**COMANDO DA AERONÁUTICA**
**DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO**
**CENTRO TÉCNICO AEROESPACIAL**

**TYPE CERTIFICATE DATA SHEET Nº ER-9003**

Type Certificate Holder:

**AGUSTA S.p.A.**
Via Giovanni Agusta 520
Cascina Costa Samarate (VA) 21017
**ITALY**

ER-9003-02
Sheet 01

AGUSTA

A109A, A109AII,
A109C, A109E
A119, A109S

November 2005

This data sheet, which is part of Type Certificate No. 9003, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

## I - Model A109A (Normal Category), approved 16 July 1990

**ENGINE**

Two Rolls-Royce Corporation Model 250-C20B turboshaft engines.
Bendix gas producer fuel control DP-N2.
Bendix power turbine governor AL-AA1.
(see TCDS n° EM-8212)

**FUEL**

For all temperatures:
MIL-T-5624 grade JP-4
ASTM D-1655 Jet B
For temperatures above -18 ºC (0 ºF):
MIL-T-5624 grade JP-5;
ASTM D-1655 Jet A; and
ASTM D-1655 Jet A1.
(See Note 3)

**ENGINE LIMITS**

All Engine Operation

Takeoff (5 min):

| | |
|---|---|
| Torque: | 113% (410 N.m) |
| Shaft horse power: | 346 hp |
| Output shaft speed (N2): | 95-100% (5 715-6 016 rpm) |
| Gas producer speed (N1): | 105% (53 518 rpm) |
| Gas temperature: | 810ºC (1 490ºF) |

Maximum Continuous

| | |
|---|---|
| Torque: | 113% (410 N.m) |
| Shaft horse power: | 346 hp |
| Output shaft speed (N2): | 95-100% (5 715-6 016 rpm) |
| Gas producer speed (N1): | 105% (5351l8 rpm) |
| Gas temperature: | 738ºC (1 360ºF) |

**ENGINE LIMITS (Cont.)**

Single-Engine Operation (emergency)

Takeoff (5 min):

| | |
|---|---|
| Torque: | 131% (475 N.m.) |
| Shaft horse power: | 400 hp |
| Output shaft speed (N2): | 95-100% (5715-6016 rpm) |
| Gas producer speed (N1): | 105% (5351l8 rpm) |
| Gas temperature: | 810 oC (1490 oF) |

Maximum Continuous:

| | |
|---|---|
| Torque: | 126% (456 N.m) |
| Shaft horse power: | 385 hp |
| Output shaft speed (N2): | 95-100% (5715-6016 rpm) |
| Gas producer speed (N1): | 105% (53518 rpm) |
| Gas temperature: | 810 oC (1490 oF) |

(See RFM for rpm and temperature transient limits)

**ROTOR LIMITS**

| | |
|---|---|
| Power off: | |
| Maximum | 110% (424 rpm) |
| Minimum | 90% (346 rpm) |
| Power on: | |
| Maximum | 100% (385 rpm) |
| Minimum | 95% (365 rpm) |

**ROTOR SPEED WARNING**

| | |
|---|---|
| Low Speed | 95% (365 rpm) |
| High Speed | 105% (404 rpm) |

**AIRSPEED LIMITS (IAS)**

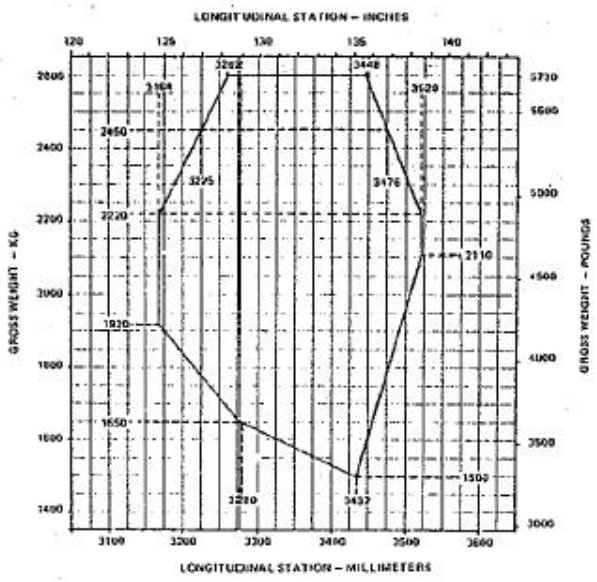
| | |
|---|---|
| Never exceed speed ($V_{NE}$): (See note 4) | 293 km/h (158 kt) |
| Maximum gear operating speed ($V_{LO}$): | 222 km/h (120 kt) |
| Maximum gear extended speed ($V_{LE}$): | 222 km/h (120 kt) |
| Maximum forward touchdown speed: | 74 km/h ( 40 kt) |

For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

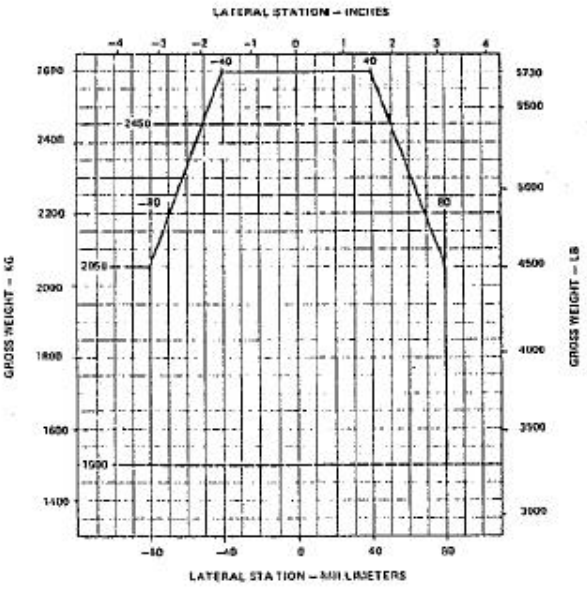
**C. G. RANGE (Gear Down)**

Longitudinal Limits

(Gear retraction moment is 4 kgm (347 lb.in) moving CG forward)




Lateral Limits



**MAXIMUM WEIGHT**

2 600 Kg (5 732 lb). See Note 4.

**MINIMUM CREW**

One pilot at Sta. 1 630 mm (64 in) to 1 695 mm (67 in). See Note 5.

**MAXIMUM PASSENGER**

7, for rotorcraft conforming to Agusta Report: 109-06-02:
1 at Sta. from 1630 mm (64 in) to 1695 mm (67 in)
3 at Sta. 2485 mm ( 98 in)
3 at Sta. 3265 mm (129 in)

0, for aircraft in "green" delivery configuration in accordance with Agusta Report 109-06-07.

**MAXIMUM BAGGAGE**

150 kg (330 lb) at Sta. 4 920 mm (194 in).

Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$).

Maximum load per tie-down fitting:
91 kg (200 lb).

**FUEL CAPACITY**

Total: 559 liters (148 US gal), in two tanks of 279.5 liters (74.2 US gal) each, at Sta. 3650 mm (144.0 in).

Usable: 550 liters (146 US gal).

See Note 1 for unusable fuel.

