



FLIGHT MANUAL

EC 120 B

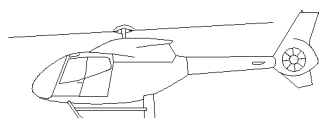
SUPPLEMENT

LIST OF SUPPLEMENTS
INCOMPATIBILITY OF USE
EFFECT ON PERFORMANCE DATA

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.



Airbus Helicopters Direction Technique Support
Aéroport international Marseille-Provence 13725 Marignane Cedex - France

NOTE

Pages SUP.0.P3 and SUP.0.P4 concern the whole of the Supplements assigned to the helicopter mentioned on the title pages.

LIST OF SUPPLEMENTS

Some Supplements covering installations or procedures not used on this helicopter may be withdrawn from this manual. The complete list of Supplements appears on pages SUP.0.P2.

No.	TITLE
0	LIST OF SUPPLEMENTS - INCOMPATIBILITY OF USE - EFFECT ON PERFORMANCE DATA
1	RESERVED
2	RESERVED
3	RESERVED
4	INSTRUCTIONS FOR OPERATIONS IN COLD WEATHER
5	RESERVED
6	AUTOROTATION LANDING TRAINING PROCEDURE
7	HYDRAULIC FAILURE TRAINING PROCEDURE
8 to 10	RESERVED
11	SKI LANDING GEAR SURFAIR
12	TRANSPORT OF EXTERNAL LOADS CARGO SLING with "SIREN" release unit (P/N AS21-8-B)
13	LH SIDE MAIN FLIGHT CONTROLS
14	SAND FILTER AEROFLO OR SOFRANCE
15 to 16	RESERVED
17	EMERGENCY FLOATATION GEAR AERAZUR
18	RESERVED
19	AIR CONDITIONING SYSTEM
20	IMPROVED HEATING SYSTEM

LIST OF SUPPLEMENTS (cond't)

No.	TITLE
21 to 49	RESERVED
50 to 55	RESERVED
55.1	GPS TNL 2101 APPROACH PLUS
55.2	GPS GARMIN GNS 430/430 W
55.5	GPS TRIMBLE TNL 1000 DC
55.6	GPS TNL 2000 APPROACH
55.7	GPS TNL 2000 APPROACH PLUS

COMPOSITION OF CONDITIONAL REVISIONS (RC)

This manual assigned to the helicopter mentioned on the title page contains the following pink pages except those cancelled when the conditions are complied with.

CAUTION

The reader will have to insert the pink pages incorporating the paragraph(s) affected by the Conditional Revision so as the paragraph(s) cover(s) the paragraph(s) of the standard version or of the variant of standard definition.

(1) Paragraph Revision Code:

- **R** Revised, to be replaced
- **N** New, to be inserted

RC No.	SECTION or SUP.	PARAGRAPH	DATE CODE	Number of pages	(1)	Applicable before condition is met:
a	SUP.12	1 *RC*	16-26	1		SB 31.003
b	SUP.4	2.3 *RC*	16-26	1		SB 28.007
c	SUP.4	2.3 *RC*	16-26	2		SB 28.009
d	SUP.4	2 *RC*	16-26	1		SB 04.003

COMPOSITION OF RUSH REVISIONS (RR)

The Supplements contain the following additional yellow page(s):

CAUTION

The reader will have to insert the yellow pages incorporating the paragraph(s) affected by the Rush Revision opposite the existing paragraph(s) of the standard version or of the variant of standard definition.

(1) Paragraph Revision Code:

- **R** Revised, to be replaced
- **N** New, to be inserted

RR No.	SECTION or SUP.	PARAGRAPHS	DATE CODE	Number of pages	(1)

LIST OF APPROVED EFFECTIVE PAGES - EASA CERTIFICATION

(1) AIRWORTHINESS EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- A Specific to EASA

(2) VARIANT OF STANDARD DEFINITION EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- XXX..... Specific to aircraft equipped with XXX

SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
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SUP.0.P2	1 to 2	16-26		
SUP.0.P3	1 to 1	16-26		
SUP.0.P4	1 to 1	16-26		
SUP.0.P5	1 to 2	16-26	A	
SUP.0	1 to 2	16-26		

LOG OF APPROVED NORMAL REVISIONS**BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA**ISSUE 1: NR 0 to NR 13:

NORMAL REVISION 13 - SEPTEMBER 2014	Approved under the authority of EASA DOA No. 21J056 on June 11, 2015
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ISSUE 2:

NORMAL REVISION 0 date code 16-26		Approved on January 11, 2018 under the authority of EASA DOA No. 21J700
Title	New issue	
Revised information	All	
Deleted information	None	

INCOMPATIBILITIES OF UTILIZATION BETWEEN OPTIONAL EQUIPMENT ITEMS

The following list is non-exhaustive and covers only those EASA-approved equipment items which are incompatible with one or several other items

NOTE

Incompatibility of installation between equipment items is stated in the Master Servicing Manual (MSM).

Item No.	Operation of the following installation:	Makes operation with the following optional equipment items impossible:	MANUAL SECTION No.
	None	None	

INFLUENCE OF OPTIONAL EQUIPMENT ITEMS ON PERFORMANCE DATA

When several optional equipment items are used simultaneously, the basic performance data must be reduced by the value corresponding to the influence of each optional item.

1 APPROVED PERFORMANCE DATA

- Takeoff weights:

When the installation of an optional equipment item modifies the takeoff weights specified in the basic Flight Manual SECTION 5.1, the relevant Supplement either provides the new takeoff weights by new charts or by a penalty relative to the basic flight performance.

- Rates of climb:

When the rates of climb in the basic Flight Manual SECTION 5.1 are modified, the relevant Supplement either provides a new chart or specifies a reduction with respect to the basic flight performance.

2 ADDITIONAL PERFORMANCE DATA

The influences of the optional equipment items are specified in SECTION 5.2 "Additional performance data".



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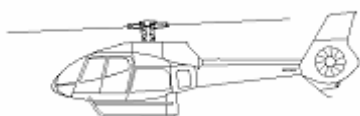
SUPPLEMENT

INSTRUCTIONS FOR OPERATIONS IN COLD WEATHER

IMPORTANT NOTE

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SUP.4.P1	1 to 1	16-26	A	
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LOG OF APPROVED NORMAL REVISIONS**BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA**ISSUE 1: NR 0 to NR 5:

NORMAL REVISION 5 - FEBRUARY 2009	EASA approval No. R.C.03353 on May 18, 2009
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ISSUE 2:

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Title	New issue	
Revised information	All	
Deleted information	None	

RC d

The paragraph **2 - LIMITATIONS**, is modified as following:

2 LIMITATIONS

Flight is forbidden if the OAT is below - 30°C.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB NO 04 003.

RC c

The paragraph **2.3 - APPROVED FUEL**, is modified as following:

- NORMAL FUELS

Add the following NOTE:

NOTE 3

**The use of an anti-icing additive is compulsory for OAT $\leq + 0^{\circ}\text{C}$
for all approved fuels which do not contain it.**

The rest of the paragraph is unchanged.

CAUTION

**THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT
OF MODIFICATION SB No 28 009.**

1 GENERAL

This supplement details the procedures to be followed when the aircraft is operated in cold weather (OAT < 0°C) and/or when aircraft is or could be exposed to falling or blowing snow.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 AIRSPEED LIMITS WITH DOORS CLOSED

For OAT ≤ -35°C: Reduce VNE Power ON by 5 kts (9 km/h)

2.2 TEMPERATURE LIMITS

Minimum temperature: -40°C

2.3 APPROVED FUELS

NOTE 1

Commercial designations of authorized fuels and additives are specified in the TURBOMECA documentation.

- NORMAL FUELS

(Fuels approved to operate throughout the flight envelope with no restrictions).

Type of fuel	NATO code	Specifications			Anti-ice additive included
		FRANCE	USA	UK	
Kerosene - 50 (AVTUR-FSII) (JP8)	F 34	AIR 3405 F 34	MIL-T-83133 (JP8)	D.ENG. RD 2453	Yes
Kerosene - 50 (AVTUR) (JP1)	F 35	AIR 3405 F 35	ASTM-D-1655 JET A1	D.ENG.RD 2494	No
Kerosene	-	-	ASTM-D-1655 JET A	-	No

NOTE 2

All specifications are effective at latest issue or amendment.

- REPLACEMENT FUELS

USE FOR: $-40^{\circ}\text{C} \leq \text{OAT} \leq +30^{\circ}$ AND FOR $\text{Hp} \leq 9842 \text{ ft (3000 m)}$						
Type of fuel	NATO Code	Specifications				Anti-ice additive included
		FRANCE	USA	UK	RUSSIA	
Wide cut (AVTAG-FSII) (JP4)	F 40	AIR 3407	MIL-T-5624 (JP4)	D.ENG.RD 2454	-	Yes
Wide cut (JET B) (AVTAG)	-	-	ASTM-D-1655 (JET B)	-	-	No
Russian fuel Kerosene TS 1 (TC1)	-	-	-	-	GOST 10227	No
Russian fuel Kerosene RT (PT)	-	-	-	-	GOST 10227	No

2.4 APPROVED LUBRICANTS

- ENGINE LUBRICANTS

USE FOR: $-40^{\circ}\text{C} \leq \text{OAT} \leq +30^{\circ}\text{C}$					
Oil type	NATO Code	Specifications			Approved oil grades
		FRANCE	USA	UK	
Synthetic 3 to 3.5 cSt at 98.9°C	0.148	AIR 3513	MIL-L-7808	-	ESSO TURBO OIL 2389 MOBIL OIL AVREX 256 TURBONYCOIL 160
	0.150	AIR 3514	-	-	TOTAL AERO TURBINE 312 ELF JET SYNTHETIC OIL 15 TURBONYCOIL 13 B

NOTE 1

When the oil specification or grade/trademark differs from the approved one, TURBOMECA approval shall be obtained before using this oil.

NOTE 2

In case of oil change with trademark/NATO code/category/grade or specification change, apply instructions as prescribed in the TURBOMECA Maintenance Manual.

NOTE 3

All specifications are effective at latest issue or amendment.

RC b

The paragraph **2.3 - APPROVED FUEL**, is modified as following:

- REPLACEMENT FUELS

Supersede the table **"USE FOR: $-40^{\circ}\text{C} \leq \text{OAT} \leq +30^{\circ}$ AND FOR $\text{Hp} \leq 9842 \text{ ft (3000 m)}$ "** by the following:

USE FOR: $-40^{\circ}\text{C} \leq \text{OAT} \leq +30^{\circ}$ AND FOR $\text{Hp} \leq 9842 \text{ ft (3000 m)}$						
Type of fuel	NATO Code	Specifications				Anti-ice additive included
		FRANCE	USA	UK	RUSSIA	
Russian fuel Kerosene TS 1 (TC1)	-	-	-	-	GOST 10227	No
Russian fuel Kerosene RT (PT)	-	-	-	-	GOST 10227	No

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No 28 007.

RC c

The paragraph **2.3 - APPROVED FUEL (cont'd)**, is modified as following:

- REPLACEMENT FUELS

Add the following NOTE

NOTE

The use of an anti-icing additive is compulsory for $OAT \leq + 0^{\circ}C$ for all approved fuels which do not contain it.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB NO 28 009.

- MAIN AND TAIL GEARBOX LUBRICANTS

USE FOR: $-40^{\circ}\text{C} \leq \text{OAT} \leq +0^{\circ}\text{C}$					
Oil type	NATO Code	Specifications			Approved oil grades
		FRANCE	USA	UK	
Synthetic 3 to 3.5 cSt at 98.9°C	0.148	AIR 3513	MIL-L-7808	-	ESSO TURBO OIL 2389 MOBIL OIL AVREX 256 TURBONYCOIL 160
	0.150	AIR 3514	-	-	ELF JET SYNTHETIC OIL 15 TOTAL AERO TURBINE 312 TURBONYCOIL 13 B

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

3.1 ENGINE FLAME-OUT

NOTE

Following an engine failure at light weight low Hp and low OAT, the stabilized NR may be below the audio warning threshold (370 rpm), the pilot can cut the horn using the [HORN] pushbutton.

3.2 FUEL ALARMS



No action if comes on during engine start as long as the engine oil temperature is below 0°C.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 GENERAL RECOMMENDATIONS

For safe and rational operation of the aircraft in cold weather and snow, carry out the following basic operations:

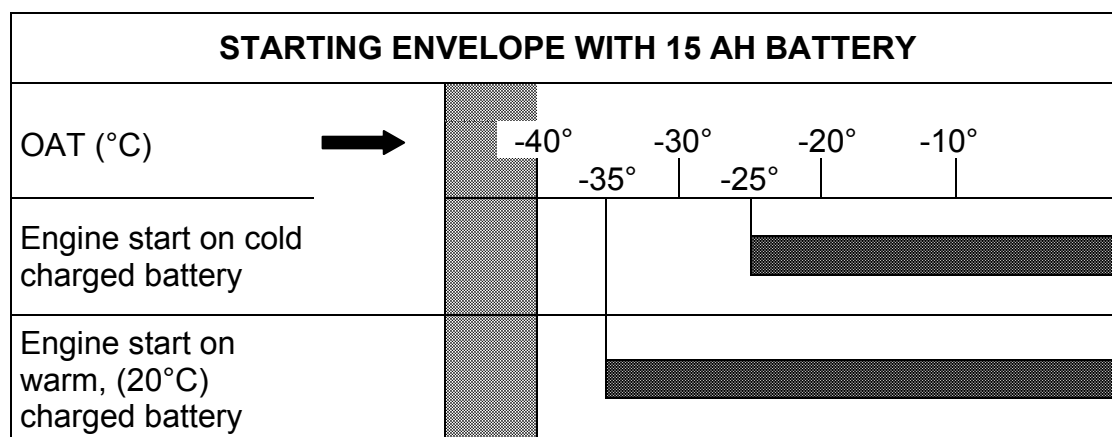
- Remove ice or snow accumulations from the whole of the aircraft, particularly at hinges and on all parts of the dynamic and control systems (main rotor, rotor mast, tail rotor drive and tail rotor, flight controls, engine controls).
- When the aircraft has been subject to very low temperatures, it is recommended:
 - either to perform regular ground runs every two hours for temperatures of around - 20°C or every hour for lower temperatures.
 - or to preheat the engine, transmission assemblies and cabin before engine starting (even if it is possible to start the engine at temperatures down to - 40°C).

4.2 USE OF BATTERY FOR STARTING

During long periods of no flight it is recommended to store the battery in a warm area.

If a ground power unit is not available, startup may be carried out using the aircraft battery.

