

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

**TYPE CERTIFICATE DATA SHEET No. ER-8107-02**

Type Certificate Holder:

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

ER-8107-02  
Sheet 01

BELL

222, 222B, 222U  
230  
430

March 2004

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This data sheet, which is part of Type Certificate No. 8107, 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 222 (Transport Category B), approved 22 December 1981.**

- ENGINE** 2 Avco Lycoming LTS-101-650C-2 or C-3  
(See TCDS No. EM-8215-01)
- FUEL** ASTM D1655 (JET B), MIL-T-5624 (JP-4), ASTM D1655 (JET A or JET A-1), MIL-T-5624 (JP-5), MIL-T-83133 (JP-8)  
(See Flight Manual for temperature limitations).
- ENGINE LIMITS** (Sea level, standard day) Normal operation:
- Take-off (5 min.):
- mast torque meter: 17 910 N.m (100%) (13 205 lb.ft)
  - main rotor mast speed: 348 rpm (100%)
  - gas generator speed: 49 638 rpm (103.7%)
  - measured gas temperature: 782°C (1 440°F)
- Maximum Continuous:
- engine torque meter: 17 910 N.m (100%) (13 205 lb.ft)
  - main rotor mast speed: 348 rpm (100%)
  - gas generator speed: 49 159 rpm (102.7%)
  - measured gas temperature: 763°C (1 405°F)
- One Engine Inoperative Limits:
- 2.5 minutes:
- engine torque meter: 519.5 N.m (100%) (383 lb.ft)
  - power turbine speed: 9 545 rpm (100%)
  - gas generator speed: 50 548 rpm (105.6%)
  - measured gas temperature: 832°C (1 530°F)
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**ENGINE LIMITS (Cont.)**

30 minutes:

- engine torque meter: 500.5 N.m (96%) (369 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 50 169 rpm (104.8%)
- measured gas temperature: 796°C (1 464°F)

Maximum Continuous Power:

- engine torque meter: 454.4 N.m (87%) (335 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 49 159 rpm (102.7%)
- measured gas temperature: 763°C (1 405°F)

Take-off and maximum continuous mast torque limits correspond to 875 shp at 348 rpm (9 545 rpm Power Turbine Speed) at the mast but not more than 539 shp from each engine. (See Note 6)

**ROTOR LIMITS**

Power Off:

- maximum 362 rpm (Tach reading 104%)
- minimum 313 rpm (Tach reading 90%)
- for weights more than 2 722 kg (6 000 lb)
- minimum 296 rpm (Tach reading 85%)
- for weights less than 2 722 kg (6 000 lb)

Power On:

- maximum 348 rpm (Tach reading 100%)
- minimum 338 rpm (Tach reading 97%)

**ROTOR TORQUE LIMITS**

Torque = 17 897 N.m (13 200 lb.ft) at 348 rpm

**AIRSPPEED LIMITS  
(INDICATED)**

Never Exceed Speed VNE:

- a) S/N 47005: VNE varies with pressure altitude and temperature.  
(See placard P/N 222-075-070).  
Maximum calibrated airspeed: 278 km/h (150 kt)
- b) S/N 47006 thru 47080:  
VNE 250 km/h (135 kt) sea level to 2 438 m (5 000 ft) density altitude. Decrease 5.5 km/h (3 kt) per 305 m (1 000 ft) Hd above 2 438 m (8 000 ft), for weights up to 3 470 kg (7 650 lb).  
VNE 241 km/h (130 kt) sea level to 914 m (3 000 ft) Hd. Decrease VNE 8.3 km/h (4.5 kt) per 305 m (1 000 ft) Hd above 914 m (3 000 ft) for weights 3470 kg to 3561 kg (7 651 lb to 7 850 lb). (See Note 9)
- c) S/N 47081 and sub.:  
278 km/h (150 kt) sea level to 914 m (3 000 ft) Hd. Decrease VNE 5.5 km/h (3 kt) per 305 m (1 000 ft) Hd above 914 m (3 000 ft), for weights below 3 561 kg (7 850 lb).

**C.G. RANGE**

- a)** Longitudinal limits: Landing gear extended (S/N 47005)  
 624.8 cm (246 in) to 650.2 cm (256 in) at 2 449 kg (5 400 lb)  
 minimum weight.  
 624.8 cm (246 in) to 650.2 cm (256 in) at 2 994 kg (6 600 lb).  
 627.4 cm (247 in) to 650.2 cm (256 in) at 3 175 kg (7 000 lb).  
 631.2 cm (248.5 in) to 645.2 cm (254 in) at 3 470 kg (7 650 lb)  
 maximum.  
 Landing gear retraction moment: -181 N.m (-1 600 in.lb) moving  
 CG 0.635 cm (0.25 in) forward when retracted at max. weight.  
 Straight line variation between points given.
- b)** Longitudinal limits: Landing gear extended (S/N 47006 and sub.)  
 626.6 cm (246.7 in) to 644.1 cm (253.6 in) at 2 359 kg (5 200 lb),  
 minimum weight.  
 622.3 cm (245 in) to 645.7 cm (254.2 in) at 2 540 kg (5 600 lb).  
 622.3 cm (245 in) to 650.2 cm (256 in) at 3 084 kg (6 800 lb).  
 630.4 cm (248.2 in) to 650.2 cm (256 in) at 3 561 kg (7 850 lb)  
 maximum.  
 Landing gear retraction moment: -181 N.m (-1 600 in.lb) moving  
 CG approximately 0.635 cm (0.25 in) forward when retracted at  
 max.weight.  
 Straight line variation between points given.
- c)** Lateral: (S/N 47006 thru 47080)  
 5.08 cm (2 in) left of  $C_L$   
 6.1 cm (2.4 in) right of  $C_L$

**MAXIMUM WEIGHT**

S/N 47005: 3 470 kg (7 650 lb)  
 S/N 47006 and sub.: 3 561 kg (7 850 lb). (See Note 8)

**MINIMUM CREW**

1 pilot at 419.1 cm (165 in)

**NUMBER OF SEATS**

S/N 47005:.....Maximum 8  
 S/N 47006 and sub.: .....Maximum 10

**MAXIMUM BAGGAGE**

227 kg (500 lb) between the fuselage stations 680.7 cm and 823.0  
 cm (268 in to 324 in).

