DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

2A3
Revision 53
Mooney
M20
M20A
M20B
M20C
M20D
M20E
M20F
M20G
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M20K
M20L
M20M
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M20S
M20TN
November 25, 2013

# AIRCRAFT SPECIFICATION NO. 2A3

Manufacturer — Mooney International Corporation
Kerrville, TX

Type Certificate Holder Record: Mooney Aviation Company, Inc. transferred TC 2A3 to Mooney International Corporation on October 11, 2013. Mooney Airplane Company, Inc transferred TC 2A3 to Mooney Aviation Company, Inc. on July 23, 2010. Mooney Aircraft Corporation transferred TC 2A3 to Mooney Airplane Company, Inc. May 6, 2002. Aerostar Aircraft Corporation of Texas transferred TC 2A3 to Mooney Aircraft Corporation October 25, 1973. Mooney Aircraft Corporation transferred TC 2A3 to Aerostar Aircraft Corporation of Texas on June 17, 1970. Mooney Aircraft Inc. transferred TC 2A3 to Mooney Aircraft Corporation on March 10, 1969. Type Certificate initial issuance to Mooney Aircraft Inc 8/24/1955.

## I. Model M20, 4 PCLM (Normal Category); Approved August 24, 1955

Engine — Textron-Lycoming O-320 (Carburetor MA4-SP-A, Flow Setting P/N 10-3678-11)

Fuel — 80 octane minimum grade aviation gasoline

Engine Limits — For all operations, 2700 r.p.m. (150 hp)

Airspeed Limits

| | | |
|---|---|---|
| Maneuvering | 130 m.p.h. | (113 knots) True Ind. |
| Maximum structural cruising | 150 m.p.h. | (130 knots) True Ind. |
| Never exceed | 183 m.p.h. | (159 knots) True Ind. |
| Flaps extended | 100 m.p.h. | ( 87 knots) True Ind. |
| Landing gear extended | 120 m.p.h. | (104 knots) True Ind. |

C.G. Range
(Landing gear extended) — (+47.0) to (+49.4) at 2450 lbs.
(+40.7) to (+49.4) at 1920 lbs. or less
(Straight line variation between points given).

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**I. Model M20** (cont'd)

| | |
|---|---|
| Empty Weight C.G. Range | None |
| Maximum Weight | 2450 lbs. |
| No. of Seats | 4 (2 at +36.5 to +41.5, 2 at +68.7 for serial numbers 1001 to 1175, or 2 at +70.7 for serial numbers 1176 and up.) |
| Maximum Baggage | 120 lbs. (+93) |
| Fuel Capacity | 49 gallons (three tanks: two 17.5 gal. tanks in wings at +47.6, one 14 gal. tank in fuselage at +68). See Note 3. See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gallons (-6.5) |
| Control Surface Movements | Wing Flaps ..... Down ..... 21½° ± 1°<br>Aileron..... Up .....15° ± 1° ..... Down ..... 9° ± ½°<br>Elevator ..... Up .....24° ± 1/2° ..... Down ..... 10½° ± 1°<br>Rudder ..... Left .....18° ± ½° ..... Right ..... 18° ± ½°<br>Stabilizer (L.E.) ..... Up .....1½° + 0°/-½° ..... Down ..... 3½° + 0°/-½° |
| Serial Nos. Eligible | 1001 through 1200. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations (FAR), Delegation Option Manufacturer No. SW-1 is authorized to approve design and production changes on airplane Serial Numbers 1001 through 1200. |
| Leveling means | Door sill (parallel to thrust line). Spirit level is used to level. |
| 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), (c), (d), or (e), 101(a) and (b); 102(a) or (b), 103(a), 104(a), 201(a), 202(a), 205(a) or (b), 206(a), 301(a) and 303(a) or 301(b) and 303(b), 302(a), 401(a), 601(a). |
| Datum | For M20, datum is the centerline of the nose gear support bolts 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 | Date of application for Type Certificate April 9, 1952. Type Certificate No. 2A3 issued August 25, 1955. No exemptions.<br><br>Model M20, CAR 3, effective November 1, 1949, as amended to May 18,1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Hartzell HC-82XG-1B hub, 7636D blades. | 60 lbs. | -29.5 |
| Pitch setting at 28.5 in. sta.: Low 11.5°, High 26° | | |
| Hartzell HC-82XL-1B Hub is replacement for HC-82XG-1B Hub. | | |
| Diameter: Max. 76 in. | | |
| Min. allowable for repairs 72 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner dome, Hartzell, C-888 | 2 lbs. | -29.5 |
| **(c)** Spinner bulkhead, Hartzell, C-885 | 1 lb. | -25.5 |
| **(d)** Propeller governor, Hamilton Standard, 1-Q-12 | 4 lbs. | + 4.0 |
| **(e)** Propeller governor, Woodward, 210345 | 3 lbs. | + 4.0 |

| **I. Model M20** (cont'd) | **Weight** | **F.S.** |
|---|---|---|
| **Engines and Engine Accessories (Fuel and Oil System):** | | |
| **101.** Fuel Pumps | | |
| **(a)** One, engine-driven, AC type AH, P/N 5594068 | 3 lbs. | + 1.2 |
| **(b)** One, electric Bendix, 476087 (or alternate) Facet, (Balkamp) P/N 476-027 | 2 lbs. | +19.0 |
| **102.** Oil Radiator | | |
| **(a)** Harrison, 8523425 | 3 lbs. | -18.0 |
| **(b)** Harrison, 8526250 | 2 lbs. | -18.0 |
| **103.** Induction Air Filter | | |
| **(a)** Air Maze, 13219 | 1 lb. | -17.0 |
| **104.** Starters | | |
| **(a)** Delco-Remy, 1109657 | 17 lbs. | -18.0 |
| **105.** AuxiliaryFuel Tank | | |
| **(a)** Mooney Instl. Dwg. 6071 | 11 lbs. | +68.0 |
| **Landing Gear:** | | |
| **201.** Two, Main Wheel/Brake Assemblies, 6.00-6 | | |
| **(a)** Cleveland Wheel/Brake Assy, Model No. 38500-HA/Brake Assy, C-2000H | 14 lbs. | +64.5 |
| **202.** Two main wheel, 6-ply rating, tires | | |
| **(a)** 6.00-6, Type III w/ regular tubes | 17 lbs. | +64.5 |
| **205.** One, Nose Wheel, 5.00-5 | | |
| **(a)** Goodyear, Model L5NDB, Assy. No. 95206532 | 3 lbs. | -2.0 |
| **(b)** Cleveland, Model 40-33 | 4 lbs. | -2.0 |
| **206.** One, Nose Wheel Tire, 4-Ply Rating, tire | | |
| **(a)** 5.00-5, Type III w/ regular tube | 7 lbs. | -2.0 |
| **Electrical Equipment:** | | |
| **301.** Generators | | |
| **(a)** 20 amp, Delco-Remy, 1101899 | 11 lbs. | -19.5 |
| **(b)** 35 amp, Delco-Remy, 1101900 | 17 lbs. | -19.5 |
| **302.** Batteries | | |
| **(a)** Reading, S-24 | 24 lbs. | +2.5 |
| **(b)** Reading, R-33 | 29 lbs. | +2.5 |
| **303.** Voltage Regulators | | |
| **(a)** 20 amp, Delco-Remy 118735B | 2 lbs. | +7.0 |
| **(b)** 35 amp, Delco-Remy 1118704 or VR300-14-35 or D GR-7-H-35 | 2 lbs. | +7.0 |
| **Interior Equipment:** | | |
| **401.** FAA Approved Airplane Flight Manual | | |
| **(a)** Flight Manual, dated August 24, 1955. | | |

**I. Model M20** (cont'd)

**Miscellaneous:**

**601.** .....Stall Warning Indicator
**(a)** Safe-Flight, Model R..... 1 lb..... +28.0

**602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24
**(a)** Pesco, 3P-194-FA or..... 4.0 lbs. ..... 0.0
**(b)** Garwin. G450L ..... 4.0 lbs. ..... 0.0

**II. Model M20A, 4 PCLM (Normal Category) Approved February 13, 1958**

| | |
|---|---|
| Engine | Textron-Lycoming O-360-A1A or AID (Carburetor MA4-5, Flow Setting P/N 10-3878, 10-3878-M or 10-4164-1). |
| Fuel | 100LL or 91/96 octane minimum grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (180 hp) |
| Airspeed Limits | Maneuvering..... 130 m.p.h. (113 knots) True Ind.<br>Maximum structural cruising..... 150 m.p.h. (130 knots) True Ind.<br>Never exceed ..... 183 m.p.h. (159 knots) True Ind.<br>Flaps extended..... 100 m.p.h. ( 87 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind. |
| C.G. Range<br>(Landing gear extended) | (+47.0) to (+49.4) at 2450 lbs.<br>(+40.7) to (+49.4) at 1920 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 536 in.-lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2450 lbs. |
| No. of Seats | 4 (2 at +36.5 to +41.5, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+93) |
| Fuel Capacity | 49 gal. Three tanks: Two 17.5 gal. tanks in wings at +47.6, one 14 gal. tank in fuselage at +68. (See Note 3.) See Note 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-7.4) |
| Control Surface Movements | Wing Flaps ..... Down ..... 21½° ± 1°<br>Aileron ..... Up ..... 15° ± 2° ..... Down ..... 9° ± ½°<br>Elevator ..... Up ..... 24° ± ½° ..... Down ..... 10½° ± 1°<br>Rudder ..... Left ..... 18° ± ½° ..... Right ..... 18° ± ½°<br>Stabilizer (L.E.) ..... Up ..... 1½ + 0°/-½°..... Down ..... 3½° + 0°/-½° |
| Serial No's. Eligible | 1201 through 1700 and 1700A. Under the delegation option provisions of Part 21 of the FAR, Delegation Option Manufacturer No. SW-1 is authorized to approve design and production changes on airplane Serial Numbers 1201 through 1700A. |
| Leveling means | Door sill (parallel to thrust line). Spirit level is used to level. |
| 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), and (c) or (d) or 2(a), (b), and (c) or (d) or 3(a), (b), and (c) or (d) or (e) or (f) or (g) or 4(a), (b), and (c) or (d), or (e) or (f) or (g), 101(a), (b), 102(a) or (b), 103(a), 104(a), 201(a) or (b), 202(a), 205(a) or (b), 206(a), 301(a) and 303(a) or 301(b) and 303(b), 302(a), 401(a), 601(a). |

**II. Model M20A** (cont'd)

| | |
|---|---|
| Datum | For M20A, datum is the centerline of the nose gear support bolts 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 | Date of application for Type Certificate April 9, 1952. Type Certificate No.2A3 issued August 24, 1955. No exemptions.<br><br>Model M20A-CAR 3, effective November 1, 1949, as amended to May 18, 1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....McCauley constant speed propeller installation | | |
| **(a)** Propeller, McCauley 2D36C14 hub, 78KM-4 blades. | 59 lbs. . | -31.5 |
| Pitch setting at 30 in. sta.: | | |
| Low 12.7° ± 0.2° | | |
| High 27.5° ± 0.5° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, McCauley, D-2135/2136 | 3 lbs. . | -31.5 |
| **(c)** Propeller governor, Woodward 210105 | 3 lbs. . | +4.0 |
| **(d)** Propeller governor, Woodward, 210345 | 3 lbs. . | +4.0 |
| **2.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC92ZK-8D hub, 8447-12A blades | 65 lbs. . | -29.5 |
| Pitch settings at 27.0 in. sta.: | | |
| Low 15.4° | | |
| High 30.1° | | |
| Diameter: Maximum 72 in. | | |
| Minimum allowable for repairs 70 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-6 | 3 lbs. . | -28.0 |
| **(c)** Propeller governor, Woodward, 210105 | 3 lbs. | +4.0 |
| **(d)** Propeller governor, Woodward, 210345 | 3 lbs. . | +4.0 |
| **3.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell, HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades | 53.75 lbs. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch settings at 30.0 in. sta.: | | |
| Low 13.0 ± 0° (See Note 6) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, Woodward, 210105 | 3 lbs. . | + 4.0 |
| **(d)** Propeller governor, Woodward, 210345 | 3 lbs. . | + 4.0 |
| **(e)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lb. | +3.6 |
| **(f)** Propeller governor, Edo Aire, 34828014 | 3 lb. | +4.0 |
| **(g)** Propeller governor, McCauley, C290D5/T24 | 2.75 lb. | +4.0 |

| **II. Model M20A** (cont'd) | **Weight** | **F.S.** |
|---|---|---|
| **4.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell, HC-C2YK-1B hub, 7666A-2 blades | 53.75 lbs. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch setting at 30.0 in. sta.: | | |
| Low 13.0 ± 0° (see Note 6) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, Woodward, 210105 | 3 lbs. | + 4.0 |
| **(d)** Propeller governor, Woodward, 210345 | 3 lbs. | + 4.0 |
| **(e)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lb. | +3.6 |
| **(f)** Propeller governor, Edo Aire, 34828014 | 3 lb. | +4.0 |
| **(g)** Propeller governor, McCauley, C290D5/T24 | 2.75 lb. | +4.0 |
| **Engines and Engine Accessories (Fuel and Oil System):** | | |
| **101.** .....Fuel Pumps | | |
| **(a)** One, engine-driven, AC type AH, P/N 5594068 | 3 lbs. | + 1.2 |
| **(b)** One, electric Bendix, 476087 (or alternate) Facet, (Balkamp) P/N 476-027 | 2 lbs. | +19.0 |
| **102.** .....Oil Radiator | | |
| **(a)** Harrison, 8523425 | 3 lbs. | -18.0 |
| **(b)** Harrison, 8526250 | 2 lbs. | -18.0 |
| **103.** .....Induction Air Filter | | |
| **(a)** Air Maze, 13219 | 1 lb. | -17.0 |
| **104.** .....Starters | | |
| **(a)** Delco-Remy, 1109673 | 18 lbs. | -18.0 |
| **105.** .....Auxiliary Fuel Tank | | |
| **(a)** Mooney Installation Drawing 6071 | 11 lbs. | +68.0 |
| **Landing Gear:** | | |
| **201.** .....Two, Main Wheel/Brake Assemblies, 6.00-6 | | |
| **(a)** Cleveland Wheel Assy, Parker Hannifin, Model No. 38500-HA/Brake Assy, C-2000H | 14 lbs. | +64.5 |
| **(b)** Cleveland wheel/brake Assembly Model No. 27-100/ Brake assembly. No. 35-200 | 14 lbs. | +64.5 |
| **202.** .....Two main wheel tires, 6.00-6 | | |
| **(a)** 6.Ply Rating, Type III w/ regular tubes | 17 lbs. | +64.5 |
| **205.** .....One, Nose Wheel, 5.00-5 | | |
| **(a)** Goodyear, Model L5NDB, Assy. No. 95206532 | 3 lbs. | -2.0 |
| **(b)** Cleveland, Model 40-33 | 4 lbs. | -2.0 |
| **206.** .....One, Nose Wheel Tire, 5.00-5, | | |
| **(a)** 4-Ply Rating, Type III, w/regular tube | 7 lbs. | -2.0 |

**II. Model M20A** (cont'd).

**Electrical Equipment:**

**301.** .....Generators
- **(a)** 20 amp, Delco-Remy, 1101899 ..... 11 lbs. ..... -19.5
- **(b)** 35 amp, Delco-Remy, 1101900 ..... 17 lbs. ..... -19.5

**302.** .....Batteries
- **(a)** Reading, R-33 ..... 29 lbs. ..... +2.5

**303.** .....Voltage Regulators
- **(a)** 20 amp, Delco-Remy 1118735B ..... 2 lbs. ..... +7.0
- **(b)** 35 amp, Delco-Remy 1118704 or 1119224 or ..... 2 lbs. ..... +7.0
  50 amp, VR 300-14-50 or DGR-7-H-50 ..... 2 lbs. ..... +7.0

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
- **(a)** Flight Manual dated February 12, 1958

| **Miscellaneous:** | **Weight** | **F.S.** |
|---|---|---|
| **601.** .....Stall Warning Indicator | | |
| **(a)** Safe-Flight, Model R | 1 lb. | +28.0 |
| **602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24 | | |
| **(a)** Pesco, 3P-194-FA or | 4.0 lbs. | 0.0 |
| **(b)** Garwin, G450L | 4.0 lbs. | 0.0 |

**III. Model M20B, 4 PCLM (Normal Category); Approved December 14, 1960**

| | |
|---|---|
| Engine | Textron-Lycoming O-360-A1 A or A1 D (Carburetor MA4-5, Flow Setting P/N 10-3878, 10-3878-M, or 10-4164-1). |
| Fuel | 100LL or 91/96 octane min. grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (180 hp) (Note 5) |
| Airspeed Limits | Maneuvering ..... 130 m.p.h. (113 knots) True Ind.<br>Maximum structural cruising) ..... 150 m.p.h. (130 knots) True Ind.<br>Never exceed ..... 183 m.p.h. (159 knots) True Ind.<br>Flaps extended ..... 100 m.p.h. ( 87 knots) True Ind.<br>Landing gear extended ..... 120 m.p.h. (104 knots) True Ind. |
| C.G. Range<br>(Landing gear extended) | (+47.0) to (+50.1) at 2450 lbs.<br>(+42.0) to (+50.1) at 2030 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 536 in.-lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2450 lbs. |
| No. of Seats | 4 (2 at +36.5 to +41.5, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+93.0) |
| Fuel Capacity | 48 gals. usable (Two integral tanks in wings at +48.43)<br>See NOTE 1 for data on unusable fuel. |

**II. Model M20B** (cont'd).

| | |
|---|---|
| Oil Capacity | 2 gal. (-7.4) |
| Control Surface Movements | Wing Flaps ..... Down ..... 21½° ± 1°<br>Aileron ..... Up ..... 12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron static position ..... Down ..... 0° to 2°<br>Elevator ..... Up ..... 24° ± 1° ..... Down ..... 10½° ± 1°<br>Rudder ..... Left ..... 18° ± 1° ..... Right ..... 18° ± 1°<br>Stabilizer (L.E.) ..... Up ..... 1° to 2½° ..... Down ..... 3½° to 4½° |
| Serial No's. Eligible | 1701 through 1851, 1853 through 1939. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to approve design and production changes on airplane Serial Numbers 1701 through 1851, 1853 through 1939. |
| Leveling means | Door sill (parallel to thrust line). Spirit level is used to level. |
| 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) and (c) or 2(a), (b), and (c), or 3(a), (b) and (c), 101(a) and (b), 102(a) or (b), 103(a), 104(a), 201(a) or (b), 202(a), 205(a) or (b), 206(a), 301(a), 302(a), 303(a), 401(a), 601(a). |
| Datum | Datum is the centerline of the nose gear support bolts 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 | Date of application for Type Certificate April 9, 1952. Type Certificate No. 2A3 issued August 24, 1955. No exemptions. CAR 3, effective November 1, 1949, as amended to May 18, 1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ... McCauley constant speed propeller installation | | |
| **(a)** Propeller, McCauley 2D36C14 hub, 78KM-4 blades. | 59 lbs. | -31.5 |
| Pitch setting at 30 in. sta.: Low 12.7° ± 0.2° High 27.5° ± 0.5° | | |
| Diameter: Maximum 74 in. Minimum allowable for repairs 72 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, McCauley, D-2135/2136 | 3 lbs. | -31.5 |
| **(c)** Propeller governor, Woodward, 210345 | 3 lbs. | + 4.0 |
| **2.** ... Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades | 53.75 lb. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch settings at 30.0 in. sta.: Low 13.0° ± 0 (See Note 6) High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |

**III. Model M20B** (cont'd) **Weight** **F.S.**

**(b)** Spinner assembly, Hartzell, 835-20 ..... 3.25 lbs. ..... -29.18
**(c)** Propeller governor, Woodward, 210345 ..... 3 lbs. ..... +4.0
**(d)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L ..... 4.5 lb. ..... +3.6
**(e)** Propeller governor, Edo Aire, 34828014 ..... 3 lb. ..... +4.0
**(f)** Propeller governor, McCauley, C290D5/T24 ..... 2.75 lb. ..... +4.0

**3.** .... Hartzell constant speed propeller installation
**(a)** Propeller, Hartzell, HC-C2YK-1 B hub, 7666A-2 blades ..... 53.75 lbs. ..... -30.16
See Notes 5 and 7.
Pitch settings at 30.0 in. sta.:
Low 13.0 ± 0° (See Note 6)
High 29.0° ± 2°
Diameter: Maximum 74 in.
Minimum allowable for repairs 72.5 in.
No further reduction permitted.
**(b)** Spinner assembly, Hartzell, 835-20 ..... 3.25 lbs. ..... -29.18
**(c)** Propeller governor, Woodward, 210345 ..... 3.0 lb. ..... + 4.0
**(d)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L ..... 4.5 lb. ..... +3.6
**(e)** Propeller governor, Edo Aire 34828014 ..... 3.0 lb. ..... +4.0
**(f)** Propeller governor, McCauley, C290D5/T24 ..... 2.75 lb. ..... +4.0

**Engines and Engine Accessories (Fuel and Oil System):**

**101.** ..... Fuel Pumps
**(a)** One, engine-driven, AC type AH, P/N 5594068 ..... 3 lbs. ..... + 1.2
**(b)** One, electric Bendix, 476087
(or alternate) Facet, (Balkamp) P/N 476-027 ..... 2 lbs. ..... +19.0

