until acknowledged.
 Refer to page 2-10 for no-go parameters.

Watch flight screen

No alarm except : **OIL P - FUEL P - OIL T - CARB T** (if OAT corresponds)
 If engine is cold..... Cross-check OAT - CHT - OIL T - CARB T
 Fuel quantity Check

Governor OFF, check GOV OFF light ON
 Mixture Forward, full rich

Note 1 : Before starting, NR green light, GOV OFF, OIL P, ALT. lights are on. CLUTCH light may also be ON.

Note 2 : The EPM has preflight functions described page 7-11 and following pages.

Note 3 : When the helicopter is soaked at very low temperature, (less than -17°C / 0°F) the EPM display may not start at once. Switch MASTER OFF and wait a few minutes in the cabin before switching it back ON.

Warning :

- **The clutch may have stayed engaged, or engage unexpectedly, allowing the rotor to turn at starter engagement.**
- **The blades can be very dangerous particularly at low speed, and with gusts or wind. They are very heavy and flexible.**
 - ➔ **Never engage the starter** while the area is not completely clear of people and foreign objects in a 6 meter (20 foot) radius. The blades may turn unexpectedly.
 - ➔ **The pilot must not leave the cockpit** as long as the engine or the rotor turns. He must wait complete stop.
 - ➔ **Strictly forbid all people presence** in the rotor area – 6 meter (20 foot) radius, while the engine is running or the rotor is turning, unless controlled by the pilot in command as follows :
 - ➔ **To allow a person enter or exit the cabin or rotor area – 6 meter (20 foot) radius, the pilot must :**
 1. **Make sure the wind is less than 20 kt,**
 2. **Hold the collective down,**
 3. **Hold the cyclic slightly aft,**
 4. **Maintain the RPM steady in the yellow – green arc,**
 5. **Watch the person in lateral sector and allow by a head sign.**
Do not move the cyclic while the person has started moving towards the helicopter.

It is the pilot's responsibility to make sure that take-off and landing area is clear from all people that could be endangered, and that all people approaching the helicopter are well aware of above warnings, and briefed to :

1. **Stay clear 6 meters (20 feet) of the helicopter,**
2. **Watch the pilot and wait his sign before moving into the rotor area,**
3. **Bend forward and keep hands, cloths and objects low,**
4. **Move in the lateral area, in pilot's sight.**

ENGINE START

Starting the engine

Headset.....	ON
Radio.....	ON if needed
Altimeter setting	Correlated with ATC information
Compass heading indication.....	Verified
Strobe	ON
Fuel pump.....	ON, check Fuel pressure increase
Manual fuel injections.....	As needed
Throttle.....	Monitor on MLI : START as required between 0% and 15 %
Rotor brake	Apply - check the light - lock forward
Mixture	Full rich forward
Ignitions, Magneto and Plasma.....	ON, check beeper
Area	Clear
<u>Radio clearance if needed</u>	
Starter	Activate
STARTER light.....	checked ON and back OFF when switch is released
After engine starts, Throttle.....	Idle, 0% START on MLI
Alternator	ON, check ALT goes off
Check oil pressure light.....	OFF within 30 seconds of starting
	<i>If not, shutdown the engine by mixture off</i>
Set engine speed to	Warm engine : idle
	Cold engine : 1000 RPM
CLUTCH	Engage and lock switch – check light is ON
Rotor and Engine indicators.....	Synchronized
CLUTCH light.....	Wait for OFF

Note 1 : Depending on belt condition and temperature, the rotor may slightly engage from engine start. In this case, engage clutch to avoid prolonged belt slippage.

Note 2 : As the rotor begins to spin, a cyclic stick rotation may occur. Center the stick smoothly.

Note 3 : ALT light may flicker at idle. Check ALT lights goes off above 1500 RPM.

Note 4 : When starting an engine soaked at very cold temperature (around -20°C / -4°F), apply not less than 5 fuel injection s and avoid high throttle settings.

Ignition test :

Set engine speed to.....2000 RPM (upper purple radial mark)
 Plasma OFF 5 sec. – maximum drop 300 RPM (lower radial mark)
 Magneto OFF 5 sec. – maximum drop 100 RPM

Set rotor speedNR < 450 RPM
 Wait for Oil temperature increase as needed.

