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**SA 316 B**

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**ALOUETTE III**

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# **TYPE SPECIFICATIONS**

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# TYPE SPECIFICATIONS

## SA 316 B ALOUETTE III

### MULTIPURPOSE HELICOPTER

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*ISSUE OF JANUARY 1, 1973*

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**aerospatiale**

DIVISION HELICOPTERES

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## SCOPE

These "Type Specifications" cover the standard version SA 316 B "Alouette III" helicopter powered by one Turboméca Artouste III B turbine engine and manufactured by the Helicopter Division of Aérospatiale.

## GENERAL DESIGN

The above SA 316 B "Alouette III" is fitted with a wheel type landing gear, has a single lifting rotor mechanically driven by a turbine engine, and an anti-torque tail rotor.

It is designed as a transport for seven persons, and items of optional equipment may be quickly installed to accomplish other duties such as casualty or cargo carrying, etc.

## AIRWORTHINESS CERTIFICATE

The SA 316 B is derived from the SE 3160 Alouette III which holds :

### French type certificate No. 14

issued by the Secrétariat à l'Aviation Civile (S.G.A.C.) on December 15, 1961.

### U.S. type certificate No. H 1 IN

issued by the Federal Aviation Agency (F.A.A.) on March 27, 1962

### German type certificate No. L. 3019

issued by the Luftfahrt-Bundesamt on July 8, 1963.

In addition, the British Air Registration Board recommended in February 1965 to the Ministry of Aviation issuance of the United Kingdom Airworthiness Certificate to the Alouette III helicopters holding the French Type Certificate.

### Note :

Extension to the SA 316 B of the French Type Certificate of Airworthiness was awarded on March 17, 1970 and the foreign type-certificate have also been extended since.

## LEADING PARTICULARS

The leading particulars of the subject helicopter with no load are approximately as follows :

### 1 - Dimensions

- Minimum length (blades folded)	10.03 m	32.90 ft
- Width (blades folded)	2.60 m	8.53 ft
- Height	3.00 m	9.84 ft
- Main rotor disc diameter	11.02 m	36.15 ft
- Tail rotor disc diameter	1.91 m	6.27 ft
- Main rotor disc area	95.00 sq. m	1,022 sq. ft
- Tail rotor disc area	2.87 sq. m	30.9 sq. ft

### 2 - Weights

- Certificated maximum gross weight	2200 kg	4850 lb
- Empty weight (*)	1122 kg	2474 lb
- Useful load	1078 kg	2376 lb

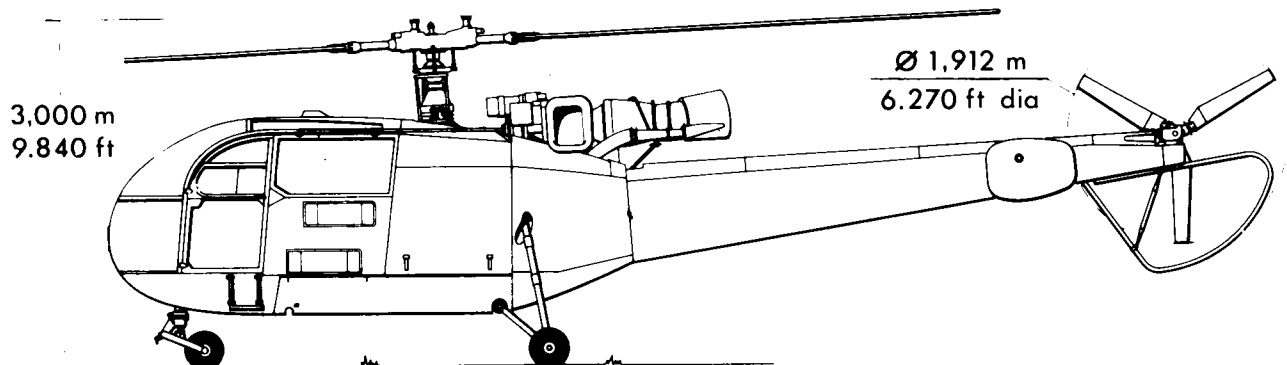
#### Useful load breakdown

- Pilot	77 kg	170 lb
- Oil (power unit)	7 kg	15 lb
- Fuel and maximum payload	994 kg	2191 lb

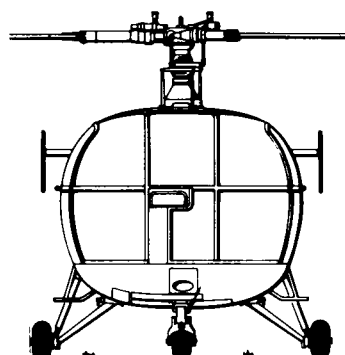
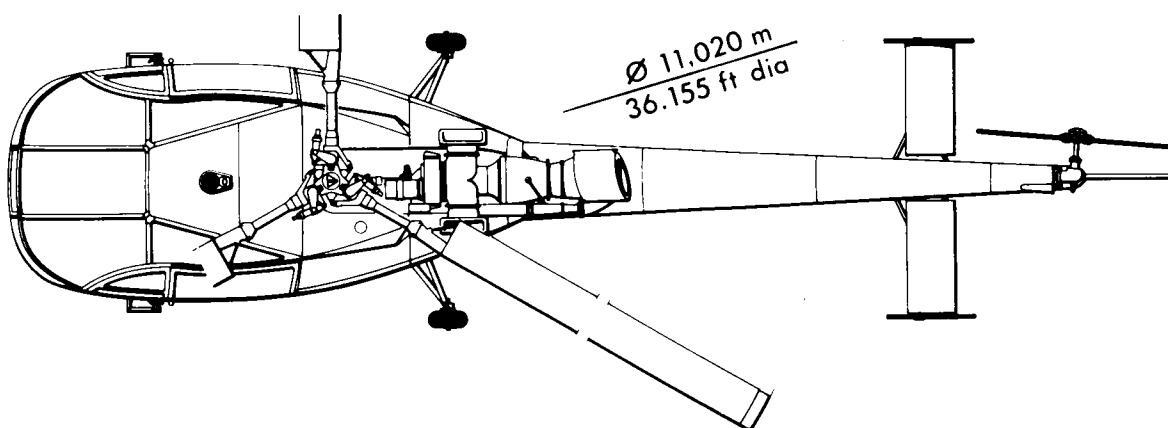
(\*) The empty weight of the standard aircraft covered by these type specifications includes all lubricants except engine oil, the trapped fuel and the Flight Manual.

#### Note :

The supplementary weight of the various items of optional equipment is shown in Appendix II.



10,175 m  
33,380 ft



2,602 m  
8,535 ft

## MAIN DIMENSIONS

## DESCRIPTION

### 1 - Airframe

The airframe comprises a body structure with a cabin at the front and tail boom at the rear. It is entirely faired except in the engine area.

- The body structure consists essentially of a welded steel-tube framework covered with detachable fairings, and a transmission support platform. Lateral step-ladders are provided to facilitate access to the main rotor head.
- The cabin consists of a frame and canopy attached to the floor. The L.H. rear portion of the floor hinges downward to permit operation of a rescue hoist. The cabin, specially designed for fast evacuation, is closed by four doors :
  - two-front doors jettisonable in flight (fully glazed)
  - two rear sliding doors that can be hinged upwards (glazed upper portion) and by an inclined bulkhead at the rear.
- The tail boom of semi-monocoque construction carries the tail drive shaft, the tail (anti-torque) rotor, the tail rotor guard and the horizontal and vertical stabilizers.

### 2 - Interior arrangement

The cabin of the standard version Alouette III is provided with single flying controls located on the R.H. side, and comprises :

- Seven places :
  - three separate and adjustable seats at the front, with extensible harnesses.
  - two folding and removable 2-place seats (4 places) at the rear, with safety belts.
- An instrument panel supported by a console located slightly to the right of the aircraft centre line.
- An adjustable ventilation shutter located at the front, and sliding panes at both front doors.
- One map case under the pilot's seat.

### 3 - Power unit

The power unit, manufactured by the TURBOMECA Company, consists of an Artouste III B turbine engine.

The engine develops 870 hp (640 kW) thermal power. The maximum available power of 570 hp (420 kW), as limited by reduction gearing, is maintained up to 4500 m (14800 ft) in ISA conditions or up to + 60°C OAT at sea level.

A governor maintains a constant rpm value in all powered flight conditions.

The engine is connected to the main gearbox of the helicopter by means of a clutch unit and a drive shaft fitted with a free wheel.

The power unit is equipped with a starter-generator.

The 550-litre or 145 US gal. fuel tank, which can be removed from the side of the aircraft, feeds the power unit through a booster pump.

The fuel tank is isolated from the power unit by firewalls.

The engine oil system includes in particular a cooler and an oil tank with a level sight-gauge. Total capacity is 10 litres (2.7 US gal.).

### 4 - Fuels

See the following page.



Designation		French Specifications	British Specifications	US Specifications	NATO Symbol
NORMAL USE	KEROSENE TR0	AIR 3405	DERD 2453 AVTUR/FS 11	-	F.34
		AIR 3405	DERD 2454 AVTUR	-	F.35
	KEROSENE TR4	AIR 3407	DERD 2454 AVTAG/FS 11	MIL J 5624 JP 4	F.40
		AIR 3407	DERD 2486 AVTAG	-	F.45
	KEROSENE TR5	AIR 3404	-	-	F.42
		-	DERD 2498 AVCAT	MIL J 5624 JP 5	F.44
FOR USE IN EMERGENCY	AUTOMOTIVE GAZOLINE	DCEA/2D MT 80	DEF 2401	-	F.46
	AVIATION GAZOLINE	AIR 3401 80/87	-	MIL G 5572 80/87	F.12
		AIR 3401 100/130	DERD 2485 100/130 AVGAS	MIL G 5572 100/130	F.18
		AIR 3401 115/145	DERD 2485 115/145 AVGAS	MIL G 5572 115/145	F.22
	NAVY FUEL	7120 STM GAS OIL 0	DEF STAN 31-4	MIL F 16884	F.75
		7120 STM GAS OIL 20	DEF STAN 31-4	-	F.76
	AUTOMOTIVE DIESEL OIL	DCEA/21 C	TS 10-003	VVF 800 Class DF 2	F.54
	ILLUMINATING OIL	DCEA/11 C	DEF 2403	VVK 211	F.58

**Note :** The use of "emergency fuels" is subject to certain temperature and duration restrictions indicated in the "limitations" chapter of the Flight Manual

## 5 - Main rotor and transmission system

The 11.02 m (36.15 ft) diameter main rotor (95 sq. m - 1,022 sq. ft disc area) consists of a rotor head which carries three variable pitch articulated rotor blades. The direction of rotation is counterclockwise viewed from the pilot's seat.

The rotor head comprises :

- a three-armed hub driven by a vertical shaft
- hinges which allow blade movement in the horizontal and vertical planes and permit blade folding on the ground.

Horizontal blade movement is limited by hydraulic dampers and by blade spacing cables.

Blade folding is effected without prior removal of these cables and no rotor adjustment is necessary when the blades are subsequently extended.

The collective-pitch lever and cyclic-pitch stick control the main rotor through control rods and a swash plate assembly.

The blades consist of a light alloy extruded leading edge spar to which is bonded a light alloy sheet metal skin filled with lightweight filler material and fitted with stainless steel leading edge coverings. The main rotor blades are of parallel plan form with a built-in twist.

The main rotor is driven through a 3-stage reduction gear (a set of bevel gears and two planet gears).

Rotor rpm range	)	powered flight	353.2 rpm
	)		
	)	autorotative flight	270 to 420 rpm approximately

## 6 - Tail rotor

The three bladed 1,91 m (6.27 ft) diameter tail rotor is located on the right-hand-side of the aircraft, at the rear. It rotates at 2,001 rpm when the main rotor turns at 353.2 rpm. Its direction of rotation is clockwise when viewed from behind.

The tail rotor blades consist of two bonded light alloy metal sheets with stainless steel leading edge protection. They are individually articulated relative to the hub, in the flapping plane, and are connected to a collective-pitch control system.

The tail rotor is driven through a torque shaft connected at the front end to the main gearbox power take-off and, at the rear, to the tail rotor gearbox.

## 7 - Flight controls and servo units

The cabin is so arranged as to permit piloting the aircraft from the central or right hand front seats. The main pilot's station is the front R.H. seat.

Removable dual controls can be installed in front of the central front seat (optional).

Hydraulic servo units are provided in both the cyclic and collective pitch control systems. The tail rotor control system incorporates a hydraulic damper.

Manual control is possible in the event of servo unit failure.

The aircraft includes provisions for the installation of a Stability Augmentation System as optional equipment.

## 8 - Landing gear

The landing gear is of the tricycle type with oleo-pneumatic shock struts. The wheels are independent and identical in size. Three mooring rings are provided.

- The front unit comprises a wheel and a fork mounted in a shock strut.

The entire unit is fully castering and self-centering.

A nose wheel castering lock can be installed on request (optional).

- The main unit comprises two wheels, carried by swivel arms on either side of the aircraft. The main wheels are connected to the top of the body structure by means of oleo pneumatic shock struts they are fitted with hydraulic brake units.

Differential toe brakes can be fitted on request (optional).

In addition, a guard type tail skid, attached to the tail boom, is provided to protect the anti-torque rotor.

## 9 - Stabilizer and fin.

The tail boom carries one horizontal and two vertical stabilizers and a tail rotor guard.

## 10 - Electrical installation

The electrical power ( $28 \pm 0.5$  volts) is supplied by a generator and a 38/40 Amp/hr battery. An external power receptacle permits supplying the aircraft system, and engine starting, by mean of ground batteries or a ground power unit. The electrical installation comprises essentially an electrical equipment box, an automatic starting box, junction boxes, instrumentation and controls. A NATO field receptacle permits the use of a ground power unit.

