

CH-7 KOMPRESS

PILOT'S HANDBOOK

THIS HANDBOOK INCLUDES THE MATERIAL
REQUIRED TO BE FURNISHED TO THE PILOT
BY FAR 27 AND FAR 21
AND MUST BE CARRIED ON THE HELICOPTER EVERY TIME.

HELICOPTER SERIAL NUMBER _____

HELICOPTER REGISTRATION NUMBER _____

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CH-7 HELI-SPORT S.R.L. TORINO – ITALY

GENERAL INTRODUCTION

*Attachment "1" to Mod. Ae.C.I. / TO / 013
(weight report)*

attachment to the circular Ae.C.I. n. 120-bis/95

BASIS CONFIGURATION

Of the plane V.D.S. type Ch-7 Kompress two seater, double command, with Rotax 914 engine, power CV 115, engine dry weight kg. 74,7.

1. **Basis configuration description** (for : frame, engine, blade, instruments and board installations) in reference to the used material:

FRAME : trestle, tubes, fiber cabin, plexiglas canopy.

ENGINE PROPELLER GROUP: Rotax 914, 4 cylinders, 4 strokes, turbo, liquid cooling system.

ROTOR GROUPS: main transmission, tail transmission, main rotor, tail rotor.

INSTRUMENTS: airspeed, altimeter, variometer, vertical compass, multiple engine instrument, engine/rotor speed indicator, Map.

BOARD INSTALLATION: two radiator cooling fans, two electrical fuel pumps, two Trim servomotor.

LANDING GEAR: two landing skids.

OTHERS: luggage support, ski support, loading support.

2. **Basis configuration of the plane over mentioned :**

- actual tare weight kg. 280
Nb: governor, trim, cooling system, warning card, windows, control centre increase the weight to 280 kg.
- maximal take-off weight kg. 450/500 (amphibian version)
- fuel tank capacity l. 40 = at kg. 30
- fuel hour consumption at 75% of the maximum developed engine power: l/h 20
= at kg/h 12
- useful load kg. 170

The admitted useful load is given by the difference between the maximum take-off weight, that is kg. 450/500 and the empty weight of kg. 280, defined also with the weight operation.

**The producer
CH7 Heli-Sport Srl**

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1 SECTION 1 – DESCRIPTIVE DATA

INTRODUCTION

This Pilot's operative handbook is designed as an operative guide for pilot. It includes the material to be furnished to the pilot, as required by FAR 27 and 21.91. It also contains supplementary data supplied by the helicopter manufacturer.

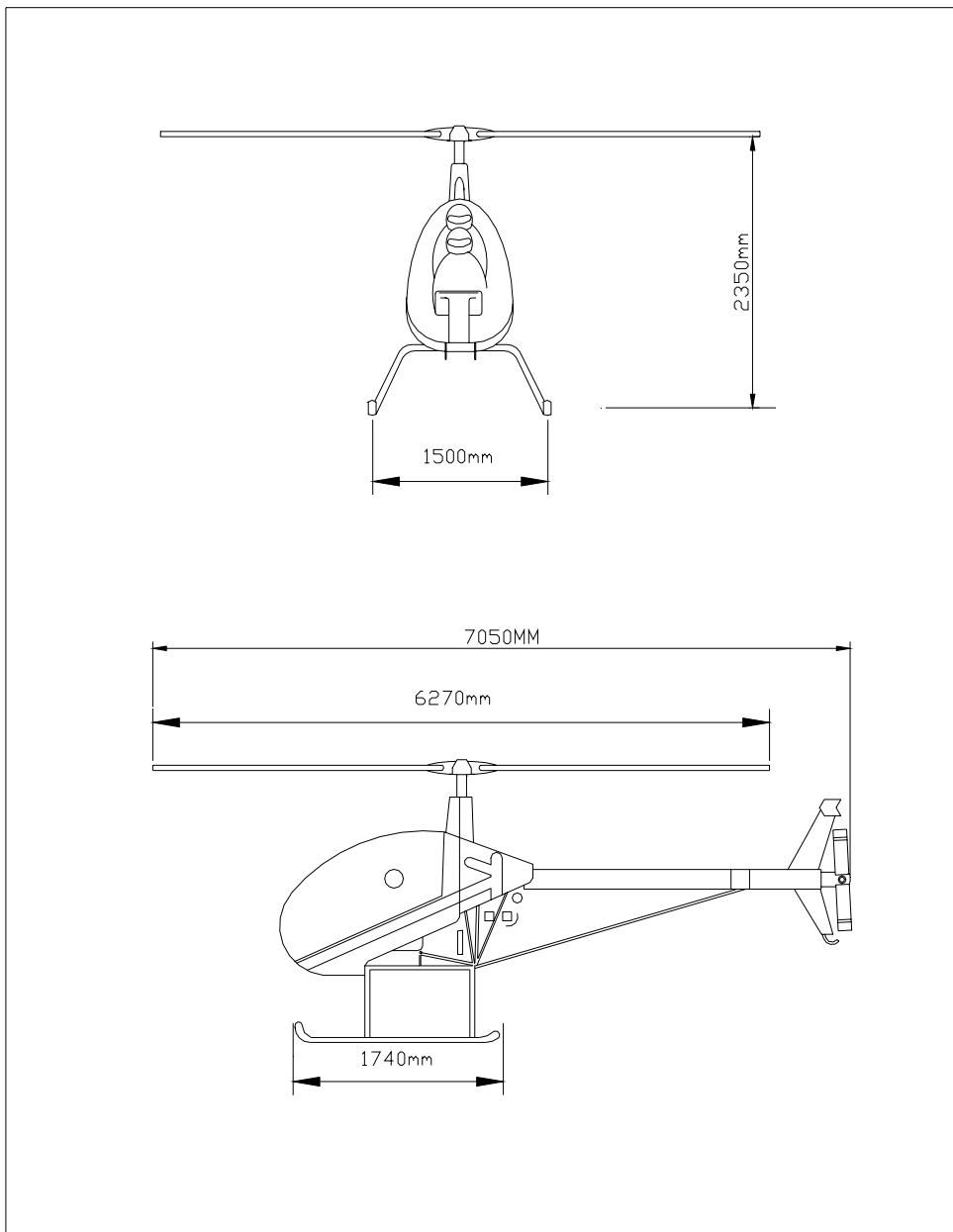
It is care and responsibility of the pilot to verify that the helicopter is in airworthy conditions and safe for flight.

The pilot must also observe the operative limitations as outlined by the instrument markings, placards, and this handbook.

Since it is very difficult consult the handbook during the flight, the pilot should study it entirely to become very familiar with limitations, performances, procedures and operational handling characteristics of the helicopter before flying it.

This handbook has been divided into numbered sections. The limitations and emergency procedures have been put at first place, before the normal procedures, performances and other sections, to provide an easier access to them.

1.1 Helicopter's view



SECTION 1**1.2 DESCRIPTIVE DATA****1.2.1 Main rotor**

Articulation-free to teeter and cone, rigid in plane

Number of blades 2

Diameter 6.20 mt. (20.30) ft

Blade chord 18 cm. (7.2 ft)

Blade twist 6°

Angular velocity – 104 % 550 fps (173 m/sec)

SECTION 1**DESCRIPTIVE DATA****1.2.2 Tail rotor**

Articulation-free to teeter and cone, rigid in plane

Number of blades 2

Diameter 1.02 Mt (3.34 ft)

Blade chord 9.7 cm (3.8 in)

Blade twist 8°

Angular velocity – 104 % 535 fps (163 m/sec)

SECTION 1**DESCRIPTIVE DATA****1.2.3 Main transmission**

From engine to upper pulley:	1 trapezoidal belt
From upper pulley to the transmission:	friction free wheel and clutch
From transmission to main rotor:	box with spiral bevel gear
From transmission to tail rotor:	box with spiral bevel gear

SECTION 1**1.2.4 Power plant**

Engine type	-Rotax 914 TURBO
	- Four strokes, four cylinder level opposed
	- Transmission by mechanical reducer.
	- Liquid/air/oil cooling system
	- Carburetors
	- Turbo electronic controlled by T.C.U. gearcase.
Displacement	1211 cc
Rated power	115 HP max 5 min (at 5800 rpm not utilizable)
Rated power	100 HP max 5 min at 5500 rpm
Continuous power	100 HP at 5500 rpm

WARNING: See engine's handbook

SECTION 1

1.2.5 Fuel

Fuel Super or unleaded auto gasoline
 Octane number not below MON 83 or
 RON 90 (preferably unleaded)
 Avio fuel 100 LL

WARNING: See engine's handbook.

SECTION 1
1.2.6 Oils and Fluids**Lubricant engine oil**

Use engine oil 4 strokes with related additive for mechanical gear.
Do not use oils for traditional airplanes engines without additive.
Use oils with following specifications: API "SF" or "SG"+"GL4" or "GL5"

Oil quantity

3.5 l.

Oil consumption

max. 0.1 lt/h

Shell ADVANCE ULTRA 4 15W 50
(has replaced oil **CASTROL GPS 15W 50**)

WARNING: See the engine's handbook**OIL****- Free wheel**

use oil type SWEPCO 201 (SAE 90 Iso 220) for the first version. MOBIL JET OIL II for the second version.

Quantity

ca. 35 cc. (as per instructions given in the construction handbook)

- Main transmission

oil SWEPCO 201 (SAE 90 Iso 220)

Quantity

max 1.3 lt (1.6 lt. if cooled)

- Tail transmission

oil SWEPCO 201 (SAE 90 Iso 220)

Quantity

40 cc.

Cooling liquid**Type suggested:**

AGIP PARAFU + water ratio 1:3 to 1:2
ANTIFREEZE EXTRA

Quantity

max 3,5 lt.

SECTION 1

DESCRIPTIVE DATA

1.2.7 Frame

Produced in steel 4130 azote pressure tight.

Pressure 2 bar

**SECTION 1
DESCRIPTIVE DATA****1.2.8 Abbreviations and Definitions****PERFORMANCE ABBREVIATIONS**

KIAS	Knots Indicated Airspeed is the speed shown on the Airspeed indicator corrected for instruments error expressed in knots.
KCAS	Knots Calibrated Airspeed is the speed shown on the Airspeed Indicator corrected for instrument and position error expressed in knots.
KTAS	Knots True Airspeed is the airspeed, expressed in knots, relative to the undisturbed air. It is the KCAS corrected for pressure altitude and temperature.
Vne	Never Exceed Airspeed
Vy	Speed for the best Rate-of-Climb
MSL Alt.	It is the height in feet above sea level shown by the Altimeter (corrected for position and instrument) when the barometric pressure is set to that existing at sea level.
Pressure Alt.	It is the altitude in feet indicated by the Altimeter (corrected for position and instrument error) when the barometric pressure is set at 29,92 inches of mercury.
Density Alt.	It is the altitude in feet having the same air density as exists on a standard ISA day. (It is the pressure altitude corrected for OAT).
ISA	International Standard Atmosphere exists when the pressure at sea level is 29,92 inches of mercury, the temperature is 15 °C and decreases 1,98 ° C per 1000 feet of altitude.
BHP	Brake Horsepower is the actual power output of the engine.
GPH	Gallons per Hour, of fuel consumed by the engine.
MAP	Manifold Pressure, is the absolute pressure in inches of mercury in the engine intake manifold.
RPM	Revolutions-Per-Minute or speed of the engine or main rotor.
MCP	Maximum continuous power.

Take-off power	Maximum power for 5 minutes
MGB	Main Gear Box
RGB	Rear Gear Box
CAT	Carburetor Air Temperature
CHT	Cylinder Head Temperature
AGL	Above Ground Level
IGE	In Ground Effect
OGE	Out of ground effect
ALT	Alternator

DEFINWEIGHT AND BALANCE DEFINITIONS

Reference Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	A location along the helicopter fuselage usually given in terms of distance in inches from the reference datum.
Arm	The horizontal distance from the reference datum to the centre of gravity (C.G.) of an item.
Moment	The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits).
C.G.	Centre of Gravity. The point at which a helicopter would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the helicopter.
C.G. Arm	The arm from the reference datum obtained by adding the helicopter's individual moments and dividing the sum by the total weight .
C.G. Limits	The extreme centre of gravity locations within which the helicopter must be operated at a given weight.
Usable Fuel	Fuel available for flight planning.
Unusable Fuel	Fuel remaining after a run out test has been completed in accordance with governmental regulations.
Std Empty Weight	Weight of a standard helicopter including unusable fuel, full operating fluids and full oil.
Basic Empty Weight	Standard empty weight plus optional equipment.
Payload	Weight of occupants, cargo and baggage.
Useful Load	Difference between maximum take – off weight and basic empty weight.