Set rotor speed to 530 RPM
 Check BARC backup green light lights ON

CARB. HEAT HOT
 Wait for an additional Carb brick to pop
 Check that NR drops

CARB. HEAT COLD
 Wait for the additional Carb brick to disappear
 Check that NR increases

CARB. HEAT AUTO

Roll-off throttle to idle..... Check needles desynchronization
 Check lower BARC light blinks when NR in yellow arc
 Check warning horn when NR approaches lower red limit
 Switch BARC to mute warning horn. This will also switch to
 normal mode
 Check idle stabilization

Governor ON, Roll-in throttle
 check governor engages from NR = 400 RPM
 Check rotor speed in green arc

Before take-off

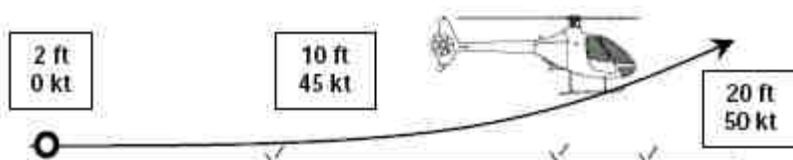
Oil temperature..... 30°C (86°F) minimum recommended
 60°C (140°F) minimum for max power
 Doors Closed or secured with strap
 Harnesses Both fastened
 Pressures and temperatures Green arcs
 Warning and caution lightsOFF
 Performance calculation first limit checked on MLI
 Landing light and NAV. lightAs needed
 RadioAs needed
 Collective frictionReleased

LANDING LIGHT ON
 (for in-flight collision avoidance, keep light ON all flight duration)

Take-off procedure

On clear flat area

1. Apply collective pitch progressively to stabilize hover at 2 feet skid height.
2. Adjust cyclic trim.
3. Check engine parameters in green arcs and warning / caution lights OFF.
4. Apply slight forward cyclic to accelerate at a constant height.
5. At 45 kt IAS, rotate to reach and maintain 50 kt IAS.
6. Once climb is stabilized, adjust power as needed. Rate of climb should not exceed 500 ft/min below 100 feet in order to ease piloting in case of an engine failure.
7. Follow take-off profile shown on Height-Velocity diagram shown page 5-3 :



Note 1 : Take-off is possible without increasing power in case of a very slow acceleration on hard surface.

Note 2 : Take-off run may be shortened, by raising slightly the collective to compensate for height loss, if power margin enables it.

On other surface (confined area or surrounded by obstacles)

Refer to HOG performance page 5-4.

Adapt acceleration procedure to environment by keeping rotor disk above horizon and avoiding as far as possible Height / Velocity limiting area (refer to page 5-3).

CHECKS

Check before Departure

1. Warning lights..... all out
2. Gauges all green arc
3. Fuel quantity checked
4. ERPM..... green

Hover Check

1. Power limitationwithin max limitations EPM
2. ERPM..... green
3. Warning lights..... all out
4. Take off axis/ Wind..... checked

Climb check

1. Speed..... adjusted -> 50 kts
2. Vertical speed positive
3. Powerwithin max limitations EPM
4. ERPM..... green

Cruise check

1. ERPM / EPMwithin max limitation
2. Warning lights.....all out
3. Gaugesall green arc
4. Fuel quantitychecked

Economy cruise : 90 % on MLI

Faste cruise : 100 % on MLI

Max endurance : 50 kts IAS

Best Range : 80 kts

Check for Approach

1. Engine gauges..... green
2. Fuel quantity checked
3. ERPM..... green
4. All warning lights off

Final Check

1. Speed..... 30 kt.
2. Vertical speed <500ft/Min.
3. Decision land/go around

Engine Shut Down

Engine / Rotor shutdown

Collective	Down, friction on
Governor	OFF
Engine cooling	420 < Nr < 450 RPM until CHT ≤ 180°C
Idle	Stable
CLUTCH	Switch to disengage
	Wait 10 seconds – check light is ON
Mixture	Pull OFF to shut-down
Ignition switches	OFF
Landing light and NAV. light	OFF
Alternator	OFF
Fuel pump	OFF
Rotor brake	On request under 150 RPM (white mark)
Rotor	Stopped
Strobe	OFF
Radio	Cleared and OFF
Hourmeter and EPM flight time	Noted
MASTER	OFF

Note : The CLUTCH switch is active only if the MASTER switch is left ON during a few seconds.

Disengagement with engine OFF

If the engine was shut-down or has stalled while it was clutched, switch CLUTCH to disengage.

The MASTER switch can then be switched OFF after a few seconds.

Engine disengaged, the complete declutching can take a few minutes.

