



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EA-8701

Type Certificate Holder:

MOONEY AIRCRAFT CORPORATION

Mooney Aircraft Corporation
Louis Schreiner Field
Kerrville, Texas 78028
USA

EA-8701-02
Sheet 01

MOONEY

M20J
M20K
M20M
M20R
M20TN

June 2008

This data sheet, which is part of Type Certificate No. 8701, 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 M20J. (Normal Category), approved 24 March 1987.

ENGINE	Textron - Lycoming, IO-360-A1B6D or IO-360-A3B6D or IO-360-A3B6 (Bendix fuel injector model RSA 5AD1 P/N 2524054). See NOTE 06 and NOTE 12.	
FUEL	100 LL or 100/130 octane min. grade aviation gasoline.	
ENGINE LIMITS	For all operations, 2 700 rpm 200 hp.	
AIRSPEED LIMITS(CAS)	Maneuvering	135 mph (117 kt)
	Never exceed	200 mph (174 kt)
	Never exceed *	225 mph (195 kt)
	Flaps extended	
	full flaps	125 mph (109 kt)
	15° flap ****	145 mph (126 kt)
	L. G. retraction	110 mph (96 kt)
	L. G. retraction **	120 mph (104 kt)
	L. G. extension	120 mph (104 kt)
	L. G. extension ***	150 mph (130 kt)
	L. G. extension ****	159 mph (138 kt)
	L. G. extended	120 mph (104 kt)
	L. G. extended ***	150 mph (130 kt)
	L. G. extended ****	186 mph (162 kt)
	Max. structural cruising	175 mph (152 kt)
	Max. structural cruising *	200 mph (174 kt)

* S/N's 24-0171 and on and 24-0002 thru 24-0170 if S.B. M20-198 is complied with

** S/N's 24-0084, 24-0378 thru 24-TBA

*** S/N's 24 0084, 24-0378 thru 24-2999, 24-3079 thru 24-TBA and previous S/N's if S.B. M20-209 is complied with

**** S/N 24-3000 thru 24-3078

C. G. RANGE

(L. G. extended)

Airplanes 1243.96 kg (2740 lb) gross weight (S/N 24-0001 thru 24-3200, 24-3202 thru 24-3217):

+ 1 143 mm (+ 45.0 in) to + 1273 mm (+ 50.1 in) at 1 243.96 kg (2740 lb)

+ 1 062 mm (+ 41.8 in) to + 1273 mm (+ 50.1 in) at 1 121.38 kg (2470 lb)

+ 1 041 mm (+ 41.0 in) to + 1273 mm (+ 50.1 in) at 1 021.5 kg (2 250 lb) or less.

Straight line variation between points given. Retraction moment 709 kg.cm (615 in. lb).

Airplanes 1 316.6 kg (2 900 lb) gross weight (S/N 24-3201, 24-3218 thru 24-TBA and 24-1686 thru 24-3200, 24-3202 thru 24-3217 when c/w MAC Dwg. No. 940071 and insertion of applicable AFM Supplement.

+1 143 mm (+45.0 in) to +1 273 mm (+50.1 in) at 1 316.6 kg (2 900 lb)

+1 112 mm (+43.8 in) to +1 273 mm (+50.1 in) at 1 243.96 kg (2 740 lb)

+1 062 mm (+41.8 in) to +1 273 mm (+50.1 in) at 1 121.38 kg (2 470 lb)

+1 041 mm (+41.0 in) to + 1 273 mm (+50.1 in) at 1 021.5 kg (2 250 lb) or less.

Straight line variation between points given. Retraction moment 709 kg.cm (615 in lb).

EMPTY WEIGHT C. G. RANGE

None

MAXIMUM WEIGHT

1 243.96 kg (2 740 lb) - S/N 24-0001 thru 24-3200, 24-3202 thru 24-3217.

1 316.6 kg (2 900 lb) - S/N 24-3201, 24-3218 and on and S/N 24-168 thru 24-3200, 24-3202 thru 24-217 when c/w MAC dwg. No. 940071 and insertion of applicable AFM supplement into appropriate AFM.

No. OF SEATS

4:2 at +864.0 mm (+34.0 in) to +991.0 mm (+39.0 in) and 2 at +1 796 mm (+70.7 in).

MAXIMUM BAGGAGE

54.48 kg (120 lb) at +2 426 mm (+95,5 in), 4.54 kg (10 lb) at +3 023.0 mm (+119.0 in)

FUEL CAPACITY

242,24 L (+64 gal) - Two integral tanks in wings at + 1229.0 mm (+48.4 in). See NOTE 1 for data on unusable fuel.

OIL CAPACITY

7.57 L (2 gal) at - 292.0 mm (-11.5 in)

MAXIMUM OPERATING ALTITUDE

See NOTE 11.

CONTROL SURFACE MOVEMENTS

S/N 24-0002 thru 24-1037

Wing flaps

Take-off

Down 15° ± 1°

Landing

Down 33° ± 2°

Aileron

Up 12.5° to 17°

Down 8° ± 1°

Aileron static position

Down 0° to 2°

CONTROL SURFACE MOVEMENTS (CONT.)	Elevator	Up $22^{\circ} \pm 2^{\circ}$	Down $22^{\circ} + 0^{\circ}/-2^{\circ}$
	Rudder	Left 23° to 24°	Right 23° to 24°
	Stabilizer (L.E.)	Up 0.5° to 1°	Down 5° to 5.75°
	S/N 24-1038 and on		
	Wing flaps	Take off	Down $15^{\circ} \pm 1^{\circ}$
		Landing	Down $33^{\circ} + 0^{\circ}/-2^{\circ}$
	Aileron	Up 12.5° to 14.5°	Down $8^{\circ} \pm 1^{\circ}$
	Aileron Static position		Down 0° to 2°
	Elevator	Up $22^{\circ} \pm 2^{\circ}$	Down $22^{\circ} \pm 2^{\circ}$
	Rudder	Left 23° to 24°	Right 23° to 24°
Stabilizer (L.E.)	Up 0.5° to 1°	Down 5.25° to 5.75°	
ELEVATOR TRIM ASSIST.	S/N 24-0002 and Up With Stabilizer set at 3° negative setting to thrust line adjust trim assist bungees 740188 for an elevator position of $19^{\circ} \pm 1^{\circ}$ at the zero spring travel position of the bungees. This rigging to be obtained before installation of the 740171 extension springs).		
LEVELING MEANS	Edge of skin splice over aft fuselage radio access panel for S/N 24-0002 thru 24-0090 (excluding 24-0084). Leveling screws located above the tailcone access door for S/N 24-0084, 24-0091 and on.		
S/N's ELIGIBLE	S/N 24-0002 and Up.		
REQUIRED EQUIPMENT	In addition to the basic equipment specified in CAR 3 the following equipment must be installed: 1(a) (1) or 1(a) (2), 1(b), 1(c) or 2(a) (1), 2(b) (1), 1(c), 2(b) (1) and 1(c), 101(a), (b) or (c), 102(a), 103(a) 104(a) or (b), 201(a), 202(a), 205(a), 206(a), 301(a) and 303(a), 301(b) and 303(b), 302(a) or (b) or (c), 601(a) (b), 602 (a) or (b) or (c) or (d) or (e).		
DATUM	127.0 mm (5.0 in) aft of the centerline of the nose gear support bolts (fuselage station 0.00). The leading edge of the wing at the wing station 1 505 mm (59.25 in) is 838.2 mm (33.00 in) aft of fuselage station 0.00.		
CERTIFICATION BASIS	CAR 3, effective 1 November 1949 as amended to 18 May 1954 with paragraph 3.74 of Amendment 3-13; paragraph 3-109, 3-112, 3-115, 3-118 and 3-120 of CAR 3 effective 15 May 1956 as amended to 1 October 1959. In lieu of corresponding CAR 3 paragraphs where applicable-FAR 23, effective 1 February 1965; paragraph 23-29 as amended to 1 March 1978; paragraph 23.1441 thru 23.1449 as amended to 17 June 1970.		
ADDITIONAL REQUIREMENTS	Brazilian Special Requirements set forth in CTA Report H.10-088-02, 26 November 1986 or in its approved revisions.		

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IMPORT ELEGIBILITY

A Brazilian Airworthiness Certificate may be issued on the basis of a FAA Export Certificate of Airworthiness, or a third country Export Certificate of 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. 8701 and in condition of safe operation". The CTA Report H.10-0880-2, dated 26 November 1986 or latest revisions, contains the Brazilian requirements for the acceptance of these airplanes. The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:

1. Brazilian approved AFM;
2. Portuguese markings and placards;
3. One ELT (RBHA 91 requirements);
4. One HF communication system (RBHA 91 requirements); and
5. One ADF system (RBHA 91 requirements).