**OIL CAPACITY**

Engines: 7.7 liters (2 US gal) each engine, at Sta. 3053 mm (120 in).

Transmission: 12 liters (3.2 US gal) at Sta. 3 460 mm (136 in)

See Note 1 for undrainable oil.

**ALTITUDE LIMITS**

2 432 m (8 000 ft) (See Note 4)

**ROTOR BLADE AND CONTROL MOVEMENTS**

For rigging information refer to the model A109A Maintenance Manual.

## II - Model A109AII (Normal Category), approved 16 July 1990

**ENGINE**

Two Rolls-Royce Corporation Model 250-C20B or 250-C20R/1 turboshaft engines.
Bendix gas producer fuel control DP-N2.
Bendix power turbine governor AL-AA1.
(see TCDS n° EM-8212)

**FUEL**

For all temperatures:
MIL-T-5624 grade JP-4
ASTM D-1655 Jet B

**FUEL (Cont.)**

For temperatures above –18 °C (0 °F):
MIL-T-5624 grade JP-5
ASTM D-1655 Jet A
ASTM D-1655 Jet A1
(See Note 3)

**ENGINE LIMITS**

All Engine Operation

Takeoff (5 min)

| | |
|---|---|
| Torque | 121% (438 N.m) (-C20B engine) |
| Torque | 97% (438 M.m)(-C20R/1 engine) |
| Shaft horse power | 370 hp |
| Output shaft speed (N2) | 95-100% (5 715-6 016 rpm) |
| Gas producer speed (N1) | 105% (53 518 rpm) |
| Gas temperature | 810 °C (1 490 °F) |

Maximum Continuous

| | |
|---|---|
| Torque | 121% (438 N.m) (-C20B engine) |
| Torque | 97 % (438 M.m) (-C20R/1 engine) |
| Shaft horse power | 370 hp |
| Output shaft speed (N2) | 95-100% (5715-6016 rpm) |
| Gas producer speed (N1) | 105% (5358 rpm) |
| Gas temperature | 738°C (1360 °F) (-C20B engine) |
| Gas temperature | 752°C (1385 °F)(-C20R/1 engine) |

Single-engine operation (emergency)

| | |
|---|---|
| Torque | 137% (475 N.m.) (-C20B engine) |
| Torque | 137% (475 N.m.) (-C20B engine) |
| Shaft horse power | 420 hp |
| Output shaft speed (N2) | 95-100% (5 715-6 016 rpm) |
| Gas producer speed (N1) | 105% (53 518 rpm) |
| Gas temperature | 810°C (1 490 °F) |

See RFM for rpm and temperature transient limits.

**ROTOR LIMITS**

| | |
|---|---|
| Power off: | |
| Maximum | 110% (424 rpm) |
| Minimum | 90% (346 rpm) |
| Power on: | |
| Maximum | 100% (385 rpm) |
| Minimum | 95% (365 rpm) |

**ROTOR SPEED WARNING**

| | |
|---|---|
| Low Speed | 95% (365 rpm) |
| High Speed | 105% (404 rpm) |

**AIRSPEED LIMITS (IAS)**

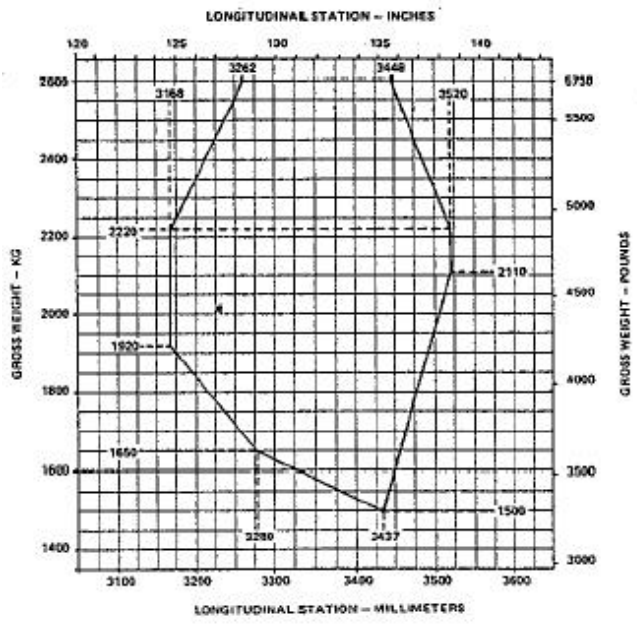
| | |
|---|---|
| Never exceed speed ($V_{NE}$) | 311 km/h (168 kt) |
| Maximum gear operating speed ($V_{LO}$) | 222 km/h (120 kt) |
| Maximum gear extended speed ($V_{LE}$) | 222 km/h (120 kt) |
| Maximum forward touchdown speed | 74 km/h ( 40 kt) |

For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

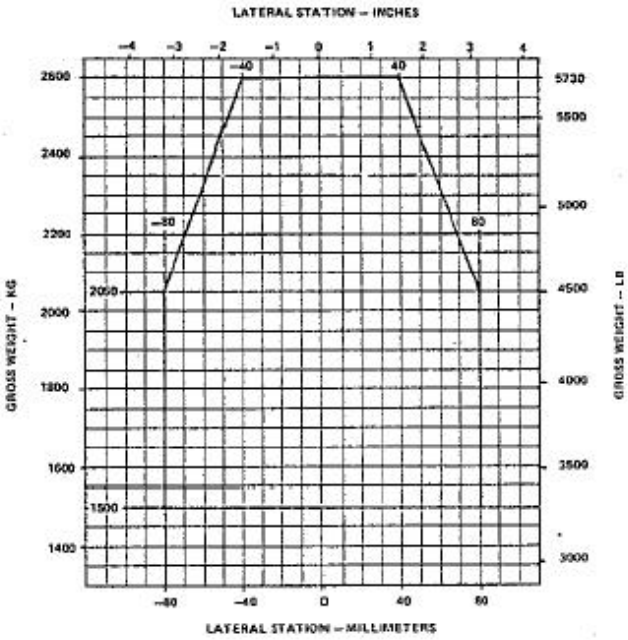
**C. G. RANGE (Gear Down)**

Longitudinal Limits

(Gear retraction moment is 4 kgm (347 lb.in) moving CG forward)




Lateral Limits




**MAXIMUM WEIGHT** 2 600 kg (5 732 lb)

**MINIMUM CREW** One pilot as Sta. 1 565mm (62 in) to 1 630 mm (64 in)

**MAXIMUM PASSENGER**

7, for rotorcraft conforming to Agusta Report: 109-06-02:
- 1 at Sta. from 1565 mm(62 in) to 1630 mm (64 in);
- 3 at Sta. 2 420 mm (95 in) facing forward or 3 at Sta 2 455 mm (97 in) facing aft.; and
- 3 at Sta. 3 265 mm (129 in).

0, for aircraft in "green" delivery configuration in accordance with Agusta Report 109-06-07.