EMERGENCY PROCEDURES

Aural warnings:

Continuous : low speed rotor

Intermittent : high speed rotor

short tone: LOW fuel

Beep warnings:

oil pressure lost / plasma ign ON and OIL P red

Engine ignition is HOT at startup

prevent leaving Plasma ON when leaving heli

POWER FAILURE

- Engine failure Yaw, desynchronisation, Oil P, Low NR
 --> autorotation
- Carburetor icing Power decay, while FLO 100%
 -> Governor overtakes -> Car heat check
- Primary transmission failure (clutch/desynchronisation)
 -> Roll off twist grip and enter AR

ENGINE FAILURE

- Enter autorotation immediately, maintain 50 kts

DITCHING – POWER OFF

- Enter autorotation, airspeed 50 knots
- Open doors, head between wave direction
- Keep collective up and apply sideward cyclic after water contact

AIR - RESTART

- Stabilize Autorotation
- Choose landing spot.
- If sufficient time available -> air restart attempt:
- Boost pump ON, fuel valve OPEN
- Mixture full rich / forward
- Ignition switches ON
- Apply 50 % twist grip
- Press starter button

TAIL ROTOR FAILURE

Nose to the right : engine failure

Nose to the left : tail rotor failure

- Hover
 - Close throttle, hover autorotation
- In flight (complete loss of thrust – yaw to the left)
 - Switch governor OFF
 - Adjust power to maintain airspeed between 70 to 80 kts
 - Enter autorotation and prepare for power-off landing

YAW CONTROL FAILURE - fixed pitch

- Hover
 - Land immediately, lower collective slowly down , roll of twist grip landing
- In flight (fixed pitch)
 - Adjust IAS 70 to 80 kts and adjust power to minimize slideslip
 - Proceed with shallow approach
 - Establish ground contact with forward speed
 - Control yaw with throttle if nesscessary

GOVERNOR FAILURE

- Hold twist grip
- Switch governor OFF
- Regulate Rotor/Engine speed manually (green arc)

ENGINE / CELL FIRE ON GROUND

- Cabin heater OFF
- Fuel valve OFF
- All switches OFF
- Rotor brake
- When rotor stopped -> Exit aircraft with fire extinguisher, fight fire

ENGINE FIRE IN FLIGHT

- Cabin heater OFF
- Lower collective to perform a full autorotation
- Fuel valve OFF
- Fuel pump OFF
- above 8000 ft increas airspeed to 90 kt to accelerate descend

Upon landing :

- Rotor brake
- When rotor stopped -> Exit aircraft with fire extinguisher, fight fire

ELECTRICAL FIRE DURING FLIGHT

- Alternator OFF
- Master switch OFF
- Open vents
- Close cabin heater
- *Caution : EPM and NR lights no longer powered + no governor !*
- Move NR switch to "Backup" position
- Use NR lights ("backup") to monitor rotor speed

if fire source identified, switch other systems ON

if electric fire continues , **LAND IMMEDIATELY**

EPM parameters Out of Limitations

CARB T	Carb heat switch HOT Continue flight If light stays, land as soon as possible Avoid low power setting
CHT	Reduce power Land as soon as possible
Oil T	Yellow : Warm up engine Red : Reduce power , land as soon as possible
Oil P - in flight	Yellow : reduce power Red : land as soon as possible If OIL P Warning light ON -> Land immediately
Oil P - ground	Allow to warm up or reduce power
Fuel P	< min : Fuel boost ON Reduce power , Vy 50 kts Land as soon as possible > max : Fuel boost OFF , land as soon as possible
Low Fuel	Check low fuel warning light. If LOW FUEL Warning light ON -> Land immediately
BATT	Check ALTERNAOR is ON Turn all unsueful equip off land as soon as possible

EPM Alarms

CO	Cabin heater off, open vents Land immediately
MGB/TGB chips	Land immediately
Fire	Land immediately, cut off - > AR
Starter	Release starter If stays, switch engine off
GOV	Flashing : governor inop - > desengage Steady : governor desengaged Regulate E/RPM with twist grip
BRAKE	Desengage and lock
OIL P	Land immediately
MGB T	Accelerate to Vy Reduce power . Land as soon as possible
LOW FUEL Short tone	<i>12 liters remaining -> land as soon as possible</i> If EPM < 10 lts : Land immediately
ALT	Check ON and voltage Turn all unsueful equip off land as soon as possible
CLUTCH	Pressure is low Reduce power to 50 kts Land immediately Be prepared to AR
NR - intermittent tone	NR too high Raise collective or reduce throttle
NR - cointinuous tone	NR too low Lower collective or increase throttle

Sensors failures

When the MASTER is switched on, the EPM carries out a self-test and displays a test page (refer to page 7-13).