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



4.3 PREFLIGHT CHECK

In addition to the inspections specified in the basic Flight Manual, perform the following operations and inspections:

- Main rotor blades : Remove snow and ice
- Main rotor hub and mast : Check for absence of ice on the swashplates, the scissors, the servo controls and the rotor head spring antivibration devices
- Engine..... :
 - Remove the engine air intake and exhaust nozzle blanking covers only after removal of snow from the aircraft surface
 - Remove snow and ice accumulations around the air intake and on either side of the screen
 - Check for absence of snow and ice accumulations inside the air intake
- Drains and air pressure probes : Inspect fuel drain, check for absence of snow and ice on all ventilation and drain pipes as well as on static ports and pitot
- Tail rotor..... :
 - Check for absence of ice on the tail rotor assembly
 - Manually rotate the tail rotor so that the main rotor performs at least a complete turn:
 - Check free rotation
 - Check freewheel operation
- Cabin :
 - Remove the cabin cover just before engine starting to prevent windscreen icing
 - Check that the windshield wiper is not stuck on the canopy

NOTE

In falling or blowing snow conditions the engine air intake should be checked at the end of the exterior checks. The further checks before engine starting should then be performed without major delay.

4.4 AFTER LAST FLIGHT OF THE DAY

The normal procedures described in the basic Flight Manual are to be supplemented by the following:

- When the rotor stops turning, position the cyclic close to the neutral position and the collective locked at full low pitch, with pedals in neutral position.
- Do not leave doors open.
- Install the air intake and exhaust nozzle blanking covers.
- When the aircraft is parked in an unsheltered area, it is recommended to apply anti-icing products and to carry out aircraft blanking and mooring.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



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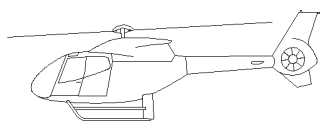
SUPPLEMENT

AUTOROTATION LANDING TRAINING PROCEDURE

IMPORTANT NOTE

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SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.6.P1	1 to 1	16-26	A	
SUP.6.P5	1 to 2	16-26		
SUP.6	1 to 3	16-26		

LOG OF APPROVED NORMAL REVISIONS**BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA**ISSUE 1: NR 0 to NR 5:

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NORMAL REVISION 0 date code 16-26		Approved on January 11, 2018 under the authority of EASA DOA No. 21J700
Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

This procedure is used for training for autorotation landing with full touchdown or power recovery, with a simulated engine failure or loss of engine power.

In case of engine failure or sudden loss of power, the helicopter will yaw to the right, some red warnings may come on associated with the Gong audio warning, the NR will decay and the low NR audio warning will sound if NR goes below 370 rpm.

The procedure enables engine failure or loss of engine power to be simulated with the same symptoms by setting the twist grip to the IDLE position. Engine is thus set to idle.

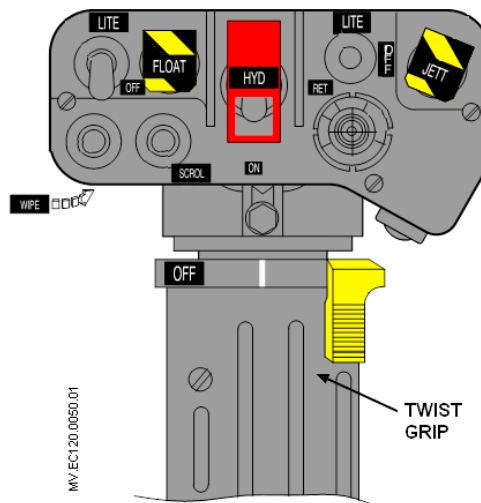


Figure 1: Collective grip

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

NOTE

Autorotation training shall be conducted within gliding distance of a suitable running landing area.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

NOTE

If necessary, it is possible to turn the twist grip back to the FLIGHT position at any time and for any NR value. However, it is recommended to restore engine power when the NR is in normal operating range.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 FAILURE SIMULATION

1. Collective.....REDUCE power
 2. Twist gripIDLE position:
 - . **TWT GRIP**
 - . Gong sounds
 - . Engine is set to idle, $N_g \cong 67\%$
- Then:

4.2 FULL TOUCHDOWN AUTOROTATION TRAINING PROCEDURE

1. Autorotation procedureAPPLY actions 1, 2, 4 to 10 of the procedure described in SECTION 3.2 § 1 of the basic Flight Manual

then:

Once the aircraft has stopped:

2. CollectiveREDUCE to full low pitch
3. Twist gripFLIGHT position:
 - . **TWT GRIP**
 - . Rotor speed increases to its normal governed value

4.3 POWER RECOVERY AUTOROTATION TRAINING PROCEDURE

1. CollectiveREDUCE, maintain NR in normal operating range
2. IASSET to V_y
3. Maneuver the aircraft into the wind on final approach

At height \cong 70 ft (21 m)

4. NR.....CHECK in normal operating range
5. Twist gripSmoothly to FLIGHT position:
 . **TWT GRIP**
 . Nf accelerates to its governed value
6. CollectiveCONTROL to maintain NR in normal operating range
7. CyclicFLARE

At 20 - 25 ft (6/8 m) and at constant attitude

8. CollectiveGRADUALLY INCREASE to reduce the rate of descent and forward speed
9. CyclicFORWARD slightly to adopt a landing attitude
10. Pedals.....ADJUST to cancel any side-slip tendency
11. CollectiveINCREASE as necessary

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

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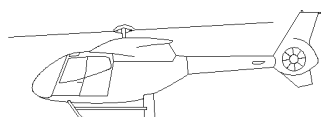
SUPPLEMENT

HYDRAULIC FAILURE TRAINING PROCEDURE

IMPORTANT NOTE

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(1) AIRWORTHINESS EFFECTIVITY:

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SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.7.P1	1 to 1	16-26	A	
SUP.7.P5	1 to 2	16-26		
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LOG OF APPROVED NORMAL REVISIONS

BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA

ISSUE 1: NR 0 to NR 5:

NORMAL REVISION 5 - SEPTEMBER 2014	Approved under the authority of EASA D.O.A No.21J.056 on June 11th, 2015
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NORMAL REVISION 0 date code 16-26		Approved on January 11, 2018 under the authority of EASA DOA No. 21J700
Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

This procedure describes hydraulic failure training for the EC 120 B.

In case of actual loss of hydraulic pressure, **HYDR** on the CWP + "Gong", the hydraulic pressure accumulators contain sufficient pressure to reach the recommended safety speed. Then the pilot must switch OFF the hydraulic cut-off switch on the collective grip (2) and apply the emergency procedure.

Pressing the **[ACCU TST]** or **[HYDR]** (1) guarded pushbutton produces the same effects as an actual failure

- The hydraulic pump pressure is by-passed
- The main rotor accumulators give hydraulic assistance for limited operation of the controls
- **HYDR** + "Gong"

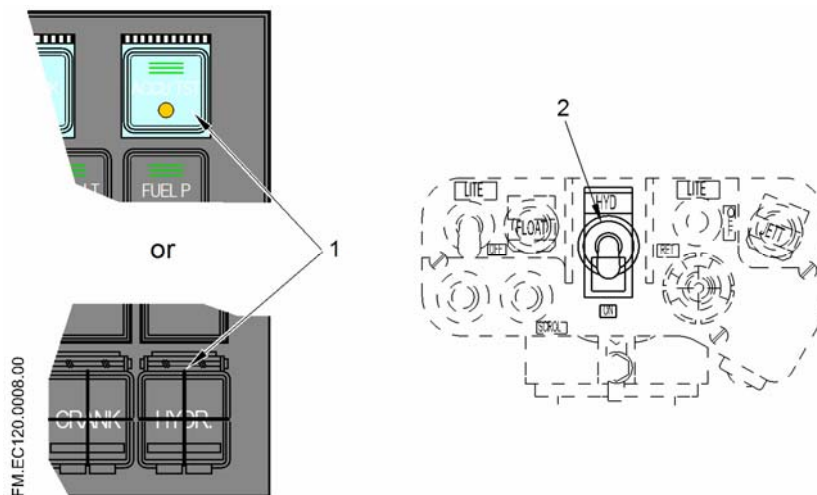


Figure 1: Hydraulic system controls

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

4 NORMAL TRAINING PROCEDURES

4.1 TRAINING PROCEDURE

CAUTION

Do not hover or taxi without hydraulic assistance.

If the [ACCU TST] or [HYDR] pushbutton is not reset, no hydraulic assistance can be restored.

NOTE

If necessary during the training exercise, hydraulic assistance can be restored by resetting [ACCU TST] or [HYDR] pushbutton (during STEP 1) or by setting the hydraulic cut-off switch on the collective grip to ON (during STEP 2).

- Before engaging the training procedure:

- It is recommended to train with low aircraft weight as higher weight leads to higher control loads.
- The hydraulic failure training procedure should be performed close to an airfield that is suitable for a running landing.
- Hydraulic can be switched on at any time but be prepared for a significant decrease of cyclic and collective control loads.
- Take care that the hydraulic cut-off switch is never in OFF position when the [ACCU TST] or [HYDR] pushbutton is in ON position.

STEP 1: FAILURE SIMULATION

- In steady cruise flight conditions:

1. Instructor..... [ACCU TST] or [HYDR]: ON position:
- CHECK **HYDR** + Gong
2. Trainee **Safety speed** (set airspeed to around Vy)

- Once safety speed reached:

3. Instructor..... [ACCU TST] or [HYDR]: Reset to OFF position:
- CHECK **HYDR**

STEP 2: HYDRAULIC FAILURE TRAINING PROCEDURE

4. Hydraulic cut-off switch OFF :
 - CHECK **HYDR** + Gong
 - Control loads are increased
5. Perform a flat approach into wind
6. Make a no-hover slow running landing at around 10 kt (18.5 km/h)

Do not hover or taxi without hydraulic pressure.

- **After landing:**

7. Hydraulic cut-off switch Reset to ON to restore hydraulic assistance before subsequent takeoff or hovering flight
CHECK **HYDR** within 2 to 3 sec.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



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SUPPLEMENT

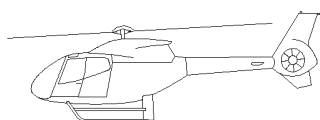
SKI LANDING GEAR
SURFAIR

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THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
THE EQUIPMENT MENTIONED ABOVE IS INSTALLED ON THE AIRCRAFT.



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LOG OF APPROVED NORMAL REVISIONS

BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA

ISSUE 1: NR 0 to NR 1:

NORMAL REVISION 1 - OCTOBER 2004	Approved by DGAC according to the article 10.3 of the CE 1592/2002 regulation on December 03, 2004
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ISSUE 2:

NORMAL REVISION 0 date code 16-26		Approved on January 11, 2018 under the authority of EASA DOA No. 21J700
Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

The SURFAIR ski landing gear allows takeoff from and landing on a snow-covered ground or a clear ground.

The skis (1) are attached to the skids by means of eight hooks (2) and a pip pin (3).

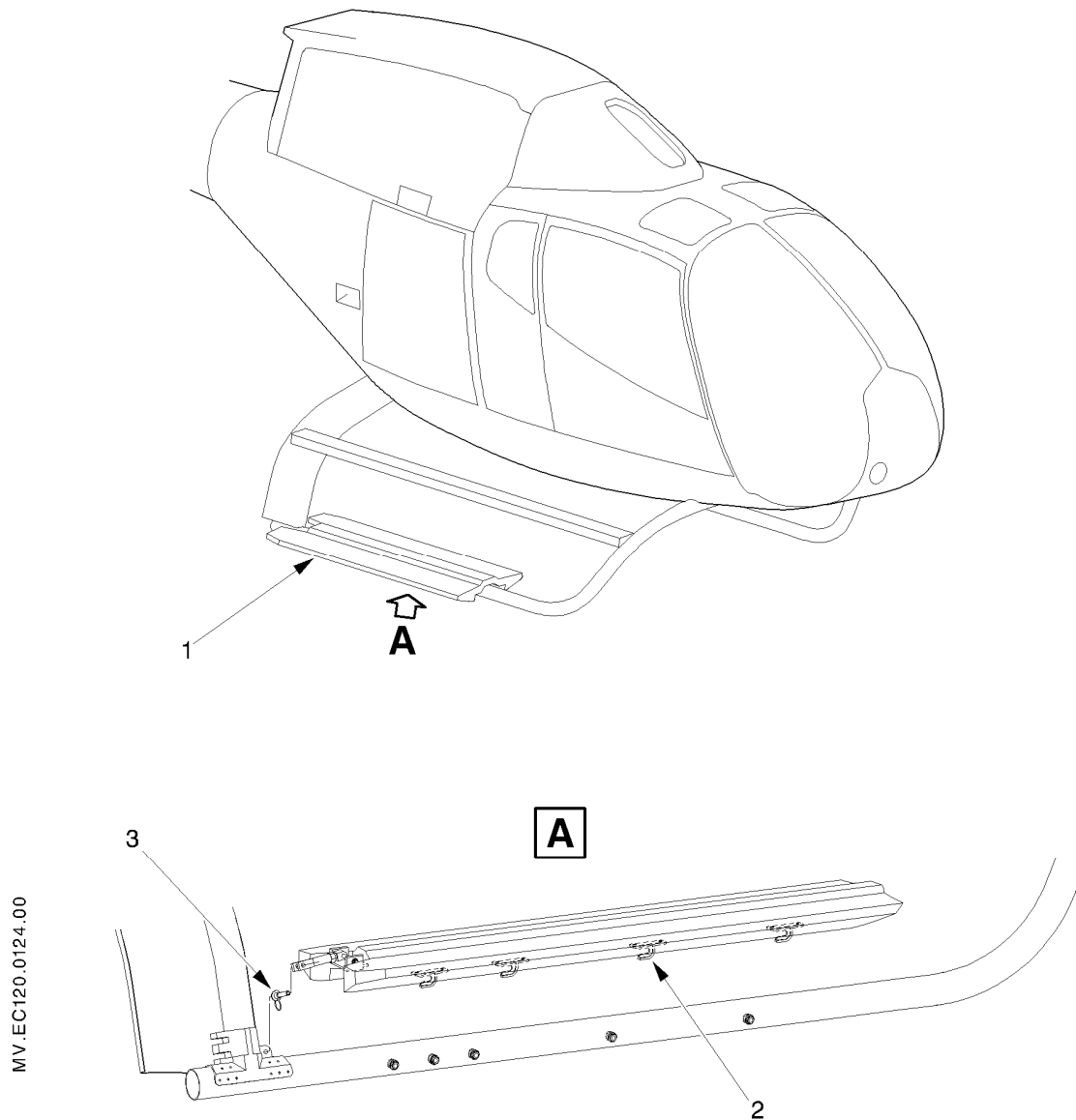


Figure 1: Ski landing gear

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Exterior checks:
 - Ski landing gear Visual check.
 - Locking system Attachment, secured.

5 PERFORMANCE DATA

When the ski landing gear is installed, the performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following :

- The rate of climb is reduced by 7 %.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

TRANSPORT OF EXTERNAL LOADS

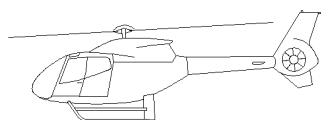
CARGO SLING with "SIREN" release unit (P/N AS21-8-B)

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
THE EQUIPMENT MENTIONED ABOVE IS INSTALLED ON THE AIRCRAFT.