The electrical equipment of the helicopter consists of the cabin lighting, the instrument and control pedestal lighting and three position lights.

## 11 - Aircraft equipment and instruments

In addition to flying controls, the cabin is provided with an instrument panel and pedestal and an overhead panel which carry :

### 11.1 - The flight instruments

- airspeed indicator (graduated in km/hr or kts)
- altimeter (graduated in m or ft)
- rate of climb indicator (graduated in m/sec. or ft/min.)
- dual tachometer indicator (engine and rotor)
- collective-pitch indicator, with computer
- outside air temperature indicator (graduated in deg. centigrade).
- magnetic compass
- clock

### 11.2 - The IFR instruments (optional equipment)

The following instruments may be added to the instrument panel :

- Gyro-horizon SFENA 4286
- Gyro-compass SFIM CG 121

### 11.3 - The engine control quadrant

- Fuel shut-off lever
- Fuel flow control lever

#### 11.4 - The engine and transmission instruments and control accessories :

- engine oil temperature and pressure indicator
- tail pipe temperature indicator
- fuel contents gauge (graduated in litres)
- booster pump switch
- booster pump warning light
- micropump warning light
- filter clogging warning light
- fuel flow control lever position warning light
- engine selector switch
- starter warning light
- starter relay warning light
- servo system control cock
- transmission oil pressure warning light
- main gearbox thermo-switch warning light

#### 11.5 - The electrical system instruments and control switches

- battery switch
- generator switch
- generator warning light
- voltmeter
- equipment master switch
- circuit breakers
- lighting rheostats, etc.

### TECHNICAL PUBLICATIONS

The following technical publications shall be supplied upon delivery of each aircraft :

- Flight Manual
- Maintenance Manual (airframe and engine)

### AIRBORNE KIT

The airborne kit delivered with each aircraft includes :

- 2 lever-type grease guns
- 1 push-type grease gun
- 1 pitot tube cover
- 1 tail pipe blank
- 2 engine air intake blanks

## APPENDIX I

### PERFORMANCE

/

# MAIN PERFORMANCE DATA

WEIGHT	1700 kg 3750 lb	1900 kg 4190 lb	2100 kg 4630 lb	2200 kg 4850 lb
Maximum speed, VNE at SL	210 km/hr 113 kts	210 km/hr 113 kts	210 km/hr 113 kts	210 km/hr 113 kts
Cruise speed, at SL	200 km/hr 108 kts	195 km/hr 105 kts	190 km/hr 102 kts	185 km/hr 100 kts
Rate of climb, oblique flight at SL	8.7 m/sec 1712 ft/min	7.2 m/sec 1417 ft/min	5.3 m/sec 1040 ft/min	4.3 m/sec 846 ft/min
Hover ceiling, IGE	5550 m 18,205 ft	4500 m 14,765 ft	2750 m 9,012 ft	1650 m 5,412 ft
Hover ceiling, OGE	4900 m 16,080 ft	3400 m 11,155 ft	1300 m 4,265 ft	100 m 30 ft
Service ceiling	6000 m 19,685 ft	5250 m 17,225 ft	4000 m 13,125 ft	3250 m 10,663 ft
Range, at SL	510 km 275 n.m.	495 km 267 n.m.	480 km 259 n.m.	470 km 254 n.m.
Endurance, at SL	3.35 hrs	3.25 hrs	3.1 hrs	3.0 hrs



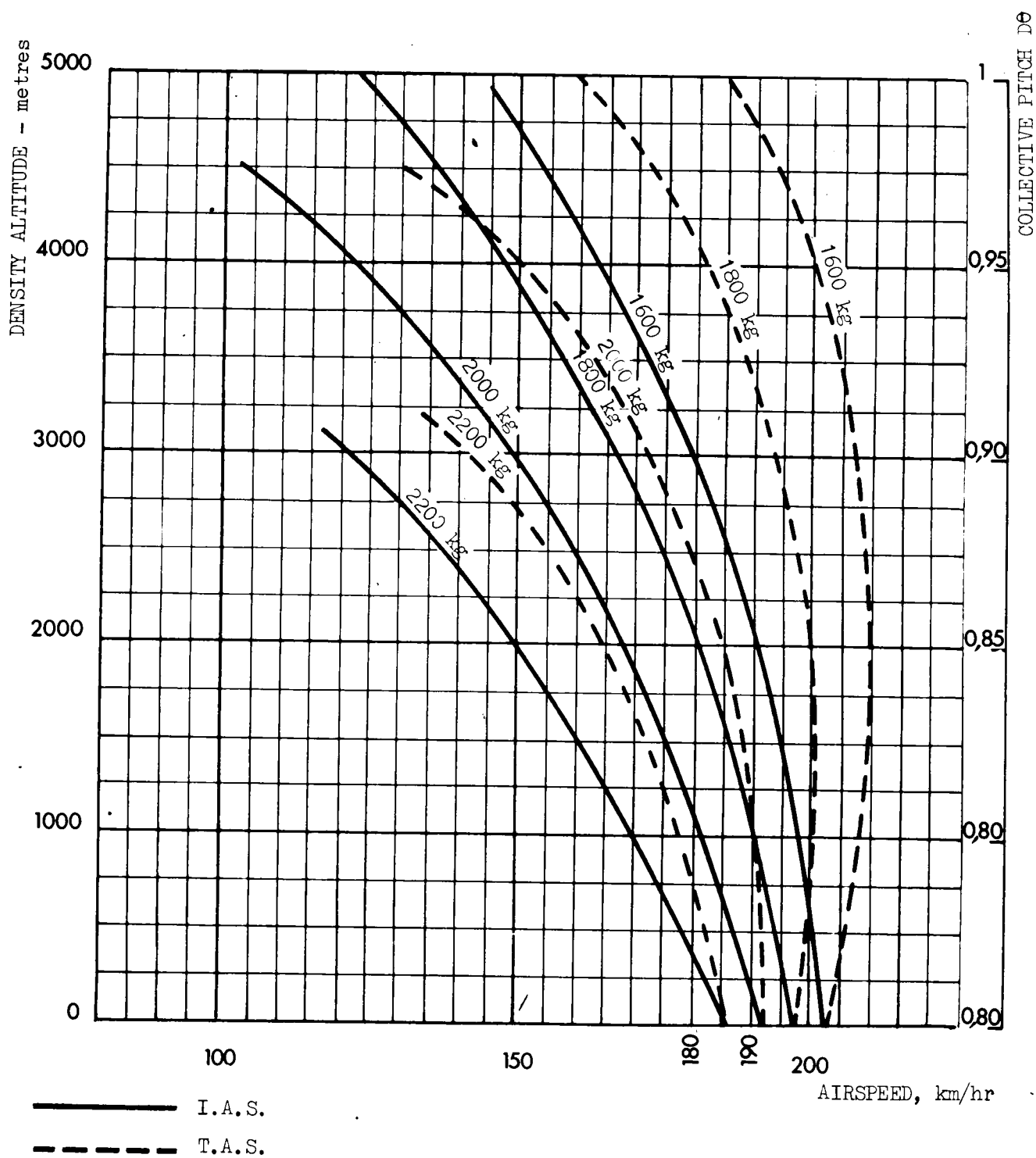
## **PERFORMANCE CURVES**

**(Metric and Anglo-Saxon units)**

**Performance curves drawn from Appendix I of the Flight Manual :**

	<b>Metric</b>	<b>English</b>
<b>Cruising speed</b>	<b>1. 4</b>	<b>1. 5</b>
<b>Maximum speed in level flight</b>	<b>1. 6</b>	<b>1. 7</b>
<b>Fuel consumption</b>	<b>1. 8</b>	<b>1. 9</b>
<b>Service ceiling</b>	<b>1.10</b>	<b>1.11</b>
<b>Hover ceiling    OGE</b>	<b>1.12</b>	<b>1.13</b>
<b>Hover ceiling    IGE</b>	<b>1.14</b>	<b>1.15</b>
<b>Rate of climb</b>	<b>1.16</b>	<b>1.17</b>