Only one flight should be performed after one of following parameters are displayed "Failed", with following restrictions :

Failed parameter	Flight restriction
OAT	Use Section 5 to compute available performance Apply a margin on temperature
Pressure	Limit MLI to 95% PWR and 100% FLO (the smallest)
T. induction	Carb. heat test : control through NR drop
CHT	Avoid long hover.
Carb. T	Control carb. heat manually Use carb. heat below 80% MLI
ManP	Use Section 5 to compute available performance
Throttle	Use Section 5 to compute available performance
Oil T	Avoid prolonged hover. Monitor CHT
Oil P	Monitor CLUTCH and OIL P. lights
Fuel Q	Perform an accurate fuel planning
MGB/TGB Chips	Hand-check corresponding plug at take-off
Battery charge	Minimize electrical loads
CO	Keep cabin heat closed
Carb. heat control	Control carb. heat manually Use carb. heat below 80% MLI

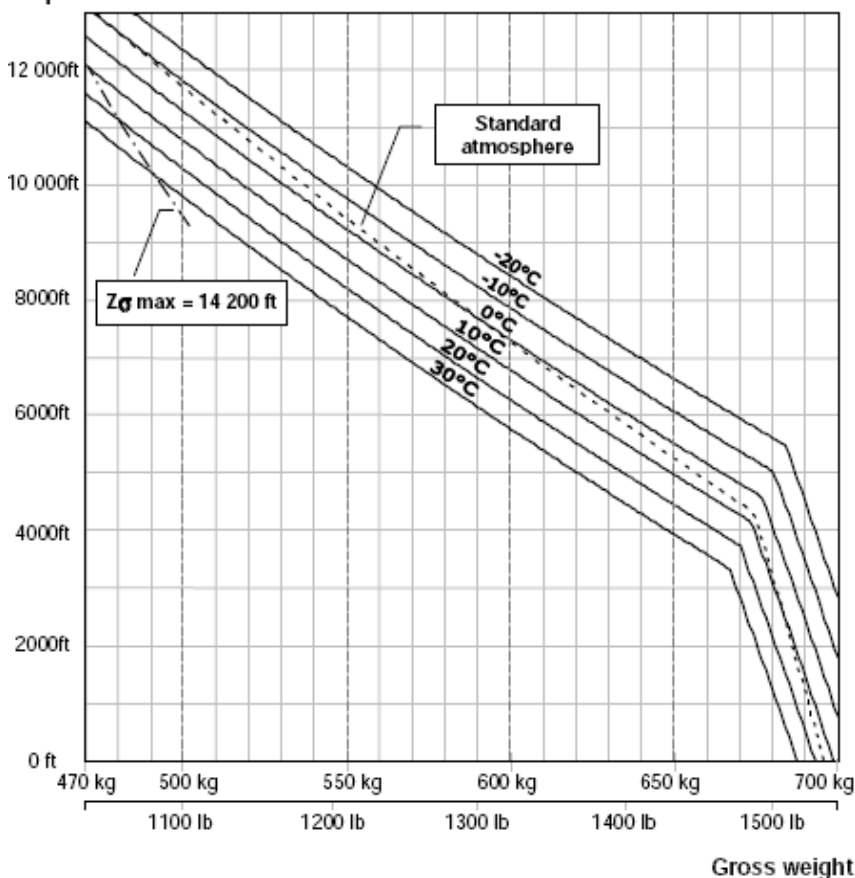
PERFORMANCES OGE

**Hélicoptères Guimbal
CABRI G2**

**SECTION 5
PERFORMANCE**

Hover Out of Ground Effect

Zp



OGE hover performance

- 20°C ≤ OAT ≤ ISA+30°C

No wind

Engine speed = 2650 RPM

Max. Continuous Power

NORMAL PROCEDURES – PREFLIGHT CHECK

Daily or Pre-flight checks

The following check must be carried out before each flight.

However, if the helicopter is operated by a single pilot, or in an organization where checks are done by a qualified mechanic, this check may be carried-out daily, before the first flight of the day.