APPROVED AIRPLANE FLIGHT MANUAL

Pilot's Operating Handbook and CTA approved Airplane Flight Manual No. 3203, dated 12 February 1995.

PROPELLER AND PROPELLER ACCESSORIES

	Weight (kg/lb)	Fuselage Station (mm/in)
1- McCauley constant speed propeller installations		
(a) (1) Propeller McCauley B2D34C212 hub, 78CDA-4 blades (see NOTES 4 and 8)	22.473/49.5	-902/-35.5
Pitch setting at 762 mm (30.0 in) station:		
- S/N 24-0002 thru 24-0083, 24-0085 thru 24-0170		
Low $14^{\circ} \pm 0.2^{\circ}$		
High $27.5^{\circ} \pm 0.2^{\circ}$		
- S/N 24-0171 thru 24-0377, 24-0002 thru 24-0083, 24-0085 thru 24-0170		
if S.B M20-198 is complied with		
Low $14^{\circ} \pm 0.2^{\circ}$		
High $29.5^{\circ} \pm 0.5^{\circ}$		
(a) (2) Propeller McCauley, B2D34C214 hub 90DHB - 16E blades or - 16EP blades (see NOTES 5 and 8)	22.473/49.5	-902/-35.5
Pitch setting at 762 mm (30.0 in) station		
- S/N 24-0378 and on		
Low $13.9^{\circ} \pm 0.2^{\circ}$		
High $33.0^{\circ} \pm 0.5^{\circ}$		
Diameter: Max. 1 880 mm (74 in)		
Min: 1 854 mm (73 in)		
No further reduction permitted		
No reduction permitted when equipped with de-ice boots.		

PROPELLER AND PROPELLER ACCESSORIES (CONT.)

(b) Spinner assy, Mooney 680031-505	2.179/4.8	-889/-35.0
(c) Propeller governor McCauley C290D5F/T17	1.248/2.75	-36/-1.4
2- Hartzell constant speed propeller installation		
(a) (1) Propeller, Hartzell HC-C2YK-1BF hub, blades F7666A 3Q	24.629/54.25	-902/-35.5
- S/N 24-1038 and ON		
Pitch settings at 762 mm (30 in) station		
Low 14.1° ± 0.1°		
High 29.3° to 31.3°		
Diameter: 1 854 mm/73.0 in		
No reduction permitted		
(b) (1) Mooney Spinner assy 680031-507 (S/N 24-1038 and on)	2.179/4.8	-835/-35.0

ENGINE ACCESSORIES (FUEL & OIL SYST.)

101 - Fuel pumps

(a) One, engine driven, P/N AC6440296 or 6441234	0.726/1.6	+165/+6.5
(b) One, electric Dukes 4140-00-19A or 1499-00-19 or (alternate) Weldon P/N 8163A	0.867/1.91 1.089/2.4	+165/+6.5 +165/+6.5
(c) One, electric, Weldon P/N 8163B for S/N 24-3000 and on	1.089/2.4	+165/+6.5

102 - Oil radiator

(a) Stewart-Warner, 8432F1 or 8432L	1.089/2.4	-96/-3.8
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103 - Induction air filter

(a) Donaldson P13-0234 or Bracket BA6210 or Air Maze 125997 - 010	0.454/1	-647/-25.5
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104 - Starters

(a) Prestolite MZ5206 or MZ4218 or MZ4222 (S/N 24-0001 thru 24-2999)	8.081/17.8	-584/-23.0
(b) Prestolite MHB-4016 (S/N 24-3000 and on)	8.081/17.8	-584/-23.0

LANDING GEAR

201 - Two main wheel/brake assy 6.00-6

(a) Cleveland wheel/brake assy wheel model No. 40-86/ brake assy No. 30-56A	8.626/19	see NOTE 3
Optional: Cleveland 40-86E, 3056-D or McCauley D-30670-9, -10, -11, -12.		

202 - Two main wheel, 6 ply rating tires

(a) 6.00-6 type III w/ regular tubes	7.718/17	see NOTE 3
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205 - One nose Wheel 5.00-5

(a) Goodyear model 40-87	1.18/2.6	see NOTE 3
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LANDING GEAR (CONT.)

206 - One nose wheel 6 ply rating tire
 (a) 5.00-5 type III w/regular tube 3.178/7 see NOTE 3

ELECTRICAL EQUIPMENT

301 - Alternators

(a) Alternator 60A, Prestolite ALY8420
 or ALY8403, ALY6420 or ALY8420M
 (S/N24-0001 thru 24-2999) 4.676/10.3 -622/-24.5

(b) Alternator 70A Prestolite ALU6421-LS
 (S/N 24-3000 and on) 4.676/10.3 -622/-24.5

302 - Batteries

(a) Auto-lite, R-35 or Prestolite R-35
 or Gill 6-GCAB-11 or PS6-11 or
 Rebat R-37 (S/N 24-0001 thru 24-2999) 12.258/27 +2 814/+110.8

(b) Gill G-242 (S/N 24-3000 thru 24-3200,
 24-3202 thru 24-3217) 12.258/27 +2 814/+110.8

(c) Gill G-243(S/N24-3201, 24-3218 and on) 13.393/29.5 +2 814/+110.8

303 - Voltage Regulators

(a) OEKO 20082* or
 Electrodelta VR 414* or 0.635/1.4 +51/+2.0

VR415 or VR 415D or Mooney 800270-505
 (S/N 24-0001 thru 24-2999) 0.272; 0.6 +51/+2.0

(* Use 800331-721 Adapter when OEKO or
 VR 414 is replaced by VR 415 or VR 515D
 or 800270-505 regulators.

(b) Precise Flight DGR-2 or Eletrodelta VR 802 or
 800290-501 (S/N 24-3000 and on) 0.272/0.6 +51/+2.0
 0.136/0.3 +51/+2.0

MISCELLANEOUS

601 - Warning Systems

(a) Gear warning indicator Mallory SC 628P 0.454/1 -63/-2,5

(b) Stall warning indicator Mallory SC 628 0.454/1 +1 270/+50.0

602 - Vacuum pumps

(a) Airborne 200CC (24-0001 thru 24-2999) or 1.589/3.5 -127/-5.0

(b) Airborne 211CC (24-0001 thru 24-2999) 1.135/2.5 -127/-5.0

(c) Airborne 241CC-17 (alternate S/N 24-3000
 and on) 1.543/3.4 -127/-5.0

(d) Airborne 241CC (alternate all counter
 clockwise applications 24-0001 thru 24-2999) or 1543/3.4 -127/-5.0

(e) Sigma Tek IU128-003 and IU128-005
 (alternate applications) 24-0001 thru 24-2999 1.543/3.4 -127/-5.0

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II - Model M20K Normal category, Approved 24 March 1987

ENGINE	Teledyne Continental Motors TSI0-360-GB1, -GB3, -GB4 (S/N) 25-0001 thru 25-0780). TSI0-360-LB1 (S/N 25-0781 thru 25-0889) see NOTE 9. TSI0-360-MB() (S/N 25-1000 and Up)		
FUEL	100LL or 100/130 octane min. grade aviation gasoline		
ENGINE LIMITS	For all operations 2700 rpm, 40.0 in Hg MP (210 hp); for the -MB(), 36 in Hg MP.		
AIRSPEED LIMITS (CAS)		25-0001 thru 25-0889	25-1000 and Up
	Maneuvering	135 mph/117 kt	
	Never exceed	225 mph/195 kt	
	Flaps extended	125 mph/109 kt	
	L.G. retraction	120 mph/104 kt	
	L.G. extension	150 mph/130 kt	160 mph/139 kt
	L. G. extended	150 mph/130 kt	190 mph/165 kt
	Max. structural cruising		200 mph/174 kt
C.G. RANGE (LG extended)	+1 105 mm (+43.5 in) to +1 252 mm (+49.3 in) at 1 316.6 kg (2 900 lb) +1 031 mm (+40.6 in) to +1 252 mm (+49.3 in) at 1 071.44 kg (2 360 lb) (Straight line variation between points given) Retraction moment 709.2 kg.cm (615 in.lb)		
EMPTY WEIGHT C.G. RANGE	None		
MAX. WEIGHT	1 316.6 kg (2 900 lb)		
No. OF SEATS	4:2 at +864 mm (+34.0 in) to +991 mm (+39.0 in) and 2 at +1 796 mm (+70.7 in)		
MAX. BAGGAGE	54.48 kg (120 lb) at +2 426 mm (+95.5 in) and 4.54 kg (10lb) at +3 023 mm (+119.0 in)		
FUEL CAPACITY	272.52 L (72.0 gal) - S/N 25-0001 thru 25-0446 286.14 L (75.6 gal) usable - S/N 25-0447 and on. Two integral tanks in wings at +1 234 mm (+48.59 in). See NOTE 1 for data on unusable fuel		
OIL CAPACITY	7.57 L (2 gal) at -564 mm (-22.19 in)		
MAX. OPERATING ALTITUDE	24 000 ft for S/N 25-0001 thru 25-0999 28 000 ft for S/N 25-1000 and on See NOTE 11		
CONTROL SURFACE MOVEMENTS	Wing flaps	Take off	Down 10° ±1°
		Landing	Down 33° +0°/-2°
	Aileron	Up 12.5° to 14.5°	Down 8° ± 1°
	Aileron static position		Down 0° to 2°
	Elevator	Up 22° +0°/-2°	Down 22° +0°/-2°
	Rudder	Left 23° to 24°	Right 23° to 24°
	Stabilizer (L.E.)	Up 3.8° to 4.2°	Down 6.5° to 7°