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(1) AIRWORTHINESS EFFECTIVITY:

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- **A** Specific to EASA

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- Without indication..... Applicable to all aircraft
- XXX..... Specific to aircraft equipped with XXX

SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.12.P1	1 to 1	16-26	A	
SUP.12.P5	1 to 2	16-26		
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LOG OF APPROVED NORMAL REVISIONS**BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA**ISSUE 1: NR 0 to NR 8:

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Title	New issue	
Revised information	All	
Deleted information	None	

RC a

The paragraph 1 - **GENERAL** , is modified as follows:

1 GENERAL

Supersede the NOTE by the following:

NOTE

When fitting the **CARGO SLING** equipment, the **VEMD** has to be configured with the **CARGO SLING** installed.

The "**SLING LOAD**" line in the **VEMD PERFORMANCE** page is valid only if the "**SLING**" pushbutton on the **LACU** is "**ON**".

For **AUW** above 1750 kg, the performance has to be checked manually with the **HOG**E charts figure 5 or 6.

The rest of the paragraph is unchanged.

CAUTION

THIS PAGE MUST NOT BE REMOVED FROM THE MANUAL UNTIL EMBODIMENT OF MODIFICATION SB No. 31.003.

1 GENERAL

The "CARGO SLING" external load installation is composed of:

- A cargo hook suspended by four cables, equipped with a release unit.
The release unit hook can be opened electrically and mechanically.
- An underslung load weight indication on the VEMD PERFORMANCE page (Figure 1).

NOTE

When fitting the CARGO SLING equipment, the VEMD has to be configured with the CARGO SLING installed.

The "SLING LOAD" line in the VEMD PERFORMANCE page is valid only if the [SLING] pushbutton on the LACU is "ON".

MV.EC120.0092.01

PERFORMANCE			
E.E.W	970 Kg		
CREW	80 Kg		
PAY LOAD	20 Kg	Zp	7170 Ft
USABLE FUEL	100 Kg	OAT	+14 °C
SLING LOAD	390 Kg	IGE	1655 Kg
A.U.W	1560 Kg	OGE	1578 Kg

Figure 1: PERFORMANCE page

- A control system is provided for the pilot (Figure 2):
 - A [**SLING**] pushbutton (1) located on the LACU, for powering on the installation,
 - A release control (2) on the cyclic grip (electrical mode),
 - A release handle (3) located under the collective lever (mechanical mode).

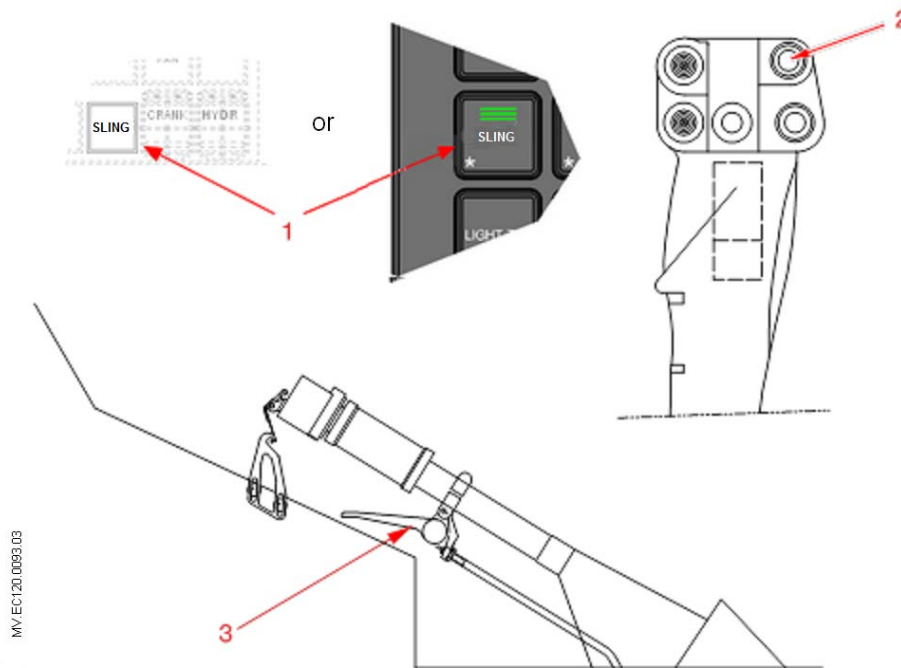


Figure 2: Cargo sling controls

NOTE

A minimum weight of 2,5kg (6lb) is required to open the hook.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 WEIGHT LIMITATION

- Maximum authorized sling load weight 700 kg (1543 lb)
- Maximum all up weight with an external load 1800 kg (3968 lb)
or maximum authorized all up weight allowing hovering flight out of ground effect
(the lowest of the two values).

CAUTION

The minimum and maximum weight without external load remains limited to the minimum and maximum weight specified in the limitations section of the basic flight manual.

2.2 LONGITUDINAL CG

With an external load, the longitudinal limits are defined according to the weight as per the graph below.

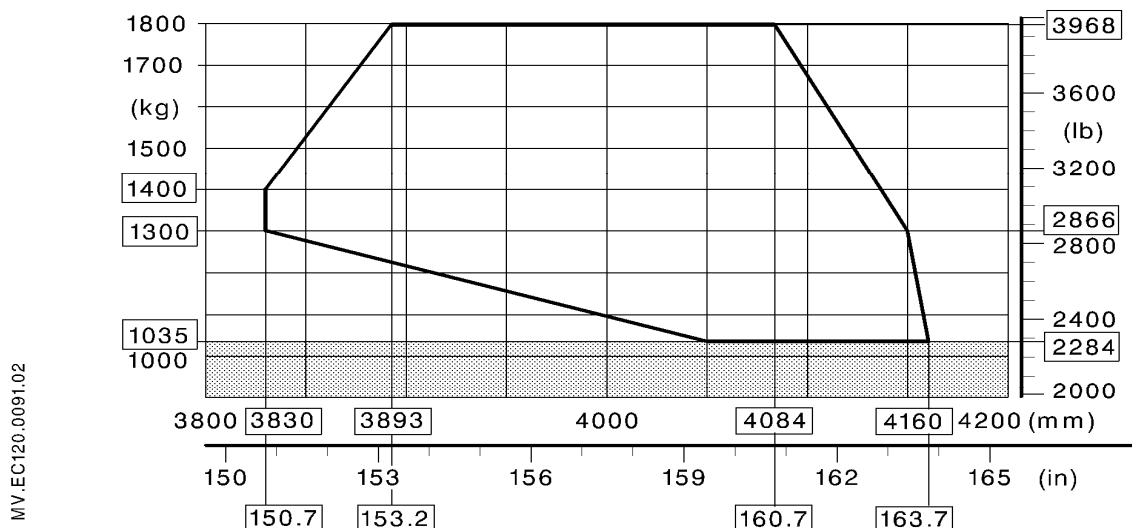


Figure 3: Longitudinal CG chart with external load

2.3 AIRSPEED LIMITATION

- Absolute maximum permissible
indicated airspeed with external load 110 kt (204 km/h)

NOTE

The pilot is responsible for determining the limit speed according to the load and sling length. Particular care must be exercised when bulky loads are carried on the sling.

2.4 OPERATING LIMITATION

Class of approved aircraft/load combination: B, "Single point suspension external load airborne". This means carriage of external loads, which are jettisonable and lifted free of land or water during rotorcraft operations.

Flying with an unballasted sling cable or empty net is prohibited.

The external loads are limited to non-human loads only.

An instruction placard in the cockpit indicates:

CARRYING OF EXTERNAL LOADS

CLASS OF APPROVED AIRCRAFT/LOAD COMBINATION : B.

WHEN EXTERNAL LOADS ARE CARRIED, NO PERSON MAY BE CARRIED UNLESS :

- HE IS A FLIGHT CREW MEMBER ;
- HE IS A FLIGHT CREW MEMBER TRAINEE ; OR
- HE PERFORMS AN ESSENTIAL FUNCTION IN CONNECTION WITH THE EXTERNAL-LOAD OPERATION.

OR

EMPORT DE CHARGES EXTERNES

CLASSE DE COMBINAISONS GIRAVION-CHARGE APPROUVEE : B

AUCUNE PERSONNE NE PEUT ETRE TRANSPORTEE A MOINS DE :

- ETRE UN DES MEMBRES DE L'EQUIPAGE
- SUIVRE UN COURS DE FORMATION EN TANT QUE MEMBRE D'EQUIPAGE OU
- REMPLIR UNE FONCTION ESSENTIELLE AYANT TRAIT A L'UTILISATION DU GIRAVION AVEC CHARGE EXTERIEURE.

Two placards visible to the ground operator and located on the lower fairing near to the hook indicate:

- the maximum sling load,
- the cargo hook rigging.

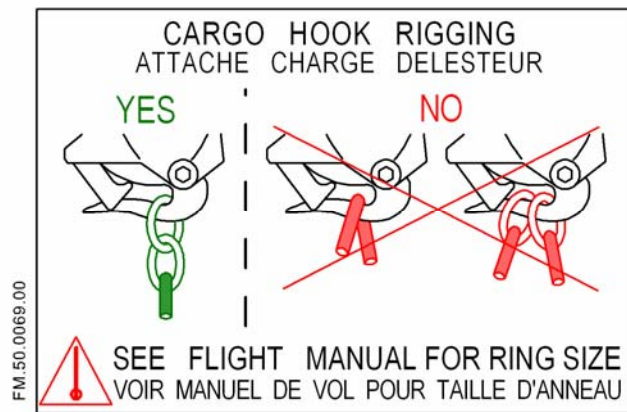


Figure 4: Cargo hook rigging placard

3 EMERGENCY PROCEDURES

The emergency procedures specified the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

3.1 ENGINE FAILURE WITH EXTERNAL LOAD

- IN CRUISE FLIGHT
 1. Autorotation procedure: APPLY
 2. External load RELEASE as soon as possible
- IN HOVER
 1. Collective REDUCE according to the height
 2. External load RELEASE as soon as possible
 3. Pedals CONTROL yaw
 4. Cyclic FORWARD to gain forward speed according to the height
 5. Collective INCREASE as needed to cushion touch-down

NOTE

In case of a failure during the hooking phase, the pilot shall move the aircraft away to the right. Ground personnel are to be forewarned that in the event of an engine failure, they have to move away to the left of the helicopter.

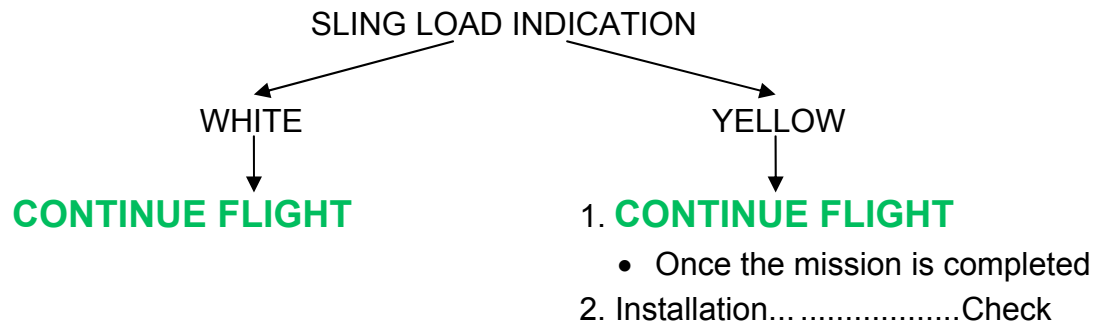
3.2 ELECTRICAL LOAD JETTISONING FAILURE

Collective lever mechanical release ACTUATE

3.3 SLING LOAD INDICATION FAILURE ON VEMD

Sling load indication in yellow

- [SLING] pushbutton CHECK ON



NOTE

With yellow sling load indication on VEMD the electrical release control may be inoperative. In this case use mechanical release and abort the mission.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Carrying heavy loads is a delicate operation due to the possible effects of a swinging load on the flight behavior of the helicopter. Consequently, pilots are advised to train with gradually increasing sling loads before undertaking heavy or bulky load carrying operations.
- The length of the sling cable must be determined in accordance with the type of mission. To carry a compact load, it is recommended to use the shortest possible cable.
- Operation with no or low load on a sling cable or in a net must be performed in such a way as to ensure that the trailing sling cable or net does not come close to the tail rotor.
- For permissible load attachment ring size refer to SECTION 9 of this Flight Manual.

WARNING

- 1- THE USE OF A LOAD ATTACHMENT RING WITH INCORRECT DIMENSIONS MAY LEAD TO LOSS OR JAMMING OF THE LOAD.
- 2- IN WET WEATHER, THE OPERATORS HANDLING THE HOOK AND LOADS SHOULD WEAR THICK RUBBER GLOVES. DISCHARGE STATIC ELECTRICITY BY PLACING AN ELECTRICAL CONDUCTOR CABLE OR TUBE BETWEEN THE GROUND AND THE CARGO RELEASE UNIT (HOOK).

4.1 GROUND CHECK OF THE INSTALLATION

- EXTERIOR CHECK

- Cargo sling equipment..... Attachment, visual check
- Electrical hook opening..... CHECK
- Mechanical hook opening CHECK

(After the last flight of the day)

- Cargo sling equipment..... Attachment, visual check
- Hook Lightly grease the end of the load hook (if necessary)

- INTERIOR CHECK

- [SLING]..... ON
- PERFORMANCE page..... SELECT
- SLING LOAD indication Valve displayed is white

NOTE

If the "SLING LOAD" indication is not displayed, check in VEMD configuration mode that sling is set to "Installed".

4.2 TAKEOFF CHECK AND PROCEDURE WITH EXTERNAL LOAD

1. External loadHOOK and SECURE
2. CollectiveINCREASE very smoothly while maintaining the aircraft vertically above the load
3. Cables tightenedDwell briefly before raising the load
4. Lift the loadVertically
5. Load indication.....CHECK
6. Take-off path.....ADJUST to adopt an immediate forward climb attitude
7. All parameters.....CHECK

4.3 MANEUVERS

All control movements should be made very gently, with very gradual acceleration and deceleration, and only slightly banked turns.

4.4 APPROACH AND LANDING WITH EXTERNAL LOAD

- Perform approach at minimum rate of descent
- Establish zero translational ground speed sufficiently high to ensure that the load is not dragged along the ground
- Then descend vertically until the load is set on the ground
- Load RELEASE
- Load release CHECK
- All parameters CHECK

NOTE

If the load is not released, actuate the mechanical release handle.