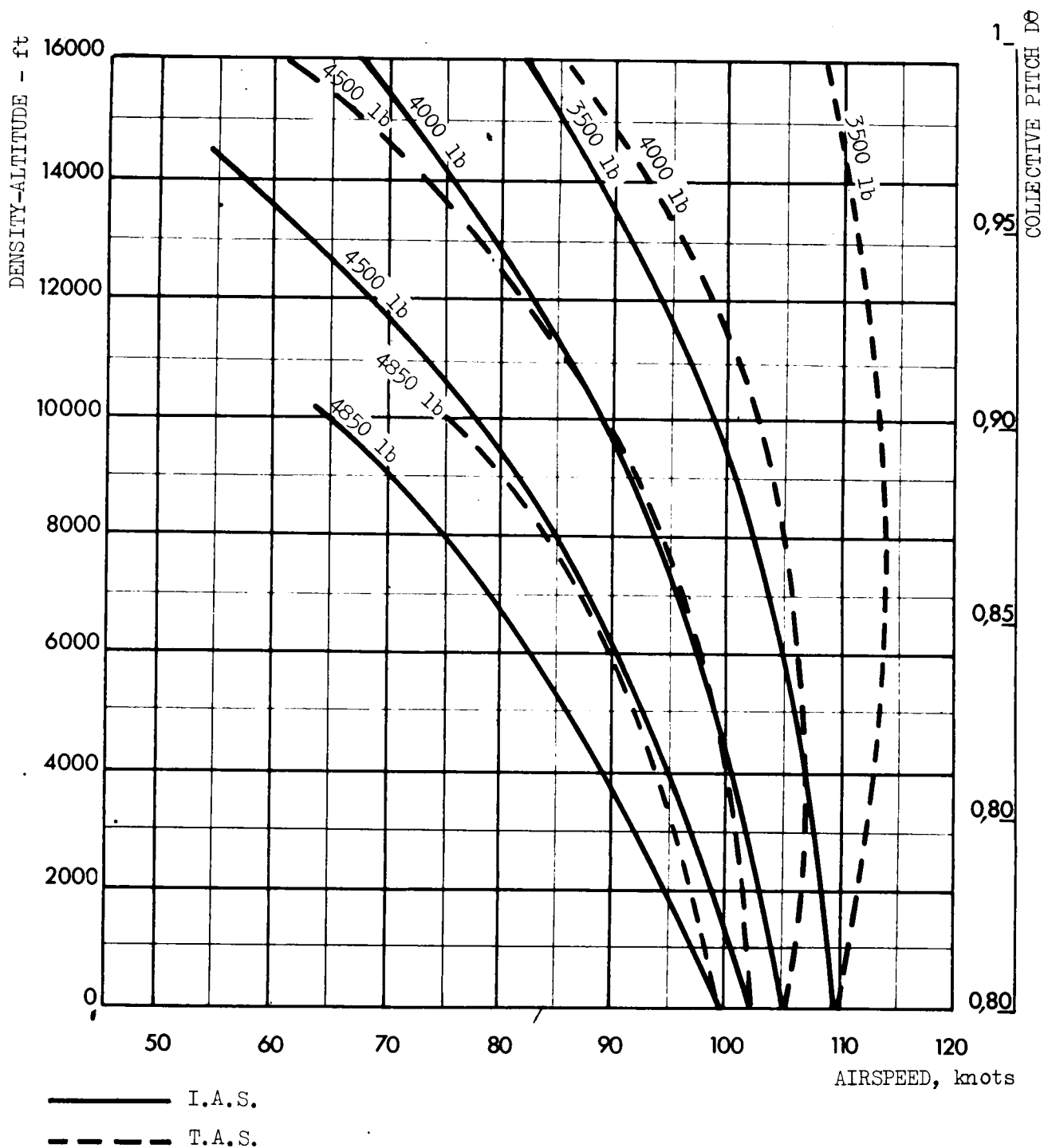
METRIC



Cruising speed

Figure 3-1

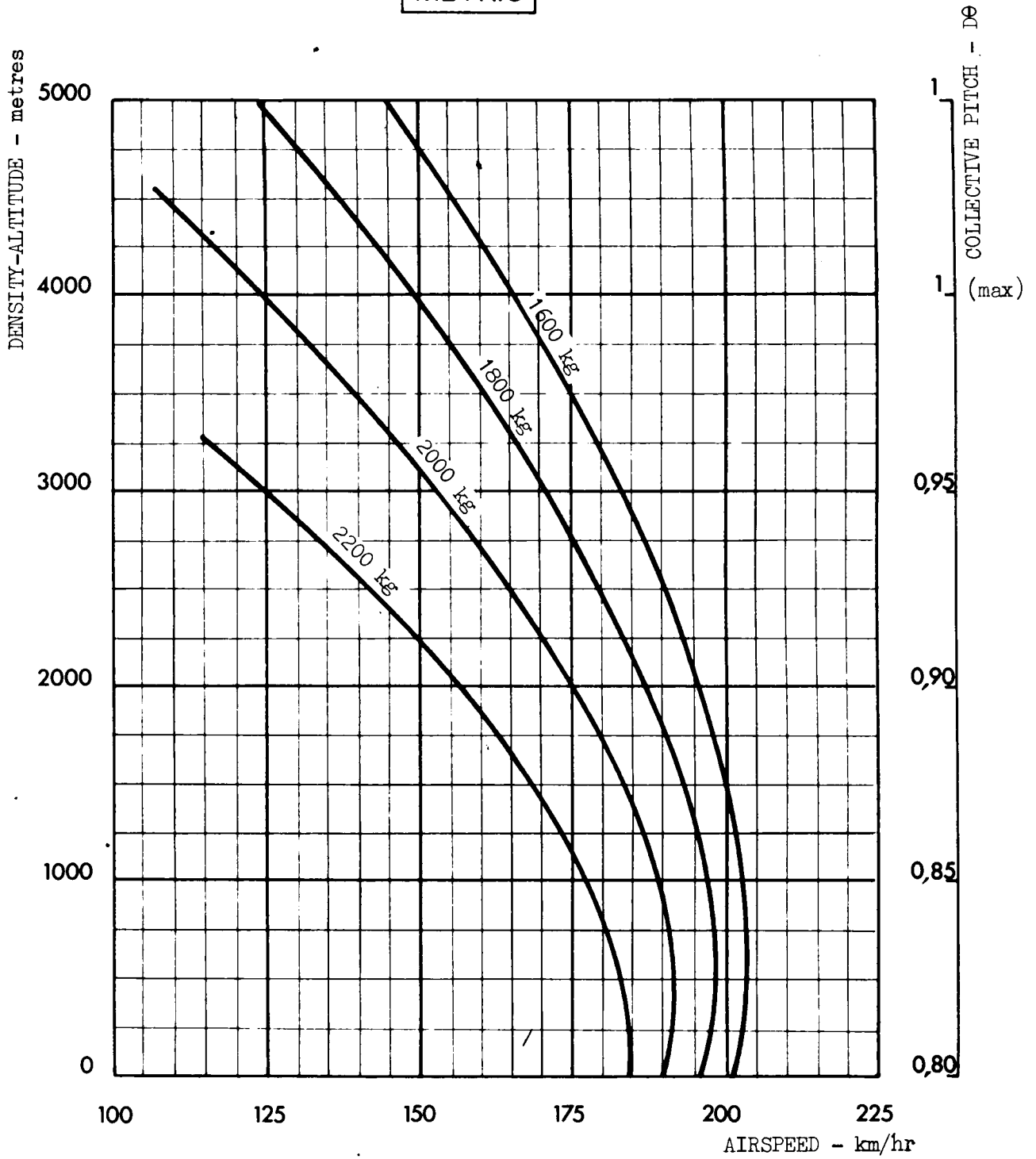
ENGLISH



Cruising speed

Figure 3-1

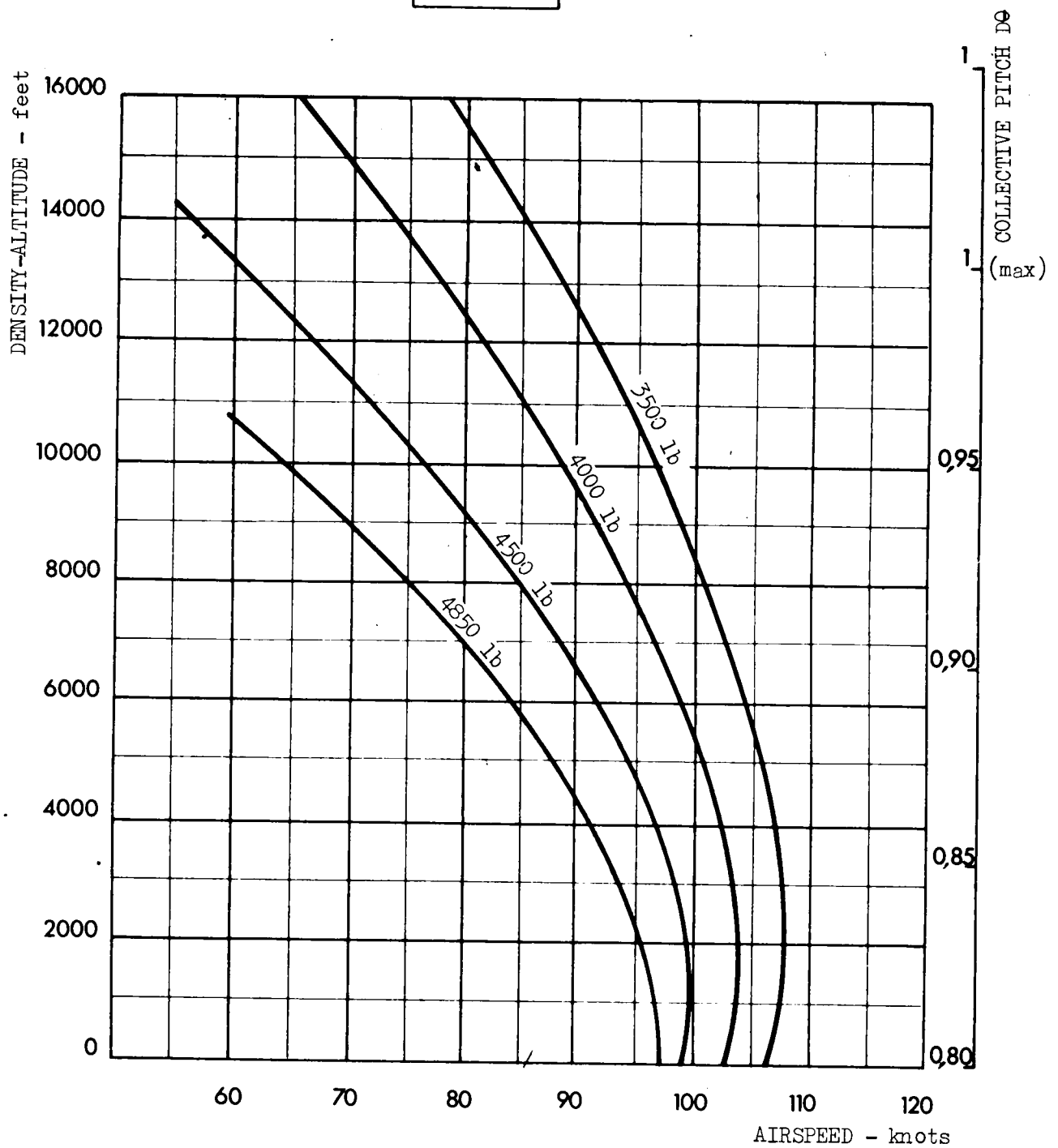
METRIC



Maximum speed in level flight

Figure 3-2

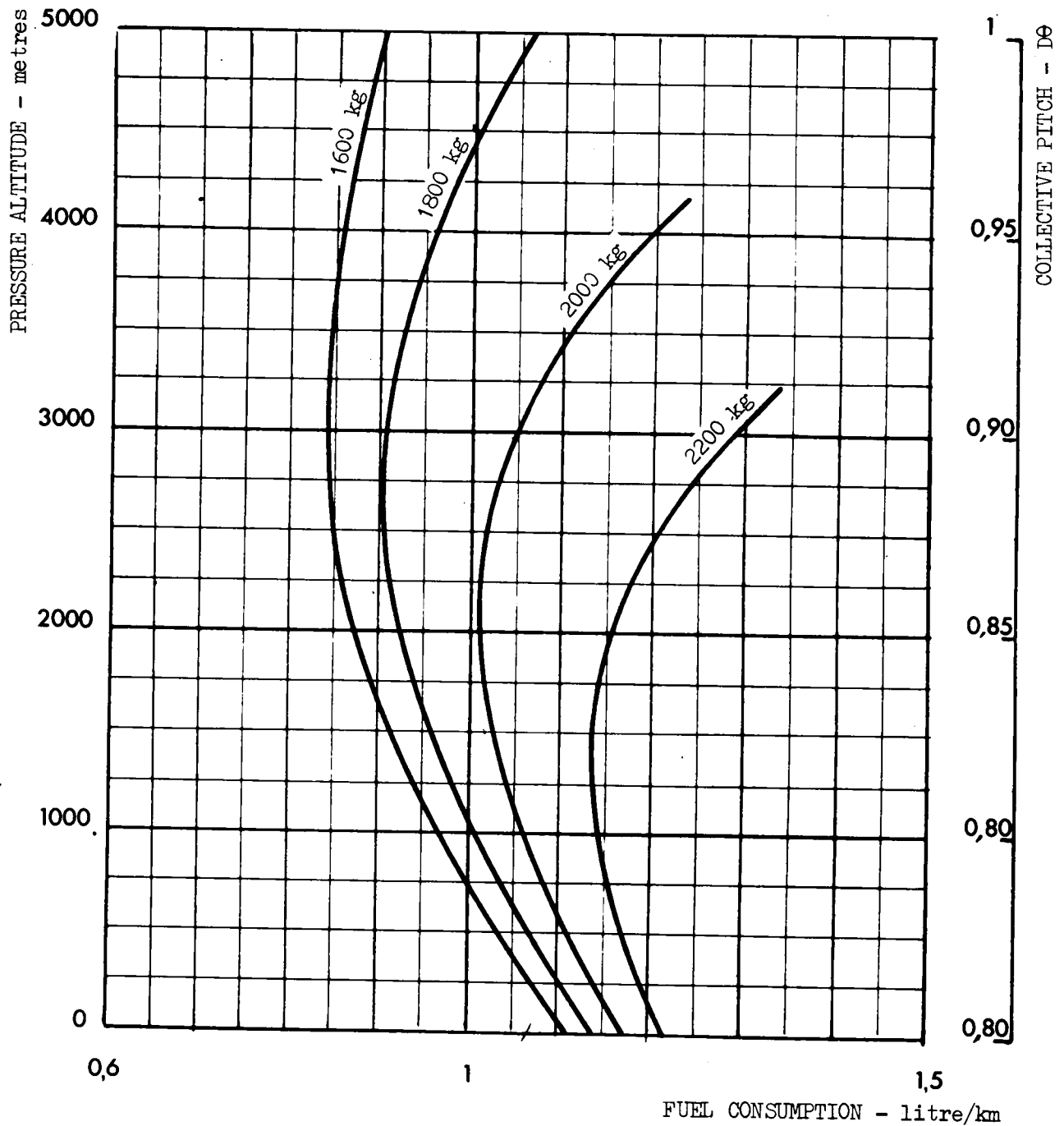
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Maximum speed in level flight