SECTION 1

DESCRIPTIVE DATA

1.2.9 Conversion tables

METRIC TO ENGLISH

Multiply	by	to obtain
centimetres (cm)	0.3937	inches (in)
kilograms (kg)	2.2046	pounds (lb)
kilometres (km)	0.5400	nautical miles (nm)
kilometres (km)	0.6214	statute miles (mi)
litres (l)	0.2642	gallons, U.S. (gal)
litres (l)	1.0567	quarts (qt)
meters (m)	3.2808	feet (ft)
Celsius degree	9/5 (C°+32)	Fahrenheit

ENGLISH TO METRIC

Multiply	by	to obtain
Feet (ft)	0.3048	meters (m)
Gallons, US gal	3.785	litres (l)
Inches (in)	2.540	centimetres (cm)
Inches (in)	25.40	millimetres
Nautical miles (nm)	1.8520	kilometres (km)
Pounds (lb)	0.4536	kilograms (kg)
Quarts (qt)	0.9464	litres (l)
Statute miles (mi)	1.6093	Kilometers (km)
Fahrenheit	5/9 (°F-32)	Celsius degree

SECTION 1

DESCRIPTIVE DATA

1.2.10 Board instruments

FLIGHT INSTRUMENTS	TYPE
Air Speed Indicator	20-180 mph
Altimeter	HPA 1000/20000 FT
Vertical speed indicator	2000 FT 80 MM DIAM.
Compass	PAI 700 14V
Hour indicator	LCD COUNTERS 6 DIGIT DISPLAY

ENGINE INSTRUMENT	TYPE
Flydata or Ch-7 Control Centre	Rotax Flydata Ch-7 Control Centre
Tachometer	3DA5-149KIT
Quad engine instruments	3AQ5 KV

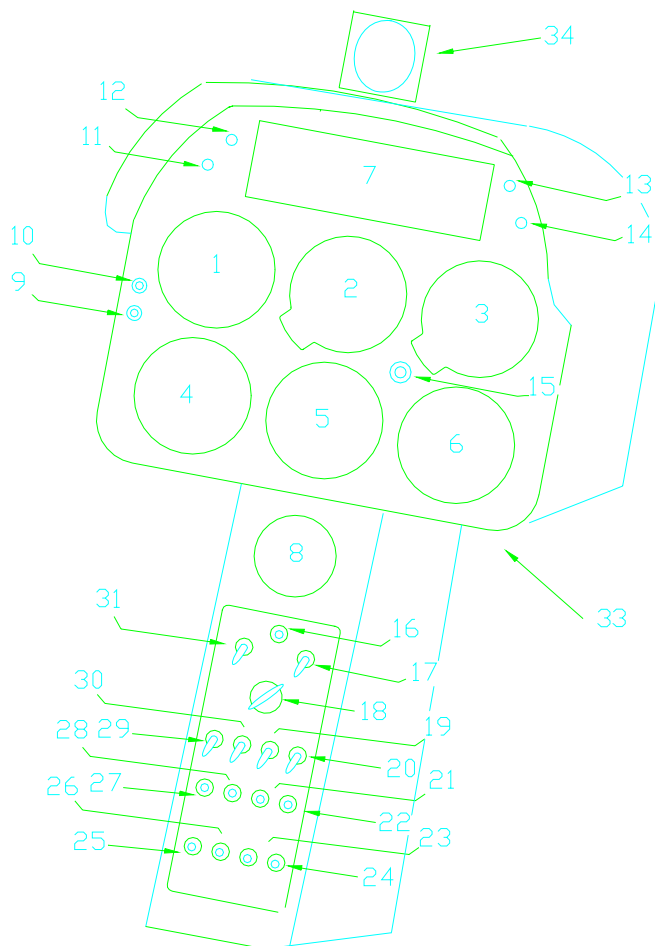
OTHER EQUIPMENT	TYPE
Battery	Fiamm 12 V 18 Ah
Radio	Becker AR4201
Strobo	

SECTION 1

DESCRIPTIVE DATA

1.2.11 Kompress panel

INSTRUMENT PANEL



KOMPRESS INSTRUMENT PANEL

- 1 ROTOR / ENGINE RPM TACHOMETER
- 2 ALTIMETER
- 3 VERTICAL SPEED INDICATOR (VSI)
- 4 AIR SPEED INDICATOR
- 5 MANIFOLD PRESSURE / FUEL FLOW
- 6 BLANK / QUAD INSTRUMENT
- 7 MULTI DATA ENGINE (FLYDAT)
- 8 RADIO COMM.
- 9 WARNING CONTROL BACK
- 10 WARNING CONTROL NEXT
- 11 CLUTCH RUNNING LAMP ORANGE
- 12 GOVERNOR ON / OFF LAMP BLUE
- 13 TRIM PITCH LAMP GREEN NEUTRAL / ORANGE MEDIUM / RED FULL
- 14 TRIM PITCH LAMP GREEN NEUTRAL / ORANGE MEDIUM / RED FULL
- 15 LAMP TEST PUSH BOTTON SWITCH
- 16 CLUTCH 2 AMP. BREAKER
- 17 CLUTCH ENGAGE /DISENGAGE SWITCH
- 18 IGNITION SWITCH
- 19 FAN MANUAL SWITCH
- 20 AUX. ALTERNATOR SWITCH
- 21 AUX. ALTERNATOR SAMP. BREAKER

-
- 22 RADIO COMM. 5 AMP. BREAKER
 - 23 FUEL PUMP 2 5 AMP. BREAKER
 - 24 FUEL PUMP 1 5 AMP. BREAKER
 - 25 MULTI ENGINE DATA / FLYDAT 5 AMP. BREAKER
 - 26 INSTRUMENT 5 AMP. BREAKER
 - 27 TURBO CONTROL UNIT 5 AMP. BREAKER
 - 28 COOLANT TEMPERATURE BULBS 5 AMP. BREAKER
 - 29 INSTRUMENT POWER SWITCH
 - 30 FUEL PUMP
 - 31 MASTER SWITCH
 - 32 WARNING / CAUTION LAMPS
 - 33 QUAD INSTRUMENT ENGINE OIL / GEAR BOX TEMP. SENDER DEVIO SWITCH
 - 34 VERTICAL CARD KOMPASS
 - 35 TRANSFERT FUEL SYSTEM

32.1 WARNING LIGHT COLOUR CODE

○ ○ ○ ○ ○ ○ ○ ○ ○ ○

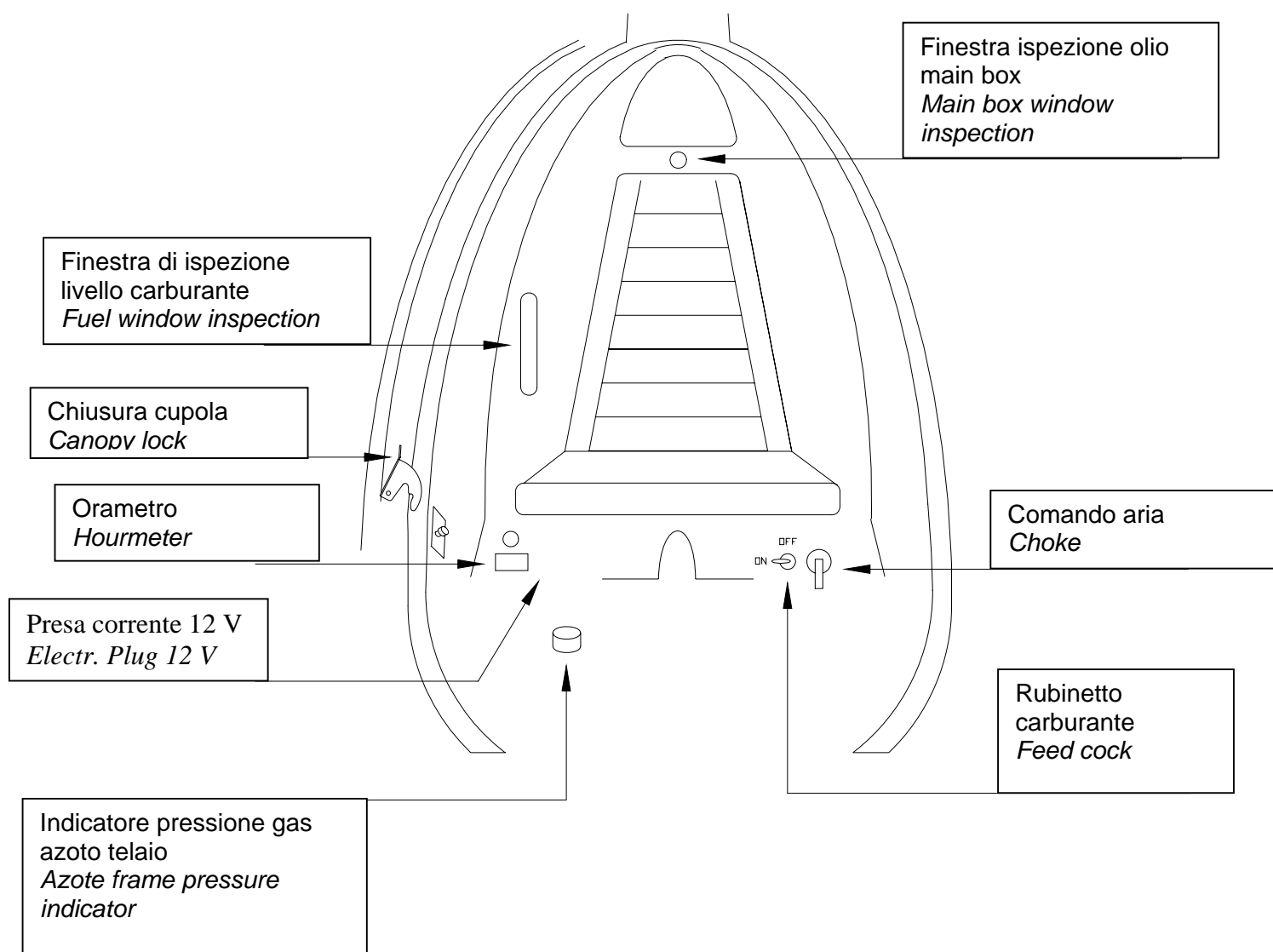
1 2 3 4 5 6 7 8 9

1 OIL PRESSURE ALLARM	Yellow
2 FRAME PRESSURE ALLARM	Yellow
3 FUEL RESERVOIR ALLARM	Red
4 INTERNAL GENERATOR CHARGE ALLARM	Yellow
5 ALTERNATOR CHARGE ALLARM	Yellow
6 T.C.U. CAUTION ALLARM	Green
7 T.C.U. WARNING BOOST ALLARM	White
8 MULTI DATA ENGINE ALLARM	Yellow
9. FUEL PRESSURE ALLARM	Yellow