**FUEL CAPACITY**

S/N\_47005: 594 liters (157 US Gal) at 670.6 cm (264 in) usable  
 S/N 47006 thru 47023: 671 liters (177.2 US Gal) at 671.3 cm  
 (264.3 in) usable.  
 S/N 47024 and sub.: 710 liters (187.5 US Gal) at 671.1 cm  
 (264.2 in) usable.  
 See Note 1 for data on unusable fuel.

<b>OIL CAPACITY</b>	14 liters (3.7 US Gal) at 685.8 cm (270 in) 3.78 liters (1 US Gal) usable (included in cap.) See Note 1 for undrainable oil.
<b>MAXIMUM OPERATING ALTITUDE (PRESSURE)</b>	6 096 m (20 000 ft) for 3561 kg (7 850 lb) max. weight. See RFM Revision 5.
<b>SERIAL NUMBERS ELIGIBLE</b>	47005 through 47130

## **II - Model 222B (Transport Category B), approved 18 August 1988.**

<b>ENGINE</b>	2 Avco Lycoming LTS-101-750C-1 (See TCDS No. EM-8215-01)
<b>FUEL</b>	ASTM D1655 (JET B), MIL-T-5624 (JP-4) ASTM D1655 (JET A or JET A-1), MIL-T-5624 (JP-5), MIL-T-83133 (JP-8) (See Flight Manual for temperature limitations).
<b>ENGINE LIMITS (Sea level, standard day)</b>	Normal operation: Take-off (5 min.):* <ul style="list-style-type: none"><li>- mast torque meter: 18 934 N.m (100%) (13 960 lb.ft)</li><li>- main rotor mast speed: 348 rpm (100%)</li><li>- gas generator speed: 49 830 rpm (104.1%)</li><li>- measured gas temperature: 786°C (1 447°F)</li></ul> Maximum Continuous: <ul style="list-style-type: none"><li>- mast torque meter: 18 934 N.m (100%) (13 960 lb.ft)</li><li>- main rotor mast speed: 348 rpm (100%)</li><li>- gas generator speed: 42 255 rpm (102.9%)</li><li>- measured gas temperature: 765°C (1 409°F)</li></ul> One Engine Inoperative Limits: 2.5 minutes: <ul style="list-style-type: none"><li>- engine torque meter: 547.9 N.m (100%) (404 lb.ft)</li><li>- power turbine speed: 9 545 rpm (100%)</li><li>- gas generator speed: 50 787 rpm (106.1%)</li><li>- measured gas temperature: 822°C (1 511°F)</li></ul> 30 minutes: <ul style="list-style-type: none"><li>- engine torque meter: 533 N.m (97.3%) (393 lb.ft)</li><li>- power turbine speed: 9 545 rpm (100%)</li><li>- gas generator speed: 50 165 rpm (104.8%)</li><li>- measured gas temperature: 800°C (1 472°F)</li></ul>

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**ENGINE LIMITS (Cont.)****Maximum Continuous Power**

- engine torque speed: 473.3 N.m (86.4%) (349 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 49 255 rpm (102.9%)
- measured gas temperature: 765°C (1 409°F)
- Measured Gas Temperature (MGT) Transient Limits
  - Start: 899°C (1 650°F)
  - 12 Second Transient: 832°C (1 530°F)

Take-off and maximum continuous mast torque limits correspond to 925 shp at 348 rpm (9 545 rpm Power Turbine Speed) at the mast but not more than 582 shp from each engine. (See Note 6)

**ROTOR LIMITS****Power Off**

- minimum transient: 285 rpm (82%)
- minimum (GW less than 2722 kg (6 000 lb)): 296 rpm (85%)
- minimum (GW 2722 kg (6 000 lb) or greater): 313 rpm (90%)
- maximum: 362 rpm (104%)
- maximum Transient: 372 rpm (107%)

**Power On**

- minimum transient: 313 rpm (90%)
- minimum continuous: 338 rpm (97%)
- maximum continuous: 348 rpm (100%).
- maximum transient: 357 rpm (102.5%)
- max. overspeed - mast torque:
  - 358 rpm (103%)
  - 50% or lower (5 Min. Limit)

**AIRSPPEED LIMITS  
(INDICATED)**

S/N 47131 and sub.: VNE varies with pressure altitude and temperature. (See placard P/N 222-075-070). VNE at 914 m (3 000 ft) Hd and below is 278 km/h (150 kt).

VNE power off 148 km/h (80 kt)

VLO 222 km/h (120 kt) for landing gear operations

VLE 259 km/h (140 kt) for landing gear extended

VNE 185 km/h (100 kt) for one engine inoperative (OEI)  
(See Note 16)

VNE 222 km/h (120 kt) for mast torques over 94.6% (See Note 16)

Sideward and rearward flights - 55 km/h (30 kt)

**C.G. RANGE****a) Longitudinal limits:**

Landing gear retraction moment: -181 N.m (-1 600 lb.ft) moving CG approximately 0.635 cm (0.25 in) forward when retracted at max. weight.