ELEVATOR TRIM ASSIST	With stabilizer set at maximum positive setting and elevators full down, adjust turnbuckle for 6 356 kg (14.0 lb) to 7 264 kg (16.0 lb) on tensiometer. Tensiometer reading 9.08 kg (20 lb) maximum permissible. Check for positive clearance between cable end and pulley sheave.
LEVELING MEANS	Edge of skin splice over aft fuselage radio access panel (S/N 25-0002 thru 25-0246). Leveling screws located above the tailcone access door (S/N 25-0247 and on).
SERIAL No.S ELIGIBLE	S/N 25-0001 and Up
REQUIRED EQUIPMENT	S/N 25-0001 thru 25-0999 In addition to the required basic equipment specified in CAR 3, the following items of equipment must be installed: 1(a)(1) or 1(a)(2)(b)(c) or 2(a)(b)(c), 101(a) 103(a), 104(a), 201(a) 202(a), 205(a), 206(a), 301(a) and 303(a), 302(a), 601 (a), (b), 602(a) or (b) or (c). S/N 25-1000 and on 1(a)(2)(b)(c) or 2(a)(b), (c), 101(b), 103(b), 104(b), 201(a), 202(a), 205(a), 206(a), 301(b) and 303(b), 302(b), 601(a), (b), 602(a) or (b) or (c).
DATUM	127.0 mm (5.0 in) aft of the centerline of the nose gear support bolts (fuselage station 0.00). The Leading Edge of the wing at wing station 1 505 mm (59.25 in) is 838 mm (33.0 in) aft of fuselage station 0.00.
CERTIFICATION BASIS	CAR 3 effective 1 November 1949 as amended to 18 May 1954 with paragraph 3.74 of Amendment 3-13; paragraph 3.109, 3.112, 3.115, 3.118, 3.120 and 3.441 of CAR 3 effective 15 May 1956 as amended to 1 October 1959. In lieu of corresponding CAR paragraphs, where applicable, FAR 23 effective 1 February 1965; paragraph 23.29 as amended to 1 March 1978; paragraph 23.33, 23.901 thru 23.953, 23.955 thru 23.963, 23.967 thru 23.1063 as amended to 14 September 1969 paragraph 23.1091 thru 23.1105 as amended to 1 February 1977 paragraph 23.1121 thru 23.1193, 23.1351 thru 23.1401, 23.1527, 23.1553 as amended to 14 September 1969; paragraph 23.1441 thru 23.1449 as amended to 17 June 1970. FAR 36, effective 20 September 1976.
ADDITIONAL REQUIREMENTS	Requirements set forth in CTA Report H.10-0880-2 dated 26 November 1986 or in its approved revisions.
IMPORT ELEGIBILITY	A Brazilian Airworthiness Certificate may be issued on the basis of a FAA Export Certificate of Airworthiness or a third country Export Certificate of 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

IMPORT ELEGIBILITY (CONT.) Type Design as defined by the Brazilian Type Certificate no. 8701 and in condition of safe operation". The CTA Report H.10.0880-2, dated 26 November 1986 or lasted revisions, contains the Brazilian requirements for the acceptance of these airplanes. The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:

1. Brazilian approved AFM;
2. Portuguese markings and placards;
3. One ELT (RBHA 91 requirements)
4. One HF communication system (RBHA 91 requirements); and
5. One ADF system (RBHA 91 requirements).

APPROVED AIRPLANE FLIGHT MANUAL Pilot's Operating Handbook and CTA approved Airplane Flight Manual No. 1236(B), dated 08 December 1989.

PROPELLER AND PROPELLER ACCESSORIES

	Weight (kg/lb)	Fuselage Station (mm/in)
1- McCauley constant speed propeller installation		
(a) (1) McCauley 2A34C216 hub/90DHB-16E blades	25.060/55.2	-1 151/-45.32
Pitch settings at 762 mm (30 in) station:		
Low $14.7^{\circ} \pm 0.2^{\circ}$		
High $33.0^{\circ} \pm 0.5^{\circ}$		
Diameter: 1 880 mm (74 in) no reduction permitted. S/N 25-0001 thru 25-0999		
(a) (2) McCauley 2A 34C221 hub/90DHC-16E or 90 DHC-16EP blades	25.060/55.2	-1 151/-45.32
Pitch settings at 762 mm (30 in) station:		
Low $14.7^{\circ} \pm 0.2^{\circ}$		
High $38.0^{\circ} \pm 0.5^{\circ}$		
Diameter: 1 880 mm (74 in) No. reduction permitted, (S/N 25-1000 and on and S/N 25-0001 thru 25-0999 providing S.I. M20-75 has been complied with).		
(b) Spinner assy, Mooney 680032-501	2.179/4.8	-1 151/-45.32
(c) Propeller governor, McCauley C290D3F/T()	1.248/2.75	-815/-32.10
2 - Hartzell constant speed propeller installation		
(a) Propeller hub/blades assy Hartzell hub BHC - J2YF-1BF/blades F8459A-11Q	24.516/54	-1 151/-45.32
Pitch settings at 762 mm (30 in) station		
Low $14.7^{\circ} \pm 0.1^{\circ}$		
High 30.0° to 32.0° (see NOTE 10)		
Diameter: 1 854 mm (73.0 in) No reduction permitted (S/N 25-0001 and on)		
(b) Spinner assy, Hartzell A2295 (S/N 25-001 and on)	2.043/4.5	-1 151/-45.32
(c) Propeller governor McCauley C290D3F/T()	1.248/2.75	-815/-32.10

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ENGINES AND ENGINES ACCESSORIES (FUEL & OIL SYST.)

101. Fuel pumps		
(a) One electric, Dukes 4140-00-19A or 1499-00-19 or Weldon 10054A (S/N 25-0001 thru 25-0999)	0.862/1.9 1.225/2.7	+165/+6.5 +167/+6.5
(b) Weldon 10054B (S/N 25-1000 and on)	1.225/2.7	+165/+6.5
103. Induction air filter		
(a) Donaldson P13-6287 or Airmaze 125685-004	0.454/1	-355/-14.0
(b) Airmaze ED04011 00736 (S/N 25-1000 and on)	0.227/0.5	-607/-23.92
104. Starters		
(a) Teledyne Continental Motors 634592 (same as Prestolite MCL 6501 or 6462381)	8.217/18.1	-231/-9.1
(b) TCM 646275 (S/N 25-0001 and ON)	8.217/18.1	-231/-9.1

LANDING GEAR

201. Two main wheel/brake assy 6.00-6		
(a) * Cleveland wheel assy model No. 40-86/ Brake assy No. 30-56A * Optional - Cleveland 40-86E, 30-56 D or McCauley D-30670-9,-10,-11,-12	8.626/19	See NOTE 3
202. Two main wheel 6 ply rating tires		
(a) 6.00-6 Type III w / regular tubes	7.718/17	See NOTE 3
205. One nose wheel 5.00-05		
(a) * * Cleveland Model 40-87 * * Optional: - McCauley D-305000	1.180/2.6	See NOTE 3
206. One nose wheel 6 ply rating tire		
(a) 5.00-5 Type III W / regular tube	3.178/7	See NOTE 3

ELECTRICAL EQUIPMENT

301. Alternators / Generators		
(a) Alternator 70A, TCM 643008 (Same as Prestolite ALX-9425 A or ALX-9425B) See NOTE 7	5.311/11.7	-175/-6.9
(b) 70 A TCM 646719 Optional 70A TCM 649172	5.311/11.7 4.676/10.3	-175/-6.9 -140/-5.5
(c) Optional 10A, Generator Eletro-Mech EM 8012	2.633/5.8	-128/-5.04
302. Batteries		
(a) Auto-Lite R-35 or Prestolite R-35 or Gill 6-GCAB-11 or PS6-11 or Rebat R-37 (S/N 25-0001 thru 25-0999)	12.258/27	+2 814/+110.8
(b) Gill G-242 (S/N 25-1000 thru 25-1196)	12.258/27	+2 814/+110.8
(c) Gill G-243 (S/N 25-1197 and on)	13.393/29.5	+2 814/+110.8
303. Voltage Regulator		
(a) OECO 20082* or Eletrodelta VR414* or VR415 or VR415D or 800270-505	0.635/1.4 0.272/0.6	+51/+2.0 +51/+2.0

ELECTRICAL EQUIPMENT (CONT.)