5 PERFORMANCE DATA

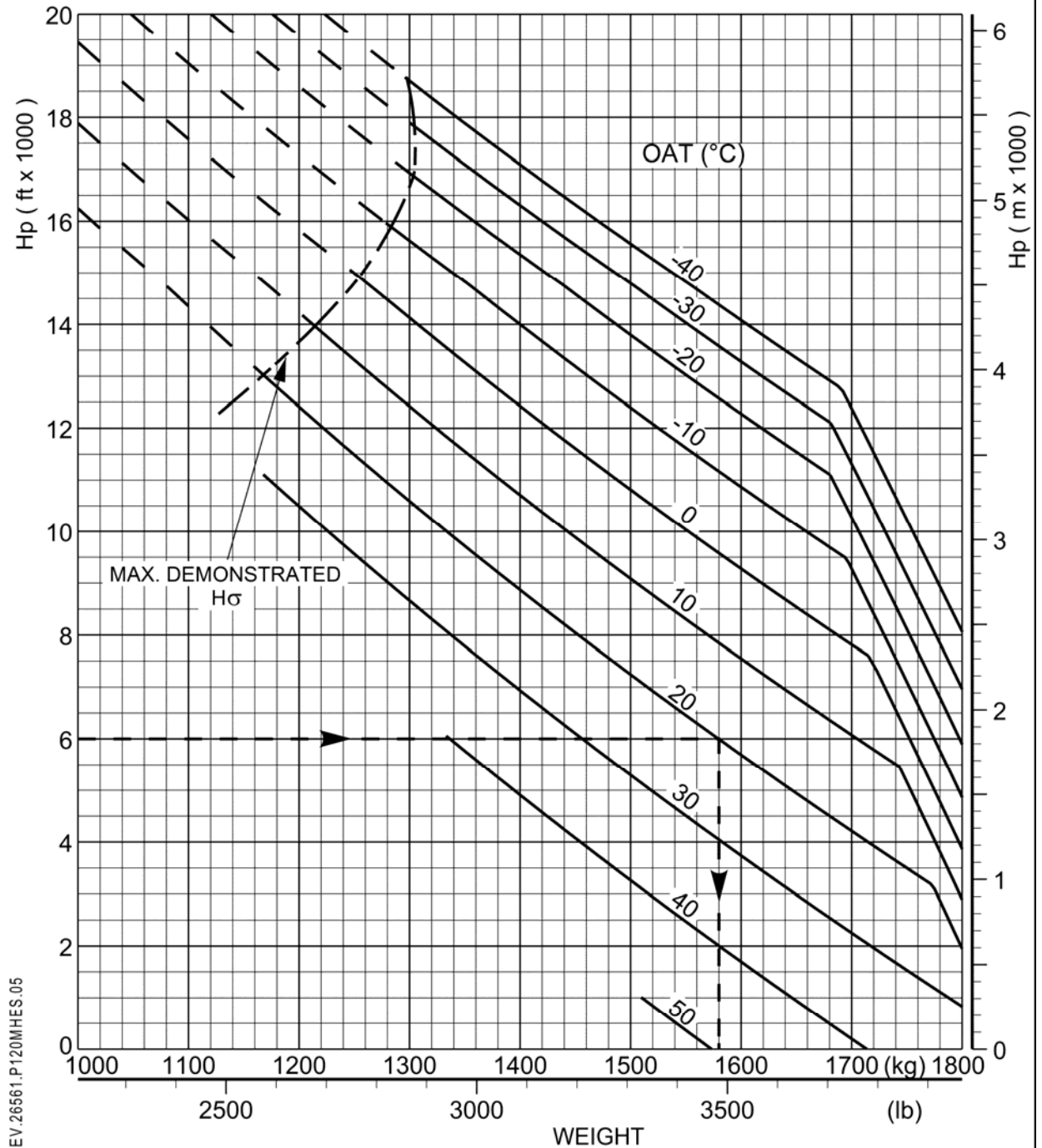
When no external load is carried on the hook, the performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

- Hover out of ground effect performance is shown in Figures 5 and 6 of this Supplement.
- Hover and climb performance may be affected when carrying bulky loads.

CONDITIONS

- NO WIND
- HEATING SYSTEM OFF
- MAX. TAKEOFF POWER
- $-40^{\circ}\text{C} \leq \text{OAT} \leq \text{ISA} + 35^{\circ}\text{C}$

HOVER OUT OF GROUND EFFECT WITH EXTERNAL LOAD

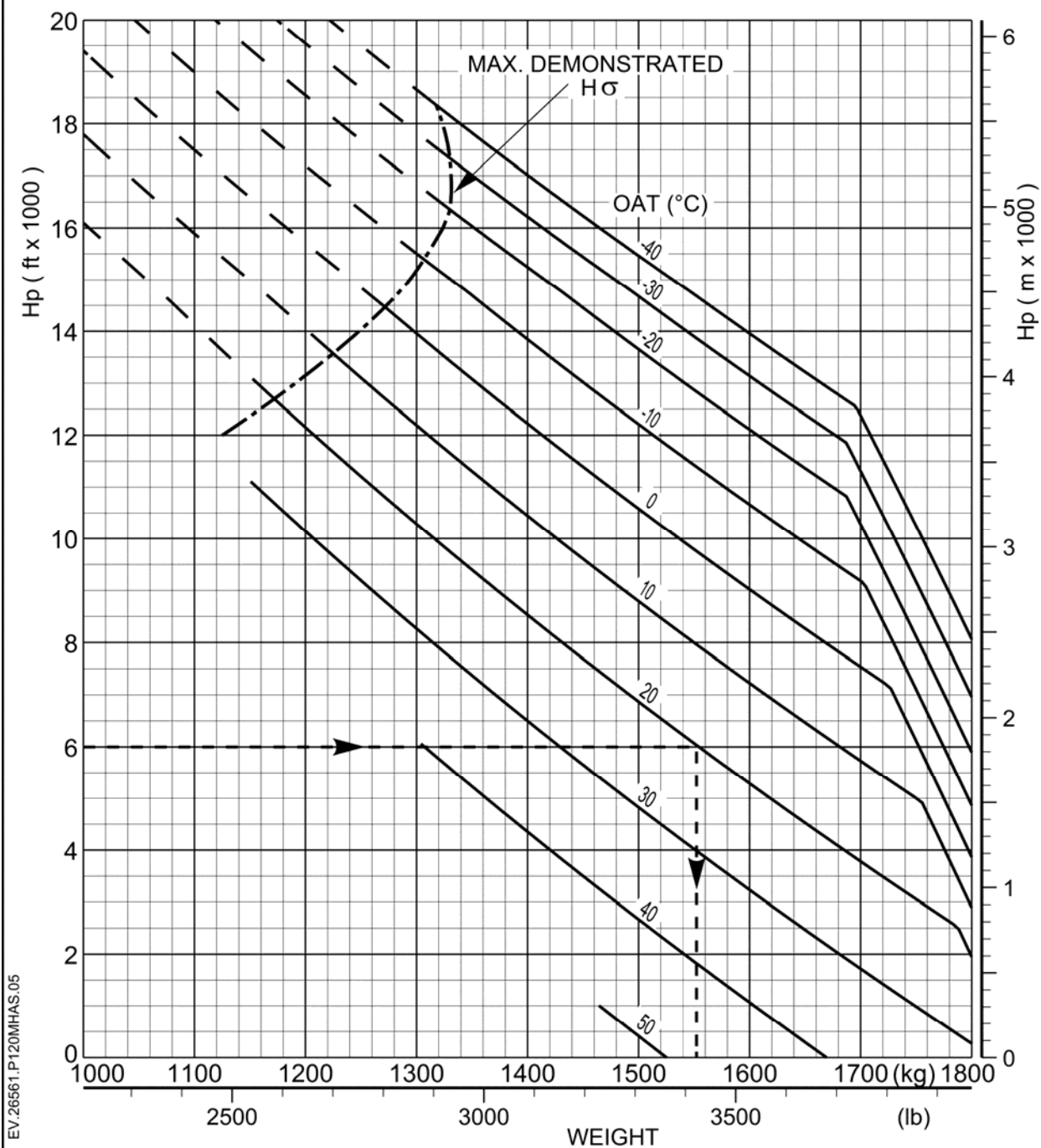


EXAMPLE : OAT = 20°C \Rightarrow HOGE WEIGHT 1580 kg (3483 lb).
 $H_p = 6000$ ft (1829 m)

Figure 5: HOGE

CONDITIONS

- NO WIND
- HEATING SYSTEM OFF
- MAX. TAKEOFF POWER
- $-40^{\circ}\text{C} \leq \text{OAT} \leq \text{ISA} + 35^{\circ}\text{C}$

**HOVER OUT OF
GROUND EFFECT
WITH SAND FILTER
AND EXTERNAL LOAD**


EXAMPLE : OAT = 20°C \Rightarrow HOGE WEIGHT 1555 kg (3427 lb).
 Hp = 6000 ft (1829 m)

Figure 6: HOGE with sand filter



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

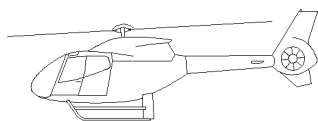
LH SIDE MAIN FLIGHT CONTROLS

IMPORTANT NOTE

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LOG OF APPROVED NORMAL REVISIONS

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

This optional equipment consists of moving the main flight controls from the RH station to the LH station. The following equipment is moved:

- Cyclic friction lock.
- Collective locking device when the aircraft is fitted with single controls (1).
- Release handle under the collective lever when the aircraft is equipped for transport of external loads (2).

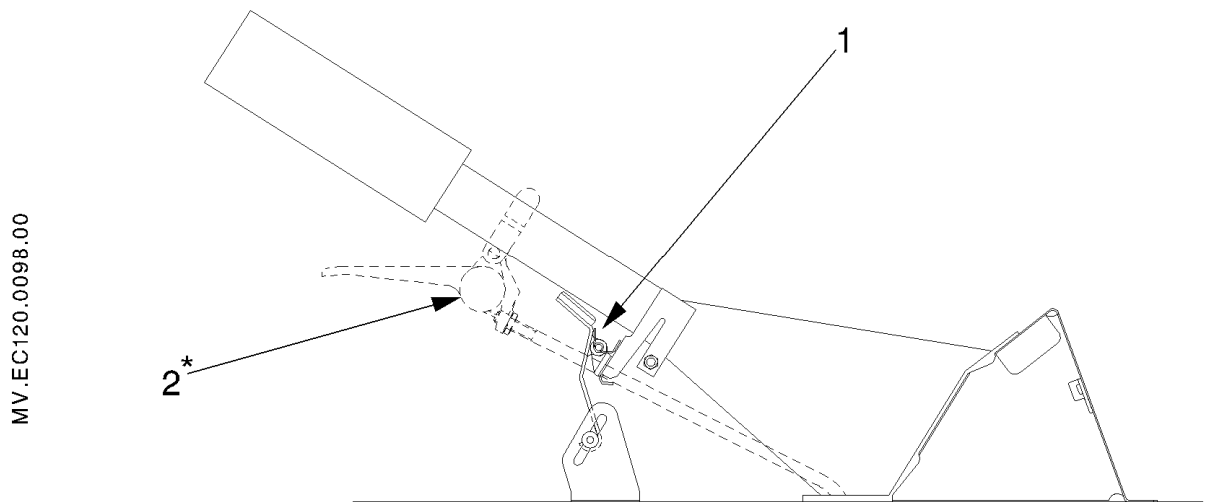


Figure 1: LH side locking device and release handle on the collective lever

* Optional

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Minimum flight crew One pilot in left seat

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

Interior checks (Only when dual controls are not installed)

- RH side pedals protective device Installed
- RH cyclic and collective control covers Installed
- LH side collective locking device Installed

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

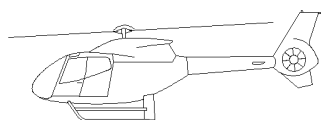
SAND FILTER
AEROFLO OR SOFRANCE

IMPORTANT NOTE

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Revised information	All	
Deleted information	None	

1 GENERAL

The sand filter installation is intended to protect the engine from sand ingestion, during hovering flight or when flying in sand-laden atmosphere.

It operates permanently when it is fitted on the aircraft.

The installation consists essentially of:

- A structural sand filter support mounted in front of the engine air intake.
- A rectangular filtering panel installed on the structural support.
- A P2 air pressure supply system.

In operation, the ambient air flows through separator tubes which constitute the filter. The sand is evacuated by scavenge tubes ventilated by P2 air.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

CAUTION

Flight is forbidden if the filtering panel is not installed on its support.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Exterior checks:

MGB cowl (right side)	OPEN
Rectangular filtering panel	Installed, visual check, attachment, not obstructed, clear of snow or ice
MGB cowl	CLOSE

- Flight in sand-laden atmosphere:

Switch off the heating system

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

NOTE 1

VEMD engine power check and hover performances are automatically modified if the sand filter is installed.

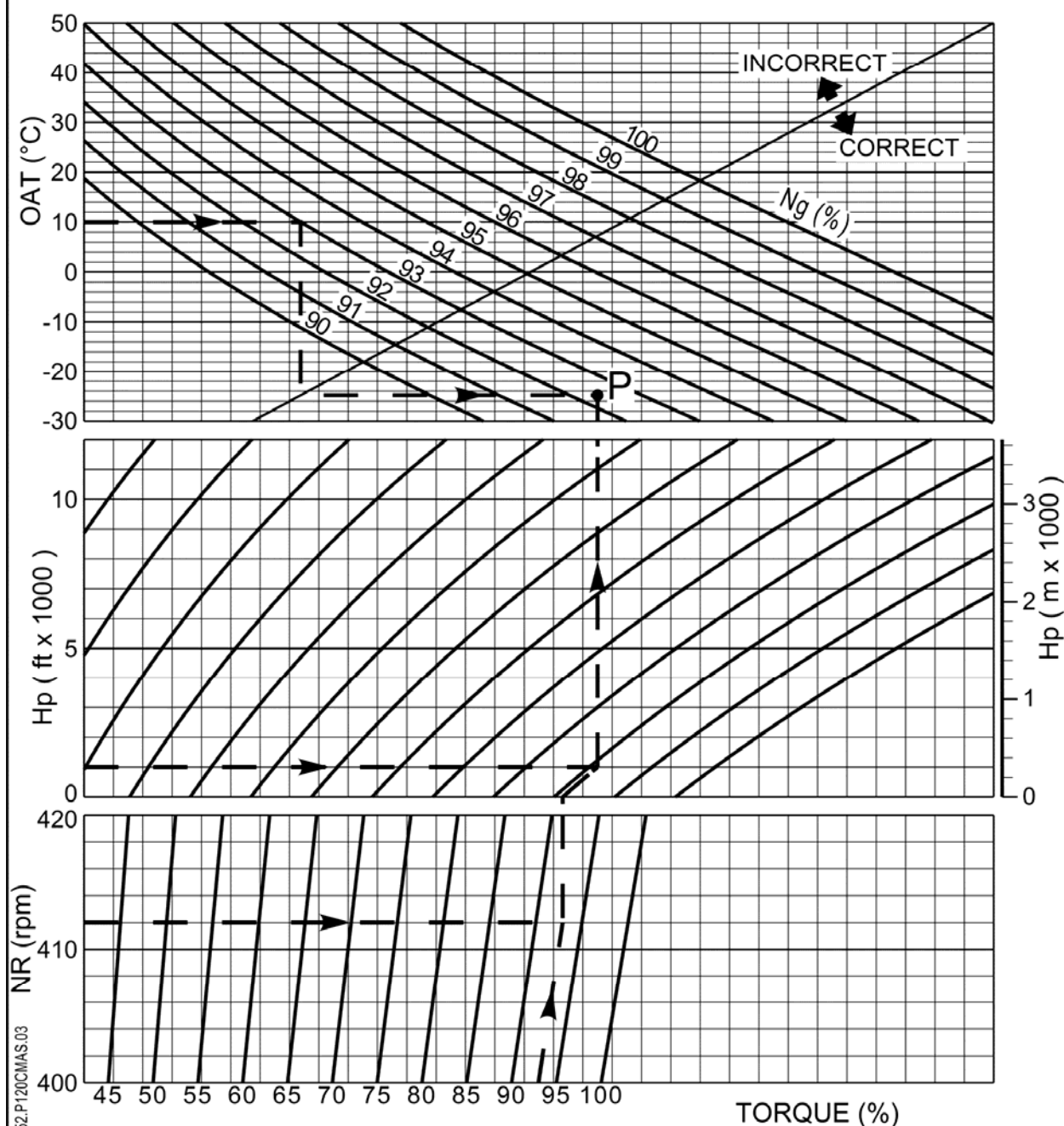
NOTE 2

The T4 check of the Engine Power Check (manual procedure) is not modified; refer to SECTION 5.1 Fig 3.