**MAXIMUM BAGGAGE**

150 kg (330 lb) at Sta. 4 920 mm (194 in)
Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$)
Maximum load per tie-down fitting:
91 kg (200 lb)

**FUEL CAPACITY**

Total: 559 liters (148.4 US gal), in two tanks of 279.5 liters (74.2 US gal) each, at Sta. 3 652 mm (144.0 in).
Usable: 550 liters (146 US gal).
(See Note 1 for unusable fuel.)
(See Note 9 for fuel capacity with auxiliary fuel tank installation.)

**OIL CAPACITY**

Engines: 7.7 liters (2 US gal) each engine, at Sta. 3 053 mm (120 in).
Transmission: 12 liters (3.2 US gal) at Sta. 3 460 mm (136 in).
(See Note 1 for undrainable oil.)

**ALTITUDE LIMITS** 4 560 m (15 000 ft)

**ROTOR BLADE AND CONTROL MOVEMENTS** For rigging information refer to the model A109AII Maintenance Manual.

## III - Model A109C (Normal Category), approved 12 July 1995

**ENGINES** Two (2) Rolls-Royce Corporation Model 250-C20R/1 turboshaft engines.

Bendix gas producer fuel control DP-N2.

Bendix power turbine governor AL-AA1.

(See TCDS nº EM-8212.)

**FUEL** For all temperatures:

MIL-T-5624 grade JP-4
ASTM D-1655 Jet B

For temperatures above -18 ºC (0 ºF):

MIL-T-5624 grade JP-5
ASTM D-1655 Jet A
ASTM D-1655 Jet A1

(See Note 3)

**ENGINE LIMITS**

All Engine Operation

Takeoff (5 min)

| | |
|---|---|
| Torque | 104 % (468 N.m) |
| Shaft horse power | 395 hp |
| Output shaft speed (N2) | 95-100 % (5 715-6 016 rpm) |
| Gas producer speed (N1) | 105 % (53 518 rpm) |
| Gas temperature | 810ºC (1 490ºF) |

Maximum Continuous

| | |
|---|---|
| Torque | 100% (450 N.m) |
| Shaft horse power | 380 hp |
| Output shaft speed (N2) | 95-100% (5 715-6 016 rpm) |
| Gas producer (N1) | 105% (53 518 rpm) |
| Gas temperature | 752ºC (1 385ºF) |

Single-engine operation (emergency)

| | |
|---|---|
| Torque | 118 % (542 N.m.) |
| Shaft Horse Power | 450 hp |
| Output shaft speed (N2) | 95-100 % (5 715-6 016 rpm) |
| Gas producer (N1) | 105 % (53 5l8 rpm) |
| Gas temperature | 810ºC (1490ºF) |

(See RFM for rpm and temperature transient limits)

**ROTOR LIMITS**

Power off:
Maximum 110% (424 rpm)
Minimum 90% (346 rpm)

Power on:
Maximum 100% (385 rpm)
Minimum 95% (365 rpm)

**ROTOR SPEED WARNING**

Low Speed 95% (365 rpm)
High Speed 105% (404 rpm)

**AIRSPEED LIMITS (IAS)**

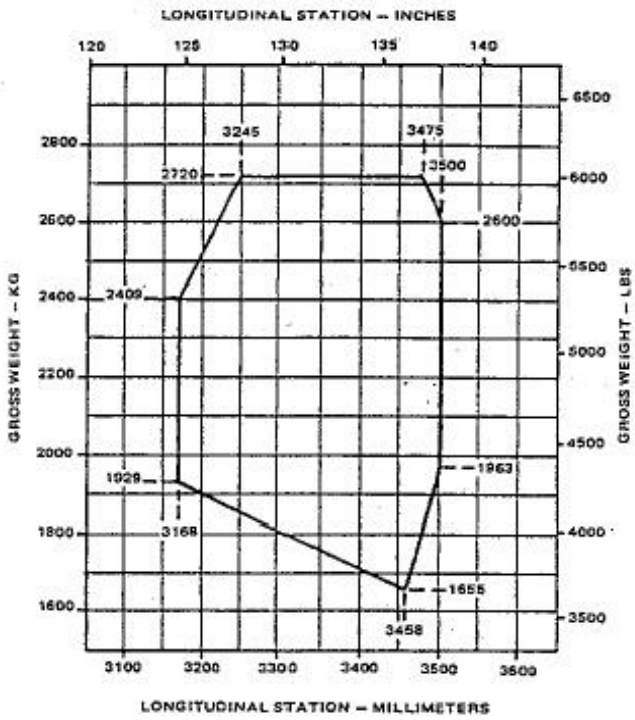
| | |
|---|---|
| Never exceed speed ($V_{NE}$) | 311 km/h (168 kt) |
| Maximum gear operating speed ($V_{LO}$) | 222 km/h (120 kt) |
| Maximum gear extended speed ($V_{LE}$) | 222 km/h (120 kt) |
| Maximum forward touchdown speed | 74 km/h ( 40 kt) |

For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

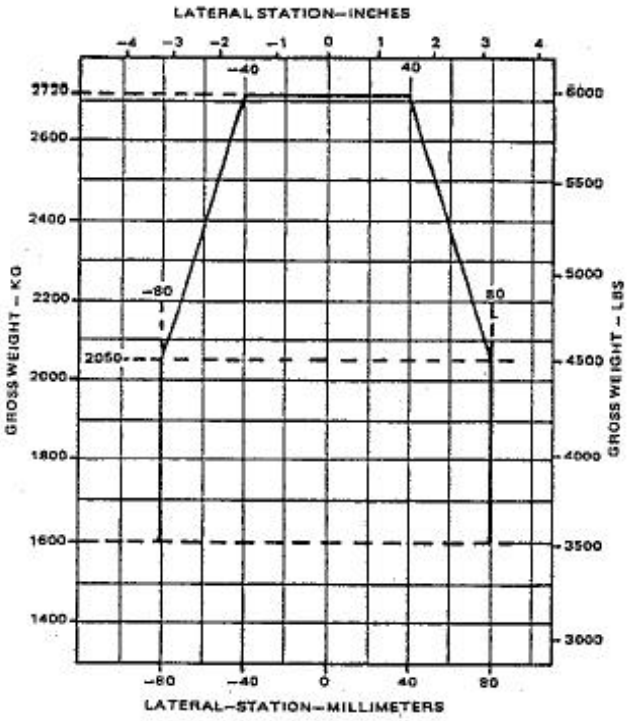
**C. G. RANGE (Gear Down)**

Longitudinal Limits

(Gear retraction moment is 4 kgm (347 lb.in) moving CG forward)




Lateral Limits




**MAXIMUM WEIGHT** 2720 kg (5997 lb)

**MINIMUM CREW** One pilot as Sta. 1 565 mm (62 in) to 1 630 mm (64 in)

**MAXIMUM PASSENGER** 7, for rotorcraft conforming to Agusta report: 109-06-02:
- 1 at Sta. from 1 565 mm (62 in) to 1 630 mm (64 in); (See Note 5)
- 3 at Sta. 2420 mm (95 in) facing forward or 3 at Sta 2 455 mm (97 in) facing aft; and
- 3 at Sta. 3 200 mm (126 in)

**MAXIMUM PASSENGER (Cont.)**
0, for aircraft in "green" delivery configuration in accordance with Agusta Report 109-06-07. See RFM.