**102.** ..... Oil Radiator
**(a)** Harrison, 8523452 ..... 3 lbs. ..... -18.0
**(b)** Harrison, 8526250 ..... 2 lbs. ..... -18.0

**103.** ..... Induction Air Filter
**(a)** Air Maze, 13219 ..... 1 lb. .....-17.0

**104.** ..... Starters
**(a)** Delco-Remy, 11096-89 or 1109519 or 1109511 ..... 17.8 lbs. ..... -18.0

**Landing Gear:**

**201.** ..... Two, Main Wheel/Brake Assemblies, 6.00-6
**(a)** Cleveland Wheel Assy, Model No. 27-100/Brake Assy No. 35-200 ..... 14 lbs. ..... See Note 8.
**(b)** Cleveland wheel/brake Assembly Model No. 40-24/
Brake assembly. No. 30-5 ..... 19 lbs. ..... +64.5

**202.** ..... Two main wheel , 6-ply rating, tires
**(a)** 6.00-6, Type III w/ regular tubes ..... 17 lbs. ..... +64.5

**205.** ..... One, Nose Wheel, 5.00-5
**(a)** Goodyear, Model L5NDB, Assy. No. 95206532 ..... 3 lbs. ..... -2.0
**(b)** Cleveland, Model 40-33 ..... 4 lbs. ..... -2.0

**206.** ..... One, Nose Wheel, 4-ply rating tire
**(a)** 5.00-5, Type III w/ regular tube ..... 7 lbs. ..... -2.0

**III. Model M20B** (cont'd)

**Electrical Equipment:**

**301.** .....Generators
**(a)** 50 amp, Delco-Remy, 1101915 Gen. ..... 16.6 lbs. ..... -19.5

**302.** .....Batteries
**(a)** Auto-Lite, R-35 ..... 27 lbs. ..... +2.5

**303.** .....Voltage Regulators
**(a)** 50 amp, Delco-Remy 1119224 or 1119224C or
VR300-14-50 or DGR-7-H-50 ..... 2 lbs. ..... +7.0

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Flight Manual Supplement, dated July 16, 1962.

| **Miscellaneous**: | **Weight** | **F.S.** |
|---|---|---|
| **601.** .....Stall Warning Indicator | | |
| **(a)** Safe-Flight, Model R | 1 lb. | +28.0 |
| **602.** ..... Vacuum Pumps (Required IFR, Opt. VFR) see NOTE 24 | | |
| **(a)** Pesco, 3P-194-FA or | 4.0 lbs. | 0.0 |
| **(b)** Garwin, G450L | 4.0 lbs. | 0.0 |

**IV. Model M20C, 4 PCLM (Normal Category); Approved October 20, 1961**

| | |
|---|---|
| Engine | Textron-Lycoming O-360-A1D or O-360-A1A<br>(Carburetor MA4-5, Flow Setting P/N 10-3878, 10-3878-M, or 10-4164-1). |
| Fuel | 100LL or 100/130 min. grade aviation gasoline (See Note 9) |
| Engine Limits | For all operations, 2700 r.p.m. (180 hp) |
| Airspeed Limits | (Aircraft with serial numbers to 680001)<br>Maneuvering..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 189 m.p.h. (164 knots) True Ind.<br>Flaps extended ..... 100 m.p.h. ( 87 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 150 m.p.h. (130 knots) True Ind.<br><br>(Aircraft with serial numbers to 680001 to 690001)<br>Maneuvering..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 189 m.p.h. (164 knots) True Ind.<br>Flaps extended ..... 125 m.p.h. (109 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 150 m.p.h. (130 knots) True Ind.<br><br>(Aircraft with serial numbers to 690001 thru 700091 and 20-0001 and up)<br>Maneuvering..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 200 m.p.h. (174 knots) True Ind.<br>Flaps extended ..... 125 m.p.h. (109 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 175 m.p.h. (152 knots) True Ind. |

**IV. Model M20C** (cont'd)

| | |
|---|---|
| C.G. Range<br>(Landing gear extended) | (+46.5) to (+49.0) at 2575 lbs.<br>(+42.0) to (+49.0) at 2100 lbs. or less<br>(Straight line variation between points given). Retraction moment 588 in. -lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2575 lbs. |
| No. of Seats | 4 (2 at +36.5 to +44.0, 2 at +70.0) |
| Maximum Baggage | 120 lbs. (+93.0), 10 lbs. (+114) |
| Fuel Capacity | Serial No. 1852, 1940, through 2622 - 48 gals. (Two integral tanks in wings at +48.4)<br>Serial No. 2623 and up - 52 gals. (Two integral tanks in wings at +48.4) See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gallons (-7.4) |
| Control Surface Movements | (Aircraft with serial numbers up to 690001)<br>Wing Flaps ..... T.O. Position .... Down ..... 15° ± 1°<br>..... Landing ..... Down ..... 33° + 0°, -2°<br>Aileron..... Up ..... 12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator ..... Up ..... 24° ± 1° ..... Down ..... 10½° ± 1°<br>Rudder ..... Left ..... 23° to 24° ..... Right ..... 23° to 24°<br>Stabilizer (L.E.) ..... Up ..... 1 to 2½° ..... Down ..... 4½° + 5° |
| Elevator Trim Assist Unit | With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist unit (740044) for elevator up angle of 19° ± ½° at the zero spring travel position. |
| | (Aircraft with serial numbers 690001-700091, 20-0001 and up)<br>Wing Flaps ..... T.O. Position .... Down ..... 15° ± 1°<br>..... Landing ..... Down ..... 33° + 0°, -2°<br>Aileron..... Up ..... 12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator ..... Up ..... 22° ± 2° ..... Down ..... 22° ± 2°<br>Stabilizer (L.E.) ..... Up ..... ½° to 1° ..... Down ..... 5¼° to 5¾°<br>Rudder ..... Left ..... 23° to 24° ..... Right ..... 23° to 24° |
| Elevator Trim Assist Unit | With stabilizer set at 3½° negative setting to the thrust line,<br>adjust trim assist bungees (740188) for elevator position of 10° ± 1° at the zero spring travel position of the bungees. |
| Leveling means | Edge of skin splice over aft fuselage radio access panel. Spirit level is used to level. |
| Serial No's. Eligible | Serial No. 1852, 1940-3466, 670001-670123, 670125-670134, 670136-670149, 680001-680077, 680079-680099, 680101-680198, 690001-690096, 690098, 700001-700052, 700055-700089, 700091, 20-0001 thru 20-1258. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to issue Airworthiness Certificates for Airplane Serial Numbers 2920, 2938, 2959, 2960, through 690022. |
| 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), and (c) or (d) or (e) or 2(a), (b) and (c), or (d) or 3(a), (b) and (c), or (d), or (e), 101(a) or (c) and (b) or (d), 102(a) or (b), 103(a), 104(a) or (b), 201(a) or (b) or (c), 202(a), 205(a) or (b) or (c), 206(a), 301(a) and 303(a) or 301(b) and 303(b) or 301(c) and 303(c), 302(a), 401(a) or (b) or (c) or (d) or (e) or (f), 601(a) or (b) or (c) and (d). See Note 13. |

**IV. Model M20C** (cont'd)

| | |
|---|---|
| Datum | For M20C, datum is the centerline of the nose gear support bolts and is fuselage station 0.00. The Leading Edge of the wing at wing station 59.25 is 33.0 inches aft of fuselage station 0.00. |
| Certification basis | Date of application for Type Certificate April 9, 1952. Type Certificate No. 2A3 issued August 24, 1955. No exemptions.<br><br>Model M20C. CAR 3, effective November 1, 1949, as amended to May 18, 1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades | 53.75 lbs. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch setting at 30.0 in. sta.: | | |
| Low 13.0 ± 0° See Note 6. | | |
| High 29.0° ± 2° | | |
| Diameter: Max. 74 in. | | |
| Min. allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| (835-33 for S/N 69-0001 & ON) | | |
| **(c)** Propeller governor | | |
| Hartzell D-1 -4 or D-1 -6 or H-1 or H-1 L | 4.5 lb. | +3.6 |
| **(d)** Propeller governor, Edo Aire 34828014 | 3.0 lbs. | +3.6 |
| **(e)** Propeller governor, McCauley, C 290D5/T24 | 2.75 lbs. | +3.6 |
| **2.** ....McCauley constant speed propeller installation | | |
| **(a)** Propeller, McCauley, 2D34C53-A hub, 74E-0 blades | 49.25 lbs. | -30.31 |
| Pitch settings at 30.0 in. sta.: | | |
| Low 12.7° ± 2° | | |
| High 27.5° ± 0.5° | | |
| Diameter: Max. 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner dome, McCauley, D-2808, D-3148 bulkhead and fillet assembly | 3.28 lbs. | -29.18 |
| **(c)** Propeller governor, Woodward 210452 | 3.0 lbs. | +4.0 |
| **(d)** Propeller governor, EDO Aire, 34828014 | 3.0 lbs. | +3.6 |
| **3.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1 B hub 7666A-2 blades | 53.75 lbs. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch settings at 30.0 in. sta.: | | |
| Low 13.0° ± 0° (See Note 6.) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |

| **IV. Model M20C** (cont'd) | **Weight** | **F.S.** |
|---|---|---|
| **(b)** Spinner assy, Hartzell, 835-20 (835-33 for S/N 69-0001 & ON) | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, McCauley, C290D5/T24 | 2.75 lbs. | +3.6 |
| **(d)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lbs. | +3.6 |
| **(e)** Propeller governor, Edo Aire, 34828014 | 3.0 lbs. | +3.6 |

**Engines and Engine Accessories (Fuel and Oil System):**

| | | | |
|---|---|---|---|
| **101.** | Fuel Pumps | | |
| | **(a)** One, engine-driven, AC type AH, P/N 5594068 | 3 lbs. | + 1.2 |
| | **(b)** One, electric Bendix, 476087 (or alternate) Facet, (Balkamp) P/N 476-027 | 2 lbs. | +19.0 |
| | **(c)** One, engine-driven, AC type AH P/N GP5623467+A, 5656880, 6440152, 6440174, 6441271, or 6440295 | 1.5 lbs. | +1.2 |
| | **(d)** One, electric, Dukes, 4140-00-21A or 1499-00-21 or (alternate) Weldon, P/N 8164A | 1.91 lb. | -1.5 |
| **102.** | Oil Radiator | | |
| | **(a)** Harrison, 8526250 | 2 lbs. | -18.0 |
| | **(b)** Stewart-Warner, Model #8406-E1 or 8406J | 2.8 lbs. | -18.0 |
| **103.** | Induction Air Filter | | |
| | **(a)** Air Maze, 13219 | 1 lb. | -17.0 |
| **104.** | Starters | | |
| | **(a)** Delco-Remy, 11096-89 or 1109519 or 1109511 | 17.8 lbs. | -18.0 |
| | **(b)** Prestolite, MZ4206 or MZ24218 or MZ4222 | 17.8 lbs. | -18.0 |

**Landing Gear:**

| | | | |
|---|---|---|---|
| **201.** | Two, Main Wheel/Brake Assemblies, 6.00-6 | | |
| | **(a)** Cleveland Wheel Assembly, Model No. 27-100/ Brake Assembly No. 35-200 | 14 lbs. | See Note 8. |
| | **(b)** Cleveland Wheel Assembly Model No. 40-24/ Brake Assembly No. 30-5 | 19 lbs. | See Note 8. |
| | **(c)** *Cleveland, Wheel/Brake Assembly Wheel Assembly No. 40-86,/ Brake Assembly No. 30-56A | 19 lbs. | See Note 8. |
| | **Optional - Cleveland, 40-86E, 30-56D* | | |
| **202.** | Two main wheel, 6-ply rating, tires | | |
| | **(a)** 6.00-6, Type III with regular tubes | 17 lbs. | See Note 8. |
| **205.** | One, Nose Wheel, 5.00-5 | | |
| | **(a)** Goodyear Model L5NDB, Assy. No. 95206532 | 3 lbs. | See Note 8 |
| | **(b)** Cleveland Model 40-33 | 4 lbs. | See Note 8 |
| | **(c)** Cleveland Model 40-87 | 2.6 lbs. | See Note 8 |
| **206.** | One, Nose Wheel, 4-Ply Rating tire | | |
| | **(a)** 5.00-5, Type III w/ regular tube | 7 lbs. | See Note 8. |

**Electrical Equipment:**

| | | | |
|---|---|---|---|
| **301.** | Generators and Alternators | | |
| | **(a)** Generator, 50 amp, Delco-Remy, 1101915 | 16.6 lbs. | -19.5 |
| | **(b)** Alternator, 60 amp, Prestolite, ALY 8420, ALY 8403, ALY 6420 or ALY 8420M | 10.3 lbs. | -19.5 |
| | **(c)** Alternator, 70 amp, Prestolite ALX 8403 | 10.3 lbs. | -19.5 |

**IV. Model M20C** (cont'd)

**302.** .....Batteries
- **(a)** Auto-Lite, R-35 or Prestolite, R-35 or Gill, 6-GCAB-11 or PS6-11 or Rebat, R-37 ..... 27 lbs. ..... +2.5

**303.** .....Voltage Regulators
- **(a)** 50 amp, Delco-Remy 1119224 or 1119224C or VR300-14-50 or DGR-7-H-50 ..... 2 lbs. ..... +7.0
- **(b)** OECO, 20082* ..... 1.4 lbs. ..... +7.0
  or Electrodelta VR 414* ..... 0.6 lbs. ..... +7.0
  or Electrodelta VR 415 or VR 415D
  or Mooney 800270-505 ..... 0.6 lbs. ..... +7.0

**Use 800331-721 Adapter when Oeco or VR414 is replaced by VR415, VR415D or 800270-505 regulator.*

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual

- **(a)** Flight Manual, dated October 20, 1961, required for S/N 1852, 1940 through 2622.
- **(b)** Flight Manual dated August 21, 1970, for S/N 700005 and on. M20C S/N 20-0001 thru 20-0009.
- **(c)** Flight Manual dated January 1974, for S/N 20-0010 through 20-1146. See Note 2.
- **(d)** Flight Manual dated December 1974, for S/N 20-1147 through 20-1172. See Note 2.
- **(e)** Flight Manual dated August 1975, for S/N 20-1173 through 20-1185. See Note 2.
- **(f)** Flight Manual dated October 1975, for S/N 20-1186 through 20-1218. See Note 2. Superseded by (g).
- **(g)** Pilot's Operating Handbook dated October 15, 1977, for S/N 20-1240 and on (replaces (f) for S/N 20-1186 and on.)

**Miscellaneous:** **Weight** **F.S.**

**601.** .....Warning Systems
- **(a)** Stall Warning Indicator, Safe-Flight, Model R ..... 1 lb. ..... +28.0
- **(b)** Dual warning indicator, Safe-Flight, Model 283 ..... 2 lbs. ..... + 2.5
- **(c)** Gear warning indicator, Mallory, SC 628 P ..... 1 lb. ..... +50.0
- **(d)** Stall warning indicator, Mallory, SC 628 ..... 1 lb. ..... +50.0

**602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24
- **(a)** Airborne, 113A1, or ..... 4.0 lbs. ..... 0.0
- **(b)** Airborne, 113A5, or ..... 4.0 lbs. ..... 0.0
- **(c)** Airborne, 200CC, or ..... 3.5 lbs. ..... 0.0
- **(d)** Airborne, 211CC ..... 2.5 lbs. ..... 0.0

**V. Model M20D, 4 PCLM (Normal Category); Approved October 15, 1962**

| | |
|---|---|
| Engine | Textron-Lycoming O-360-A1D or 0-360-A2D (Carburetor MA4-5, Flow Setting P/N 10-3878, 10-3878-M, or 10-4164). |
| Fuel | 100LL or 91/96 octane min. grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (180 hp) |
| Airspeed Limits | Maneuvering ..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 189 m.p.h. (164 knots) True Ind.<br>Flaps extended ..... 100 m.p.h. ( 87 knots) True Ind.<br>Maximum structural cruising ..... 147 m.p.h. (128 knots) True Ind. |
| C.G. Range<br>(Fixed gear) | (+46.5) to (+49.0) at 2575 lbs.<br>(+42.0) to (+49.0) at 2100 lbs. or less<br>(See Note 4) (Straight line variation between points given). |
| Empty Weight C.G. Range | None |

**V. Model M20D** (cont'd)

| | |
|---|---|
| Maximum Weight | 2575 lbs. or 2500 lbs. with Item 3 installed. |
| No. of Seats | 4 (2 at +36.5 to +44.0, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+93.0) |
| Fuel Capacity | Serial No. 1, 101-200 - 48 gals. (Two integral tanks in wings at +48.4)<br>Serial No. 201 and up - 52 gals. (Two integral tanks in wings at +48.4)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-7.4) |
| Control Surface Movements | Wing Flaps ..... .....Landing ..... Down .....33° + 0°, -2°<br>Aileron.....Up .....12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron.....Static Position ..... Down ..... 0° to 2°<br>Elevator ..... Up .....24° ± 1° ..... Down .....10½° ± 1°<br>Rudder ..... Left .....23° to 24° ..... Right .....23° to 24°<br>Stabilizer (L.E.) .... Up .....1° to 2½° ..... Down .....4½° to 5° |
| Elevator Trim Assist Unit | With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist unit 740044 for elevator up angle of 12° ± ½° at the zero spring travel position. The elevator up angle changes to 19° ± ½° when conversion to retractable gear in accordance with Mooney Drawing 950082 is accomplished. |
| Leveling means | Edge of skin splice over aft fuselage radio access panel. Spirit level is used to level. |
| Serial No's. Eligible | Serial No. 1, 101 through 260. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to issue Airworthiness Certificates for Airplane Serial Nos. 256 thru 260; and approve design and production changes on Airplane Serial Numbers 1, 101 through 260. |
| 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), and (c) or (d) or (e) or 2(a), (b), (c) or 3(a), (b), (c) and (d) or 4(a) (b), and (c), or (d) or (e), 101(a) or (c) and (b), 102(a), 103(a), 104(a) or (b), 201(a) or (b), 202(a), 205(a) or (b) or (c), 206(a), 301(a), 302(a), 303(a), 401(a), or (b), 601(a). See Note 13. |

**Specifications Pertinent to Model:**

| | |
|---|---|
| Datum | For M20D, datum is the centerline of the nose gear support bolts 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 | Date of application for Type Certificate April 9, 1952.<br>Type Certificate No. 2A3 issued August 24, 1955. No exemptions.<br>Model M20D CAR 3 effective November 1, 1949, as amended to May 18, 1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**V. Model M20D** (cont'd)

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades | 53.75 lbs. | -30.16 |
| See Notes 5 and 7. | | |
| Pitch setting at 30.0 in. sta.: | | |
| Low 13.0° ± 0° (See Note 6.) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Min. allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1 L | 4.5 lbs. | + 3.6 |
| **(d)** Propeller governor, Edo Aire 34828014 | 3.0 lbs. | + 3.6 |
| **(e)** Propeller governor, McCauley, C290D5/T24 | 2.75 lb. | + 3.6 |
| **2.** ....McCauley constant speed propeller installation | | |
| **(a)** Propeller, McCauley 2D34C53-A hub, 74E-0 blades | 49.25 lbs. | -30.31 |
| Pitch setting at 30.0 in. sta.: | | |
| Low 12.7° ± 2° | | |
| High 27.5° ± 0.5° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner dome, | | |
| McCauley D-2808, D-3148 bulkhead and fillet assembly | 3.28 lbs. | -29.18 |
| **(c)** Propeller governor, Woodward, 210452 | 3.0 lbs. | + 4.0 |
| **3.** ....McCauley fixed pitch propeller installation | | |
| **(a)** Propeller, McCauley, 10172/MFA hub, 7460 blades | 33.2 lbs. | -27.9 |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| Static RPM: Max. 2460./Min. 2360 | | |
| No additional tolerance permitted. | | |
| **(b)** Spinner assembly, McCauley, D-3337 | 3.5 lbs. | -29.18 |
| **(c)** Spinner assembly, McCauley, D-3338 | | -25.5 |
| **(d)** Front plate assembly, McCauley, D-3353 | | -27.9 |
| **4.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell, HC-C2YK-1B hub, 7666A-2 blades | 53.75 lbs. | -30.16 |
| See NOTES 5 and 7. | | |
| Pitch setting at 30.0 in. sta.: | | |
| Low 13.0° ± 0° (See Note 6.) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, McCauley, C290D5/T24 | 2.75 lbs. | + 3.6 |
| **(d)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lb. | +3.6 |
| **(e)** Propeller governor, Edo Aire, 34828014 | 3 lb. | +3.6 |

**Engines and Engine Accessories (Fuel and Oil System):**

| | | |
|---|---|---|
| **101.** .....Fuel Pumps | | |
| **(a)** One, electric Bendix, 476087 | | |
| (or alternate) Facet, (Balkamp) P/N 476-027 | 2 lbs. | +19.0 |

**V. Model M20D** (cont'd) **Weight** **F.S.**

**(b)** One, engine driven, AC type AH, P/N GP5623467+A, 5656880, 6440152, 6440174, 6441271, or 6440295 ..... 1.5 lbs. ..... +1.2
**(c)** One, electric, Dukes, 4140-00-21A or 1499-00-21 (or alternate) Weldon, P/N 8164A ..... 1.91 lbs. ..... -1.5

**102.** .....Oil Radiator
**(a)** Harrison, 8526250..... 2 lbs. ..... -18.0

**103.** .....Induction Air Filter
**(a)** Air Maze, 13219 ..... 1 lb. ..... -17.0

**104.** .....Starters
**(a)** Delco-Remy, 11096-89 or 1109519 or 1109511..... 17.8 lbs. ..... -18.0
**(b)** Prestolite, MZ4206 or MZ4218 or MZ4222 ..... 17.8 lbs. ..... -18.0

**Landing Gear:**

**201.** .....Two main wheel/brake assemblies, 6.00-6
**(a)** Cleveland, wheel assembly Model No. 27-100/ Brake assembly, No. 35-200 ..... 14 lbs. ..... See Note 8.
**(b)** Cleveland, wheel assembly Model No. 40-24/ Brake assembly, No. 30-5 ..... 19 lbs. ..... See Note 8.