624.6 cm (245.9 in) to 644.9 cm (253.9 in) at 2 449 kg (5 400 lb)

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<b>C.G. RANGE (Cont.)</b>	622.3 cm (245 in) to 645.7 cm (254.2 in) at 2 540 kg (5 600 lb) 622.3 cm (245 in) to 650.2 cm (256 in) at 3 084 kg (6 800 lb) 630.7 cm (248.3 in) to 6 502 cm (256 in) at 3 742 kg (8 250 lb) (maximum for internal loads) Straight line variation between points given above.
<b>b) Lateral Limits:</b>	
	6.1 cm (2.4 in) right of CL from Sta. 637.5 cm to 650.2 cm (251 in to 256 in)
	1.9 cm (0.75 in) right of CL at Sta. 622.3 cm (245 in)
	3.175 cm (1.25 in) left of CL at Sta. 622.3 cm (245 in)
	5.1 cm (2 in) left of CL from Sta. 625.5 cm to 630.2 cm (246.25 in to 248.1 in)
	2.54 cm (1 in) left of CL at Sta. 650.2 cm (256 in)
	Straight line variation between points given above.
<b>MAXIMUM WEIGHT</b>	3 742 kg (8 250 lb)
<b>MINIMUM CREW</b>	1 pilot at 419.1 cm (165 in)
<b>NUMBER OF SEATS</b>	10 occupants maximum
<b>MAXIMUM BAGGAGE</b>	227 kg (500 lb) between Sta. 680.7 cm to 823.0 cm (268 in to 324 in)
<b>FUEL CAPACITY</b>	710 liters (187.5 US Gal) at 671.1 cm (264.2 in) usable. 7.3 kg (16 lb) at 644.6 cm (253.8 in) unusable. See Note 1 for data on unusable fuel.
<b>OIL CAPACITY</b>	14 liters (3.7 US Gal) at 685.8 cm (270 in) 3.8 liters (1.0 US Gal) usable. See Note 1 for undrainable oil.
<b>MAXIMUM OPERATING ALTITUDE (PRESSURE)</b>	6 096 m (20 000 ft)
<b>SERIAL NUMBERS ELIGIBLE</b>	47131 and subsequent.

**III - Model 222U (Transport Category B), approved 18 August 1988.**

<b>ENGINE</b>	2 Avco Lycoming LTS-101-750C-1 (See TCDS No. EM-8215-01)
<b>FUEL</b>	ASTM D1655 (JET B), MIL-T-5624 (JP-4) ASTM D1655 (JET A or JET A-1), MIL-T-5624 (JP-5), MIL-T-83133 (JP-8) (See Flight Manual for temperature limitations) (See Note 17)

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**ENGINE OPERATING LIMITS**

(Sea level, standard day)

Normal operation:

Take-off (5 min.):

- mast torque meter: 18 934 N.m (100%) (13 960 lb.ft)
- main rotor mast speed: 348 rpm (100%)
- gas generator speed: 49 830 rpm (104.1%)
- measured gas temperature: 786°C (1 447°F)

Maximum Continuous:

- mast torque meter: 18 934 N.m (100%) (13 960 lb.ft)
- main rotor mast speed: 348 rpm (100%)
- gas generator speed: 42 255 rpm (102.9%)
- measured gas temperature: 765°C (1 409°F)

One Engine Inoperative Limits:

2.5 minutes:

- engine torque meter: 547.9 N.m (100%) (404 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 50 787 rpm (106.1%)
- measured gas temperature: 822°C (1 511°F)

30 minutes:

- engine torque meter: 533 N.m (97.3%) (393 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 50 165 rpm (104.8%)
- measured gas temperature: 800°C (1 472°F)

Maximum Continuous Power:

- engine torque speed: 473.3 N.m (86.4%) (349 lb.ft)
- power turbine speed: 9 545 rpm (100%)
- gas generator speed: 49 255 rpm (102.9%)
- measured gas temperature: 765°C (1 409°F)
- measured gas temperature (MGT) transient limits
  - Start: - 899°C (1 650°F)
  - 12 Second Transient: - 832°C (1 530°F)

Take-off and maximum continuous mast torque limits correspond to 925 shp at 348 rpm (9 545 rpm Power Turbine Speed) at the mast but not more than 582 shp from each engine. (See Note 6)

**ROTOR LIMITS**

Power Off

- minimum transient: 285 rpm (82%)
- minimum (GW less than 27 22 kg (6 000 lb)): 296 rpm (85%)
- minimum (GW 2 722 kg (6 000 lb) or greater): 313 rpm (90%)
- maximum: 362 rpm (104%)
- maximum transient: 372 rpm (107%)

**ROTOR LIMITS**

## Power On

- minimum transient: 313 rpm (90%)
- minimum continuous: 338 rpm (97%)
- maximum continuous: 348 rpm (100%)
- maximum transient: 357 rpm (102.5%)
- max. overspeed - mast torque 50% or lower (5 min limit):  
358 rpm (103%)

**AIRSPEED LIMITS  
(INDICATED)**

S/N 47501 and sub.: VNE varies with pressure altitude and temperature. (See placard P/N 222-075-208). VNE at 914 m (3 000 ft) Hd and below is 278 km/h (150 kt).

VNE power off 148 km/h (80 kt)

VNE 185 km/h (100 kt) for one engine inoperative (OEI)  
(See Note 16)

VNE 222 km/h (120 kt) for mast torques over 94.6%. (See Note 16)

Sideward and rearward flight - 55 km/h (30 kt)

**C. G. RANGE****a) Longitudinal limits:**

624.6 cm (245.9 in) to 644.9 cm (253.9 in) at 2 449 kg (5 400 lb)

622.3 cm (245 in) to 645.7 cm (254.2 in) at 2 540 kg (5 600 lb)

622.3 cm (245 in) to 650.2 cm (256 in) at 3 084 kg (6 800 lb)

630.7 cm (248.3 in) to 650.2 cm (256 in) at 3 742 kg (8 250 lb)  
(maximum weight for Internal loads).

Straight line variation between points given above.

**b) Lateral limits:**

6.1 cm (2.4 in) right of CL from Sta. 637.5 cm to 650.2 cm (251 in to 256 in)

1.9 cm (0.75 in) right of CL at Sta. 622.3 cm (245 in)

3.175 cm (1.25 in) left Of CL at Sta. 622.3 cm (245 in)

5.1 cm (2 in) left of CL from Sta. 625.5 cm to 630.2 cm (246.25 in to 248.1 in)

2.54 cm (1 in) left of CL at Sta. 650.2 cm (256 in)

Straight line variation between points given above.