Figure 3-2

METRIC

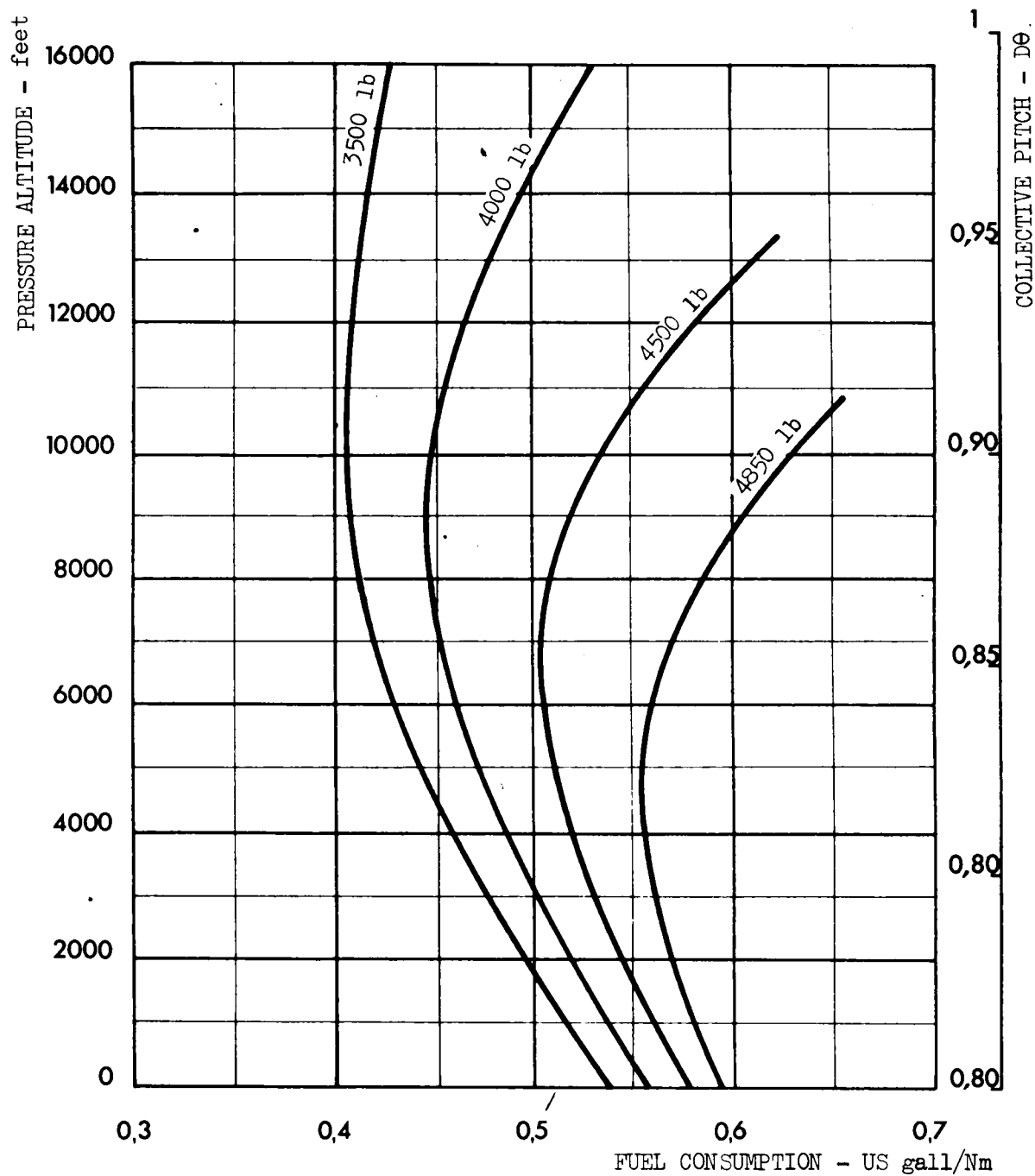


Standard atmosphere

Fuel consumption per kilometre in cruising flight

Figure 3-3

ENGLISH

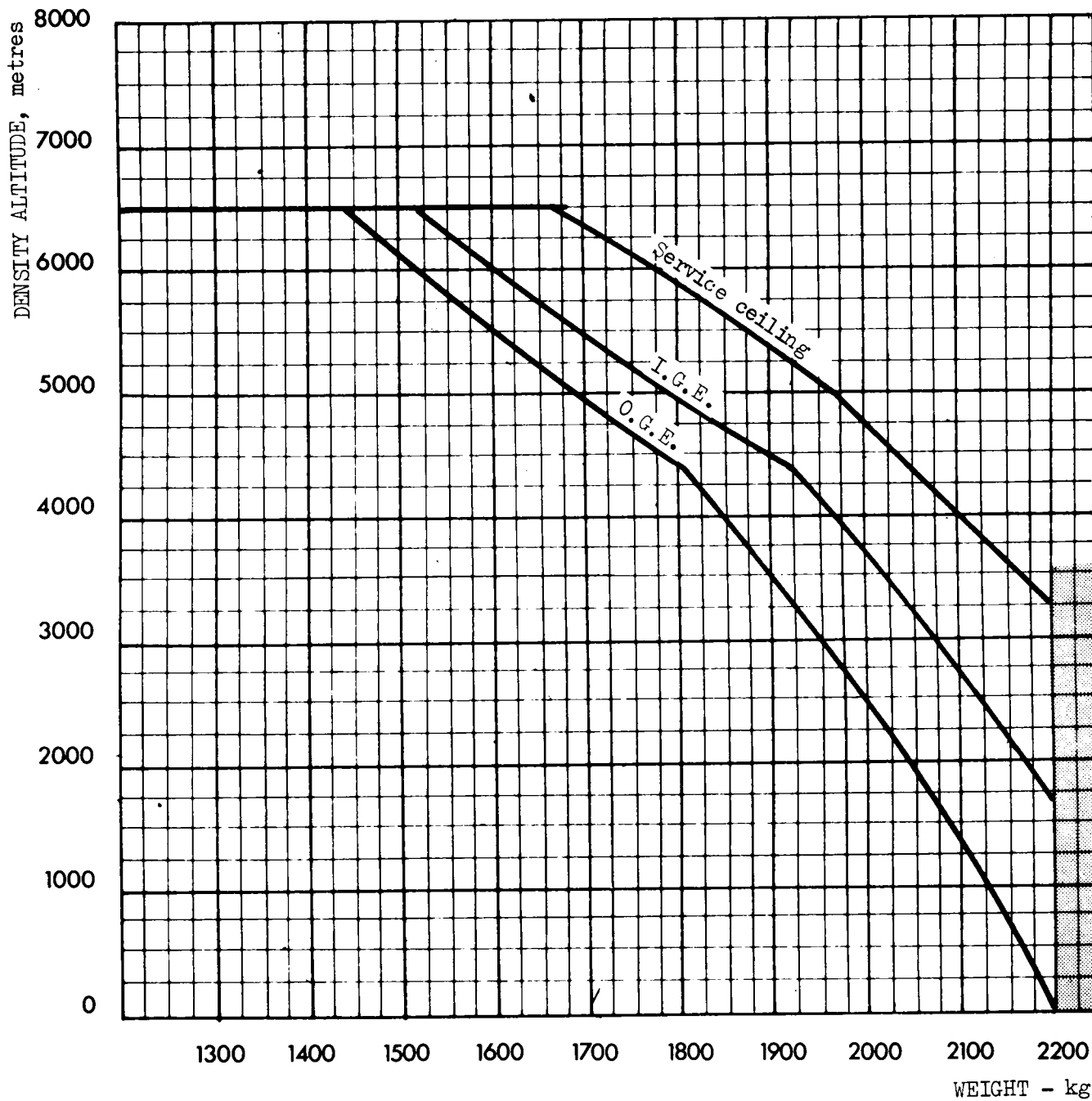


Standard atmosphere

Fuel consumption per nautical mile in cruising flight

Figure 3-3

METRIC



Service ceiling

-

Ceilings in hover I.G.E and O.G.E

Figure 3-5



ENGLISH



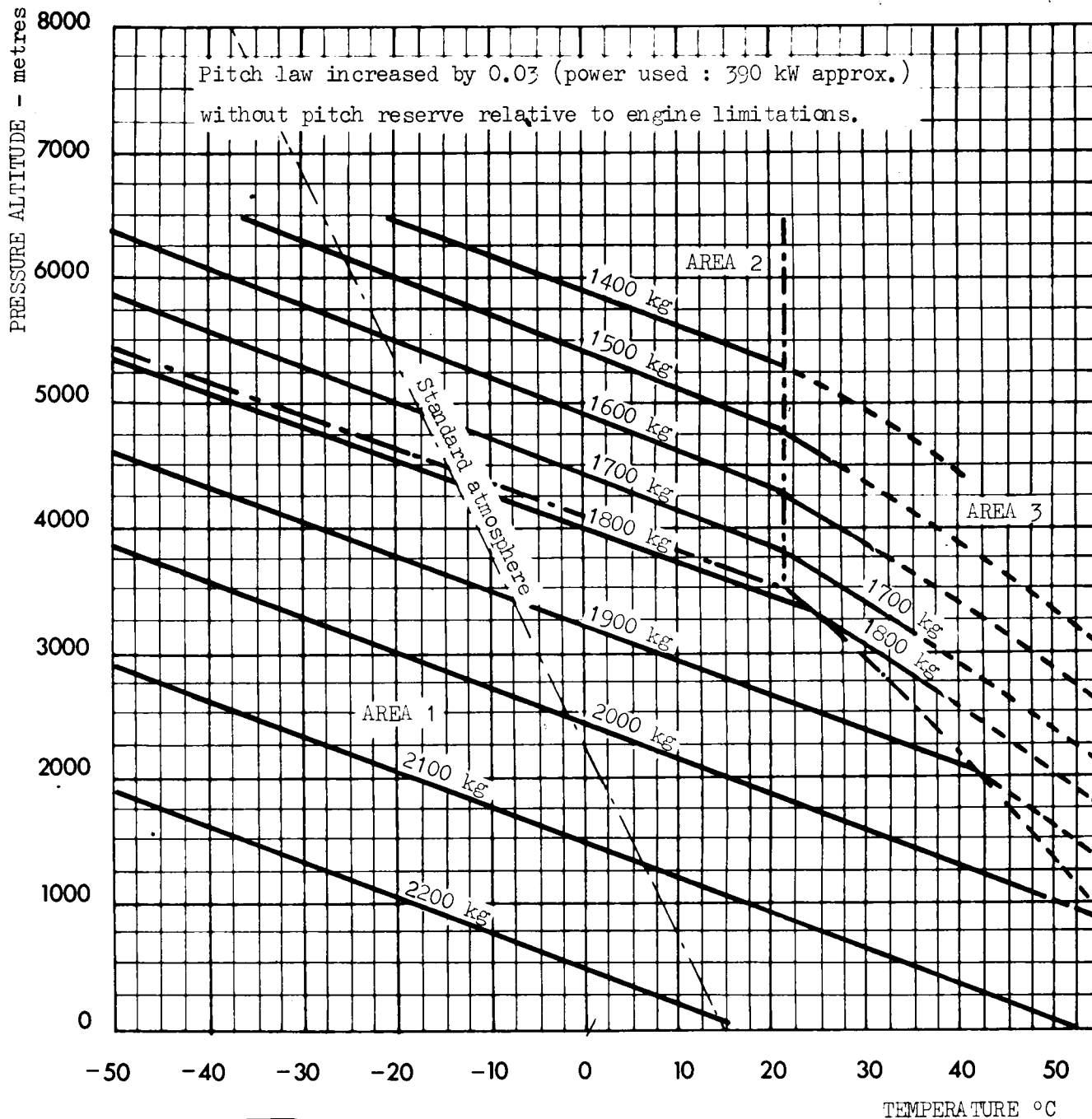
Service ceiling

-

Ceilings in hover I.G.E and O.G.E

Figure 3-5

## METRIC



AREA 1 = M.G.B. power limitation

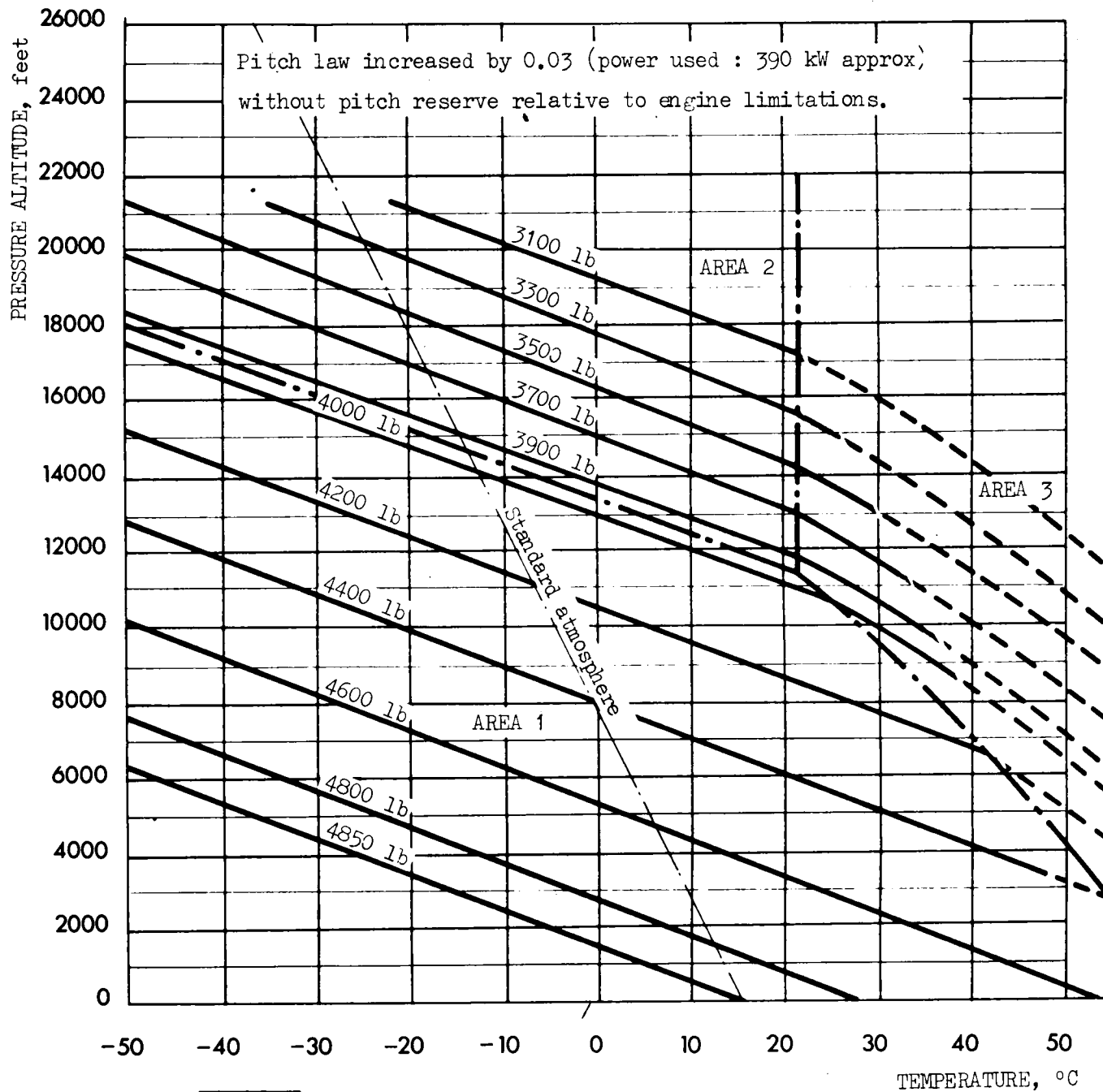
AREA 2 = Pitch limitation : 1

AREA 3 = Maximum thermal power

Ceiling in hover O.G.E

Figure 3-6

ENGLISH



AREA 1

 = M.G.B. power limitation

AREA 2

 = Pitch limitation : 1

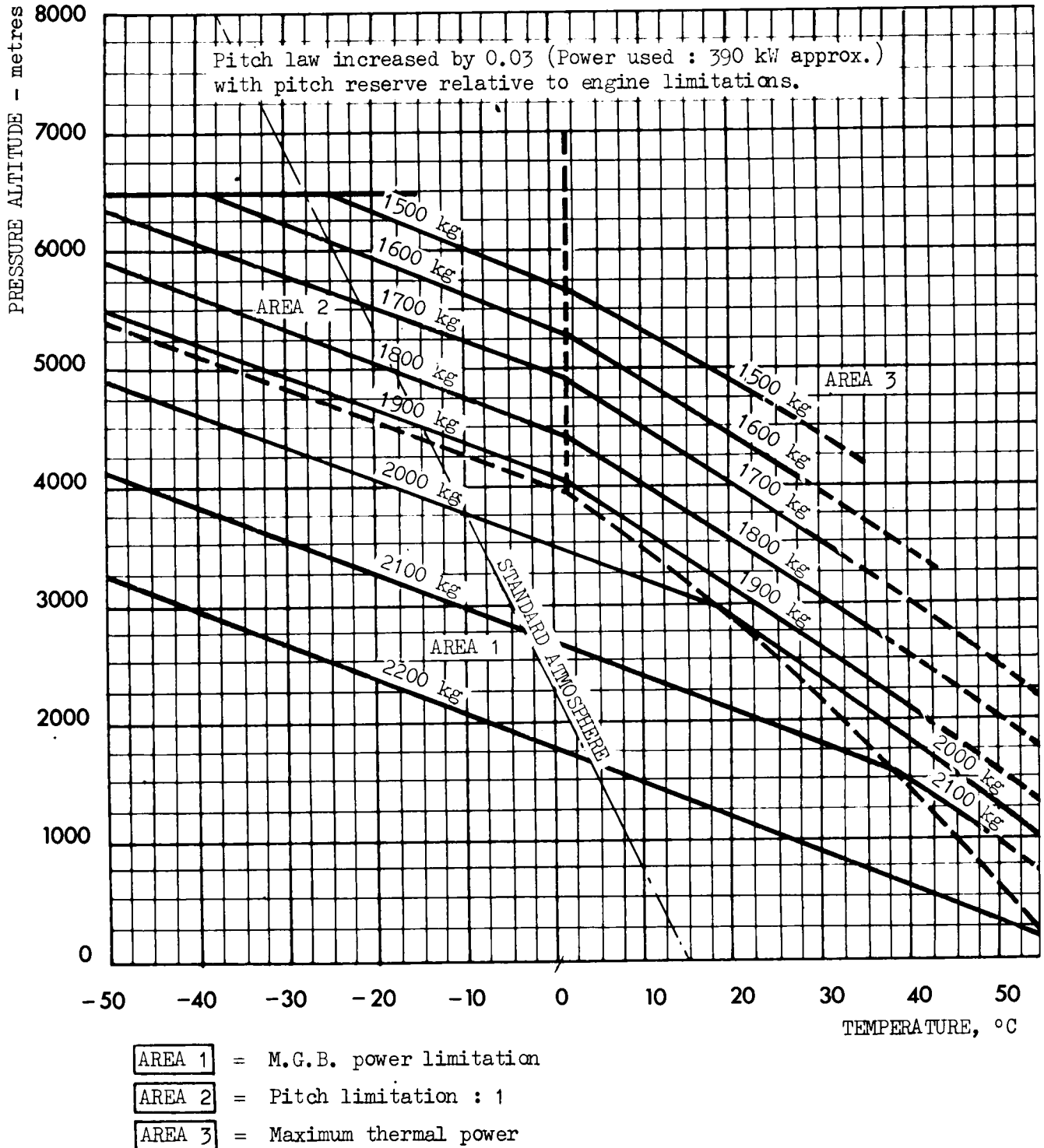
AREA 3

 = Maximum thermal power

Ceiling in hover O.G.E

Figure 3-6

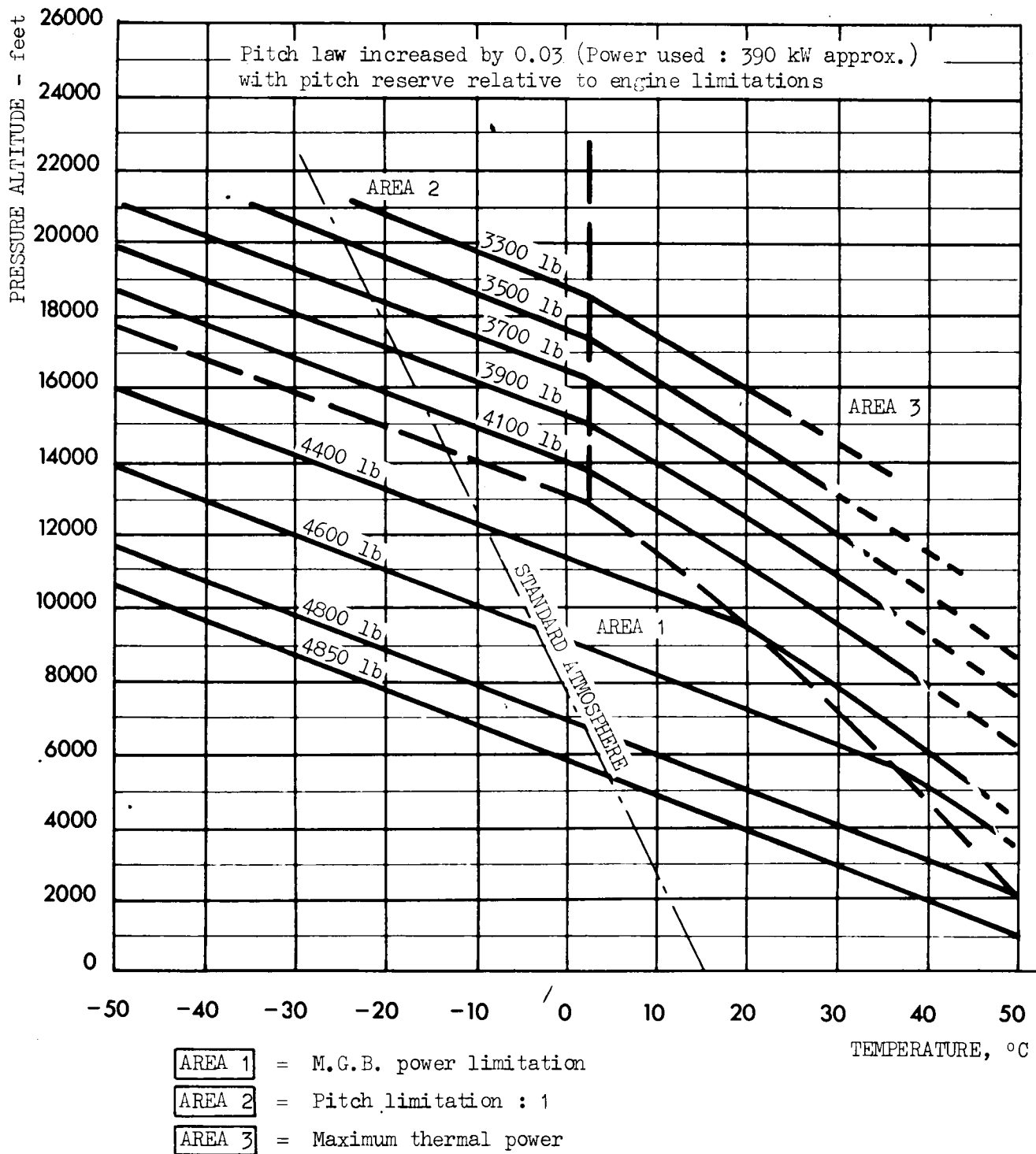
METRIC



Ceiling in hover I.G.E

Figure 3-7

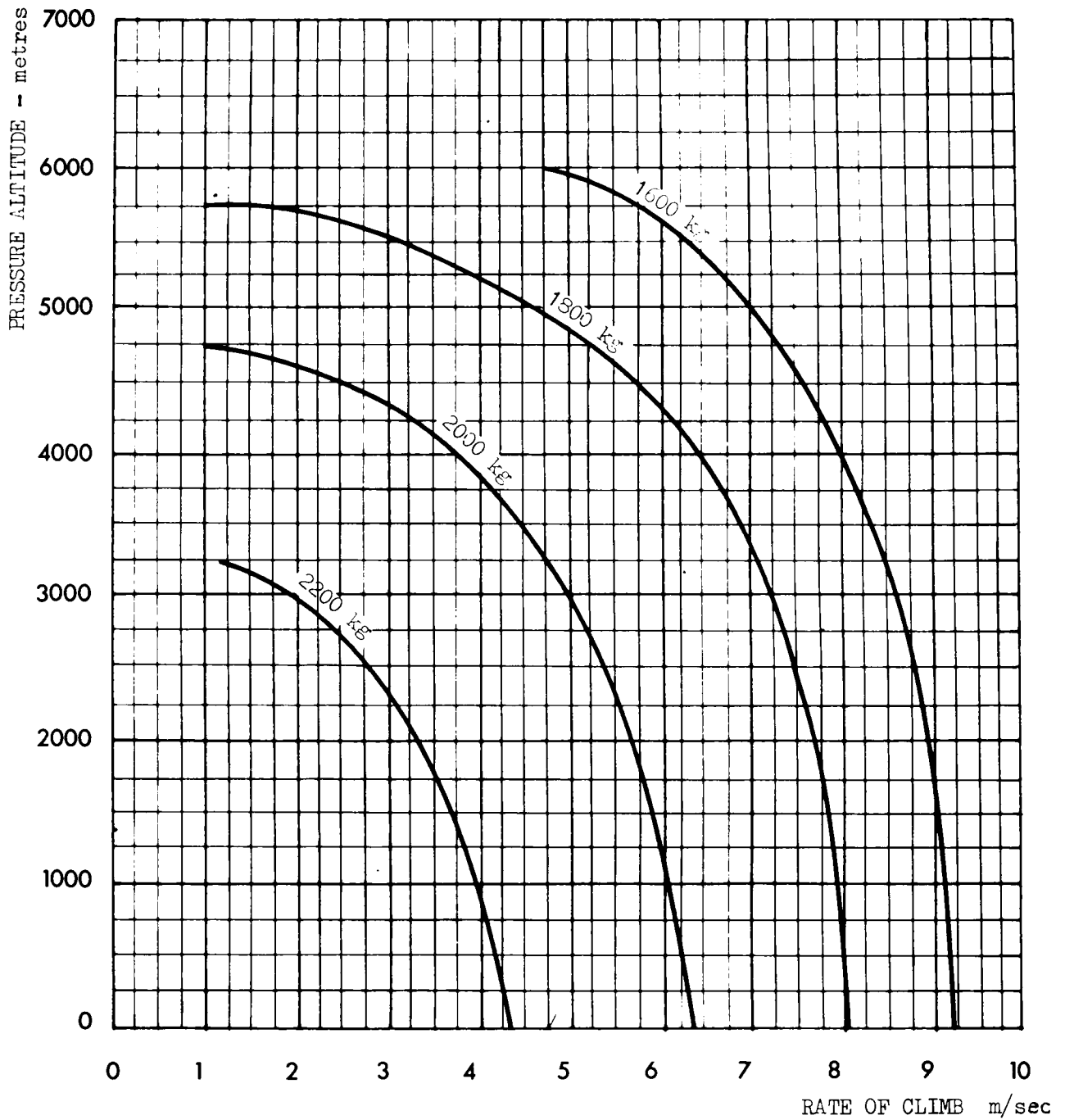
ENGLISH



Ceiling in hover I.G.E

Figure 3-7

METRIC

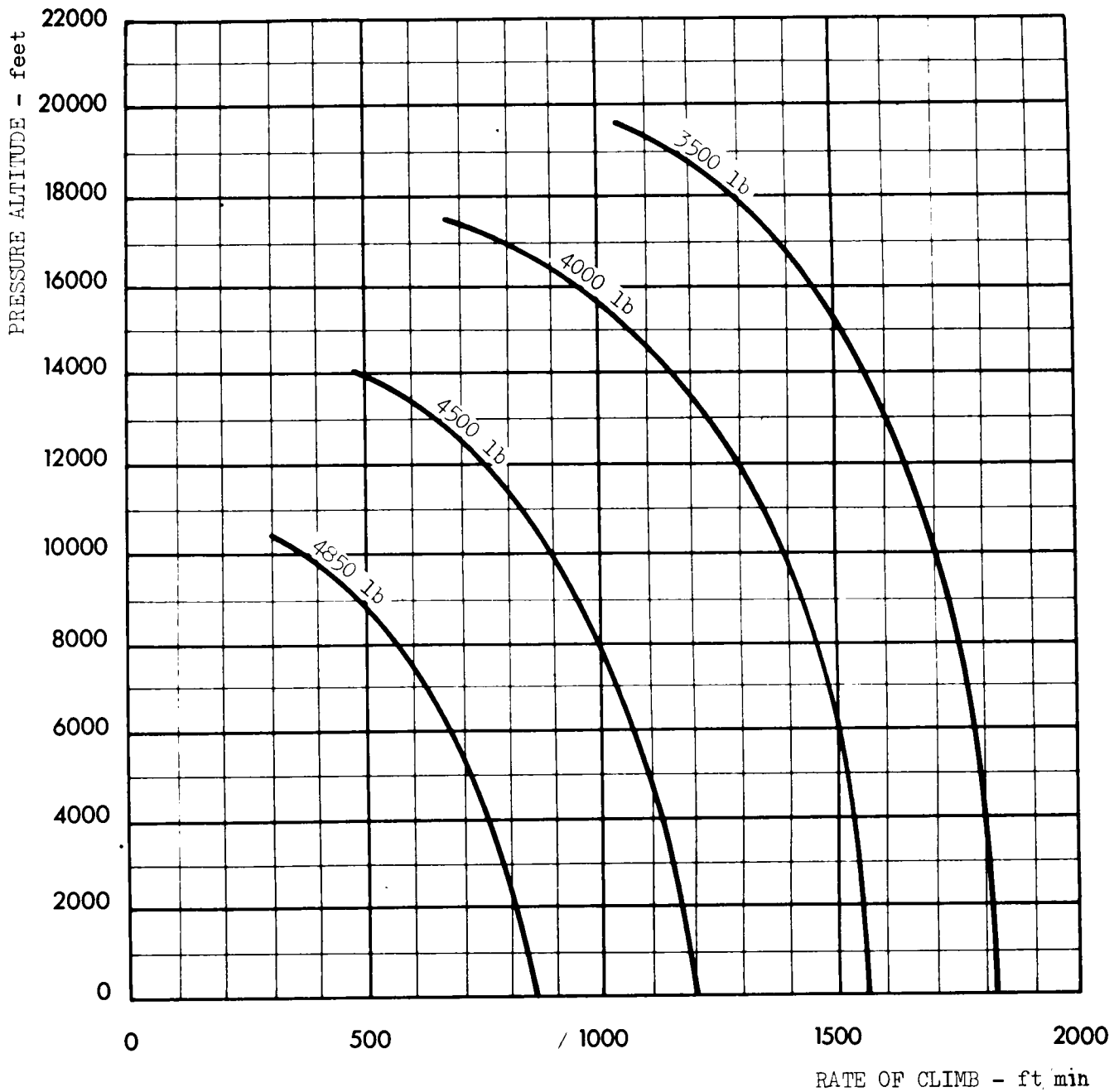


Standard atmosphere

Rate of climb

Figure 3-8

ENGLISH



Standard atmosphere

Rate of climb

Figure 3-8

## APPENDIX II

### OPTIONAL EQUIPMENT



## OPTIONAL EQUIPMENT

	<u>Supplementary weight</u>	
	<u>kg</u>	<u>lb</u>
<b>A - <u>GENERAL ITEMS OF EQUIPMENT</u></b>		
- Dual controls	5.0	11.0
- Main rotor brake	4.7	10.3
- Cabin heating system	5.0	11.0
- Windshield wiper	3.1	6.8
- Landing light	2.2	4.8
- Anti-collision lights	1.8	3.9
- Cargo tie-down kit in lateral cargo holds	2.0	4.4
- Nose wheel caster lock	2.3	5.1
- Differential wheel brakes	5.3	11.7
- Fuel jettison system	4.5	9.9
- Self sealing fuel tank	10.0	22.0
- Fire extinguisher support	0.7	1.5
- Stability Augmentation System	30.0	66.1
- A.C. generating system      125 VA	2.5	5.5
400 VA	6.5	14.3
- IFR instruments	7.3	12.5
<b>B - <u>RADIO-COMMUNICATION AND RADIO-NAVIGATION EQUIPMENT</u></b>		
- <u>SOCRAT</u> TRAP 32 VHF Transceiver	17.5	38.6
- <u>KING</u> KX 170 VHF Transceiver	6.5	14.3
with VOR/ILS adapter	13.5	29.7
- <u>COLLINS</u> 618 M2 VHF Transceiver	12.0	26.5
- <u>EAS</u> ER 671 VHF Transceiver	7.0	15.4
- <u>OMERA</u> TRAP 21 UHF Transceiver	21.0	46.3
- <u>AIR EQUIPEMENT</u> TRAP 18D HF Transceiver		
with homing	20.5	45.2
- <u>SUNAIR</u> ASB 100 HF (SSB) Transceiver	16.0	35.3
- <u>TEAM</u> TFAP 6 F I.C.S.	8.5	18.7
- <u>TEAM</u> TFAP 11 I.C.S.	13.1	29.0
- <u>CSF</u> NRAN 11 G Radio-compass	10.0	22.0
- <u>TRI</u> (AHV 6) NRAS 11 Radio-altimeter	8.7	19.2

**C - SPECIFIC MISSION EQUIPMENT**

	<u>kg</u>	<u>lb</u>
- Skis	33.0	72.7
- Float landing gear	103.0	224.9
- Emergency floatation gear	84.5	186.3
- Casualty carrying equipment (without litters)	4.7	10.3
- External cargo carriers	11.0	24.2
- Stabilized cargo sling	13.5	29.8
- Rescue hoist	27.2	59.9
- Cabin arrangement for rescue at sea	21.5	47.4

**D - SPECIAL EQUIPMENT**

- Engine air intake sand retaining filter	30.0	66.1
- Quick folding and unfolding of rotor blades		
- Army version	23.0	50.7
- Navy version	35.0	77.2
- Hydraulic deck-landing harpoon	36.0	79.4
- Rough weather mooring kit	4.0	8.8
- VIP cabin interior arrangement	37.0	81.6

**E - ARMAMENT**

- APX BEZU 260 aiming sight	36.0	79.4
- AA 52 machine gun installation with two ammunition boxes (400 rounds)	33.0	72.7
- MG 151 20 mm gun installation with two ammunition boxes (480 rounds)	292.0	643.7
- AS 12 wire-guided missile launcher installation with 2 missiles	245.0	540.1
- AS 11 wire-guided missile launcher installation with 4 missiles	217.0	465.7

## DUAL CONTROLS

In the SA 316 B helicopter, the first pilot's station, located on the R.H. side at the front, has provisions for connecting up dual controls to be installed at the co-pilot's station on the left.

This simply requires removal of the cover plates from the co-pilot control locations and fitting in of the following parts :

- cyclic-pitch stick
- collective-pitch control lever
- tail rotor control pedals

Installation is completed in less than twenty minutes and involves no special tools.

The arrangement of the co-pilot's controls is similar to that of the first pilot's controls.

With the dual control installation, the helicopter may be used for flight training.

Supplementary weight                      5.0 kg     -     11.0 lb

## MAIN ROTOR BRAKE

A "MESSIER" mechanical brake allows bringing rapidly the rotor to a complete standstill.

### DESCRIPTION AND OPERATION

#### The installation comprises :

- a rotating disc attached to the main transmission input gear assembly
- a brake unit, consisting of two shoes with Ferodo linings
- a mechanical linkage and a bell crank
- a TELEFLEX cable
