Aerospatiale AS-332C1 Super Puma of Hellenic Air Force 358th Sqdr for FS2K2

GENERAL

The Greek Ministry of the Merchant Marine has signed a $60 million contract with Eurocopter to purchase four (4) AS-332C1 Super Pumas to be used in SAR (**S**earch **A**nd **R**escue) operations. The helicopters are scheduled for delivery between late 1999 and mid-2000 and will operate mostly over the Aegean Sea. The SAR package will include a Bendix 1500B radar, Thomson-CSF "CLIO" FLIR system, Spectrolab searchlight, a 600 lbs (272 kg) hoist, jettisonable life rafts, anti icing equipment and a Sextant Avionique Nadir Mk2 autonomous navigation system slaved to an SFIM 155 autopilot, which will allow automatic transitions and hover. Also, air ambulance installation including stretchers and a system for flight in moderate icing conditions are included.

On December 1, 1999 the 358th SAR Sqdr of the Hellenic Air Force received its first Super Puma helicopters. While they are considered assets of the Hellenic Coast Guard, they will be operated by the HAF with assorted crew. This repaint version has been specifically created as an honor to the 358th Sqdr of Hellenic Air Force based in Elefsina, Greece with a SAR (**S**earch **A**nd **R**escue) role.

CREDITS

- Original helicopter model was made by Mr **Dirk Fassbender** email@dirkfassbender.de
- Hellenic Air Force repaint, panel design, flight dynamics, install / flight manual & screenshots by **Nick Karatzides** Nick_Karatzides@hotmail.com **OR** Pathfinder@mail.gr.
- Aircraft infos & data by Aerospatiale / Eurocopter and Hellenic Air Force.

INSTALATION

- Create a folder into C:\Program Files\Microsoft Games\FS2002\Aircraft and name it "**Aerospatiale AS-332C1 Super Puma Hellenic Air Force**"
- Open the "Aerospatiale effects" folder, then COPY & PASTE its contents into destination C:\Program Files\Microsoft Games\FS2002\Effects. Overwrite any existing FS2K2 "fx" files with the same name if it is needed so. This will **NOT** harm your FS2002 system for other aircrafts! If you do not want to overwrite the existing FS2K2 "fx" files, backup them first.
- Open the "Aerospatiale gauges" folder, then COPY & PASTE its contents into destination C:\Program Files\Microsoft Games\FS2002\Gauges. Overwrite any existing FS2K2 "gau" files with the same name if it is needed so. This will **NOT** harm your FS2002 system for other aircrafts! If you do not want to overwrite the existing FS2K2 "gau" files, backup them first.
- Open the "Aerospatiale FPDA" folder, then COPY & PASTE its contents into destination C:\Program Files\Microsoft Games\FS2002\Sound. Overwrite any existing FS2K2 "wav" files with the same name if it is needed so. This will **NOT** harm your FS2002 system for other aircrafts! If you do not want to overwrite the existing FS2K2 "wav" files, backup them first.
- Finally, COPY & PASTE all the other folders & files into C:\Program Files\Microsoft Games\FS2002\Aircraft\Aerospatiale AS-332C1 Super Puma Hellenic Air Force.

Anyway, after a successfull installation, you are now OK to start your FS2K2 and go flying. To select this aircraft, you'll find it under the manufacturer's name of "Aerospatiale" into the "Select Aircraft" menu of FS2K2.

RELATED LINKS

http://www.helis.com/news/1999/aespgre.htm
http://www.aircraftresourcecenter.com/AWA1/201-300/walk213_Super_Puma/walk213.htm
http://www.fas.org/man/dod-101/sys/ac/row/cougar.htm
http://www.sfaerospace.ch/d/produkte/heli_superpuma.html
http://avia.russian.ee/vertigo/puma-r.html
http://www.futura-dtp.dk/Flysiden/Lande/Europa/Grakenland.htm

KNOWN BUGS

There is a known "bug" issue with this model, and I'll explain it to you, as best I can:

- The lights should be activated **ONLY** by clicking on the proper light switches! Do **NOT** use the "**L**" button on your keyboard!!! This action will result float inflation, hoist cable extension and water bucket load operation at the same time. As you might understand this is likely unreal...
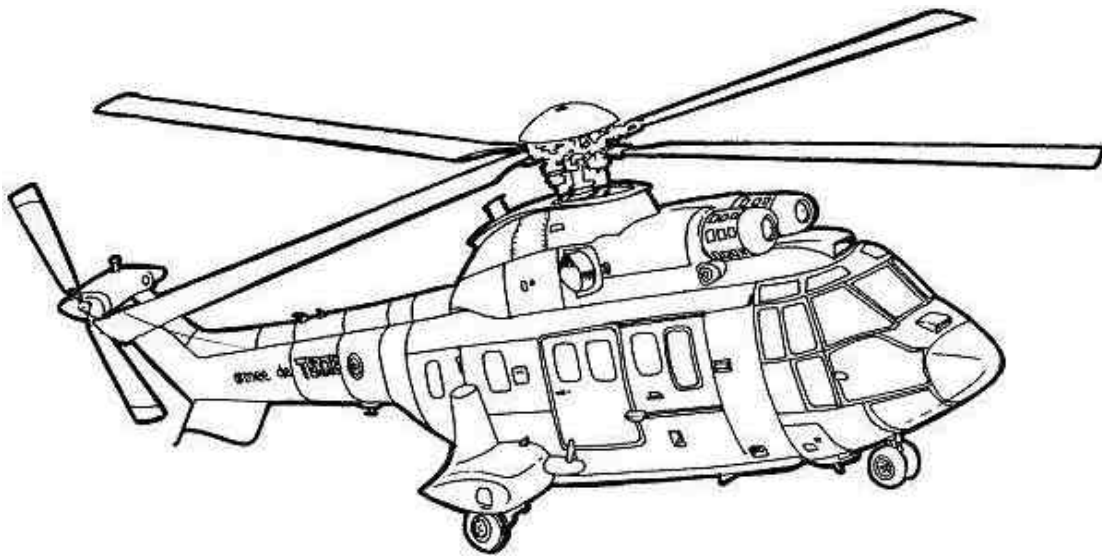
NOTES

- This Hellenic Air Force's Aerospatiale AS-332C1 Super Puma (SAR) helicopter contained in this AS-332C1_HAF_v1.zip package is a fully compatible helicopter with FS2K2.
- This helicopter package for FS is not meant to be artistically brilliant, but to give a faithful as possible rendition of what it is like to fly this helicopter. It is also frame rate friendly.
- Hellenic Air Force's Aerospatiale AS-332C1 Super Puma repaint archive for FS2K2 is a **STRICTLY FREEWARE ONLY!** NO COMMERCIAL GAIN BY ANYONE COULD BE ACCEPTABLE BY ME. The Aerospatiale's AS-332C1 Super Puma helicopter repaint package should **NOT** UNDER ANY CIRCUMSTANCES be uploaded or displayed on payware FS sites or **ANY** of its associated subsidiaries. If it is, or available on any website offering this archive in return for money, any appropriate legal action will be undertaken using all the appropriate International copyright laws.
- The repainter of this package is in no way liable for any damage it may cause from incorrect use (however unlikely that it may be).
- If you have any questions & comments, bug reports etc, please feel free to send to my E-mail address Nick_Karatzides@hotmail.com **OR** Pathfinder@mail.gr.
- This Hellenic Air Force's Aerospatiale AS-332C1 Super Puma repaint (original model by Dirk Fassbender) should **NOT be uploaded to ANY InterNet site without the repainter's written comfirmation**.
- Finaly, AS-332C1_HAF_v1.zip package should **NOT** under **ANY** circumstances be uploaded in FSPlanet.com, because this site is **NOT** freeware and the site moderator named Ferdy Serena, makes money and never ask any permision before uploading any file. You have to know that this man is selling you this FS repaint which is already freeware in other FS file libraries. Considering these, **SHAME on Ferdy Serena, SHAME on FSPlanet.com for this behavior**...

Aerospatiale AS-332C1 Super Puma flight manual for use in FS2K2

GENERAL

This flight manual is made NOT to give you the knowledge to fly the real helicopter, but to be able to simulate a typical Aerospatiale AS-332C1 Super Puma behavior in a FS2K2 enviroment. No matter this AS-332C1 Super Puma model for FS2K2 is made and test to fly and behave as close to a real Search And Rescue / transport helicopter flight envelope (Microsoft says...), you must NOT attemp to use these informations included in this FS2K2 flight manual to fly **ANY** helicopter in real situations!!!

WARNING

The author has NO responsibility if FS2K2 tactics explained in the present flight manual will be considered as real aviation tutorials and be the reason of an aviation accident, leathal injury or death. These information are for Microsoft Flight Simulator use ONLY
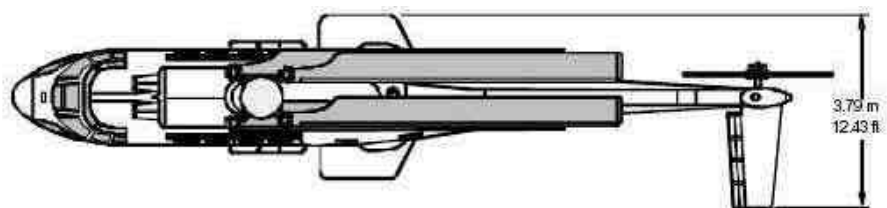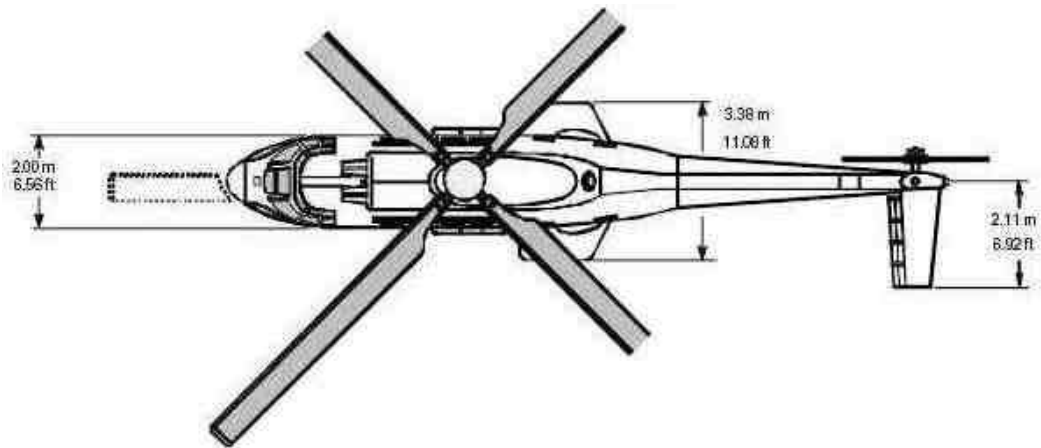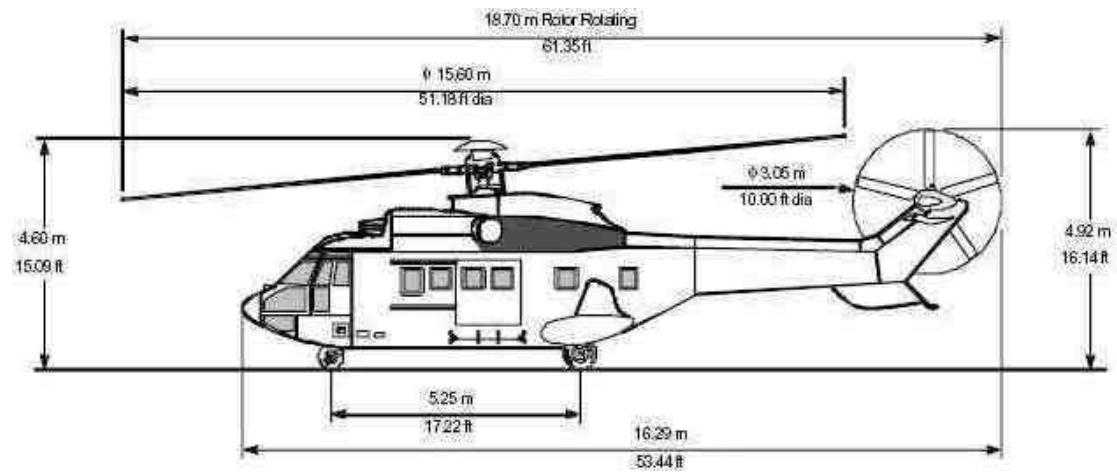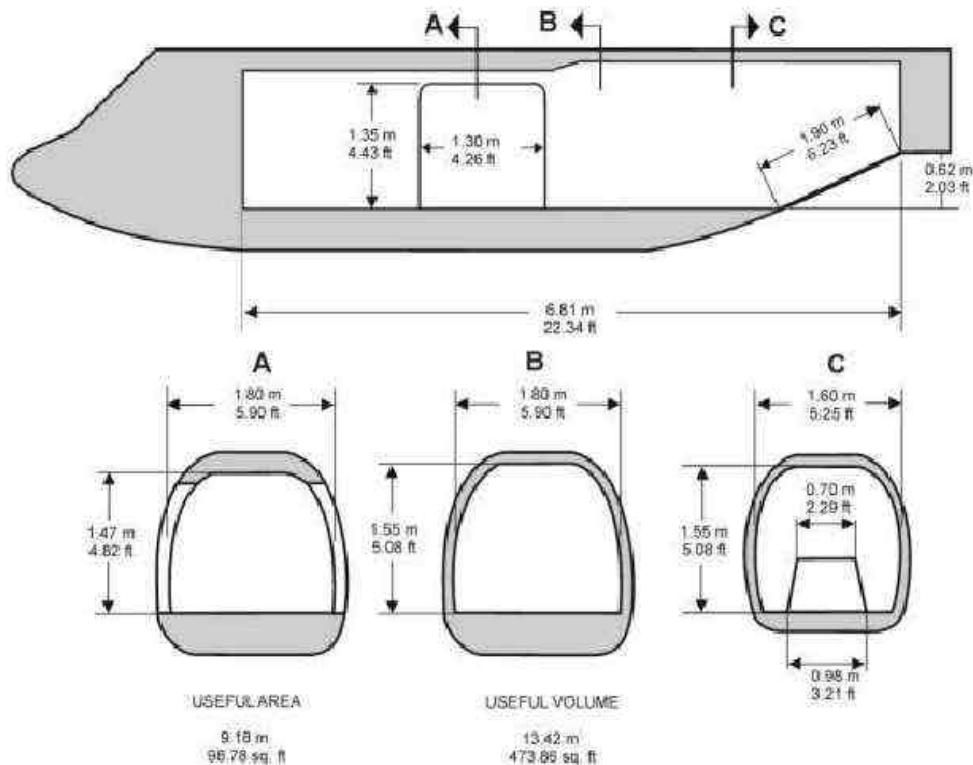