SECTION 1

DESCRIPTIVE DATA

1.2.12 Cabin – inside view

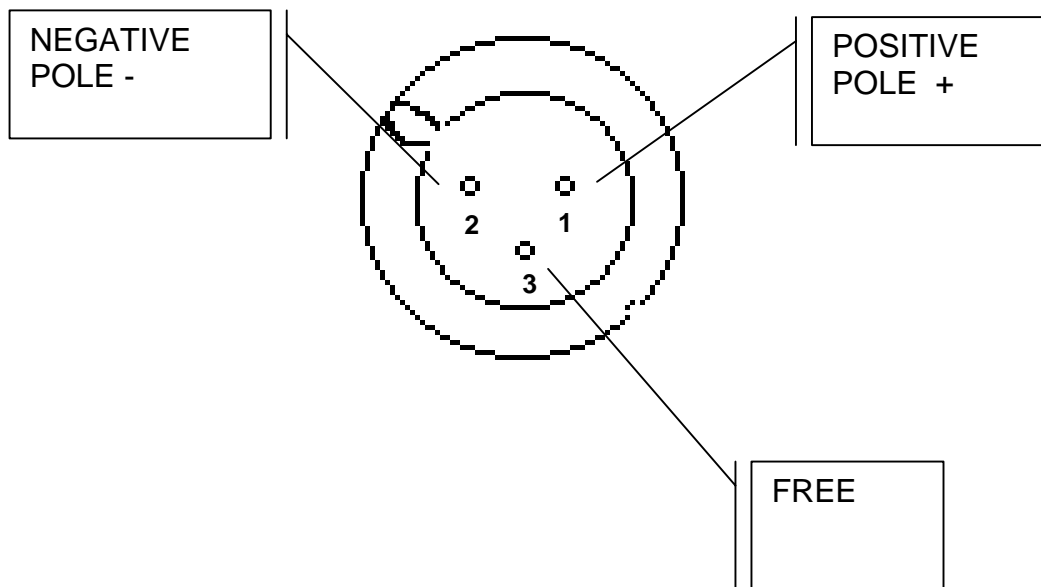


SECTION 1

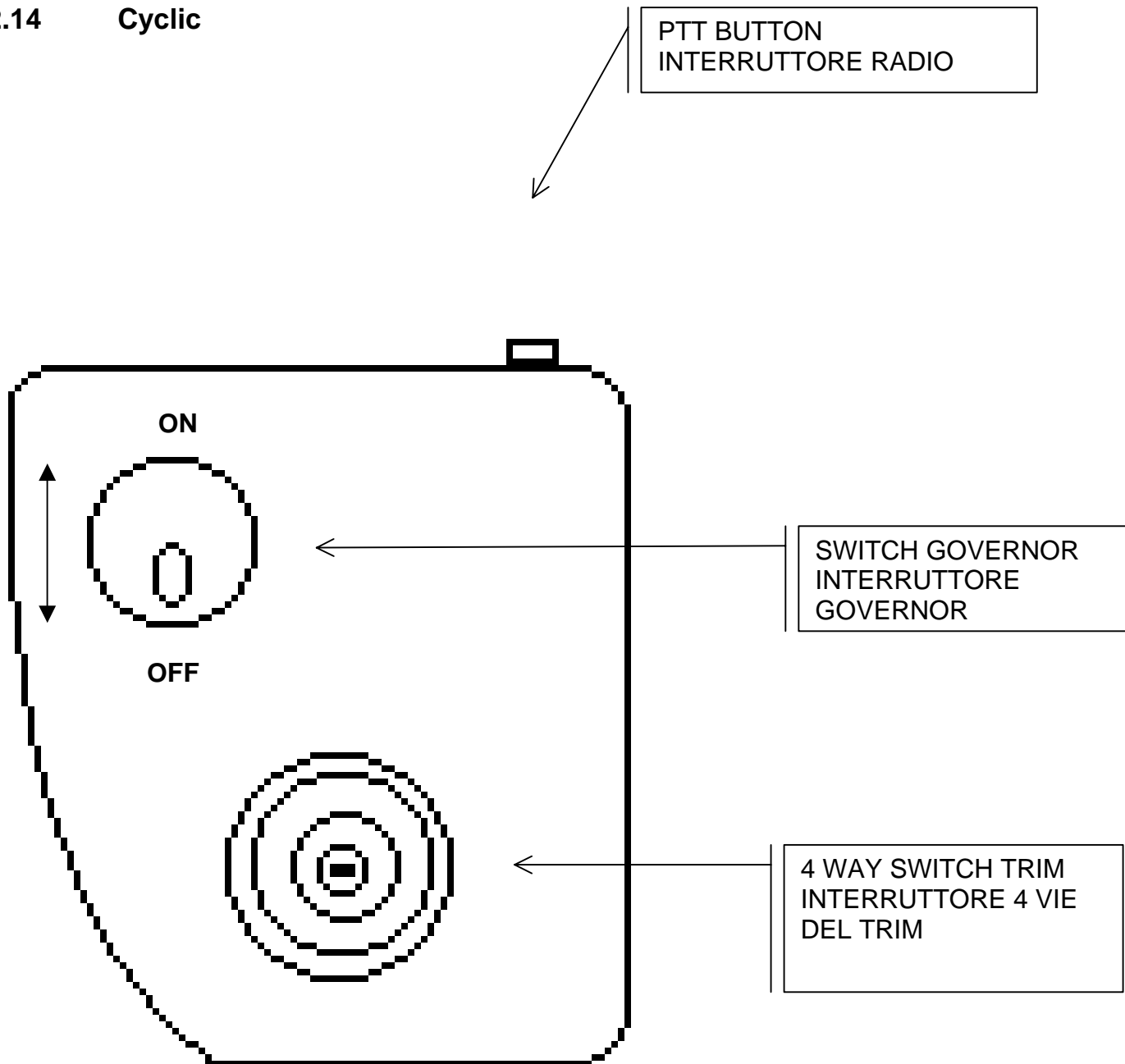
DESCRIPTIVE DATA

1.2.13 Socket

Model type : KAMON



1.2.14 Cyclic



SECTION 1

DESCRIPTIVE DATA

1.2.15 Voice Check List & Warning Card

The voice check list is a system connected to the radio installed on board that helps the pilot to effect every control before starting and shutting down the helicopter through vocal messages; moreover, pushing the button GOV, placed on the cyclic, the system goes automatically to the warning through vocal notices and warning lights of high or low rotor revolutions connected to the led inside the dual engine/rotor rpm tachometer and the lights, section 1.2.11 (123456789).

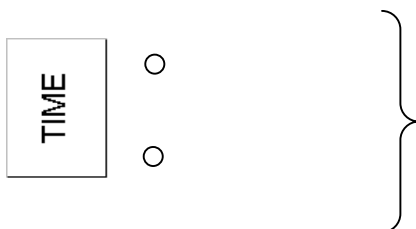
To start correctly the system once on board, put on the radio (8) and in order: main switch (31 MASTER), instrument switch (29 INSTR) and then follow the vocal instructions.

At ground, to exit from the warning system and return to the check list, press for two seconds the button NEXT and follow the vocal instructions.

Attention: the traditional check list must be always on board.

NEXT

It permits you to proceed in the voice check list.



By a simultaneous pressure of both buttons in active warning, you can read the information about the flight time passed from the beginning of the flight.

BACK

It permits you to go back in the check list.

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2 SECTION 2 – LIMITATIONS

WARNING: the informations contained in the section 2 refer to the operation limitations, the instrument indications and the most important placards, necessary for a good use of the helicopter, its engine and its principal systems.

SECTION 2

LIMITATIONS

2.1 INSTRUMENTS COLOUR CODES

RED	It shows the operational limitations The indicator must never enter in the red range during the normal operations
YELLOW	Limitation range for sure operations
GREEN	Normal operative range

SECTION 2**LIMITATION****2.2 AIRSPEED LIMITATIONS****Speed limitation:**

Maximum speed VNE 104 KIAS

120 MPH

Maximum speed VNE 52 KIAS

Without canopy

60 MPH

Tachometer indications

Green arc: 40 to 100 MPH

Red line at 104 KIAS

120 MPH

SECTION 2**LIMITATIONS****2.3 ROTOR SPEED LIMITS****Rotor speed limitations:**

With engine	Tach	RPM	Max 104 %	540 RPM
			MIN 96 %	480 RPM
For max 5 sec. in extreme condition			110 %	550 RPM
Without engine	Tach	RPM	Max 110 %	550 RPM
			MIN 90 %	450 RPM

SECTION 2**2.4 ROTOR SPEED LIMITS****Rotor tachometer indications**

Red upper line	110 %
Yellow range	104 % to 110 %
Green range	96 % to 104 %
Yellow range	90 % to 97 %
Red lower line	90 %
Yellow range	60 % to 70 %

SECTION 2**2.5 ENGINE LIMITATIONS****2.5.1 Power plant pressure limitations – operative range**

Map	0—35 continuative	104 % RPM
Map	35--40	for max 5 min.

2.5.2 Engine limitations

Engine	Rotax 914	
Engine revolutions	96%	4900 RPM
Engine revolutions	104%	5500 RPM
Engine revolutions	110%	5800 RPM
Developed power	115 HP	5800 RPM
Engine revolution limitations		5800 RPM

WARNING: See the engine handbook

SECTION 2
2.6 ENGINE LIMITATIONS**2.6.1 Engine instruments indications**

EGT Exhaust gas temperature	Normal	900° C	1652° F
	Max	950° C	1742° F
CHT cylinder temperature	Normal	75-110° C	167-230° F
	Max	120° C	248° F
Oil temperature	Normal	90-110° C	194-230° F
	Max	130° C	266° F
	Min	50° C	120° F
Airbox temperature	Max	72° C	160° F
OAT operative temperature	Max	50° C	120° F
	Min	-25° C	-13° F
Oil pressure	Min	1,5 bar	22 PSI
	Max	7 bar	100 PSI
	Normal	1.5 bar	22 PSI
		5.0 bar	73 PSI

WARNING: See the engine handbook / Rotax' S/B

Ethylene Glicol, chap. 1,2 CHT Max 120° C

Ethylene Glicol, chap. 0,9 CHT Max 115° C

(CH7 advises against its use) NPG+TM, chap. 0,9 or 1,2 CHT Max 135° C

SECTION 2**2.7 MAIN GEARBOX LIMITATIONS**

Temperature	normal	90° C - 110° C	194 °F – 230 °F
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Temperature	max	127°	240 °F
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WARNING : do not fly in hovering IGE/OGE with full load for more than 10 minutes if the optional cooling main gearbox system is not installed.

SECTION 2**2.8 TRANSMISSION LIMITATIONS****2.8.1 Weight limitations**

Empty weight	Kg 280	lbs 617,29
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Max. weight at take-off	Kg 450	lbs 992,07
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2.8.2 Full optional configuration + amphibian

Empty weight	Kg 300	lbs 661,38
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Max. weight at take-off	Kg 500	lbs 1102,30
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SECTION 2

CENTER OF GRAVITY LIMITS

Reference line: 254 cm 100 inches before the median line of the main rotor

Front Limit of the CG : 249,5 cm (98,22 inches) behind the reference line.

Rear Limit of the CG: 264,1 cm (104 inches)

SECTION 2**2.9 FLIGHT AND MANEUVRE LIMITATIONS****Flight and manœuvre limitations:**

The acrobatic flight is forbidden.

Use the maximum rotation number (104%) during the take-off, the climbs, the approach and the level flight under 100 meters (300 ft) AGL or over the density altitude of 1500 meters (5000 ft).

Maximum equipment: one pilot + one passenger.

Avoid flying when it rains without the appropriate blades' protective tapes.

The flight is forbidden during icing and snow conditions.

Both safe belts must be buckled.

Admitted operations without canopy - VNE 52 KIAS (60 mph).

Solo flight in the rear seat is forbidden.

Flying with the canopy released is forbidden.

IFR flying is forbidden.

SECTION 2

2.10 FUEL LIMITATIONS

Fuel limitations:

Super Fuel octane rating not lower than MON 83 or RON 90

Fuel type 100 LL Avio can be used (for detailed instructions, contact the authorised workshop)

Main tank capacity: 40 liters (10.56 US Gallons)

Charlie version: 35 liters (9,24 US Gallons)

Usable quantity of the main tank : 38 liters (10,03 US gallons)

Charlie version: 33 liters (8,71 US Gallons)

Additional tank capacity: 19 liters (5 US Gallons)

Charlie version: 29 liters (7,66 US Gallons)

Usable quantity of the additional tank: 18.5 liters (4,88 US Gallons)

Charlie version: 28,5 liters (7,52 US Gallons)

Fuel window: it shows the fuel level in the main tanks from 19 liters (5 US Gallons) to empty (it can change from installation to installation)

Pilot lamp for low fuel level: it lights when the fuel is sufficient for 15 minutes; **land immediately** (it is not the same for every helicopter and must be controlled).