**MAXIMUM BAGGAGE**
150 kg (330 lb) at Sta. 4920 mm (194 in)
Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$)
Maximum load per tie-down fitting:
91 kg (200 lb)

**FUEL CAPACITY**
Total: 559 liters (148 US gal), in two tanks of 279.5 liters (74.2 US gal) each, at Sta. 3652 mm (144.0 in).
Total usable: 550 liters (146 US gal)
(See Note 1 for unusable fuel.)
(See Note 8 for fuel capacity with auxiliary fuel tank installation.)

**OIL CAPACITY**
Engines: 7.7 liters (2 US gal) each engine, at Sta. 3 053 mm (120 in).
Transmission: 12 liters (3.2 US gal) at Sta. 3 460 (136 in).
(See Note 1 for undrainable oil.)

**ALTITUDE LIMITS**
4 560 m (15 000 ft)

**ROTOR BLADE AND CONTROL MOVEMENTS**
For rigging information refer to the model A109C Maintenance Manual.

## IV - Model A109E (Normal Category), approved 03 September 1997

**ENGINES**
Two (2) Pratt&Whitney Canada Inc. PW206C turboshaft engines.
FADEC control engines.
(See TCDS nº EM-9707).

**FUEL**
For all temperatures:
ASTM D-1655 Jet A, Jet A1, Jet A2, Jet B
Military specification (only for reference)
MIL-T-5624 grade JP-4, JP-5
MIL-T-83133 grade JP-8
For detailed information see Section I of the RFM.
(See Note 3)

**ENGINE LIMITS**

All Engine Operation

Takeoff

| | |
|---|---|
| Torque | 100 % (900 SHP at N2 100 %) |
| Output shaft speed (N2) | 102 % (6 120 rpm) |
| Gas producer speed (N1) | 98.7 % (57 250 rpm) |
| Gas temperature 5 min(TOT) | 863ºC (1 585ºF) |

Maximum Continuous

| | |
|---|---|
| Torque | 100 % (900 SHP at N2 100 %) |
| Output shaft speed (N2) | 100 % (6 060 rpm) |
| Gas producer speed (N1) | 97.4 % (56 500 rpm) |
| Gas temperature (TOT) | 820ºC (1 508ºF) |

**ENGINE LIMITS (Cont.)**

Single-engine operation (emergency)

2 ½ min.

| | |
|---|---|
| Torque | 114% (640 SHP at 100%) |
| Maximum Output shaft speed (N2) | 102% (6120 rpm) |
| Gas producer (N1) | 102.4% (59400 rpm) |
| Gas temperature (TOT) | 930 °C (1706 °F) |

Maximum Continuous

| | |
|---|---|
| Torque | 100 % (560 SHP at N2 100 %) |
| Output shaft speed (N2) | 100 % (6 000 rpm) |
| Gas producer speed (N1) | 100.4 % (58 250 rpm) |
| Gas temperature (TOT) | 885°C (1625°F) |

**ROTOR LIMITS**

Power off:

| | |
|---|---|
| Maximum | 110% (422 rpm) |
| Minimum | 90% (346 rpm) |

Power on all engine operative:

| | |
|---|---|
| Maximum | 102% (394 rpm) |
| Minimum | 99% (380 rpm) |

Power on single engine (OEI):

| | |
|---|---|
| Maximum | 102% (394 rpm) |
| Minimum | 90% (346 rpm) |

**ROTOR SPEED WARNING**

| | |
|---|---|
| Low Speed | 95.5% (367 rpm) |
| High Speed | 105.5% (405 rpm) |

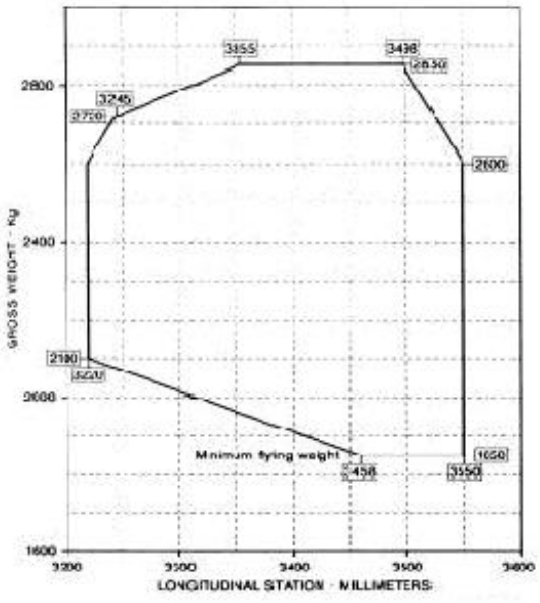
**AIRSPEED LIMITS (IAS)**

| | | |
|---|---|---|
| Never exceed speed ($V_{NE}$) - | Power on: | 311 km/h (168 kt) |
| | Power off/OEI: | 237 km/h (128 kt) |
| Maximum forward touchdown speed | | 74 km/h ( 40 kt) |

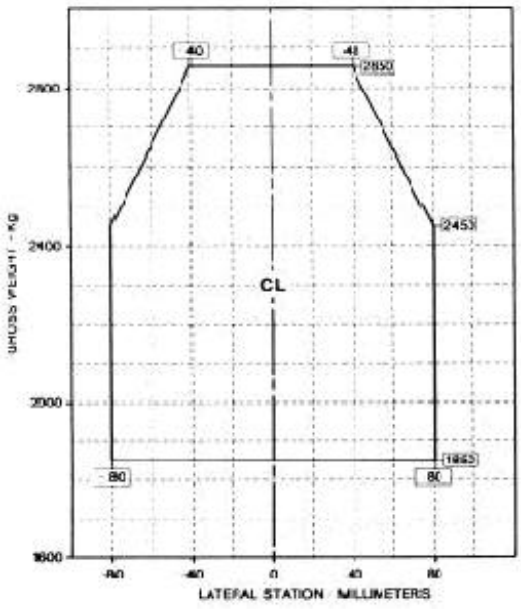
For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

**CG RANGE**

Longitudinal Limits




Lateral Limits



**MAXIMUM WEIGHT** 2 850 kg (6 283 lb)

**MINIMUM CREW** One pilot as Sta. 1 565 mm (62 in) to 1 630 mm (64 in)

**MAXIMUM PASSENGER** 7

**MAXIMUM BAGGAGE** 150 kg (330 lb) at Sta. 5 300 mm (209 in)
Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$)
Maximum load per tie-down fitting:
91 kg (200 lb)

**FUEL CAPACITY** Usable: 595 *l* (157 US gal)
(See Note 1 for unusable fuel)

**OIL CAPACITY** Engines: 5.12 liters (1.35 US gal) each engine.
Transmission: 11 liters (2.9 US gal)
(See Note 1 for undrainable oil)