CONDITIONS

- HEATING SYSTEM OFF
- GENERATOR LOAD < 50A
- $H_p \leq 12000$ ft (3657 m)

ENGINE POWER CHECK WITH SAND FILTER



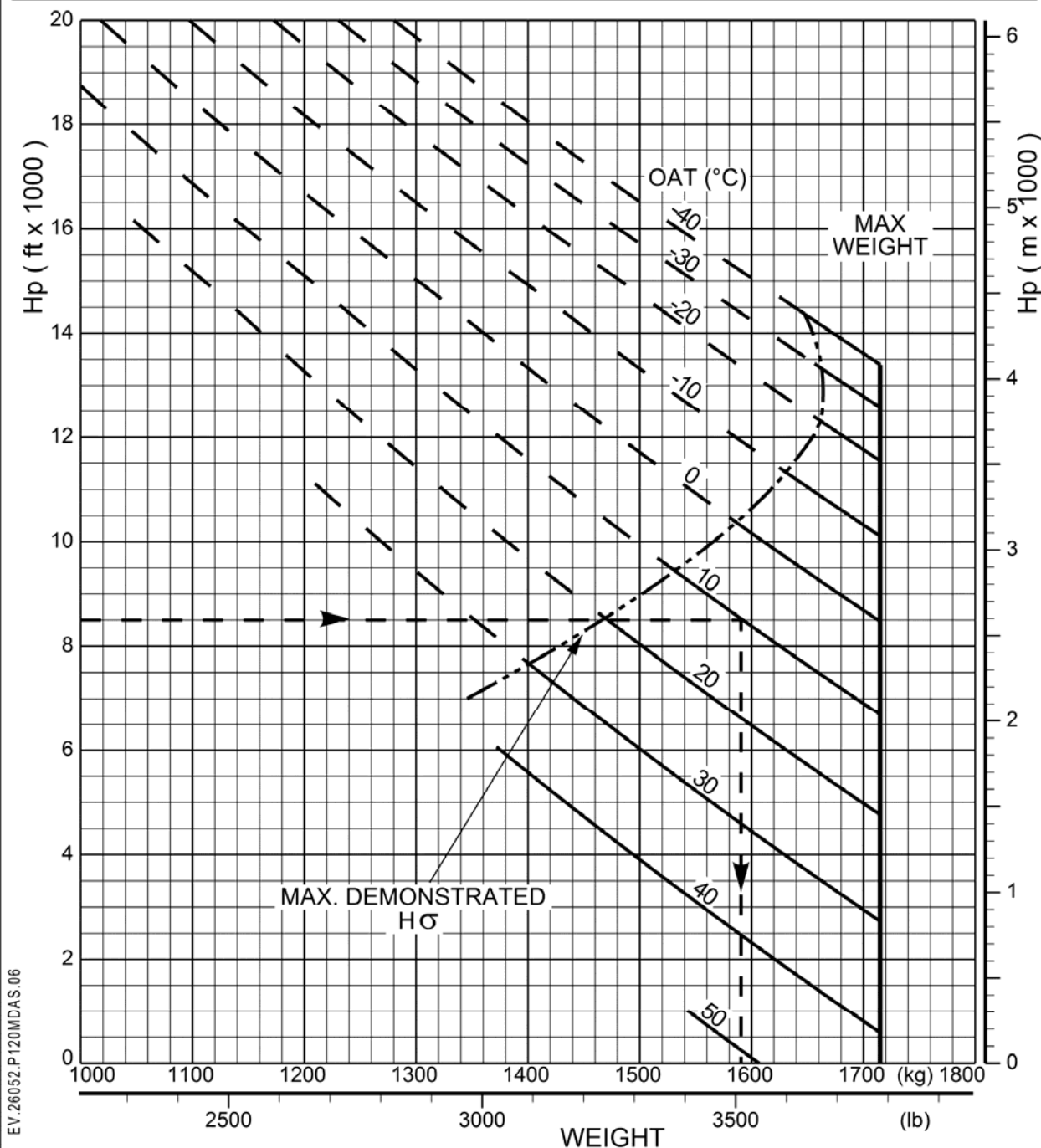
EXAMPLE : OAT = 10°C Hp = 1000 ft (300 m) NR = 412 rpm
 Ng = 93% TORQUE = 93% => **P** is in the "correct" zone

Figure 1: Engine power check with sand filter

CONDITIONS

- NO WIND
- HEATING SYSTEM OFF
- MAX. TAKEOFF POWER
- $-40^{\circ}\text{C} \leq \text{OAT} \leq \text{ISA} + 35^{\circ}\text{C}$
- HEIGHT 5 ft (1.5 m)

HOVER IN GROUND EFFECT WITH SAND FILTER



SAFE WIND HAS BEEN DEMONSTRATED UP TO 35 kt (65 km/h) AND MAX. WEIGHT FROM ALL DIRECTIONS AT SEA LEVEL AND AT 22 kt (41 km/h) FOR A CORRECTED WEIGHT OF 2200 kg (4850 lb). (Refer to section 5.1 Fig.8)

EXAMPLE : OAT = 10°C

Hp = 8500 ft (2591 m)

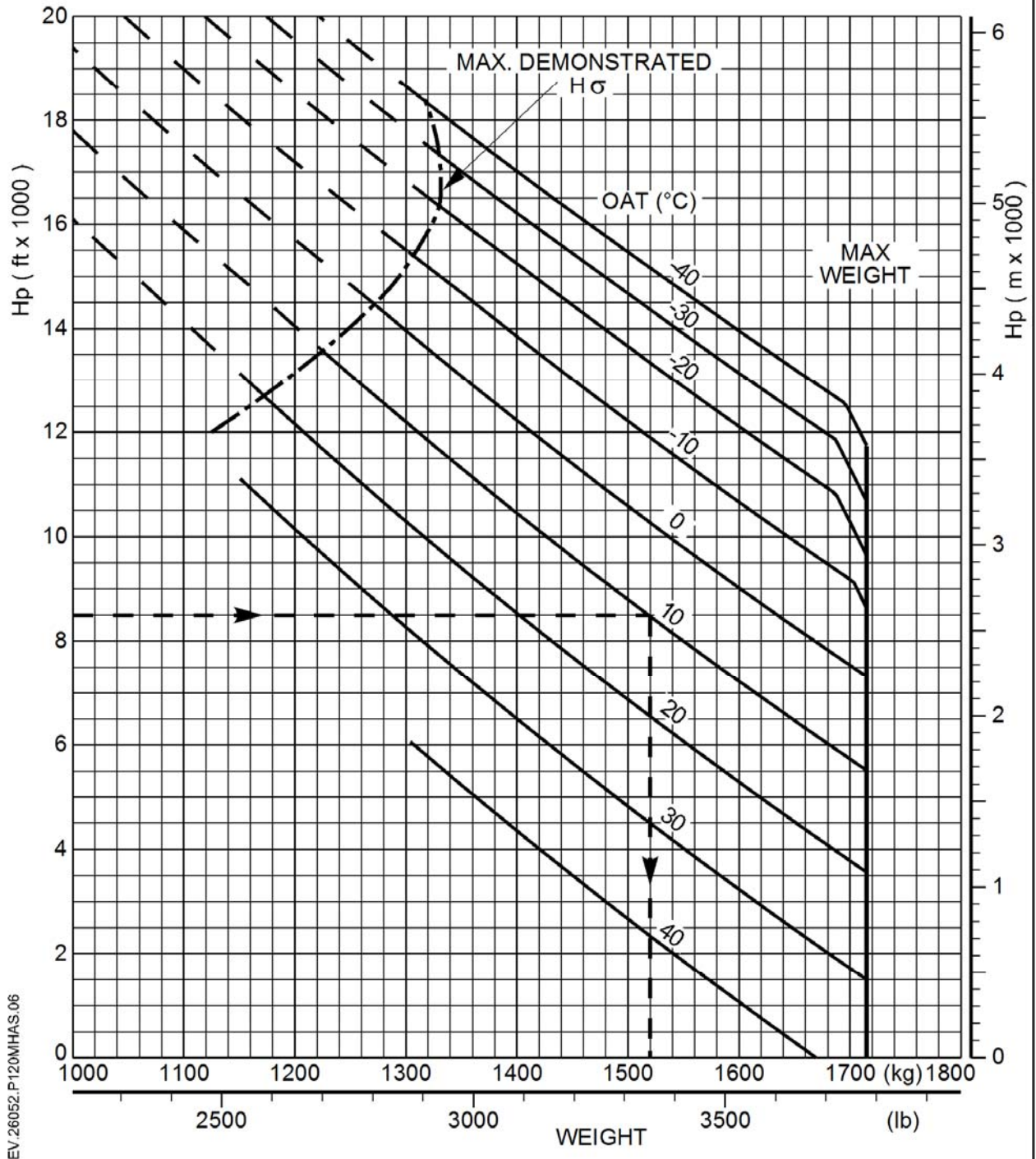
\Rightarrow HIGE WEIGHT WITH 1590 kg (3505 lb).

Figure 2: HIGE with sand filter

CONDITIONS

- NO WIND
- HEATING SYSTEM OFF
- MAX. TAKEOFF POWER
- $-40^{\circ}\text{C} \leq \text{OAT} \leq \text{ISA} + 35^{\circ}\text{C}$

HOVER OUT OF GROUND EFFECT WITH SAND FILTER



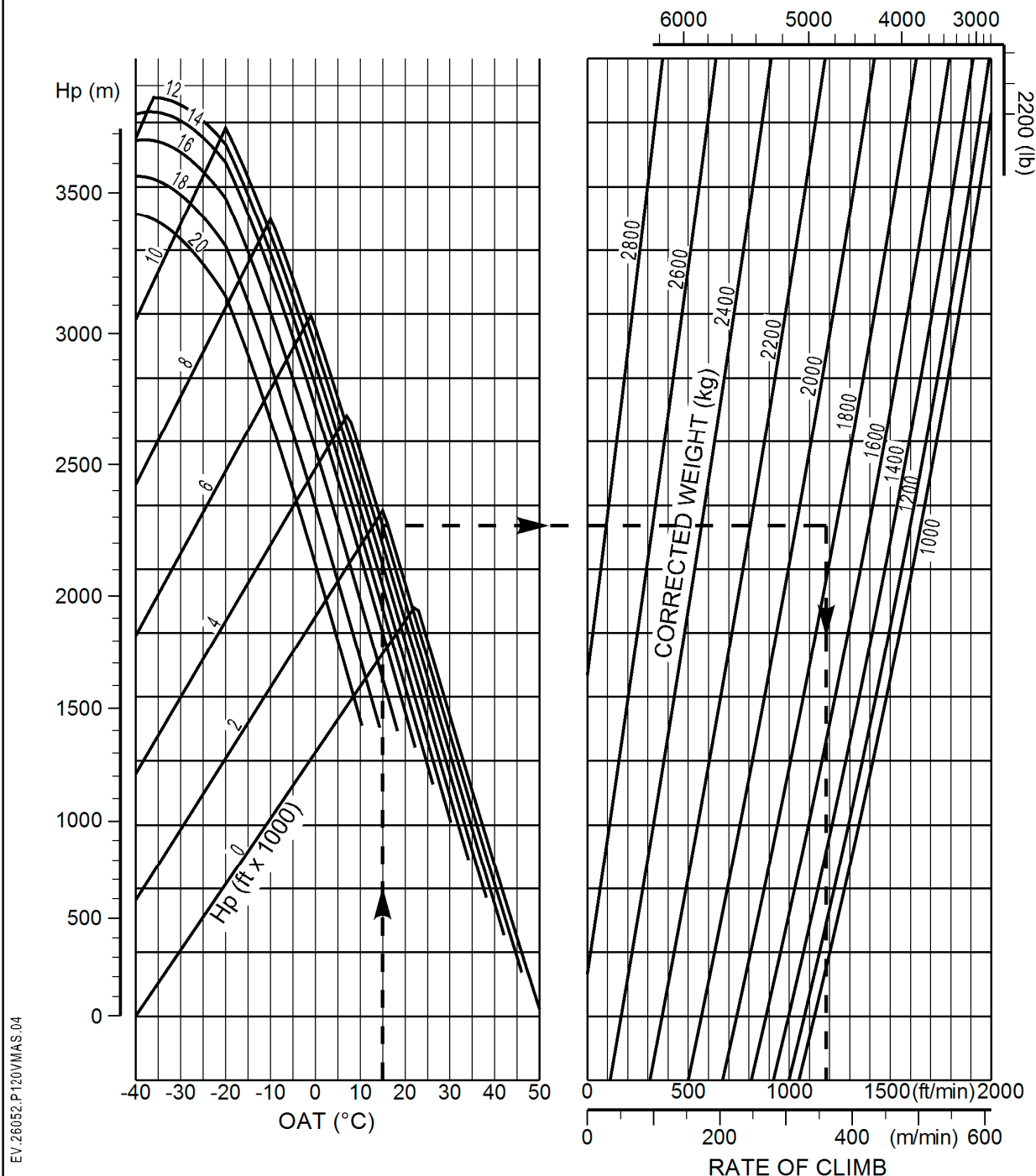
EXAMPLE : OAT = 10°C \Rightarrow HOGE WEIGHT 1520 kg (3351 lb).
 Hp = 8500 ft (2591 m)

Figure 3: HOGE with sand filter

CONDITIONS

- MAX. CONTINUOUS POWER
- HEATING SYSTEM OFF
- $-40^{\circ}\text{C} \leq \text{OAT} \leq \text{ISA} + 35^{\circ}\text{C}$

**RATE OF CLIMB
AT V_y**



EXAMPLE :

OAT = 15°C
Hp = 4000 ft (1220 m)

ACTUAL WEIGHT = 1600 kg (3527 lb)
CORRECTED WEIGHT = 1850 kg (4079 lb)
RATE OF CLIMB = 1180 ft/min

Figure 4: Rate of climb with sand filter



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

EMERGENCY FLOATATION GEAR

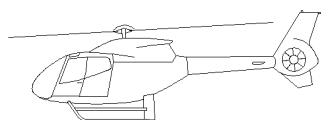
AERAZUR

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Deleted information	None	

1 GENERAL

The emergency floatation gear is approved for emergency use (not for ditching according to JAR 27) i.e. to aid in keeping rotorcraft sufficiently upright and in adequate trim to permit safe and orderly evacuation in emergency touchdown on water.

