AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº ER-9603

Type Certificate Holder:

BELL HELICOPTER TEXTRON
A DIVISION OF TEXTRON CANADA
12800 Rue De L'Avenir
Mirabel, Quebec J7J 1R4
CANADA

ER-9603-01
Sheet 01

BELL

407

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This data sheet, which is part of Type Certificate No. 9603, 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 407 (Normal Category), approved 23 August 1997.

ENGINE

Rolls Royce Model 250-C47B with Chandler Evans EC-135 (FADEC) Fuel Control System.

FUEL

ASTM-D-6615 Type Jet B;
ASTM-D-1655 Jet A, and Jet A-1;
MIL-T-5624 Grade JP-4 (NATO F-40);
MIL-T-5624 Grade JP5 (NATO F-44); and
MIL-T-83133 Grade JP8 (NATO F-34).
See Rotorcraft Flight Manual for fuel mixture and fuel temperature limitations.

ENGINE LIMITS

	Torque Pressure	Output Shaft Speed
Takeoff (5 min.)	100% (91.4psi) (674 Shp)	100% (6 317 rpm)
Max. Continuous	93.5% (85.5psi) (630 Shp)	100% (6 317 rpm)
	Turbine Out Temp.	**Gás Producer rpm**
Takeoff (5 min.)	779ºC (1 434ºF)	105% (53 550 rpm)
Max. Continuous	727ºC (1 341ºF)	105% (53 550 rpm)

(See 407 Rotorcraft Flight Manual for Transient Limits)

ROTOR LIMITS

	Power Off	Power On
Maximum	442 rpm (Dual Tach Reading 107%)	413 rpm (Dual Tach Reading 100%)
Minimum	351 rpm (Dual Tach Reading 85%)	409 rpm (Dual Tach Reading 99%)

AIRSPEED LIMITS

Basic VNE is 140 KIAS sea level to 3 000 feet density altitude.
Decrease VNE for ambient conditions and internal loading in accordance with Airspeed Limitation Placard in the 407 Rotorcraft Flight Manual.
Also see the 407 Rotorcraft Flight Manual for VNE limits associated with peculiar operating conditions.

C.G. RANGE (NOTE 9)

Longitudinal C.G. Limits. cm (in):

Forward Limit (Internal Loading)
302.3 cm (+119.0 in) up to 2 041 kg (4 500 lb) changing linearly to 303.5 cm (+119.5 in) at 2 268 kg (5 000 lb).

Aft Limit (Internal Loading)
327.7 cm (+129.0 in) up to 2 268 kg (5 000 lb).

Lateral C.G Limits (Internal Loading)
Left -6.4 cm (-2.5 in) up to 1 588 kg (3 500 lb), changing linearly to -3.9 cm (1.5 in) at 2 268 kg (5 000 lb);
Right 7.6 cm (3.0 in) up to 1 588 kg (3 500 lb) changing linearly to 5.1 cm (2.0 in) at 2 268 kg (5 000 lb).

Aircraft when kit 407-706-020 (5250 lb kit) is installed:

Longitudinal C. G. limits cm (in)

Forward Limit (Internal Loading)
302.3 cm (+119.0 in) up to 2 041 kg (4 500 lb) changing linearly to 304.2 cm (+119.0 in) at 2 041 kg (4 500 lb) changing linearly to 304.2 cm (+119.8 in) at 2381 kg (5 250 lb).

Aft Limit (Internal Loading)
327.7 cm (+129.0 in) up to 2 268 kg (5 000 lb) changing linearly to 326.8 cm (+128.7 in) at 2381 kg (5 250).

Lateral C.G Limits (Internal Loading)
Left -6.4 cm (-2.5 in) up to 1 588 kg (3 500 lb), changing linearly to -3.5 cm (-1.4 in) at 2 381 kg (5 250 lb);

Right 7.6 cm (3.0 in) up to 1 588 kg (3 500 lb) changing linearly to 4.8 cm (1,9 in) at 2 381 kg (5 250 lb).

External Loading Limits for basic aircraft or when kit 407-706-020 is installed

Longitudinal C.G. Limits c (in.)

Forward Limit (External Loading)
302.3 cm. (+119.0 in.) up to 2 041 kg. (4 500 lb.) changing linearly to 306.1cm. (+120.5 in.) at 2 722 kg. (6 000 lb.).