**MAXIMUM WEIGHT**

3 742 kg (8 250 lb). See Note 15

**MINIMUM CREW**

1 pilot 419.1 cm (165 in)

**NUMBER OF SEATS**

10 occupants maximum

**MAXIMUM BAGGAGE**

227 kg (500 lb) between sta. 680.7 cm to 823.0 cm (268 in to 324 in)

**FUEL CAPACITY**

935 liters (247.1 US Gal) at 668.8 cm (263.3 in), usable - 6.8 kg (15 lb) at 644.6 cm (253.8 in), unusable.

See Note 1 for data on unusable fuel.



<b>OIL CAPACITY</b>	14 liters (3.7 US Gal) at 685.8 cm (270 in) 3.8 liters (1.0 US Gal) usable. See Note 1 for undrainable oil.
<b>MAXIMUM OPERATING ALTITUDE (PRESSURE)</b>	6 096 m (20 000 ft)
<b>SERIAL NUMBERS ELIGIBLE</b>	47501 and subsequent.

**IV - Model 230 (Transport Category A and B), approved 27 May 1993.**

<b>ENGINES</b>	2 Allison 250-C30G/2
<b>FUEL</b>	ASTM D1655 (JET B), MIL-T-5624 (JP-4), ASTM D1655 (JET A or JET A-1), MIL-T-5624 (JP-5), MIL-T-83133 (JP-8) (See Flight Manual for temperature limitations). (See Note 17)
<b>ENGINE LIMITS</b>	All Engines Operating:  Take-off (5 min.): - mast torque meter: 925 SHP (100%) - main rotor mast speed: 348 rpm (100%) - gas generator speed: 53 550 rpm (105%) - measured gas temperature: 767.8°C(1 414°F)  Maximum Continuous:  Take-off (5 min.): - mast torque meter: 875 SHP (94.6%) - main rotor mast speed: 348 rpm (100%) - gas generator speed: 53 550 rpm (105%) - measured gas temperature: 715.6°C(1 320°F)  One Engine Inoperative:  2.5 Min. Power - engine torque meter: 734 SHP (100%) - output shaft speed: 9 545 rpm (100%) - gas generator speed: 53 550 rpm (105%) - measured gas temperature: 825.6°C (1 518°F)  30 Min. Power - engine torque meter: 714 SHP (97.3%) - output shaft speed: 9 545 rpm (100%) - gas generator speed: 53 550 rpm (105%) - measured gas temperature: 797.8°C (1 468°F)

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<b>ENGINE LIMITS (Cont.)</b>	Maximum Continuous - engine torque power: 676 SHP (100%) - output shaft meter: 9 545 rpm (100%) - gas generator speed: 53 550 rpm (105%) - measured gas temperature: 767.8°C (1 414°F)
<b>ROTOR LIMITS</b>	See models 222B and 222U
<b>AIRSPEED LIMITS (IAS)</b>	See models 222B and 222U
<b>MAXIMUM WEIGHT (mass)</b>	Internal 3810 kg (8 400 lb) External 3810 kg (8 400 lb)
<b>MINIMUM CREW</b>	1 pilot
<b>NUMBER OF SEATS</b>	Maximum 10
<b>MAXIMUM BAGGAGE</b>	226.8 Kg (500 lb)
<b>MAXIMUM OPERATING ALTITUDE (PRESSURE)</b>	6 096 m (20 000 ft)
<b>MAXIMUM TAKE-OFF AND LANDING ALTITUDE</b>	14 000 feet density altitude
<b>OUTSIDE AIR TEMP LIMITS (OAT) (Sea Level)</b>	-45° + 51.7° (°C) -49° + 125° (°F) See RFM for variation with altitude
<b>FUEL CAPACITY</b>	Wheel LG usable: 709.8 Litres (187.5 U.S. Gals) Skid LG usable: 935.4 Litres (247.1 U.S. Gals)
<b>ENGINE OIL TANK CAPACITY (Per Engine)</b>	Total: 6.1 Litres (1.61 U.S. Gals) Usable: 1.9 Litres (0.50 U.S. Gals)
<b>CERTIFICATION BASIS</b>	FAR Part 29 dated 1 February 1965, (Transport Category A & B) amendment 29-1 through 29-9 plus the following: Amendment 29-10 -29.997 Amendment 29-11 -all Amendment 29-12 -29.25(c), 29.801, 29.865, 29.1555(c) and 29.1557(c) Amendment 29-17 -29.927(b)(2) IFR requirements 15 dated December 1978 FAA exemption no. 2789, FAR 29.811(h)(l) FAA exemption no. 4395, FAR 29.855(a) The following selected additional sections of FAR 29 up to and including amendment 29-26:

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**CERTIFICATION BASIS  
(Cont.)**

Amendment 29-26:

29.1, 29.21, 29.25, 29.27, 29.29, 29.31, 29.33, 29.45, 29.51, 29.53, 29.59, 29.63, 29.65, 29.67, 29.71, 29.73, 29.75, 29.77, 29.79, 29.141, 29.143, 29.151, 29.161, 29.171, 29.173, 29.175, 29.231, 29.235, 29.251, 29.301, 29.303, 29.305, 29.309, 29.321, 29.337, 29.339, 29.341, 29.351, 29.361, except (a)(4), 29.411, 29.471, 29.473, 29.475, 29.477, 29.479, 29.481, 29.483, 29.485, 29.493, 29.501, 29.547, 29.549, 29.561, 29.563, 29.571, 29.601, 29.603, 29.607, 29.609, 29.611, 29.613, 29.619, 29.621, 29.623, 29.625, 29.629, 29.683, 29.723, 29.725, 29.727, 29.731, 29.735, 29.771, 29.773, 29.775, 29.785, 29.831, 29.861, 29.863, 29.873, 29.901, 29.903, 29.907, 29.908, 29.917, 29.931, 29.939, 29.951, 29.955, 29.961, 29.993, 29.995, 29.997, 29.1011, 29.1013, 29.1015, 29.1017, 29.1019, 29.1021, 29.1023, 29.1027, 29.1041, 29.1043, 29.1045, 29.1047, 29.1049, 29.1091, 29.1093, 29.1103, 29.1105, 29.1121, 29.1123, 29.1141, 29.1143, 29.1145, 29.1163, 29.1165, 29.1181, 29.1183, 29.1185, 29.1187, 29.1189, 29.1191, 29.1193, 29.1194, 29.1195, 29.1197, 29.1199, 29.1201, 29.1203, 29.1301, 29.1303, 29.1305, 29.1307, 29.1321, 29.1322, 29.1327, 29.1331, 29.1333, 29.1337, 29.1359, 29.1363, 29.1381, 29.1401, 29.1431, 29.1461, 29.1501, 29.1503, 29.1505, 29.1517, 29.1519, 29.1521, 29.1527, 29.1541, 29.1543, 29.1549, 29.1551, 29.1555, 29.1557, 29.1559, 29.1581, 29.1583, 29.1585, 29.1587.