- a control handle, located on the control pedestal.

The control handle, located in the upper left hand portion of the instrument panel actuates, through a TELEFLEX control cable routed under the cabin floor, a bell crank fitted in front of the transmission platform. Connected to the bell crank is an elastic ling which, acting as a torque limiter, brings firmly the shoes against the disc.

The brake is to be applied only when rotor speed is down to 175 rpm.

Complete rotor standstill is obtainable in 10-15 seconds (zero wind conditions); as against approximately 3 minutes without the rotor brake.

Heat dissipation is such that the brake may be applied every fifteen minutes.

Supplementary weight                      4.7 kg      -      10.3 lb

# CABIN HEATING SYSTEM

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## STANDARD INSTALLATION

In cold weather, a heating system is used for warming the air in the cabin and defrosting the canopy.

The increase in cabin temperature is 20° to 25°C in forward flight with 0°C outside air temperature.

Supplementary weight                      5.0 kg     -     11.0 lb

## WINDSHIELD WIPER

---

For better visibility in rainy weather, the SA 316 B helicopter can be fitted with a windshield wiper which operates on the center forward transparent panels.

### DESCRIPTION

The electrically-operated equipment includes the following :

- 180 W TELEFLEX motor with flexible shaft
- Motion converter
- Wiper arm attached to L.H. vertical member of center forward transparent panel
- Instrument panel-mounted control switch and warning light.

Supplementary weight                      3.1 kg      -      6.8 lb

# LANDING LIGHT

For landing by night or in poor visibility conditions, the SA 316 B helicopter can be fitted with a landing light.

## DESCRIPTION

The landing light is made up of a retractable 250-watt SYNERAVIA spotlight built into the bottom front cabin panel.

This light, adjustable in elevation, is controlled by a set of switches (extension-retraction-light-on-light off) mounted on pilot's control lever, as well as on copilot's control lever when dual controls are installed.

The landing light can be easily removed and its opening blanked off by a plate.

## CHARACTERISTICS

Extension or retraction time	Approximately 10 seconds
Adjustment	provided anywhere between 52 and 90 deg.
Voltage	26-28 volts
Motor current consumption	1.3 A
Optical unit current consumption	9 A

### Note :

Electrical wiring is included in the standard version.

Supplementary weight                      2.2 kg                      -                      4.8 lb

## ANTI-COLLISION LIGHTS

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In addition, to the position lights included in the standard version, the SA 316 B helicopter can be fitted on request with anti-collision lights.

### DESCRIPTION

Two S.G.E. type anti-collision lights are installed the one above the cabin on the VHF antenna support, and the other under the rear fairing.

#### Each light comprises :

- a red glass cover
- a motor whose spindle carries a wormshaft  
a cup carrying :
  - a geared lamp holder
  - two 40-watt lamps
  - a slip ring system for feeding the lamps.

#### In addition, the installation includes :

- the electrical system, part of the standard version
- a switch located on the instrument panel.

### OPERATION

The motor drives the cup at 45 rpm. Consequently, an observer standing in the area scanned by the double light beam perceives 90 flashes per minute.

Power drain                      6.6 A                      /

Supplementary weight                      1.8 kg                      -                      3.9 lb



## CARGO TIE-DOWN KIT IN LATERAL CARGO HOLDS

---

This equipment has been designed for the carrying of loads in the cargo holds located on either side of the fuel tank.

### DESCRIPTION

The following items are provided on the cargo hold floor :

- 8 attachment fitting used as attachment points for the straps
- 4 straps in each cargo hold

and a case is provided on the cabin rear wall in each cargo hold for stowing the straps when not in use.

### Note :

The load in each cargo hold must not exceed 150 kg - 330 lb.

The use of this equipment is mandatory when loads are transported in the cargo holds.

Supplementary weight                      2.0 kg    -    4.4 lb

# NOSE WHEEL CASTER LOCK

## DESCRIPTION

The locking of the nose wheel in the fore and aft position can be controlled from inside the cabin.

The locking system includes a control handle installed on the control pedestal and connected to a cable in a conduit acting on the locking device and on a retractable flag which can be seen on the forward section of the landing gear when the wheel is in the locked position.