The installation allows the aircraft to land also with floatation bags inflated on a runway or a hard prepared surface.

The emergency floatation gear consists of a landing gear assembly fitted with:

- Two floatation units mounted parallel along each skid of the aircraft (1) (1').
- A system for inflating the floats from a cylinder (2) with pressure indicator.
- An electrical control system with a [**FLOAT**] or [**FLOAT ARM**] pushbutton on the LACU (4) to arm the system.
- A guarded firing pushbutton (3) mounted on the pilot's collective grip.

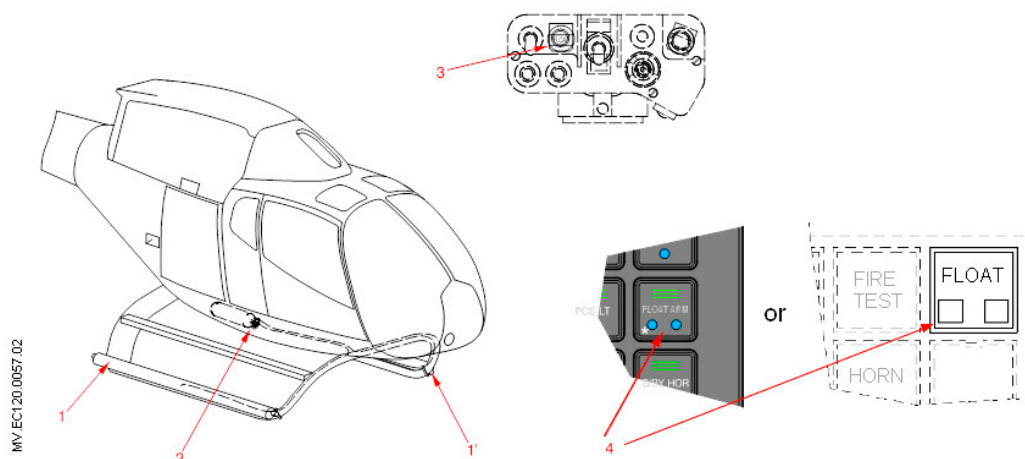


Figure 1: Emergency floatation equipment

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Emergency floatation gear stowed - system armed or floats inflated:
 - maximum indicated airspeed: 120 kt (222 km/h) or VNE power on, whichever is less.
- Maximum altitude for float inflation: 13200 ft (4000 m).
- Maximum permissible loss of altitude after inflation: 6600 ft (2000 m)
- When flying at less than 400 ft (122 m) above water, the floatation gear must always be armed.
- The limit values of pressure in the inflation cylinder, provided by the following table, are applicable if the flight requires the emergency floatation gear to be armed.

Cylinder reference: 215494-0

OAT	°C	-45	-40	-30	-20	-10	0	10	20	30	40	50	60	70
	°F	-49	-40	-22	-4	14	32	50	68	86	104	122	140	158
MAX. PRESSURE	BAR	170	174	181	188	195	202	209	216	223	230	237	244	251
	PSI	2466	2524	2625	2727	2828	2930	3031	3133	3234	3336	3437	3539	3640
MIN PRESSURE	BAR	154	157	164	171	178	185	192	199	206	213	220	227	234
	PSI	2234	2277	2378	2480	2582	2683	2785	2886	2988	3089	3191	3292	3394

Cylinder reference: 215494-1

OAT	°C	-45	-40	-30	-20	-10	0	10	20	30	40	50	60	70
	°F	-49	-40	-22	-4	14	32	50	68	86	104	122	140	158
MAX. PRESSURE	BAR	163	166	173	180	187	193	200	207	214	220	227	234	241
	PSI	2364	2408	2509	2611	2712	2799	2901	3002	3104	3191	3292	3394	3495
MIN PRESSURE	BAR	147	150	157	164	170	177	184	190	197	204	210	217	224
	PSI	2132	2176	2277	2379	2466	2567	2669	2756	2857	2959	3046	3147	3249

NOTE

The placard located adjacent to the cylinder provides the limit values.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- INFLATION PROCEDURE

In the event of engine failure or other urgent requirement to alight on water, check the rotor speed then apply the following procedure:

- [FLOAT] or [FLOAT ARM] ON
- [FLOAT] or [FLOAT ARM] lights 1 and 2 CHECK ON
- [FLOAT FIRE] on collective grip PRESS (recommended firing IAS: below 80 kt - 148 km/h)

NOTE

A deceleration with a pitch down movement can occur when inflating the floatation gear at a speed greater than 80 kt (148 km/h).

- AUTORATION PROCEDURE OVER WATER WITH EMERGENCY FLOATATION GEAR

1. Collective **REDUCE** to maintain NR in normal operating range
2. IAS **V_y**
 - If relighting impossible or after tail rotor failure.
3. Twist Grip SHUT OFF position
4. Maneuver to head the aircraft equally between the wind and wave direction on final approach.
 - At height \cong 70 ft (21 m)
5. Cyclic Flare
 - At 20-25 ft (6/8 m) at constant attitude
6. Collective GRADUALLY INCREASE
to reduce the rate of descent and forward speed
7. Cyclic FORWARD slightly to adopt attitude of 10° nose-up and a forward speed less than 10 kt (19 km/h) on touch-down

- 8. PedalsADJUST
to cancel any side-slip tendency
- 9. CollectiveINCREASE
to cushion touch down with minimum speed
- After touch-down
- 10. CollectiveGradually decrease to fully down
- 11. Rotor brakeAPPLY
- 12. Evacuate aircraft once the rotor has stopped.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Exterior checks:
 - Floatation units..... LOCK in the lowered position
 - Protective cover CHECK
 - Pressure in the inflation cylinder CHECK
- Interior check:
 - Arming of the emergency floatation gear:
 - [FLOAT] or [FLOAT ARM] ON
 - [FLOAT] or [FLOAT ARM] lights 1 and 2..... CHECK ON
 - Disarming of the emergency floatation gear:
 - [FLOAT] or [FLOAT ARM] RESET in OFF position
 - [FLOAT] or [FLOAT ARM] lights 1 and 2..... CHECK OFF

5 PERFORMANCE DATA

When the floatation gear is stowed, the performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- The rate of climb must be reduced by 11%.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

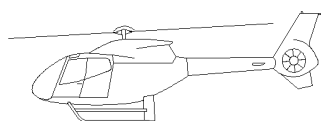
AIR CONDITIONING SYSTEM

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
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- XXX..... Specific to aircraft equipped with XXX

SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.19.P1	1 to 1	16-26	A	
SUP.19.P5	1 to 2	16-26		
SUP.19	1 to 4	16-26		

LOG OF APPROVED NORMAL REVISIONS**BASIC RFM REVISIONS - EFFECTIVITY (1) (2) EASA**ISSUE 1: NR 0 to NR 4:

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ISSUE 2:

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

1.1 DESCRIPTION OF THE SYSTEM

The purpose of the system is to maintain a comfortable temperature in the cabin. It is composed of:

- A compressor which is mechanically driven by a belt from the MGB.
- A condenser located between the MGB fan and the engine oil cooler.
- A cabin fan.
- An evaporator.
- An air supply system only operating for cabin air recirculation.
The cabin air outlet nozzles are identical to those of the basic aircraft.
- A control unit located on the console comprising:
 - A three-position selector (1).
 - A fan speed adjustment potentiometer (2).

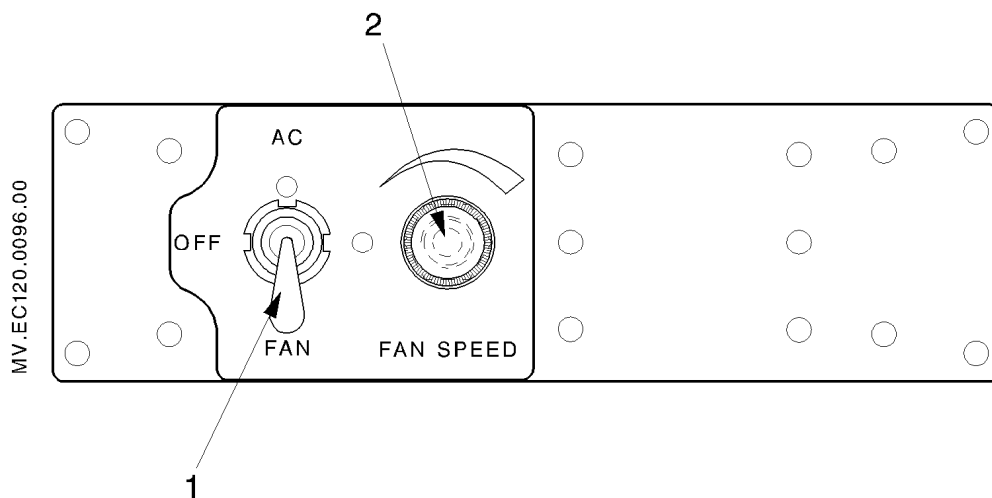


Figure 1: Air conditioning control unit

- An electrical supply and monitoring system. The cabin fan is switched on automatically when the heating system is on.
- A **P2 TEMP** light on the CWP panel indicates that the maximum allowable temperature is reached in the cabin ventilation duct.

1.2 OPERATING PRINCIPLE

The air conditioning system uses an internal air recirculation system. The air is taken from the interior of the cabin at the rear RH side of the distribution duct. This air flows through the fan and then through the evaporator where it is cooled, finally flowing through the P2 diffuser where it can be mixed with the hot air. This air then flows along the cabin ceiling to reach the cabin distribution duct. The air distribution in the cabin has not changed compared to the basic version.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

3.1 VENTILATION SYSTEM FAILURE

If the ventilation system does not operate (no air flow from outlet nozzles), set the system selector to OFF.

3.2 AIR CONDITIONING SYSTEM FAILURE

If the air conditioning system does not operate (cooling inoperative), set the system selector to OFF.

3.3 HEATING/CABIN VENTILATION FAILURE

WARNING PANEL	CORRECTIVE ACTIONS
<div data-bbox="371 1182 534 1279" style="background-color: black; color: yellow; padding: 5px; text-align: center; margin-bottom: 10px;"> P2 TEMP </div> <p>Maximum temperature in heating duct exceeded</p>	<p>Cabin air outlets CHECK that air flows and air outlets not obstructed</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>YES</p> <p>↓</p> <p>Heating control.....Reduce until:</p> <div data-bbox="967 1518 1129 1615" style="background-color: black; color: white; padding: 5px; text-align: center; margin: 10px auto; width: 80px;"> P2 TEMP </div> <p>CONTINUE FLIGHT</p> </div> <div style="text-align: center;"> <p>NO</p> <p>↓</p> <p>Heating control.....Close</p> </div> </div>

NOTE

The demisting function is inoperative when the heating control is closed. If the external visibility becomes significantly degraded:

LAND AS SOON AS POSSIBLE

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 PRESTART CHECK

- Heating control..... OPEN
- Cabin fanCHECK automatically activated
- Heating control..... CLOSE

4.2 SWITCHING ON AND OFF THE SYSTEM

Set the selector to the:

- FAN position for cabin ventilation
- AC position for cabin air conditioning
- OFF position to switch off the system

Use the FAN SPEED control to adjust the air flow.

4.3 HEATING SYSTEM OPERATION

Open the heating control located on the cabin ceiling.

A P2 indication is displayed on the VEMD FLI screen: **P2**.

The air distribution fan is automatically activated at its maximum flow rate even if the air conditioning selector is set to the OFF position.

When the heating control is closed, the fan is switched off if the air conditioning selector is in the OFF position.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

5.1 HOVER FLIGHT

The hover performance is reduced by 20 kg (44 lb) when the air conditioning is active (selector in the AC position). The performance calculated by the VEMD must be reduced by the same value.

5.2 CLIMB

The climb performance given in SECTION 5 of the basic Flight Manual is reduced by 20 ft/min (6 m/min) when the air conditioning is active (selector in the AC position).

5.3 ENGINE POWER CHECK

The operation of the air conditioning system does not affect the engine power check given in the basic Flight Manual.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

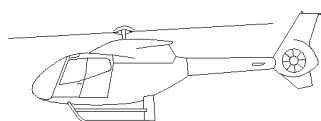
IMPROVED HEATING SYSTEM

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

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SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.20.P1	1 to 1	16-26	A	
SUP.20.P5	1 to 2	16-26		
SUP.20	1 to 4	16-26		

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

The improved heating system is designed for use in very cold temperatures when additional heating is required. Heating is achieved by mixing hot P2 air from the engine with outside air drawn from under the cabin floor.

It is composed of:

- Additional P2 tubes (1).
- A P2 air valve (2).
- A mixing unit/diffuser (3).
- A heating duct under the cabin floor (4).
- Two air outlets on the cabin floor located under the front seats (5).
- A T-handle on the cabin floor which opens or closes a valve in the diffuser to prevent cold air leaking in the cabin when the system is not operating (6).
- A heating control valve on the cabin floor which opens or closes P2 air bleed (7).