(b) Precise Flight DGR-2 or Eletrodelta VR802 (1 or 2 ea) or 800270-503 (S/N 25-1000 and on)	0.272/0.6	+51/+2.0
* Use 800331-721 adapter when OECO or VR414 is replaced by VR415, VR415D or 800270- 505 regulator.		

MISCELLANEOUS

601. Warning Systems

(a) Gear warning indicator Mallory SC628P	0.454/1	-64/-2.5
(b) Stall warning indicator Mallory SC628	0.454/1	+1 270/+50.0

602. Vacuum pumps

(a) *** Airborne 200CC	1.589/3.5	-96/-3.8
(b) *** Airborne 211CC	1.135/2.5	-96/-3.8
(c) Sigma-Tek 1U128-003 and 1U128-005 (Alternate for all applications)	1.543/3.4	-96/-3.8
*** Airborne 241CC (alternate all counter clockwise applications)	1.543/3.4	-96/-3.8
*** Airborne 242CW-10 (alternate all clockwise applications)	1.543/3.4	-96/-3.8

III - Model M20M. (normal Category) Approved 26 November 1991

ENGINE	Textron-Lycoming TIO-540-AF1A Textron-Lycoming TIO-540-AF1B standard for 27-0211 thru 27-TBA Optional for 27-0001 thru 27-0210.	
FUEL	100 LL or 100 min. grade aviation gasoline	
ENGINE LIMITS	For all operations 2 575 rpm, 38.0 in Hg MP (270 hp)	
AIRSPEED LIMITS (CAS)	Maneuvering	141 mph (123 kt)
	Never exceed	225 mph (195 kt)
	Flaps extended	125 mph (109 kt)
	L.G. retraction	120 mph (104 kt)
	L.G. extension	160 mph (139 kt)
	L.G. extended	190 mph (165 kt)
	Max. structural cruising	200 mph (174 kt)
C.G. RANGE (L.G. extended)	S/N 27-0001 thru 27-0052: 1452.8 kg (3200lb) C.G. limits: +1 143 mm (+45.0 in) to +1 295 mm (+51.0 in) at 1 452.8 kg (3 200 lb) +1 092 mm (+43.0 in) to +1 295 mm (+51.0 in) at 1362 kg (3 000 lb) +1 041 mm (+41.0 in) to +1 295 mm (+51.0 in) at 1 103.22 kg (2 430 lb) or less. Straight line variation between points given. Retraction moment 709.2 kg.cm (615 in.lb)	

C.G. RANGE (CONT.) (L.G. extended)	S/N 27-0053 and on and S/N 27-0001 thru 27-0052 that have complied With Mooney S.B. M20-248: 1 529.1 kg (3 368 lb) C. G. limits: +1 168 mm (+46.0 in) to +1 295 mm (+51.0 in) at 1 529.1 kg (3 368 lb) +1 118 mm (+44.0 in) +1 295 mm (+51.0 in) at 1 498 kg (3 300 lb) +1 041 mm (+41.0 in) to +1 295 mm (+51.0 in) at 1 103.22 kg (2 430 lb) or less. Straight line variation between points given. Retraction moment 709.2 kg.cm (615 in.lb)		
EMPTY WEIGHT C. G. RANGE	None		
MAX. WEIGHT	1 452.8 kg (3 200 lb) S/N 27-0001 thru 27-0052 1 529.1 kg (3 368 lb) takeoff and 1 452.8 kg (3 200 lb) landing for S/N 27-0053 and on and those aircraft S/N 27-0001 thru 27-0052 that have complied with Mooney S.B. M20-248.		
No. OF SEATS	4:2 at +864 mm (+34.0 in) to +991 mm (+39.0) 2 at +1 796 mm (+70,7 in)		
MAX. BAGGAGE	54.48 kg (120 lb) at +2 578 mm (+101.5 in) and 4.54 kg (10 lb) at +3 200 mm (+126.0 in)		
FUEL CAPACITY	336.8 L (89 gal) Two integral tanks in wings at +1 250 mm (+49.23 in). See NOTE 1 for data on unusable fuel.		
OIL CAPACITY	9.46 L (10 gal) at -629 mm (-24.76 in)		
MAX. OPERATING ALTITUDE	25 000 ft (See NOTE 11)		
CONTROL SURFACE MOVEMENTS	Wing flaps	Take off Landing	Down 10° ±1° Down 33° +0°/-2°
	Aileron	Up 12.5° to 14.5°	Down 8° ± 1°
	Aileron static position		Down 0° to 2°
	Elevator	Up 22° +0°/-2°	Down 22° +0°/-2°
	Rudder	Left 23° to 24°	Right 23° to 24°
	Stabilizer (L.E.)	Up 3.8° to 4.2°	Down 6.5° to 7°
ELEVATOR TRIM ASSIST	With stabilizer set at maximum positive setting and elevators full down, adjust turn buckle for a 6 356 kg (14.0 lb) to 7 264 kg (16.0 lb) tensionmeter reading on cable. Check for positive clearance between cable end and pulley sheave. Tensionmeter reading 9.08 kg (20 lb) maximum permissible.		
LEVELING MEANS	Leveling screws located above the tailcone access door on left side		
SERIAL No. ELIGIBLE	S/N 27-0001 and Up		

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REQUIRED EQUIPMENT	In addition to the required basic equipment specified in CAR 3 the following items of equipment must be installed: 1(a), (b) or (c), (d), 101(a)(b), 102(a), 103(a) or (b), 104(a), 201(a), 202(a), 205(a), 206(a), 301(a), 302(a), 303(a), 601(a), 602(a), (b) or (c).
DATUM	330 mm (13 inches) aft of the centerline of the nose gear support bolts (fuselage station 0.00). The leading edge of the wing, at wing station 1 505 mm (59.25 in), is 838 mm (33 inches) aft of fuselage station 0.00.
CERTIFICATION BASIS	<u>Model M20M</u> CAR 3 effective 1 November 1949, as amended to 18 May 1954, paragraph 3.74 as amended to 25 August 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective 15 May 1956, as amended to 1 October 1959. In lieu of corresponding CAR 3 paragraphs, where applicable FAR 23. effective 1 February 1965; paragraph 23.29 as amended to 1 March 1978, paragraph 23.33, as amended to 14 September 1969: paragraphs 23.901 thru 23.953, 23.955 thru 23.963, 23.967 thru 23.1063, as amended to 14 September 1969; paragraphs 23.1091 thru 23.1105, as amended to 1 February 1977; paragraphs 23.1121 thru 23.1193, 23.1351 thru 23.1399 as amended 14 September 1969; paragraphs 23.1401 as amended to 11 August 1971; paragraphs 23.1441 thru 23.1449 as amended to 17 June 1970, paragraph 23.1521 as amended to 1 December 1978; paragraph 23.1525; paragraph 23.1527, as amended to 14 September 1969; paragraph 23.1545, 23.1549, 23.1553 as amended to 1 December 1978; paragraph 23.1557, as amended to 20 December 1973; paragraph 23.1559 as amended to 1 March 1978; paragraph 23.1563 as amended to 14 September 1969; paragraph 23.1583 as amended to 1 December 1978; FAR 36, effective 20 September 1976, as amended to 22 December 1988.
ADDITIONAL REQUIREMENTS	Requirements set forth in CTA Report H.10-0882-01 dated 19 January 1998 or in its approved revisions.
IMPORT ELIGIBILITY	A Brazilian Airworthiness Certificate may be issued on the basis of a FAA Export Certificate of Airworthiness or a third country Export certificate of 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. 8701 and in condition of safe operation". The CTA Report H.10.0882-01, dated 19 January 98 or latest revisions, contains the Brazilian requirements for the acceptance of these airplanes. The differences of the Brazilian airplanes in relation to the basic FAA type <ol style="list-style-type: none">1. Brazilian approved AFM;2. Portuguese markings and placards;3. One ELT (RBHA 91 requirements)4. One HF communication system (RBHA 91 requirements); and5. ADF system (RBHA 91 requirements).

PLACARDS All markings and placards for passenger information, external markings for emergency, load limits in cargo/baggage compartments must be presented in Portuguese or bilingual in accordance with Annex 1 to CTA Report H.10-088-02.