Appendix B.

The Noise Standards of FAR Part 36 and ICAO Annex 16, Chapter 8, Rev. 17 November 1988, published in 2nd Edition of 1988 Vol. 1.

Canadian Airworthiness Manual 529, change 1 dated 1 January 1989.

529.1301-1, 529.1557(c)(3), 529.1581, 529.1093(b)(1)(ii)

Equivalent Safety Findings:

- |    |       |  |  |
|----|-------|--|--|
| 1. | 92/01 | Engines: Category A<br>Engine Isolation  | FAR 29.903(b)                                  |
| 2. | 92/02 | Powerplants Instruments  | FAR 29.1305(b)(2)                              |
| 3. | 92/03 | Fuel Tanks   | FAR 29.963(b) &<br>29.965                      |
| 4. | 92/04 | Doors  | FAR 29.783(e)                                  |
| 5. | 92/05 | Emergency Exit Marking   | FAR 29.811(d)                                  |
| 6. | 92/06 | Passenger Emergency Exits  | FAR 29.807(d)(1)                               |
| 7. | 92/07 | External Load Attaching Means  | FAR 29.865(b)(2)                               |
| 8. | 92/08 | Landing Gear, Limit Drop<br>Test and Reserve Energy<br>Absorption Drop Test                        | FAR 29.725 & 29.727                            |
| 9. | 92/09 | Proof of Structure,<br>Landing Gear Limit<br>Drop Test & Reserve<br>Energy Absorption<br>Drop Test | FAR 29.307(b),<br>29.723,<br>29.725,<br>29.727 |

**CERTIFICATION BASIS  
(Cont.)**

10. 92/10	Airworthiness Criteria for Helicopter Instrument Flight - Static Lateral - Directional Stability	FAR 29 Appendix B, V
11. 92/11	Cargo and Baggage Compartments	FAR 29.855(a)

**MODEL DEFINITION**

The Bell 230 helicopter is defined by Bell Helicopter Textron drawing number 230-100-001 Revision AM dated 19 August 1992, or subsequent revision.

**SERIAL NUMBERS  
ELIGIBLE**

Serial number 23001 and subsequent.

**REQUIRED EQUIPMENT**

The basic required equipment as prescribed in the applicable Airworthiness requirements (see Basis of Certification) must be installed in the aircraft.

In addition the following equipment is required:

- 1) DOT approved Rotorcraft Flight Manual as listed in Approved Publications.

**APPROVED  
PUBLICATIONS**

DOT approved Rotorcraft Flight Manual BHT-230-FM-1, dated 12 March 1992 or later approved revision.

**V - Model 430 (Transport Category B), approved 26 May 1998.  
Model 430 (Transport Category A), approved 07 May 2001.****ENGINES**

2 Allison 250-C40B with Chandler Evans EMC-35A (FADEC) fuel control system

**FUEL**

ASTM D1655 (JET B), MIL-T-5624 (JP-4), ASTM D1655 (JET A or JET A-1), MIL-T-5624 (JP-5), MIL-T-83133 (JP-8)  
(See Flight Manual for temperature limitations).

**ENGINE LIMITS**

All Engines Operating:

- mast torque meter: 1 045 SHP (100%)
- main rotor mast speed: 348 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 779.4°C (1 435°F)

Maximum Continuous:

- mast torque meter: 875 SHP (94.6%)
- main rotor mast speed: 348 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 726.7°C (1 340°F)

**ENGINE LIMITS (Cont.)**

## One Engine Inoperative:

## 2 Min. Power

- engine torque meter: 1 045 SHP (100%)
- output shaft speed: 9 598 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 827.24°C (1 521°F)

## One Engine Inoperative:

## 30 Sec. Power

- engine torque meter: 844 SHP (109.6%)
- output shaft speed: 9 598 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 871.1°C (1 600°F)

## One Engine Inoperative:

## 30 Min. Power

- engine torque meter: 715 SHP (92.8%)
- output shaft speed: 9 598 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 797.8°C (1 468°F)

## Maximum Continuous

- engine torque meter: 715 SHP (92.8%)
- output shaft speed: 9 598 rpm (100%)
- gas generator speed: 53 550 rpm (105%)
- measured gas temperature: 779.4°C (1 435°F)

**ROTOR LIMITS**

## Power Off

- minimum transient: 86 %
- transient operation: 86 to 90 %
- continuous operation: 91 to 105 %
- maximum transient: 106 %

## Power On

- minimum transient: 90 %
- maximum continuous: 100 %
- maximum ground operation: 102 %
- maximum transient: 106 %

**AIRSPEED LIMITS (KIAS)**

$V_{NE}$  (Never exceed) 150 knots. Decrease  $V_{NE}$  for ambient conditions in accordance with airspeed limitation placard.