**202.** .....Two main wheel, 6-ply rating, tires
**(a)** 6.00-6, Type III, w/regular tubes..... 17 lbs. ..... See Note 8.

**205.** .....One nose wheel, 5.00-5
**(a)** Goodyear, Model L5NDB, assembly no. 95206532 ..... 3 lbs. ..... See Note 8.
**(b)** Cleveland, Model 40-33..... 4 lbs. ..... See Note 8.
**(c)** Cleveland, Model 40-87..... 2.6 lbs. ..... See Note 8.

**206.** .....One nose wheel, 4-ply rating, tire
**(a)** 5.00-5, Type III w/regular tube ..... 7 lbs. ..... See Note 8.

**Electrical Equipment:**

**301.** .....Generators
**(a)** 50 amp, Delco-Remy, 1101915..... 16.6 lbs. ..... -19.5

**302.** .....Batteries
**(a)** Auto-Lite R-35..... 27 lbs. ..... + 2.5
or Prestolite R-35
or Gill 6-GCAB-11
or PS6-11
or Rebat R-37

**303.** .....Voltage Regulators
**(a)** 50 amp, Delco-Remy 111922I or 1119224C or VR300-14-50 or DGR-7-H-50 ..... 2 lbs. ..... +7.0
If 940019 alternator retrofit kit is installed
**(b)** OECO, 20082*..... 1.4 lbs. ..... +7.0
or Electrodelta VR 414*..... 0.6 lbs. ..... +7.0
or Electrodelta VR 415 or VR 415D or Mooney 800270-505..... 0.6 lbs. ..... +7.0
**Use 800331 - 721 adapter when Oeco or VR 414 is replaced by VR 415, VR415D or 800270-505 regulator.*

**V. Model M20D** (cont'd)

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
- **(a)** Owners Manual,dated October 15, 1962, for S/N 1, 101 thru 200 (See Note 4)
- **(b)** Owners Manual (Supplement), dated May 14, 1963. S/N 1, 101 thru 260(See Note 4).
- **(c)** Owners Manual, dated 1965 for S/N 1, 101 thru 260 (See Note 4).

**Miscellaneous:**

**601.** .....Warning systems
- **(a)** Stall warning indicator Safe-Flight, Model R..... 1 lb..... +28.0

**602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24
- **(a)** Airborne, 113A1 or..... 4.0 lbs. ..... 0.0
- **(b)** Airborne, 113A5 or..... 4.0 lbs. ..... 0.0
- **(c)** Airborne, 200 cc or ..... 3.5 lbs. ..... 0.0
- **(d)** Airborne, 211 cc..... 2.5 lbs. ..... 0.0

**VI. Model M20E, 4 PCLM (Normal Category); Approved September 4, 1963**

| | |
|---|---|
| Engine | IO-360-A1A (fuel injector, Model RSA-5AD1, P/N 2524054-1) See Note 20. |
| Fuel | 100LL or 100/130 octane minimum grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (200 hp) |
| Airspeed Limits | (Aircraft with Serial Numbers to 690001)<br>Maneuvering..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 189 m.p.h. (164 knots) True Ind.<br>Flaps extended..... 100 m.p.h. ( 87 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 150 m.p.h. (130 knots) True Ind.<br><br>(Aircraft with serial numbers to 690001-700061 and 21-0001 and up)<br>Maneuvering..... 132 m.p.h. (115 knots) True Ind.<br>Never exceed ..... 200 m.p.h. (174 knots) True Ind.<br>Flaps extended..... 125 m.p.h. (109 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 175 m.p.h. (152 knots) True Ind. |
| C.G. Range<br>(Landing gear extended) | (+46.5) to (+49.0) at 2575 lbs.<br>(+42.0) to (+49.0) at 2100 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 588 in. -lb. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2575 lbs. |
| No. of Seats | 4 (2 at +36.5 to +44.0, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+93.0), 10 lbs. (+114) |
| Fuel Capacity | 52 gals. (Two integral tanks in wings at +48.4)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-6.5) |

**VI. Model M20E** (cont'd)

Control Surface Movements

(Aircraft with serial numbers up to 690001)

| | | | | | |
|---|---|---|---|---|---|
| Wing Flaps | | T.O. Position | Down | 15° ± 1° |
| | | Landing | Down | 33° + 0°, - 2° |
| Aileron | Up | 12½° to 17° | Down | 8° ± 1° |
| Aileron static position | | | Down | 0° to 2° |
| Elevator | Up | 24° ± 1° | Down | 10½° ± 1° |
| Rudder | Left | 23° to 24° | Right | 23° to 24° |
| Stabilizer (L.E.) | Up | 1° to 2½° | Down | 4½° to 5° |

Elevator Trim Assist Unit

With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist unit 740044 for elevator up angle of 19° ± ½° at the zero spring travel position.

(Aircraft with serial numbers up to 690001-700061, 21-0001 thru 21-1180)

| | | | | |
|---|---|---|---|---|
| Wing Flaps | T.O. Position | Down | 15° ± 1° |
| | Landing | Down | 33° + 0° / -2° |
| Aileron | Up | 12½° to 17° | Down | 8° ± 1° |
| Aileron static position | | | Down | 0° to 2° |
| Elevator | Up | 22° ± 2° | Down | 22° ± 2° |
| Stabilizer (L.E.) | Up | ½° to 1° | Down | 5¼° to 5¾° |
| Rudder | Left | 23° to 24° | Right | 23° to 24° |

Elevator Trim Assist Unit

With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist bungees (740188) for elevator position of 10° ± 1° at the zero spring travel position of the bungees.

Leveling means

Edge of skin splice over aft fuselage radio access panel. Spirit level is used to level.

Serial No's. Eligible

Serial No. 101-400, 470-1217, 1219, 1221, 1223-1308, 670001-670062, 690001-690073, 700001-700039, 700041-700043, 700045-700052, 700055, 700056, 700060, 700061, 21-0001 thru 21-1180. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to issue Airworthiness Certificates for Airplane Serial Numbers 460, 607, 622, 625 through 690029.

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 (d) or (e) and (c) or (f) or (g), or 2(a), (b) or (d) or (e) and (c) or (f) or (g) or (h), 101(a), (b), 102(a), 103(a), 104(a) or (b), 201(a) or (b) or (c), 202(a), 205(a) or (b) or (c), 206(a), 301(a) and 303(a) or 301(b) and 303(b) or 301(c) and 303(b), 302(a), 401(b) or (c) or (d) or (e), 601(a) or (b) or (c) and (d). See Note 13.

**Specifications Pertinent to Model**

Datum

For M20E, datum is the centerline of the nose gear support bolts and is fuselage station 0.0.

The Leading Edge of the wing at wing station 59.25 is 33.00 inches aft of fuselage station 0.00.

Certification basis

Date of application for Type Certificate April 9, 1952. Type Certificate No. 2A3 basis issued August 24, 1955. No exemptions.

Model M20E, CAR 3, effective November 1, 1949, as amended to May 18, 1954.

Production basis

None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics.

**VI. Model M20E** (cont'd)

Equipment — Approval for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer.

| **Propeller and Propeller Accessories with Fuselage - Station Locations:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades (See Notes 6 and 7.) | 53.75 lbs. | -30.16 |
| Pitch setting at 30.0 in. sta.: Low 14.0° ± 0° (See Note 6) High 29.0° ± 2 | | |
| Diameter: Maximum 74 in. Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.50 lbs. | +3.6 |
| **(d)** Spinner assembly, Mooney, 680014-000 | 3.6 lbs. | -29.18 |
| **(e)** Spinner assembly, Mooney, 680014-501 | 3.6 lbs. | -29.18 |
| **(f)** Propeller governor, Edo Aire, 34828014 | 3.0 lbs. | +3.6 |
| **(g)** Propeller governor, McCauley, C290D5/T24 | 2.75 lbs. | +3.6 |
| **2.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1B hub, 7666A-2 blades (See Notes 6 and 7.) | 53.75 lbs. | -30.16 |
| Pitch settings at 30.0 in. sta.: Low 14.0° ± 0° (See Note 6.) High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell 835-20 | 3.25 lbs. | -29.18 |
| **(c)** Spinner assembly, Hartzell, 835-33 | 3.25 lbs. | -29.18 |
| **(d)** Spinner assembly, Hartzell, 835-33P | 3.25 lbs. | -29.18 |
| **(e)** Propeller governor, McCauley, C290D5/T24 | 2.75 lbs. | +3.6 |
| **(f)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lb. | +3.6 |
| **(g)** Propeller governor, Edo Aire, 34828014 | 3.0 lb. | +3.6 |

| **Engines and Engine Accessories (Fuel and Oil System):** | | |
|---|---|---|
| **101.** .....Fuel Pumps | | |
| **(a)** One, electric, Dukes, 4140-00-19A | 1.91 lb. | -1.5 |
| **(b)** One, engine-driven AC 5656696A, 6440160, GP5656999, Type JJ, 6440296, or 6441234 | 1.6 lbs. | +1.2 |
| **102.** .....Oil Radiator | | |
| **(a)** Stewart-Warner, P/N 8432A or 8432E or 8432F or or 8432F1 or 8432L (S/N 200 and up) | 2.4 lbs. | -18.0 |
| **103.** .....Induction Air Filter | | |
| **(a)** Donaldson, P10-4065 or P11-3576 | 1.2 lb. | -19.5 |
| **104.** .....Starters | | |
| **(a)** Delco-Remy, 11096-89 or 1109519 or 1109511 | 17.8 lbs. | -18.0 |
| **(b)** Prestolite, MZ4206 or MZ4218 or MZ4222 | 17.8 lbs. | -18.0 |

| **VI. Model M20E** (cont'd) | **Weight** | **F.S. (in.)** |
|---|---|---|
| **Landing Gear:** | | |
| **201.** Two Main Wheel/Brake Assemblies, 6.00-6 | | |
| **(a)** Cleveland, wheel assembly, Model No. 27-100/Brake Assembly No. 35-200 | 14 lbs. | See Note 8. |
| **(b)** Cleveland, wheel assembly, Model No. 40-24/ Brake Assembly No. 30-5 | 19 lbs. | See Note 8. |
| **(c)** *Cleveland, wheel assembly, Model No. 40-86/ Brake Assembly No. 30-56A | 19 lbs. | See Note 8. |
| **Optional - Cleveland, 40-86E, 30-56* | | |
| **202.** Two main wheel, 6-ply rating, tires | | |
| **(a)** 6.00-6, Type III w/ regular tubes | 17 lbs. | See Note 8. |
| **205.** One, Nose Wheel, 5.00-5 | | |
| **(a)** Goodyear Model L5NDB, Assy. No. 95206532 | 3 lbs. | See Note 8 |
| **(b)** Cleveland Model 40-33 | 4 lbs. | See Note 8 |
| **(c)** Cleveland Model 40-87 | 2.6lbs. | See Note 8 |
| **206.** One, Nose Wheel, 4-Ply Rating tire | | |
| **(a)** 5.00-5, Type III w/ regular tube | 7 lbs. | See Note 8. |
| **Electrical Equipment:** | | |
| **301.** Generators and Alternators | | |
| **(a)** Generator, 50 amp, Delco-Remy, 1101915 | 16.6 lbs. | -19.5 |
| **(b)** Alternator, 60 amp, Prestolite, ALY-8420 | 10.3 lbs. | -19.5 |
| **(c)** Alternator, 70 amp, Prestolite, ALX-8403 | 10.3 lbs. | -19.5 |
| **302.** Batteries | | |
| **(a)** Auto-Lite, R-35 or Prestolite, R-35 or Gill, 6-GCAB-11 or PS6-11, or Rebat, R-37 | 27 lbs. | +105.8 |
| **303.** Voltage Regulators | | |
| **(a)** 50 amp, Delco-Remy 1119224 or 1119224C or VR300-14-50 or DGR-7-H-50 | 2 lbs. | +7.0 |
| If 940019 alternator retrofit kit is installed. | | |
| **(b)** OECO, 20082* | 1.4 lbs. | +7.0 |
| or Electrodelta VR 414* | 0.6 lbs. | +7.0 |
| or Electrodelta VR 415 or VR 415D or Mooney 800270-505 | 0.6 lbs. | +7.0 |
| **Use 800331-721 adapter when OECO or VR414 is replaced by VR415, VR415D or 800270-505 regulator.* | | |
| **Interior Equipment:** | | |
| **401.** FAA Approved Airplane Flight Manual | | |
| **(a)** Flight Manual dated September 3, 1963, for S/N 101 through 1308. | | |
| **(b)** Flight Manual dated August 21, 1970, for S/N 700028 and ON. S/N 21-0001 thru 21-0023 (Aerostar). | | |
| **(c)** Flight Manual dated January 1974, for S/N 21-0024 through 21-1160. See Note 2. | | |
| **(d)** Flight Manual dated December 1974, for S/N 21-1161 through 21-1180. See Note 2. | | |
| **Miscellaneous:** | **Weight** | **F.S. (IN)** |
| **601.** Warning Systems | | |
| **(a)** Stall warning indicator, Safe-Flight, Model R | 1 lb. | +28.0 |
| **(b)** Dual warning indicator, Safe-Flight, Model 283 | 2 lbs. | +2.5 |
| **(c)** Gear warning indicator, Mallory, SC 628P | 1 lb. | +50.0 |
| **(d)** Stall warning indicator, Mallory, SC 628. | 1 lb. | +50.0 |

**VI. Model M20E** (cont)

**602.** ……Vacuum Pumps (Required. IFR, Optional VFR) see NOTE 24

| | | | |
|---|---|---|---|
| **(a)** | Airborne, 113A1 or | 4.0 lbs. | 0.0 |
| **(b)** | Airborne, 113A5 or | 4.0 lbs. | 0.0 |
| **(c)** | Airborne, 200CC or | 3.5 lbs. | 0.0 |
| **(d)** | Airborne, 211CC | 2.5 lbs. | 0.0 |

**VII. Model M20F, 4 PCLM (Normal Category); Approved July 25, 1965**

| | |
|---|---|
| Engine | Textron-Lycoming IO-360-A1A (Bendix fuel injector, Model RSA-5AD1, P/N 2524054-1) See Note 20. |
| Fuel | 100LL or 100/130 octane min. grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (200 hp) |
| Airspeed Limits | Maneuvering ..... 135 m.p.h. (117 knots) True Ind.<br>Never exceed ..... 200 m.p.h. (174 knots) True Ind.<br>Flaps extended ..... 105 m.p.h. ( 91 knots) True Ind.<br>(All aircraft to S/N 680001)<br>Flaps extended ..... 125 m.p.h. (109 knots) True Ind.<br>(S/N 680001-700072 and 22-0001 and on)<br>Landing gear extended ..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising ..... 175 m.p.h. (152 knots) True Ind. |
| C.G. Range<br>(Landing gear extended) | (+45.0) to (+50.1) at 2740 lbs.<br>(+41.8) to (+50.1) at 2470 lbs.<br>(+41.0) to (+50.1) at 2250 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 615 in. -lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2740 lbs. |
| No. of Seats | 4 (2 at +31.5 to +39.0, 2 at +70.7 to 75.2) |
| Maximum Baggage | 120 lbs. (+95.5), 10 lbs. (+119.0) |
| Fuel Capacity | 64 gals. (Two integral tanks in wings at +48.4)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-11.5) |
| Control Surface Movements | Wing Flaps ..... T.O. Position ..... Down ..... 15° ± 1°<br>..... Landing ..... Down ..... 33° + 0° / -2°<br>Aileron ..... Up ... 12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron static position ..... Down ..... 0° to 2°<br>Elevator ..... Up ..... 22° ± 2° ..... Down ..... 22° ± 2°<br>Rudder ..... Left ..... 23° to 24° ..... Right ..... 23° to 24°<br>Stabilizer (L.E.) ..... Up ..... ½° to 1° ..... Down ..... 5¼° to 5¾° |
| Elevator Trim Assist Unit | (for Aircraft with Serial Nos. to 680001): With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist unit 740128 for elevator up angle of 5° +/– 1° at the zero spring travel position. |

**VII. Model M20F** (cont'd)

| | |
|---|---|
| Elevator Trim Assist Unit | (for Aircraft with Serial Nos. 680001 and up): With stabilizer set at 3° negative setting to the thrust line, adjust trim assist bungees 740188 for elevator position of 19° +/– 1° 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. Spirit level is used to level. |
| Serial No's. Eligible | Serial No. 660002-660004, 670001-670363, 670365-670385, 670387-670482, 670484-670539, 680001-680206, 690003-690090, 690092, 700001-700061, 700063-700066, 700070-700072, 22-0001 thru 22-1439. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to issue Airworthiness Certificates on Airplane Serial Numbers 660002 through 690035. |
| 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) and (c) or (d) or (e), or 2(a), (b) or (c), (d) or (e) or (f), 101(a), (b), 102(a), 103(a), 104(a), 201(a), 202(a), 205(a), 206(a), 301(a), and 303(a) or 301(b), and 303(b) or 303(c) and 303(d), 302(a), 401(a) or (b) or (c) or (d) or (e) or (f), 601(a) or (b) and (c). See Note 13. |
| Datum | For M20F, datum is 5.00 inches aft of the centerline of the nose gear support bolts 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 | Model M20F CAR 3 effective November 1, 1949, as amended to May 18, 1954, with paragraphs 3.109, 3.112, 3.115, 3.118, and 3.120 of CAR 3 effective May 15, 1956, as amended to October 1, 1959. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades ..... See Notes 5 and 7. | 53.75 lbs. | -35.16 |
| Pitch setting at 30.0 in. sta.: | | |
| Low 14.0° ± 0° (See Note 6) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |
| No further reduction permitted. | | |
| **(b)** Spinner assembly, Mooney, 680014-501 ..... | 3.6 lbs. | -34.18 |
| **(c)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L ..... | 4.50 lbs. | -1.4 |
| **(d)** Propeller governor, Edo Aire, 34828014 ..... | 3.0 lbs. | -1.4 |
| **(e)** Propeller governor, McCauley, C290D5/T24 ..... | 2.75 lb. | -1.4 |
| **2.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller, Hartzell HC-C2YK-1B hub, 7666A-2 blades | | |
| See Notes 5 and 7..... | 53.75 lbs. | -35.16 |
| Pitch setting at 30.0 in. sta.: | | |
| Low 14.0 ± 0° (see Note 6) | | |
| High 29.0° ± 2° | | |
| Diameter: Maximum 74 in. | | |
| Minimum allowable for repairs 72.5 in. | | |

**VII. Model M20F** (cont'd) **Weight** **F.S.**

No further reduction permitted.

| | | | |
|---|---|---|---|
| **(b)** | Spinner assembly, Hartzell 835-33 | 3.25 lbs. | -34.18 |
| **(c)** | Spinner assembly, Hartzell, 835-33P | 3.25 lbs. | -34.18 |
| **(d)** | Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L | 4.5 lb. | -1.4 |
| **(e)** | Propeller governor, Edo Aire, 34828014 | 3 lb. | -1.4 |
| **(f)** | Propeller governor, McCauley, C290D5/T24 | 2.75 lbs. | -1.4 |

**Engines and Engine Accessories (Fuel and Oil System):**

| | | | |
|---|---|---|---|
| **101.** | Fuel Pumps | | |
| **(a)** | One, electric, Dukes, 4140-00-19A | 1.91 lb. | -1.5 |
| **(b)** | One, engine-driven P/N AC 5656696A, 6440160, GP5656999, Type JJ, 6440296, or 6441234 | 1.6 lbs. | -3.8 |
| **102.** | Oil Radiator | | |
| **(a)** | Stewart-Warner, P/N 8432A or 8432E or 8432F or or 8432F1 or 8432L | 2.4 lbs. | -23.0 |
| **103.** | Induction Air Filter | | |
| **(a)** | Donaldson, P10-4065 or P11-3576 | 1.2 lb. | -24.5 |
| **104.** | Starters | | |
| **(a)** | Prestolite, MZ4206 or MZ4218 or MZ4222 | 17.8 lbs. | -23.0 |

**Landing Gear:**

| | | | |
|---|---|---|---|
| **201.** | Two Main Wheel/Brake Assemblies, 6.00-6 | | |
| **(a)** | *Cleveland wheel assembly, Model No. 40-86/ Brake Assembly No. 30-56A | 19 lbs. | See Note 8. |
| | **Optional - Cleveland, 40-86E, 30-56D* | | |
| **202.** | Two main wheel, 6-ply rating, tires | | |
| **(a)** | 6.00-6, Type III w/ regular tubes | 17 lbs. | See Note 8. |
| **205.** | One, Nose Wheel, 5.00-5 | | |
| **(a)** | Cleveland Model 40-87 | 2.6 lbs. | See Note 8. |
| **206.** | One, Nose Wheel, 6-Ply Rating tire | | |
| **(a)** | 5.00-5, Type III w/ regular tube | 7 lbs. | See Note 8. |

**Electrical Equipment:**

| | | | |
|---|---|---|---|
| **301.** | Generators and Alternators | | |
| **(a)** | Generator, 50 amp, Delco-Remy, 1101915 | 16.6 lbs. | -24.5 |
| **(b)** | Alternator, 60 amp, Prestolite, ALY-8420 or (alternate) ALY8403, ALY6420 or ALY8420M | 10.3 lbs. | -24.5 |
| **(c)** | Alternator, 70 amp, Prestolite, ALX-8403 | 10.3 lbs. | -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 | 27 lbs. | +110.8 |
| **303.** | Voltage Regulators | | |
| **(a)** | 50 amp, Delco-Remy 1119224 or 1119224C or VR300-14-50 or DGR-7-H-50 | 2 lbs. | +2.0 |
| | If 940019 alternator retrofit kit is installed. | | |

**VII. Model M20F** (cont'd)

**(b)** OECO, 20082*..... 1.4 lbs. ..... +2.0
or Electrodelta VR 414*..... 0.6 lbs. ..... +7.0
or Electrodelta VR 415 or VR 415D or Mooney 800270-505..... 0.6 lbs. ..... +7.0
**Use 800331-721 adapter when OECO or VR414 is replaced by VR415, VR415D or 800270-505 regulator.*

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Flight Manual dated August 21, 1970, for S/N 700035 and ON, S/N 22-0001 through 22-0012 (Aerostar). See Note 2.
**(b)** Flight Manual dated November 17, 1969, for S/N 700005 and ON. See Note 2.
**(c)** Flight Manual dated January 1974, for S/N 22-0013 through 22-1178. See Note 2.
**(d)** Flight Manual dated December 1974, for S/N 22-1179 through 22-1272. See Note 2.
**(e)** Flight Manual dated August 1975, for S/N 22-1273 through 22-1305. See Note 2.
**(f)** Flight Manual dated October 1975 for S/N 22-1306 through 22-1438. See Note 2.