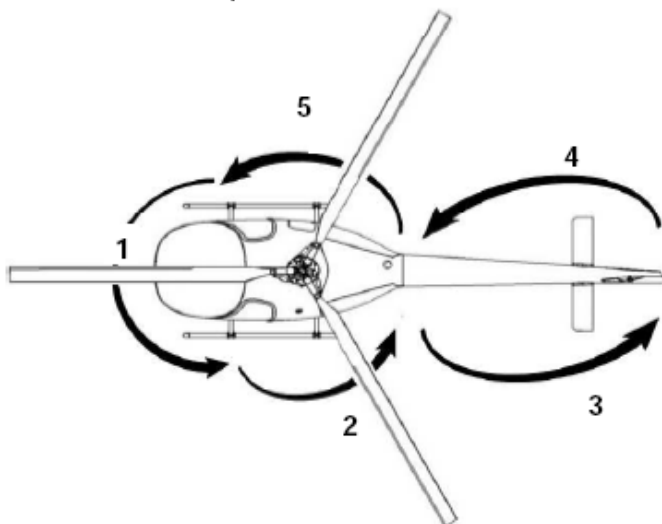
In this case, an inter-flight check should be done between each flight (refer to page 4-7).

Preliminaries

- Remove airframe covers, pitot and static plugs, blade tie downs and exhaust plug.
- In cold weather, remove all frost, ice or snow.
- Purpose of the following inspection is to :
 - Visually check the helicopter general condition,
 - Detect leakage indications,
 - Detect aluminum fretting marks : dark powder marks,
 - Detect steel fretting marks : black or brown marks/residues,
 - Detect overheating marks (color changing),
 - Detect damages (impacts, scratches, cracks, frictions, corrosion...).

Note : All castellated nut must be locked by cotter pin.
Lockwire must be tight.
Torque-seal marks must be intact.

Definition of Cabri G2 inspection stations



Station 1

Main rotor blades (each 3) :

Clean, particularly at leading-edge

Leading edge hand-check for damage or debonding

Tips bolts Check lockwiring

Right door hinges Check

Door hinge safety pins Installed

Windshield condition and cleanliness Check

Sideslip string indicator Check

Lower windows condition and cleanliness Check

Landing light Check

Pitot tube Cover removed, check

Static pressure port Plug removed, check

Front gear bow attachment Check

Left door hinges Check

Door hinge safety pin Installed

Station 2 :

Fuel cap	Locked
Navigation lights	Check
Front and main gear bow condition	Check
Landing gear pants and skid condition	Check
Skid shoes	Check
Fuel manifold	No leak
Drain valve	Sample
Cowling hinge	Check

Open the left engine cowling

Battery strap	Check
Battery terminals	Tightened
Breakers	All set
MAP lines	Check
Transmission belt	Check
Belt slack	Check
Electronic ignition coils attachment	Check
Ignition wires	Check
Engine and baffling general condition	Check
Engine skirts condition and attachment	Check
Exhaust pipes	Check
Heat muff and hose condition	No cracks
Mixture control	Check
Throttle control	Check
Air box attachment	Check
Auto carburetor heat	Check cold
Engine connector	Locked
Engine mount condition	Inspect for cracks or corrosion
Engine rubber mounts	Check
Magneto connection	Check
Fuel pump and hose	No leak
Oil cooler air hose	Check
Flexible push-pull control	Check
Left tail boom attachments	No crack
Cotter pins	Installed
Cowling	Close and lock front latch

Station 3 :

Left tail boom side general condition	No damage
Horizontal stabilizer	Shake and inspect
Strobe light	Check
Rotor duct	Clean
Tail rotor blades condition	Clean, no impact
Tail rotor blades slack	Check all 7
Tail skid and attachment	Check

Station 4 :

Tripod attachments Check
 Tail gearbox oil level Check – Minimum is mid-sight gage
 Chip detector Locked
 Pitch lever and rod end Check free-play
 Horizontal stabilizer Check
 Rear transmission tube Check while turning main rotor
 Right tail boom side general condition No damage
 Transmission bearings bolts and plugs Check tight

Station 5 :