## USE

For landing on ship decks in naval operations and on slopy ground.

Supplementary weight                      2.3 kg     -     5.1 lb

## DIFFERENTIAL WHEEL BRAKES

---

To facilitate taxiing, and operation of the helicopter on ships at sea, two differential wheel brakes can be fitted to the aircraft.

This equipment also includes a parking brake manual control.

### DESCRIPTION

The installation comprises the following :

- 1 pedal fitted on either side on each of the tail rotor control pedals
- 1 connecting device
- 1 hydraulic transmitter

New brakes with A4 - 21201 dual discs

- 1 new hydraulic unit for the parking brake.

### Note :

This installation requires the fitting of new wheels (ref. A2- 20201) as well as the replacement of the universal joints on the shock absorbers.

Supplementary weight	5.3 kg	-	11.7 lb
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## FUEL JETTISON SYSTEM

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This equipment permits dumping the fuel tank contents in order to reduce aircraft weight for the purpose, for instance, of carrying out a rescue operation.

### DESCRIPTION AND OPERATION

A guarded switch located at the base of the control pedestal controls a motor operated cock fitted on the fuel tank, at the rear.

Fuel jettisoning is accomplished by gravity through a special vent at a rate of 200 litres (53 U.S. gal.) in approximately 90 seconds.

Jettisoning action stops automatically when the fuel in the tank is down to some 53 U.S. gal. The pilot, however, may halt jettisoning at any time prior to reaching this minimum value.

Supplementary weight

4.5 kg

9.9 lb

## SELF-SEALING FUEL TANK

---

The standard version fuel tank can be equipped with a self-sealing "SUPERFLEXIT" type K.1 protection, whereby 200 litres (53 U.S. gal.) of fuel are retained in the tank after it has been hit by bullets of up to 0.50 in. caliber. The helicopter can thus either continue its mission or return to base.

### DESCRIPTION

The lower half of the tank is protected by a rubber lining and a glass cloth lining. Protection in the form of pinked tape is provided for the tank edges.

Attachment is provided by special straps.

### Note :

Installation of this equipment can only be effected at the factory.

Supplementary weight                      10.0 kg      -      22.0 lb

## FIRE EXTINGUISHER SUPPORT

---

A cylinder 256 mm long x 109 mm I D and opened at one end, can accommodate an extinguisher 400 mm in overall length.  
The extinguisher is held in place by 3 clips.

The fire extinguisher support is secured to a tube of the body structure located under the battery floor.

Supplementary weight                      0.7 kg    -    1.5 lb

### 3 - AXIS SFENA S.A.S.

The SFENA servo units are for ensuring stabilization of the helicopter about the pitch, roll and yaw axes within the flight envelope without affecting or restricting flight handling of the aircraft.

Long range monitoring of the aircraft attitude and heading as well as turns or heading changes must still be effected by the pilot. A S.A.S. master release control switch is located on the pilot and copilot cyclic control stick hand grip.

#### DESCRIPTION

The installation includes :

- 1 control box installed on the control pedestal and fitted with :
  - 1 operation warning light
  - 1 master switch
  - 3 switches marked "roulis - tangage - lacet" ("roll - pitch - yaw")
- 1 detection box
- 1 amplification box
- 3 linear electrically-operated jacks
- 1 airspeed capsule

The main changes to be introduced in the aircraft are as follows :

- A new flight control arrangement
- Replacement of the hydraulic pump and various modifications to the circuits
- Installation of brackets and associated electrical wiring.

Power drain	D.C.	120 W
	A.C.	70 VA

#### Note :

The installation of SFENA servo units makes it necessary to use an airborne 400 VA A.C. generating system.

Supplementary weight                      30.0 kg    -    66.1 lb

AUXILLEC 125 VA CONVERTER

Located under the cabin floor on the R.H. side.

Used, for instance, for supplying the APX 260 sight.

Supplementary weight                      2.5 kg     -     5.5 lb

AUXILLEC 400 VA CONVERTER

Located behind the fuel tank on the R.H. side.

Used for supplying the SAS, the 260 gyro-stabilized sight,  
the electrically-operated artificial horizon.

Supplementary weight                      6.5 kg     -     14.3 lb

Note :

The power values given are not restrictive. Depending on the characteristics of the equipment to be fed and the total power required other types of converters can be used.