**ALTITUDE LIMITS** 4 560 m (15 000 ft)

**ROTOR BLADE AND CONTROL MOVEMENTS** For rigging information refer to the model A109E Maintenance Manual.

**V – Model A119 (Normal Category), approved 03 August 2001**

**ENGINES** One (1) Pratt&Whitney Canada Inc. PT6B-37A turboshaft engine.
(See TCDS nº EM-2001T02)

**FUEL** For all temperatures:
ASTM D-1655 Jet A, Jet A1, Jet A2.
Military specification (only for reference)
MIL-T-5624 grade JP-5
MIL-T-83133 grade JP-8
For detailed information see Section II of the RFM.
(See Note 3)

**ENGINE LIMITS**

Takeoff

| | |
|---|---|
| Torque | 108.5 % (900 SHP at N2 100%) |
| Output shaft speed (N2) | 101 % (4 416 rpm) |
| Gas producer speed (N1) | 103.2 % (39 300 rpm) |
| Gas temperature 5 min.(ITT) | 810ºC (1490ºF) |

Maximum Continuous

| | |
|---|---|
| Torque | 100 % (830 SHP at N2 100 %) |
| Output shaft speed (N2) | 101 % (4 416 rpm) |
| Gas producer speed (N1) | 100.1 % (38 100 rpm) |
| Gas temperature (ITT) | 755ºC (1391ºF) |

**ROTOR LIMITS**

Power off:
- Maximum 110 % (422 rpm)
- Minimum 90 % (346 rpm)

Power on:
- Maximum 101 % (388 rpm)
  103 % (396 rpm) with torque <50 %
- Minimum 95 % (365 rpm)

**ROTOR SPEED WARNING**

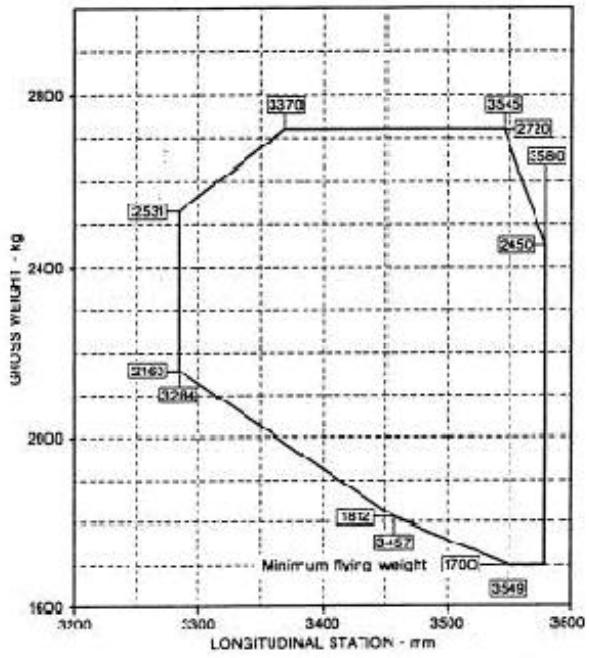
Low Speed 96 % (369 rpm)
High Speed 108 % (415 rpm)

**AIRSPEED LIMITS (IAS)**

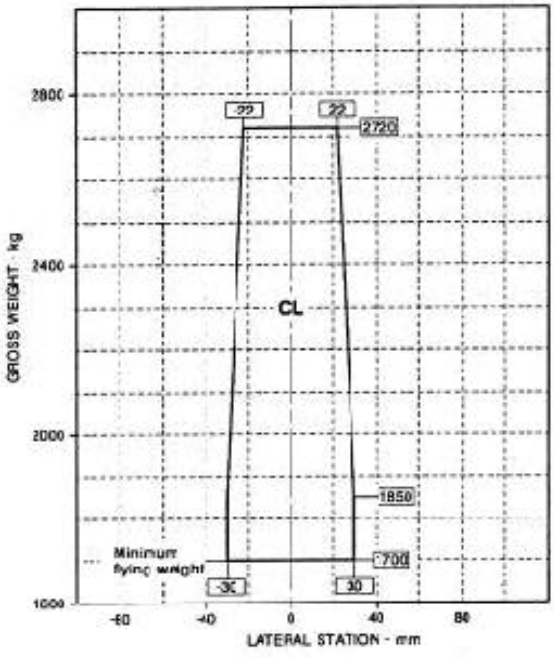
Never exceed speed ($V_{NE}$) 281 km/h (152 kt)
For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

**CG RANGE**

Longitudinal Limits




Lateral Limits




**MAXIMUM WEIGHT** 2 720 kg (5 997 lb)

**MINIMUM CREW** One pilot as Sta. 1 565 mm (62 in) to 1 630 mm (64 in).

**MAXIMUM PASSENGER** 7

**MAXIMUM BAGGAGE** 150 kg (330 lb) at Sta. 4 880 to 6 430 mm (192 to 253 in)
Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$)
For loading instruction see RFM.

**FUEL CAPACITY** Total usable: 595 liters (157 US gal)
(See Note 1 for unusable fuel)

**OIL CAPACITY**

Engines: 10.45 *l* (2.76 US gal).
Transmission: 10.3 *l* (2.72 US gal)
(See Note 1 for undrainable oil)

**ALTITUDE LIMITS**

4 572 m (15 000 ft)

**ROTOR BLADE AND CONTROL MOVEMENTS**

For rigging information refer to the model A119 Maintenance Manual.

**IV - Model A109S (Normal Category), approved 16 November 2005.**

**ENGINES**

Two (2) Pratt&Whitney Canada Inc. PW207C turboshaft engines.
FADEC control engines.
(See TCDS nº EM-9707).

**FUEL**

For all temperatures:
ASTM D-1655 Jet A, ASTM D-1655-82 Jet A1
Military specification (only for reference)
MIL-T-5624 grade JP-5
MIL-T-83133 grade JP-8
For detailed information see Section I of the RFM.
(See Note 3)

**ENGINE LIMITS**

All Engine Operation

Takeoff (5 min)

| | |
|---|---|
| Torque * | (2 x 735 SHP at N2 102 %) |
| Output shaft speed (N2) | 102 % (6 151 rpm) |
| Gas producer speed (N1) | 99.7 % (57 900 rpm) |
| Gas temperature 5 min (TOT) | 900ºC (1 652ºF) |

Maximum Continuous

| | |
|---|---|
| Torque * | (2 x 625 SHP at N2 102 %) |
| Output shaft speed (N2) | 102 % (6151 rpm) |
| Gas producer speed (N1) | 99.7 % (56 400 rpm) |
| Gas temperature (TOT) | 840ºC (1 540ºF) |

Single-engine operation (emergency)

2 ½ min.

| | |
|---|---|
| Torque * | (815 SHP at 102%) |
| Maximum Output shaft speed (N2) | 102% (6151 rpm) |
| Gas producer (N1) | 102.4% (59 750 rpm) |
| Gas temperature (TOT) | 970 ºC (1778 ºF) |

Maximum Continuous

| | |
|---|---|
| Torque * | (735 SHP at N2 102 %) |
| Output shaft speed (N2) | 102 % (6151 rpm) |
| Gas producer speed (N1) | 102 % (57900 rpm) |
| Gas temperature (TOT) | 900ºC (1652ºF) |

* All torque value are thermodynamic value

**ROTOR LIMITS**

Power off:
- Maximum 110% (422 rpm)
- Minimum 95% (364 rpm)