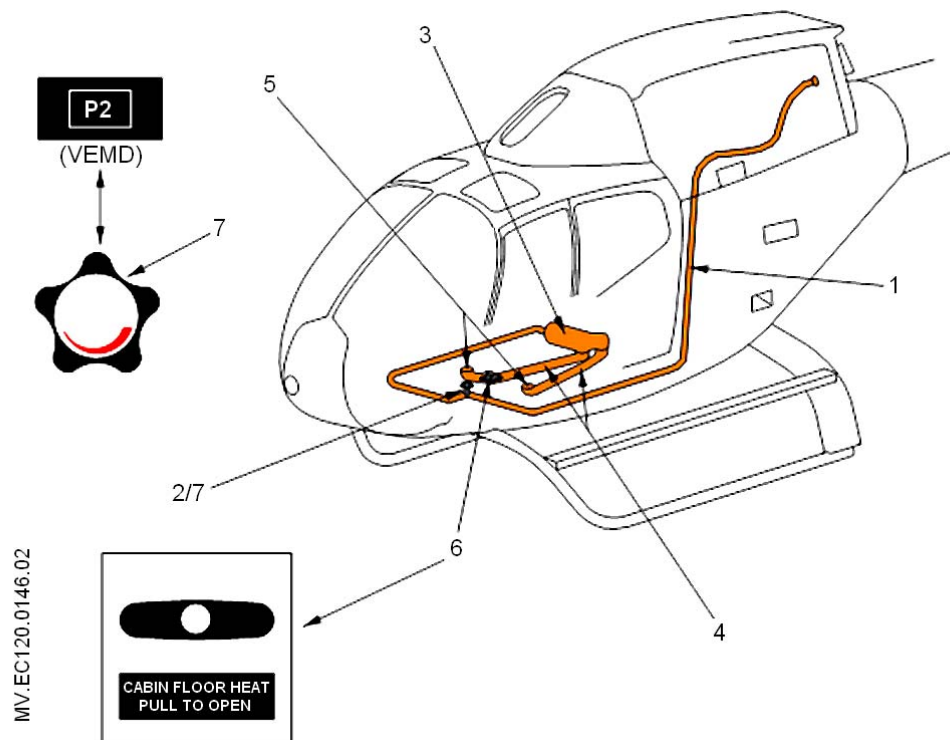


Figure 1: Improved heating system

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- The improved heating system shall only be used in conjunction with the existing heating system.
- Cabin heating shall be used with the improved heating system full-on or full-off. The cabin temperature shall be adjusted by the standard heating system control located on the cabin ceiling.

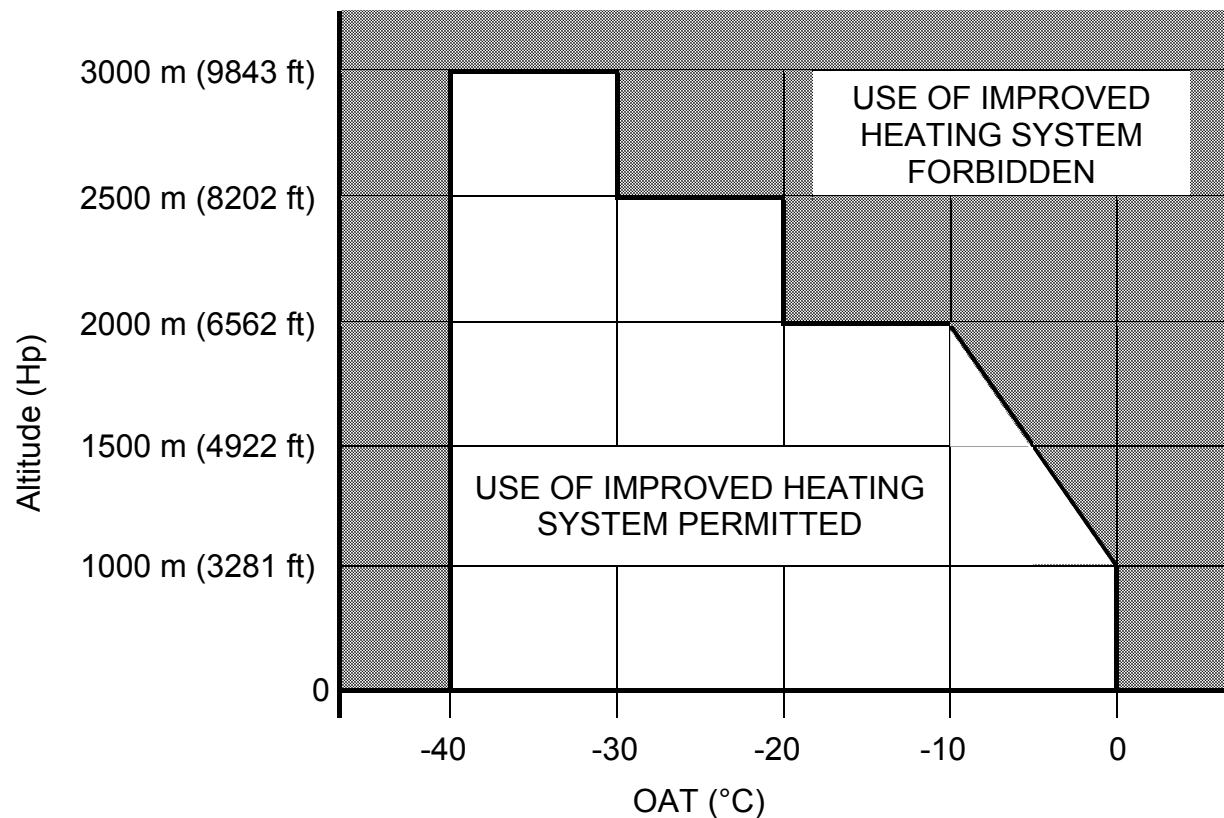


Figure 2: Flight envelope for use of improved heating system.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

WARNING PANEL	CORRECTIVE ACTIONS
<div data-bbox="300 562 424 656" style="background-color: black; color: yellow; padding: 5px; text-align: center; margin-bottom: 10px;">P2 TEMP</div> <p>Maximum temperature in heating duct exceeded</p>	<pre> graph TD Start[T- handleCHECK open] -- YES --> TurnOff[Improved heating system TURN OFF using floor heating control valve] Start -- NO --> Open[T- handleOPEN] Open --> P2Temp1[P2 TEMP] TurnOff --> P2Temp2[P2 TEMP] P2Temp1 --> CloseHandle[T- handleCLOSE] P2Temp2 --> CloseHandle CloseHandle --> ContinueFlight1[CONTINUE FLIGHT] TurnOff --> CheckOutlets[Cabin air outlets.....CHECK that air flows and air outlets not obstructed] CheckOutlets -- YES --> Reduce[Heating control on cabin ceiling..... REDUCE until : P2 TEMP] CheckOutlets -- NO --> CloseCeiling[Heating control on cabin ceiling....CLOSE] Reduce --> CloseHandle CloseCeiling --> CloseHandle CloseHandle --> ContinueFlight2[CONTINUE FLIGHT] </pre> <p style="text-align: center;">NOTE</p> <p>The demisting function is inoperative when the heating control on cabin ceiling is closed. If the external visibility becomes significantly degraded:</p> <p style="text-align: center;">LAND AS SOON AS POSSIBLE</p>

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are modified by the following:

4.1 PREFLIGHT CHECK

- Floor heating T-handle CHECK fully closed position
- Floor heating control valve CHECK fully closed position

4.2 IMPROVED HEATING SYSTEM OPERATION

- Floor heating T-handle OPEN
- Floor heating control valve OPEN

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

GPS

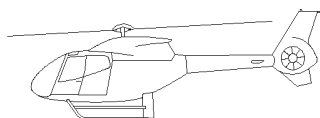
TNL 2101 APPROACH PLUS

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

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(1) AIRWORTHINESS EFFECTIVITY:

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SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
SUP.55.1.P1	1 to 1	16-26	A	
SUP.55.1.P5	1 to 2	16-26		
SUP.55.1	1 to 5	16-26		

LOG OF APPROVED NORMAL REVISIONS

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

The TNL 2101 APPROACH PLUS system complies with the requirements for use:

- In VFR conditions as a day or night primary navigation aid (GPS and HSI or external CDI).
- In VFR conditions in sight of ground or water (GPS autonomous).

For a detailed description of the TNL 2101 APPROACH PLUS, refer to the latest revision of the TNL 2101 APPROACH PLUS Pilot's guide P/N 82879.

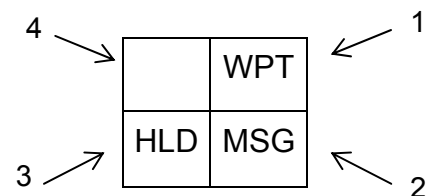
1.1 GPS RECEIVER IN "AUTONOMOUS" MODE

The navigation system supplies the DTK for each navigation leg, to the CDU.

1.2 GPS RECEIVER COUPLING

- The navigation system supplies the following information to the navigation indicator (HSI or external CDI):
 - DTK : The DTK is manually displayed using the CRS (course) control.
 - XTK : The track error has an adjustable scale both for the equipment built-in CDI and for the navigation indicator (HSI or external CDI).
On the helicopter, the recommended value to use en route is ± 1 NM.
It is also recommended to use the same scale for the built-in and external CDI (or HSI).
When the equipment is powered on, the operator is automatically advised of the XTK selected values.
 - A validity flag for the GPS.
- It sends the following data to an annunciation panel located on the instrument panel:

1. WPT - Waypoint approach.
2. MSG - Repeat of CDU MSG data.
3. HLD - Indicates a pilot action that led to a suspension of the current flight plan.
4. - Not used.



1.3 ABBREVIATIONS USED

DTK : Desired Track.
 XTK : Cross-Track.
 TK : Track.
 CDU : Control Display Unit.
 CDI : Course Deviation Indicator.
 RAIM : Receiver Autonomous Integrity Monitoring.
 HSI : Horizontal Situation Indicator.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

- Use of the GPS system is prohibited in approach mode.
- A placard indicates:

GPS receiver in “autonomous” mode

GPS OPERABLE IN DAY VFR CONDITIONS IN SIGHT OF GROUND OR WATER ONLY

GPS UTILISABLE EN VFR DE JOUR EN VUE DU SOL OU DE L'EAU UNIQUEMENT
--

GPS receiver and HSI (or CDI) coupling

GPS OPERABLE IN VFR CONDITIONS ONLY
--

GPS UTILISABLE EN VFR UNIQUEMENT

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

3.1 GPS FAILURES

- GPS receiver in "autonomous" mode

Symptoms:

- Flashing of MSG pushbutton on the CDU.

<u>Analysis</u>	<u>Action</u>
Loss of GPS data validity.	Use conventional navigation equipment.

NOTE

Pressing the MSG pushbutton on the CDU indicates the status of the GPS.

- GPS receiver coupling

1st case

Symptoms:

- Appearance of a GPS flag on the HSI (or CDI).
- Flashing of MSG pushbutton on the CDU as well as the pilot's MSG warning light.

<u>Analysis</u>	<u>Action</u>
Loss of GPS data validity.	Use conventional navigation equipment.

NOTE

Pressing the MSG pushbutton on the CDU indicates the status of the GPS.

2nd case

Symptoms:

- Illumination of RAIM warning light on the CDU.
- Flashing of MSG pushbutton on the CDU and MSG warning light on the instrument panel with 30 sec. time delay.

<u>Analysis</u>	<u>Action</u>
RAIM failure ("RAIM UNAVAILABLE" message).	Use conventional equipment (Refer to NOTES 1 and 2).
or	
Position error detected by the RAIM ("RAIM ERROR" message).	Use conventional navigation equipment (Refer to NOTE 2).

NOTE 1

"En route", the GPS can still be used, provided that the navigation data are checked with conventional equipment at least every 15 minutes.

NOTE 2

Pressing the MSG pushbutton on the CDU indicates the status of the GPS.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

All the navigation means required for each route phase of the intended flight must be available and serviceable.

As the database is not guaranteed, the crew must check, before the flight if possible, the validity and the accuracy of the database information by reference to the official documentation.

Before starting navigation, the crew must read the TNL 2101 APPROACH PLUS self-test messages to check that all necessary validities are present.

The detailed operating procedures are described in the Pilot's Guide referenced in paragraph 1 of this supplement.

NOTE 1

Use of the VHF frequencies listed below may degrade GPS receiver operation after 10 to 15 seconds of transmission time, returning to normal operation a few seconds after transmission ends.

Frequencies = 121.150 / 121.175 / 121.200 / 131.200 / 131.250 / 131.275 and 131.300 MHz.

NOTE 2

Correct operation of the GPS is not guaranteed for cabin temperatures below - 20°C.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

GPS

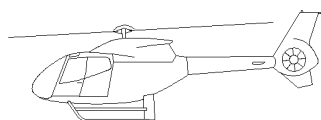
GARMIN GNS 430 / 430W

IMPORTANT NOTE

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- Without indication..... Applicable to all aircraft
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SUP.55.2.P1	1 to 1	16-26	A	
SUP.55.2.P5	1 to 2	16-26		
SUP.55.2	1 to 6	16-26		

LOG OF APPROVED NORMAL REVISIONS

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Revised information	All	
Deleted information	None	

1 GENERAL

The use of this installation is subject to the approval of the operational authorities concerned.

The "GNS 430/430W" includes a VHF COM transceiver, a VOR/ILS receiver and a GPS navigation system.

The GARMIN "GNS 430/430W" GPS system complies with the requirements as a supplement to VFR navigation.

For a detailed description of the GARMIN "GNS 430", refer to the latest revision of the GNS 430 Pilot's guide P/N 190-00140-00.

For a detailed description of the GARMIN "GNS 430W", refer to the latest revision of the GNS 430W Pilot's guide P/N 190-00356-00.

Abbreviations

- BRG : Bearing to waypoint.
- CDI : Course Deviation Indicator.
- DTK : Desired Track.
- DIS : Distance to waypoint.
- ETE : Estimated Time En-route.
- GS : Ground Speed.
- HSI : Horizontal Situation Indicator.
- OBS : Omni Bearing Selector.
- RAIM : Receiver Autonomous Integrity Monitoring.
- TRK : Track.
- XTK : Cross Track error, the cross track error has a manual or an automatic adjustable scale on the CDI.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 SOFTWARE VERSIONS

2.1.1 GNS 430 software versions

The GNS 430 must be loaded with the following or later approved software versions:

GNS 430 sub-system	Software version
Main	2.25
GPS	2.11
COMM	5.00
VOR/LOC	3.01
G/S	2.03

The main software version is displayed on the GNS 430 self-test page 5 seconds after power-on. The other system software versions can be checked on the AUX group sub-page 2:

SOFTWARE/DATABASE Ver.

From main software version 5.01, a TAWS (TERRAIN) function has been added to the GNS 430. USING THE TAWS FUNCTION OF THE GPS IS PROHIBITED. Consequently, this function is de-activated by configuration and shall remain so.

2.1.2 GNS 430W software versions

The GNS 430W must be loaded with the following or later approved software versions:

GNS 430W sub-system	Software version
Main	3.10
GPS	3.1
COMM	7.00
VOR/LOC	5.02
G/S	4.00

The main software version is displayed on the GNS 430W self-test page 5 seconds after power-on. The other system software versions can be checked on the AUX group sub-page 2:

SOFTWARE/DATABASE Ver.

USING THE TAWS FUNCTION OF THE GPS IS PROHIBITED. Consequently, this function is de-activated by configuration and shall remain so.

The GPS receiver is capable of tracking SBAS (WAAS, EGNOS) satellites. USING THE SBAS MODE OF THE GPS IS PROHIBITED. Consequently, SBAS (WAAS, EGNOS) operation is de-activated in set-up sub-group page 2 and shall remain so.

2.2 OPERATION

The use of the GPS is restricted to VFR flight only.