FLIGHT STAGES

The stages you can follow in a FS2K2 flight and will be explained to you, are the following:

- Applying power,
- Taxiing to the line,
- Take off procedures,
- Climbing,
- Cruising,
- Descending,
- Landing,
- Engine shutdown,
- Helicopter limitations,
- Gauges & systems operation.

HELICOPTER DATA & SPECIFICATIONS

18.70 m Rotor Rotating
61.35 ft

ø 15.60 m
51.18 ft dia

ø 3.05 m
10.00 ft dia

4.60 m
15.09 ft

4.92 m
16.14 ft

5.25 m
17.22 ft

16.29 m
53.44 ft

2.00 m
6.56 ft

3.38 m
11.08 ft

2.11 m
6.92 ft

3.79 m
12.43 ft

3.00 m
9.84 ft

Aerospatiale AS-332C1 Super Puma specifications

Type:	Twin engine medium lift helicopter
Role:	Search And Rescue / transport helicopter
Manufacturer:	Aerospatiale / Eurocopter (France)
Engine:	2 x Ôurbojet Turbomeca Makila 1A turboshaft
Take-Off power:	2 x 1357 kw / 2 x 1845 ch / 2 x 1819 shp
Maximum continuous power:	2 x 1185 kw / 2 x 1610 ch / 2 x 1588 shp
Maximum emergency power:	2 x 1400 kw / 2 x 1902 ch / 2 x 1877 shp
Intermediate emergency power:	2 x 1330 kw / 2 x 1807 ch / 2 x 1783 shp
Propeller:	4 blade constant speed diameter 49 ft 6 in
Main rotor disc area:	1905 sq. ft / 177 sq. m
Length:	61 ft 3 ½in / 18.70 m
Height:	16 ft 11 in / 5.14 m
Weight:	9920 lbs / 4500 kg empty with engn oil & fuel
	9040 lbs / 4100 kg useful load
	18960 lbs / 8600 kg maximum gross weight
	9920 lbs / 4500 kg maximum cargo-sling load
	20615 lbs / 9350 kg maximum operational load
Fuel weight:	535 US gal / 3516 lbs / 1595 kg (all tanks)
Fuel consumption at 70 KIAS:	739 lbs/hour / 335 kg/hour
Never exceed airspeed (VNE):	164 KIAS / 304 km/h
Fast cruise airspeed:	153 KIAS / 283 km/h
Economical cruise airspeed:	143 KIAS / 265 km/h
Approach airspeed:	65 KIAS / 120 km/h
Average cruise true airspeed:	110 KIAS / 204 km/h
Maximum range (standard fuel):	412 nm / 763 km
Endurance (standard fuel):	4 hrs 20 min
Maximum climb ratio:	2894 ft/min / 14.7 m/sec
Service ceiling:	15000 ft / 4572 m
Hover ceiling in ground effect:	7315 ft / 2230 m
Crew:	2 pilots and 1 flying engineer / hoist operator

COCKPIT PANEL & CONSOLES

This AS-332C1_HAF_v1.zip package you've downloaded from the InterNet, also contains a panel whitch had been modified by photos and diagrams of the real one. Some of the FS2K2 virtual pilot's actions on this panel, effects on this Aerospatiale AS-332C1 Super Puma helicopter model in FS2K2, just like as real pilot's actions on the real aviation. The panel consists by eight (8) screens. To activate / de-activate each one of the following screens you must press Shift + 2 or Shift + 3 or Shift + 4 or Shift + 5 or Shift + 6 or Shift + 7 or Shift + 8 or Shift + 9. Additionally you can use one of the following buttons on the panel to activate / de-activate each one of the screens.

| Button A	Button B	Button C	Button D	Button E	Button F	Button G

- The Main contains the main panel with most of the flight instruments,
- The Meteo screen switch ON / OFF by pressing Shift + 2 or by pressing the button A
- The Collective (FS default) switch ON / OFF by pressing Shift + 3 or by pressing the button B
- The Control stick switch ON / OFF by pressing Shift + 4 or by pressing the button C
- The Radio stack contains the communication & navigation frequency panel, seen by pressing Shift + 5 or by pressing the button D
- The Map LGEL LO 36 switch ON / OFF by pressing Shift + 6
- The Map LGEL SID 10-3 switch ON / OFF by pressing Shift + 7
- The Map LGEL SID 10-3A switch ON / OFF by pressing Shift + 8
- The Map LGEL switch ON / OFF by pressing Shift + 9
- The Air Trafic Control screen seen by pressing the button E.
- The Map view screen seen by pressing the button F.
- The Kneeboard seen by pressing the button G.

PANEL INDEX

Please read very carefully the following index in order to understand the panel's functions.
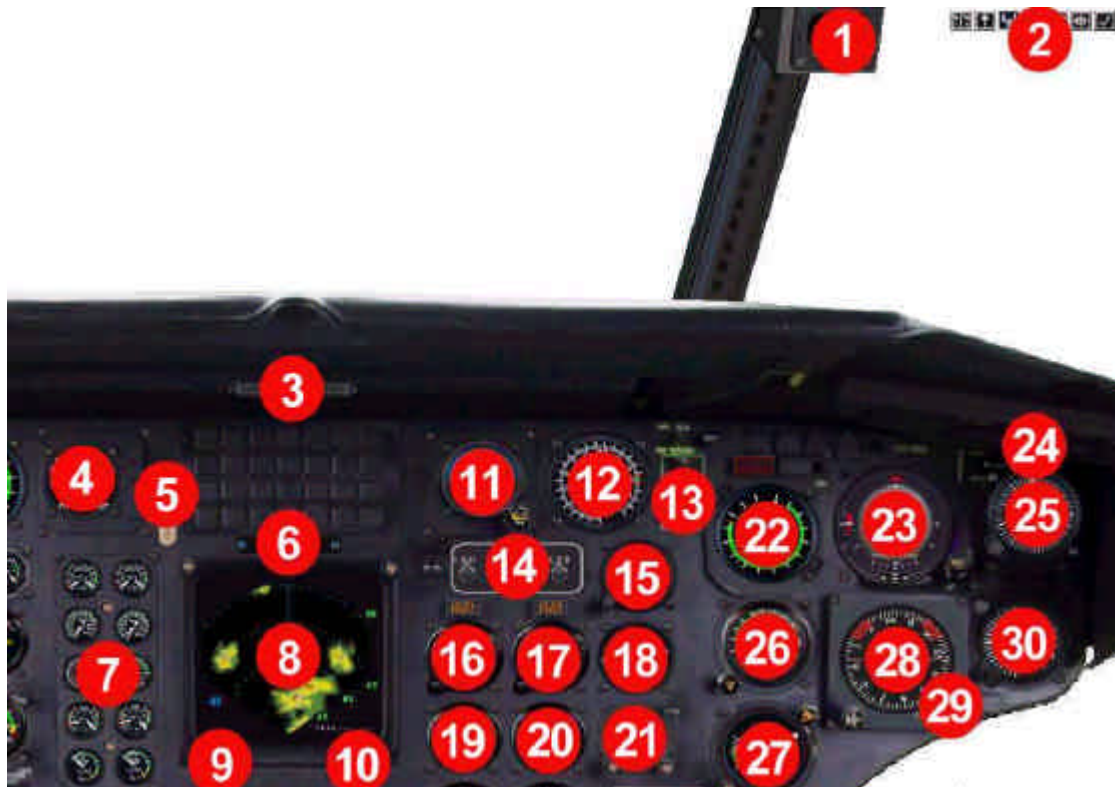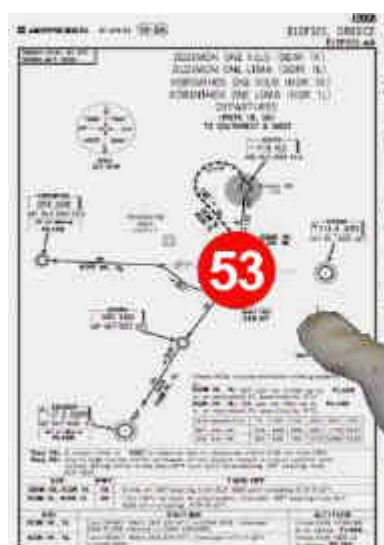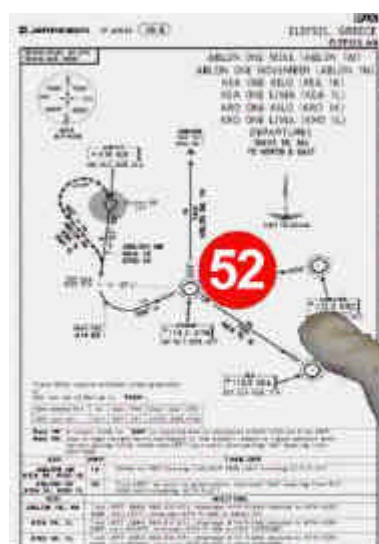
01)	Magnetic compass	28)	Analog radio magnetic indicator
02)	Toggle buttons	29)	VOR / ADF select knob
03)	Warning light indicators	30)	Analog vertical speed indicator
04)	Digital chronometer	31)	Digital EHSI screen
05)	Gear lever	32)	Landing lights switches on collective
06)	OAT indicator	33)	Governor switch
07)	Engine operation indications	34)	Starter (NOT fuctionable)
08)	Meteo RADAR screen	35)	Throttle ring
09)	CRS knob	36)	Main lights switches on control stick
10)	HDG knob	37)	Cargo hook switch
11)	Attitude direction indicator	38)	Hoist switch
12)	Rotor RPM indicator	39)	Search / Landing lights trimer
13)	OMI marker indicator lamp	40)	Floater switch
14)	Light switches	41)	Avionics / Master BAT switches
15)	Analog altimeter indicator	42)	Audio control
16)	Delta NG 1 indicator	43)	COM1 digital display frequencies
17)	Delta NG 2 indicator	44)	NAV1 digital display frequencies
18)	Oil pressure / temperature indicator	45)	COM2 digital display frequencies
19)	T4 Turbine temperature indicator 1	46)	NAV2 digital display frequencies
20)	T4 Turbine temperature indicator 2	47)	ADF digital display frequencies
21)	Clock	48)	DME digital display indications
22)	Analog airspeed indicator	49)	Transporder digital display frequencies
23)	Master attitude direction indicator	50)	A/P digital display
24)	Digital radio altimeter indicator	51)	LGEL LO 36 map
25)	Analog altimeter indicator	52)	LGEL SID 10-3 map
26)	Engine torque indicator	53)	LGEL SID 10-3A map
27)	Dual tachometer indicator	54)	LGEL map

APPLYING POWER

First of all you must set the Throttle ring (35) on the collective from CLSD possition to to the OPEN position (if it is already closed) by clicking with your mouse's left button as required, as shown at the righ screenshot. To set your helicopter's engine throttle to MIN, simply press F1 button on your keyboard or press F4 button for MAX.

CAUTION

If you use a control stick or a flight yoke equiped with a throtle lever you **must** press the F1 button on your keyboard to set your throttle to MIN which means **0%** of total thrust power (just keep engine rotating) and the F4 button if you want to set your throttle to MAX position which means **100%** of total thrust. This is a known "bug" situation which could result many thrust problems during helicopter flight. For example:

- If you just set your throttle lever at the "BACK" position you will **unfortunately** set your thrust power at 25% of total thrust, which means 25% more thrust power! This would be a problem while trying to descend.