Muffler exhaust Check and shake
 Right cowling hinge Check

Open the right engine cowling

Right tail boom attachments No crack
 Cotter pins Installed
 Muffler No crack or interference with engine frame
 Oil filter Locked, no leak
 Engine oil dipstick Check 4 to 6 Qt and tighten
 Engine mount condition Inspect for cracks or corrosion
 Fuel line condition Check
 Clutch distributor and attachment Tight, no leak
 Oil cooler pipes No leak
 VHF antenna Check
 Engine cooling intake screen Inspect and clean
 Ignition wires Check
 Engine and baffling general condition Check
 Rotor brake Check pads and clearance
 Flex coupling and bolts Tight – no crack
 Upper pulley Check
 Clutch actuator Retracted
 Main gearbox oil level Check – Minimum is mid-sight gage
 Chip detector Locked
 Inspection door Closed
 Engine skirts condition and attachment Check
 Exhaust pipes Check
 Carburetor heating hose Check
 Air intake duct and hose Check
 Gascolator drain Sample
 Fuel flow sender Check
 Aft landing gear attachment Check
 Cowling Close and lock both latches
 Front and main gear bow condition Check
 Landing gear pants and skid condition Check
 Skid shoes Check

Navigation lights Check

Open the luggage door, step for main rotor examination :

Blade bolts Check

Elastomeric thrust bearings Check elastomer condition

Main rotor hub Check nicks or corrosion

Lead-lag dampers :

- Elastomer condition No crack

- Rod ends Free without looseness

All control rod-ends Free without looseness

Droop stop ring Visual check

Rotating and non-rotating scissors Free with moderate looseness

Swashplate Check no free-play

Main gearbox upper fitting Check

Air intake and MGB compartment No foreign object

Engine air intake screen Inspect and clean

Blades leading edge No debonding

Step down and slam luggage door

Inside the cockpit

Stroking seats :

- Upper slide Aligned

- Attachment Check

Harnesses Check

Main controls condition Check

Pedals condition Check

Objects inside Stowed

Removable controls (if installed) Check

Instruments and switches Check

All breakers In

intentionnaly left blank

ERP

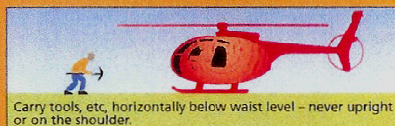
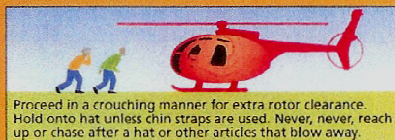
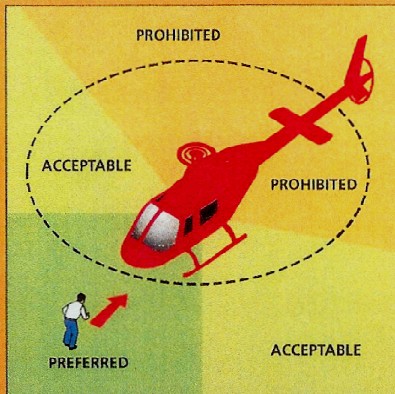
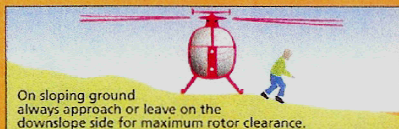
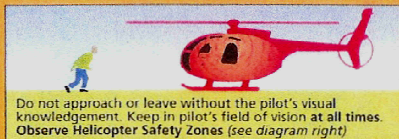
QUI QUAND QUOI COMMENT CONTACT				
EQUIPAGE	Immédiat 1	Alerte	REGA - Ambulance - Police - Pompiers	1414 canal K/R 144 117 118
	Immédiat 2	Secours	- sécuriser le site de l'accident - actions pour sauver les vies - information aux sauveteurs	
	Immédiat 3	Information	Communication externe EXCLUSIVEMENT par le management de la COMPAGNIE. Aucune information aux médias ou tiers	
			- Management compagnie - Responsable des opérations - Management technique	
		Protocole	- noter tous les appels et messages	

Les principes les plus importants lors de l'alerte

Alerte	Que s'est-il passé Où cela s'est-il passé (lieu, rue, montagne, altitude, coordonnées, etc.) Quand cela s'est-il passé Qui est concerné (nombres personnes, blessés, décès, etc.) Hélicoptère et immatriculation Quelles mesures ont été prises Tous les appels, messages et mesures prises ont été enregistrées jusqu'à ce que le management prenne le relais
Proches	Les proches sont informées exclusivement par le management ou une personne autorisée par le management
Information	L'information à des tiers et aux médias est effectuée exclusivement par le management ou une personne autorisée par le management

SAFETY AROUND HELICOPTERS

APPROACHING OR LEAVING A HELICOPTER



LANDING, TAKE-OFF AND LOADING OPERATIONS