APPROVED AIRPLANE FLIGHT MANUAL Pilot's Operating Handbook and CTA approved Airplane Flight manual No. 3203, dated 12 February 1995.

PROPELLER AND PROPELLER ACCESSORIES	Weight (kg/lb)	Fuselage Station (mm/in)
1. McCauley constant speed propeller installation		
(a) McCauley B3D32C417 Hub/Blades 82NRD-7	34.05/75.0	-1 257/-49.5
Pitch settings at 762 mm (30 in) blade station:		
Low $15.1^{\circ} \pm 0.2^{\circ}$		
High $43.0^{\circ} \pm 0.5^{\circ}$		
Diameter: 1 905 mm (75.0 in)		
No reduction permitted		
(b) Spinner assy McCauley D-6204	2.179/4.8l	-1 295/-51.0
(c) Spinner assy McCauley D-6204-1	2.179/4.8l	-1 295/-51.0
(d) Propeller governor McCauley C290D3() T27	1.452/3.2	-909/-35.80
(e) Propeller de-icing boots, McCauley 690003-501 (S/N 27-0001 and on)	4.086/9	-1 257/-49.5
ENGINES AND ENGINE ACCESSORIES (FUEL & OIL SYSTEMS)		
101. Fuel Pumps		
(a) Electric Weldon A10051-D	0.862/1.9	+165/+6.5
(b) Engine driven Lear Siegler RG 17980J	0.908/2.0	-76/-3.0
102. Oil Radiator		
(a) Stewart Warner 10614R	3.405/7.5	-812/-32.0
103. Induction air filter		
(a) Air Maze ED04028 or		
(b) Donaldson P5242257	0.454/1	-914/-36.0
104. Starter		
(a) Starter, geared, Textron-Lycoming 31B21064	8.172/18	-902/-35.5
LANDING GEAR		
201. Two main wheel/brake assy 6.00-6		
(a) * Cleveland wheel assy model No. 40-86/Brake assy No. 30-56A * Optional-Cleveland 40-86E, 30-56D or McCauley D-30670-9,-10,-11,-12.	8.626/19.0	see NOTE 3
202. Two main wheel 6 ply rating tires		
(a) 6.00-6 Type III w/regular tubes	7.718/17	see NOTE 3

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LANDING GEAR (CONT.)

205.	One nose wheel 5.00-5		
	(a) * Cleveland model 40-87	1.180/2.6	see NOTE 3
	* Optional: -McCauley D-305000		
206.	One nose wheel 6 ply rating tire		
	(a) 5.00-5 Type III w/regular tube	3.178/7	see NOTE 3

ELECTRICAL EQUIPMENT

301.	Alternators		
	(a) Alternator ES 4009 # 1	4.199/9.25	-1 130/-44.5
	Optional Alternator ES 4009 # 2	4.199/9.25	-1 176/-46.3
302.	Batteries		
	(a) Two, Gill (Teledyne) G-243	13.393/29.5 (ea)	+3 708/+146
303.	Voltage regulators		
	(a) Precise Flight DGR-2 or		
	Electrodelta VR 802 (2 reqd) or	0.272/0.6 (ea)	+413/+16.25
	800270-503 (1 reqd.)	0.281/0.62	+413/+16.25

MISCELLANEOUS

601.	Systems		
	(a) Stall/Gear warning		
	IAI, P/N 950D-0309-000	0.494/1.1	+107/+4.24
	(b) Oxygen installation 870029-513	20.203/44.5	+3 479/+137
602.	Vacuum Pumps		
	(a) Airbone 241CC-15	1.543/3.4	-231/-9.11
	(b) Airborne 28C214 CW	1.543/3.4	-231/-9.11
	(c) Sigma Tec 1U128-006 (alternate)	1.543/3.4	-231/-9.11

IV - Model M20R. (Normal Category). approved on 10 February 1998

ENGINE	Teledyne Continental motors IO-550-G(5) (6) configuration is same as (5) configuration and may be used when dry pad adapter is required.	
FUEL	100 LL or 100 min-grade aviation gasoline	
ENGINE LIMITS	For all operations 2 500 rpm, 280 hp.	
AIRSPEED LIMITS (CAS)	Maneuvering	141 mph (123 knots)
	Never exceed	225 mph (195 knots)
	Flaps extended	125 mph (109 knots)
	L.G. retraction	120 mph (104 knots)
	L.G. extension	160 mph (139 knots)
	L.G. extended	190 mph (165 knots)
	Max. structural cruising	200 mph (174 knots)

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C. G. RANGE (L.G. extended)	S/N 29-0001 and on: +1 168 mm (+46,0 in) to +1 295 mm (+51.0 in) at 1529 kg (3368lb) +1 117 mm (+44.0 in) to +1 295 mm (+51.0 in) at 1 498.2 kg (3 300 lb) +1 041 mm (+41.0 in) to +1 295 mm (+51.0 in) at 1 103.22 kg (2 430 lb) or less		
EMPTY WEIGHT C.G. RANGE	None		
MAXIMUM WEIGHT	For S/N 29-0001 and on: Takeoff - 1 529 kg (3 368 kbf) Landing - 1 452.8 kg (3 200 lb)		
No. OF SEATS	4:2 at +864 mm (+34.0 in) to +991 mm (+39.0 in), 2 at +1 796 mm (+70,7 in)		
MAXIMUM BAGGAGE	54.48 kg (120 lb) at +2 578 mm (+101.5 in) and 4.54 kg (10 lb) at +3 200 mm (+126.0 in)		
FUEL CAPACITY	336.9 L (89 gal) - Two integral tanks in wings at +1 250 mm (49.23 in) (usable) See NOTE 1 for data on unusable fuel.		
OIL CAPACITY	7.5 L (8 gal) at -629 mm (-24.76 in)		
MAX. OPERATING ALTITUDE	See NOTE 11		
CONTROL MOVEMENTS	SURFACE		
	Wing flaps	Take off Landing	Down 10° ±1° Down 33° +0°/-2°
	Aileron	Up 12.5° to 14.5°	Down 8° ± 1°
	Aileron static position		Down 0° to 2°
	Elevator	Up 22° +0°/-2°	Down 22° +0°/-2°
	Rudder	Left 23° to 24°	Right 23° to 24°
	Stabilizer (L.E.)	Up 3.8° to 4.2°	Down 6.5° to 7°
ELEVATOR TRIM ASSIST	With stabilizer set at maximum positive setting and elevators full down, adjust turnbuckle for a 6 356 kg (14.0 lb) to 7 264 kg (16.0 lb) tensiometer reading on cable. Max. tensiometer reading permissible 9.08 kg (20 lb). Check for positive clearance between cable end and pulley sheave.		
LEVELING MEANS	Leveling screws located above the tail cone access door on left side		
SERIAL No. ELIGIBLE	S/N 29-0001 and Up		
REQUIRED EQUIPMENT	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1(a), (b) or (c) or (d), 101(a), (b), 102(a), 103(a) or (b), 104(a), 201(a), 202(a), 205(a), 206(a), 301(a), 302(a), 303(a), 601(a), 602(a) or (d) and (b) or (c).		

DATUM	<p>330 mm (13 inches) aft of the centerline of the nose gear support bolts (fuselage station 0.00)</p> <p>The leading edge of the wing at wing station 1 505 mm (59.25 in) is 838 mm (33.00 in) aft of fuselage station 0.00.</p>
CERTIFICATION BASIS	<p>Model M20R CAR 3 effective 1 November 1949, as amended to 18 May 1954, paragraph 3.74 as amended to 25 August 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective 15 May 1956, as amended to 1 October 1959. In lieu of corresponding CAR 3 paragraph, where applicable-FAR 23, effective 1 February 1965; paragraph 23.29 as amended to 1 March 1978, paragraph 23.33, as amended to 14 September 1969; paragraphs 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to 14 September 1969; paragraphs 23.1091 through 23.1105, as amended to 1 February 1977; paragraphs 23.1121 through 23.1193, 23.1351 through 23.1399 as amended to 14 September 1969; paragraphs 23.1401 as amended to 11 August 1971; paragraphs 23.1441 through 23.1449 as amended to 17 June 1970, paragraph 23.1521 as amended to 1 December 1978; paragraph 23.1525; paragraph 23.1527, as amended to 14 September 1969; paragraph 23.1545, 23.1549, 23.1553 as amended to 1 December 1978; paragraph 23.1557, as amended to 20 December 1973; paragraph 23.1559 as amended to 1 March 1978; paragraph 23.1563 as amended to 14 September 1969; paragraph 23.1583 as amended to 1 December 1978; FAR 36, effective 20 September 1976, as amended to 22 December 1988.</p>
ADDITIONAL REQUIREMENTS	<p>Requirements set forth in CTA Report H.10-0883-01, dated 19 January 1998 or in its approved revisions.</p>
IMPORT ELIGIBILITY	<p>A Brazilian Airworthiness Certificate may be issued on the basis of a FAA Export Certificate of Airworthiness or a third country Export certificate of 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. 8701 and in condition of safe operation". The CTA Report H.10.0883-01, dated 19 January 1998 or latest revisions, contains the Brazilian requirements for the acceptance of these airplanes. The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:</p> <ol style="list-style-type: none">1. Brazilian approved AFM;2. Portuguese markings and placards;3. One ELT (RBHA 91 requirements)4. One HF communication system (RBHA 91 requirements); and5. One ADF system (RBHA 91 requirements).
PLACARDS	<p>All markings and placards for passenger information, external markings for emergency, load limits in cargo/baggage compartments must be presented in Portuguese or bilingual in accordance with Annex 1 to CTA Report H.10-088-02.</p>

APPROVED AIRPLANE FLIGHT MANUAL Pilot's Operating Handbook and CTA approved Airplane Flight Manual No. 3.600, dated 12 March 1996.