- By the same way if you set your throttle lever at the "AFT" (front) position you will only set your thrust power at 75% of total thrust, which means 25% less thrust power which will be a problem while trying to gain altitude. **This is a known FS2K2 bug, so use F1 and F4 buttons as required!**

To overlay this problem you can do the following: On your FS main menu (top of the screen) click on Options / Controls / Sensitivities and set your bars as the following screenshot shows! You MUST have your throttle's axis Null zone bar setted to ZERO (full left)! This means that you can have thrust variety from **0%** to **100%** and not the wrong **25%** to **75%** !!!
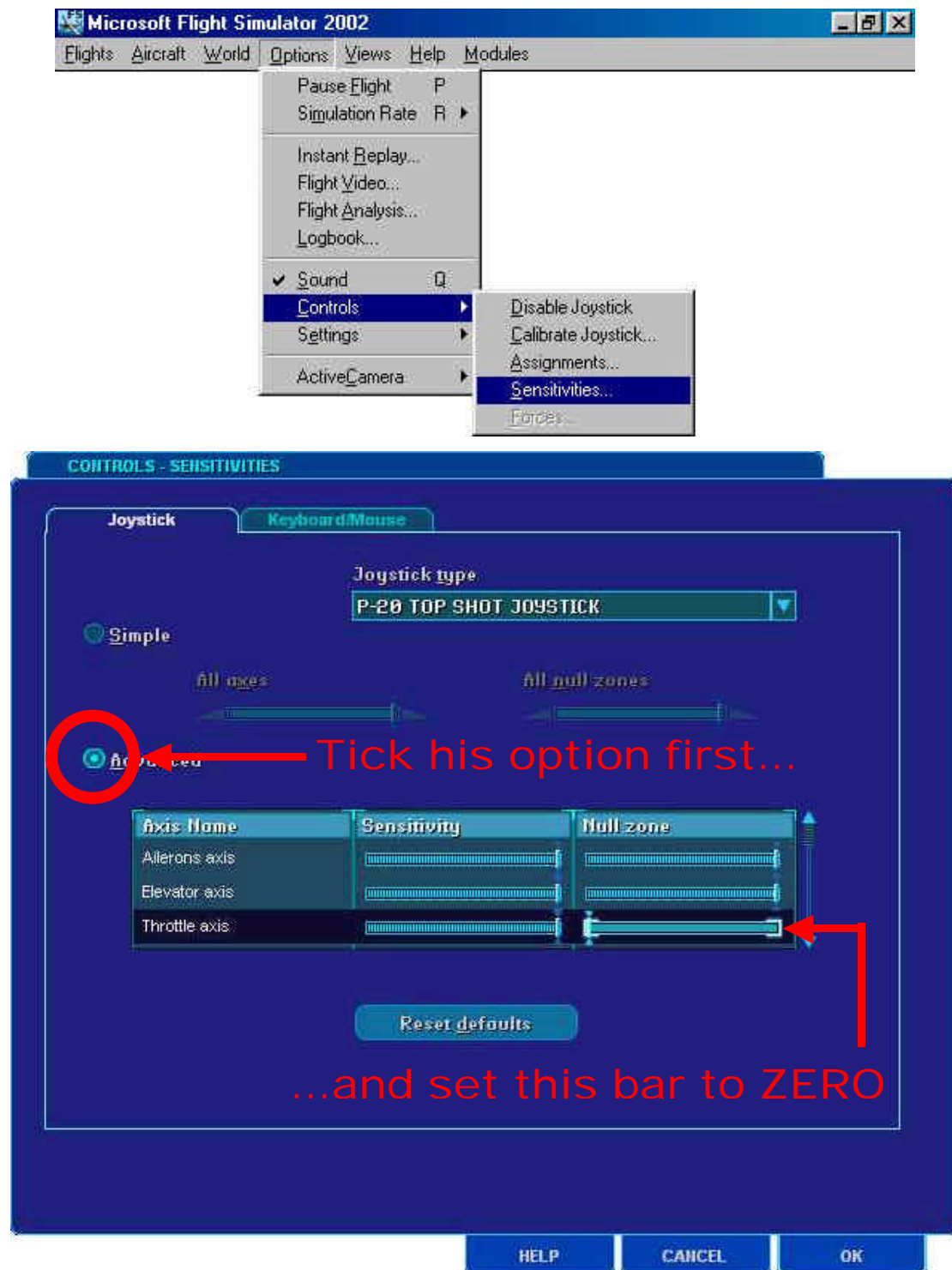
TAXIING TO THE LINE

At this moment your engine is "alive", your throtle is set to MIN and the parking brakes are ON. Release the parking brakes and apply power too gently and wait the engine to reply. Do NOT attemp violent throttle move if you do not want to sudenly become airborne and damage your Super Puma!

Approaching **38%** thrust (watch **87.2** units on Delta NG indicators (16) & (17)) when fully fuel loaded or about **14%** thrust (watch **81.6** units on Delta NG indicators (16) & (17)) when the minimum fuel capacity is installed is the right time to move your control stick / flight yoke forward. The pilot who taxies slowly **always has control of the helicopter** and can stop whenever he chooses. When taxiing, it is important that speed and use of brakes be held to a minimum and that all controls be utiliazed to maintain directional control and balance. While taxxing to the line, check the flight controls. The best taxi speed is between **15 KIAS** and **20 KIAS**.

TAKE OFF PROCEDURES

Completing a succesfull take off procedure, is <u>not an easy job</u> for a rookie pilot, even in a virtual FS2K2 enviroment. You'll need much "training" which means that you are going to crash your Super Puma heli in FS too many times before start acting like a SAR heli pilot!!! Helicopter flying has nothing to do with aircraft's principles of flight. As much you crash your helicopter in your FS, the more stable flight you'll be able to complete in the future.

Set the collective lever as required and let the engine to reply. Approaching **88%** RPM on Engine torque indicator (26) when fully fuel loaded or about **57%** RPM on Engine torque indicator (26) when the minimum fuel capacity is installed, is the right time to feel the helicopter "raising" up to take off attitude. Try to hover at very low altitute before proceding further. While hovering you'll feel the helicopter turning right, so you'll need to correct this rotation by pushing the left rudder as inside as it is needed.

After that, lower the nose **SMOOTHLY** down to start gaining velocity. Maintain this attitude and allow the helicopter to fly off the ground, which will normally will happen by increasing the power on throttle. Set the aircraft's nose up, as low as it is neccesery to establish and maintain a possitive climb rate and an increasing forward heading velocity. The best angle to succed that is between **0** degrees and **-5** degrees. When your airspeed reaches high enough, pitch the nose as high as needed to maintaint the desireable flight. You can control your vertical speed by both pitching and seting the throttle as it is needed as well. At the following screenshot there are two different methods to help you take off.

- **First take off method**

Try to understand this take off method and operate it on your Flight Simulator.
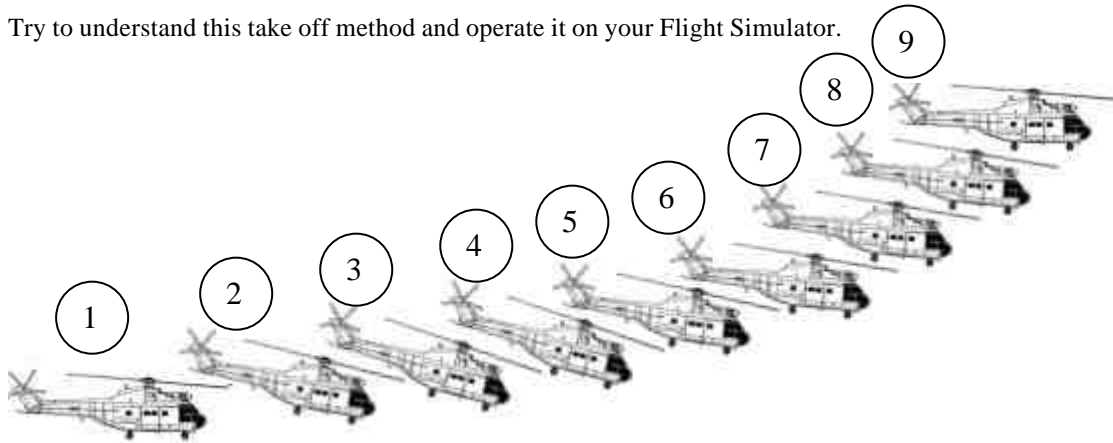
 (1) Hover at normal hovering altitute.
 (2), **(3)** & **(4)** Ease cyclic forward increase collective pitch to prevent settling.
 (5), **(6)** & **(7)** As airspeed aproaches normal climbspeed, raise nose to climbing attitute.
 (8) & **(9)** Continue climb at normal climb speed.

- **Second take off method**

Try to understand this take off method and operate it on your Flight Simulator.
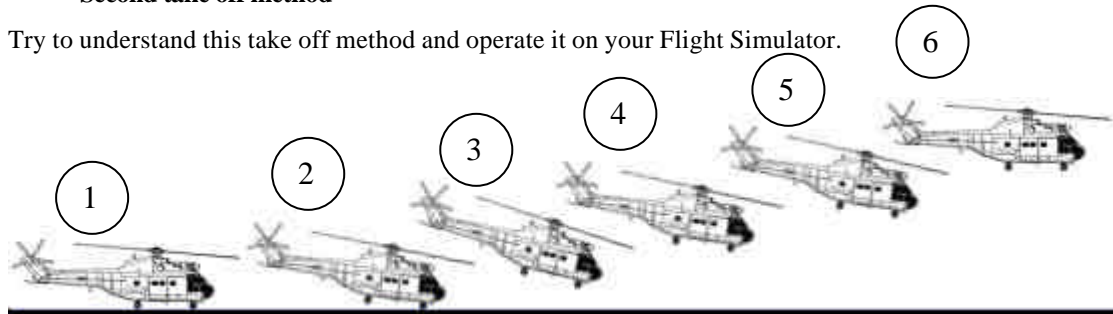
 (1) & **(2)** Adjust power less than hovering power. Cyclic slightly forward of hovering position for gradual accelaration.
 (3), At transition lift, ease cyclic back slightly to become airborne.
 (4), Maintain altitude at 10 feet or less to build to climb airspeed.
 (5) & **(6)** Adjust to climb altitute.

CLIMBING

When your Digital radio altimeter indicator (24) indicate more than 200 ft AGL, retract the landing gears by pressing the "**G**" on your keyboard or by clicking on Gear lever (5). When the "**G**" key on keyboard will be pressed, the simulation will automaticaly be paused for less than ½second, the gears will retract and then continue flight as normal.