$V_{NE}$ (Power off)	80
(OEI)	100

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<b>MAXIMUM WEIGHT (MASS)</b>	Internal: 4 218 kg (9 300 lb) External: 4 218 kg (9 300 lb) Category A: 4 082 kg (9 000 lb)
<b>MINIMUM CREW</b>	1 pilot Cat. B, VFR, IFR and most Cat. A 2 pilots For Cat. A, elevated helipad operation. Refer to RFM BHT-430-FMS-02 or later approved revision.
<b>NUMBER OF SEATS</b>	Maximum 10
<b>MAXIMUM BAGGAGE</b>	226.8 Kg (500 Lbs.)
<b>MAXIMUM OPERATING ALTITUDE (PRESSURE)</b>	6 096 m (20 000 ft) for VFR operations 4 572 m (15 000 ft) for IFR operations
<b>MAXIMUM TAKE-OFF AND LANDING ALTITUDE</b>	4 267.2 m (14 000 ft) density altitude 2 438.4 m (8 000 ft) density altitude for Category A operations
<b>OUTSIDE AIR TEMP LIMITS (OAT) (Sea Level)</b>	-40° + 51.7°C (-40° + 125°F) See RFM for variation with altitude
<b>FUEL CAPACITY</b>	Wheel LG Usable: 709.8 Litres (187.5 U.S. Gals) Skid LGUsable: 935.4 Litres (247.1 U.S. Gals)
<b>ENGINE OIL TANK CAPACITY (Per Engine)</b>	Total: 6.1 Litres (1.61 U.S. Gals) Usable: 2.36 Litres (0.625 U.S. Gals)
<b>CERTIFICATION BASIS</b>	a) FAR Part 29 dated 01 February 1965, amendment 29-1 through 39 except for:  The following paragraphs of FAR Part 29 at amendment 29-9: 29.497, 29.519, 29.521, 29.561, (a), (b) and (d), 29.671, 29.729, 29.783, 29.805, 29.807, 29.811, 29.853, 29.855, 29.865, 29.963, 29.967, 29.969, 29.971, 29.973, 29.975, 29.977, 29.979, 29.991, 29.999, 29.1001, 29.1309  The following paragraphs of FAR Part 29 at amendment 29-12: 29.787 and 29.865; The following paragraph of FAR Part 29 at amendment 29-13: 29.927; The following paragraph of FAR Part 29 at amendment 29-24: 29.1309 applicable to new systems introduced as model 430 design changes (FADEC, IIDS, AFCS and EFIS) from the 230; and The following paragraph of FAR Part 29 at amendment 29-26: 29.563, 29.785, and 29.901 The following paragraph of FAR Part 29 at amendment 29-31: 29.903.

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**CERTIFICATION BASIS  
(Cont.)**

- b)** The following paragraph of the Canadian Airworthiness Manual 529. Change 2, dated 01 February 1992 also apply:  
529.1093(b)(1)(ii) & (iii), 529.1301-1, 529.1581(e) and (f)
- c)** FAR Part 36 1 dated June 1974 amendments 36-1 through 36-18 (Canadian Airworthiness Manual Chapter 516 Change 2 dated 1 November 1991 - Noise Requirements).
- d)** Additional compliance with FAR Part 29 at amendment 29-12 is shown for paragraph 29.801 Ditching, when the required safety equipment and ditching equipment is installed.
- e)** Transport Canada Special Conditions:
1. SCA93-2 High Intensity Radiated Fields (HIRF), dated 4 January 1993.
  2. SCA93-3 Lightning Protection, dated 4 January 1993
  3. SCA94-08 Software Aspects of Certification, dated 18 March 1994.
- f)** Findings of Equivalent Safety
- |                              |  |
|------------------------------|--|
| FAR 29.963(b) and 965        | Crash Resistant Fuel Cell  |
| FAR 29.783(e)                | Crew Door Switch   |
| FAR 29.811(d)                | Size of Emergency Exit Signs   |
| FAR 29.807(d)(1)             | Passenger Emergency Exits<br>(Main Door Exit Size for<br>Ditching)   |
| FAR 29.865(b)(2)             | External Load Attaching Means<br>(Hoist Manual Release)  |
| FAR 29.855(a)                | Baggage and Cargo<br>Compartment   |
| FAR 29.307(b), 723, 725, 727 | Proof of Structure, Landing Gear<br>Limit Drop Test and Reserve<br>Energy Absorption Drop Test<br>(Skid Gear Only) |
- g)** The following exemptions have been granted:
- |                    |                                    |
|--------------------|------------------------------------|
| FAR 29.855(a), (d) | Cargo and Baggage<br>Compartments  |
| FAR 29.811(h)(1)   | Emergency Exit External<br>Marking |
| FAR 29.811(i)      | Emergency Exit Marking             |
- h)** The following paragraphs of FAR part 29 not complied with:  
29.952 new additions to FAR at amendment 35, and 29.1415 new addition to FAR at amendment 33.

**MODEL DEFINITION**

The Bell 430 helicopter is defined by Bell Helicopter Top Drawing 430-100-001 Revision BG, or later approved revision.

**SERIAL NUMBERS  
ELIGIBLE**

Serial number 49001 and subsequent

**REQUIRED EQUIPMENT** The basic required equipment as prescribed in the applicable Airworthiness requirements (see Basis of Certification) must be installed in the aircraft.

In addition the following equipment is required:

- 1) DOT approved Rotorcraft Flight Manual as listed in Approved Publications.

**APPROVED  
PUBLICATIONS**

DOT approved RFM BHT-430-FM-1, dated 23 February 1996 or later approved revision, and Flight Manual Supplement BHT-430-FMS-02 dated 19 February 1999 or later approved revision for Cat A.

**DATA PERTINENT TO MODELS 222, 222B AND 222U**

**DATUM** Station 0 is located 241.3 cm (95 in) forward of the fuselage nose or 230.4 cm (90.7 in) forward of the radome nose.

**LEVELING MEANS** Plumb line from right, inside top of baggage compartment.  
**ROTOR BLADE AND** For rigging information, refer to the corresponding model 222  
**CONTROL MOVEMENTS** Maintenance Manual.