**Miscellaneous:**

**601.** .....Warning Systems
**(a)** Dual warning indicator, Safe-Flight, Model 283..... 2 lbs. ..... -2.5
**(b)** Gear warning indicator, Mallory, SC 628P..... 1 lb..... -2.5
**(c)** Stall warning indicator, Mallory, SC 628..... 1 lb..... +50.0

**602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24
**(a)** Airborne, 113A1 or..... 4.0 lbs. ..... -5.0
**(b)** Airborne, 113A5 or..... 4.0 lbs. ..... -5.0
**(c)** Airborne, 200CC or..... 3.5 lbs. ..... -5.0
**(d)** Airborne, 211CC..... 2.5 lbs. ..... -5.0

**VIII. Model M20G, 4 PCLM (Normal Category); Approved November 13, 1967**

| | |
|---|---|
| Engine | Textron-Lycoming O-360-A1D (Carburetor MA 4-5, Flow Setting P/N 10-3878-M, or 10-4164-1) |
| Fuel | 100LL or 100/130 octane min. grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (180 hp) |
| Airspeed Limits | Maneuvering..... 135 m.p.h. (117 knots) True Ind.<br>Never exceed..... 200 m.p.h. (174 knots) True Ind.<br>Flaps extended..... 125 m.p.h. (109 knots) True Ind.<br>Landing gear extended..... 120 m.p.h. (104 knots) True Ind.<br>Maximum structural cruising..... 175 m.p.h. (152 knots) True Ind. |
| C.G. Range<br>(Landing gear extended) | (+42.5) to (+50.1) at 2525 lbs.<br>(+41.8) to (+50.1) at 2470 lbs.<br>(+40.5) to (+50.1) at 2113 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 615 in. -lb. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2525 lbs. |
| No. of Seats | 4 (2 at +31.5 to +39.0, 2 at +70.7 to +75.2) |
| Maximum Baggage | 120 lbs. (+95.5), 10 lbs. (+119) |

**VIII. Model M20G** (cont'd)

| | |
|---|---|
| Fuel Capacity | 52 gals. (Two integral tanks in wings at +48.4)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-11.5) |
| Control Surface Movements | Wing Flaps .....T.O. Position ..... Down .....15° ±1°<br>.....Landing ..... Down .....33° + 0°/ -2°<br>Aileron.....Up .....12½° to 17° ..... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator .....Up .....22° + 0°, 2°..... Down .....22° + 0°, -2°<br>Rudder ..... Left .....23° to 24° ..... Right .....23° to 24°<br>Stabilizer (L.E.) .....Up .....½° to 1° ..... Down .....5¼° to 5 ¾° |
| Elevator Trim Assist Unit | (for Aircraft with Serial Nos. to 680001): With stabilizer set at 3½° negative setting to the thrust line, adjust trim assist unit 740128 for elevator up angle of 5° +/- 1° at the zero spring travel position. |
| Elevator Trim Assist Unit | (for Aircraft with Serial Nos. 680001 and up): With stabilizer set at 3° negative setting to the thrust line, adjust trim assist bungees 740188 for elevator position of 19° +/- 1° 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. Spirit level is used to level. |
| Serial No's. Eligible | Serial No. 680001 thru 680164, 690001 thru 690020, 700001 thru 700006. Under the delegation option provisions of Part 21 of the Federal Aviation Regulations, Delegation Option Manufacturer No. SW-1 is authorized to issue Airworthiness Certificates on Airplane Serial Numbers 680001 thru 690009. |
| 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) (c) or (d) or (e), or 2(a) (b) (c), or 3(a) (b) (c) or (d) or (e), 101(a) or (c) and (b), 102(a) or (b), 103(a), 104(a) or (b), 201(a), 202(a), 205(a), 206(a), 301(a) and 303(a) or 301(b) or (c) and 303(b), 302(a), 401(a), 601(a) or (b) and (c). See Note 13. |
| Datum | For M20G, datum is 5.00 inches aft of the centerline of the nose gear support bolts 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 | Date of application for Type Certificate April 9, 1952. Type Certificate No. 2A3 issued August 24, 1955. No exemptions. Model M20G CAR 3, effective November 1, 1949, as amended to May 18, 1954. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**Propeller and Propeller Accessories:** **Weight** **F.S.**

**1.**....Hartzell constant speed propeller installation

**(a)** Propeller, Hartzell HC-C2YK-1 or HC-C2YR-1 hub, 7666-2 blades..... 53.75 lbs. ..... -35.16
See Notes 5 and 7.
Pitch setting at 30.0 in. sta.: (See Note 6)
Low 13.0° ± 0°
High 29.0° ± 2°
Diameter: Maximum 74 in.
Minimum allowable for repairs 72.5 in.
No further reduction permitted.

**VIII. Model M20G** (cont'd) **Weight** **F.S.**

**(b)** Spinner assembly, Hartzell, 835-20 ..... 3.25 lbs. ..... -34.18
**(c)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L ..... 4.50 lbs. ..... -1.4
**(d)** Propeller governor, Edo Aire 34828014 ..... 3.0 lbs. ..... -1.4
**(e)** McCauley governor, C290D5/T24..... 2.75 lbs. ..... -1.4

**2.** ....McCauley constant speed propeller installation
**(a)** Propeller, McCauley, 2D34C53-A hub, 74E-0 blades ..... 49.25 lbs. ..... -35.31
Pitch setting at 30.0 in. sta.:
Low 12.7° ± 2°
High 27.50° ± 0.5°
Diameter: Maximum 74 in.
Minimum allowable for repairs 72.5 in.
No further reduction permitted.
**(b)** Spinner dome, McCauley, D-2808, bulkhead & fillet assembly, D-3148 ..... 3.28 lbs. ..... -34.18
**(c)** Propeller governor, Woodward, 210452 ..... 3.0 lbs. ..... -1.0

**3.** ....Hartzell constant speed propeller installation
**(a)** Propeller, Hartzell, HC-C2YK-1B hub, 7666A-2 blades ..... 53.75 lbs. ..... -35.16
See Notes 5 and 7.
Pitch setting at 30.0 in. sta.: (See Note 6)
Low 13° ± 0°
High 29.0° ± 2°
Diameter: Maximum 74 in.
Minimum allowable for repairs 72.5 in.
No further reduction permitted.
**(b)** Spinner assembly, Hartzell, 835-20 ..... 3.25 lbs. ..... -34.18
**(c)** Propeller governor, Hartzell, D-1-4 or D-1-6 or H-1 or H-1L ..... 4.5 lb. ..... -1.4
**(d)** Propeller governor, Edo Aire, 34828014 ..... 3.0 lb. ..... -1.4
**(e)** Propeller governor, McCauley, C290D5/T24 ..... 2.75 lb. ..... -1.4

Engines and Engine Accessories (Fuel and Oil System)

**101.** .....Fuel Pumps
**(a)** One, electric, Bendix 476087
(or alternate) Facet, (Balkamp) P/N 476-027 ..... 2.0 lbs. ..... +14.0
**(b)** One, engine-driven AC type AH, P/N GP5623467 + A,
5656880, 6440152, 6440174, 6441271, or 6440295 ..... 1.5 lbs. ..... -3.8
**(c)** One, electric, Dukes, 4140-00-21A or 1499-00-21
(or alternate) Weldon, P/N 8164A ..... 1.91 lb. ..... +6.5

**102.** .....Oil Radiator
**(b)** Harrison, 8526250..... 2 lbs. ..... -23.0
**(a)** Stewart-Warner, Model #8406-E1 or 8406J..... 2.8 lbs. ..... -23.0

**103.** .....Induction Air Filter
**(a)** Air Maze, 13219 ..... 1 lb. ..... -22.0

**104.** .....Starters
**(a)** Delco-Remy, 11096-89 or 1109519 or 1109511..... 17.8 lbs. ..... -23.0
**(b)** Prestolite, MZ4206 or MZ4218 or MZ4222 ..... 17.8 lbs. ..... -23.0

**Landing Gear:**

**201.** .....Two Main Wheel/Brake Assemblies, 6.00-6
**(a)** Cleveland Wheel Assembly, Model No. 40-86/
Brake Assembly No. 30-56A ..... 19 lbs. ..... See Note 8.
**Optional - Cleveland, 40-86E, 30-56D.*

**202.** .....Two main wheel, 6-ply rating, tires
**(a)** 6.00-6, Type III w/ regular tubes..... 17 lbs. ..... See Note 8.

**VIII. Model M20G** (cont'd) **Weight** **F.S.**

**205.** .....One, Nose Wheel, 5.00-5
**(a)** Cleveland, Model 40-87 ..... 2.6 lbs. ..... See Note 8.

**206.** .....One, Nose Wheel, 6-Ply Rating tire
**(a)** 5.00-5, Type III w/ regular tube ..... 7 lbs. ..... See Note 8.

**Electrical Equipment:**

**301.** .....Generators and Alternators
**(a)** Generator, 50 amp, Delco-Remy, 1101915 ..... 16.6 lbs. ..... -24.5
**(b)** Alternator, 60 amp, Prestolite, ALY8420, ALY8403, ALY6420 or ALY8420M ..... 10.3 lbs. ..... -24.5
**(c)** Alternator, 70 amp, Prestolite, ALX8403 ..... 10.3 lbs. ..... -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 ..... 27 lbs. ..... +2.5

**303.** .....Voltage Regulators
**(a)** 50 amp, Delco-Remy 1119224 or 1119224C or VR300-14-50 or DGR-7-H-50 ..... 2 lbs. ..... +2.0
**(b)** OECO, 20082* ..... 1.4 lbs. ..... +2.0
or Electrodelta VR 414* ..... 0.6 lbs. ..... +7.0
or Electrodelta VR 415 or VR 415D or Mooney 800270-505 ..... 0.6 lbs. ..... +7.0
**Use 800331-721 adapter when OECO or VR 414 is replaced by VR415, VR415D or 800270-505 regulator.*

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Flight Manual dated November 17, 1969, for S/N 700005 and ON. See Note 2.

**Miscellaneous:** **Weight** **F.S. (IN)**

**601.** .....Warning Systems
**(a)** Dual warning indicator, Safe-Flight, Model 283 ..... 2 lbs. ..... -2.5
**(b)** Gear warning indicator, Mallory, SC 628P ..... 1 lb. ..... -2.5
**(c)** Stall warning indicator, Mallory, SC 628 ..... 1 lb. ..... +50.0

**602.** ……Vacuum Pumps (Required IFR, Optional VFR) see NOTE 24
**(a)** Airborne, 113A1 or ..... 4.0 lbs. ..... -5.0
**(b)** Airborne, 113A5 or ..... 4.0 lbs. ..... -5.0
**(c)** Airborne, 200CC or ..... 3.5 lbs. ..... -5.0
**(d)** Airborne, 211CC ..... 2.5 lbs. ..... -5.0

**IX. Model M20J, 4 PCLM (Normal Category); Approved September 27, 1976**

| | |
|---|---|
| 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 12 and Note 20. |
| Fuel | 100LL or 100/130 octane minimum grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m. (200 hp) |
| Airspeed Limits | Maneuvering ..... 136 m.p.h. (118 knots) IAS<br>Never exceed ..... 200 m.p.h. (174 knots) IAS<br>*Never exceed ..... 225 m.p.h. (195 knots) IAS |

**IX. Model M20J** (cont'd)

| | | | |
|---|---|---|---|
| | Flaps extended (full flaps) | 127 m.p.h. | (110 knots) IAS |
| **** | (15° flaps) | 145 m.p.h. | (126 knots) IAS |
| | Landing gear retraction | 110 m.p.h. | ( 96 knots) IAS |
| ** | " " " | 123 m.p.h. | (107 knots) IAS |
| | Landing gear extension | 120 m.p.h. | (104 knots) IAS |
| *** | " " " | 152 m.p.h. | (132 knots) IAS |
| **** | " " " | 159 m.p.h. | (138 knots) IAS |
| | Landing gear extended | 120 m.p.h. | (104 knots) IAS |
| *** | " " " | 152 m.p.h. | (132 knots) IAS |
| **** | " " " | 186 m.p.h. | (162 knots) IAS |
| | Maximum structural cruising | 175 m.p.h. | (152 knots) IAS |
| * | " " " | 200 m.p.h. | (174 knots) IAS |

** Serial No's. 24-0171 and on, (and 24-0002 through 24-00170 if S.B. M20-198 is complied with).*
*** Serial No's. 24-0084, 24-0378 thru 24-TBA.*
**** Serial No's. 24-0084, 24-0378 thru 24-2999, 24-3079 thru 24-TBA (and previous S/N's if SB M20-209 is complied ith).*
***** Serial No. 24-3000 thru 24-3078.*

S/N 24-0001 thru 24-3200, 24-3202 thru 24-3217 -- 2740 lbs. gross weight.

| | |
|---|---|
| C.G. Range | (+45.0) to (+50.1) at 2740 lbs. |
| (Landing gear extended) | (+41.8) to (+50.1) at 2470 lbs. |
| | (+41.0) to (+50.1) at 2250 lbs. or less |
| | (Straight line variation between points given). |
| | Retraction moment 615 in. -lbs. |

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 - 2900 lbs. gross weight.

| | |
|---|---|
| C.G. Range | (+45.0) to (+50.1) at 2900 lbs. |
| (Landing gear extended) | (+43.8) to (+50.1) at 2740 lbs. |
| | (+41.8) to (+50.1) at 2470 lbs. |
| | (+41.0) to (+50.1) at 2250 lbs. or less |
| | (Straight line variation between points given). |
| | Retraction moment 615 in. -lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2740 lbs. - S/ N 24-0001 thru 24-3200, 24-3202 thru 24-3217)<br>2900 lbs. - S/N 24-3201, 24-3218 and ON and S/N 24-1686 thru 24-3200, 24-3202 thru 24-3217 when c/w MAC dwg. No. 940071 and insertion of applicable AFM Supplement into the appropriate AFM. |
| No. of Seats | 4 (2 at +34.0 to +39.0, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+95.5), 10 lbs. (+119) |
| Fuel Capacity | 64 gals. (Two integral tanks in wings at +48.4)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-11.5) |
| Maximum Operating Altitude | See Note 19 |
| Control Surface Movements | (Aircraft with Serial Numbers 24-0002 thru 24-1037) |

| | | | |
|---|---|---|---|
| Wing Flaps | T.O. Position | Down | 15° +/- 1° |
| | Landing | Down | 33° + 0°/-2° |
| Aileron | Up | 12½° to 17° | Down 8° ± 1° |
| Aileron static position | | | Down 0° to 2° |

**IX. Model M20J** (cont'd)

| | |
|---|---|
| | Elevator ..... Up .....22° ± 2° ..... Down .....22° ± 2°<br>Rudder ..... Left .....23° to 24° ..... Right .....23° to 24°<br>Stabilizer (L.E.) ..... Up .....½° to 1° ..... Down .....5¼° to 5 ¾° |
| Elevator Trim Assist Unit | With stabilizer set at 3° negative setting to the thrust line, adjust trim assist bungees 740188 for an elevator position of 19° +/- 1° at the zero spring position of the bungees. (This rigging to be obtained before installation of the 740171 extension springs). |
| | (Aircraft with serial numbers 24-1038 and up)<br>Wing Flaps .....T.O. Position ..... Down .....15° +/- 1°<br>.....Landing ..... Down .....33° + 0°/-2°<br>Aileron..... Up .....12½° to 14½° .... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator ..... Up .....22° ± 2° ..... Down .....22° ± 2°<br>Rudder ..... Left .....23° to 24° ..... Right .....23° to 24°<br>Stabilizer (L.E.) ..... Up .....½° to 1° ..... Down .....5¼° to 5 ¾° |
| Elevator Trim Assist Unit | With stabilizer set at 3° negative setting to the thrust line, adjust trim assist bungees 740188 for an elevator position of 19° ± 1° 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. Spirit level is used to level. Serial No. 24-0002 thru 24-0090 (excluding 24-0084). Leveling screws located above the tailcone access door. Spirit level is used to level S/N 24-0084, S/N 24-0091, and on. |
| Serial numbers eligible | Serial No. 24-0002 thru 24-3431 |
| Export eligibility | See Note 14. |
| Required equipment | In addition to the pertinent 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)(1), 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), 401(a) or (b) or (c) or (d) or (e) or (f) or (g) or (h) or (i) or (j) or (k) or (l) or (m), 601(a), (b) or (c), 602(a) or (b) or (c) or (d) or (e). |

**Specifications Pertinent to Model**

| | |
|---|---|
| Datum | For M20J, datum is 5.00 inches aft of the centerline of the nose gear support bolts 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 | Model M20J CAR 3, effective November 1, 1949, as amended to May 18, 1954, with paragraph 3.74 of Amendment 3-13 dated August 25, 1955; with paragraphs 3.109, 3.112., 3.115, 3.118, and 3.120 of CAR 3 effective May 15, 1956, as amended to October 1, 1959. In lieu of corresponding CAR 3 paragraphs, where applicable - FAR 23, effective February 1, 1965; paragraph 23.29 as amended to March 1, 1978, paragraphs 23.45 through 23.77 as amended to February 17,1987, paragraphs 23.1441 through 23.1449, as amended to June 17, 1970; FAR 36, effective September 20, 1976. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**IX. Model M20J** (cont'd)

| **Propeller and Propeller Accessories:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....McCauley constant speed propeller installation | | |
| **(a) (1)** Propeller, McCauley, B2D34C212 hub, 78CDA-4 blades (See Notes 10, 16) | 49.5 lbs. | -35.5 |
| Pitch setting at 30.0 in. sta.: (S/N 24-0002 thru 24-0083, 24-0085 thru 24-0170) Low 14° ± 0. 2° High 27.5° ± 0.2° (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° ± 0. 2° High 29.5° ± 0.5° | | |
| **(a) (2)** Propeller, McCauley, B2D34C214 hub, 90DHB-16E blades or -16EP blades (See Notes 11, 16) | 49.5 lbs. | -35.5 |
| Pitch setting @ 30.0 in. Sta. (S/N 24-0378 & on) Low 13.9° ± 0. 2° High 33.0° ± 0.5° Diameter: Maximum 74 in. Minimum allowable for repairs 73 in. No further reduction permitted. No reduction permitted when equipped with deice boots. | | |
| **(b)** Spinner assembly, Mooney, 680031-505 | 4.8 lbs. | -35.0 |
| **(c)** Propeller governor, McCauley, C290D5F/T17 | 2.75 lbs. | -1.40 |
| **(d)** Propeller governor, Edo Air, 34-828-014-11 | 3.0 lbs. | -1.40 |
| **(e)** Propeller governor, McCauley, DC290D1/T22 | 2.75 lbs. | -1.40 |
| **(f)** Propeller governor, McCauley, DC290D1/T5 | 2.75 lbs. | -1.40 |
| **2.** ....Hartzell constant speed propeller installation | | |
| **(a) (1)** Propeller, Hartzell HC-C2YK-1BF hub, F7666A-3Q blades | 54.25 lbs. | -35.5 |
| Pitch setting at 30.0 in. sta.: Low 14.1° ± .1° High 29.3° to 31.3° Diameter: 73.0 in. No further reduction permitted. (S/N 24-1038 and ON) | | |
| **(b) (1)** Mooney Spinner assembly, 680031-507 (S/N 24-1038 and ON) | 4.8 lbs. | -35.0 |

**Engines and Engine Accessories (Fuel and Oil System):**

| | | | |
|---|---|---|---|
| **101.** .....Fuel Pumps | | | |
| **(a)** One, engine driven, P/N AC 6440296 or 6441234 | 1.6 lb. | +6.5 |
| **(b)** One, electric, Dukes, 4140-00-19A, 1499-00-19 | 1.91 lbs. | +6.5 |
| (or alternate) Weldon, P/N 8163A | 2.4 lbs. | +6.5 |
| **(c)** Weldon, P/N 8163B (S/N 24-3000 and ON) | 2.4 lbs. | +6.5 |
| **102.** .....Oil Radiator | | |
| **(a)** Stewart-Warner, 8432F1 or 8432L | 2.4 lbs. | -3.8 |
| **103.** .....Induction Air Filter | | |
| **(a)** Donaldson, P13-0234 or Bracket, BA6210 or Air Maze, 125997-010 | 1 lb. | -25.5 |
| **104.** .....Starters | | |
| **(a)** Prestoline, MZ5206 or MZ4218 or MZ4222 (S/N 24-0001 thru 24-2999) | 17.8 lbs. | -23.0 |
| **(b)** Prestolite, MHB-4016 (S/N 24-3000 and ON) | 17.8 lbs. | -23.0 |

**IX. Model M20J** (cont'd) **Weight** **F.S.**

**Landing Gear:**

**201.** .....Two Main Wheel/Brake Assemblies, 6.00-6
**(a)** Cleveland Wheel /Brake Assembly,
*Wheel, Model No. 40-86/Brake Assembly No. 30-56A..... 19 lbs. ..... See Note 8.
**Optional - Cleveland, 40-86E, 30-56D.*

**202.** .....Two main wheel, 6-ply rating, tires
**(a)** 6.00-6, Type III w/ regular tubes..... 17 lbs. ..... See Note 8.