Power settings between **95%** and **100%** RPM will provide a comfortable climb rates at **125 KIAS** to **130 KIAS** for intermediate altitude level-offs. If condition require a maximum thrust climb, maintain a climb indication untill approaching the recomended climb airspeed and then adjust pitch to maintain climb schedule. The best recomended climb rate (**1600 ft / min**) is succeded when maintain a **-3 degree** pitch climb and **115 KIAS** to **125 KIAS** speed.
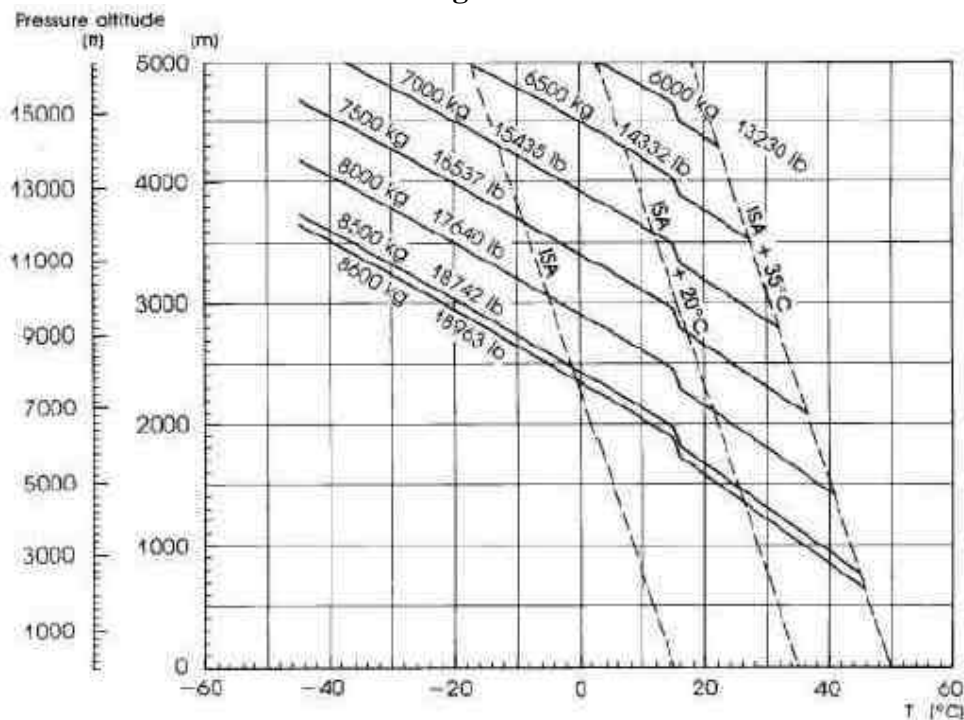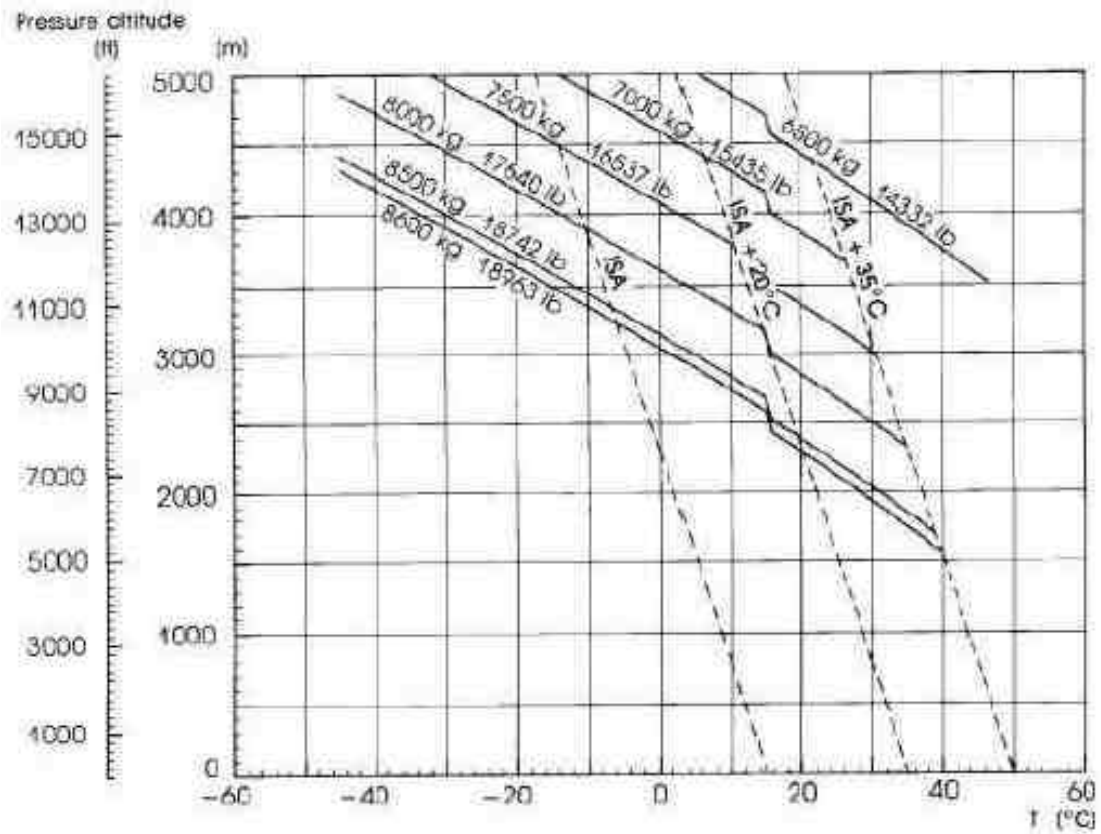
Turbomeca Makila 1A2 engine

CRUISING

Normal cruising can be easily performed between **60%** and **85%** of total power, depends from the fuel quantity (check the Engine torque indicator (26) gauge). The engine's RPM and corresponding fuel consumption for various altitutes can be determined by using the official Aerospatiale power computer or cruising charts. These cruising charts (used in real aviation) provide the helicopter's cruising performance, which includes time, distance and fuel required to fly as well as estimated cruise-climb altitute & service ceiling for a various of drag indices. These charts could easily used in FS2K2 conditions too!. To perform the best cruise behavior you should maintain your flying within the aircraft's limitations.
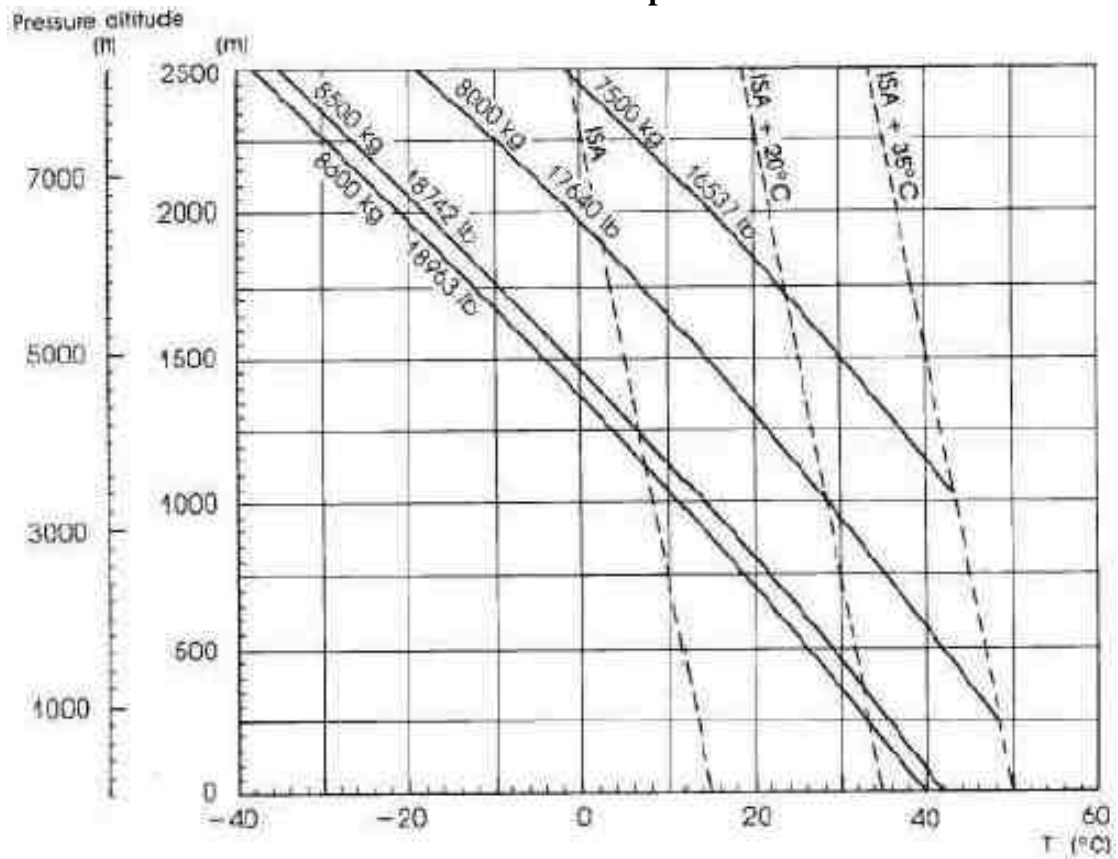
Take-off weight in hover OGE

Take-off weight in hover IGE (Height = 10 ft)

Pressure altitude
(ft)   (m)

15000	5000
13000	4000
11000	
9000	3000
7000	2000
5000	
3000	1000
1000	
	0

8000 kg 7500 kg 7000 kg 6500 kg
17640 lb 16537 lb 15435 lb 14332 lb
8500 kg 18742 lb
8600 kg 18963 lb

ISA   ISA + 20°C   ISA + 35°C

−60   −40   −20   0   20   40   60
T (°C)

Take-off clear airport

Pressure altitude
(ft)   (m)

	2500
7000	2000
5000	1500
3000	1000
	500
1000	
	0

8500 kg 8000 kg 7500 kg
8600 kg 18742 lb 17640 lb 16537 lb
18963 lb

ISA   ISA + 20°C   ISA + 35°C

−40   −20   0   20   40   60
T (°C)

Fast cruise speed
Pitch 16 ½ degrees for weight ₤ 18410 lbs / 8350 kg
Pitch 16 degrees for weight > 18410 lbs / 8350 kg
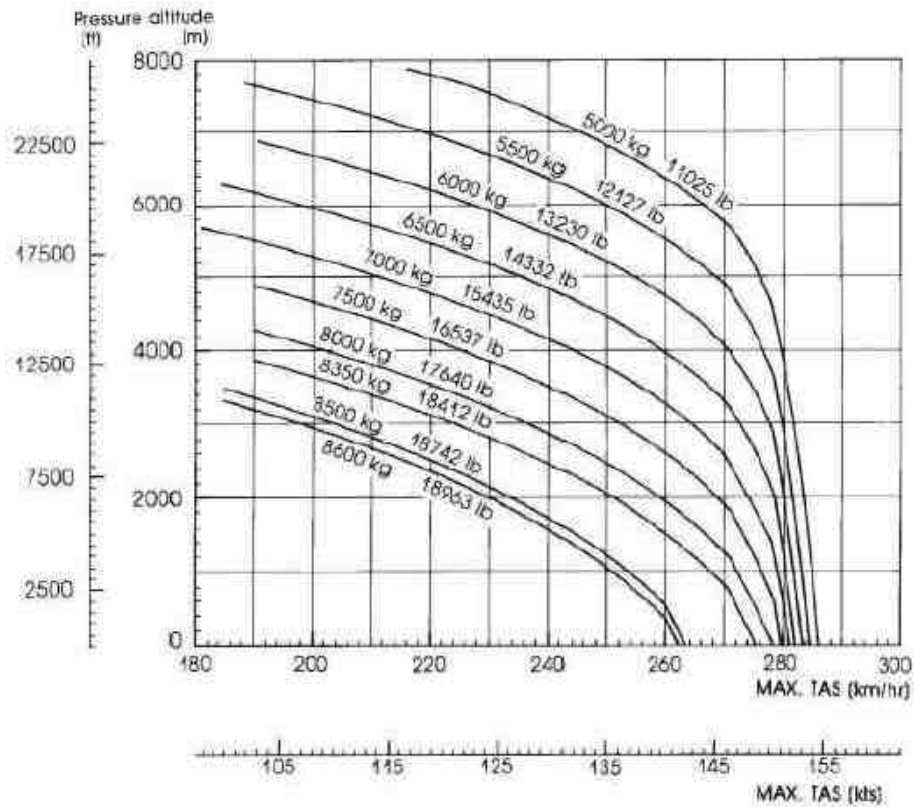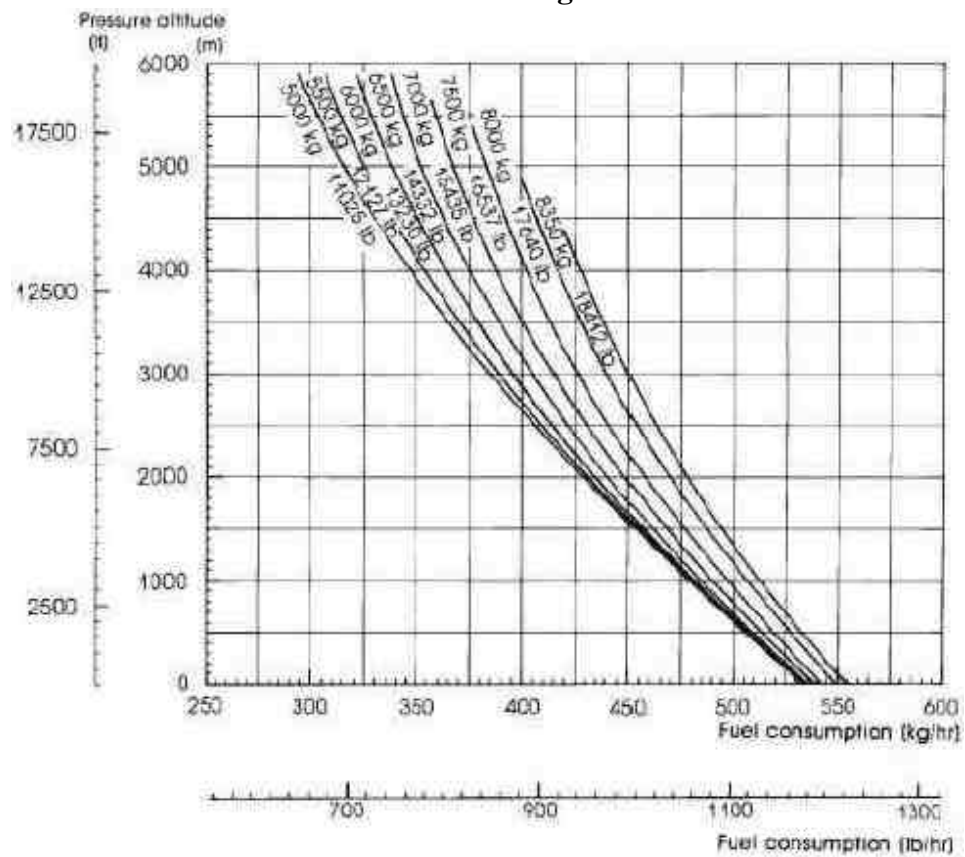