Power on all engine operative:
- Maximum 102% (392 rpm)
- Minimum 99% (380 rpm)

Power on single engine (OEI):
- Maximum 102% (392 rpm)
- Minimum 90% (346 rpm)

**ROTOR SPEED LIMITS**

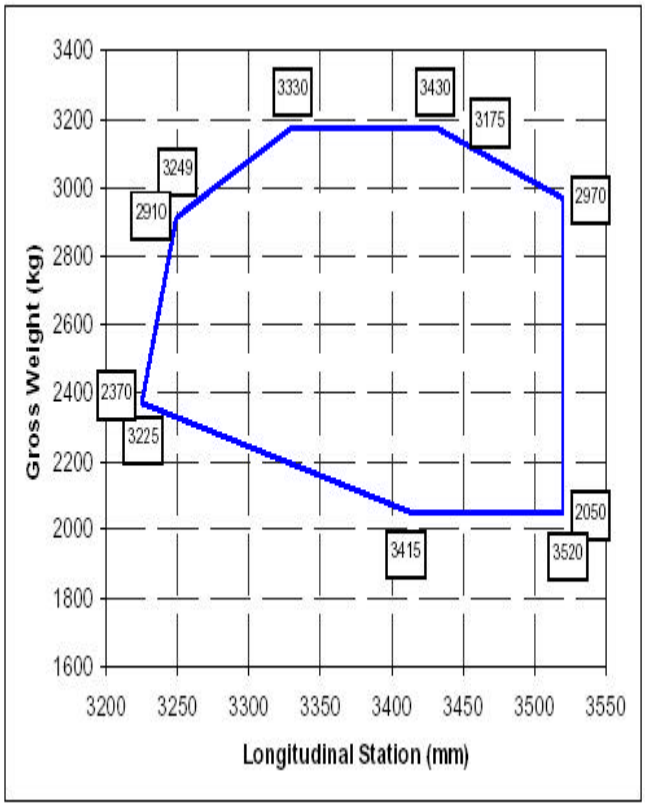
Low Speed 95.5% (367 rpm)
High Speed 105.5% (405 rpm)

**AIRSPEED LIMITS (IAS)**

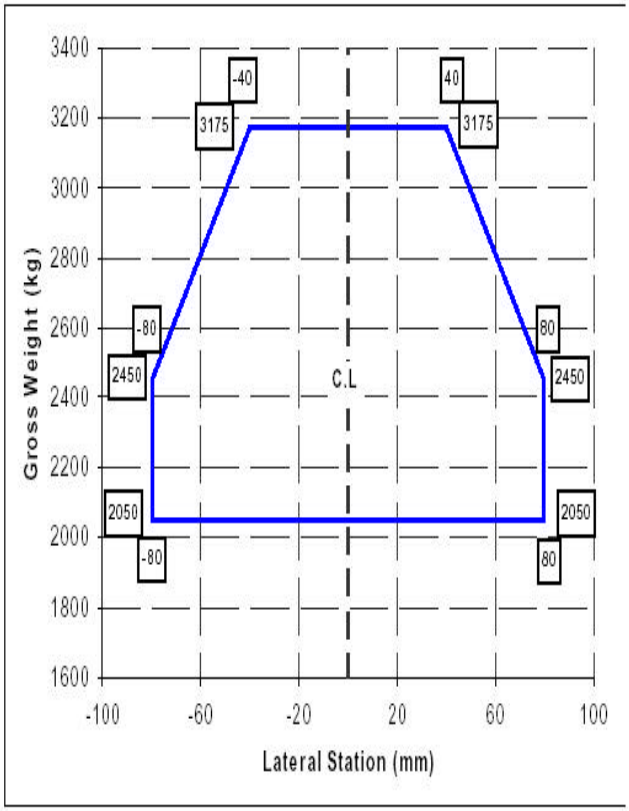
Never exceed speed ($V_{NE}$) - Power on: 311 km/h (168 kt)
Power off/OEI: 237 km/h (128 kt)
Maximum forward touchdown speed 74 km/h (40 kt)
For reduction of $V_{NE}$ with altitude and OAT, see the RFM.

**CG RANGE**

Longitudinal Limits




Lateral Limits




**MAXIMUM WEIGHT** 3175 kg (7000 lb)

**MINIMUM CREW** One pilot who shall operate the helicopter from the right crew seat.

**MAXIMUM PASSENGER** 7

**MAXIMUM BAGGAGE**

120 kg (265 lb) at Sta. 4 880 (192 in)
Maximum floor loading for baggage compartment:
500 kg/$m^2$ (102 lb/$ft^2$)
For loading instruction see RFM.

**FUEL CAPACITY**

Total usable: 575 liters (151 US gal)
(See Note 1 for unusable fuel)

**OIL CAPACITY**

Engines: 5,25 *l* (1,38 US gal).
Transmission: 11,7 *l* (2.72 US gal)
(See Note 1 for undrainable oil)

**ALTITUDE LIMITS**

6095 m (20 000 ft)

**ROTOR BLADE AND CONTROL MOVEMENTS**

For rigging information refer to the model A109S Maintenance Manual.

**DATA PERTINENT TO ALL MODELS:**

**DATUM**

For the models A109A, A109AII, A109C and A109E: longitudinal reference at station 0 (datum) is 1 835 mm (72 in) forward of the front jack point.
For the model A119: longitudinal station 0 (datum) is 1 785 mm (70 in) forward of the front jack point.
For all models: lateral reference at station 0 (datum) is (+-) 450 mm [(+-)18 in] inboard of each main jack point and coincides with the rotorcraft longitudinal plane of symmetry.

**LEVELING MEANS**

For the models A109A, A109AII, A109C and A119: plumb line from ceiling reference point to index plate on floor of passenger cabin.
For model A109E: the leveling is performed by water level put on the datum plate located on the cabin roof, right hand side.

**SERIAL NUMBERS ELIGIBLE**

A Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for a Brazilian Certificate of Airworthiness is made..

**IMPORT REQUIREMENTS**

A Brazilian Certificate of Airworthiness may be issued on the basis of on an RAI Export Certificate on Airworthiness (or a third country Export Certificate on Airworthiness, in case of used aircraft imported from such country), including the following statement:

"The aircraft covered by this certificate has been inspected, tested and found to be in conformity with the Brazilian approved type design as defined by the Brazilian Type Certificate nº. 9003 and in condition of safe operation".

The CTA reports H.10-0750-1 (A109A and A109AII), H.10-0752-0 (A109C), H.10-0753-2 (A109E) and H.10-0754-02 (A119), dated 05 May 1997, 23 Oct. 2001, 29 Jul. 1998 and 03 Aug. 2001 respectively or further revisions, contains the Brazilian requirements for the acceptance of these rotorcraft. (See Note 4)

**CERTIFICATION BASIS**

Brazilian Type Certificate Nº. 9003 issued on 16 July 1990 based on the RBHA 1370 (former) and RBHA 27 (current), which endorse the FAR Part 27 effective 01 February 1965 as amended by 27-1 through 27-8, plus the following:

For the models A109A, A109AII and A109C:

- RBHA/FAR 29.903(b) for category A engine isolation;
- RBHA/FAR 27.927(c) as amended by 27-12, elected to comply by the applicant;
- Special condition for the model A109 helicopter nº 27-54-EU-17, issued on 26 June 1973, accepted by CTA; and
- Equivalent level of safety for compliance with RBHA/FAR 27.1189, Shutoff means.