SECTION 2**2.11 PLACARDS**

SMOKING PROHIBITED	Placed in front of the pilot.
FUEL AUTO MOGAS (or FUEL AVIO 100 LL) CAP. 40 LT.	Both placed in proximity of the fuel cap.
FUEL ON-OFF	Located near the fuel feed cock.
MAX CAPACITY 15 KG	Located in the bay under the seat.
MIN. PILOT'S WEIGHT KG 50	Located in the front of the pilot.
THROTTLE FRICTION OFF WITH GOVERNOR INSTALLED	Placed in front of the pilot on the collective level.
CHOKE	Placed in front of the pilot on the choke level.

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3 SECTION 3 – EMERGENCY PROCEDURES

INTRODUCTION

A loss of power can be caused by engine and / or drive systems failure.

An engine failure may be indicated by a change in noise level and / or a nose left yaw or decreasing engine RPM.

A drive system failure may be indicated by an unusual noise or vibration, nose right or left yaw, decreasing rotor RPM while engine RPM is increasing.

Warning: at high speed and with the C.G. forwards, lowering the collective, the cyclic control must be given backwards

SECTION 3**3.1 POWER FAILURE ABOVE 500 FT (150 MT) IN CRUISE CONDITION****Above 500 FT (150 MT)**

1. Lower collective immediately to maintain RPM and enter normal autorotation.
2. Speed around 51 KIAS (65 MPH).
3. Adjust collective to maintain RPM in green range.
4. Choose a landing spot and, if altitude permits, manoeuvre so that landing will be into wind.
5. Turn off all unnecessary switches.
6. At about 40 FT (12 meters) AGL, begin cyclic flare to reduce gradually forward speed.
7. At about 8 FT (2.5 meters) AGL, apply the cyclic forward to level the rotorcraft and increase the collective to stop descent. Touch down in level altitude with nose straight ahead.

WARNING: avoid using cyclic backwards during touchdown or by skimming the ground

SECTION 3**POWER FAILURE****3.2 BETWEEN 8 AND 300 FT (2.5 and 100 MT)**

1. Take-off operations should be conducted per the Height Velocity Diagram.
2. In case of loss of power, lower immediately the collective to maintain the rotor RPM.
3. Adjust collective to keep RPM in green range, full down if necessary
4. Maintain airspeed until ground is approached, then begin cyclic flare to reduce forward speed.
5. At about 8 FT (2.5 meters) AGL apply the cyclic forward to level the rotorcraft and start raising collective to stop descent. Touchdown with skids level and nose straight ahead.

WARNING: avoid using cyclic backwards during touchdown or by skimming the ground

SECTION 3**POWER FAILURE****3.3 *UNDER 8 FT (2.5 MT) AGL***

1. Apply right pedal and correct the yaw.
2. Lower partially the collective.
3. Increase collective immediately before the touchdown to cushion landing.

SECTION 3

POWER FAILURE

3.4 MAXIMUM GLIDE DISTANCE CONFIGURATION

- 1. Airspeed about 56 KIAS (65 MPH)
- 2. Rotor about 100 %
- 3. Best glide ratio 8.7 : 1

SECTION 3**POWER FAILURE****3.5 DITCHING WITHOUT ENGINE (POWER OFF)**

1. Follow same procedure as per engine failure over land, section 3.3
2. Apply right cyclic when the rotorcraft comes into contact with water to stop the blades' rotation.
3. Release seat belt and quickly quit the aircraft when blades stop the rotation.

3.6 DITCHING WITH ENGINE (POWER ON)

1. Descend to hover above water.
2. Release the seat belt.
3. Release the canopy.
4. Switch off completely throttle.
5. Keep rotorcraft level and apply full collective as it comes into contact with water.
6. Apply lateral right cyclic to stop blades.
7. Quit as soon as possible the rotorcraft when the blades stop.

SECTION 3**3.7 TAIL ROTOR FAILURE****During the flight**

1. A failure is usually indicated by right yaw which can not be stopped by applying left pedal.
2. Enter immediately in autorotation.
3. Keep rotorcraft level at 48 KIAS (55 MPH).
4. A little increasing of the collective and power is recommended to prolong the glide. Avoid that the right yaw becomes spiral.
5. Apply left cyclic and regulate the collective to limit the yaw angle.
6. Choose the landing spot, close completely the throttle and shut off the engine. Land in autorotation.

During hovering IGE

1. A failure is usually indicated by a right yaw, which can not be corrected by applying left pedal.
2. Close completely throttle and land in hovering, power off condition.
3. Keep the rotorcraft level and increase the collective until contact with the ground to mitigate the impact, throttle completely closed.

SECTION 3**3.8 FIRE IN FLIGHT****3.8.1 During the flight**

1. Enter in autorotation.
2. Cabin vents on.
3. If engine is running, perform normal landing and immediately close fuel valve.
4. If engine stops running, fuel valve - Off
5. If altitude permits, land in autorotation.

SECTION 3**FIRE****3.8.2 During start on ground**

1. Continue the starting in order that the engine can suck flames and fuel through the carburetor.
2. If engine starts, run at minimum for a moment, shut-down and control the damages.
3. If engine does not start, fuel valve - Off , switch master - Off, extinguish fire, inspect for damages.

SECTION 3

FIRE

3.8.3 ELECTRICAL FIRE IN FLIGHT

1. Land immediately.
2. Extinguish the fire, inspect the damages.

SECTION 3**3.9 TACHOMETER FAILURE****Failure in flight**

1. If one of the two tachometers Engine or Rotor indicates zero during the flight, use the one that works and land immediately.
2. If the two tachometers Engine and Rotor indicate discordant data during the flight, to understand which of them is correct, slow down until 60 KIAS (70 MPH) and reduce gradually the RPM until the acoustic or voice warning of low RPM runs.

The tachometer that indicates about 95% when the indicator rings, is the correct one and must be used to land normally.

3. If both tachometers do not work, use the acoustic advisor of the low RPM as indicator and land in emergency.
4. In case both tachometers and the governor do not work, look at the RPM on the engine multiple digital display and check manually that they remain at 5500 RPM. Land normally.
5. The loss of both tachometers, engine and rotor, or the RPM instability, can mean a damage of the electrical-mechanical system of the governor. Put the governor switch on OFF and manage manually the engine RPM, looking at the RPM on the display of Flydata or Control Centre.

SECTION 3

3.9.1 CLUTCH FAILURE

Failure during start

If by starting, the tightening system of the main transmission belt “clutch” suffers a failure, it may happen a wrong belt tightening; verify that at each start the light of the clutch remains on for 90 sec., in this case the tightening is right; if the light of the clutch remains on for shorter or longer time, disconnect the fuse of the clutch.

Do not take-off and shut down the engine.

Failure in flight

If during the flight, the clutch tightening system suffers a failure, the light of the clutch switches and remains on for more than 6 sec. (with vocal system installed, the message received is “clutch failure”). In this case, disconnect the fuse of the clutch.

Choose the nearer and safer area to land normally as soon as possible.

Inspect carefully.

Failure during stop

If by stopping, the clutch tightening system suffers a failure, it may be that once the switch is off, the light of the clutch does not switch on. In this case the belts will remain tight; continue normally the procedure to shut down the engine.

SECTION 3

3.10 VOCAL / EMERGENCY NOTICES AND WARNING LIGHTS

Warnings (see also the CH-7 Control Centre or Flydata guides, if installed). If on the vehicle is installed the voice card, the pilot in addition to the warning lights, can listen also the vocal messages.

When an emergency advise appears, choose the safer and nearer area and land normally as soon as possible.

Land in power off.

WARNING LIGHTS:

The two lights inside the (instrument 1) dual engine/rotor rpm warn of high and low rpm and put on once reached the higher and lower limit of the operative rotor revolutions. **Vocal message: overspeed - low rpm.**

1. **OIL:** it lights when the oil pressure is under the minimum admitted value **(land immediately in autorotation). Vocal message: oil pressure**
2. **FRM:** it is ON when the azote pressure contained in the frame has got a failure. **(land immediately and inspect). Vocal message: frame pressure**
3. **FUEL:** it lights when fuel is in reserve in the main tanks (about 15 minutes before the total exhaustion: to verify for each helicopter) **(land immediately). Vocal message: fuel level**
4. **GEN:** it lights when the engine generator suffers a failure **(land immediately). Vocal message: generator**
5. **ALT:** it is ON when occurs an alternator failure: switch off all electrical consumes to grant current to the fuel pumps. Do not make autorotation for a long time **(land immediately). Vocal message: alternator**
6. **T.C.U.:** it lights when the turbo control has a failure: see the engine handbook **(land immediately). Vocal message: TCU caution with fixed light; TCU warning with flashing light**
7. **BOOST:** the light is fixed when the maximum power range is reached. **Do not exceed the 5 minutes allowed (Charlie version since 2009). Vocal message: over boost**

BOOST: it lightens when the air inside the air box reaches the limit temperature of 72°C +/-3 (Charlie version since 2009) **(land immediately).**
Vocal message: air box temperature

8. **FD:** it is ON when the control centre registers engine values out of normal operative values **(verify the values and, if necessary, land).**
Vocal message: engine failure
9. **PRESS:** it is ON when the fuel pressure value refers to one fuel pump only; **if the pump 2 is on ON, land immediately and keep ready for an autorotation landing. Vocal message: fuel pressure**
10. **LED GOV OFF:** it is ON when the governor switch is OFF
11. **LED CLUTCH:** it lights putting the switch clutch in action by tightening and untightening the transmission belt. In flight it can light for 3 sec.; occasionally, in case of normal voltage reset time, in case of 6 sec. or more **(clutch failure procedure, sec. 3.9.1) Vocal message: clutch failure**

12-13. LED TRIM: they light operating on the 4 way switch and put on 2 electric actuators, one for longitudinal control and the other for lateral control; the leds are 2 or 4 according to the models and are green if the trim is neutral, red in case the trim is to the end of its running

TELATEMP MGB TEMP (main rotor box temperature) **Normal 110°C (230°F) Max 116°C (240°F)** indicates possible dysfunction or deterioration in the gear box of the main rotor.

TELATEMP RGB TEMP (tail rotor box temperature) **Normal 60°C, (140°F), Max 66°C (150°F)** indicates possible dysfunction or deterioration in the transmission box of the tail rotor.

TELATEMP CLUTCH (tightener temperature) **Normal 60°C, (140°F), Max 66°C (150°F)**

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4 SECTION 4 – NORMAL PROCEDURES**AIRSPEED****FOR SAFE OPERATIONS**

Take-off and climbs	43 KIAS
	50 MPH
Maximum Rate-of-Climb (VY)	43 KIAS
	50 MPH
Maximum Range	56 KIAS
	65 MPH
Landing approach	43 KIAS
	50 MPH
Autorotation	56 KIAS
	65 MPH

SECTION 4**4.1 DAILY INSPECTION****PREFLIGHT CHECKS AND NECESSARY CONDITIONS.**

- Light conditions suitable to visual controls; if necessary, use further light sources.
- Before moving the aircraft, drain both tanks.
- Clean the main rotor blades, verify status and condition of the metal edging and of the “tabs “ if present.
- Clean the canopy inside and outside.
- Clean the tail rotor blades, verify status and conditions of the metal edgings, if present.
- Remove the engine cover.
- Clean the radiators (suction) and the air filter

ZONE 1 – CENTRAL LEFT SIDE.