Fast cruise speed
Pitch 16 ½ degrees for weight ₤ 18410 lbs / 8350 kg (ISA +20° C)
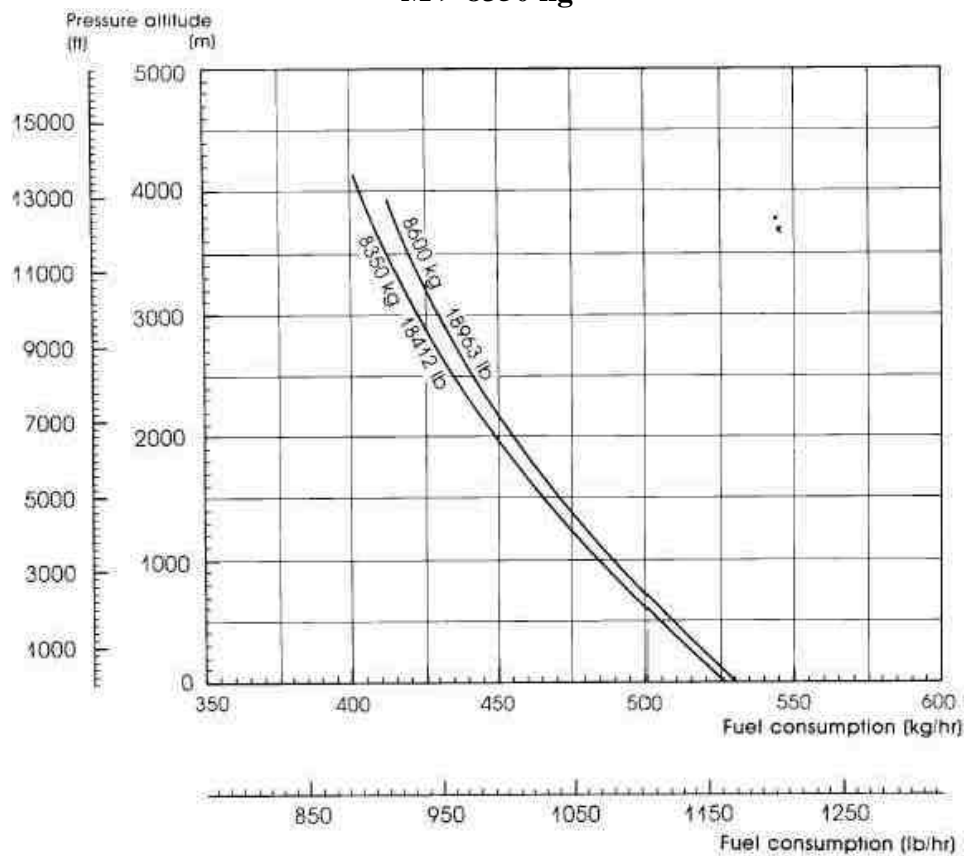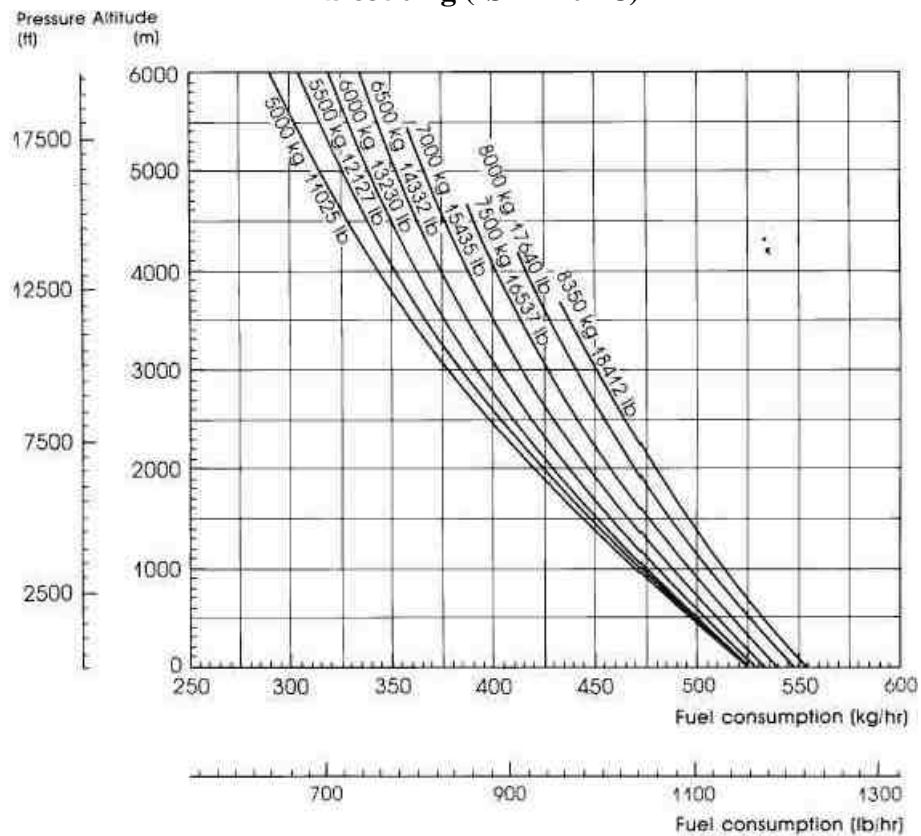**Pitch 16 degrees for weight > 18410 lbs / 8350 kg (ISA +20° C)**
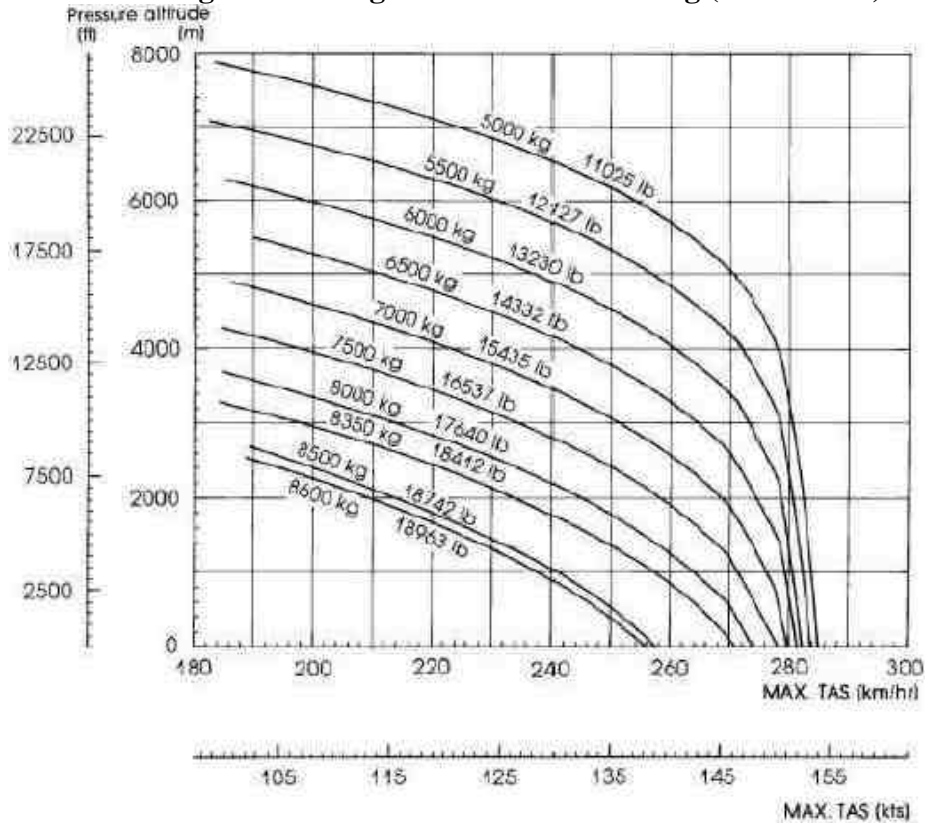
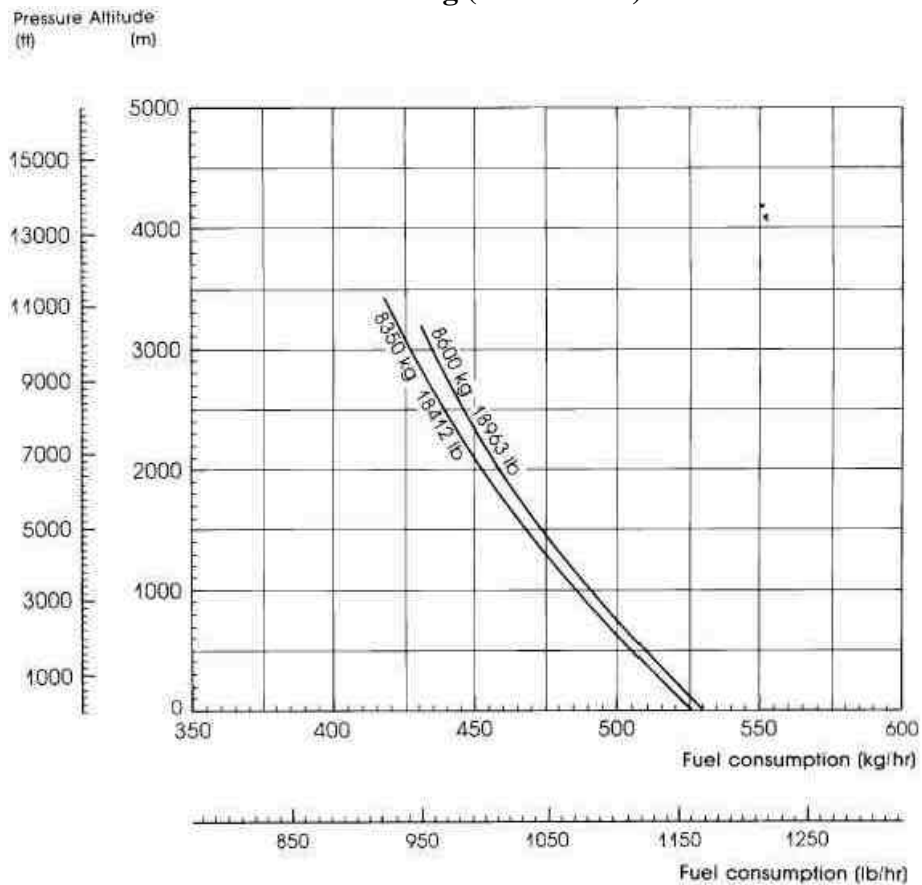## Hourly fuel consumption at fast cruise speed (pitch 16 ½ degrees)
M ≰ 8350 kg

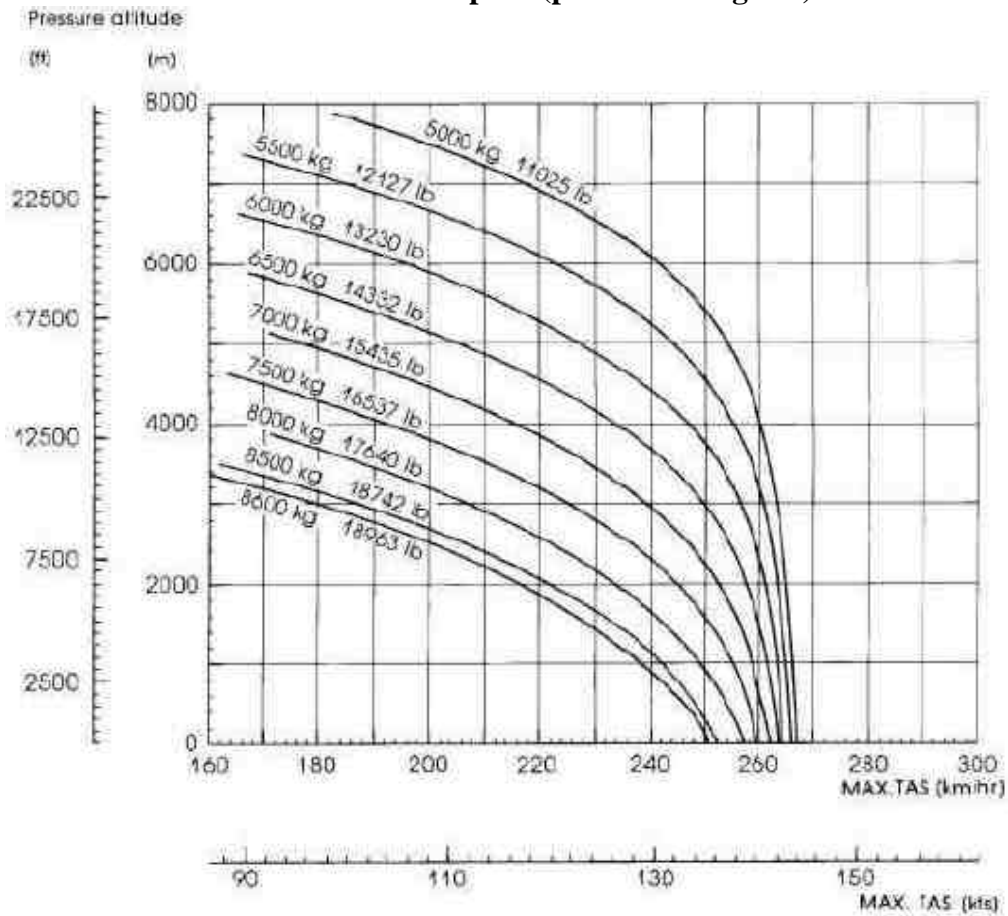## Hourly fuel consumption at fast cruise speed (pitch 16 degrees)
M > 8350 kg