**205.** .....One, Nose Wheel, 5.00-5
**(a)** Goodyear, Model 40-87 ..... 2.6 lbs. ..... See Note 8.

**206.** .....One, Nose Wheel, 6-Ply Rating tire
**(a)** 5.00-5, Type III w/ regular tube ..... 7 lbs. ..... See Note 8.

**Electrical Equipment:**

**301.** .....Alternators
**(a)** Alternator, 60 amp, Prestolite, ALY8420, ALY8403,
ALY6420 or ALY8420M (S/N 24-0001 thru 24-2999) ..... 10.3 lbs. ..... -24.5
**(b)** Alternator, 70 amp, Prestolite, ALU6421-LS (S/N 24-3000 and on) ..... 10.3 lbs. ..... -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 (24-0001 thru 24-2999)..... 27 lbs. ..... +110.8
**(b)** Gill, G-242 (S/N 24-3000 thru 24-3200, 24-3202 thru 24-3217) ..... 27 lbs. ..... +110.8
**(c)** Gill, G-243 (S/N 24-3201, 24-3218 and thru 24-TBA)..... 29.5 lbs. ..... +110.8
**(d)** Concorde, RG24-11M, or -15 ..... 26.5 lb. ..... +110.8
(S/N 24-3201, 24-3218 and thru 24-TBA)

**303.** .....Voltage Regulators
**(a)** OECO, 20082*..... 1.4 lbs. ..... +2.0
or Electrodelta VR 414*
or Electrodelta VR 415 or VR 415D or Mooney 800270-505..... 0.6 lbs. / 0.3lbs. ..... +2.0
(S/N 24-0001 thru 24-2999)
**Use 800331-721 adapter when OECO or VR 414 is replaced by VR415, VR415D or 800270-505 regulator.*
**(b)** Precise Flight, DGR-2, or Electrodelta, VR 802
(S/N 24-3000 and ON)..... 0.6 lbs. ..... +2.0
or 800270-501..... 0.3 lb. ..... +2.0

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Pilot's Operating Handbook and FAA Approved Airplane Flight Manual dated September 27, 1976, for 24-0002 through 24-0083 and 24-0085 through 24-0377. See Note 2.
**(b)** Pilot's Operating Handbook dated November 15, 1977, for S/N 24-0084, 24-0378 thru 24-0763. See Note 2.
**(c)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 12-28-78, S/N 24-0764 thru 24-1037. See Note 2.
**(d)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated August 29, 1980, for S/N 24-1038 thru 24-1213. See Note 2.
**(e)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 9/4/81 for S/N 24-1214 thru 24-1417. See Note 2.
**(f)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 9/6/83 for S/N 24-1418 thru 24-1499.
**(g)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 10/12/84 for S/N 24-1500 thru 24-2999 (#1231). Excludes M20J Advanced Trainer, see (j) below.
**(h)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 6/2/86 for S/N 24-3000 thru 24-3078.

**IX. Model M20J** (cont'd)

**(i)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 11-22-88, for S/N 24-3079 thru 24-3153.
**(j)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 8-89 for S/N 24-1686-14 thru 24-2999. (ATS's only)
**(k)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 3-90 for S/N 24-3154 thru 24-3217, excluding S/N 24-3201.
**(l)** Pilot's Operating Handbook and FAA approved Airplane Flight Manual, dated 7-91, for 24-3201. 24-3218 thru 24-3373.
**(m)** Pilots Operating Handbook and FAA approved Airplane Flight Manual, dated 1-96 for S/N 24-3374 thru 24-TBA.

| **Miscellaneous:** | **Weight** | **F.S.** |
|---|---|---|
| **601.** .....Warning Systems | | |
| **(a)** Gear warning indicator, Mallory, SC 628P | 1 lb. | -2.5 |
| **(b)** Stall warning indicator, Mallory, SC 628 | 1 lb. | +50.0 |
| **(c)** Stall/Gear Warning indicator, IAI, 950D-0309-000 | 1.1 lb. | + 4.24 |
| **602.** ……Vacuum pumps (see NOTE 24) | | |
| **(a)** **Airborne, 200CC (24-0001 thru 24-2999) or | 3.5 lbs. | -5.0 |
| **(b)** **Airborne, 211CC (24-0001 thru 24-2999) | 2.5 lbs. | -5.0 |
| **(c)** Airborne, 241CC-17 (alternate) S/N 24-3000 and ON. | 3.4 lbs. | -5.0 |
| **(d)** **Airborne, 241CC (alternate - all counter clockwise applications) (24-0001 thru 24-2999) or | 3.4 lbs. | -5.0 |
| **(e)** **Sigma Tek, IU128-003 and IU128-005 or -006 (alternate - all applications) (24-0001 thru 24-2999) | 3.4 lbs. | -5.0 |

**X. Model M20K, 4 PCLM (Normal Category); Approved November 16, 1978**

| | |
|---|---|
| Engine | Teledyne Continental Motors TSIO-360-GB1, -GB3, -GB4 (S/N 25-0001 thru 25-0780);<br>TSIO-360-LB1 (S/N 25-0781 thru 25-0889). See Note 17.<br>TSIO-360-MB1 (S/N 25-1000 and 25-1999).<br>TSIO-360-MB2 (S/N 25-2000 thru 25-2012) See NOTE 21.<br>TSIO-360-SB2 (S/N 25-2000 thru 25-2032) See NOTE 21. |
| Fuel | 100LL or 100/130 octane minimum grade aviation gasoline |
| Engine Limits | For all operations, 2700 r.p.m., 40.0 in. MP (210 HP); except -MB-(1) & (2), 36.0 in. MP. & -SB2, 2,600 RPM, 39.0 in. Hg. MP (220 HP). |

| Airspeed Limits | S/N 25-0001 thru -0889 | 25-1000 and Up |
|---|---|---|
| Maneuvering | 135 m.p.h. (117 kts) IAS | 123 KIAS |
| Never exceed | 225 m.p.h. (195 kts) IAS | 195 KIAS |
| Flaps extended | 125 m.p.h. (109 kts) IAS | 109 KIAS |
| Landing gear retraction | 122 m.p.h. (106 kts) IAS | 106 KIAS |
| Landing gear extension | 150 m.p.h. (130 kts) IAS | 140 KIAS |
| Landing gear extended | 150 m.p.h. (130 kts) IAS | 165 KIAS |
| Maximum structural cruising | 200 m.p.h. (174 kts) IAS | 174 KIAS |

| | |
|---|---|
| C.G. Range<br>Landing gear extended) | (+43.5) to (+49.3) at 2900 lbs.<br>(+40.6) to (+49.3) at 2360 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment + 615 in. -lb. |
| Empty Weight C.G. Range | None |

**X. Model M20K** (cont'd)

| | |
|---|---|
| Maximum Weight | 2900 lbs. (S/N 25-0001 thru 25-2012) (See NOTE 21)<br>3130 lbs. (S/N 25-2000 thru 25-TBA) (See NOTE 21) |
| No. of Seats | 4 (2 at +34.0 to +39.0, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+95.5), 10 lbs. (+119) |
| Fuel Capacity | 72.0 gal. (S/N 25-0001 thru 25-0446); 75.6 gal. usable) (S/N 25-0447 and on). (Two integral tanks in wings at +48.59) See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 2 gal. (-22.19) |
| Maximum Operating Altitude | 24,000 feet for S/N 25-0001 thru 25-0999<br>28,000 feet for S/N 25-1000 thru 25-1999. (See NOTE 19.)<br>25,000 feet for S/N 25-2000 thru 25-TBA. (See NOTE 19.) |
| Control Surface Movements | Wing Flaps .....T.O. Position ..... Down ..... 10° ± 1°<br>.....Landing ..... Down ..... 33° + 0°/-2°<br>Aileron.....Up .....12½° to 14½° ... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator .....Up .....22° + 0°, -2° ..... Down ..... 22° + 0°, -2°<br>Rudder ..... Left .....23° to 24° ..... Right ..... 23° to 24°<br>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 turnbuckle for 14.0 to 16.0 lb. on tensionmeter, tensionmeter reading 20 lbs. maximum permissible. Check for positive clearance between cable end and pulley sheave. |
| Leveling means | Edge of skin splice over aft fuselage radio access panel. Spirit level is used to level. (Serial No. 25-0002 thru 25-0246)<br>Leveling screws located above the tailcone access door. Spirit level is used to level. (Serial No. 25-0247 and on) |
| Serial No's. Eligible | Serial No. 25-0001 thru 25-2032 |
| Export Eligibility | See Note 14. |
| Required equipment | Serial No. 25-0001 thru 25-0999.<br>In addition to the pertinent 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), 401(a) or (b) or (c) or (d) or (e), 601(a) (b), 602(a) or (b), (c).<br>Serial No. 25-1000 thru 25-1999.<br>In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1(a) (2) (b) (c) or 2(a) (b), 101(b), 103(b), 104(b), 201(a), 202(a), 205(a), 206(a), 301(b) and 303(b), 302(b), & (c), 401(f) or (g) or (h), 601(a) (b) or (c), 602(a) or (b) or (c).<br>S/N 25-2000 and ON.<br>In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1(a)(2)(b)(c) or 2(a)(b), 101(b), 103(b), 104(b), 201(a), 202(a), 205(a), 206(a), 301(b) and 303(b), 302(b) or (c), 401(i) or (j), 601(a)(b) or (c), 602(a) or (b) or (c). |
| Datum | For M20K, datum is 5.00 inches aft of the centerline of the nose gear support bolts and is fuselage station 0.00.<br>The leading edge of the wing at wing station 59.25 is 33.00 inches aft of fuselage station 0.00. |

**X. Model M20K** (cont'd)

Certification basis

Model M20K (Serial Number 25-0001 through 25-2012) See Note 21. CAR 3, effective November 1, 1949, as amended to May 18, 1954, with paragraph 3.74 of Amendment 3-13 dated August 25, 1955; CAR 3 effective May 15, 1956, as amended to October 1, 1959, paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 3.441; in lieu of corresponding CAR 3 paragraphs, where applicable --FAR 23, effective February 1, 1965; as amended to September 14, 1969, paragraph 23.33,23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1047, 23.1121 through 23.1193, 23.1351 through 23.1401, 23.1527, 23.1553, as amended to June 17, 1970, paragraphs 23.1441 through 23.1449; as amended to February 1, 1977; paragraphs 23.1091 through 23.1105; as amended March 1, 1978, paragraph 23.29; FAR 36, effective September 20, 1976.

Model M20K (Serial Number 25-2013 and on) See Note 21. CAR 3, effective November 1, 1949, as amended to May 18, 1954, with paragraph 3.74 of Amendment 3-13; CAR 3 effective May 15, 1956, as amended to October 1, 1959, paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 3.441; in lieu of corresponding CAR 3 paragraphs, where applicable-- FAR 23, effective February 1, 1965; paragraphs 23.33, 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1047, 23.1121 through 23.1193, 23.1351 through 23.1401, 23.1527, 23.1553, of amendment 23-7; paragraphs 23.1441 through 23.1449 of amendment 23-9; paragraphs 23.1091 through 23.1105 of amendment 23-17; paragraph 23.1301 of amendment 23-20; paragraph 23.29 of amendment 23-21; paragraph 23.1529 of amendment 23-26, paragraphs 23.45 through 23.77 of amendment 23-34; paragraph 23.1587 of amendment 23-45; paragraphs 23.1323 and 23.1325 of amendment 23-42; FAR 36, latest amendment at time of certification.

Production basis

None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics.

Equipment

Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer.

| **Propeller and Propeller Accessories - Fuselage Station Location:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....McCauley constant speed propeller installation | | |
| **(a) (1)** Propeller, McCauley, 2A34C216, 90DHB-16E blades | 55.2 lbs. | -45.32 |
| Pitch setting at 30.0 in. sta.: Low 14.7° ± 0. 2° High 33.0° ± 0.5° Diameter 74.0 in. No reduction permitted. (S/N 25-0001 thru 25-0999) | | |
| **(a) (2)** Propeller, McCauley, 2A34C221 hub, 90DHC-16E or 90DHC-16EP blades | 55.2 lbs. | -45.32 |
| Pitch settings at 30 in. sta.: Low 14.7° ± 0.2° High 38.0° ± 0.5° Diameter: 74 in. No reduction permitted. (S/N 25-1000 thru 25-2032) or (S/N 25-0001 thru 25-0999 providing S.I. M20-75 has been complied with) | | |
| **(b)** Spinner assembly, Mooney, 680032-501 | 4.8 lbs. | -45.32 |
| **(c)** Propeller governor, McCauley, C290D3F/T20 | 2.75 lbs. | -32.10 |
| **2.** ....Hartzell constant speed propeller installation | | |
| **(a)** Propeller hub blades assembly Hartzell, hub BHC-J2YF-1BF, blades F8459A-11Q | 54.00 lbs. | -45.32 |
| Pitch settings at 30.0 in. sta.: Low 14.7° ± 0.1° | | |

**X. Model M20K** (cont'd)

| **Propeller and Propeller Accessories - Fuselage Station Location** (cont'd): | **Weight** | **F.S.** |
|---|---|---|
| High 30.0° to 32° (See Note 18.) | | |
| Diameter: 73.0 in. | | |
| No reduction permitted. (S/N 25-0001 thru 25-1999) | | |
| **(b)** Spinner assembly, Hartzell, A2295 (S/N 25-0001 thru 25-1999) | 4.5 lbs. | -45.32 |
| **(c)** Propeller Governor, McCauley, C290D3F/T() | 2.75 lbs. | -32.10 |

**Engines and Engine Accessories (Fuel and Oil System):**

| | | | |
|---|---|---|---|
| **101.** | Fuel Pumps | | |
| **(a)** | One, electric, Dukes, 4140-00-19A, or 1499-00-19 | 1.91 lbs. | +6.5 |
| | or Weldon, 10054A (S/N 25-0001 thru 25-0999) | 2.7 lbs. | +6.5 |
| **(b)** | Weldon, 10054B (S/N 25-1000 and on) | 2.7 lbs. | +6.5 |
| **103.** | Induction Air Filter | | |
| **(a)** | Donaldson, P13-6287 or Airmaze, 125685-004 | 1 lb. | -14.0 |
| **(b)** | Airmaze, ED04011 00736 (S/N 25-1000 and on) | .5 lb. | -23.92 |
| **104.** | Starters | | |
| **(a)** | Teledyne Continental Motors, 634592 (same as Prestolite, MCL 6501 or 646238) | 18.1 lbs. | -9.1 |
| **(b)** | TCM, 646275 (S/N 25-0001 and on) | 18.1 lbs. | -9.1 |

**Landing Gear:**

| | | | |
|---|---|---|---|
| **201.** | Two Main Wheel/Brake Assemblies, 6.00-6 | | |
| **(a)** | *Cleveland Wheel Assembly, Model No. 40-86/ Brake Assembly No. 30-56A | 19 lbs. | See Note 8. |
| | **Optional - Cleveland, 40-86E, 30-56D.* | | |
| **202.** | Two main wheel, 6-ply rating, tires | | |
| **(a)** | 6.00-6, Type III w/ regular tubes | 17 lbs. | See Note 8. |
| **205.** | One, Nose Wheel, 5.00-5 | | |
| **(a)** | Cleveland, Model 40-87 | 2.6 lbs. | See Note 8. |
| **206.** | One, Nose Wheel, 6-Ply Rating tire | | |
| **(a)** | 5.00-5, Type III w/ regular tube | 7 lbs. | See Note 8. |

**Electrical Equipment:**

| | | | |
|---|---|---|---|
| **301.** | Alternators/Generators | | |
| **(a)** | Alternator, 70 amp, TCM, 643008 (12V) | 11.7 lbs. | -6.9 |
| | (Same as Prestolite, ALX-9425A or ALX-9425B) See Note 15. | | |
| | (Opt.) 80 amp, TCM, 649281 (12V) | | |
| **(b)** | 70 amp, TCM, 646719 (24V) | 11.7 lbs. | -6.9 |
| | (Opt.) 70 amp, TCM, 649280 (24V) | | |
| | (Opt.) 70 amp, TCM, 649172 (24V) | 10.3 lbs. | -5.5 |
| **(c)** | Optional 10 Amp, Generator Electro-Mech, EM8012 | 5.8 lbs. | -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) | 27 lbs. | +110.8 |
| **(b)** | Gill G242 (S/N 25-1000 thru 25-1196) | 27 lbs. | +110.8 |
| **(c)** | Gill, G-243 (S/N 25-1197 and ON) | 29.5 lbs. | +110.8 |
| **(d)** | Concorde, RG24-11M, or -15 (S/N 24-3201, 24-3218 and thru 24-TBA) | 26.5 lb. | +110.8 |

**X. Model M20K** (cont'd) **Weight** **F.S.**

**303.** .....Voltage Regulators

**(a)** OECO, 20082*..... 1.4 lbs. ..... +2.0
or Electrodelta VR414* or VR415 or VR415D or
Mooney 800270-505..... 0.6 lbs. ..... +2.0

**(b)** Precise Flight, DGR-2, or Electrodelta, VR 802
(1 or 2 ea.) or 800270-503
(S/N 25-1000 and ON)..... 0.6 lbs. ..... +2.0

**Use 800331-721 Adapter when Oeco or VR414 is replaced by VR415, VR415D or 800270-505 regulator.*

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual

**(a)** Pilot's Operating Handbook dated November 16, 1978, for S/N 25-0001 thru 25-0446. See Note 2.
**(b)** Pilot's Operating Handbook dated August 29, 1980, for S/N 25-0447 thru 25-0612. See Note 2.
**(c)** Pilot's Operating Handbook dated September 4, 1981 for S/N 25-0613 thru 25-0780. See Note 2.
**(d)** Pilot's Operating Handbook dated September 6, 1983, for S/N 25-0781 thru 25-0841.
**(e)** Pilot's Operating Handbook dated October 12, 1984, for S/N 25-0842 thru 25-0889.
**(f)** Pilot's Operating Handbook dated December 16, 1985, for S/N 25-1000 thru 25-1066.
**(g)** Pilot's Operating Handbook dated September 18, 1986, for S/N 25-1067 thru 25-1224.
**(h)** Pilot's Operating Handbook dated March 1990 for S/N 25-1225 thru 25-1999.
**(i)** Pilot's Operating Handbook, #3302 dated 4/97 for S/N 25- 2000 thru 25 2012 (See NOTE 21)
**(j)** Pilot's Operating Handbook, #3303 dated 7/97 for S/N 25- 2000 thru 25 TBA( See NOTE 21)

**Miscellaneous:**

**Weight** **F.S.**

**601.** .....Warning Systems

**(a)** Gear warning indicator, Mallory, SC 628P..... 1 lb..... -2.5
**(b)** Stall warning indicator, Mallory, SC 628..... 1 lb..... +50.0
**(c)** Stall/Gear Warning indicator, IAI, 950D-0309-000..... 1.1 lb..... + 4.24