PROPELLER AND PROPELLER ACCESSORIES

	Weight (kg/lb)	Fuselage Station (mm/in)
1. McCauley constant speed propeller installation		
(a) McCauley 3A32C418 Hub/Blades 82NRC-9	32.597/71.8	-1 257/-49.5
Pitch settings at 762 mm (30 in) blade station:		
Low $16.1^{\circ} \pm 0.2^{\circ}$		
High $40.0^{\circ} \pm 0.5^{\circ}$		
Diameter: 1 854 mm (73.0 in). 12.7 mm (0.5 in) reduction permitted		
(b) Spinner assy McCauley D-7192 (painted)	2.179/4.8	-1 295/-51
(c) Spinner assy McCauley D-7192-1 (polished)	2.179/4.8	-1 295/-51
(d) Propeller governor Mooney 660115-511	1 452/3.2	-968/-38.13
(e) Propeller de-icing boots McCauley 690003-501 (S/N 29.0001 and on)	4.086/9	-1 257/-49.5

ENGINES AND ENGINE ACCESSORIES (FUEL & OIL SYST.)

101. Fuel pumps		
(a) Electric, Weldon A8152B	0.862/1.9	+165/+6.5
(b) Engine driven, TCM 649364-4A1	0.908/2.0	-252/-9.95
102. Oil radiator		
(a) TCM 637132	3.541/7.8	-311/-12.24
103. Induction air filter		
(a) Air- Maze ED04028 or		
(b) Donaldson P5242257	0,454/1	-914/-36.0
104. Starter		
(a) Starter geared, TCM 646275	6.583/14.5	-231/-9.11

LANDING GEAR

201. Two, main wheel/brake assy 6.00-6		
(a) Cleveland, wheel assy model n° 40-86 and brake assy No. 30-56A Optional: Cleveland 40-86E, 30-56D or McCauley D-30670-9, -10, -11, -12	8.626/19.0	See NOTE 3
202. Two, main wheel 6 ply rating tires		
(a) 6.00-6 Type III W/regular tubes	7.718/17	See NOTE 3

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LANDING GEAR (CONT.)

205. One nose wheel 5.00-5 (a) Cleveland model 40-87 Optional: McCauley D-305000	1.180/2.6	See NOTE 3
206. One nose wheel 6 ply rating tire (a) 5.00-5 Type III w/regular tube	3.178/7	See NOTE 3

ELECTRICAL EQUIPMENT

301. Alternator (a) Alternator, TCM 649304 (100A)	7.945/17.5	-966/-38.05
302. Batteries (a) Gill (Teledyne) G-243 (2 reqd.)	(ea) 13.393/29.5	+3 708/+146.0
303. Voltage Regulators (a) MAC 800270-501 (alternator)	0.136/0.3	+413/+16.25
(b) MAC 800270-523 (Low boost pump)	0.113/0.25	+413/+16.25

MISCELLANEOUS

601. Systems (a) Stall/Gear Warning IAI 950D-0309-000	0.499/1.1	+108/+4.24
(b) Oxygen installation 870029-513	20.679/45.55	+3 480/+137
602. Vacuum pumps (a) Airborne 242Cw	1.543/3.4	-231/-9.11
(b) Airborne 28C214Cw (Clutch driven)	1.543/3.4	-231/-9.11
(c) Sigma Tec 1U128-006 (alternate)	1.543/3.4	-231/-9.11
(d) Airborne 241CC-15	1.543/3.4	-231/-9.11

V - Model M20TN. (Normal Category). approved on March 05, 2008.

ENGINE	Teledyne Continental Motors, TSIO-550-G (1B)	
FUEL	100 LL or 100 octane min. grade aviation gasoline.	
ENGINE LIMITS	For all operations, 2 500 rpm, 280 hp.	
AIRSPEED LIMITS (CAS)	Maneuvering	146 mph (127 kt)
	Never exceed	225 mph (196 kt)
	Flaps extended	127 mph (111 kt)
	L. G. retraction	123 mph (107 kt)
	L. G. extension	162 mph (141 kt)
	L. G. extended	191 mph (166 kt)
	Max. structural cruising	201 mph (175 kt)

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C. G. RANGE (L. G. extended)	+1 168.4 mm (+46.0 in) to +1 295.4 mm (+51.0 in) at 1 527.7 kg (3368 lb) +1 117.6 mm (+44.0 in) to +1 295.4 mm (+51.0 in) at 1 496.9 kg (3300 lb) S/N 31-0001 and on +1 041.4 mm (+41.0 in) to +1 295.4 mm (+51.0 in) at 1 102.2 kg (2 430 lb) or less		
EMPTY WEIGHT C. G. RANGE	1 046 kg (2 306 lb)		
MAXIMUM WEIGHT	S/N 31-0001 thru 31-TBA. 1 451.5 kg (3 200 lb) landing / 1 527.7kg (3 368 lb) takeoff		
No. OF SEATS	2 at +864.0 mm (+34.0 in) to +991.0 mm (+ 39.0 in) and 2 at +1 796 mm (+70.7 in).		
MAXIMUM BAGGAGE	54.48 kg (120 lb) at +2 426 mm (+101.5 in), 4.54 kg (10 lb) at +3 200.4 mm (+126.0 in)		
FUEL CAPACITY	336.9L (+89 gal) - Two integral tanks in wings at +1 249.7mm (+49.2 in). See NOTE 1 for data on unusable fuel.		
OIL CAPACITY	7.57 L (2 gal) at -628.9 mm (-24.76 in)		
MAXIMUM OPERATING ALTITUDE	Service Ceiling 25 000 ft. See NOTE 11.		
CONTROL MOVEMENTS:	SURFACE		
	Wing flaps	Take-off	Down 10° ± 1°
		Landing	Down 33° +0°/-2°
	Aileron	Up 12.5° to 15.5°	Down 8° ± 1°
	Aileron static position		Down 0° to 2°
	Elevator	Up 22° +0°/-2°	Down 22° +0°/-2°
	Rudder	Left 23° to 24°	Right 23° to 24°
	Stabilizer (L.E.)	Up 3.8° to 4.2°	Down 6.5° to 7.0°
ELEVATOR TRIM ASSIST.	With stabilizer set at maximum positive setting and elevators full down. Adjust turn buckle for a 6.4 to 7.3 kg (14.0 to 16.0 lb) tensiometer reading on cable, tensionmeter reading (9.1kg (20 lb) maximum permissible). Check for positive clearance between cable end and pulley sheave.		
LEVELING MEANS	Leveling screws located above the tail cone access door on left side. Spirit level is to be placed on screws for level.		
SERIAL No. ELIGIBLE	S/N 31-0001 and Up.		
REQUIRED EQUIPMENT	In addition to the pertinent required basic equipment specified in CAR 3, following items of equipment must be installed: 1(a), (b) or (c), (d), or 2(a), (b), or (c), (d), 101(a)(b), 102(a), 103(a) or (b), 104(a), 201(a), 202(a), 205(a), 206(a), 301(a), 302(a) or (b), 303(a), 401(a), 601(a), 602(a) or (c) or (d) and (b) or (e).		
DATUM	For M20TN, datum is 13 inches aft of the centerline of the nose		

gear support bots and is fuselage station 0.00.
The leading edge of the wing, at wing station 59.25, is 33.00 inches aft of fuselage station 0.00.