Hourly fuel consumption at fast cruise speed (pitch 16 ½ degrees)
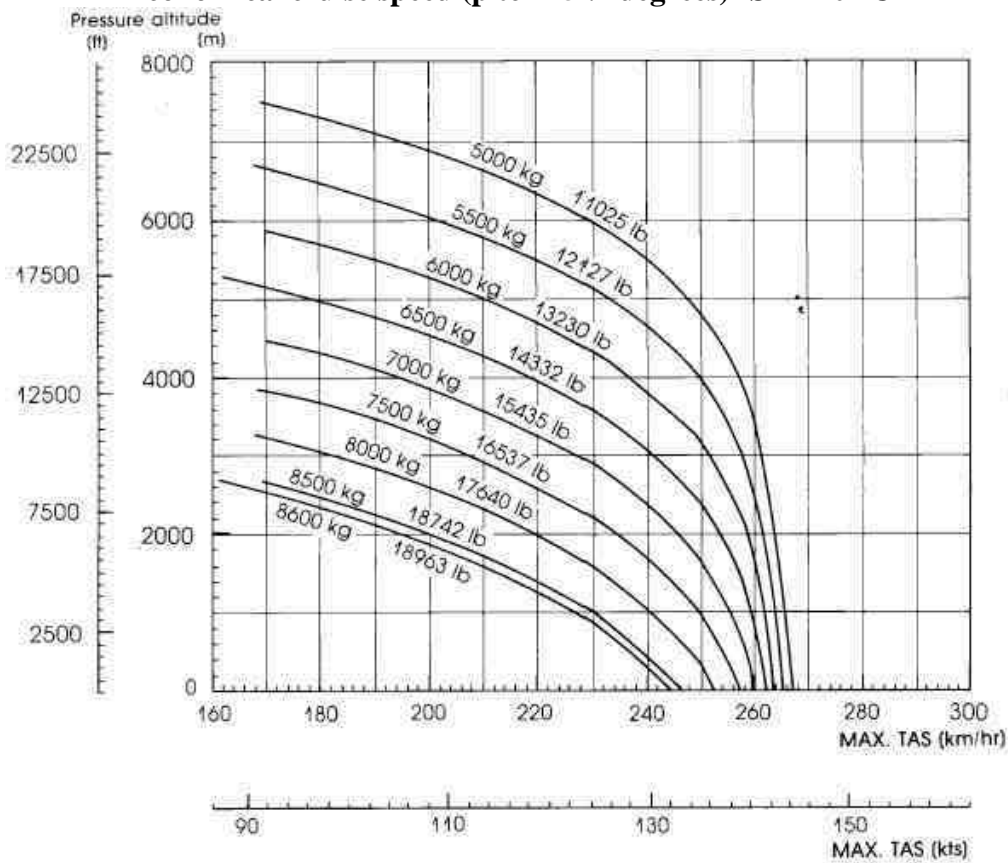## M ≤ 8350 kg (ISA +20° C)

Hourly fuel consumption at fast cruise speed (pitch 16 degrees)
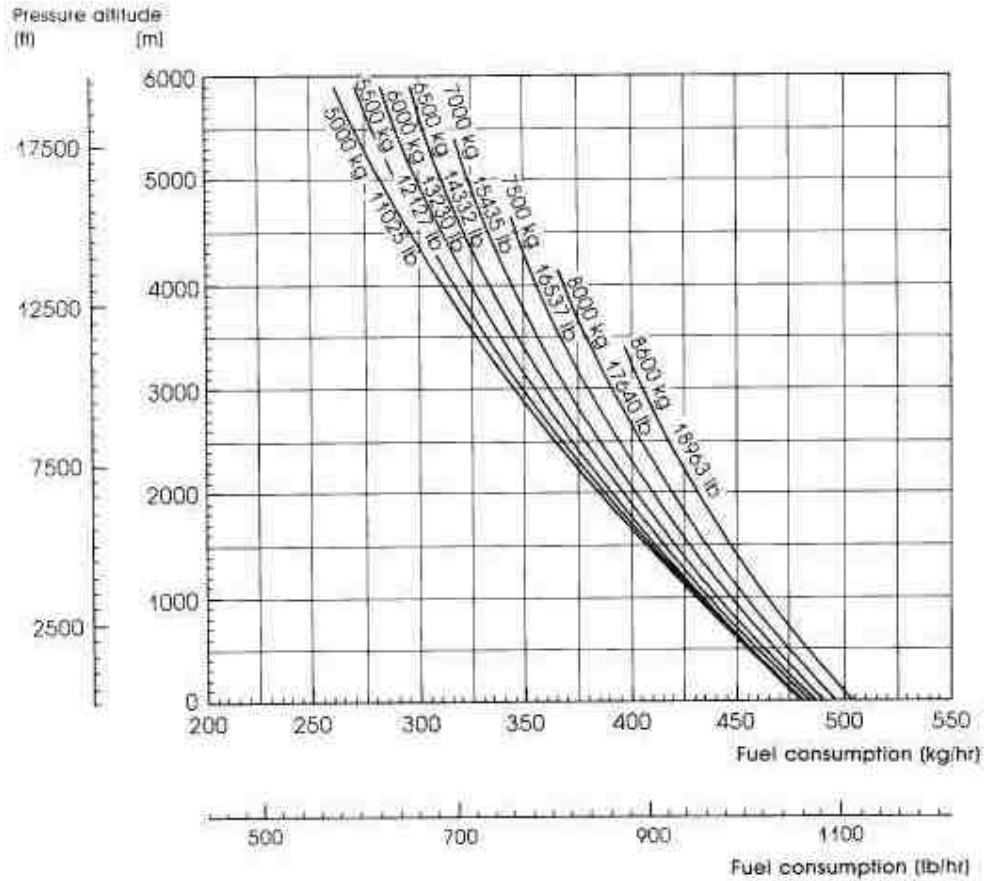## M > 8350 kg (ISA +20° C)

Economical cruise speed (pitch 15 ½ degrees)
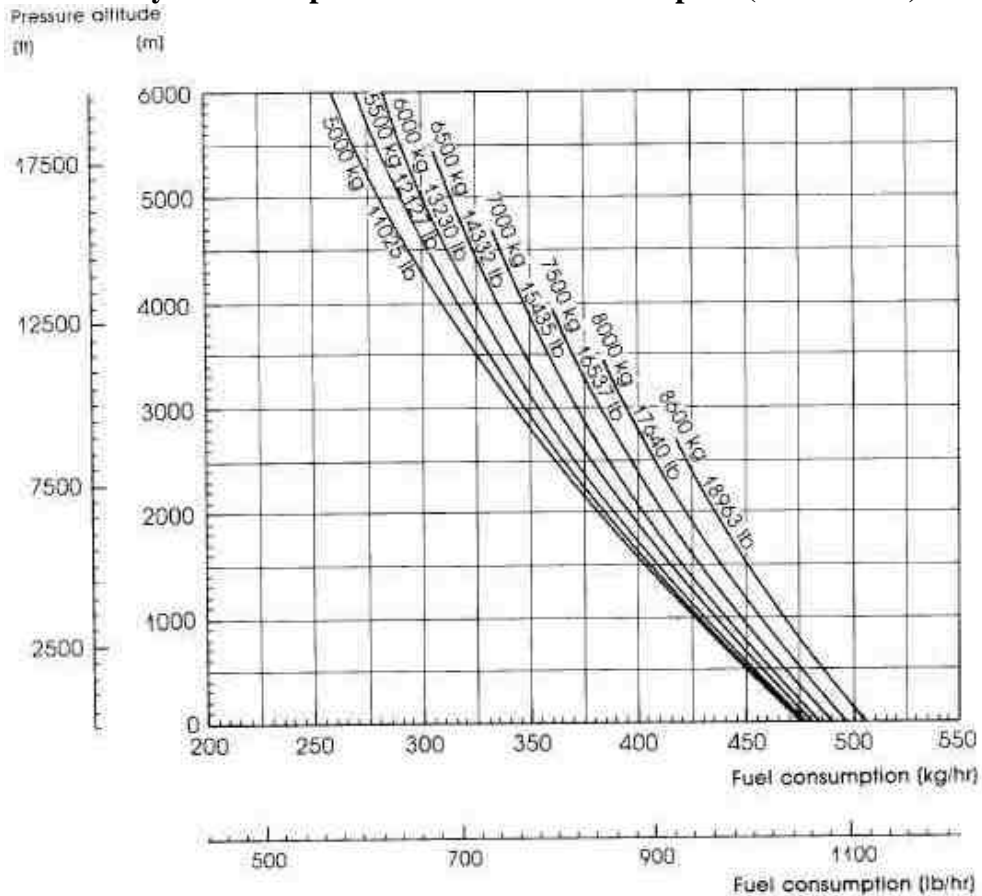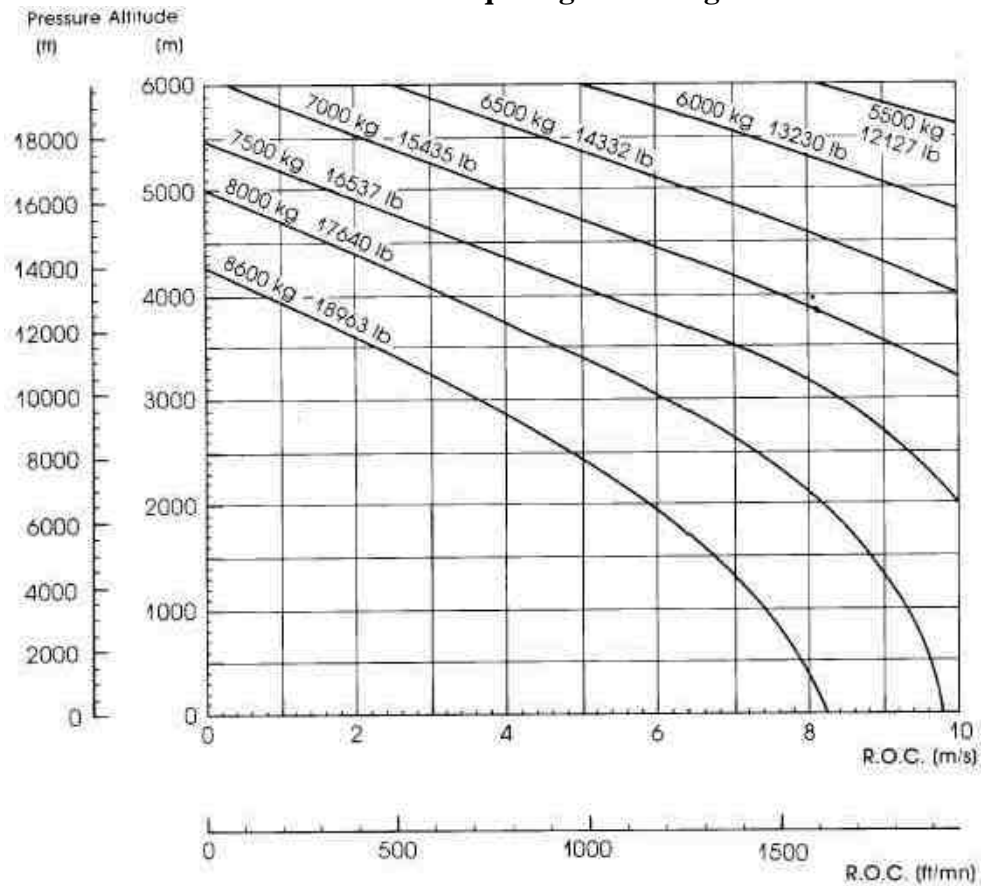