All the navigation means required for each route phase of the intended flight must be available and serviceable.

As the database is not guaranteed, the crew must check, before the flight if possible, the validity and the accuracy of the database information by reference to the official documentation.

Before starting navigation, the crew must read the GNS 430/430W self-test messages to check that all necessary validities are present.

2.3 PLACARDS

GPS OPERABLE IN VFR
CONDITIONS ONLY

GPS UTILISABLE EN VFR
UNIQUEMENT

Location: Besides GNS 430/430W on the instrument panel.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

3.1 GPS FAILURES

FAILURES	CORRECTIVE ACTIONS
<div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: 100px;">NAV</div> <p>Flag on HSI (or external CDI)</p> <p style="text-align: center;">+</p> <div style="border: 1px solid black; padding: 2px; text-align: center; margin: 10px auto; width: 60px;">MSG</div>	<p>[MSG] key Press and check message</p> <p style="text-align: center;">↓</p> <p>1. GPS navigation data not available or invalid. 2. RAIM POSITION WARNING.</p> <p>In both cases, use remaining operational means of navigation (GNS 430/430W VOR or any other available means).</p> <p style="text-align: center; color: green; font-weight: bold; font-size: 1.2em;">CONTINUE THE FLIGHT</p>
<div style="border: 1px solid black; padding: 2px; text-align: center; margin: 10px auto; width: 60px;">MSG</div> <p style="text-align: center;">+</p> <div style="border: 1px solid black; padding: 2px; text-align: center; margin: 10px auto; width: 70px;">INTEG</div>	<p>[MSG] key Press and check message</p> <p style="text-align: center;">↓</p> <p style="text-align: center; font-weight: bold;">RAIM IS NOT AVAILABLE</p> <p>Revert to other operational means of navigation (GNS 430/430W VOR or any other available means) approved for the route and flight phase. During En-route phase, GPS navigation can still be used provided the position can be checked with other means of navigation at least every 15 min.</p> <p style="text-align: center; color: green; font-weight: bold; font-size: 1.2em;">CONTINUE THE FLIGHT</p>

NOTE

Bottom row key [MSG] is used on GNS 430/430W to display the message.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 OPERATING PROCEDURES

The detailed operating procedures are described in the Pilot's Guide referenced in paragraph 1 of this Supplement.

NOTE 1

Use of the VHF frequencies listed below may degrade GPS receiver operation after 10 to 15 seconds of transmission time, returning to normal operation a few seconds after transmission ends.

Frequencies = 121.150 / 121.175 / 121.200 / 131.200 / 131.250 / 131.275 and 131.300 MHz.

NOTE 2

Correct operation of the GPS is not guaranteed for cabin temperatures below - 20°C.

4.2 CONTROLS AND INDICATORS

The GNS 430/430W GPS navigation system provides the following information to the pilot's HSI or external CDI:

- XTK.
- TO / FROM.
- Validity flag.

NOTE 1

XTK full scale deviation is the same for the HSI, or external CDI, and the GNS 430/430W integrated CDI. Default setting is 5 NM (meaning that full deviation is achieved when XTK reaches 5 NM) except within 30 NM range of the departure/destination airfield. Within 30 NM of the destination airfield, the full scale deviation gradually ramps from 5 to 1 NM. Likewise, upon departure, default setting is 1 NM gradually increasing up to 5 NM beyond 30 NM from the departure airfield.

XTK scale is also selectable by the pilot. However, the GNS 430/430W will automatically select the lowest value between the default setting and the value selected by the pilot. Current selected scale is displayed on either side of the GNS 430/430W's CDI. Recommended full-scale value for helicopter "En-route" navigation is 1 NM.

NOTE 2

The HSI or CDI course is not automatically slaved to the desired track (DTK). Consequently, when GPS navigation is selected, (**GPS** on GNS 430/430W screen) as HSI or external CDI navigation source, the course pointer on the HSI or course selector on the external CDI must be manually set to the DTK indicated by the GNS 430/430W. Particular attention is required during automatic navigation leg changes and subsequent change of DTK. However, if the course selected on pilot's HSI or external CDI differs from the DTK by more than 10°, the **MSG** annunciator will flash and the message **Set course to xxx** will be displayed on the GNS 430/430W "MSG" page.

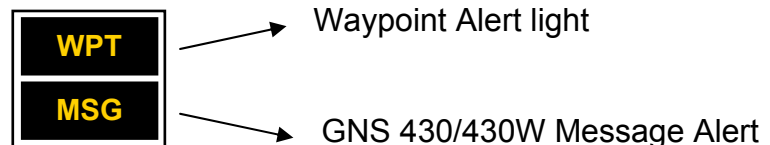
NOTE 3

Pressing the [CDI] key on the GNS 430/430W toggles HSI or external CDI navigation source between GPS and VOR/ILS (**GPS** or **VLOC** displayed above [CDI] key).

NOTE 4

Pressing the [OBS] key on the GNS 430/430W toggles between manual mode (OBS mode) and automatic sequencing of waypoints. Activating OBS mode, indicated by the **OBS** annunciator above the [OBS] key, holds current active waypoint as the navigation destination and prevents the GNS 430/430W from sequencing to the next waypoint. In OBS mode, the DTK to/from the active waypoint is controlled via the pilot's HSI course pointer or external CDI course selector.

The "GNS 430/430W" GPS navigation system is also associated with a two-label indicator on the pilot's instrument panel (If installed):



5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

GPS

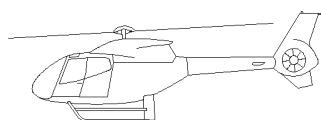
TRIMBLE TNL 1000 DC

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
THE EQUIPMENT MENTIONED ABOVE IS INSTALLED ON THE AIRCRAFT.



Airbus Helicopters Direction Technique Support
Aéroport international Marseille-Provence 13725 Marignane Cedex - France

LIST OF APPROVED EFFECTIVE PAGES - EASA CERTIFICATION

(1) AIRWORTHINESS EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- **A** Specific to EASA

(2) VARIANT OF STANDARD DEFINITION EFFECTIVITY:

- Without indication..... Applicable to all aircraft
- XXX..... Specific to aircraft equipped with XXX

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SUP.55.5.P1	1 to 1	16-26	A	
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SUP.55.5	1 to 2	16-26		

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

The use of this installation is subject to the approval of the operational authorities concerned.

The "TRIMBLE 1000 DC" system includes a VHF COM transceiver, a VOR/ILS receiver and a GPS navigation system.

The "TRIMBLE 1000 DC" system complies with the requirements as a supplement to VFR navigation.

For a detailed description of the "TRIMBLE 1000 DC", refer to the latest revision of the Pilot's guide P/N 80455-0612.

Abbreviations

- BRG : Bearing to waypoint.
- CDI : Course Deviation Indicator.
- DTK : Desired Track.
- DIS : Distance to waypoint.
- ETE : Estimated Time En-route.
- GS : Ground Speed.
- HSI : Horizontal Situation Indicator.
- OBS : Omni Bearing Selector.
- RAIM : Receiver Autonomous Integrity Monitoring.
- TRK : Track.
- XTK : Cross Track error, the cross track error has a manual or an automatic adjustable scale on the CDI.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 OPERATION

The use of the GPS is restricted to day VFR flight in sight of the ground or water.

Use of the GPS is prohibited in approach mode.

All the navigation means required for each route phase of the intended flight must be available and serviceable.

As the database is not guaranteed, the crew must check, before the flight if possible, the validity and the accuracy of the database information by reference to the official documentation.

Before starting navigation, the crew must read the TRIMBLE 1000 DC self-test messages to check that all necessary validities are present.

2.2 PLACARDS

A placard located within pilot's sight field indicates:

GPS OPERABLE IN DAY VFR CONDITIONS IN SIGHT OF GROUND OR WATER ONLY	GPS UTILISABLE EN VFR DE JOUR EN VUE DU SOL OU DE L'EAU UNIQUEMENT
--	---

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

NOTE

Press the MSG key on the CDU to display the situation of the GPS and to scroll through next messages if any.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 BEFORE STARTING

The detailed operating procedures are described in the Pilot's Guide referenced in paragraph 1 of this Supplement.

NOTE

During the « en route » phase, the integrity of the position supplied by the GPS is not ensured. Consequently it is the responsibility of the crew to check the accuracy of the position every 15 minutes using either conventional VFR method or other navigation equipment if available.

Transmissions from the helicopter, via transmitters KX165 and KY196 can lead to momentary losses of GPS reception at the following frequencies:

121.150 MHz , 121.175 Mhz, 121.250 Mhz, 131.275 MHz.

Navigation calculation becomes nominal 2 to 3 sec. after the end of transmission.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

GPS

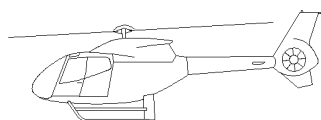
TNL 2000 APPROACH

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
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- **A** Specific to EASA

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- XXX..... Specific to aircraft equipped with XXX

SECTION or SUP.	PAGES	DATE CODE	(1)	(2)
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SUP.55.6.P5	1 to 2	16-26		
SUP.55.6	1 to 2	16-26		

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Title	New issue	
Revised information	All	
Deleted information	None	

1 GENERAL

The use of this installation is subject to the approval of the operational authorities concerned.

The "TNL 2000 APPROACH" system includes a VHF COM transceiver, a VOR/ILS receiver and a GPS navigation system.

The "TNL 2000 APPROACH" system complies with the requirements as a supplement to VFR navigation.

For a detailed description of the "TNL 2000 APPROACH", refer to the latest revision of the Pilot's guide P/N 81449.

Abbreviations

- BRG : Bearing to waypoint.
- CDI : Course Deviation Indicator.
- DTK : Desired Track.
- DIS : Distance to waypoint.
- ETE : Estimated Time En-route.
- GS : Ground Speed.
- HSI : Horizontal Situation Indicator.
- OBS : Omni Bearing Selector.
- RAIM : Receiver Autonomous Integrity Monitoring.
- TRK : Track.
- XTK : Cross Track error, the cross track error has a manual or an automatic adjustable scale on the CDI.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 OPERATION

The use of the GPS is restricted to day VFR flight in sight of the ground or water.

Use of the GPS is prohibited in approach mode.

All the navigation means required for each route phase of the intended flight must be available and serviceable.

As the database is not guaranteed, the crew must check, before the flight if possible, the validity and the accuracy of the database information by reference to the official documentation.

Before starting navigation, the crew must read the TNL 2000 APPROACH self-test messages to check that all necessary validities are present.

2.2 PLACARDS

A placard located within pilot's sight field indicates:

GPS OPERABLE IN DAY VFR CONDITIONS IN SIGHT OF GROUND OR WATER ONLY

GPS UTILISABLE EN VFR DE JOUR EN VUE DU SOL OU DE L'EAU UNIQUEMENT
--

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

NOTE

Press the MSG key on the CDU to display the situation of the GPS and to scroll through next messages if any.

4 NORMAL PROCEDURES

The normal procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

4.1 BEFORE STARTING

The detailed operating procedures are described in the Pilot's Guide referenced in paragraph 1 of this Supplement.

NOTE

During the « en route » phase, the integrity of the position supplied by the GPS is not ensured. Consequently it is the responsibility of the crew to check the accuracy of the position every 15 minutes using either conventional VFR method or the other navigation equipment if available.

Transmissions from the helicopter, via KY196 can lead to momentary losses of GPS reception at the following frequencies:

121.175 ± 0.25 MHz and 131.275 ± 0.25 MHz.

Navigation calculation becomes nominal 2 to 3 sec. after the end of transmission.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.



FLIGHT MANUAL

EC 120 B

SUPPLEMENT

GPS

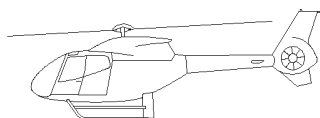
TNL 2000 APPROACH PLUS

IMPORTANT NOTE

The information contained herein supplements or supersedes the information given in the basic Flight Manual and/or the Supplements listed in section Supplement 0.

The effectivity of the manual at the latest revision is specified on the list of effective pages.

THIS SUPPLEMENT MUST BE INCLUDED IN THE FLIGHT MANUAL WHEN
THE EQUIPMENT MENTIONED ABOVE IS INSTALLED ON THE AIRCRAFT.



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- XXX..... Specific to aircraft equipped with XXX

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SUP.55.7.P5	1 to 2	16-26		
SUP.55.7	1 to 2	16-26		

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Deleted information	None	

1 GENERAL

The use of this installation is subject to the approval of the operational authorities concerned.

The "TNL 2000 APPROACH PLUS" system includes a VHF COM transceiver, a VOR/ILS receiver and a GPS navigation system.

The "TNL 2000 APPROACH PLUS" system complies with the requirements as a supplement to VFR navigation.

For a detailed description of the "TNL 2000 APPROACH PLUS", refer to the latest revision of the Pilot's guide P/N 82877.

Abbreviations

- BRG : Bearing to waypoint.
- CDI : Course Deviation Indicator.
- DTK : Desired Track.
- DIS : Distance to waypoint.
- ETE : Estimated Time En-route.
- GS : Ground Speed.
- HSI : Horizontal Situation Indicator.
- OBS : Omni Bearing Selector.
- RAIM : Receiver Autonomous Integrity Monitoring.
- TRK : Track.
- XTK : Cross Track error, the cross track error has a manual or an automatic adjustable scale on the CDI.

2 LIMITATIONS

The limitations specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

2.1 OPERATION

The use of the GPS is restricted to day VFR flight in sight of the ground or water.

Use of the GPS is prohibited in approach mode.

All the navigation means required for each route phase of the intended flight must be available and serviceable.

As the database is not guaranteed, the crew must check, before the flight if possible, the validity and the accuracy of the database information by reference to the official documentation.

Before starting navigation, the crew must read the TNL 2000 APPROACH PLUS self-test messages to check that all necessary validities are present.

2.2 PLACARDS

- A placard located within pilot's sight field indicates:

GPS OPERABLE IN DAY VFR CONDITIONS IN SIGHT OF GROUND OR WATER ONLY

GPS UTILISABLE EN VFR DE JOUR EN VUE DU SOL OU DE L'EAU UNIQUEMENT
--

- The GPS must not be energized for cabin temperatures less than minus 20°C.

3 EMERGENCY PROCEDURES

The emergency procedures specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable and are supplemented or modified by the following:

NOTE

Press the MSG key on the CDU to display the situation of the GPS and to scroll through next messages if any.

4 NORMAL PROCEDURES

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4.1 BEFORE STARTING

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NOTE

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Transmissions from the helicopter, via KY165 and KY196 can lead to momentary losses of GPS reception at the following frequencies:

121.175 \pm 0.025 Mhz, 131.275 \pm 0.025 Mhz and 131.200 Mhz.

Navigation calculation becomes nominal few seconds after the end of transmission.

5 PERFORMANCE DATA

The performance data specified in the basic Flight Manual and in the Flight Manual Supplements remain applicable.