For flight in conditions of poor visibility the following equipment may be installed :

- A SFENA 42-86 gyroscopic horizon with cross pointers
- A SFIM 121 gyromagnetic compass
- A pitot tube heating system.

### SFENA 42-86 gyroscopic horizon

This instrument provides the pilot with a stable vertical reference. The cross pointers may be used as the readout for a VOR/ILS system and the vertical pointer may also be used as a homing indicator.

### SFIM 121 gyro-compass

This instrument presents gyroscopically stabilized information to the pilot from a magnetic detector unit. It also has a secondary pointer which is utilised for the radio-compass or VOR presentation.

### Pitot tube heating system

In order to prevent blocking of the pitot tube by ice, a heated pitot tube is fitted.

### Note :

The SFENA 42-86 gyroscopic horizon and the SFIM 121 gyro-compass require the installation of an A.C. electrical system.

Supplementary weight                      7.3 kg     -     12.5 lb

# SOCRAT TRAP 32 VHF TRANSCEIVER

## GENERAL

The TRAP 32 VHF radio set is used to provide two-way communication between different aircraft and between aircraft and ground stations.

Remote control of the set is achieved through a control box located in the cabin.

## CHARACTERISTICS

Frequency range	100 to 156 MHz
Number of channels	1221 + 10 crystals
Channel spacing	50 kHz
Power output	5 W
Power supply	28 V D.C.

## DESCRIPTION

This equipment consists of :

- 1 transmitter-receiver
- 1 control box
- 1 supply unit
- 1 whip antenna located in the upper section of the cabin.

Supplementary weight                      17.5 kg       -       38.6 lb

# KING KX 170 VHF TRANSCEIVER WITH VOR/ILS ADAPTER

## GENERAL

This radio set provides two-way communication between aircraft and ground stations. It incorporates a VOR receiver. The KN 70 is a glide path receiver and a VOR/LOC inverter. It is controlled by the KX 170.

## CHARACTERISTICS

Frequency range	118.0	135.95 MHz
Channel spacing	50 kHz	
Number of channels	360	
Power output	7 W minimum	
Power supply	28 V D.C.	

## DESCRIPTION

The installation consists of :

- a transmitter-receiver mounted in the console
- an inverter and a KN 70 adapter
- an indicator mounted in the instrument panel
- a VOR antenna unit
- a glide antenna
- a VHF antenna

Supplementary weight	VHF	6.5 kg	-	14.3 lb
	VHF + adapter	13.5 kg	-	29.7 lb

# COLLINS 618 M2 (B or D) VHF TRANSCEIVER

## GENERAL

The radio set provides two-way communication between different aircraft and between aircraft and ground stations.

It is remotely controlled from a control panel unit installed at pilot's station.

## CHARACTERISTICS

Frequency range	618 M2 B	118.0 to 135.975 MHz
	618 M2 D	116.0 to 151.975 MHz
Channel spacing	50 or 25 kHz for certain sets	
Power supply	28 V D.C.	
Power output	20 - 25 W	

## DESCRIPTION

The installation consists of :

- a transmitter-receiver
- a control box on the console
- an antenna

Supplementary weight                      12.0 kg      -      26.5 lb

## GENERAL

The radio set provides two-way communication between different aircraft and between aircraft and ground stations.

## CHARACTERISTICS

Frequency range	118.0	135.95 MHz
Number of channels	360	
Channel spacing	50 kHz	
Power supply	28 V D.C.	
Power consumption, transmission	4.5 A	
Power output	20 W	

## DESCRIPTION

The installation consists of :

- A transmitter-receiver
- A control unit mounted on the console
- An antenna

Supplementary weight	7.0 kg	-	15.4 lb
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## OMERA TRAP 21 UHF TRANSCEIVER

The UHF TRAP 21 set is used for air-to-air and air-to-ground radio-telephone communications.

Tuning of the transmitter-receiver is fully automatic.  
The transmitter-receiver is remotely controlled from a control box located in the cabin.

The same frequency is used for transmitting and receiving using the press-to-talk control.

### CHARACTERISTICS

Frequency range	225 to 399.95 MHz
Number of channels	3500
Channel spacing	50 kHz
Number of preset channels	20
Channeling time	6 sec.
Frequency stability and accuracy	$\pm$ 5 kHz
Supply voltage	28.5 V
Transmitter carrier power	3 to 5 W

### DESCRIPTION

The installation includes :

- 1 transmitter-receiver and support
- 1 control box
- 1 supply unit and base
- 2 antennas
- 1 coaxial relay

Supplementary weight                      21.0 kg    -    46.3 lb

# AIR EQUIPEMENT TRAP 18 D HF TRANSCEIVER WITH HOMING

## CHARACTERISTICS

Frequency range	24 to 51.9 MHz
Channel spacing	100 kHz
Modulation	frequency modulation communication transmission and reception : voice F 3 homing reception A1 or A2
HF output	7 watts across 52 ohms
Transmitter range	optical range

## DESCRIPTION

The HF TRAP 18 D radio installation with homing breaks down into two part.

## AEROSPATIALE SUPPLY

- a communication tubular antenna mounted between the tail rotor guard and the tail boom
- two vertical dipole antennas installed on the front portion of the cabin
- a homing switch and a squelch control switch installed on the instrument panel
- wiring and supports.

## AIR EQUIPEMENT SUPPLY

- a frequency modulation transmitter/receiver installed in the body structure
- a control box secured to the control pedestal including :
  - a frequency selector and indicator
  - an "on-off" switch
  - a receiving volume control
- an inverter fed from the 27.5-volt aircraft network
- an automatic keyer, for homing antenna signals, secured to the control pedestal, behind the instrument panel.

## OPERATION

The transmitter/receiver is remote-controlled from the control box.  
The dipole antennas provide for the homing function of the receiver. All that is required to establish homing function is to set the homing switch on.

Homing reception and communications reception and transmission are made through the Interphone system, and, therefore, involve installation of the latter.

Supplementary weight                      20.5 kg      -      45.2 lb

## SUNAIR ASB 100 HF (SSB) TRANSCEIVER

The SUNAIR ASB 100 HF set is used for air-to-air and air-to-ground radiotelephone communications.

Two modes can be used :

- single side band
- amplitude modulation

The selection of any one of the 10 preset frequencies is achieved through a selector with automatic tuning for each frequency.

### CHARACTERISTICS

Frequency range	2 to 18 MHz
Number of channels	10
Channel spacing	unlimited
Power output	Amplitude modulation 50 W SSB 100 W
Range	It can be of the order of several hundred kilometers with a direct range of the order of 80 km.

### DESCRIPTION

The installation includes :

- 1 transmitter-receiver with 10 preset channels, located in the body structure and remote control.
- 1 antenna coupler
- 1 power supply unit
- 1 control box located on the control pedestal
- 1 wire antenna fitted to the tail boom

Supplementary weight 16.0 kg - 35.3 lb



## TEAM TFAP 6 F I.C.S.

As a means of intercommunication between members of the crew and/or passengers, and also for mixing of the various airborne sets, an interphone system of the "conference" type can be installed in the SA 316 B.

### DESCRIPTION

The TEAM TFAP 6 F interphone has four reception channels (VHF, HF, Interphone, Radio-compass) and three microphone channels (VHF, HF, Interphone).

Four control boxes are provided :

- 2 are located on the control pedestal, for use by the pilot and copilot
- 2 are located on the cabin ceiling for passengers' use.

Each control box consists of :

- one normal/emergency selector switch (VHF, HF, Interphone)
- three volume control knobs.

The installation also includes :

- a junction box
- a power supply interference supressor

Supply voltage      27.5 volts  
Current drain      less than 1 A

#### Note :

At each passenger station, the use of an extension cord with a press-to-talk switch, ref. SP 492, is required for transmission purposes.

Supplementary weight      8.5 kg      -      18.7 lb

## GENERAL

This fully transistorized equipment can be used for :

- telephonic intercommunication between crew members
- use of aircraft radio equipment.

Two types of switches can be used :

### Main switches

- 6 transmitting channels
- 12 receiving channels of which 11 can be used as emergency channels
- 1 interphone channel
- 1 call channel

### Secondary switches

- 3 radio transmitting channels of which 2 can be used as emergency channels
- 3 receiving channels plus one extra channel
- 1 interphone channel
- 1 call channel

## CHARACTERISTICS

Possibility of use with the following units :

- Headset of 8 or 600 ohms impedance
- Microphone of 5 or 75 ohms impedance or carbon microphone

Power drain at 27.5 V :                      4.5 W per switch - 6.4 W for the amplifier

Range of operation                              Altitude : 25000 m (82,000 ft)

Temperature range                               - 40° to + 70°C

## DESCRIPTION

The aircraft intercommunication system consists of the following main components :

- 4 control panels
- 1 amplifier
- 1 junction box
- 1 adapter
- 4 "press-to-talk" switches

Connecting provisions for the related equipment

Supplementary weight                      13.1 kg      -      29.0 lb

For radio-navigation purposes, a CSF NRAN 11 G (type RC 232) transistorized miniature radio-compass can be installed in the SA 316 B. However, its use necessitates that aircraft be fitted with the interphone system.

### CHARACTERISTICS

Frequency range	single continuous coverage band of 200 to 800 kHz
Type of receivable signals	A1, A2, A3.
Reception range	200 km (125 miles) from a 40-watt transmitter
Operation start time	2 seconds
Bearing indication accuracy	$\pm 2^\circ$
Current drain	0.4 A at 27 volts.

### DESCRIPTION

#### The installation includes :

- a package located on the control pedestal comprising : control box, receiver unit, power supply unit.
- a radio-compass indicator, on the instrument panel
- a loop antenna, located under the cabin
- an omnidirectional antenna, fitted into the fairing below the fuel tank.

### OPERATION

A tuning meter is included in the indicator. A test button allows checking that radio-compass and indicator function are correctly.

The control box allows selection of four pre-tuned frequencies by means of four push-buttons.

Supplementary weight                      10.0 kg      -      22.0 lb

**GENERAL**

The AHV 6 radio-altimeter operates in the altitude range of 0-5000 ft (0-1500 m). It incorporates outlets for feeding signals of the indicators, to an auto pilot and to a warning system.

**CHARACTERISTICS**

Transmission center frequency	4300 MHz
Altitude range	0-5000 ft 0-1500 m
Power supply	3-phase 115 V - 400 MHz
Consumption	60 W

**DESCRIPTION**

The installation consists of :

- a transmitter-receiver
- an indicator mounted on the instrument panel
- two antennas

Supplementary weight                      8.7 kg    -    19.2 lb

## SKIS

The SA 316 B helicopter tricycle landing gear can be readily fitted with a set of skis which permit operating the helicopter from ice or snow-covered surfaces (whether the snow is hard or soft).

### DESCRIPTION

The equipment includes 3-metal skis, reinforced at the rear and fitted to each wheel.

Each ski consists of a formed sheet metal panel, with an opening in the center for the wheel, stiffened by a welded-on structure.

Attachment of the ski is provided by long bolts passing through the M.L.G. stub axles and the nose gear wheel axle.

During flight, the skis are steadied about their attachment bolt by spring loaded cables connected to the shock strut.

Fittings are provided on the main gear skis for speedy installation using wing bolts of a spiked plate at the rear and a shoe at the front.

### DIMENSIONS

Length	4 ft 6 in.	(1.36 m)
Width	15 in.	(0.38 m)

#### Note :

The helicopter can be wheeled on the ground with the skis installed provided the spiked plates and shoes are removed.

Supplementary weight                      33.0 kg     -     72.7 lb

## FLOAT LANDING GEAR

For operation from a water base or as additional safety for flights over the sea, rivers and marshland, the helicopter can be fitted with a float gear in lieu of the tricycle landing gear.

### DESCRIPTION

The equipment consists of :

Two AERAZUR floats of rubberized nylon cloth secured together by two cross tubes to the aircraft structure. The rear cross tube carries two hydraulic shock absorbers connected to the body structure.

Each float is made up of 5 watertight cells and includes :

- on the outboard surface a bonded strip of rubberized linen fabric to prevent excessive wear.
- on the inboard surface, in line with the cabin door, a reinforcement of same material used as a footstep.

Each cell is provided with an air inflation cap and check-valve.

Inflation of each cell is performed with a foot-operated bellows and a hose connected to the inflation cap fitting.

The inflation pressure can be readily assessed from a removable pressure gauge plug. With inflation performed at any altitude (Z), the aircraft can fly and land safely at all altitudes between :

Z - 1500 ft (500 m) and Z + 5500 ft (1800 m)

### DIMENSIONS

	Floats		Helicopter
Length	15 ft 10 in (4.70 m)	overall height	11 ft 5 in (3.46 m)
Diameter	2 ft 4 1/2 in (0.72 m)	overall width (blades folded)	12 ft 10 1/4 in (3.92 m).

### Note :

Installation of the float gear requires prior incorporation of a minor modification to the front structure, under the cabin floor.

A lightweight dolly, of simple design, enables ground handling of the float geared aircraft.

Supplementary weight                      103.0 kg      -      224.9 lb

## EMERGENCY FLOATATION GEAR

The emergency floatation gear fitted to the helicopter is to keep the helicopter afloat in the event of ditching, so that the crew can be rescued and the aircraft recovered.

This gear is made up of two inflatable bags located on either side of the aircraft and practically centered about the main rotor axis. Their sitting relative to the cabin floor is 5 degrees nose-down. Their total capacity is 3,200 litres.

When folded, the floatation bags are stowed in two containers of elliptical form. They are held in position by canvass screens fastened together by breakable string. The containers are kept slightly apart from the fuselage so as to affect flight performance as little as possible. They are secured to the aircraft through four fuselage fittings. Fixed and removable reinforcement parts are incorporated in the structure.