Control:

- PUMPS-FILTERS FUEL system for conditions and lacks.
- COOLING H₂O tubes for condition and lacks on the left side of the engine.
- RADIATORS and SUPPORTS for condition. CLEAN RADIATORS by suction.
- Tubes system OIL COOLING for condition and lacks.
- PUMP-MAIN TRANSMISSION COOLING SYSTEM TUBES for condition and lacks.
- LEFT FUEL TANK installation and fixing for condition and lack. Drain.
- ELECTRIC CONNECTIONS and SENSORS for condition.
- Belt tighten pulley CLUTCH for condition and wear, electrical connections. Pinion LOAD BOLT BRAKING status. FLEXIBLE JOINT “STAR FLEX” TAIL ROTOR MAST, control for condition.
- GOVERNOR SYSTEM for condition and wear, verify slacks in the engine group and axis.
- EXHAUST ENGINE GAS tubes system for condition and fixing.
- LEFT CARBURETOR for condition, verify status and condition CARB-ENGINE collector.
- COOLING LIQUID H₂O level.
- Landing legs and skids for condition. Put the aircraft on the wheels and control the lower skid part for condition and wear.

ZONE 2 – TAIL BOOM AND STRUT CONNECTION.

Control:

- SLACK STRUT- TAIL BOOM.
- CLEARANCE BEARINGS-BEARING BOX tail rotor mast.
- STRUT CONNECTION BELT for condition.

ZONE 3 –TAIL ROTOR

Control:

- TAIL ROTOR BLADES for condition and wear. Cracks absence.
- Clearance bearings HUB-CONDUCT AXIS.
- Sliding SQUARES conduct axis for wear.
- LINK RODS and UNIBALL tail rotor pitch command for condition and wear.
- COMMAND LEVERAGE for condition and wear.
- OIL LEVEL tail rotor box. Verify the reached operative temperature. Verify the cap brakings for status and tension.
- STABILIZER ATTACHMENT BAND for condition.
- STABILIZER for condition.

ZONE 4 – ENGINE RIGHT CENTRAL AND REAR SIDE.

Control:

- TURBINE system for condition and lacks, VALVE CABLE WASTEGATE and SUPPORTS for condition and wear.
- COOLING H₂O tubes system for condition and lacks on the right side of the engine.
- COOLING H₂O tubes system in entry and exit PUMP H₂O for condition and lacks.
- RADIATORS and SUPPORTS for condition. CLEAN RADIATORS by suction
- PICK-UP SENSORS for condition, verify electric connection status.
- AIR BOX system for condition and lacks.
- FUEL PRESSURE GOVERNOR for condition and lacks.
- RIGHT CARBURETOR for condition, verify status and condition collector CARB-ENGINE.
- CONDUCT and ENGINE INTAKE FILTER for condition. Clean the filter.
- Check installation of ENGINE EXHAUST GAS for condition and attachment.
- CHAIN AXIS-TAIL ROTOR DISPATCH COMMAND for condition and functionality.
- CHIAN AXISE-DISHING PLATE DISPATCH COMMAND for condition, verify slack plastics sliding and the braking of command axis. Lubricate.
- OIL TUBES system for condition and lacks. Verify ENGINE OIL LEVEL.
- ALTERNATOR attachment for condition, verify the wear status and tightening of the ALTERNATOR BELT, electrical connections for condition.
- Installation and fixing right FUEL TANK for condition and lacks. Drain.
- ELECTRIC CONNECTIONS and MASSES for condition.
- BATTERY attachment for condition, verify the connections.
- TRANSMISSION BELT for condition and wear. Verify the PULLEYS for condition and the braking status. Lubricate the belt.

- Landing legs and skids for condition. Put the aircraft on the wheels to control the lower part of the skids for condition and wear.

ZONE 5 – CABIN INSIDE

Control:

- MAIN TRANSMISSION OIL LEVEL.
- Equipment for status, Breakers inserted, controls locked.

ZONE 6 – FRONT HELICOPTER

Control:

- WOOL WIRE system for condition.
- Components opening level cabin for condition.
- PITOT TUBE system for condition.

ZONE 7 - ROTOR HEAD

Control:

- FLANGES AND HUBS for condition.
- Position BOLTS CENTERAGE ROTOR HEAD.
- COMMAND LINK RODS MAIN ROTOR BLADES for condition and wear. Verify braking status.
- MAIN ROTOR BLADES ROOT for condition.
- COMMANDS CHAIN for status, wear, condition, verify slack SLIDING SQUARES. Lubricate.

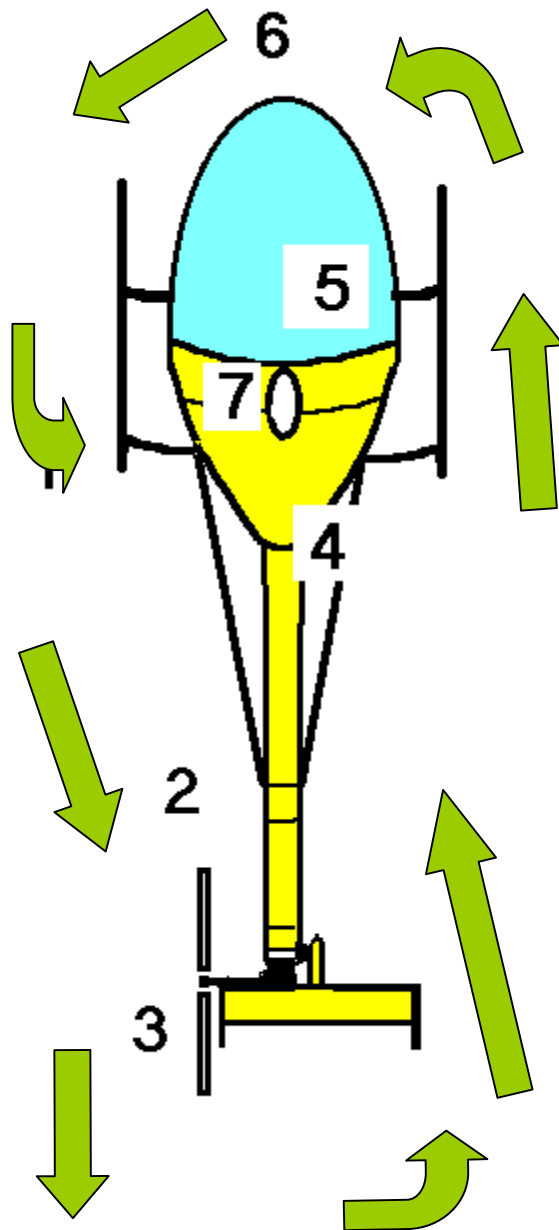
RUBBER LIMIT STOP FLAP ROTOR HEAD for condition and wear. Verify the correct position.

**CONTROL THE STATUS OF THE PROGRAMMED MAINTENANCES
(BOTH CALENDER AND OPERATING).**

WRITE ON THE PROPER BOOK THE CORRECTIVE OPERATIONS, IN CASE OF FAILURES.

WRITE THE NORMAL MAINTENANCE OPERATIONS TOGETHER WITH THE DATE AND THE HOURS FLOWN BY THE HELICOPTER WHEN THE MAINTENANCE HAS BEEN EXECUTED.

ZONE DRAWING



SECTION 4

4.1.1 HANDLING ON GROUND

INTRODUCTION

It is necessary to know the right handling procedures before moving or carrying the helicopter; often the aircrafts suffer important accidental damages more on ground than in flight. The helicopter must be moved by an operator which knows the right procedures.

1. MANUAL HANDLING USING KIT-WHEELS

These wheels permit the handling on smooth surface, asphalt or cement but are not suitable for the movement on grass. Before installing the wheels into their connection on the skids, pay attention that the area under the tail rotor is free from obstacles; when the wheels are installed, the tail bends down and if it is out of control, can hit violently against the skid rudder on ground.

2. MANUAL HANDLING USING LONG ARM WHEELS (option)

These wheels permit a best handling on smooth surface, asphalt or cement, as well as on grass. Before installing the wheels into their connection on the skids, pay attention that the area under the tail rotor is free from obstacles and that the canopy is closed and blocked; when the wheels are installed, the tail bends down and if it is out of control, can hit violently against the skid rudder on ground.

3. OPERATOR

The operator can follow 2 procedures to move the helicopter:

- a) he can use his strength to handle the helicopter, putting his hands on the collar placed on the tail boom coinciding with the strut attachment.
- b) he can use his strength to move the helicopter putting one hand on the tail rotor box and the other hand on the end of the skid rudder tail.

SECTION 4**ATTENTION**

Do not use any strength on both rear struts for the handling, as well as for parking.

4. TRANSPORT ON TRAILER

The trailer must be able to transport loads no higher than 300 kg.: those used for the cars have the shock-absorbers proportioned to the load that they must carry, therefore are too stiff and cause too much stress to the helicopter.

The helicopter must be carried with its face in the march direction of the hauling vehicle.

The trailer must be equipped with a front support, able to hold up the front blade according to the march way; for the rear blade must be used the support supplied by CH-7 (option). Verify that the blades so supported have a positive angle of about 2°. These rests must not interfere with the trim tabs tongues and at a distance not higher than 50 cm from the blade's edge. Fasten the helicopter to the trailer through 4 belts using the 4 points of attachment on the undercarriage legs. Before fastening the blades, turn the main rotor until the tail rotor is in vertical position.

ATTENTION

1. Absolutely do not transport the helicopter if you do not have both blade supports; otherwise remove the blades (consult the construction handbook).
2. Absolutely do not transport the helicopter with the CH-7 cover kit because it could damage the transparent canopy, the blades and the painting.

SECTION 4

5. PARKING

The helicopter must be parked in a sheltered and dry place, covered from strangers or persons, who do not know its functional characteristics; in case of outdoor-parking, in the wind, fix a blade to the tail boom in connection with the collar strut attachment using the tape included in the kit. If the helicopter is parked outdoor for a long time, use the CH-7 complete cover kit (option).

6. WASHING

A normal washing of the outer parts of the helicopter can be effected with water and liquid detergent .

Do not rinse through mean/high pressure jet of water directly on the engine or electric components, in case blow accurately a.m. parts with compressed air.

4.2 BEFORE STARTING.**Before starting**

Canopy	Locked
Safety belts	Locked
Fuel cock	On
Fuel level	Sufficient
Cyclic/collective friction	Off
Cyclic/collective pedals	Full free
Collective down	Friction ON
Cyclic neutral	Friction ON
Pedals	Neutral
All switches/avionics	Off
Sensor frame gas pressure	Inspect
Electromagnetic fuses	On

WARNING

Fasten the safety belts of the passenger also if you are alone.

Starting

Air throttle	On, by cool engine
Instruments switch	On
Master key switch	On
Led warning T.C.U. blue green	Check
Fuel pump No. 1	Check
Fuel pump No. 2	On Check Off
Gas throttle	Close
Area	Free
Key	On start
Motor/rotor revolutions	50% 2.500 rpm (1)
Alternator	On check volts
Clutch	On – led on check time
Air throttle	Off
Alternator	On Check volts
Engine Oil	Temp. 35°C
Led Clutch	Off check time (2)
Motor/rotor revolutions	80-90% set ATTENTION: gradually, without stopping in middling zone to avoid remaining in area of possible vibrations
Check starting circuits L/R	Off 3" On-loss 150 rpm
Starting circuits	On both
Engine oil	Temp. 50°C
Motor/rotor revolutions	100%
Collective	Up 1 inc.
Gas throttle	Close
Release points engine/rotor	Check
Engine revolutions at minimum	2.400 rpm not less than 1.800
Engine / rotor revolution	50% 2.500 rpm

(1) Attention: do not start the engine for more than 10 sec. if the clutch is not ON; from starting and oil pressure check pass quickly to CLUTCH ON. A longer time can damage the transmission belt/pulley.

(2) The clutch must be ON for about 90 sec. and the pilot must check it carefully. A different time may signify a wrong tightening of the transmission belt.

SECTION 4**4.3 TAKE-OFF PROCEDURE****Take-off**

1. Lift slowly the collective and help the gas throttle to spin automatically in order to keep the revolutions at 104% and bring the rotorcraft in stationary flight.
2. Cyclic control forward, raise collective pitch until you reach the climb speed, following the take-off curve (HV), as showed in section 5.5. Maintain the rotor speed at the top of the green arc during the take-off and the climbing.

SECTION 4**AUTOROTATION PRACTICE****Autorotation – Recovery with power under 4.000 ft (1.200 mt)**

Without removing gas, lower completely the collective.

Close the throttle to release the points (needles).