**602.** ……Vacuum pumps (see NOTE 24)

**(a)** ***Airborne, 200CC or..... 3.5 lb..... -3.8
**(b)** ***Airborne, 211CC..... 2.5 lbs. ..... -3.8

**(c)** Sigma-TEK, 1U128-003 and 1U128-005
(alternate for all applications)..... 3.4 lbs. ..... -3.8
***Airborne, 241CC (alternate all counter-clockwise applications)..... 3.4 lbs. ..... -3.8
***Airborne, 242CW-10 (alternate all clockwise applications)..... 3.4 lbs. ..... -3.8
**(d)** ***Airborne, 241CC-15 (alternate all clockwise applications)..... 3.4 lbs. ..... -3.8
**(e)** ***Airborne, 242CW (alternate all clockwise applications)..... 3.4 lbs. ..... -3.8
**(f)** Sigma-TEK, 1U128-006 (Alt)..... 3.4 lbs. ..... -3.8

**XI. Model M20L, 4 PCLM (Normal Category); Approved February 25, 1988**

| | |
|---|---|
| Engine | Porsche PFM 3200 N03 |
| Fuel | 100 LL min-grade aviation gasoline |
| Engine Limits | For all operations, 2343 RPM (217 HP) |
| Airspeed Limits | Maneuvering..... 135 m.p.h. (117 knots) IAS<br>Never exceed..... 225 m.p.h. (195 knots) IAS<br>Flaps extended..... 127 m.p.h. (110 knots) IAS<br>Landing gear retraction..... 120 m.p.h. (106 knots) IAS<br>Landing gear extension..... 150 m.p.h. (129 knots) IAS<br>Landing gear extended..... 150 m.p.h. (129 knots) IAS<br>Maximum structural cruising..... 200 m.p.h. (174 knots) IAS |

**XI. Model M20L** (cont'd)

| | |
|---|---|
| C.G. Range<br>(Landing gear extended) | (+43.5) to (+49.3) at 2900 lbs.<br>(+41.0) to (+49.3) at 2430 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 615 in. -lb. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 2900 lbs. |
| No. of Seats | 4 (2 at +34.0 to +39.0, 2 at +70.0) |
| Maximum Baggage | 120 lbs. (+101.0), 10 lbs. (+125.0) |
| Fuel Capacity<br>(usable) | 60.5 gallons (Two integral tanks in wings at +48.43)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 13.5 qt. total; 7 qt. in oil tank |
| Maximum Operating Altitude | N/A |
| Control Surface Movements | Wing Flaps .....T.O. Position Down ..... 10° ± 1°<br>.....Landing ..... Down ..... 33° + 0°/-2°<br>Aileron..... Up ...12½° to 14½° ..... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator ..... Up .....22° +0°, -2° ..... Down ..... 22° +0°, -2°<br>Rudder ..... Left .....23° to 24° ..... Right ..... 23° to 24°<br>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 turnbuckle for a 14.0 to 16.0 lbs. tensionmeter reading on cable, tensionmeter reading (20 lb. max. permissible.) Check for positive clearance between cable end and pulley end and pulley sheave. |
| Leveling means | Leveling screws located above the tailcone access door. Spirit level is used to level. |
| Serial No's. Eligible | Serial No. 26-0001 thru 26-0041 |
| Required equipment | Serial No. 26-0001 thru 26-TBA. In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1(a) (b) (c), 101(a), 102(a), 103(a), 104(a), 106(a), 201(a), 202(a), 205(a), 206(a), 301(a), 302(a), 303(a), 304(a) (b), 401(a), 601(a). |
| Datum | For M20L, datum is 13 inches aft of the centerline of the nose gear support bolts and is fuselage station 0.00.<br>The Leading Edge of the wing at wing station 59.25 is 33.00 inches aft of fuselage station 0.00. |
| Certification basis | Model M20L CAR 3, effective November 1, 1949, as amended to May 18, 1954, with paragraph 3.74 of Amendment 3-13 dated August 25, 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 3.441 of CAR 3 effective May 15, 1956, as amended to October 1, 1959. In lieu of corresponding CAR 3 paragraphs where applicable FAR 23, effective February 1, 1965, paragraph 23.29 as amended to March 1, 1978, paragraph 23.33, as amended to September 14, 1969; paragraph 23.853(d), as amended to December 20, 1973; paragraphs 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to September 14, 1969, paragraphs 23.1091 through 23.1105, as amended to February 1, 1977; paragraphs 23.1121 through 23.1193, 23.1351 through 23.1401 as amended to September 14, 1969; paragraphs 23.1441 through 23.1449, as amended to June 17, 1970, paragraphs 23.1527, 23.1553, as amended to September 14, |

**XI. Model M20L** (cont'd)

| | |
|---|---|
| Certification basis (cont'd) | 1969, paragraph 23.1557, as amended to December 20, 1973; FAR 36, effective September 20, 1976. Exemption No. 4753 dated February 13, 1987, and 4753A dated June 9, 1987, granted an exemption from 23.991(a)(1). |
| Special conditions | No. 23-ACE-35 effective November 11, 1987, established requirements for single power control lever, protection of electronic ignition system from lightning and unwanted effects of radio frequency (RF) energy. |
| Production basis | None. Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. |
| Equipment | Approved for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories - Fuselage Station Location:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....Hartzell constant speed propeller installation | | |
| **(a)** Hartzell, BHC-J2YF-1C hub, blades B7421 | 43.2 lbs. | -51.50 |
| Pitch setting at 30.0 in. sta.: | | |
| Low 15.3° ± .1° | | |
| High 40° ± 1° | | |
| Diameter: 74.0 in. | | |
| No reduction permitted. | | |
| **(b)** Spinner assembly, Hartzell, D5413 | 4.5 lbs. | -51.50 |
| **(c)** Propeller governor, Woodward, A210778 | 2.8 lbs. | -12.48 |

| **Engines and Engine Accessories (Fuel and Oil System):** | | |
|---|---|---|
| **101.** .....Fuel Pumps | | |
| **(a)** 933.620.001.00 (3 required main and emergency) | 2.2 lbs. | +17.62 |
| 933.620.00 (boost) (1 required) | 2.2 lbs. | +19.25 |
| **102.** .....Oil Radiator | | |
| **(a)** Mooney, 620058-501 or Lori, L8600805 | 5.8 lbs. (dry) | -39.08 |
| **103.** .....Induction Air Filter | | |
| **(a)** 933.110.141.01 | .78 lb. | -10.97 |
| **104.** .....Starter | | |
| **(a)** 933.604.001.00 | 8 lbs. | -40.1 |
| **106.** .....Fuel filter | | |
| **(a)** 933.110.380.01 | .88 lbs. | -.81 |

| **Landing Gear:** | | |
|---|---|---|
| **201.** .....Two Main Wheel/Brake Assemblies | | |
| **(a)** *Cleveland Wheel Assembly, Model No. 40-86/ Brake Assembly No. 30-56A | 19 lbs. | See Note 8. |
| **Optional - Cleveland, 40-86E, 30-56D* | | |
| **202.** .....Two main wheel, 6-ply rating, tires | | |
| **(a)** 6.00-6, Type III w/ regular tubes | 17 lbs. | See Note 8. |

| **XI. Model M20L** (cont'd) | **Weight** | **F.S.** |
|---|---|---|
| **205.** .....One, Nose Wheel, 5.00-5 | | |
| **(a)** Cleveland, wheel assembly, Model 40-87 | 2.6 lbs. | See Note 8. |
| **206**. .....One, Nose Wheel, 6-Ply Rating tire | | |
| **(a)** 5.00-5, Type III w/ regular tube | 7 lbs. | See Note 8. |
| **Electrical Equipment:** | | |
| **301.** .....Alternators | | |
| **(a)** 70 amp, Porsche, 933.603.004.00 (2 required) | 13.672 lbs. | -12.80(left) |
| | 13.672 lbs. | -10.60(right) |
| **302.** .....Batteries | | |
| **(a)** Gill, (Teledyne) G243 (2 required) | 29.5 lbs. (ea.) | +146.0 |
| **(b)** Concorde, RG24-11M or -15 (2 required) | 26.5 lbs. | +146.0 |
| **303.** .....Voltage Regulators | | |
| **(a)** Overvoltage control (2 required) Electrodelta. OS-400 | 0.4 lbs. | +16.25 |
| **304.** .....Ignition boxes and coils | | |
| **(a)** Ignition box, 933.602.007.07 (2 required) | 3.09 lbs. (ea.) | +64.99 |
| **(b)** Coil, 933.602.005.02 or 933.602.005.01 (2 required) | 2.205 lbs. (ea.) | -3.62 |
| **Interior Equipment:** | | |
| **401.** .....FAA Approved Airplane Flight Manual | | |
| **(a)** Pilot's Operating Handbook dated 2/88 for S/N 26-0001 thru 26-0041. | | |
| **Miscellaneous:** | **Weight** | **F.S. (in)** |
| **601.** .....Warning Systems | | |
| **(a)** Stall/gear warning, IAI-950D-0309-000 | 1.1 lb. | +4.24 |

**XII. Model M20M, 4 PCLM (Normal Category); Approved June 28, 1989**

| | |
|---|---|
| Engine | Textron-Lycoming TIO-540-AF1A<br>Textron-Lycoming, TIO-540-AF1B (OPT. 27-0001 THRU 27-0210)<br>Standard 27-0211 Thru 27-TBA |
| Fuel | 100 LL or 100 octane min-grade aviation gasoline |
| Engine Limits | For all operations, 2575 r.p.m., 38.0 in. MP (270 HP) |
| Airspeed Limits | Maneuvering..... 146 m.p.h. (127 knots) IAS<br>Never exceed..... 225 m.p.h. (195 knots) IAS<br>Flaps extended..... 127 m.p.h. (110 knots) IAS<br>Landing gear retraction..... 122 m.p.h. (106 knots) IAS<br>Landing gear extension..... 161 m.p.h. (140 knots) IAS<br>Landing gear extended..... 190 m.p.h. (165 knots) IAS<br>Maximum structural cruising..... 200 m.p.h. (174 knots) IAS |

**XII. Model M20M** (cont')

| | |
|---|---|
| C.G. Range<br>(Landing gear extended)<br>S/N 27-0001 thru 27-0052 | 3200 lb. C.G. limits<br>(+45.0) to (+51.0) at 3200 lbs.<br>(+43.0) to (+51.0) at 3000 lbs.<br>(+41.0) to (+51.0) at 2430 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 615 in. -lbs. |
| C.G. Range<br>(Landing gear extended)<br>S/N 27-0053 and on, and<br>aircraft S/N 27-0001<br>thru 27-0052 that<br>have complied with<br>Mooney S/B M20-248. | 3368 lb. C.G. limits<br>(+46.0) to (+51.0) at 3368 lbs.<br>(+44.0) to (+51.0) at 3300 lbs.<br>(+41.0) to (+51.0) at 2430 lbs. or less<br>(Straight line variation between points given).<br>Retraction moment 615 in. -lbs. |
| Empty Weight C.G. Range | None |
| Maximum Weight | 3200 lbs. S/N 27-0001 thru S/N 27-0052. 3200 lbs. Landing, 3368 lbs. takeoff for S/N 27-0053 and on, and those aircraft S/N 27-0001 thru 27-0052 that have complied with Mooney Service Bulletin M20-248. |
| No. of Seats | 4 (2 at +34.0 to +39.0, 2 at +70.7) |
| Maximum Baggage | 120 lbs. (+101.5), 10 lbs. (+126) |
| Fuel Capacity<br>(usable) | 89 U.S. gallons (Two integral tanks in wings at +49.23)<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 10 qt. (at -24.76 in.) |
| Maximum Operating Altitude | 25,000 ft. See Note 19. |
| Control Surface Movements | Wing Flaps .....T.O. Position ..... Down ..... 10° ± 1°<br>.....Landing ..... Down ..... 33° + 0°/-2°<br>Aileron..... Up .....12½° to 14½° .... Down ..... 8° ± 1°<br>Aileron static position..... Down ..... 0° to 2°<br>Elevator ..... Up .....22° +0°, -2° ..... Down ..... 22° +0°, -2°<br>Rudder ..... Left .....23° to 24° ..... Right ..... 23° to 24°<br>Stabilizer (L.E.) ..... Up .....3.8° to 4.2° ..... Down ..... 6.5° to 7.0° |

**XII. Model M20M** (cont'd)

| | |
|---|---|
| Elevator trim assist | With stabilizer set at maximum positive setting and elevators Full down. Adjust turn buckle for a 14.0 to 16.0 lb. tensionmeter reading on cable. Check for positive clearance between cable end and pulley sheave. |
| Leveling means | Leveling screws located above the tailcone access door on left side. Spirit level is to be placed on screws for level. |
| Serial No's. Eligible | Serial No. 27-0001 thru 27-0355 |
| Export Eligibility | See Note 14. |
| 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), (d), or (f), 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), 401(a) or (b) or (c), 601(a), 602(a), (b) or (c). |
| Datum | For M20M, datum is 13 inches aft of the centerline of the nose gear support bolts and is fuselage station 0.00.<br>The Leading Edge of the wing, at wing station 59.25, is 33.00 inches aft of fuselage station 0.00. |
| Certification basis | Model M20 CAR 3 effective November 1, 1949, as amended to May 18, 1954, paragraph 3.74 as amended to August 25, 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective May 15, 1956, as amended to October 1, 1959. In lieu of corresponding CAR 3 paragraphs, where applicable - FAR 23, effective February 1, 1965; paragraph 23.29 as amended to March 1, 1978, paragraph 23.33, as amended to September 14, 1969; paragraphs 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to September 14, 1969; paragraphs 23.1091 through 23.1105, as amended to February 1, 1977; paragraphs 23.1121 through 23.1193, 23.1351 through 23.1399 as amended to September 14, 1969, paragraphs 23.1401 as amended to August 11, 1971; paragraphs 23.1441 through 23.1449 as amended to June 17, 1970, paragraphs 23.1521 as amended to December 1, 1978; paragraph 23.1525; paragraph 23.1527, as amended to September 14, 1969; paragraphs 23.1545, 23.1549, 23.1553 as amended to December 1, 1978, paragraph 23.1557, as amended to December 20, 1973; paragraph 23.1559 as amended to March 1, 1978; paragraph 23.1563 as amended to September 14, 1969; paragraph 23.1583 as amended to December 1, 1978; FAR 36 effective September 20, 1976, as amended to December 22, 1988. (See Note 22 and 23) |
| Production basis | 27-0001 thru 27-0273: Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. PC11SW: 27-0274 thru 27-0316; PC13SW: 27-0317 thru 27-0355; PC18SW: No Aircraft Produced, Spare Parts Only.. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**Propeller and Propeller Accessories:** **Weight** **F.S.**

**1.** .... McCauley constant speed propeller installation

**(a)** McCauley, B3D32C417 hub blades 82 NRD-7 ..... 75.0 lbs. ..... -49.5

Pitch setting at 30.0 in. blade station:

Low 15.1° ± 0.2°

High 43.0° ± 0.5°

Diameter: 75.0 in.

**XII. Model M20M** (cont'd) **Weight** **F.S.**

No reduction permitted.
**(b)** Spinner assembly, McCauley D-6204 ..... 4.8 lbs. ..... -51.00
**(c)** Spinner assembly, McCauley D-6204-1 ..... 4.8 lbs. ..... -51.00
**(d)** Propeller governor, McCauley C290D( )/T27 ..... 3.2 lbs. ..... -35.80
**(e)** Propeller de-icing boots, McCauley 690003-501 (S/N 27-0001 and on) ..... 9 lbs. ..... -49.50
**(f)** Propeller governor, McCauley DC 290D(x)/T(x) ..... 3.2 lbs. ..... -35.80

**Engines and Engine Accessories (Fuel and Oil System):**

**101.** .....Fuel Pumps
**(a)** Electric, Weldon, A10051-D ..... 1.9 lbs. ..... +6.50
**(b)** Engine driven, Lear-Siegler, RG17980J ..... 2.0 lb. ..... -3.00

**102.** .....Oil Radiator
**(a)** Stewart-Warner, 10614R ..... 7.5 lbs. ..... -32.0

**103.** .....Induction Air Filter
**(a)** Air-Maze, ED04028 or
**(b)** Donaldson, P5242257 ..... 1 lb. ..... -36.0

**104.** .....Starter
**(a)** Starter, geared, Textron-Lycoming, 31 B21064 ..... 18 lbs. ..... -35.5

**Landing Gear:**

**201.** .....Two Main Wheel/Brake Assemblies, 6.00-6
**(a)** *Cleveland Wheel Assembly,
Wheel, Model No. 40-86/Brake Assembly No. 30-56A ..... 19 lbs. ..... See Note 8.
**Optional - Cleveland, 40-86E, 30-56D*
**(b)** Cleveland wheel assembly, model 40-90A,
Brake Assembly No. 30-652 (27-0117 thru 27-0116)

**202.** .....Two main wheel, 6-ply rating, tires
**(a)** 6.00-6, Type III w/ regular tubes ..... 17 lbs. ..... See Note 8.

**205.** .....One, Nose Wheel, 5.00-5
**(a)** Cleveland, wheel assembly, Model 40-87 ..... 2.6 lbs. ..... See Note 8.

**206.** .....One, Nose Wheel, 6-Ply Rating tire
**(a)** 5.00-5, Type III w/ regular tube ..... 7 lbs. ..... See Note 8.

**Electrical Equipment:**

**301.** .....Alternators
**(a)** Alternator, ES 4009 (alternator #1) ..... 9.25 lb. ..... -44.5
ES 4009 (alternator #2) (optional) ..... 9.25 lb. ..... -46.3

**302.** .....Batteries
**(a)** Gill, (Teledyne) G-243 (2 required) ..... 29.5 lbs. ea. ..... +146.0
**(b)** concorde, RG24-11M or -15 (2 req'd.) ..... 26.5 lb. ea. ..... +146.0

**303.** .....Voltage Regulators
**(a)** Precise Flight, DGR-2 or
Electrodelta, VR802 (2 required) ..... 0.6 lbs. ea. ..... +16.25
or 800270-503 (1 Reed) ..... 0.62 lb. ..... +16.25

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Pilot's Operating Handbook dated 6/89 for S/N 27-0001 thru 27-0052.

**XII. Model M20M** (cont'd)

**(b)** Pilot's Operating Handbook dated 3/90 for S/N 27-0053 thru 27-0107.
**(c)** Pilot's Operating Handbook dated 7/91 for S/N 27-0108 thru 27-TBA.

| **Miscellaneous:** | **Weight** | **F.S.** |
|---|---|---|
| **601.** .....Warning Systems | | |
| **(a)** Stall/gear warning, IAI, -950D-0309-000 | 1.1 lb. | +4.24 |
| **(b)** Oxygen installation, 870029 (see note 19) | | |
| **602.** ……Vacuum pumps (see NOTE 24) | | |
| **(a)** Airborne, 241CC-15 | 3.4 lb. | -3.00 |
| **(b)** Airborne, 28C214 CW (Clutch Driven) | 3.4 lb. | -2.50 |
| **(c)** Sigma Tec, 1U128-006 (Alternate) | 3.4 lb. | -3.00 |
| **(d)** Mooney, 940104-505 | 12.4 lb. | +110.4 |

**XIII. Model M20R, 4PCLM (Normal Category), approved June 30, 1994**

| | |
|---|---|
| Engine | Teledyne Continental Motors, IO-550-G(5); -G(6)*; or -G(7)<br>*(6) configuration is same as (5) configuration, and may be used, when dry pad adapter is required. |
| Fuel | 100LL or 100 minimum grade aviation gasoline |
| Engine limits | For all operations, 2500 rpm (280 hp) |
| Airspeed limits | Maneuvering ..... 146 mph (127 knots) IAS<br>Never exceed ..... 225 mph (195 knots) IAS<br>Flaps extended ..... 127 mph (110 knots) IAS<br>L.G. retraction ..... 122 mph (106 knots) IAS<br>L.G. extension ..... 161 mph (140 knots) IAS<br>L.G. extended ..... 190 mph (165 knots) IAS<br>Maximum structural cruising ..... 200 mph (174 knots) IAS |
| C.G. range<br>(L.G. extended)<br>S/N 29-0001 and on | (+46.0) to (+51.0) at 3368 lbs.<br>(+44.0) to (+51.0) at 3300 lbs.<br>(+41.0) to (+51.0) at 2430 lbs. or less |
| Empty weight C.G. range | None |
| Maximum weight | 3200 lbs. landing, 3368 lbs. takeoff for S/N 29-0001 and on |
| Number of seats | 4 (2 at +34.0) to +39.0, 2 at +70.7) |
| Maximum baggage | 120 lbs. (+101.5), 10 lbs. (+126.0) |
| Fuel capacity<br>(usable) | 89 U.S. gallons (two integral tanks in wings at +49.23).<br>See Note 1 for data on unusable fuel. |
| Oil capacity | 8 quarts (-24.76 in.) |
| Maximum operating altitude | See Note 19 |
| Control surface movements | Wing flaps ..... T.O. position ..... Down ... 10° ± 1°<br>..... Landing ..... Down ... 33° +0 / -2°<br>Aileron ..... Up ... 12½° to 14½° ..... Down ... 8° ± 1°<br>Aileron static position ..... Down ... 0° to 2°<br>Elevator ..... Up ... 22° +0°, -2° ..... Down ... 22° +0°, -2°<br>Rudder ..... Left ... 23° to 24° ..... Right ... 23° to 24°<br>Stabilizer (L.E.) ..... Up ... 3.8° to 4.2° ..... Down ... 6.5° to 7.0° |