Aft Limit (External Loading)
327.7 cm (+129.0 in.) up to 2 268 kg (5 000 lb.) changing linearly to 324.1 cm. (+127.6 in.) at 2 722 kg. (6 000 lb.)

Lateral C.G Limits (External Loading)
Left –10.2 cm (-4.0 in.) up to 2 268 kg (5 000 lb.), -3.9 cm (-1.5 in.) at 2 268 kg (5 000 lb),changing linearly to –2.3 cm (-0.9 in) at 2 722 kg (6 000 lb.)

Right 10.2 cm (4.0 in.) at 2 268 kg (5 000 lb)
5.2 cm (2.0 in.) at 2268 kg (5 000lb.), changing linearly to 3.6 cm (1.4 in.) at 2 722 kg. (6 000 lb.).

MAXIMUM WEIGHT	2 268 kg (5 000 lb.) (Internal Loading); 2 381 kg (5 250 lb.) (Internal Loading) when equipped with kit 407-706-020. 2 722 kg (6 000 lb.) (External Loading). (See Note 11 for external cargo configuration information)
ALTITUDE LIMITS	Maximum altitude is 20 000 feet density altitude. For other altitude limitations refer to Rotorcraft Flight Manual Supplements..
MAXIMUM BAGGAGE	Refer to 407 Rotorcraft Flight Manual for Loading schedule.
MAXIMUM PASSENGERS	Passengers 7 (includes minimum crew: 1 pilot).
FUEL CAPACITY	483.7 L (106.4 Imp. Gal) (127.8 US Gal) usable; 10.0 L (2.21 Imp. Gal) (2.65 US Gal) unusable.
OIL CAPACITY	5.21 L (4.58 Imp. quarts) (5.5 US quarts); Usable oil 2 US quarts in capacity. Undrainable oil, 1.6 lb.
S/N's 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.
PRODUCTION BASIS	Production Certificate No. 100.
DATUM	Station 0 (datum is 2.54 cm (1 in.) forward of most forward point of fuselage cabin nose section or 140.11 cm (55.16 in) forward of jack point centerline).
LEVELING MEANS	Plumb line from the underside of the engine pan through the access panel in the baggage bay roof to an index plate on the floor of the baggage compartment.
IMPORT ELIGIBILITY	A Brazilian Certificate of Airworthiness may be issued on the basis of a TCCA Export Certificate of Airworthiness (or a third country Export Certificate of Airworthiness, in case of issued aircraft import from such country), including the following statement: "The aircraft covered by this certificate have been examined and found to be in conformity with the Brazilian approved type design by the Brazilian Type Certificate Nº. 9603 and in condition of safe operation". The ANAC report H.10-0571-0, dated 16 August 1996, for rotorcraft model Bell 407, contains the Brazilian requirements for the acceptance of this rotorcraft.

CERTIFICATION BASIS

1) RBHA (Brazilian Requirements for Aeronautical Certification) 27, which endorses the FAR 27, dated 02 October 1964 Amendment 27-1 through 27-30 with the following exceptions;
   - RBHA/FAR 27.561(b)(3) at Amdt. 27-24;
   - RBHA/FAR 27.563 at Amdt. 27-25;
   - RBHA/FAR 27.785 at Amdt. 27-24;
   - RBHA/FAR 27.1093 at Amdt. 27-8; and
   - RBHA/FAR 27.173 at Amdt. 27-1;
   - RBHA/FAR 27.175 at Amdt. 27-1;
   - RBHA/FAR 27.562 n/a;
   - RBHA/FAR 27.1195 n/a
   - RBHA/FAR 27.952(b) (1) n/a.

2) RBHA (Brazilian Requirements for Aeronautical Certification) 36 which endorses the FAR 36 Amdt. 36-1 through 36-20.

3) Plus the following sections of the Canadian Airworthiness Manual, change 527-3 dated 3 January 1994 which have corresponding RBHA/FAR :
   - RBHA/FAR 527-3 dated 03 January 1994;
   - RBHA/FAR 527.1093(b)(i)(ii) and (iii) Induction System Icing Protection;
   - RBHA/FAR 527.1301-1 Rotorcraft Operations After Ground Cold Soak;
   - RBHA/FAR 527.1557(c)(3) Miscellaneous Markings and Placards;
   - RBHA/FAR 572.1581(c) Rotorcraft Flight Manual;
   - RBHA/FAR 527.1583(h) Operating Limitations.