Maintain the rotor revolutions in green arc and the speed at 56 KIAS (65 MPH).

At about 40 ft (12 mt) AGL reduce the speed with flare and apply cyclic forward to level the aircraft and lift collective to stop landing.

Open throttle sufficiently to maintain the revolutions in green arc.

Autorotation – Recovery with power over 4000 ft (1.200 mt)

Proceed as above mentioned but reduce slightly throttle before lowering the collective and open it slightly before lifting the collective. During landing maintain the power rating not lower than 80%.

Autorotation with touchdown

If it is necessary to touchdown in autorotation, proceed as above mentioned but, before flaring (recalling cyclic control), continue to spin the throttle during the rising phase of collective control pitch. This avoid that the automatic compensation system runs when you pitch.

Touchdown always with the skids level and nose straight ahead.

SECTION 4**4.4 APPROACH AND LANDING****Approach**

1. Revolutions 104%. Engine instruments in green arc. Make final approach upwind, beginning with a landing speed at 43 KIAS (50 MPH).
2. Reduce airspeed and altitude until hovering (be sure that the rate of descent is under 300 Ft/min. before reducing the airspeed under 20 KIAS (23 MPH).

Landing

3. From hover reduce gradually collective pitch to ground contact
4. After initial ground contact, reduce collective pitch to full down position.

Warning: if you land on slopes, place cyclic neutral before reducing completely collective.

SECTION 4**4.5 ENGINE SHUT DOWN**

Collective	Lower completely
Governor	Off
Engine/rotor revolutions	80-90% for 30 sec.
Trim	Neutral green
Cyclic/collective friction	On
Engine/rotor revolutions	Cut 50% 2.500 rpm "Cut" means close quickly and completely the throttle in order to pass the area of possible vibrations without the torque
Clutch	Off – Led On time check (2)
Fuel Pump No. 2	Off
Cool/Fan	On
Engine Oil/Cht	under 90°C (194 °F)
Radio	Off
Led Clutch	Off
Key	Off
Master	Off
Instruments switch	Off
Cool/Fan	Off
Alternator	Off

Fuel cock	Off
Time	Shut off time

- (2) The clutch must be OFF for about 90 sec.+10% and the pilot must check it carefully; in case of an excessive noise of the transmission belt, do not wait the switching off of the led and shut down the engine with key on OFF, then wait that the led of the clutch switches off before putting the master switch on OFF

WARNING: do not lift the collective to slow the rotor in shut down phase of the engine. Blades should touch the tail boom.

WARNING: do not open the canopy before completely stop of the rotor: blades should touch the canopy and break it.

WARNING: do not permit to anyone to approach the helicopter until the complete stop of the blades.

SECTION 4**4.6 NOISE ABATEMENT**

To improve the quality of our environment and to dissuade the public authorities from enacting overly restrictive ordinances against helicopters, it is imperative that the pilots make the lowermost possible noise with their helicopter to avoid every irritation to the people.

1. Avoid flying over outdoor concerts, ballgames or other assemblies of people.
2. Avoid the blade flap that usually occurs during high speed flights, especially during turns. It can be avoided effecting slower descents.

The pilot can easily determine the flight conditions which produce noises and try to avoid or reduce them.

3. Reduce the low altitude flights (under 500 feet AGL). Altitude helps in reducing the noise.
4. Repetitive noise is far more irritating than a single occurrence. If you must fly over the same area more than once, vary your flight path so that you do not fly over the same buildings each time.

NOTE: above recommended procedures can not be applied if incompatible with Air Traffic Control clearances or instructions or when in the pilot's judgment they would compromise the flight safety.

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5 SECTION 5 - PERFORMANCE

INTRODUCTION

Hover controllability has been substantiated in 15 knots wind from any direction up to a density altitude of 11.500 FT (3500 meters).

Refer to the diagram hovering ceiling with ground effect for the maximum allowed weight.

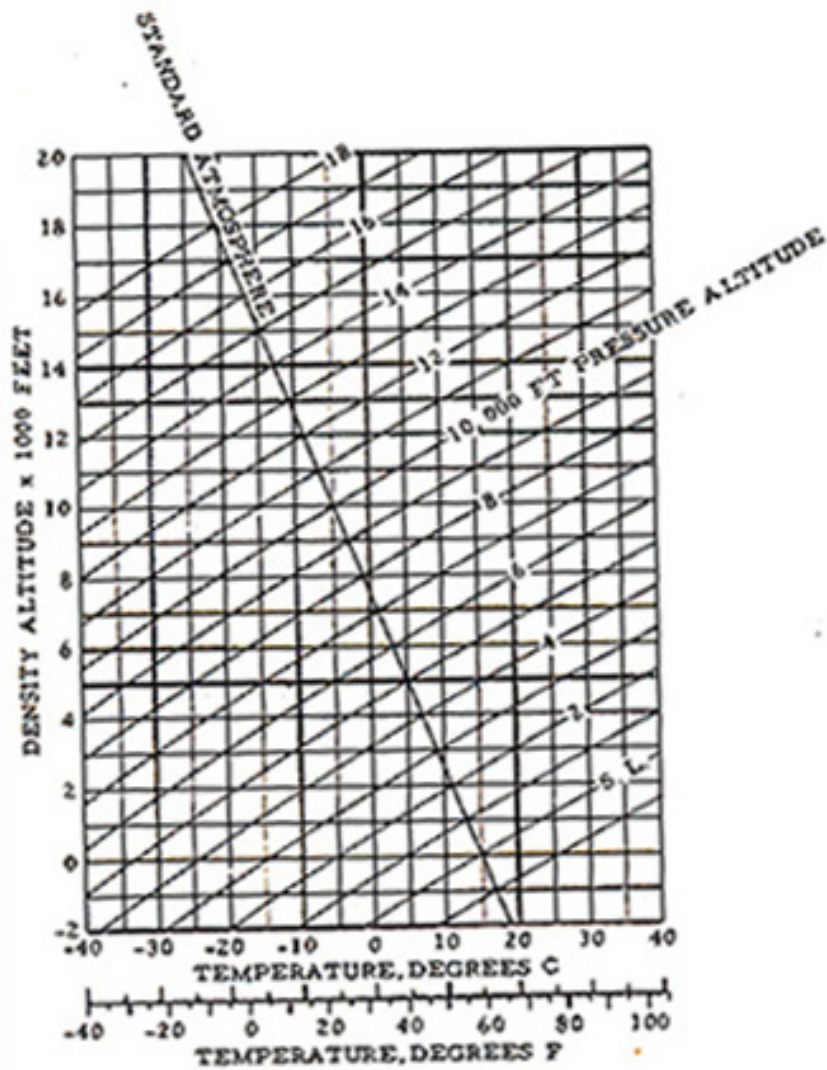
Use always the governor and be sure that it keeps always 104% of revolution.

Warning:

The performance data presented in this section are obtained under ideal conditions.

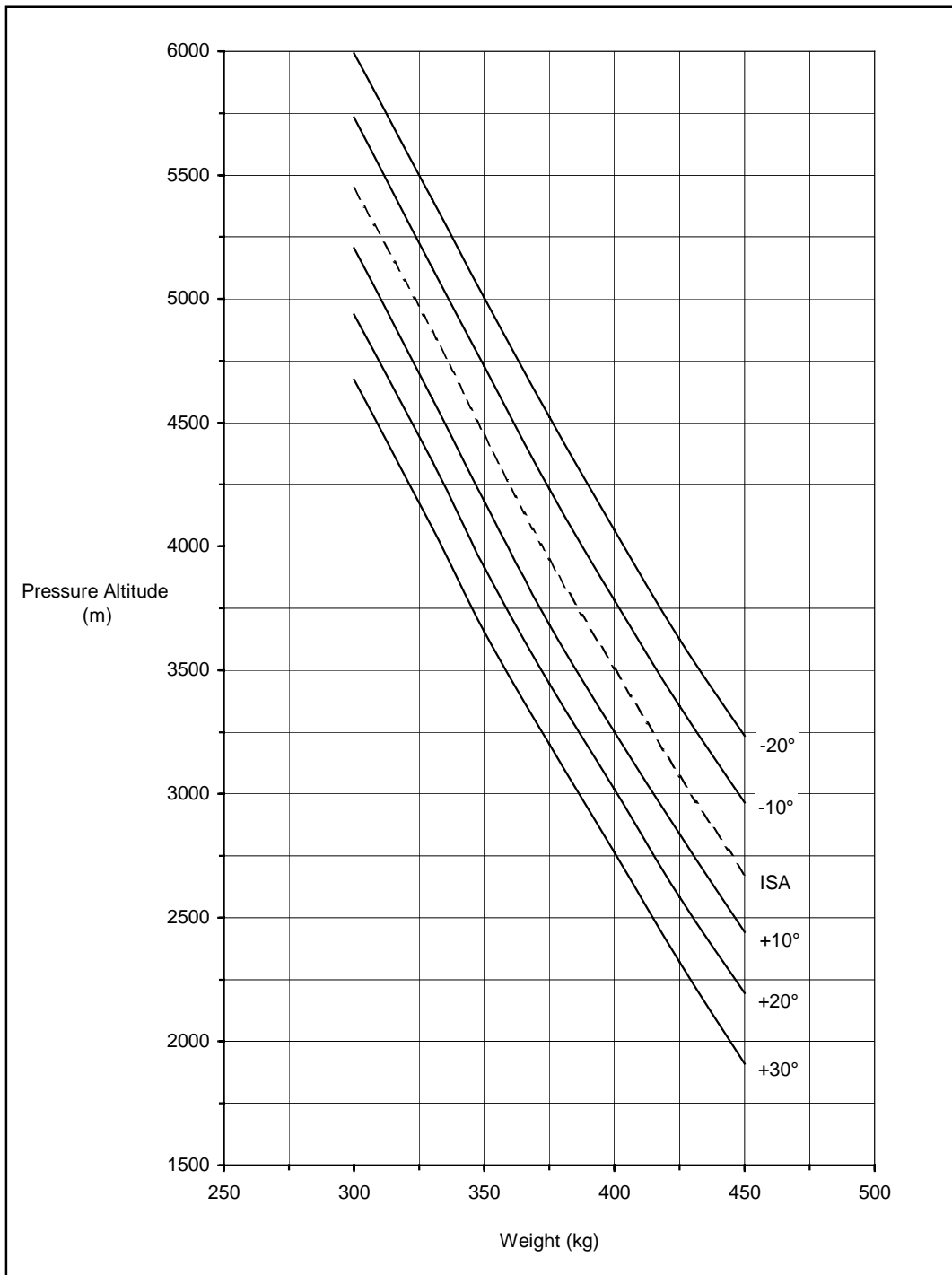
The performances in other conditions may be substantially lower.