**CERTIFICATION BASIS** Model 222:  
TC No. 8107 issued 22 December 1981, in the basis of the following requirements:  
FAR Part 29 dated 1 February 1965 (Transport Category B and powerplant isolation requirements of Category A) Amdt 29-1 through 29-9. Amdt 29-11. FAR 29.997 of Amdt 29-10 and FAR 29.927(b)(2) of Amdt 29-17.  
Ditching FAR 29.801 of Amdt 29-12.  
External cargo FAR 29.25(c) and 29.865 of Amdt 29-12. FAR 29.1555(c) and 29.1557(c) of Amdt 29-12.  
Height velocity requirements of Amdt 29-21, Sections 29.1, 29.79, 29.1517 and 29.1587. IFR requirements dated 15 December 1978.  
Special Conditions No. 29-87-SW-7. Exemption No. 2789. FAR 29.811(h)(1).  
See Note 7 for Equivalent Safety Items.  
Brazilian Requirements for acceptance of BELL 222 as defined in letter No. 1186-IFI/80 and Report No. H.10-031-01 dated 13 May 1981.

Models 222B and 222U:  
TC No. 8107 issued August 18, 1988, in the basis of the following requirements:

FAR Part 29 dated 1 February 1965 (Transport Category B and powerplant isolation requirements of Category A) Amdt 29-1 through 29-9. Amdt 29-11. FAR 29.997 of Amdt 29-10 and FAR 29.927(b)(2) of Amdt 29-17.  
Ditching FAR 29.801 of Amdt 29-12.



**CERTIFICATION BASIS****(Cont.)**

External cargo FAR 29.25(c) and 29.865 of Amdt 29-12. FAR 29.1555(c) and 29.1557(c) of Amdt 29-12.

Height velocity requirements of Amdt 29-21, Sections 29.1, 29.79, 29.1517 and 29.1587. IFR requirements dated 15 December 1978.

Special Conditions No. 29-87-SW-7 dated 8 March 1979.

Exemption No. 2789. FAR 29.811(h)(1).

See Note 7 for Equivalent Safety Items.

Brazilian Requirements for acceptance of BELL 222B and 222U as defined in the Report No. H.10-031-04 dated 26 May 1987.

**IMPORT REQUIREMENTS**

A Brazilian Airworthiness Certificate will be issued on the basis of a FAA Certificate of Airworthiness for Export signed by a FAA representative indicating compliance with the type design approved by the CTA (TC No. 8107).

**EQUIPMENT**

The basic required equipment as prescribed in the applicable airworthiness regulations (See Certification Basis) must be installed in the helicopter. In addition the following equipment are required with each helicopter as specified:

**1) Batteries:**

Model 222: EPI 18137, or GE 438010RB03

Model 222B: GE 438010RB03

Model 222U: Marathon 30703-001

**2) Airspeed indicator:**

Model 222:

S/N 47006 thru 47080: Bell P/N 222-375-027-105 (See Note 9)

S/N 47081 thru 47130: Bell P/N 222-375-027-107

Model 222B:

S/N 47131 and sub.: P/N 222-375-027-107

Model 222U:

S/N 47501 and sub.: P/N 222-375-027-107

**3) FAA approved helicopter Flight Manual Model 222, dated 16 August 1979 (S/N 47005) and Supplement BHT-222-FMS-22 for Brazilian Registered Helicopters Revision dated 10 June 1986, approved by the CTA.**

**4) FAA approved helicopter Flight Manual Model 222, dated 20 December 20 (Model 222 S/N 47006 thru 47080) and Supplement BHT-222-FMS-22 for Brazilian Registered Helicopters Revision dated 10 June 1986, approved by the CTA.**

**5) FAA approved Flight Manual Model 222, dated 18 December 1980 (Model 222, S/N 47081 thru 47130) and Supplement BHT-222-FMS-22 for Brazilian Registered Helicopters Revision dated 10 June 1986, approved by the CTA.**

**EQUIPMENT (Cont.)**

- 6) Brazilian Flight Manual approved by the FAA for the Model 222B, BHT-222B-FM-CTA, dated 28 June 1988 (S/N 47131 and sub.).
- 7) Brazilian Flight Manual approved by the FAA for the Model 222U, BHT-222U-FM-CTA, dated 28 June 1988 (S/N 47501 and sub.).
- 8) Aft window exits for 10 place arrangement. (Model 222 S/N 47006 thru 47130; Model 222B Model 222U).
- 9) Decision Height Indicator Bell P/N 222-075-189-101 for Category A operations. (Model 222 only)

**NOTES:**

**NOTE 1:** Current weight and balance report including list of equipment included in the certificated empty weight and loading instructions when necessary, must be provided with each helicopter.

Model 222: The certificated empty weight must include a total undrainable oil of 2.3 kg (5 lb) at 670.6 cm (264 in) and unusable fuel of: S/N 47005, 45.4 kg (100 lb) at 683.3 cm (269 in); S/N 47006 thru 47023, 25 kg (55 lb) at 652.0 cm (256.7 in); S/N 47024 and sub. 7.3 kg (16 lb) at 644.6 cm (253.8 in). Minimum empty weight 2 282 kg (5030 lb) for S/N 47006 and subsequent.

Model 222B: The certificated empty weight must include a total undrainable oil of 2.3 kg (5 lb) at 670.6 cm (264 in) and unusable fuel of 7.3 kg (16 lb) at 644.6 cm (253.8 in). Minimum empty weight, 2 449 kg (5 400 lb).

Model 222U: The certificated empty weight must include a total undrainable oil of 2.3 kg (5 lb) at 670.6 cm (264 in) and unusable fuel of 6.8 kg (15 lb) at 644.6 cm (253.8 in). Minimum empty weight, 2 449 kg (5 400 lb).

**NOTE 2:** Model 222 and 222B: The following placard must be displayed in front of and in clear view of the pilot:

"THIS HELICOPTER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS SPECIFIED IN THE FAA APPROVED ROTORCRAFT FLIGHT MANUAL. THE AIRWORTHINESS LIMITATIONS SECTION OF THE ROTORCRAFT MAINTENANCE MANUAL MUST BE COMPLIED WITH".

Model 222U: The following placard must be displayed in front of and in clear view of the pilot:

"THIS HELICOPTER IS CERTIFIED FOR DAY/NIGHT VFR/IFR NON-ICING OPERATIONS".