**XIII. Model M20R** (cont'd)

| | |
|---|---|
| Elevator trim assist | With stabilizer set at maximum positive setting and elevators Full down. Adjust turn buckle for a 14.0 to 16.0 lb. tensionmeter reading on cable, tensionmeter reading (20 lb. maximum permissible). Check for positive clearance between cable end and pulley sheave. |
| Leveling means | Leveling screws located above the tailcone access door on left side. Spirit level is to be placed on screws for level. |
| Serial numbers eligible | Serial No. 29-0001 thru 29-TBA |
| Export eligibility | See Note 14. |
| 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) (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), 401(a), 601(a), 602(a) or (d) and (b) or (c). |
| Datum | For M20R, datum is 13 inches aft of the centerline of the nose gear support bolts and is fuselage station 0.00.<br>The Leading Edge of the wing, at wing station 59.25, is 33.00 inches aft of fuselage station 0.00. |
| Certification basis | Model M20R CAR 3 effective November 1, 1949, as amended to May 18, 1954, paragraph 3.74 as amended to August 25, 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective May 15, 1956; as amended to October 1, 1959. In lieu of corresponding CAR 3 paragraphs, where applicable - FAR 23, effective February 1, 1965; paragraph 23.29 as amended to March 1, 1978, paragraph 23.33, as amended to September 14, 1969; paragraphs 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to September 14, 1969; paragraphs 23.1091 through 23.1105, as amended to February 1, 1977; paragraphs 23.1121 through 23.1193, 23.1351 through 23.1399 as amended to September 14, 1969, paragraphs 23.1401 as amended to August 11, 1971; paragraphs 23.1441 through 23.1449 as amended to June 17, 1970, paragraph 23.1521 as amended to December 1, 1978, paragraph 23.1525; paragraph 23.1527, as amended to September 14, 1969; paragraphs 23.1545, 23.1549, 23.1553 as amended to December 1, 1978, paragraph 23.1557, as amended to December 20, 1973; paragraph 23.1559 as amended to March 1, 1978; paragraph 23.1563 as amended to September 14, 1969; paragraph 23.1583 as amended to December 1, 1978, FAR 36 effective September 20, 1976, as amended to December 22, 1988. (See Note 22 and 23) |
| Production basis | 29-0001 thru 29-0190: Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. PC11SW: 29-0191 thru 29-0279; PC13SW: 29-0280 thru 29-0519; PC18SW: No Aircraft Produced, Spare Parts Only; PC19SW: 29-0520 and subsequent. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

| **Propeller and Propeller Accessories - Fuselage Station Location:** | **Weight** | **F.S.** |
|---|---|---|
| **1.** ....McCauley constant speed propeller installation | | |
| **(a)** McCauley, 3A32C418-G Hub/Blades ( )-82 NRC-9 ..... | 71.8 lbs. ..... | -49.5 |
| Pitch setting at 30.0 in. blade station: | | |
| Low 16.1° ± 0.2° | | |
| High 40.0° ± 0.5° | | |
| Diameter: 73.0 in. - -½ in. reduction permitted. | | |
| **(b)** Spinner assembly, McCauley D-7192 (painted) ..... | 4.8 lbs. ..... | -51.00 |
| **(c)** Spinner assembly, McCauley D-7192-1 (polished) ..... | 4.8 lbs. ..... | -51.00 |
| **(d)** Propeller governor, Mooney 660115-511 ..... | 3.2 lbs. ..... | -38.13 |
| **(e)** Propeller De-Icing Boots, McCauley, 690005-501 ..... | 9.0 lbs. ..... | -38.13 |
| (Serial No. 29-0001 thru 29-0199, excluding 29-0183) | | |

**XIII. Model M20R** (cont'd) **Weight** **F.S. (in.)**

**2.** ....McCauley constant speed 241 propeller installation
**(a)** McCauley, 2A34C241-G hub, blades 82PGC-6 ..... 65 lbs. ..... -49.5
Pitch setting at 30.0 in. blade station:
Low 20.0° ± .5°
High 37.5° ± .5°
Diameter: 76.0 in. + 0, -.5
**(b)** Spinner assembly, McCauley D-7579-2 (painted) ..... 4.8 lbs. ..... -51.00
**(c)** Spinner assembly, McCauley D-7579-1 (polished) ..... 4.8 lbs. ..... -51.00
**(d)** Propeller governor, Mooney 660115-511 ..... 3.2 lbs. ..... -38.13
**(e)** Propeller De-Icing Boots, McCauley, 690005-501 ..... 9.0 lbs. ..... -49.5
(S/N 29-0001 thru 29-0199, excluding 29-0183)

**3.** ....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° ±0.2°
High 38.0° ±1.0°
Diameter - 76.0 in. - -1/2 Inch reduction permitted.
**(b)** Spinner assy, Hartzell A-2295-10P (polished)
**(c)** Propeller governor, McCauley C290D3X/T45
**(d)** Propeller governor, McCauley D-20960-1 (Alternate)

Engines and Engine Accessories (Fuel and Oil System)

**101.** .....Fuel Pumps
**(a)** Electric, Weldon, A8152B ..... 1.9 lbs. ..... +6.50
**(b)** Engine driven, TCM, 649364-4A1 ..... 2.0 lb. ..... -9.95

**102.** .....Oil Radiator
(a) TCM, 649479 or ..... 7.8 lbs. ..... -12.24
(b) TCM, 654585A1 ..... 7.8 lbs. ..... -12.24

**103.** .....Induction Air Filter
**(a)** Air-Maze, ED04028 or
**(b)** Donaldson, P5242257 ..... 1 lb. ..... -36.0

**104.** .....Starters
**(a)** Starter, geared, TCM, 646275 ..... 14.5 lbs. ..... -9.11
**(b)** Starter, geared, TCM, 655566…….. 9.4 lbs. …… -9.11

**Landing Gear:**

**201.** .....Two Main Wheel/Brake Assemblies, 6.00-6
**(a)** *Cleveland Wheel Assembly,
Wheel, Model No. 40-86/Brake Assembly No. 30-56A ..... 19 lbs. ..... See Note 8.
**Optional - Cleveland, 40-86E, 30-56D 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 ..... 17 lbs. ..... See Note 8.

**205.** .....One, Nose Wheel, 5.00-5
**(a)** *Cleveland, wheel assembly, Model 40-87 ..... 2.6 lbs. ..... See Note 8.
***Optional - McCauley D-305000*

**206.** .....One, Nose Wheel, 6-Ply Rating tire
**(a)** 5.00-5, Type III w/ regular tube ..... 7 lbs. ..... See Note 8.

**Electrical Equipment:**

**301.** .....Alternator
**(a)** Alternator, TCM, 649304 (100 amp) ..... 17.5 lb. ..... -38.05
(Alternator Assy. -649305 includes Hub, etc.)

**XIII. Model M20R** (cont'd)

| | | Weight | F.S. (in.) |
|---|---|---|---|
| **302.** | Batteries | | |
| **(a)** | Gill, (Teledyne) G-243 (2 required) | 29.5 lb. (ea.) | +146.0 |
| **(b)** | Concorde, RG24-11M or -15 (2 required) | 26.5 lb. (ea.) | +146.0 |
| **303.** | Voltage Regulators | | |
| **(a)** | MAC, 800270-501 (alternator) | 0.3 lb. (ea.) | +16.25 |
| **(b)** | MAC, 800270-523 (low boost pump) | 0.25 lbs. | +16.25 |

**Interior Equipment:**

**401.** FAA Approved Airplane Flight Manual
- **(a)** Pilot's Operating Handbook dated 6/94 for S/N 29-0001 thru 29-0199, excluding 29-0183.
- **(b)** Pilot's Operating Handbook, dated 11/99 for S/N 29-0183, 29-0200 thru 29-0494
- **(c)** Pilot's Operating Handbook, dated 12/07 for S/N 29-0495 thru 29-TBA

**Miscellaneous:**

| | | Weight | F.S. |
|---|---|---|---|
| **601.** | Systems | | |
| **(a)** | Stall/Gear Warn, IAI-950D-0309-000 | 1.1 lb. | +4.24 |
| **(b)** | Oxygen installation, 870029 or 870032 (see note 19) | | |
| **602.** | Vacuum pumps (see NOTE 24) | | |
| **(a)** | Airborne, 242CW | 3.4 lbs. | -9.11 |
| **(b)** | Airborne, 28C214 CW | 3.4 lbs. | +110.40 |
| **(c)** | Sigma Tec, 1U128-006 [Alternate for (a), (d), (e)] | 3.4 lbs. | -9.11 |
| **(d)** | Airborne, 212CW | 3.4 lbs. | +110.40 |
| **(e)** | Airborne, 216CW | 3.4 lbs. | -110.40 |
| **(f)** | Mooney, 940104-505 [Alternate for (b), (d), (e)] | 12.4 lbs. | +110.40 |

**XIV. Model M20S, 4PCLM (Normal Category), February 7, 1999**

| | |
|---|---|
| Engine | Teledyne Continental Motors, IO-550-G(6) |
| Fuel | 100 LL or 100 min-grade aviation gasoline |
| Engine Limits | For all operations, 2400 RPM, (244 HP) |
| Airspeed Limits | Maneuvering ..... 143 mph (124 knots) IAS<br>Never exceed ..... 225 mph (195 knots) IAS<br>Flaps extended ..... 127 mph (110 knots) IAS<br>L.G. retraction ..... 122 mph (106 knots) IAS<br>L.G. extension ..... 161 mph (140 knots) IAS<br>L.G. extended ..... 190 mph (165 knots) IAS<br>Max. structural cruising ..... 200 mph (174 knots) IAS |
| C.G. Range<br>(L.G. Extended)<br>S/N 30-0001 and ON | (+45.0) to (+51.0) at 3200 lbs.<br>(+43.0) to (+51.0) at 3200 lbs.<br>(+41.0) to (+51.0) at 2430 lbs. or less |
| Empty Weight<br>C.G. Range | None |
| Maximum Weight | 3200 lbs. Landing/Takeoff - S/N 30-0001 thru 30-TBA |
| Number of seats | 4 (2 - at +34.0 to +39.0, 2 - at +70.7) |
| Maximum baggage | 120 lbs. (+101.5), 10 lbs. (+126.0) |
| Fuel capacity<br>(Usable) | 75 U.S. gallons (Two integral tanks in wings at +49.23).<br>See Note 1 for data on unusable fuel. |

**XIV. Model M20S** (cont'd)

| | |
|---|---|
| Oil Capacity | 8 quarts (-24.76 in.) |
| Maximum Operating Altitude | N/A - Service Ceiling is approximately 21,000 ft. |
| Control Surface Movements: | Wing flaps ..... T.O. position ..... Down 10° ± 1°<br>..... Landing ..... Down 33° +0 / -2°<br>Aileron ..... Up .... 12½° to 14½° ..... Down 8° ± 1°<br>Aileron static position ..... Down 0° to 2°<br>Elevator ..... Up .... 22° +0°, -2° ..... Down 22° +0°, -2°<br>Rudder ..... Left ... 23° to 24° ..... Right 23° to 24°<br>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 14.0 to 16.0 lb. tensionmeter reading on cable, tensionmeter reading (20 lb. maximum permissible). Check for positive clearance between cable end and pulley sheave. |
| Leveling means | Leveling screws located above the tailcone access door on left side. Spirit level is to be placed on screws for level. |
| Serial Numbers Eligible | Serial No. 30-0001 thru 30-0065 |
| Export Eligibility | See Note 14. |
| 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), (d), 101(a) and (b), 102(a) or (b), 103(a) or (b), 104(a), 201(a), 202(a), 205(a), 206(a), 301(a), 302(a) or (b), 303(a) and (b), 401(a), 601(a), 602(a) or (c) or (d) and (b) or (e). |

**Specifications Pertinent to Model**

| | |
|---|---|
| Datum | For M20S, datum is 13 inches aft of the centerline of the nose gear support bolts and is fuselage station 0.00.<br>The Leading Edge of the wing, at wing station 59.25, is 33.00 inches aft of fuselage station 0.00. |
| Certification basis | Model M20S CAR 3, effective November 1, 1949, as amended May 18, 1954; except for paragraph 3.74 amended August 25, 1955; paragraph 3.109, .112, .115, .118, .120, and .441 of CAR 3 effective May 15, 1956, as amended October 1, 1959; and in lieu of corresponding CAR 3 paragraphs, where applicable -- FAR 23, effective February 1, 1965: Paragraph 23.29, as amended by Amdt. 23-21, dated March 1, 1978; Paragraph 23.33, dated September 14, 1969; Paragraph 23.45 through 23.77, as amended by Amdt. 23-34, dated January 15, 1987; Paragraph 23.777, as amended by Amdt. 23-7, dated September 14, 1969; Paragraph 23.901 through 23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended by Amdt. 23-7, dated September 14, 1969; Paragraphs 23.1091 through 23.1105, as amended by Amdt. 23-17, dated February 1, 1977; Paragraphs 23.1121 through 23.1193, 23.1351 through 23.1399, as amended by Amdt. 23-7, dated September 14, 1969; Paragraph 23.1311, as amended by Amdt. 23.49, dated March 11, 1996; Paragraph 23.1337(b), as amended by Amdt. 23-7, dated September 14, 1969; Paragraphs 23.1401, as amended by Amdt. 23-11, dated August 11, 1971; Paragraphs 23.1441 through 23.1449, as amended by Amdt. 23-9, dated June 17,1970; Paragraph 23.1521, as amended by Amdt. 23-21, March 1, 1978; Paragraphs 23.1525 and 23.1527, as amended by Amdt. 23-7, dated September 14, 1969; Paragraph 23.1529, as amended by Amdt. 23-26, dated October 14, 1980; Paragraphs 23.1545, 23.1549, and 23.1553, as amended by Amdt. 23-23, dated December 1, 1978; Paragraph 23.1555(a), as amended by Amdt. 23-7, dated September 14, 1969; Paragraph 23.1557, as amended by Amdt. 23-14, dated December 20, 1973; Paragraph 23.1559, as amended by Amdt. 23-21, dated March 1, 1978; Paragraph 23.1563, as amended by Amdt. 23-7, dated September 14, 1969; Paragraphs 23.1581 through 23.1589, as amended by Amdt. 23-34, dated January 15, 1987; FAR 36 effective September 20, 1976, the current amendment in effect at date of certification; and Equivalent Level of Safety ref. FAR 23.32(d)(2), issued on January 28, 1999. |

**XIV. Model M20S** (cont'd)

| | |
|---|---|
| Production Basis | 29-0157, 30-0001 thru 30-0030: Prior to original certification of each aircraft manufactured subsequent to March 7, 1969, an FAA representative must perform a detailed inspection for workmanship, materials and conformity with the approved technical data and a check of the flight characteristics. PC11SW: 30-0031 thru 30-0062; PC13SW: 30-0063 thru 30-0065. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**Propeller and Propeller Accessories:**

| | Weight | F.S. (in.) |
|---|---|---|
| **1.** ..McCauley constant speed propeller installation | | |
| **(a)** McCauley, 2A34C239 Hub/Blades 90DMC-15 | 69.0 lb. | -49.5 |
| Pitch settings at 30" blade station: | | |
| Low 19.7° ± 0.2° | | |
| High 37.5° ± 0.5° | | |
| Diameter - 75.0 in. - ½ Inch reduction permitted. | | |
| **(b)** Spinner assy, McCauley D-7579-2 (painted) | 4.8 lb. | -51.0 |
| **(c)** Spinner assy, McCauley D-7579-1(polished) | 4.8 lb. | -51.0 |
| **(d)** Propeller governor, Mooney, 660115-523 | 3.2 lb. | -38.13 |

**Engines and Engine Accessories (Fuel & Oil Systems):**

| | Weight | F.S. |
|---|---|---|
| **101.** .....Fuel Pumps | | |
| **(a)** Electric, Weldon, A8152B | 1.9 lbs. | +6.50 |
| **(b)** Engine Driven, TCM, 649364-4A1 | 2.0 lb. | -9.95 |
| **102.** .....Oil Radiator | | |
| **(a)** TCM, 649479 or | 7.8 lbs. | -12.24 |
| **(b)** TCM, 654585A1 | 7.8 lbs. | -12.24 |
| **103.** .....Induction air filter | | |
| **(a)** Air-Maze, EDO4028 or | | |
| **(b)** Donaldson, P5242257 | 1 lb. | -36.0 |
| **104.** .....Starter | | |
| **(a)** Starter, Geared, TCM, 646275 | 14.5 lbs. | -9.11 |
| **(b)** Starter, geared, TCM, 655566…….. | 9.4 lbs. …….. | -9.11 |

**Landing Gear:**

| | | |
|---|---|---|
| **201.** .....Two main wheel,brake assy, 6.00-6 | | |
| **(a)** Cleveland, Wheel Assembly, Model No. 40-90/ Brake Assembly No. 30-65 | 23.3 lbs. | See Note 8. |
| **202.** .....Two main wheel, 6-ply rating tires, | | |
| **(a)** 6.00-6, Type III, with regular tubes | 17 lbs. | See Note 8. |
| **205.** .....One, nose wheel, 5.00-5 | | |
| **(a)** ** Cleveland, Model 40-87 | 2.6 lbs. | See Note 8. |
| ** Optional-McCauley, D-305000 | | |
| **206.** .....One, nose wheel, 6-ply rating tire, | | |
| **(a)** 5.00-5, Type III, w/regular tube | 7 lbs. | See Note 8. |

**Electrical Equipment:**

| | | |
|---|---|---|
| **301.** .....Alternator | | |
| **(a)** Alternator, TCM, 649304 (100 amp) (Alternator Assy. - 649305 includes Hub, etc.) | 17.5 lb. | -38.05 |
| **302.** .....Batteries | | |
| **(a)** Gill (Teledyne), G-243 (2 red's) | 29.5 lb. (ea.) | +146.0 |
| **(b)** Concorde, RG24-11MK or -15 (2 red's) | 26.5 lb. (ea.) | +146.0 |

**XIV. Model M20S** (cont'd)

| | | Weight | F.S. |
|---|---|---|---|
| **303.** | Voltage Regulators | | |
| **(a)** | MAC, 800270-501 (Alternator) | 0.3 lb. (ea.) | +16.25 |
| **(b)** | MAC, 800270-523 (Low Boost Pump) | 0.25 lbs. | +16.25 |

**Interior Equipment:**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Pilot's Operating Handbook dated 2/7/99 for S/N 30-0001 thru 30-TBA

| **Miscellaneous:** | | Weight | F.S. |
|---|---|---|---|
| **601.** | Systems | | |
| **(a)** | Stall/Gear Warn, IAI, 950D-0309-000 | 1.1 lb. | +4.24 |
| **(b)** | Oxygen instl, 870029 (see note 19) | | |
| **602.** | Vacuum Pumps (see NOTE 24) | | |
| **(a)** | Airborne, 242CW | 3.4 lb. | -9.11 |
| **(b)** | Airborne, 28C214 CW | 3.4 lb. | +110.40 |
| **(c)** | Sigma TEK, 1U128-006 [Alternate for (a), (d), (e)] | 3.4 lb. | -9.11 |
| **(d)** | Airborne, 212CW | 3.4 lb. | +110.40 |
| **(e)** | Airborne, 216CW | 3.4 lb. | +110.40 |
| **(f)** | Mooney, 940104-505 [Alternate for (b), (d), (e)] | 12.4 lb. | +110.40 |

**XV, Model M20TN, 4PcLM (Normal Category), Approved October 15, 2006**

| | |
|---|---|
| Engine | Teledyne Continental Motors, TSIO-550-G(1), -G(2), -G(3), -G(4)<br>Fuel 100 LL or 100 min-grade aviation gasoline |
| Engine Limits | For all operations 2500 RPM, (280 HP) |
| Airspeed Limits | |
| | Maneuvering ..... 146 mph (127 knots) IAS<br>Never exceed ..... 225 mph (195 knots) IAS<br>Flaps extended ..... 127 mph (110 knots) IAS<br>L.G.retraction ..... 122 mph (106 knots) IAS<br>L.G. extension ..... 161 mph (140 knots) IAS<br>L.G. extended ..... 190 mph (165 knots) IAS<br>Max. structural cruising ..... 200 mph (174 knots) IAS |
| C.G. Range<br>(L.G. extended)<br>S/N 31-0001 and ON | (+46.0) to (+5 1.0) at 3368 lbs.<br>(+44.0) to (+5 1.0) at 3300 lbs.<br>(+41.0) to (+5 1.0) at 2430 lbs. or less |
| Empty Weight C.G. Range | None |
| Maximum Weight | 3200 lbs. landing/3368 lbs. Takeoff – S/N 31-0001 thru 31-TBA |
| No. of Seats | (2 – at +34.0 to +39.0, 2 – at +70.7) |
| Maximum Baggage | 120 lbs. (+101.5), 10 lbs. (+126.0) |
| Fuel Capacity | 89 U.S. gallons usable (two integral tanks in wings at +49.23).<br>See NOTE 1 for data on unusable fuel. |
| Oil Capacity | 8 qts. (-24.76 in.) |

**XV, Model M20TN** (cont'd)

Max. Operating Altitude: 25,000 ft. (See NOTE 19)

Control Surface Movements:

| | | | | |
|---|---|---|---|---|
| Wing flaps | ...T.O. position | Down | 10° ± 1° |
| | ...Landing | Down | 33° +0 / -2° |
| Aileron | Up ...12½° to 14½° | 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 14.0 to 16.0 lb. tensionmeter reading on cable, tensionmeter reading (20 lb. maximum permissible). Check for positive clearance between cable end and pulley sheave.