5.1 ALTITUDE DENSITY CHART



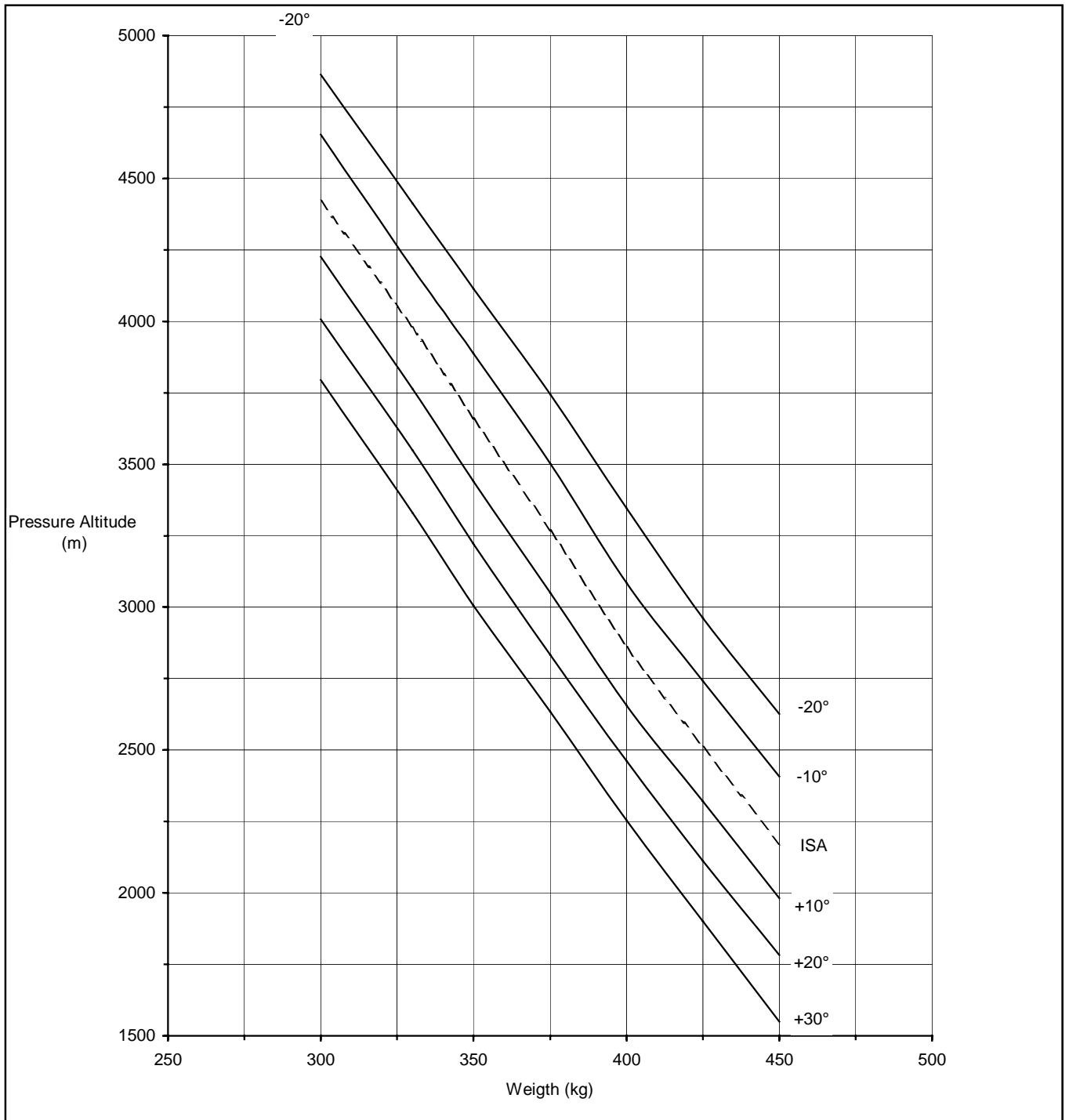
DENSITY ALTITUDE CHART

5.2 IGE (In ground effect) hovering altitude limits



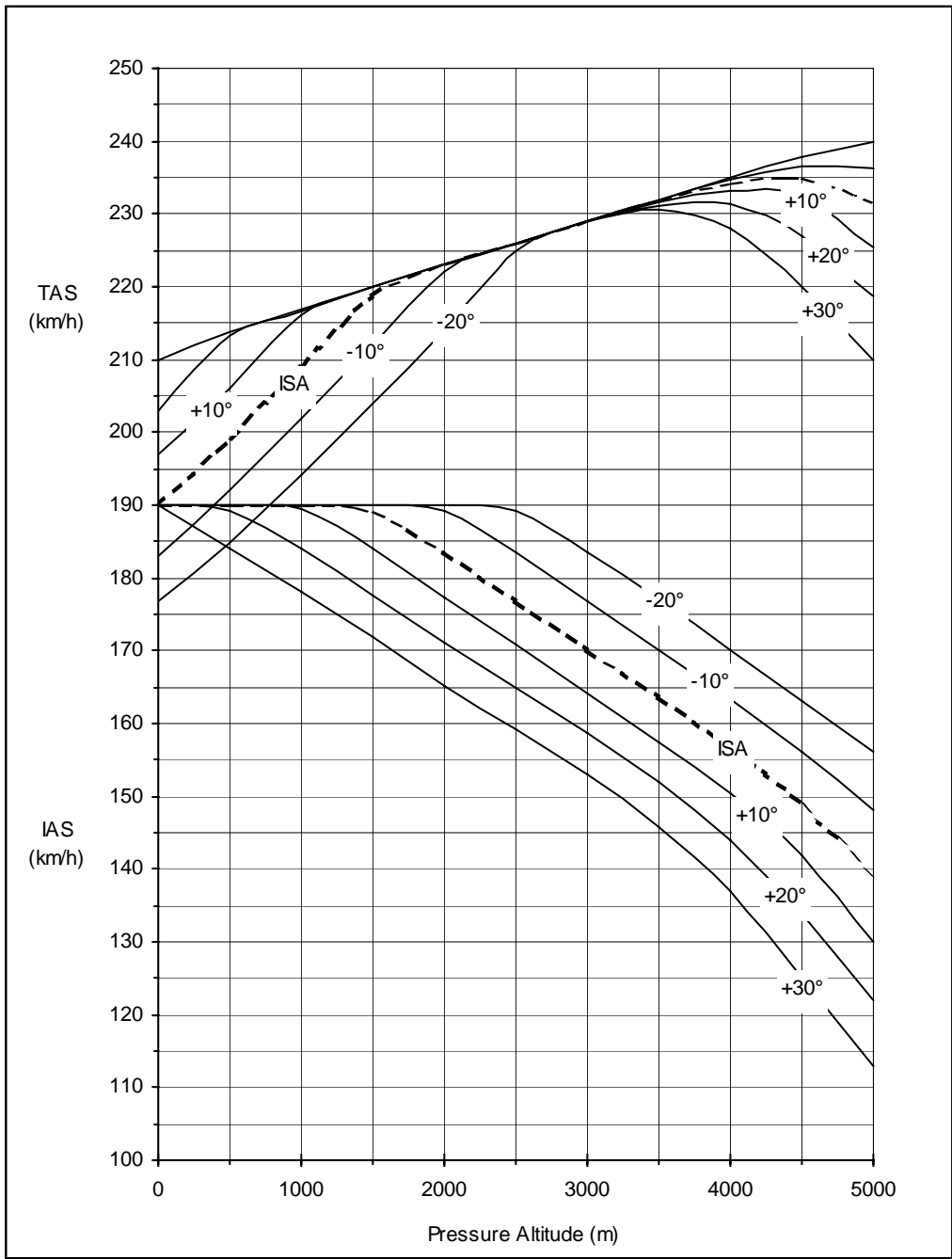
IGE HOVER CEILING

5.3 OGE (Out of ground) hovering altitude limits



OGE HOVER CEILING

5.4 VNE – maximum speed – Height-velocity diagram

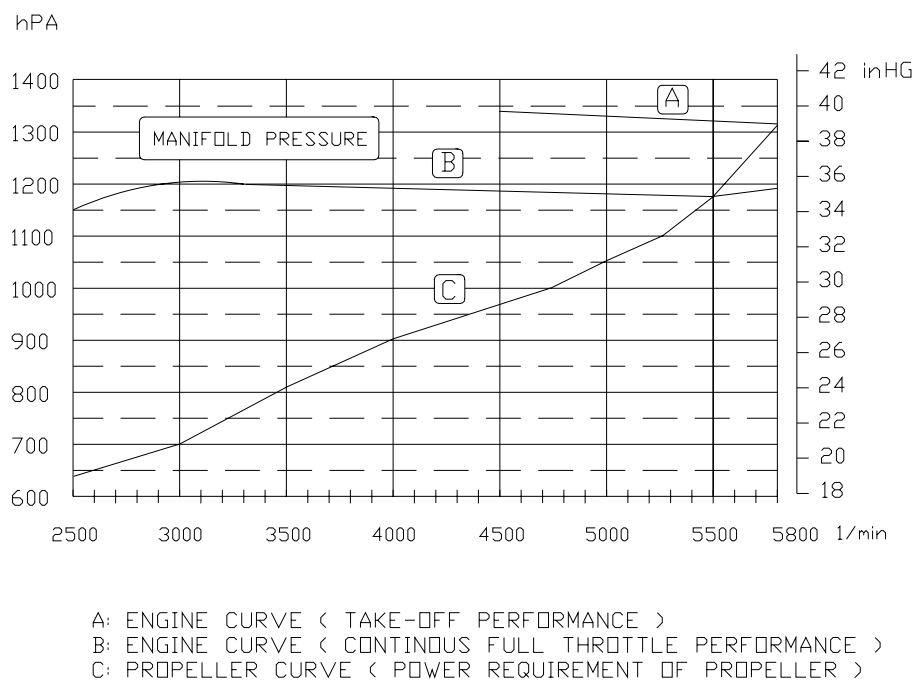
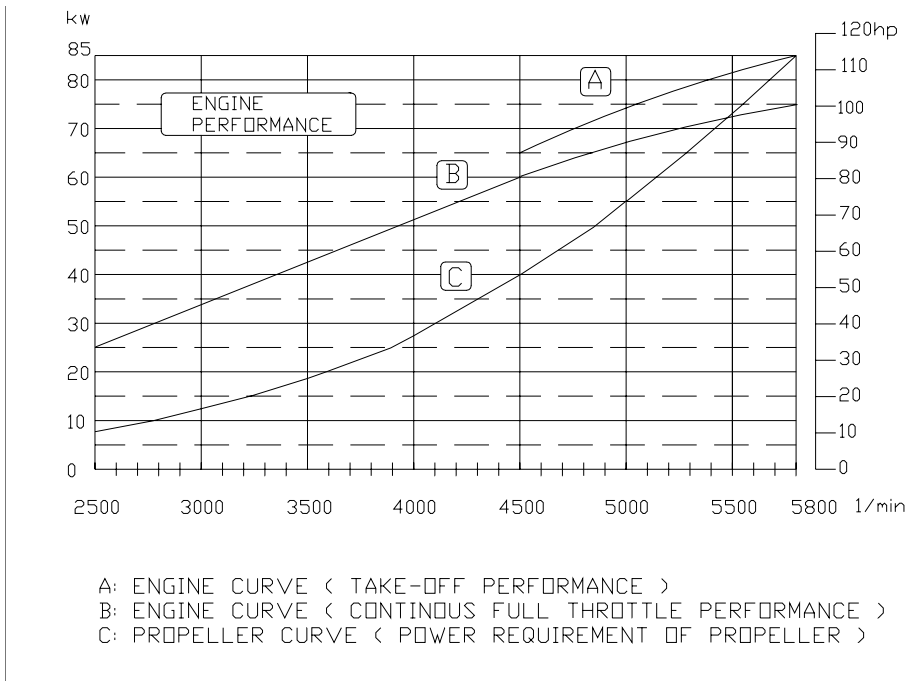


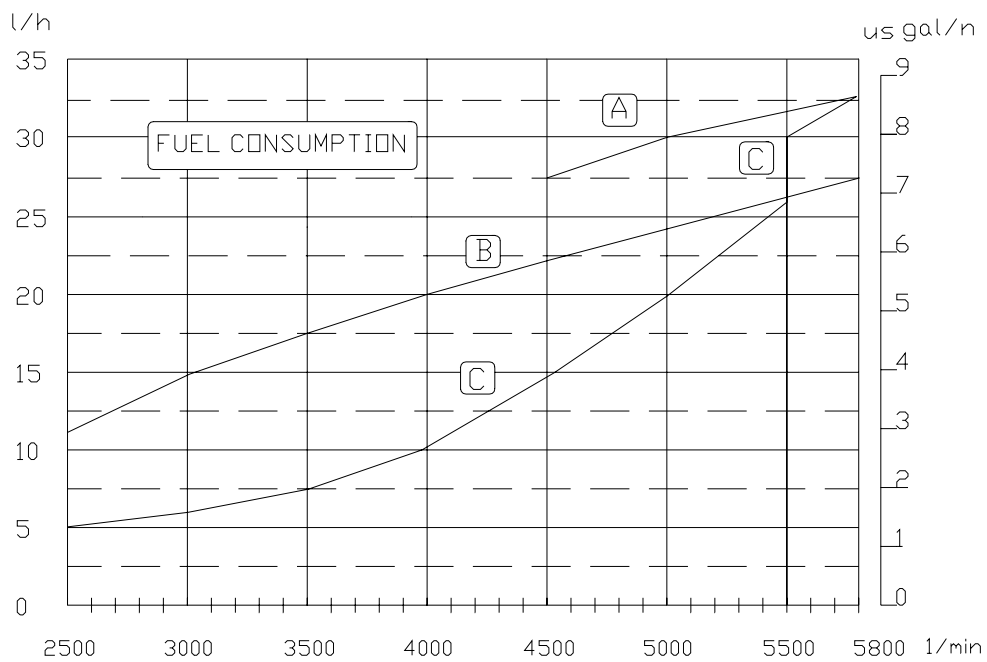
VNE (km/h) – MTOW 450 kg

SECTION 5

5.5 Height velocity diagram

5.6 Engine features





- A: ENGINE CURVE (TAKE-OFF PERFORMANCE)
- B: ENGINE CURVE (CONTINUOUS FULL THROTTLE PERFORMANCE)
- C: PROPELLER CURVE (POWER REQUIREMENT OF PROPELLER)

SUMMARY SECTION 6

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6 SECTION 6 – WEIGHT AND BALANCE

INTRODUCTION

The flight is permitted only respecting the weight and balance limits specified in Section 2. Loadings outside these limits can give rise to dangerous restrictions in the margin of control.