Inflation of the bags is effected by means of four compressed-air-cylinders each fitted with two pyrotechnical heads. A cross-feed arrangement permits symmetric and even inflation of the bags. The gas cylinders are installed in a rack in the battery compartment.

The folding and fastening system of the canvass screens causes the rear end of the bags to come out first when the cylinders are fired.

Firing of the operating squibs is controlled from a button on the pilot collective-pitch lever. A switch with a red-colour guard is used for energizing the control circuit.

Inflation time is of the order of 8 to 10 seconds.

Keeping in mind the aircraft stability required, the containers have been positioned to ensure compatibility of the emergency floatation gear with the operated quick-mooring harpoon etc. , and to make it possible for the aircraft to land on its wheels (with some precautions being taken) in the event of inadvertent inflation of the bags in flight.

However, the emergency floatation gear cannot be installed concurrently with the following equipment :

Cargo carriers, SS 11, SS 12 missiles, rockets, Mk 44 torpedoes.

Supplementary weight	84.5 kg	-	186.3 lb
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# CASUALTY CARRYING EQUIPMENT

This equipment is designed for the carrying of two litter patients inside the cabin.

In addition, two casualties, or one casualty and a medical attendant, can sit in the front seats ; the middle seat or L.H. seat can be turned round to face rearwards after removing the dual controls (cyclic stick and collective-pitch lever), which enables the attendant to give medical attention to the litter patients (injection, transfusions, etc.).

## DESCRIPTION

The installation includes :

- a welded steel-tube front support hinged on two legs fitted to the cabin floor
- two hinged clamp assemblies secured to the rear cabin wall
- two elastic cords for securing the support legs
- four quick-disconnect straps.

There are provisions at the top of the cabin rear wall for quick removal and installation and stowage of this equipment.

## INSTALLATION OF LITTERS IN CABIN

Place the first litter on the cabin floor, using the slides provided on the floor, then lift the litter, resting it on the front support and engaging it with the rear clamp assemblies.

Slide the second litter into the cabin and fit it in the stop holes provided in the rear track. The straps are to be secured to the rings fitted to the cabin rear wall.

Various type litters can be used such as :

- NATO type
- French 1953 and 1958 types
- USA type (steel)
- USA folding type (in three sections)

Note :

When the litter installation is used, the cabin rear seat can be left in the cabin after folding it against the upper portion of the rear wall and securing it with the elastic cords provided.

Supplementary weight                      4.7 kg      -      10.3 lb (litters not included)



## EXTERNAL CARGO CARRIERS

---

### DESCRIPTION

Rectangular in shape, the external cargo carriers are tube, angle and sheet metal assemblies.

Two flanges welded to the bottom at the left end and two outboard lugs are at the right end and are used for securing the carriers to the fore and aft supports.

### LOCATION

The cargo carriers are installed under the cargo holds.

The load in each carrier must not exceed 330 lb (150 kg) distributed over the whole length of the carrier.

Supplementary weight                      11.0 kg     -     24.2 lb

# STABILIZED CARGO SLING

For the transportation of bulky loads up to 1650 lb (750 kg), a cargo sling can be readily fitted to the helicopter.

## DESCRIPTION

The equipment includes :

- a pyramidal frame made up of welded steel tubes connected to the fuselage by four cables.
- a SIREN A 90 A release unit hinged to the frame and, in the stowed position, held against the latter by elastic cords.

The release unit supports the load through a strop.

An electrical release control including :

- a master switch
- a toggle switch on pilot's cyclic control stick
- a "release" warning light on the instrument panel
- a junction box under the body structure.

A manual release control provided on pilot's collective-pitch lever and connected to the release unit by a cable and conduit assembly.

## OPERATION

Release can be actuated either electrically or manually.

A trigger on the release unit permits rearming of the mechanism on the ground.

Supplementary weight                      13.5 kg      -      29.8 lb

## RESCUE HOIST

The SA 316 B helicopter can be fitted with a hoist equipment for air-to-sea and air-to-ground rescue purposes. The standard aircraft is fitted with a hatch hinging downwards to make it easier for the survivor to enter the cabin.

### DESCRIPTION

The installation includes :

- a welded steel tube arm installed on the L.H. side of the body structure
- attached to the end of the arm, a 76 300 type AIR EQUIPEMENT hoist unit.  
This unit includes :
  - an air-operated motor operating in both directions
  - a servo-selector which admits compressed air into the motor in the desired direction
  - a 2-stage reduction gear
  - a disc-type automatic brake
  - a mechanical cable extractor
  - a cable tensioner which operates when the cable is fully reeled in and unreeled
  - an automatic switch off which operates when the hook approaches full high position
  - a load-sensing pressure switch ensures slow reel up when the load is zero or close to zero
  - a three-fold solenoid valve unit on the air inlet system
  - a load-carrying cable of approximately 80 ft (25 m) useful length terminating in a hook with a safety lock and topped with a ring which the rescued person can easily grasp
  - a pyrotechnic cable-cutter, for use in an emergency, controlled by a guarded switch fitted to the pilot's cyclic control stick.
- a compressed air system fed from the engine compressor
- a filter on the air supply line prevents fouling of the hoist motor by foreign matter
- an electrical system (partially included in the basic aircraft).
- a winchman's control handle
- a special footstep and a handgrip fitted to the cabin wall to make it easier for the survivor to enter the aircraft.

### CHARACTERISTICS

Maximum load	500 lb	-	225 kg
Lifting rate with	265 lb	-	120 kg : at S. L. : 0.6 m/sec ( 2ft/sec.)
			at 4000 m (13000 ft) 0.5 m/sec.
			(1.6 ft/sec.)

Supplementary weight	27.2 kg	-	59.9 lb
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## CABIN ARRANGEMENT FOR RESCUE AT SEA

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The hoist installation can be complemented by a readily-removable special cabin arrangement which prevents the effects of corrosion by salt-water.

### DESCRIPTION

The equipment includes :

- a metal plate protecting the pilot's cyclic pitch control stick
- four metal panels sealing the hinged hatch in order to protect the control system under the cabin floor.
- a rubberized-fabric "tub" laid on the cabin floor and including the necessary provisions for collecting and draining overboard the salt-water dripping from the survivors.
- a blank for the nose gear shock-absorber access hole.

### Note :

This equipment cannot be installed concurrently with the casualty-carrying equipment.

Supplementary weight                      21.5 kg    -    47.4 lb

# ENGINE AIR INTAKE SAND RETAINING FILTERS

---

At customer's request, the 2 engine air intakes can be fitted with sand retaining filters.

Sand retaining filters are intended to prevent internal erosion of the engine and, in particular, of the compressor wheel, by small sand and grit particles in suspension in the air or blown away from the ground by rotor downwash.

## DESCRIPTION

Each filter includes :

- a special horn installed in lieu of the standard engine air intakes. This horn is secured to the engine by two brace rods connected, at the front, to a special bracket and, at the rear, to the engine flange.
- an A.M.A. filter element and a seal secured to the horn by a quick-disconnect frame in order to permit ready cleaning or replacement of the filter element.

Clogging of the filter is checked on the ground using special tooling.

Supplementary weight                      30.0 kg    -    66.1 lb

# QUICK FOLDING AND UNFOLDING FOR ROTOR BLADES (Army Version)

A special equipment has been developed whereby the time required for main rotor blade folding and unfolding operations is kept down to a minimum. The Army version of this equipment is intended for the aircraft operated from steady platforms as rigging of rotor blade angle is made with a clinometer, which prevents the use of this equipment on a moving platform.

The equipment can be carried inside the helicopter under the rear seat.

The ladders for access to rotor head, R.H. and L.H. sides, now installed as standard items, are indispensable for using this equipment.

## DESCRIPTION

This equipment includes 2 categories of components :

The permanently mounted components :

- |               |   |
|---------------|---|
| on rotor head | pitch control locking system on the sleeves of the blades that are actually folded or unfolded that is on the "blue" and "yellow" blades, and equivalent ballast on the "red" blade guides for torquing crank arms on "blue" and "yellow" blades and equivalent ballast on "red" blade. |
| on tail boom  | fitting for blade supports.   |

The removable components including :

- a "red" blade trestle resting on tail boom fittings
- a "blue" blade support and a "yellow" blade support resting, when the blades are folded, on the "red" blade trestle.

Each of the supports is topped by a neoprene-padded clamp whose opening and closing is controlled by a rod.

Two wrenches for extracting the taper pins before blade folding

Two-torque crank arms for tightening the taper pin nuts after unfolding

A locking ring used as a distance piece between the drag clamper fixed levers in order to prevent the sleeves from coming against their "up" stop during folding.

A stowage bag.

## TIME REQUIRED FOR OPERATION

Folding and unfolding operations each require 2 minutes, inclusive of the time for loading or unloading the equipment in or from the cabin.

Weight of the installation	23.0 kg - 50.7 lb of which 5.0 kg - 11.0 lb permanently mounted equipment.
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# QUICK FOLDING AND UNFOLDING OF ROTOR BLADES (Navy Version)

A special equipment has been developed whereby the time required for main rotor blade folding and unfolding operations is kept down to a minimum. The Navy Version of this equipment is more particularly intended for the aircraft operated from a ship (moving platform) as rigging of rotor blade angle is made with a protractor and not with a clinometer.

The equipment can be carried inside the helicopter under the rear seat.

The ladders for access to rotor head, R.H. and L.H. sides, now installed as standard items, are indispensable for using this equipment.

## DESCRIPTION

This equipment includes 2 categories of components :

The permanently-mounted components :

- |                                 |   |
|---------------------------------|---|
| on rotor head                   | locking system on the sleeves of blades that are actually folded or unfolded, that is on the "blue" and "yellow" blades and equivalent ballast on the "red" blade sleeve. |
| on tail boom and body structure | Fittings for accommodation of blade stowing supports.   |

The removable components including :

- a "red" blade support resting on tail boom supports
- a "blue" blade support and a "yellow" blade support secured, when the blades are folded, to the body structure fittings.

Each of the 3 supports is topped by a neoprene-padded clamp whose opening and opening and closing is controlled by a rod.

Two taper pin distributors secured by a quick-disconnect fastener above the blade lower taper pin hole. These distributors provide for automatic insertion of the taper pins at the end of the unfolding cycle and prevent the pins from turning during tightening the taper pin nuts.

- two torque crank arms for tightening the taper pin nuts
- a taper pin extractor
- a stowage bag.

## TIME REQUIRED FOR OPERATION

With a crew of 2, the times required are as follow :

Folding : approximately 5 min.      Unfolding : approximately 2 min.

These times are inclusive of the time required for loading or unloading the equipment in or from the cabin

Weight of the installation 35.0 kg - 77.2 lb of which 2.0 kg - 4.4 lb permanently mounted equipment.

# HYDRAULIC DECK-LANDING HARPOON

This equipment has been designed for holding the helicopter fast to a grille fitted in the top portion of a landing platform so as to make it possible to operate the helicopter from small surface ships.

## DESCRIPTION

The installation includes :

- 1 harpoon made up of a jack and a release unit,
- 1 aircraft connecting structure
- hydraulic components for operation of the harpoon
- electric components for control of the system.

The harpoon can be controlled either manually or automatically. In this latter case, the harpoon is lowered and engages with the grille as soon as the collective-pitch control lever is moved to low pitch position.

## CHARACTERISTICS

Hydraulic system supply pressure	91 bars
Accumulator inflating pressure	25 bars
Piston travel	390 mm
Jack pull force	640/670 daN
Hooking time	1.2 to 1.7 sec.
Release time	instantaneous
Power required	3.3 A - 28 volts.

## OPERATING LIMITATION

Maximum acceleration of landing platform

Vertical acceleration	+ 1.5 g to + 0.4 g
Longitudinal acceleration	+ 0.2 g
Lateral acceleration	+ 0.2 g
Max. permissible roll	15°
Max. permissible pitch	5°
Max. landing angle in relation to roll axis	45°

### Note :

Landings are effected with the wheel brakes applied and take-offs are effected by selecting take-off power with the collective-pitch control lever before releasing the harpoon.

Supplementary weight                      36.0 kg - 79.4 lb



# ROUGH WEATHER MOORING KIT

## DESCRIPTION

This equipment used for mooring ship-based SA 316 B helicopters includes :

- 1 ring secured to the nose landing gear in lieu of the standard ring,
- 2 R.H. and L.H. side rings secured to the airframe above the landing gear cross the tube.
- 1 reinforcement part for the rear structure.

Each ring is hinged at its attachment point on the helicopter.

Provided mooring instructions are adhered to (locking of landing gear shock absorbers, position of aircraft in relation to mooring rings) the aircraft can be held down in the following conditions :

- Side wind with 100 kts force
- G - force limits at 1700 kg gross weight
  - vertically - 0.4 to + 2.2 g
  - horizontally 0.35 g all round

Supplementary weight                      4.0 kg    -    8.8 lb

# V.I.P. CABIN INTERIOR ARRANGEMENT

## DESCRIPTION

The V.I.P. installation includes :

- 1 carpet
- 1 special rear bench seat with retractable arm rests
- 1 set of decoration panels for :
  - the upper portion of the cabin
  - the rear wall
  - the bottom portion of the sliding doors
- 1 special covering for the front seats
- 1 footstep on the L. H. side.

### Note :

Rear bench seat can fit :  
3 people with arm-rests extended  
4 people with arm-rests retracted

Safety belts are provided in both cases

A set of protective covers is furnished for protection of the seats during maintenance operations.

Supplementary weight                      37.0 kg       -       81.6 lb