For the model A109E:

- RBHA/FAR 27.2 (Amdt. 28), 27.21 (Amdt. 21), 27.45 (Amdt. 21), 27.71 (Amdt. 21), 27.141 (Amdt. 21), 27.175 (Amdt. 21), 27.177 (Amdt. 21), 27.401 (Amdt. 27), 27.610 (Amdt. 21), 27.901 (Amdt. 23), 27.903 (Amdt. 23), 27.927 (Amdt. 23), 27.954 (Amdt. 23), 27.1091 (Amdt. 23), 27.1189 (Amdt. 23), 27.1305 (Amdt. 23), 27.1321 (Amdt. 13), 27.1322 (Amdt. 11), 27.1323 (Amdt. 13), 27.1325 (Amdt. 13), 27.1401 (Amdt. 10), 27.1505 (Amdt. 21), 27.1519 (Amdt. 21), 27.1521 (Amdt. 23), 27.1527 (Amdt. 14), 27.1529 (Amdt. 18), 27.1549 (Amdt. 23), 27.1555 (Amdt. 21), 27.1557 (Amdt. 11), 27.1581 (Amdt. 14), 27.1583 (Amdt. 16), 27.1585 (Amdt. 21) and 27.1587 (Amdt. 21).
- Special condition for the model A109 helicopter nº 27-54-EU-17, issued on 26 June 1973, accepted by CTA;
- Special condition Nº 27-ASW-3, High Intensity Radiated Fields, issued on 13 June 1996; and
- Equivalent level of safety for compliance with RBHA/FAR 27.175 (c), Static Longitudinal Stability (CTA FCAR HDE 01, dated 07 Aug. 1997).

For the Model A119:

- RBHA/FAR 27.2 (Amdt. 28), 27.21 (Amdt. 21), 27.25 (Amdt. 11), 27.29 (Amdt. 14), 27.33 (Amdt. 14), 27.45 (Amdt. 21), 27.65 (Amdt. 33), 27.71 (Amdt. 21), 27.79 (Amdt. 21), 27.141 (Amdt. 21), 27.143 (Amdt. 21), 27.151 (Amdt. 21), 27.161 (Amdt. 21), 27.173 (Amdt. 21), 27.175 (Amdt. 21), 27.177 (Amdt. 21), 27.307 (Amdt. 26), 27.321 (Amdt. 11), 27.337 (Amdt. 26), 27.339 (Amdt. 11), 27.351 (Amdt. 26), 27.361 (Amdt. 23), 27.391 (Amdt. 26), 27.395 (Amdt. 26), 27.397 (Amdt. 11), 27.401 (Amdt. 27), 27.427 (Amdt. 27), 27.501 (Amdt. 26), 27.571 (Amdt. 26), 27.602 (Amdt. 38), 27.603 (Amdt. 16), 27.610 (Amdt. 21), 27.613 (Amdt. 26), 27.663 (Amdt. 26), 27.672 (Amdt. 21), 27.727 (Amdt. 26), 27.779 (Amdt. 21), 27.783 (Amdt. 26), 27.807 (Amdt. 26), 27.863 (Amdt. 16), 27.865 (Amdt. 11), 27.901 (Amdt. 23), 27.903 (Amdt. 23), 27.917 (Amdt. 11), 27.923 (Amdt. 29), 27.927 (Amdt. 23), 27.939 (Amdt. 11), 27.951 (Amdt. 9), 27.954 (Amdt. 23), 27.955 (Amdt. 23), 27.963 (Amdt. 23), 27.967 (Amdt. 30), 27.975 (Amdt. 30), 27.977 (Amdt. 11), 27.997 (Amdt. 23), 27.1027 (Amdt. 23), 27.1041 (Amdt. 23), 27.1043 (Amdt. 14), 27.1045 (Amdt. 23), 27.1091 (Amdt. 23), 27.1093 (Amdt. 20), 27.1141 (Amdt. 33), 27.1143 (Amdt. 29), 27.1145 (Amdt. 12), 27.1189 (Amdt. 23), 27.1193 (Amdt. 23), 27.1305 (Amdt. 23), 27.1321 (Amdt. 13), 27.1322 (Amdt. 11), 27.1323 (Amdt. 13), 27.1325 (Amdt. 13), 27.1327 (Amdt. 13), 27.1337 (Amdt. 23), 27.1401 (Amdt. 10),

**CERTIFICATION BASIS (Cont.)**

27.1411 (Amdt. 11), 27.1501 (Amdt. 14), 27.1505 (Amdt. 21), 27.1519 (Amdt. 21), 27.1521 (Amdt. 23), 27.1525 (Amdt. 21), 27.1527 (Amdt. 14), 27.1529 (Amdt. 18), 27.1545 (Amdt. 16), 27.1547 (Amdt. 13), 27.1549 (Amdt. 23), 27.1555 (Amdt. 21), 27.1557 (Amdt. 11), 27.1559 (Amdt. 21), 27.1581 (Amdt. 14), 27.1583 (Amdt. 16), 27.1585 (Amdt. 21), 27.1587 (Amdt. 21) and Appendix A (Amdt. 24).

- Special condition for the model A109 helicopter nº 27-54-EU-17, issued on 26 June 1973, accepted by CTA;
- Special condition ENAC CRIF-01, High Intensity Radiated Fields; and
- RBHA 36, which corresponds to ICAO Annex 16 Vol. I, third edition, 1993.

For the Model A109S: FAR 27 Amendment 40 dated 09 May 2001, for new or changed parts with respect to the A109E with exception of FAR 27.863.

**REQUIRED EQUIPMENT**

The basic required equipment, as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the rotorcraft.

**NOTES:**

**NOTE 1** Weight and balance. Current weight and balance report, including list of equipment included in the certificated empty weight and loading instructions, must be provided for each rotorcraft at the time of original certification.
The certificated empty weight and corresponding CG location must include undrainable oil of zero and unusable fuel.
Undrainable oil is zero kg. for all models except for the A109E where the undrainable oil is 2.09 kg./4.61 lb (0.567 U.S.gal/2.15 liters) at the Sta. 4 280 mm (168.5 in).
Unusable fuel is 7 kg /15 lb (2.4 U.S. gal./9 liters) at sta. 3 750 mm (148°) for model A109A/AII/C, 8 kg/17.6 lb (2.66 U.S. gal./10 liters) at Sta 3 320 mm (131 in) for model A109E, and 8.15 kg /18 lb (2.72 U.S. gal./10.18 liters) at Sta 3 325 mm (131 in) for model A119.

**NOTE 2** Markings and placards. : all markings and placards for passenger information, external markings for emergency, and load limits in cargo/baggage compartments must be presented in Portuguese or bilingual. A list of these placards and the respective translations acceptable to CTA is provided in the reports referred in the Import Requirements item.