Economical cruise speed (pitch 15 ½ degrees) ISA +20° C

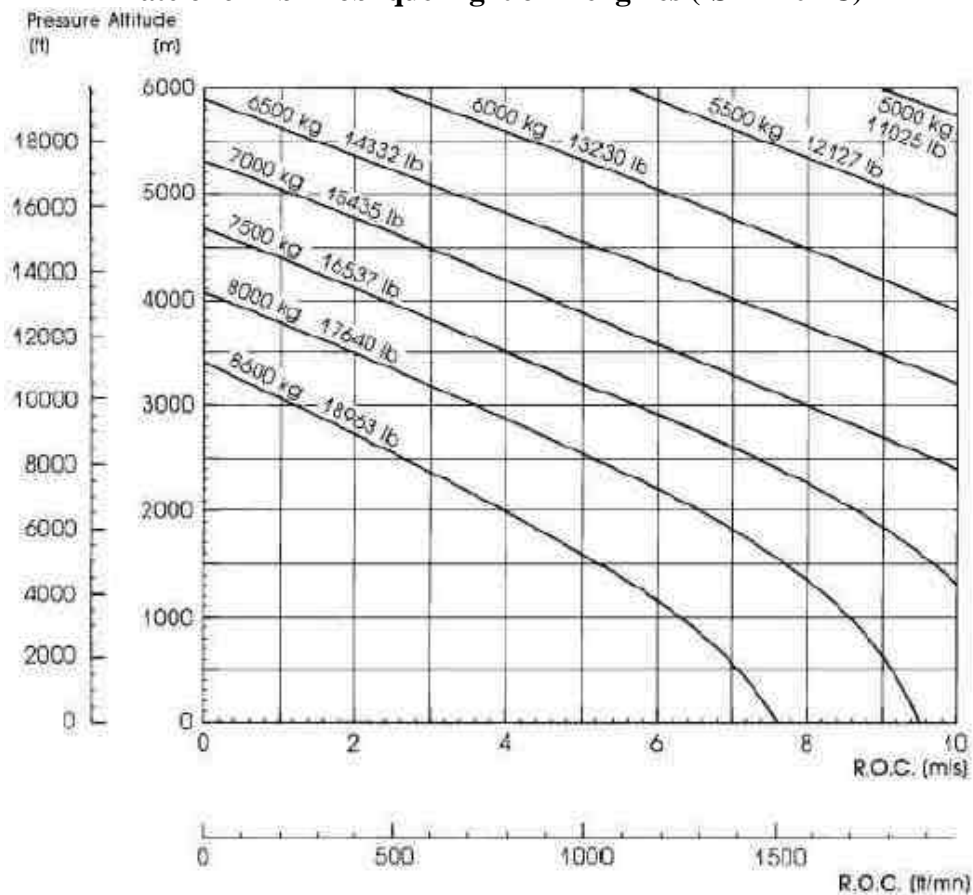# Hourly fuel consuption at economical cruise speed

Hourly fuel consuption at economical cruise speed (ISA +20° C)
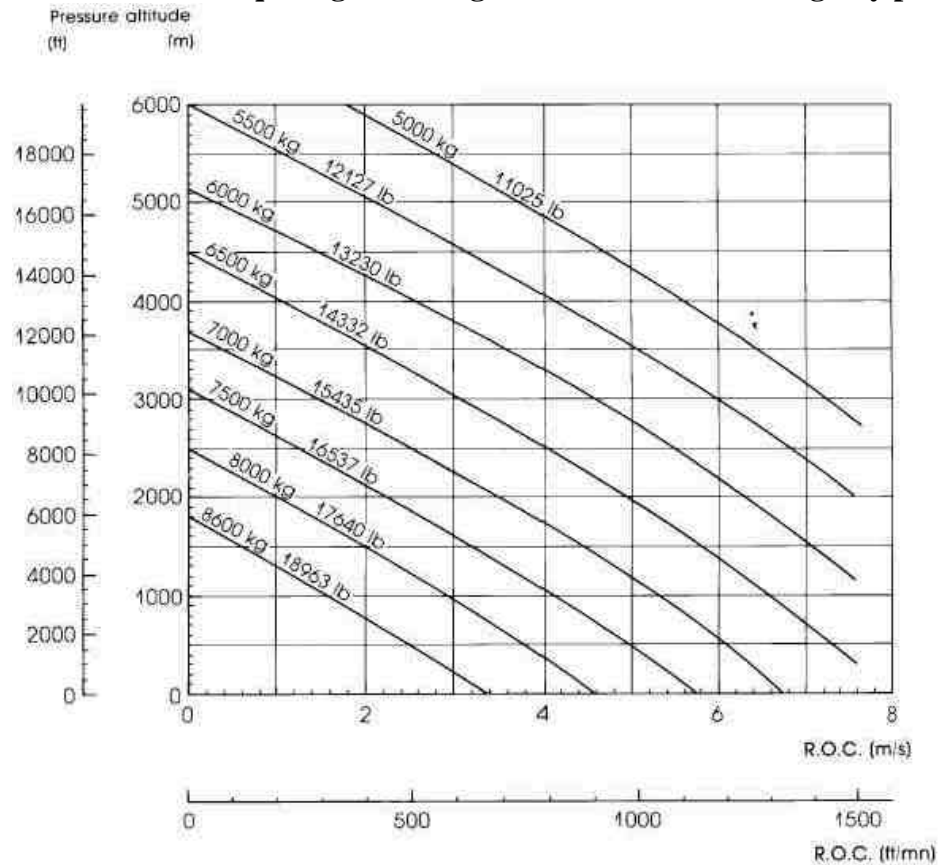
Rate of climb in oblique flight on 2 engines

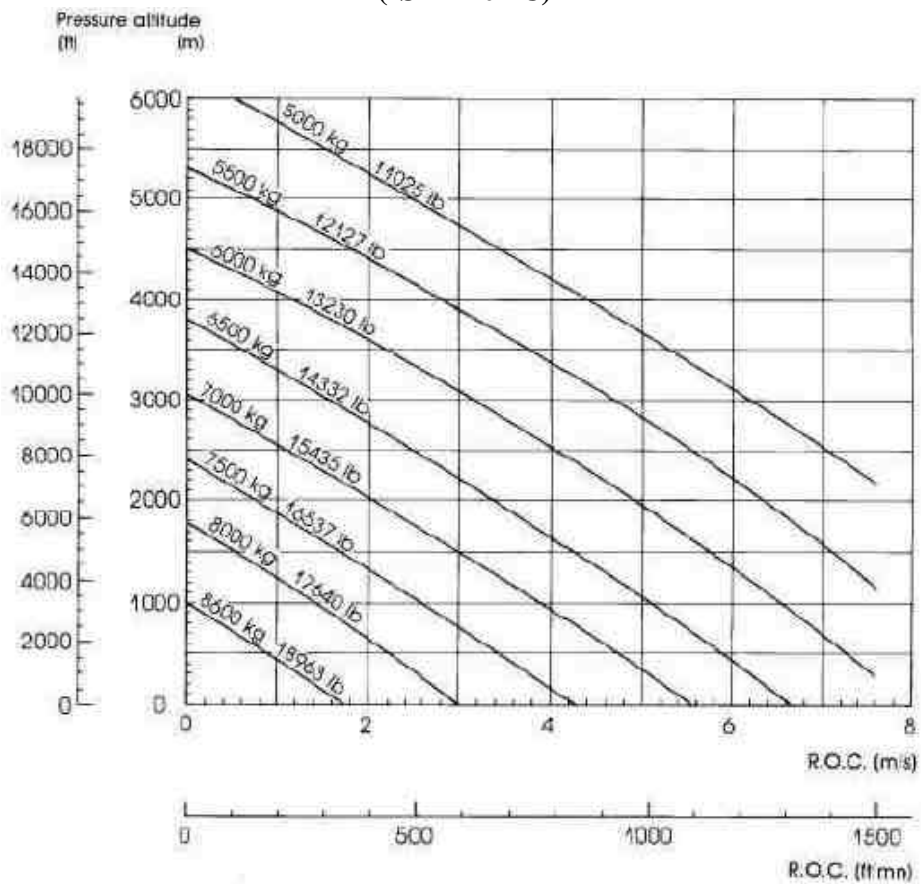# Rate of climb in oblique flight on 2 engines (ISA +20° C)

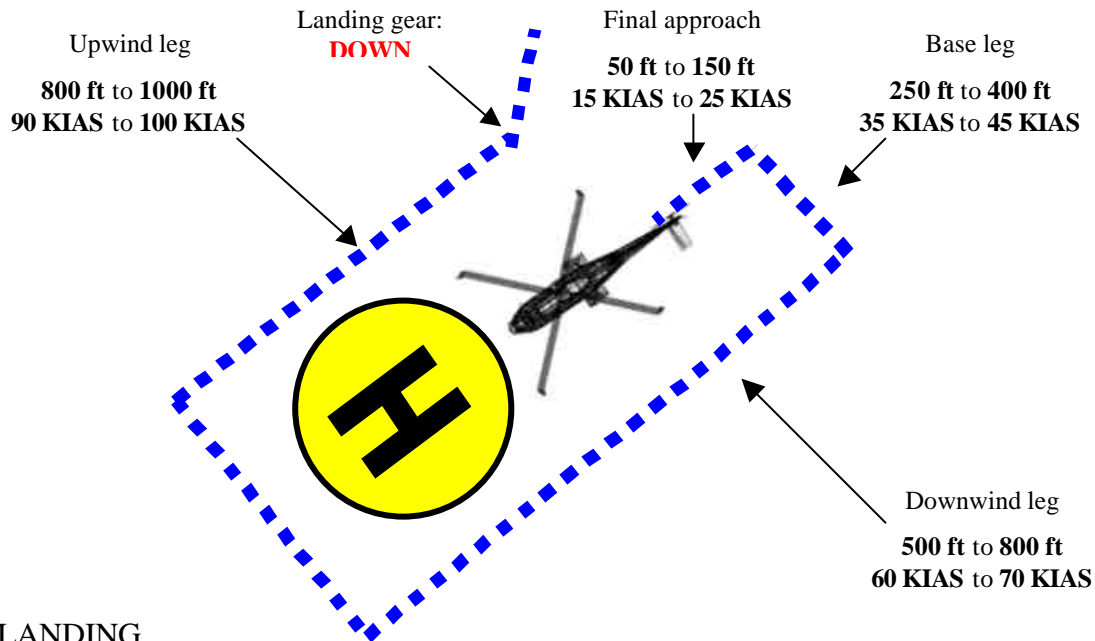## Rate of climb in oblique flight in 1 engine at intermediate emergency power

Rate of climb in oblique flight in 1 engine at intermediate emergency power (ISA +20° C)

DESCENDING

Power settings between **40%** and **45%** thrust on Engine torque indicator (26) (pitch **0 degrees**) when fully fuel loaded will provide descend rates about **–1000 ft/min**. By setting on throttle the same **40%** to **45%** power (pitch **0 degrees**) when the minimum fuel capacity is installed, a **–300 ft/min** descend will be provided.

Gears should be extended by pressing the "**G**" key on your keyboard or by clicking on Gear lever (5) before entering into the landing phase. The simulation will automaticaly pause the flight for less than ½ second, extend the gears and then continue flight as normal.

Upwind leg
800 ft to **1000 ft**
90 KIAS to **100 KIAS**

Landing gear:
DOWN

Final approach
50 ft to **150 ft**
15 KIAS to **25 KIAS**

Base leg
250 ft to **400 ft**
35 KIAS to **45 KIAS**

Downwind leg
500 ft to **800 ft**
60 KIAS to **70 KIAS**

LANDING

Completing a succesfull and safe landing is a very hard thing to do if you are still a rookie heli pilot. You'll need much "training" which means that you'll crash your heli in FS too many times before your first safe landing. Helicopter landing methods has nothing to do with aircraft's way. As much you crash your helicopter in your FS while trying to land, the more stable, safe and completed landings you'll be able to operate in the future. So, don't be disapointed each time you crash on the ground.

Normal helicopter landing procedures should be used to land the Aerospatiale AS-332C1 Super Puma in FS2K2 situations too. After you'll be established at the main heading line towards the desirable runway or spot, maintain a descend glide path. Keep your airspeed between **60 KIAS** and **70 KIAS** while attempting to "enter" at the landing procedure. To increase / descrease the aircraft's airspeed, set your helicopter's nose (piching) as required. Do not over-react by pulling the stick back too much, because control stick "kicks" may effect control loosing. You can increase / descrease the aircraft's sink rate by seting the throttle and collective at the "right place" so you can "drag" your helicopter velocity on the Y axis.