All Models: All placards required in the approved Helicopter Flight Manual must be installed in the appropriate locations.

In the aft faced seats must be installed the following placard:

"HEADREST MUST BE IN PLACE DURING FLIGHT".  
"O APOIO DE CABEÇA É REQUERIDO PARA VÔO".

**NOTE 3:** The retirement times of certain parts and inspection requirements are listed in Airworthiness Limitations, Chapter 4, of the Model 222 Series Maintenance Manuals. These values of retirement or service life and inspections cannot be increased without FAA and CTA approval. In addition, information essential for proper maintenance of the helicopter is contained in the Bell Helicopter Company Model 222 Series Maintenance Manuals and Component Repair and Overhaul Manuals.

**NOTE 4:** Model 222 only: AVCO Lycoming engines used in the Model 222 Prototype helicopter (S/N 47005) must incorporate a shim in the fuel control. Fuel controls with the shim are identified by P/N 4-301-098-05. Engines used in the production configuration (S/N 47006 and subsequent) must use this shim or use selectively fitted governor reset spring in accordance with AVCO Lycoming Service Bulletin LTS 101C-73-0015.

**NOTE 5:** For all operations below -29°C (-20°F) ambient temperature, all fuel used in Model 222 Series helicopters must contain Phillips PFA-55MB anti-icing additive in concentrations of not less than 0.035% nor more than 0.15% by volume. Blending this additive into the fuel and checking its concentration must be conducted in the manner prescribed by the Rotorcraft Flight Manual.

**NOTE 6:** Model 222: Engine gas generator control (N1 control) must be adjusted in accordance with AVCO Lycoming "topping" instructions dated 27 June 1979, or equivalent approved instructions. This procedure must be accomplished at density altitudes of 1524m (5,000 ft) or lower unless an FAA approved alternate procedure is utilized.

Model 222B and 222U: Engine Gas Generator Control (N1 control) must be adjusted in accordance with the procedure outlined in the Maintenance Manual.

**NOTE 7:** Equivalent Safety Findings:

1. Power Turbine Common Control .....	FAR 29.903(b)
2. Fuel Pressure Switch .....	FAR 29.1305(b)(2)
3. Fireproof Oil System .....	FAR 29.1189
4. Crash Resistant Fuel Cell .....	FAR 29.963(b) & 29.965
5. Crew Doors Switch .....	FAR 29.783(e)
6. Size of Exit Sign .....	FAR 29.811(d) (S/N 47005)
7. Unsafe Rotor and Engine Out Warning Indicator	FAR 29.33(b), 29.1309(d), 29.1357(e) & Special Flight Condition No. 2.
8. Aft Window Exit Size .....	FAR 29.807(a)(4)
9. Main Door Window Exit Size for Ditching .....	FAR 29.807(d)(1)
10. Hoist Manual Release .....	FAR 29.865(b)(2)
11. Baggage Compartment Lining .....	FAR 29.855(a)
12. Main Gear Drop Test for 3561 kg (7850 lbf) Gross Weight .....	FAR 29.725 & 29.727 (Model 222 only)
13. Landing Gear Drop Test .....	FAR 29.307(b)(5), 29.723, 29.725 & 29.727 (Model 222U only)
14. Limitations Placard .....	FAR 29.1559 (Model 222U only)
15. IFR Dihedral Stability .....	IFR Criteria Paragraph 4(a) (Model 222U only)

- NOTE 8:** Model 222 helicopters equipped with external cargo suspension installation kit Nos. 222-706-904 and 222-706-905 in accordance with Service Instruction 22215 meet the certification basis when operated at 3 674 kg (8 100 lb) gross weight in accordance with the limits of FAA approved Brazilian RFM Supplement 10.
- NOTE 9:** Model 222 helicopter S/N 47006 thru 47080 when modified for 278 km/h (150 kt) VNE operation by Bell Helicopter Service Instruction 222-23 meet the certification basis when operated in accordance with the limits of FAA approved Brazilian RFM Supplement 20.
- NOTE 10:** Model 222 helicopters incorporating IFR Modification 222-705-006 are eligible for IFR operations when operated in accordance with the limitations of FAA approved Model 222 Brazilian RFM Supplement 17. Minimum crew is one pilot for IFR operations.
- NOTE 11:** Model 222 helicopters are eligible for Category A operations when operated in accordance with the limitations of FAA approved Model 222 Brazilian RFM Supplement 21. Minimum crew is one pilot for Category A operations.
- NOTE 12:** Model 222B helicopters are eligible for IFR operations when operated in accordance with the limitations of FAA approved Brazilian Flight Manual dated 28 June 1988. Minimum crew is one pilot for IFR operations.
- NOTE 13:** Model 222B helicopters S/N 47131 and sub. equipped with external cargo suspension installation kit No.s 222-706-904 and 222-706-905 in accordance with Service instruction 222-15 meet the certification basis when operated at 3 810 kg (89 400 lb) gross weight in accordance with the limits of FAA approved Brazilian RFM Supplement 10.
- NOTE 14:** Model 222U helicopters are eligible for IFR operations when operated in accordance with the limitations of FAA approved Brazilian Flight Manual dated 28 June 1988. Minimum crew is one pilot for IFR operations.
- NOTE 15:** Model 222U helicopters equipped with external cargo suspension kit No.s 222-706-704 and 222-706-905 in accordance with Service Instruction 222-15 meet the certification basis when operated at 3 810 kg (8 400 lb) gross weight in accordance with the limits of FAA approved Brazilian RFM Supplement 10.
- NOTE 16:** The VNE placard installed in the pilot's cockpit and displayed in Section 2 of the FAA approved Brazilian Flight Manual, should include the VNE limits for one engine inoperative and also for mast torques over 94.6%.
- NOTE 17:** For all operations below 10°C (50°F) ambient temperature, all fuel used in Model 230 and 430 helicopters must contain Phillips PFA-55MB or MIL-L-27686 anti-icing additive in concentration of not less than 0.035% or more than 0.15% by volume.

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