**NOTE 3** Continuing Airworthiness. Life-limited components and approved retirement times are listed in Chapter 4, "Airworthiness Limitations" of the Model A109A/A109AII/A109C/A109E/A119/A109S Maintenance Manuals and these components must be replaced as prescribed therein.

**NOTE 4** The differences of the Brazilian airplanes in relation to the basic EASA/ENAC type design are summarized below:

1. The Brazilian Airplane Flight Manual.
2. Markings and placards in the Portuguese language.

**NOTE 5** For operations below 4°C (40°F) of the Model A109A/A109AII/A109C, the use of anti-ice additive is authorized, but is not mandatory due to rotorcraft anti-ice fuel filter installation. Below 4°C (40°F), the AVGAS JET FUEL MIXTURE may be used as an alternative fuel. Refer to the Engine Manufacturer Operation and Maintenance Manual for AVGAS mix, cold weather fuel and blending instructions.
For A109E/A109S operation below 4°C (40°F) the use of anti-ice additive is authorized but not mandatory due to rotorcraft anti-ice fuel filter installation. For additive requirements and blending procedures refer to Pratt & Whitney manuals.
For A119 operation below 4°C (40°F) the use of anti-ice additive is not mandatory if the engine is equipped with a fuel heater.

**NOTE 6** For helicopters up to and including S/N 7114 not equipped with adjustable seat kit P/N 109-0700-49-1, moment arm of pilot and forward passenger seat is 1 650 mm (65 in) from Sta. 0.

**NOTE 7**

a. Model A109A helicopters S/N 7107, 7130 and subsequent are eligible for day and night IFR operations, with one pilot or with two pilots, when "IFR" installation Agusta Kit No. 109-0810-22, Rev. E or later RAI-approved revision, is incorporated and the helicopter is operated in accordance with Model A109A Flight Manual IFR Supplement No. 1 approved by RAI under date of 16 July 1978 and subsequent approved revisions.

b. Model A 109A II and A I 09C helicopters S/N 7256 and subsequent are eligible for day and night IFR operations with one or with two pilots when "IFR" installation Kit No. 109-0810-22, Rev. E or later RAI approved revision, is incorporated and the helicopter is operated in accordance with Model A109 II and A109C Rotorcraft Flight Manuals.

c. Model A109E Helicopters S/N 11001 and subsequent are eligible for day and night single pilot IFR operation when IFR installation Agusta Kit P/N 109-0810-22-143 and subsequent ENAC approved dash number is incorporated.
Certification Basis:
- Appendix B to FAA FAR 27 - Airworthiness criteria for helicopter instrument flight - Amdt. 27.19.
- FAA FAR 27 Paragraph 27.672 Amdt. 21; 27.1309 Amdt 21; 27.1329 Amdt 21; 27.1335 Amdt. 13.

The helicopter shall be operated in accordance with the Model A109E Flight Manual.

d. Model A109S Helicopters S/N 22001 and subsequent are eligible for day and night single pilot IFR operations.
The helicopter A109S shall be operated in accordance with the Model Flight Manual document number 109G0040A013.

**NOTE 8** Model A109A helicopters are eligible for operations at maximum weight of 2600 kg (5732 lb) when Agusta Technical Bulletin n° 109-20 and subsequent approved revisions are incorporated. For Model A109A helicopters not incorporating the Agusta Technical Bulletin N° 109-20, the following limitations are to be applied:

- Airspeed Limits
  Never exceed speed ($V_{NE}$) 311 km/h (168 kt) IAS.
  For reduction of $V_{NE}$ with altitude and OAT, see the RFM.
- CG Range (Gear down)
  Longitudinal limits
  Refer to diagram of model A109A for weights up to 2 450 kg (5 400 lb).
  Lateral limits
  Refer to diagram of model A109A up to 2 450 kg (5 400 lb)

**NOTE 8 (Cont.)**

- Maximum Weight
  2 450 kg (5 400 lb). See RFM.
  See RFM.
- Maximum Operating Altitude
  4 560 m (15 000 ft). See RFM.

**NOTE 9** For Models A109AII and A109C, the auxiliary fuel tank installation P/N 109-0810-56 adds a total fuel capacity of 40.8 US gal. (153 lit.) at sta. 4 708 mm (185.3 in) of which 150 liters (40 US gal) is usable.

**NOTE 10** The model A109E is eligible for operations on clear airfield and helipad with the "Equivalent Category A" when the installation P/N 109-0811-39 (all the approved dashes) is incorporated and the helicopter is operated in accordance with the Model A109E Flight Manual Supplement No. 12 Equivalent Category "A" operations.
In addition to the paragraphs of the Certification Basis the A109E must comply also with the following paragraphs:
JAR 29.45 (a), (b), (2) Amendment base; JAR 29.49 (a) Amendment base; JAR 29.51 Amendment base; JAR 29.53 Amendment base; JAR 29.55 Amendment base; JAR 29.59 Amendment base; JAR 29.60 Amendment base; JAR 29.61 Amendment base; JAR 29.62 Amendment base; JAR 29.64 Amendment base; JAR 29.65 (a) Amendment base; JAR 29.67 (a) Amendment base; JAR 29.75 Amendment base; JAR 29.77 Amendment base; JAR 29.79 Amendment base; JAR 29.81 Amendment base; JAR 29.85 Amendment base; JAR 29.87 (a) Amendment base; (JAR 29.571 Amendment base Fatigue evaluation of structure.) AC Material only: AC 29-2A Item 230 Paragraph 10; JAR 29.861 (a) Amendment base; JAR 29.901 (c) Amendment base; JAR 29.903(b), (c), (e) Amendment base; JAR 29.908 (a) Amendment base; JAR 29.927 (c)(1), JAR 29.953 (a) Amendment base; JAR 29.1027 (a) Amendment base; JAR 29.1045 (a)(1), (b), (c), (d), (f) Amendment base; JAR 29.1047 (a) Amendment base; JAR 29.1181 (a) Amendment base; JAR 29.1187 (e) Amendment base; JAR 29.1189 (c) Amendment base; JAR 29.1191 (a)(1) Amendment base; JAR 29.1193 (e) Amendment base; JAR 29.1195 (a), (d) Amendment base; JAR 29.1197 Amendment base; JAR 29.1199 Amendment base; JAR 29.1201 Amendment base; JAR 29.1305 (a)(6), (b) Amendment base; JAR 29.1309 (b)(2)(i), d) Amendment base; JAR 29.1323 (c) (1) Amendment base; JAR 29.1331 (b) Amendment base; JAR 29.1351 (d) (2) Amendment base; JAR 29.1587 (a) Amendment base.
The JAR requirements listed above meets the RBHA/FAR Part 27 and RBHA/FAR Part 29 CAT A requirements.

**NOTE 11** For the model A109E that has been certified with ditching provisions in accordance with RFM supplement n° 21 the certification basis has been updated adding with the following paragraphs: FAR 27.563 Amendment 26, FAR 27.801 Amendment 11, FAR 27.807 Amendment 26, FAR 27.1411 Amendment 11, FAR 27.1415 Amendment 11.

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