To complete a safe landing attemp you'll have to touch the ground with **as low sink rate as possible** and with **as low airspeed as possible**. Maximum landing sink rate for a loaded helicopter is **800 ft/min** (red arrow on the VSI gauge as shown at the right screenshot) for normal landings and **600 ft/min** for crosswind landings. The maximum landing speed is **10 KIAS**. Try to touch the ground with **0 KIAS** (zero) so you will not damage your landing skids. At the following page there are two different screenshots showing landing methods to help you understand how to land your helicopter. Personally, I prefer the second method.
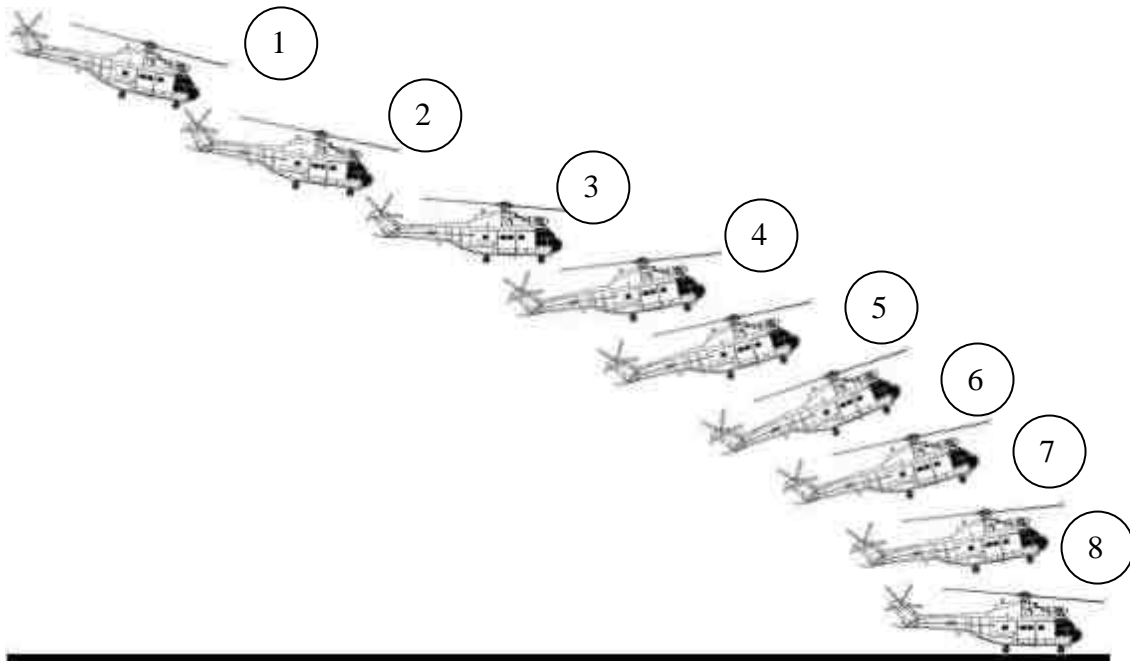

WARNING

You will **NEVER – NEVER – NEVER** make a safe landing if you try to touchdown when the helicopter sinkrate is more than **–800 ft/min** or the touchdown airspeed is too high.


- **First landing method**

Try to understand this landing method and operate it on your Flight Simulator.

    (1) Cruising airspeed, safe altitute.
    (2) Decrease collective slight back cyclic.
    (3), & **(4)** Continue down collective and back cyclic to decrease groundspeed.
    (5), & **(6)** Forward cyclic up collective.
    (7), & **(8)** Settle to a normal hover and touchdown.

- **Second landing method**

Try to understand this landing method and operate it on your Flight Simulator.
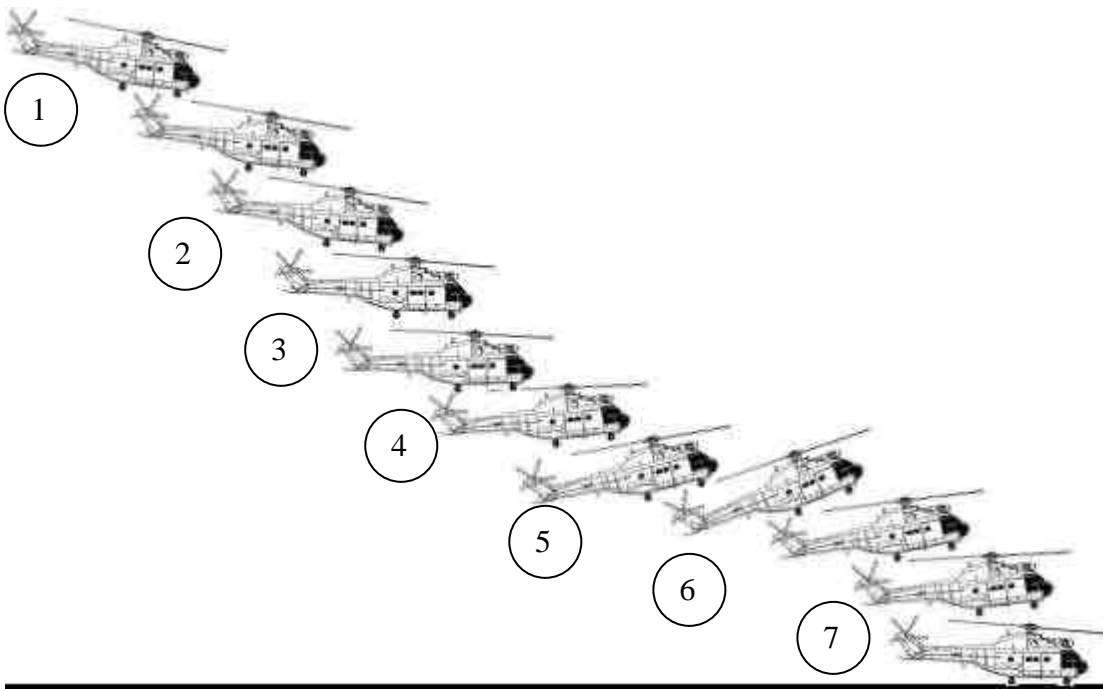
    (1), & **(2)** Bottom collective, close throttle to split kneedles.
    (3), & **(4)** Maintain autorotation airspeed.
    (5), Flare to slow to desired groundspeed
    (6), & **(7)** Forward cyclic to level skids, increase collective to slow descent and cushion landing.

When aproacing to land, a sound warning system will keep you informed for the remaining altitute:

"**400 feet**" ... "**300 feet**" ... "**200 feet**" ... "**100 feet**" ... "**50**" ... "**40**" ... "**30**" ... "**20**" ... "**10**"

When the altitude will get lower than **50 ft** AGL (Above Ground level), set the throttle as required to establish the minimum sink rate (even sinkrates near **0 ft/min**...!). As soon as the "**10**" warning sound is announced, pull **veeeery getly** back your contol stick to land the helicopter nice & easy.

ENGINES SHUT DOWN

After landing to the desired spot on the ground, follow the "Engine shut down" procedure. Retract the Throttle ring (35) on the collective from OPEN back to CLSD position by clicking your mouse's left button on it as required, as it is shown at the righ screenshot.

After that, press Ctrl + Shift + F1 buttons on your keyboard. Now you've just "close" the engine's fuel valves and normally the engine's indications on the panel are "dying" and the rotor is rotating slower and slower. After you hear the engine completely shuts down you must switch the Avionics / Master BAT switches (41) and Main lights switches (36) to OFF position.

HELICOPTER LIMITATIONS

- Maximum speed limit (glide, dive or smooth air): **164 KIAS**
- Landing gear system: The best VSI while landing is **–10 ft/min** and **0 KIAS**. You must never exceed **800 ft/min** while landing.
- Service ceiling: Helicopter can climb at 15000 ft, but the control is quite difficult above 13800 ft.
- Load factor limit: **+2.2 G / -0.8 G**.
- The lights should be activated **ONLY** by clicking the mouse on proper light switches! Do **NOT** use the "**L**" button on your keyboard !!! This action will result float inflation, hoist cable extension and water bucket load operation at the same time. As you might understand this is likely unreal...

SPECIAL VISUAL FX

Blowing sand or waving water while landing can be noticed. The helicopter's side sliding doors can be fully opened / closed by pressing Shift + E buttons on your keyboard at any time. Pilots doors can also open by pressing first the Shift + E buttons and the 2 button immediately and with no delay (!!!). If you press the Shift + E buttons and the 2 button with a delay more than 1 sec, the pilot doors will not open and you should try again.

Fire fighting can also be simulated by water special fx. When flying with the cargo water "bucket" loaded, press the "I" button on your keyboard and a water blast will pop from the "bucket". Press the "I" button each time you want to simulate this situation...!

GAUGES & SYSTEMS OPERATION

Analog altimeter indicator

Before each flight the Analog altimeter indicator (25) should be calibrated. Use the mouse's left button, and click on the altimeter calibration knob (spoted with the red arrow as shown in the right screenshot) to set the runways ASL altitude. Don't get confused with the Digital radio altimeter indicator (24). This gauge will remain at **00000 ft** when the heli is landed on the ground.
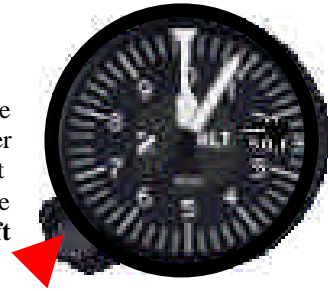
Analog radio magnetic indicator

The gauge of Analog radio magnetic indicator (28) can show you the direction of VOR1, VOR2 and ADF navigational aids when the proper frequencies are set on the Radio Stack. On the lower right part of the gauge, a VOR / ADF selector (29) can be found. By clicking with the mouse's left button, on this selector, (spoted with the red arrow, as shown in the screenshot) VOR or ADF can be swiched. The **DOUBLE** lined orange arrow on the Analog radio magnetic indicator (28), **ALWAYS** shows the direction of VOR2. The **SINGLE** lined orange arrow, shows the direction of VOR1 or ADF direction, depending of the VOR / ADF selector (29) position. The red flag with "ADF" written on (spoted with the yellow arrow in the screenshot), shows that ADF navigational aid has not detected yet or the frequecy is not set properly. By the same way red VOR1 & VOR2 flags can also be seen on the Analog radio magnetic indicator (28) gauge.
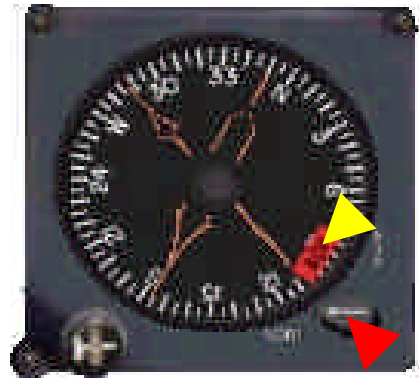
Digital EHSI screen

The Digital EHSI screen (31) can switched by simply pressing Shift + 2 keys on your keyboard or by clicking on the proper toggle key as noticed previously. On Digital EHSI screen (31):

- ADF direction spoted by the **light blue** single lined arrow.
- VOR2 direction spoted by the **green** double lined arrow.
- VOR1 direction spoted by the white double lined arrow when it becomes even with the smaller line.
- HDG is spoted by the **purple** bug on circle's perimeter.

CRS knob (9) and HDG knob (10) can also be clicked with the mouse, to scroll the course direction or heading direction.

Cargo load control

This Aerospatiale AS-332C1 Super Puma model can also be equiped with a cargo load (fire fighting water "bucket" which is used in fire figthing operations). To activate / deacticate the cargo control, you must switch the Cargo hook switch (37) placed on the Control stick. As shown at the screenshot, the cargo is activated when the switch is at DOWN position and deactivated when in UP position.

Landing / Search lights trimer

The helicopter is equiped with two bright landing lights placed in the nose and one Spectrolab searchlight placed at the right side. You <u>must NOT</u> switch ON / OFF the lights by pushing the "**L**" button on the keyboard as briefed before, because this action will result float inflation, hoist cable extension and water bucket cargo load operation at the same time. As you might understand this is likely unreal (**!!!**) The landing / search lights should always be operated through the Main lights switches on control stick (36). The lights are switched ON if the switches are set at UP position and switched OFF when the switches are set at DOWN position.

On the Control stick, a Search / Landing lights trimer (39) can be found. By clicking with the mouse's left button on this trimer the landing lights can be trimed UP or DOWN and by the same way the side search light can be trimed in RIGHT or LEFT direction as shown at the screenshot.
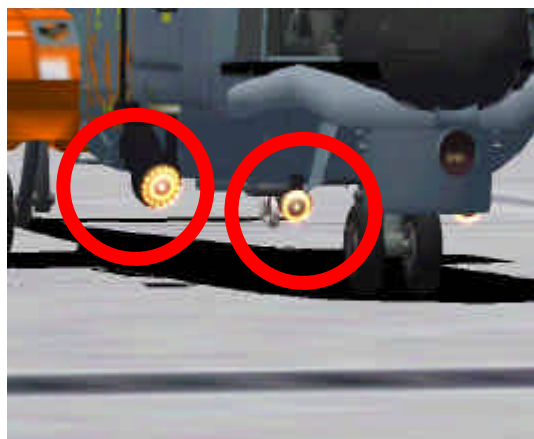
Floater switch

Floaters can be inflated in order to give a more realistic look when the helicopter is operating or hovering few ft above the sea surface. The side and front floaters can be operated by clicking with the mouse on Floater switch (40) placed on the Control stick. Every single mouse "click" on the switch, activate or deactivate the floaters. Inflated floaters **DOES NOT** mean that the helicopter can realy float on water. Any water landing attemp, will cause the helicopter's sinking (**!**)

Hoist cable control

Super Puma is a SAR helicopter. For that reason, it is equiped with a rescue hoist device which is also operative in FS2K2 conditions. The cable can be extended or retracted by clicking with the mouse on UP or DOWN white coloured arrows on the Hoist switch (38) placed on the Control stick. To activate / deacticate the cargo control, you must switch the Cargo hook switch (37) placed on the Control stick as shown at the screenshot. Every single "click" on the proper white arrow, will result few feet extension or retraction of the rescue cable. The hoist can be operated with or without the rescued crew.

Hellenic Air Force AS-332C1 photos