The longitudinal weight and balance limits specified in Section 2 are expressed in this section as total moments. The total moments can be determined using the method indicated in Section 6.4.

Weighing and balance examples.

Warning:

The fuel tank is not located at the CG of the helicopter. As a consequence, the CG will have some variations during the flight.

Determine always the safe load without fuel as well as with the necessary fuel for the take-off. The quantity of fuel that can be extracted to allow a greater useful load is limited by the forwards location of CG with empty tank.

SECTION 6**6.1 HELICOPTER'S WEIGHING PROCEDURES****6.1.1 Aircraft preparation**

1. Drain the fuel

Verify the oil levels in the operative values.

Verify that all the equipment of the check list is correctly located.

Verify that the aircraft is clean and remove every useless items as papers, tools or rags.

Mark on the check list all the equipment installed on board.

2. Hoist the helicopter and put it on a scale of Kg 250 (500 lb) capacity under each skid, exactly in the centre of each one.

3. Lower aircraft until it rests entirely on scales. The rotorcraft must be well balanced on scales before releasing the tail. Be sure that the rotorcraft is level laterally, by placing a level in the centre of aft landing gear cross tube.

4. The total weight of the two scales, PR and PL, is the empty weight of the helicopter.

5. Lower the tail mast and take away the two scales.

6. Put a steel tube of 5 cm. (2 in.) under the skids. Mark on one skid the balance line of the main rotor.

7. Measure one distance of 2.54 cm. (1 in.) from the balance line of the main rotor and mark it on the ground.

8. Roll the helicopter on the tube till you get the balance.

9. Measure the distance from the balance line of the main rotor. If the balance point is backward as to the line, add it. If it is forward, subtract it.

SECTION 6

6.1.2 WEIGHING AND BALANCING EXAMPLES

Moment = kg x mm

Weight for arm CG

Arm = mm

It is measured starting from the datum located at 2.54 cm. (1 in.) before the balance line of the Main Rotor

Total weight

Kg 450 (lbs 992,07)

Empty weight

Kg 280 (lbs 617,29)

Payload weight (with Kg 15 luggage)

Kg 170 (lbs 374,78)

Maximum Load (with full fuel)

Kg 205 (lbs 451,94)

	Kg	mm	kg x mm
Right scale weight (PR)	125	2750	343750
Left scale weight (PL)	155	2750	426250
Pilot's weight	75	2000	150000
Passenger's weight	75	2300	172500
Fuel	20	2541	50800
...			0
...			0
	450	2540,7	1143300

Example 1

	Kg	mm	kg x mm
Right scale weight (PR)	125	2750	343750
Left scale weight (PL)	155	2750	426250
Pilot's weight	90	2000	180000
Passenger's weight	75	2300	172500
Fuel	48	2540	121920
...			0
...			0
	493	2524,2	1244420

Example 2

	Kg	mm	kg x mm
Right scale weight (PR)	125	2750	343750
Left scale weight (PL)	155	2750	426250
Pilot's weight	55	2000	110000
Passenger's weight	0	2300	0
Fuel	20	2540	50800
...			0
...			0
	355	2622	930800

Example 3

	Kg	mm	kg x mm
Right scale weight (PR)	125	2750	343750
Left scale weight (PL)	155	2750	426250
Pilot's weight	110	2000	220000
Passenger's weight	80	2300	184000
Fuel	20	2540	50800
...			0
...			0
	490	2499,6	1224800

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SECTION 7 – HANDLING AND MAINTENANCE

INTRODUCTION

This section outlines the procedures recommended for handling, servicing and maintaining the CH-7 KOMPRESS helicopter.

Every owner must be in touch with his nearest CH7 HELI-SPORT s.r.l. dealer to obtain the latest information available concerning the CH-7 KOMPRESS.

Every owner has to provide for its registration in the list of the factory in order to receive service bulletins, handbook's updating and other helpful information which become official starting from their issuing date.

The pilot must consult the web-site **www.ch-7helicopter.com**, section "**Documentation**", to verify the airworthiness state of his vehicle that has to be in conformity with the service bulletins before starting every flight procedure.

CH-7 HELI-SPORT s.r.l. holds owner and operator responsible for the maintenance of the helicopter CH-7 KOMPRESS; these must make sure that all maintenances are performed by qualified mechanics and in accordance with all established airworthiness CH-7 HELI-SPORT s.r.l. requirements.

All restrictions, procedures, safety practices, time limits, servicing and maintenance requirements contained in this handbook have to be considered as peremptory.

Authorized CH-7 HELI-SPORT s.r.l. dealers are recommended to consult the web-site **www.ch-7helicopter.com**, section "**Documentation**", to check, inform and update the airworthiness state of the vehicles of their customers in order that their helicopters are conformable to the service bulletins issued before starting every flight procedure.

The observance of these instructions will be useful in obtaining the maximum about reliability, performance and safety from the CH-7 KOMPRESS.

SECTION 7**7.1 DOCUMENTS REQUIRED**

Following documents must always be on board:

1. Registration certificate
2. Insurance payment certificate
3. Pilot's handbook
4. Weight and Balance data
5. Pilot's check list
6. Maintenance handbook
7. Technical log-book

SECTION 7**7.2 *INSPECTIONS REQUIRED***

CH-7 HELI-SPORT s.r.l. indicates as obligatory following inspections:

1. Daily inspection as chapter 4.1

2. 25/50 hours as per maintenance handbook, last release. For the first 25 hours and afterwards all 50 hours must be followed the described maintenance that can be performed by the pilot after a training course held by the dealer.

3. 100 hours as per maintenance handbook, last updating; every 100 hours must be effected the prescribed maintenance, which has to be followed by a specialized workshop.

4. CH-7 HELI-SPORT s.r.l., according to F.A.A. specifications, imposes a completely inspection every 12 months and preferably it must be entrusted to the CH-7 HELI-SPORT s.r.l. dealer.

SECTION 7**7.3 CHECK LIST****Before starting**

Canopy	Locked
Safety belts	Fastened
Fuel cock	On
Fuel level	Sufficient
Cyclic/collective friction	Off
Cyclic/collective/pedals	Full free
Collective down	Friction ON
Cyclic neutral	Friction ON
Pedals	Neutral
All switches/avionics	Off
Frame gas pressure sensor	Inspect
Electromagnetic fuses	On

WARNING

Fasten the safety belts of the passenger also if you are alone.

CHECK LIST
Starting

Air throttle	On, by cool engine
Instruments switch	On
Master key switch	On
Led warning T.C.U. blue green	Check
Fuel pump No. 1	Check
Fuel pump No. 2	On Check Off
Gas throttle	Close
Area	Free
Key	On start
Motor/rotor revolutions	50% 2.500 rpm (1)
Alternator	On check volts
Clutch	On – led on check time
Air throttle	Off
Alternator	On Check Volts
Engine Oil	Temp. 35°C
Led Clutch	Off check time (2)
Motor/rotor revolutions	80-90% set ATTENTION: gradually without stopping in middling zone to avoid remaining in area of possible vibration
Check starting circuits L/R	Off 3" On - less 150 rpm
Starting circuits	On both
Engine oil	Temp. 50°C
Motor/rotor revolutions	100%
Collective	Up 1 inc.
Gas throttle	Close
Release points engine/rotor	Check
Engine revolutions at minimum	2.400 rpm – not less than 1.800
Engine/rotor revolution	50% 2.500 rpm

- (1) Attention: do not start the engine for more than 10 sec. if the clutch is not ON; from starting and oil pressure check pass quickly to CLUTCH ON. A longer time can damage the transmission belt/pulley.
- (2) The clutch must be ON for about 90 sec. and the pilot must check it carefully. A different time may signify a wrong tightening of the transmission belt.

CHECK LIST
Pre-flight controls

Canopy	Locked check
Fuel cock	On check
Air throttle	Off check
Fuel pump 2	On
Altimeter	Field altitude
Radio	On freq. flight check
OAT	Temp. check
Electromagnetic fuses	All On
Emergency lights	Off press test
Cyclic/collective frictions	Off
Engine/rotor revolutions	80-90%
Governor	On

AREA FREE – CHECK WIND - TAKE-OFF

ATTENTION: additional pump 2 must be ON during all take-off phases

ENGINE SHUT DOWN

Collective	Lower completely
Governor	Off
Engine/rotor revolutions	80-90% 30 sec.
Collective friction	On
Trim	Neutral green
Engine/rotor revolutions	cut 50% 2.500 rpm “Cut” means close quickly and completely the throttle in order to pass the area of possible vibrations without the torque
Cyclic friction	On
Clutch	Off - led on check time (2)
Fuel pump No. 2	Off
Cool/Fan	On
Engine Oil/Cht	under 90°C (194 °F)
Radio	Off

Led Clutch	Off (if waiting the led clutch there is an increasing of the noise of the transmission belt, shut down the engine before connecting Master On)
Key	Off
Master key	Off
Instruments switch	Off
Cool/Fan	Off
Alternator	Off
Fuel cock	Off
Time	Shut off time

- (2) The pilot must check carefully the release time of the clutch that must be about 90 sec. +10%; in case of excessive noise of the transmission belt, do not wait that the led is off and stop the engine with key on off then wait that the clutch led if off before putting the Master switch on off

WARNING: do not lift the collective to slow the rotor in shut off phase of the engine. Blades could touch the tail boom.

WARNING: do not open the canopy before completely stop of the blades: blades could touch the canopy and break it.

WARNING: do not permit to anyone to approach the helicopter until the complete stop of the blades.

SECTION 7

7.4 OBLIGATORY CHECK

7.4.1 Safety course

Aeronautical operators use helicopters type CH-7 Kompres/C/F for the training of the pilots to obtain the flight licence. In order to prevent accidents caused at 92% by pilot's error usually during the training, FAA has published the Special Federal Aviation Regulation Nr. 73-1 (SFAR 73-1).

With the purpose of confirming that the operative features of the CH-7 Kompres/C/F helicopters had to be object of particularly attention and precautions against accidents owing to the peculiarity of the type of helicopters, CH-7 Heli-Sport s.r.l. has thought it right to remind with this amendment the instructions that must be observed by operators, training organisations of every kind of certification (ULM or Aircraft) and by each pilot, who uses these helicopters.

Safety Course

Pilots, before obtaining the authorization to operate as responsible pilots the CH-7 Kompres/C/F helicopters, have to attend the "Safety course" at the training organisations recognized by CH-7 Heli-Sport s.r.l.

Pilots/instructors, before obtaining the authorization to operate as responsible pilots/instructors the CH-7 Kompres/C/F helicopters, shall have to gain experience in the "solo" flight with 150 hours on a.m. models and attend the "Safety course" at the training organisations recognized by CH-7 Heli-Sport s.r.l.

Above mentioned training flight hours must be effected with an instructor using the dual control and have to be indicated on the flight book of the student pilot.

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