4) Transport Canada Special Conditions
   High Intensity Radiated Fields (HIRF), SCA 95-02, 26 April 1995
   Lightning Protection, SCA 95-03, 26 April 1995.

5) Equivalent Safety exist with respect to the following regulations:
   - RBHA/FAR 27.307(b)(5), 27.723, 27.725; and 27.727 - Skid Type Undercarriages;
   - RBHA/FAR 27.952 - Forward Fuel Tank Drop Test;
   - RBHA/FAR 27.952 - Aft Fuel tank Drop Test;
   - RBHA/FAR 27.965(e)(1) and (2) - Fuel Tank Pressure Test;
   - RBHA/FAR 27.1305(p) - Engine Anti-Ice Annunciation.

REQUIRED EQUIPMENT

The basic required equipment, as described in the applicable airworthiness regulations (see Certification Basis) must be installed in the rotorcraft for certification. In addition, the following items of equipment are required:
(a) Engine Out Warning System.
(b) Outside air temperature gage.
(c) CTA approved Helicopter Flight Manual, dated 09 February 1996, or later revisions approved by ANAC.

NOTES:

NOTE 1 Weight and Balance: Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary must be provided for each helicopter at the time of original certification. The certificated empty weight and corresponding C.G. location must include unusable oil and unusable fuel.

NOTE 2 Markings and Placards: The following placard must be displayed in front of and in clear view of the pilot:

"THIS HELICOPTER MUST BE OPERATED IN ACCORDANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE ANAC APPROVED ROTORCRAFT FLIGHT MANUAL."

All placards required in the approved flight manual must be installed in the appropriate locations.

In addition, all markings and placards for passenger information under normal or emergency conditions must be in Portuguese (or English and Portuguese). External markings for emergency operation of doors, normal ground operation of cargo doors and servicing operations must be in Portuguese (or bilingual). Marking and placards indicating maximum loads in cargo and baggage compartments must be also presented in Portuguese (or bilingual). A list of these placards for the rotorcraft and the respective translations acceptable to ANAC is provided in the Annex II to the report H.10-0571-0, dated 16 August 1996 or later approved revision.

NOTE 3 The retirement times of critical parts may not be changed without Transport Canada engineering approval.

Refer to approved Chapter 4 of the Maintenance Manual, BHT-407-MM-1 for service lives of components applicable to the Model 407.

NOTE 4 The differences between the Brazilian rotorcraft in relation to the basic TCCA type design are summarized below:

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

NOTE 5 Information essential for proper maintenance is contained in appropriate Model Bell Helicopter Textron maintenance or overhaul manual.

NOTE 6 Power on rotor and engine output shaft speed limits increase (inversely with power as shown in approved Flight Manual for the Model 407).

NOTE 7 Reserved

NOTE 8 Reserved

NOTE 9 Installed battery capacity must be at least 17 ampere hours to insure fuel transfer pump operation and C.G. control after electrical system failure. A special emergency circuit for fuel transfer pump operations is provided.

NOTE 10 Model 407 serial numbers 53000-53003, 53005-53138, 53140-53279, 53281-53470, 53472-53900, 53911 and subsequent are manufactured by Bell Helicopter Textron, Mirabel, Quebec, Serial numbers 53139, 53280, 53471 data plates and aircraft have been destroyed, therefore removed from this TCDS.

NOTE 11 Model 407 helicopters equipped with an external cargo hook may operate to 2 722 kg (6 000 lb.) gross weight in accordance with the limits of Transport Canada approved Rotorcraft Flight Manual Supplement BHT-407-FMS-5, Rev. 1 Supplemental Cargo Hook P/N 206-706-341 dated 4 September 1998 or later approved revision validated by ANAC.

NOTE 12 Reserved.

NOTE 13 Bell Helicopter Textron Service Bulletins are approved by Transport Canada and include a statement to that effect. Such approval may be interpreted as approved by ANAC.

NOTE 14 Reserved.

NOTE 15 Reserved.

NOTE 16 Model 407 serial number 53901 to 53910 do not have a commercial certification.

for **CLÁUDIO PASSOS SIMÃO**
Gerente Geral, Certificação de Produtos Aeronáuticos
(Manager, Aeronautical Products Certification)