CERTIFICATION BASIS

a. CAR 3 effective 1 November 1949, as amended to 18 May 1954, paragraph 3.74 as amended to 25 August 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective 15 May 1956, as amended to 1 October 1959.

b. In lieu of corresponding CAR 3 paragraphs, where applicable the RBHA 23 (Brazilian Requirements for Aeronautical Certification), which endorses the FAR 23 effective 1 February 1965: paragraph 23.29 as amended to 1 March 1978; paragraph 23.33, as amended to 14 September 1969; paragraphs 23.201 and 23.203 as amended 11 March 1996; paragraphs 23.45 thru 23.77 as amended to 11 March 1996; paragraph 23.771 as amended to 20 December 1973; paragraph 23.773 as amended to 7 September 1993; paragraphs 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to 14 September 1969; paragraphs 23.1091 through 23.1105, as amended to 1 February 1977; paragraphs 23.1121 through 23.1193 as amended to 14 September 1969; paragraph 23.1301 as amended to 1 September 1997; paragraph 23.1305 as amended to 25 July 1996; paragraphs 23.1307, 23.1311, 23.1321 as amended to 11 March 1996; paragraph 23.1322 as amended to 10 May 1993; paragraphs 23.1323 thru 23.1326 as amended to 11 March 1996; paragraph 23.1327 as amended 1 September 1977; paragraph 23.1329 as amended to 11 March 1996; 23.1331 as amended to 10 May 1993; 23.1337, 23.1359 as amended to 11 March 1996; 23.1351 through 23.1399 as amended to 14 September 1969; paragraphs 23.1401 as amended to 11 August 1971; paragraphs 23.1441 through 23.1449 as amended to 17 June 1970, paragraph 23.1521 as amended 1 December 1978; paragraph 23.1525; paragraph 23.1527, as amended to 14 September 1969; paragraph 23.1529 as amended to 14 October 1980; 23.1541 as amended to 1 March 1978; 23.1543 as amended to 1 February 1997; 23.1553 as amended to 1 December 1978; paragraph 23.1557, as amended to 20 December 1973; paragraph 23.1559 as amended to 1 March 1978; paragraph 23.1563 as amended to 14 September 1969; paragraph 23.1583 as amended to 1 December 1978; paragraph 23.1587 as amended to 11 March 1996; and RBHA 23, paragraph 23.729(f)(3), as amended to 6 August 1990.

c. Regulations RBHA 23, which endorses the FAR Part 23 effective 1 February 1965 at the latest Amendment 23-0 through 23-55.

14 CFR Part	Amd.	14 CFR Part	Amd.
§ 23.143(a)(b)(c)	23-50	§ 23.867(a)(b)	23-49
§ 23.303(a)	23-48	§23.1301(a)(b)(c)(d)	23-20
§ 23.303	-	§23.1309(a)(b)(c)(d)(e)(f)	23-49
§ 23.305(a)(b)	23-45	§ 23.1311(a)(b)(c)	23-49
§ 23.307(a)	-	§ 23.1321(a)(c)(e)	23-49

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CERTIFICATION BASIS (CONT.)

14 CFR Part	Amd.	14 CFR Part	Amd.
§ 23.395(a)(l)	23-7	§23.1322(a)(b)(c)(d)(e)	23-43
§ 23.397(a)(b)	23-45	§23.1329(a)(b)(c)(d)(e)(f)(h)	23-49
§23.561(a)(b)(2)	23-48	§ 23.1335	23-20
§ 23.601	-	§ 23.1351(a)(g)	23-49
§ 23.603(a)(b)	23-23	§ 23.1353(h)	23-49
§ 23.605	23-23	§ 23.1357(a)(b)(c)(d)	23-43
§ 23.607	-	§ 23.1359(a)(b)(c)	23-49
§ 23.609(a)(b)	-	§ 23.1365(a)(b)(d)(e)	23-49
§ 23.611	-	§ 23.1367(a)(b)(c)(d)	-
§23.613(a)(b)(c)	23-45	§ 23.1381(a)(b)	-
§ 23.625(a)	23-7	§ 23.1431(a)(b)(e)	23-49
§ 23.671(a)(b)	-	§ 23. 1525	23-45
§ 23.677(a)(d)	23-49	§ 23. 1529	23-26
§ 23.685(a)(c)(d)	23-17	§ 23.1541(b)(l)(c)(2)	23-21
§23.689(a)(l)(2)(3)(b)(c)(d)(e)	23-7	§ 23.1555(a)	23-50
§ 23.771(a)	23-14	§23.1581(a)(b)(2)(c)(d)(f)	23-50
§ 23.777(a)(b)	23-51	§ 23.1583(h)(m)	23-50
§ 23.779(a)	23-51	§ 23.1585(j)	23-50

d. RBHA 36 - Brazilian Requirements for Aeronautical Certification, which endorses the FAR 36 effective 20 September 1976, as amended to 22 December 1988.

e. Special Conditions:

- FAA 23-177-SC: Garmin International, Inc., GFC-700 AFC with G1000 EFIS; Protection of Systems for High Intensity Radiated Fields (HIRF).
- See NOTE 13.

ADDITIONAL REQUIREMENTS

Brazilian Special Requirements set forth in ANAC Report H.10-0885-01, 02 June 2008 or in its approved revisions.

IMPORT ELIGIBILITY

A Brazilian Airworthiness Certificate may be issued on the basis of a FAA Export Certificate of Airworthiness, or a third country Export Certificate of 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. 8701 and in condition of safe operation". The ANAC Report H.10-0885-01, 02 June 2008 or latest revisions, contains the Brazilian requirements for the acceptance of these airplanes. The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:

1. Brazilian approved AFM;
2. Portuguese markings and placards.

PLACARDS

All markings and placards for passenger information, external markings for emergency, load limits in cargo/baggage compartments must be presented in Portuguese or bilingual in accordance with Annex 1 to ANAC-GGCP Report H.10-0885-01.

APPROVED AIRPLANE FLIGHT MANUAL

(a) Pilot's Operating Handbook and FAA approved Airplane Flight Manual (On behalf of the ANAC) No. POH-003900BR, dated 11 December 2007.

(b) Pilot's Operating Handbook and FAA approved Airplane Flight Manual (On behalf of the ANAC) No. POH-003901BR, dated 02 April 2008, for M20TN Type S, with Hartzell Propeller Hub/Blade Model Number PHC-J3YF-1RF/F7498 or PHC-J3YF-1RF/F7498(B).

PROPELLER AND PROPELLER ACCESSORIES

1. Hartzell constant speed propeller installation

- (a) Hartzell Hub/Blade Model Number
PHC-J3YF-1RF/F7693DF(B)-2 or
PHC-J3YF-1RF/F7693DF-2

Pitch Settings at 30" blade station:

Low $16.5^{\circ} \pm 0.2^{\circ}$

High $38.0^{\circ} \pm 1^{\circ}$

Diameter – 76.0 in. –1/2 inch reduction permitted.

- (b) Spinner assy, Hartzell, A-2295-10P (polished)
(c) Propeller governor, McCauley, D-20960-1

1. Hartzell constant speed propeller installation

- (a) Hartzell Hub/Blade Model Number
PHC-J3YF-1RF/F7498 or
PHC-J3YF-1RF/F7498(B)

Pitch Settings at 30" blade station:

Low $17^{\circ} \pm 0.2^{\circ}$

High $38.0^{\circ} \pm 1^{\circ}$

Diameter – 76.0 in. max., 74.0 in. min

- (b) Spinner assy, Hartzell, A-2295-10
(c) Propeller governor, McCauley, D-20960-1

ENGINE ACCESSORIES (FUEL & OIL SYST.)

101. Fuel Pumps

- (a) Electric, Dukes 5791-00-1
(b) Engine Driven, TCM, 649364-4A1

103. Induction air filter

- (a) Challenger Aviation Products, CPE1 179

104. Starter (a) Starter, Geared TCM, 646275,

LANDING GEAR

201. Two, Main Wheel/brake assy, 6.00-6

(a) Cleveland, Wheel Assembly, Model No. 40-90-A/
Brake Assembly No. 3 0 65 See NOTE 3.

