



## **ATTACHMENT 4**

### **AIRWORTHINESS GROUP CHAIRMAN'S FACTUAL REPORT**

**CEN13FA121**

**Eurocopter EC130 B4 Aircraft Maintenance Manual 05-40-00, Section 6-3:  
Additional Operation - Cold Weather and Very Cold Weather  
(6 pages)**

For A/C: B4

## 6-3 Additional Operation - Cold Weather or very Cold Weather

### A. Applicable Documents

#### 1. Main information

05-40-00, 6-7	Checks P
05-40-00, 6-8	Checks P - optional Equipment
10-10-00, 3-2	Covering - Helicopter

#### 2. Conditional information

24-33-00, 4-1	Removal / Installation - Battery
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#### 3. General information

MSM 05-00-00	
MSM 05-20-00	
FLM Section 2	
FLM Section 8	
MTC 20.07.02.205	De-icing and anti-icing protection before helicopter take-off

### B. Special Tools

350A92-5481-00	engine air intake cover
350A92-2380-00	fenestron cover
350A92-0080-00	canopy cover
350A92-3180-00	MRH cover
350A92-5411-00	exhaust pipe blank
355A92-1145-00	blade covers
Commercial	hot air generator

### C. Materials

CM 238	alcohol
CM 781	de-icing /anti-icing fluid type I

### D. Routine Replacement Parts

None

### E. Procedure



**COMPLY WITH COLD WEATHER UTILIZATION RESTRICTION DEFINED IN  
CHAPTERS MSM 05-00-00 AND MSM 05-20-00 , ESPECIALLY RESTRICTIONS  
CONCERNING HYDRAULIC FLUID.**

1. This section groups all the operating procedures to be followed when the aircraft is used in particular climatic conditions, such as cold weather and snow. Aircraft servicing does not require any special tools or systematic replacement.
2. General preventive operations for rational helicopter operation in cold weather between - 10°C and - 30°C (14°F and - 22°F) , extreme cold weather between - 30°C and - 40°C (- 22°F and - 40°F) or snow:
  - a. Use oils and fuels specified in (FLM Section 2 ).
  - b. If possible, park the helicopter under a shelter, otherwise carry out picketing (10-10-00, 3-2).
  - c. Should the helicopter endure prolonged exposure to cold weather, remove the battery(ies) (24-33-00, 4-1) and store it (them) in a room at a moderate temperature.
  - d. Apply approved anti-icing products on blades and door seals and locks (MTC 20-07-02-205 )



**ANTI-ICING PRODUCTS ARE VERY AGGRESSIVE ON THE HELICOPTER  
COMPONENTS.**



**IT IS NECESSARY TO CARRY OUT DE-ICING AND HEATING PRIOR TO THE FIRST  
FLIGHT.**



**DURING PREHEATING DO NOT LEAVE THE HELICOPTER UNATTENDED AND  
KEEP AN EXTINGUISHER AT HAND.**

- e. In cold weather conditions, parts made of rubber (bellows, door seals, leak-tightness seals) become brittle. Preheating of the helicopter is therefore required.
3. Operating procedures:
    - a. If the helicopter is subjected to temperatures comprised between - 10°C and - 30°C (14°F and - 22°F), and according to its availability or operating conditions, it is advised to carry out a run-up (FLM Section 8 )

every two hours.

- b. If the helicopter is subjected to temperatures comprised between - 30°C and - 40°C (- 22°F and - 40°F), and according to its availability or operating conditions, it is advised to carry out complete heating of the helicopter: engine, dynamic components, cabin, until all snow and ice has disappeared.

**NOTE:**

- For heating and de-icing, only use hot air generators which are appropriate and in correct operating condition.
- Do not heat the sensitive parts of the helicopter directly: piping (fuel, oil, hydraulics), transparent panels.
- During heating, carefully dry the moisture produced by de-icing, particularly in the engine air intake and the MGB compartment.
- Do not refuel during heating and de-icing.
- It should be remembered that when changing the oil, the system is first to be flushed in accordance with the recommendations in the maintenance publications.

c. Lubricants to be used for Transmission Assemblies: refer to (FLM Section 2 ) of the Basic Flight Manual.

d. After compliance with these operating procedures, perform the check outlined in paragraph 4.

4. Additional operations to be performed before flight, in cold or extreme cold weather:

If a ground power unit is not available, startup may be carried out using the aircraft battery or two aircraft batteries connected in parallel.

The starting envelope is related to the temperature and is indicated in the chart (

**NOTE:**

*The following procedures are to be carried out in addition to the checks specified in this manual.*

- a. Remove accumulations of snow or ice from the whole of the helicopter, particularly from the forward cowling air intakes, hinges and drive components (main rotor, main rotor shaft, tail rotor drive especially around the limiter, tail rotor, flight controls, engine controls).
- b. Main rotor blades:
  1. remove blade covers [355A92-1145-00],
  2. remove if necessary, snow and ice from the blades using hot air of less than 80°C (176°F).
- c. Main rotor hub and mast:
  1. remove MRH cover [350A92-3180-00],
  2. remove ice and frost from swashplates, scissors, servocontrols and the rotor head vibration damper.

**d. Engine:**

1. remove exhaust pipe blank [350A92-5411-00] and engine air intake cover [350A92-5481-00],
2. make sure that there is no snow or ice in the air intake cowling, MGB compartment and engine air intake,
3. make sure that the drains and scuppers are not clogged,
4. manually and visually check for snow and ice inside the air intake duct up to the first stage of the compressor,
5. in case of icing:
  - remove ice using a wooden or plastic scraper,
  - carefully wipe the surface using a cloth soaked with isopropyl alcohol,
  - inspect drains, unblanked scuppers; check for snow and ice on vent and static ports.

**e. Tail rotor hub:**

1. Remove fenestron cover [350A92-2380-00],

**f. MGB:**

1. Turn the tail rotor manually, so that the main rotor turns at least once, and make sure that the rotor brake and free wheel are not blocked.

**g. Structure:**

1. remove MRH cover [350A92-3180-00], at the end of the check to prevent icing,
2. make sure that the windshield wiper is not stuck on the canopy,
3. make sure that there is no ice on the static ports, pitot heads and the air vent.

**h. Flight, rotor brake and engine controls:**

1. Before operating the controls, heat the cabin, then gradually, move the rotor brake, engine and collective pitch lever controls over their full operating range (do not move the cyclic pitch stick and pedals over their full operating range).

**i. Fuel system:**

1. Do not drain the system if the temperature is lower than 0°C (32°F).

5. Additional operations to be performed after flight, in cold or extreme cold weather:

**NOTE:**

*In cold or very cold weather, the Check (05-40-00, 6-7) and Check for optional equipment (05-40-00, 6-8) must be performed after the last flight of the day.*

**NOTE:**

*The following procedures are to be carried out in addition to the checks specified in this*

*manual.*

- a. When the rotor is stopped, move the cyclic pitch stick to approximately the neutral position and lock the collective pitch lever in the full low pitch position.
- b. If the magnetic plug check limit is reached, perform the operation within half an hour following engine shutdown to prevent damage to the seals.
- c. Apply CM 238 alcohol and CM 781 de-icing /anti-icing fluid type I (MTC 20-07-02-205 ).
- d. According to the operating conditions and the availability of the helicopter, carry out the preventive operations outlined in paragraph 1.
- e. Carry out picketing of the helicopter (10-10-00, 3-2).

Figure 1. Flight-Related Checks - Operation of the Helicopter in cold or extreme cold weather