202. Two, main wheel, 6-ply rating tires, (a) 6.00-6, Type
III, w/ regular tube See NOTE 3.

ELECTRICAL EQUIPMENT

301. Alternator
(a) Alternator, Kelly Aerospace, ES-10024-1 (100 amp)
(b) Alternator, Stand-by, B&C, BC410-1
302. Batteries
(a) Gill (Teledyne), G-243 (2 reqd.) or
(c) Concorde, RG24-1 1M or -15 (2 reqd.)
303. Voltage Regulators (a) Zeftronics, A25EAM, (Alternator)

INTERIOR EQUIPMENT

401. FAA Approved Airplane Flight Manual
(a) POH/AFM number POH-003900BR, Rev. A, 11 December 2007.

MISCELLANEOUS

601. Systems
(b) Oxygen instl, 870029-513
602. Vacuum Pumps – N/A

NOTES - Applicable to all Models, except as noted

NOTE 1 Current weight balance report, including list of equipment included in certificate empty weight and loading instructions when necessary, must be in each aircraft at the time of original certification and at all times thereafter (except in the case of air carrier operators having an approved weight control system). The certificated empty weight and the corresponding center of gravity location must include unusable fuel (not included in fuel capacity) as follows: 6.81 kg (15 lb) at +1 229 mm (+48,4 in) for the M20J; 21.792 kg (48.0 lb) at +1 234 mm (+48.59 in); for the M20K (S/N 25-0001 thru 25-0446); 8.172 kg (18.0 lb) at +1 234 mm (+48.59 in) for the M20K (S/N 25-0447 and on; 16.344 kgf (36 lbf) at +1 250 mm (+49.23 in) for the M20M S/N 27-0001 and on and M20R S/N 29-0001 and on; 16.3 kg (36 lb) at +1 250 mm (+49.23 in) for the M20TN (S/N 31-0001 and on).

NOTE 2 Placards:

- a. The following placards must be displayed in front of and in clear view of the pilot.
- (1) M20J - (S/N 24-0002 THROUGH 24-0083 AND 24-0085 THROUGH 24-0377)
"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. MAXIMUM SPEED WITH LANDING GEAR EXTENDED, 104 KIAS MAXIMUM SPEED TO RETRACT GEAR, 96 KIAS. MAXIMUM SPEED TO EXTEND GEAR, 104 KIAS. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR - FLAPS UP +3.8, -1.5; FLAPS DOWN +2.0."
- (2) M20J & M20K - (S/N 24-0084, 24-0378 THRU 24-2999, 24-3079 THRU 24-TBA, 25-0001 THRU 25-0999)
"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. MAXIMUM SPEED WITH LANDING GEAR EXTENDED, 132 KIAS. MAXIMUM SPEED TO RETRACT GEAR, 104 KIAS. MAXIMUM SPEED TO EXTENDED GEAR, 132 KIAS. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR-FLAPS UP +3.8, -15; FLAPS DOWN +2.0, -0."

**NOTE 2
(Cont.)**

- (3) M20J - (S/N 24-3000 THRU 24-TBA): M20K - (S/N 25-1000 THRU 25-TBA)
"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. MAXIMUM SPEED WITH LANDING GEAR EXTENDED, 165 KIAS. MAXIMUM SPEED TO RETRACT GEAR, 107 KIAS. MAXIMUM SPEED TO EXTEND GEAR, 140 KIAS. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR - FLAPS UP +3.8, -1.5; FLAPS DOWN +2.0 -0."
- (4) M20M - (S/N 27-0001 THRU 27-0052 if SB M20-248 has not been complied with)
"THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. THIS AIRPLANE IS CERTIFIED FOR DAY AND NIGHT VFR/IFR OPERATION WHEN THE REQUIRED EQUIPMENT IS INSTALLED AND OPERATIONAL. FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL. MANEUVERING SPEED (3 200 LBS.). 123 KIAS; (2 400LBS.), 106 KIAS.
- (5) M20M - (S/N 27-0001 thru 27-0052 if SB M20-248 has been complied with and S/N 27-0053 and ON)
"THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. THIS AIRPLANE IS CERTIFIED FOR DAY AND NIGHT VFR/IFR OPERATION WHEN THE REQUIRED EQUIPMENT IS INSTALLED AND OPERATIONAL. FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL. MANEUVERING SPEED (3 368 LBS.), 127 KIAS; (2 600 LBS.), 111 KIAS.
- (6) M20R - (S/N 29-0001 AND ON)
"THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. THIS AIRPLANE IS CERTIFIED FOR DAY AND NIGHT VFR/IFR OPERATION WHEN THE REQUIRED EQUIPMENT IS INSTALLED AND OPERATIONAL. FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL. MANEUVERING SPEED (3 368 LBS.) 127 KIAS; (2 232 LBS.) 103 KIAS.
- (7) M20TN - (S/N 31-001 and ON) "
"THE MARKINGS AND PLACEARDS INSTALLED IN THIS AIRPLANE COTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. THIS AIRPLANE IS CERTIFIED FOR DAY AND NIGHT VFR/IFR OPERATION WHEN THE REQUIRED EQUIPMENT IS INSTALLED AND OPERATIONAL. FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY AR CONTAINED IN THE AIRPLANE FLIGHT MANUAL. MANEUVERING SPEED (3 368 LBS) 127 KIAS; (2 232 LBS) 103 KIAS.

- NOTE 2 (Cont.)**
- b. On storm window: Early M20M & M20R aircraft - OPTIONAL "DO NOT OPEN ABOVE 129 KIAS"
 - c. On baggage compartment: "PESO MAX. NO BAGGAGEIRO 54 kg. VEJA INSTRUÇÕES PARA CARREGAMENTO NO MANUAL DE VÔO."
 - d. M20J, M20K, M20M, M20R, M20TN (on hat rack) "PESO MAX. NESTE COMPARTIMENTO 4,5 kg. COLOQUE SOMENTE OBJETOS MACIOS. VEJA INSTRUÇÕES PARA CARREGAMENTO NO MANUAL DE VÔO."
 - e. M20J - On instrument panel (right side):
 - (1) When McCauley Model B2D34C212/78CDA-4 propeller is installed. "AVOID CONTINUOUS OPERATION BETWEEN 1 600 AND 1 950 RPM WITH SETTING BELOW 15" Hg. MANIFOLD PRESSURE."
 - (2) When McCauley Model B2D34C214/90DHB-16E or 16-EP propeller is installed. "AVOID CONTINUOUS OPERATION BETWEEN 1 500 AND 1 950 RPM WITH POWER SETTINGS BELOW 15" Hg. MANIFOLD PRESSURE."
 - f. On rear seat bottom beneath cushion. (Eff. 24-1214 & UP - M20J, 25-0613 & UP - M20K, 27-0001 & up - M20M, 29-0001 & UP - M20R).
CUIDADO: "NÃO EXCEDA 77 kg SOBRE OS ENCOSTOS DOS ASSENTOS. VEJA INSTRUÇÕES PARA CARREGAMENTO NO MANUAL DE VÔO. AMARRE A CARGA COM OS CINTOS DE SEGURANÇA"
 - g. On M20J (24-30000 through 24-3078) above flap switch:
"FLAP EXTENSION SPEED MAXIMUM, 15°, 132 KIAS; FULL, 115 KIAS."
- NOTE 3** See aircraft weight and balance data for wheel locations.
- NOTE 4** Engine tachometer is to be marked with a YELLOW arc between 1 600 and 1 950 rpm indicating a caution range against continuous operation in this speed range with manifold pressure below 15" Hg.
- NOTE 5** Engine tachometer is to be marked with a YELLOW arc between 1 500 and 1 950 rpm indicating a caution range against continuous operation in this speed range with manifold pressure below 15" Hg.
- NOTE 6** A Textron-Lycoming 10-360-A1B6D engine can be converted to a Textron-Lycoming 10-360-A3B6D engine by complying with Mooney Aircraft Corporation Service Bulletin No. M20-206.
- NOTE 7** Model M20K gearing limits alternator output to 60 amperes (S/N 25-0001 thru 25-0999).
- NOTE 8** McCauley Model B2D34C214/90DHB-16E or 16EP propeller may be used on aircraft S/N 24-0002 thru 24-0377 when Mooney Service Bulletin # M20-214 has been incorporated.
- NOTE 9** A TSI0-360-GB series engine may be replaced with a TSI0-360-LB-1 engine by complying with Mooney Aircraft Corporation Service Bulletin No. M20-228.
- NOTE 10** High pitch setting at 30 in. station for Hartzell BHC-J2YF-1BF (Hub S/N 134 & ON) is 36.5° ±1.0° when installed on M20K S/N 25-1000 and on.

- NOTE 11** Operating altitude limitations are established in the applicable Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. The Mooney Oxygen System Installation is an approved oxygen installation on the M20J and M20K per Mooney Drawing 870007-501, -505, -507, -509; and on the M20M and M20R per Mooney Drawing 870029-513; and on the M20TN per Mooney Drawing 870029-513.
- NOTE 12** The dash number following the injector setting number indicates manufacturing revision level of the injector and does not change or dictate the setting of the injector.
- NOTE 13** M20TN S/Ns 31-0001 thru 31-TBA aircraft with AmSafe Inflatable Three-Point Restraint Safety Belt with an Integrated Airbag Device installed. Special Condition 23-156-SC; Amsafe Inflatable Restraint System optional on all seats of the Mooney M20TN.


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