Leveling Means: Leveling screws located above the tailcone access door on left side. Spirit level is to be placed on screws for level.

Serial Nos. Eligible: S/N 31-0001 thru 31-TBA

Export Eligibility: See NOTE 14

Required Equipment: In addition to the pertinent required basic equipment specified in CAR 3, following items of equipment must be installed: 1(a), (b) and (c), 101(a) (b), 102(a), 103(a), 104(a), 201(a), 202(a), 205(a), 206(a), 301 (a), 302(a) or (b), 303 (a), 401(a), 601(a).

Datum: For M20TN, datum is 13 inches aft of the centerline of the nose gear support bolts 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: Model M20TN CAR 3 effective November 1, 1949, as amended to May 18, 1954, paragraph 3.74 as amended to August 25, 1955; paragraphs 3.109, 3.112, 3.115, 3.118, 3.120, and 34.441 of CAR 3 effective May 15, 1956, as amended to October 1, 1959. In lieu of corresponding CAR 3 paragraphs, where applicable FAR 23, effective February 1, 1965; paragraph 23.29 as amended to March 1, 1978, paragraph 23.33, as amended to September 14, 1969; paragraphs 23.20 1 and 23.203 as amended March 11, 1996; paragraphs 23.45 thru 23.77 as amended to March 11, 1996; paragraph 23.77 1 as amended to December 20, 1973; paragraph 23.773 as amended to September 7, 1993; paragraphs 23.901 through23.953, 23.955 through 23.963, 23.967 through 23.1063, as amended to September 14, 1969; paragraphs 23.1091 through 23.1105, as amended to February 1, 1977; paragraphs 23.1121 through 23.1193 as amended to September 14, 1969; paragraph 23.1301 as amended to September 1, 1997; paragraph 23.1305 as amended to July 25, 1996; paragraphs 23.1307, 23.1311, 23.1321 as amended to March 11, 1996; paragraph 23.1322 as amended to May 10, 1993; paragraphs 23.1323 thru 23.1326 as amended to March 11, 1996; paragraph 23.1327 as amended September 1, 1977; paragraph 23.1329 as amended to March 11, 1996; 23.1331 as amended to May 10, 1993; 23.1337, 23.1359 as amended to March 11, 1996; 23.1351 through 23.1399 as amended to September 14, 1969; paragraphs 23.1401 as amended to August 11, 1971; paragraphs 23.1441 through 23.1449 as amended to June 17, 1970, paragraph 23.1521 as amended December 1, 1978; paragraph 23.1525; paragraph 23.1527, as amended to September 14, 1969; paragraph 23.1529 as amended to October 14, 1980; 23.1541 as amended to March 1, 1978; 23.1543 as amended to February 1, 1997; 23.1553 as amended to December 1, 1978; paragraph 23.1557, as amended to December 20, 1973; paragraph 23.1559 as amended to March 1, 1978; paragraph 23.1563 as amended to September 14, 1969; paragraph 23.1583 as amended to December 1, 1978; paragraph 23.1587 as amended to March 11, 1996; FAR 36, effective September 20, 1976, as amended to December 22, 1988. (See Note 22 and 23)

**XV, Model M20TN** (cont'd)

| | |
|---|---|
| Production Basis | PC13SW: 31-0001 thru 31-0127; PC18SW: No Aircraft Produced, Spare Parts Only; PC19SW 31-0128 and subsequent. |
| Equipment | Approval for the installations of all items of equipment listed herein has been obtained by the aircraft manufacturer. |

**Propeller and Propeller Accessories**

**1.**..... Hartzell constant speed propeller installation
**(a)** Hartzell Hub/Blade Model Number PHC-J3YF-1RF/F7693DF-2 or PHC-J3YF-1RF/F7693DF(B)-2
Note: The (B) denotes a booted prop (for TKS)
Pitch Settings at 30" blade station:
Low 16.5˚ ±0.2˚
High 38.0˚ ±1.0˚
Diameter – 76.0 in. –1/2 inch reduction permitted.
**(b)** Spinner assy, Hartzell, A-2295-10P (polished)
**(c)** Propeller governor, McCauley, D-20960-1

**2.** .....Hartzell constant speed propeller installation
**(d)** Hartzell Hub/Blade Model Number PHC-J3YF-1RF/F7498 or PHC-J3YF-1RF/F7498(B)
Note: The (B) denotes a booted prop (for TKS)
Pitch Settings at 30" blade station:
Low 17.˚ ±0.2˚
High .38.0˚ ±1.0˚
Diameter – 76.0 in. max., 74.0 in. min.,
**(e)** Spinner assy, Hartzell, A-2295-10
Propeller governor, McCauley, D-20960-1

**Engines and Engine Accessories (Fuel & Oil Systems)**

**101.**..... Fuel Pumps
**(a)** Electric, Dukes 5791-00-1
**(b)** Engine Driven, TCM, 649362-44A7

**102.** ……Oil Radiator
**(a)** TCM, 649479
**(b)** TCM, 654585
**(c)** Niagara Thermal, 10281A

**103.** .....Induction air filter
**(a)** Challenger Aviation Products, CPE 1179

**104.** .....Starter
**(a)** Starter, Geared TCM, 646275
**(b)** Starter, TCM – 655566

**Landing Gear**
**201.** .....Two, Main Wheel/brake assy, 6.00-6
**(a)** Cleveland, Wheel Assembly, Model No. 40-90-A/
Brake Assembly No. 30-65 ..... See NOTE 8

**202.** .....Two, main wheel, 6-ply rating tires,
**(a)** 6.00-6, Type III, w/ regular tube ..... See NOTE 8

**205.**……. One, nose wheel, 5.00-5
**(a)** ** Cleveland, Model 40-87 ..... 2.6 lbs. …….. See Note 8.
** Optional-McCauley, D-305000

**206.** …….One, nose wheel, 6-ply rating tire,
**(a)** 5.00-5, Type III, w/regular tube..... 7 lbs. ……. See Note 8.

**XV, Model M20TN** (cont'd)

**Electrical Equipment**

**301.**..... Alternator
- **(a)** Alternator, Kelly Aerospace, ES-10024-1 (100 amp)
- **(b)** Alternator, Stand-by, B&C, BC410-1
- **(c)** Alternator, TCM, 656802

**302.** .....Batteries
- **(a)** Gill (Teledyne), G-243 (2 reqd.) or
- **(b)** Concorde, RG24-1 1M or -15 (2 reqd.)

**303.** .....Voltage Regulators
- **(a)** Zeftronics, A25EAM, (Alternator)

**Interior Equipment**

**401.** .....FAA Approved Airplane Flight Manual
**(a)** Pilots Operating Handbook, 003900 dated 11/2006 for S/N 31-0001 thru 31-0089.
**(b)** Pilots Operating Handbook, 003901 dated 04/02/2008 S/N 31-0001 thru 31-TBA for M20TN Type S equipped with Hartzell Propeller Hub/Blade Model Number PHC-J3YF-1RF/F7498 or PHC-J3YF-1RF/F7498(B).
**(c)** Pilots Operating Handbook Supplement, 003900A dated 12/2008 for S/N 31-0001 thru 31-0089 – When equipped with Heater Modification Kit Only.
**(d)** Pilots Operating Handbook Supplement, 003901A dated 12/2008 for S/N 31-0001 thru 31-TBA M20TN Type S aircraft – When equipped with Heater Modification Kit Only.

**Miscellaneous:**

**601.**.....Systems
- **(a)** Oxygen instl, 870029 or 870032 (see note 19)

**602.** .....Vacuum Pumps – N/A

**NOTES APPLICABLE TO ALL MODELS**

**NOTE 1:**
Current weight and 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: 4 lbs. (+47.6) for the M20 and M20A; 3.4 lbs. (+48.4) for the M20B, M20C, M20D, M20E, and M20G; 15.0 lb. (+48.4) for the M20F and M20J; 48.0 lbs. (+48.59) for the M20K (S/N 25-0001 thru 25-0446); 18 lbs. (+48.59) for the M20K (S/N 25-0447 and ON); 36 lbs. (+48.43) for the M20L (S/N 26-0001 and ON); 36 lbs. (+49.23) for the M20M (S/N 27-0001 and ON) and M20R (S/N 29-0001 and ON) and M20S (S/N 30-0001 and ON); 36 lbs. (+49.23) 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)** M20, M20A, M20B - "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH FAA APPROVED FLIGHT MANUAL. NO AEROBATIC MANEUVERS INCLUDING SPINS ARE APPROVED."

**(2)** M20D - "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 MANEUVERING FLIGHT LOAD FACTOR: FLAPS UP +3.8, -1.5, FLAPS DOWN +2.0."

**(3)** M20C, M20E, M20F, M20G - "THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKING, AND MANUALS. NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED. MAXIMUM SPEED LANDING GEAR EXTENDED, 120 MPH, MAXIMUM SPEED FOR OPERATING OF GEAR, 120 MPH. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR: FLAPS UP +3.8. -1.5; FLAPS DOWN +2.0."

**(4)** 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, 120 MPH. MAXIMUM SPEED TO RETRACT GEAR, 110 MPH. MAXIMUM SPEED TO EXTEND GEAR, 120 MPH. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR-FLAPS UP +3.8, -1.5; FLAPS DOWN +2.0."

**(5)** 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 107 KIAS. MAXIMUM SPEED TO EXTEND GEAR, 132 KIAS. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR - FLAPS UP +3.8, -1.5; DOWN +2.0, -0."

**(6)** M20D with retractable gear: "MAXIMUM SPEED, LANDING GEAR EXTENDED - 120 MPH; MAXIMUM SPEED FOR OPERATING OF GEAR - 120 MPH".

**(7)** "COWL FLAP - PULL TO OPEN - DO NOT OPEN ABOVE 150 MPH." (Not applicable for M20C S/N 680001 and ON or M20G, M20J or M20K).

**(8)** "RETRACT FLAPS AFTER LANDING." (hydraulic flaps only)

**(9)** 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; DOWN +2.0, -0."

**(10)** M20L - (S/N 26-0001 and ON) "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, 129 KIAS. MAXIMUM SPEED TO RETRACT GEAR, 106 KIAS. MAXIMUM SPEED TO EXTEND GEAR, 129 KIAS. MAXIMUM MANEUVERING FLIGHT LOAD FACTOR - FLAPS UP +3.8, -1.5; DOWN + 2.0, -0."

**(11)** 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 (3200 LBS.), 123 KIAS; (2400 LBS.), 106 KIAS."

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 (3368 LBS.),127 KIAS; (2600 LBS.),111 KIAS."

**(12)** 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 (3368 LBS.) 127 KIAS; (2232 LBS.) 103 KIAS."

**(13)** M20S - (S/N 30-0001 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 (3200 LBS.) 123 KIAS; (2232 LBS.) 103 KIAS."

**(14)** M20TN – (S/N 31-001 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 (3368 LBS) 127 KIAS; (2232 LBS) 103 KIAS.

**a.** On storm window: "DO NOT OPEN ABOVE 132 KIAS." M20L - "DO NOT OPEN ABOVE 129 KIAS." (NOTE: Early M20M & M20R aircraft - OPTIONAL "DO NOT OPEN ABOVE 129 KIAS".

**b.** On baggage compartment: "WARNING: DO NOT EXCEED 120 LBS. (54.4 Kg) IN THIS COMPARTMENT. SEE AIRCRAFT LOADING SCHEDULE DATA FOR BAGGAGE COMPARTMENT ALLOWABLE."

**c.** M20C, M20E, M20F, M20G, M20J, M20K, M20M, M20R, M20S (on hat rack) & M20L (on hat rack door): "WARNING: DO NOT EXCEED 10 LBS. (4.5 Kg) IN THIS COMPARTMENT. USE FOR STOWAGE OF LIGHT SOFT ARTICLES ONLY. SEE AIRCRAFT LOADING SCHEDULE DATA FOR BAGGAGE COMPARTMENT ALLOWABLE."

**d.** M20J - On instrument panel (right side):

**(1)** When McCauley Model B2D34C212/78CDA-4 propeller is installed: "AVOID CONTINUOUS OPERATION BETWEEN 1600 AND 1950 RPM WITH SETTINGS BELOW 15" Hg. MANIFOLD PRESSURE."

**(2)** When McCauley Model B2D34C214/9ODHB-16E or -16EP propeller is installed: "AVOID CONTINUOUS OPERATION BETWEEN 1500 AND 1950 RPM WITH POWER SETTINGS BELOW +15" Hg. MANIFOLD PRESSURE."

**e.** On rear seat bottom beneath cushion. (Eff. 24-1214 & UP - M20J, 25-0613 & UP - M20K, 26-0001 & UP - M20L, 27-0001 & UP - M20M, 29-0001 & UP - M20R; 30-0001 & UP -- M20S):

"WARNING: DO NOT EXCEED 170 LBS. (77.1 Kg) ON THIS SEAT BACK. SEE AIRCRAFT LOADING SCHEDULE DATA FOR BAGGAGE COMPARTMENT ALLOWABLE."

**f.** On M20J (24-3000 through 24-3078) above flap switch:
"FLAP EXTENSION SPEED MAXIMUM, 15°, 132 KIAS; FULL, 115 KIAS."

**NOTE 3:** Republic 311-221-1/4D or 313-33-1/4D fuel selector valve must be modified per Mooney Dwg. 6122 (610026).

**NOTE 4:** Retractable landing gear kit may be installed in accordance with Mooney Dwg. 950082. Retraction moment 588 in.-lb. Item 401(b) (M20D only) required with this installation.

**NOTE 5:** Engine tachometer is to be marked with RED arc between 2000 and 2250 RPM indicating the restriction against continuous engine operating in this speed range for M20A, M20B, M20C, M20D, M20G models with Hartzell HC-C2YK-1/7666 propellers or HC-C2YK-1B/7666A-() propellers.

**NOTE 6:** Pitch setting at 30 in. sta. for Hartzell HC-C2YK-1/7666-2 or HC-C2YK-1B/7666A-2 when installed on M20E, M20F is:
Low 14.0° ± 0; High 29.0° ± 2°.

**NOTE 7:** Engine tachometer is to be marked with a RED arc between 2100 and 2350 RPM indicating the restriction against continuous engine operating in this speed range for M20E and M20F only.

**NOTE 8:** See aircraft weight and balance data for wheel locations.

**NOTE 9:** 91/96 Min. grade aviation gasoline acceptable for Model M20C aircraft, Serial Nos. 1940 through 3184.

**NOTE 10:** Engine tachometer is to be marked with a YELLOW arc between 1600 and 1950 RPM indicating a caution range against continuous operation in this speed range with manifold pressure below 15" Hg.

**NOTE 11:** Engine tachometer is to be marked with a YELLOW arc between 1500 and 1950 RPM indicating a caution range against continuous operation in this speed range with manifold pressure below 15" Hg.

**NOTE 12:** A Textron-Lycoming IO-360-A1B6D engine can be converted to a Textron-Lycoming IO-360-A3B6D engine by complying with Mooney Aircraft Corporation Service Bulletin No. M20-206.

**NOTE 13:** MOONEY OWNERS MANUALS REQUIRED:

| Model | Year | Serial Numbers | Date |
|---|---|---|---|
| **M20C** | 1967 | 670001 - 670123,<br>670125 - 670134,<br>670136 - 670149 | November 1966 |
| | 1968 | 680001 - 680077,<br>680079 - 680099,<br>680101 - 680198 | November 1967 |
| | 1969 | 690001 -690096, 690098 | July 1968 |
| | 1970 | 700001-700052,<br>700055-700089, 700091 | February 1970 |
| | 1971 | 20-0001 -20-0009 | February 1970 |
| | 1974 | 20-0010 - 20-1146 | January 1974 |
| | 1975 | 20-1173 - 20-1185 | August 1975 |
| | 1976 | 20-1186 thru 20-1218 | October 1975* |
| | 1977/78 | 20-1219 thru 20-1258 | October 1977* |
| **M20E** | 1967 | 670001 - 670062 | March 1967 |
| | 1969 | 690001 - 690073 | July 1968 |
| | 1970 | 700001 - 700039,<br>700041 - 700043,<br>700045 - 700052,<br>700055 - 700056,<br>700060 - 700061 | February 1970 |
| | 1971 | 21-0001 thru 21-0023 | February 1970 |
| | 1974 | 21-0024 thru 21-1160 | January 1974 |
| | 1975 | 21-1161 thru 21-1179 | December 1974 |
| | 1975 | 21-1180 only | June 1975 |
| **M20F** | 1966 | 660002 - 660004 | September 1966 |
| | 1967 | 670001 - 670363,<br>670365 - 670385,<br>670387 - 670482,<br>670484 - 670539 | September 1966 |
| | 1968 | 680001 - 680206 | July 1967 |
| | 1969 | 690003 - 690090, 690092 | July 1968 |
| | 1970 | 700001 - 700062,<br>700063, 700066,<br>700070, 700072 | February 1970 |
| | 1971 | 22-0001 thru 22-0012 | February 1970 |

**NOTE 13:** (cont'd)

| | | | |
|---|---|---|---|
| 1974 | 22-0013 thru 22-1178 | January 1974 |
| 1974 | 22-1179 thru 22-1241 | December 1974 |
| 1975 | 22-1242 thru 22-1272 | June 1975 |
| 1975 | 22-1273 thru 22-1305 except 22-1246 | August 1975 |
| 1976 | 22-1246, 22-1306 thru 22-1438 | October 1975* |

**From 1976 model year and ON "Pilot's Operating Handbooks" have replaced "Owner's Manuals" (See Item 401 for each Model aircraft.)*

| Model | Year | Serial Numbers | Date |
|---|---|---|---|
| **M20G** | 1968 | 680001- 680095, 680097- 680164 | October 1967 |
| | 1969 | 690001 - 690020 | October 1968 |
| | 1970 | 700001 - 700006 | August 1969 |

**NOTE 14:** Model M20J (Serial No's. 24-0378 and ON), Model M20K (Serial No's. 25-0001 and ON), M20M (Serial No's. 27-0001 and ON) and M20R (Serial No's. 29-0001 and ON} and M20S (Serial No's. 30-0001 and ON) are eligible for export to France if in compliance with the modifications of Drawing No. 940002, "Electrical - French Modification."

**NOTE 15:** Model M20K gearing limits alternator output to 60 amperes (S/N 25-0001 thru 25-0999).

**NOTE 16:** McCauley Model B2D34C214/9ODHB-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 17:** A TSI0-360-GB series engine may be replaced with a TSI0-360-LB engine by complying with Mooney Aircraft Corporation Service Bulletin No. M20-228.

**NOTE 18:** 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 thru 25-1999.

**NOTE 19:** 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.

**(a)** Oxygen System on the M20J and M20K per Mooney Drawing 870007.

**(b)** AVOX/SCOTT Oxygen System on the M20M, M20R,M20S, and M20TN equipped per Mooney Drawing 870029.

**(c)** (Optional) Precise Flight Oxygen System on Mooney Models M20R, M20TN per Mooney Drawings 870032 through 870038.

**NOTE 20:** 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 21:** M20K S/N's 25-1000 thru 25-1230 and 25-2000 thru 25-2012 may be retrofitted to TSIO 360 SB2 engine and gross weight increase to 3130 Lbs. when complied with M20K Gross Weight Increase Retrofit Instructions.

**NOTE 22:** M20 series aircraft with Garmin G1000 Integrated Avionics System installed in M20M, S/Ns 27-0318, 27-0326, 27-0328 thru 27-0355; M20R, S/Ns 29-0334 thru 29-TBA; M20TN S/Ns 31-0001 thru 31-TBA., certification basis as follows:

*The certification basis for parts changed or affected by the change since the reference date of application, is based upon Part 23 as amended by Amendment 23-55, The certification basis for this modification was determined to be: Regulations at the latest Amendment 23-0 through 13-55.*

**NOTE 22:** (cont'd)

| *14 CFR Part* | *Amendment* | *14 CFR Part* | *Amendment* |
|---|---|---|---|
| *§ 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.l32l(a)(c)(e)* | *23-49* |
| *§ 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* | *§ 23.158l(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* |
| | | | |

*Special Conditions 23-177-SC; GFC 700 AFCS on the Mooney M20.M, M20R, and M20TN with GI000 EFIS; Protection of Systems for High Intensity Radiated Fields (HIRF)*

**NOTE 23:** M20 series aircraft with AmSafe Inflatable Three-Point Safety Belt With an Integrated Airbag Device installed in M20M, S/Ns 27-0318 thru 27-0355; M20R, S/Ns 29-0362 thru 29-TBA; M20TN, S/Ns 31-0001 thru 31-TBA. *Special Conditions 23-156-SC; AmSafe Inflatable Restraint System optional on all seats of the Mooney M20M, M20R, and M20TN*

**NOTE 24**: Aircraft models that originally were certified with vacuum powered attitude systems that have those systems replaced with a non-vacuum powered attitude system: If the Primary Attitude system has been replaced with an FAA Approved STC'd installation that meets the requirements of 14 CFR 23.1303(f)(i)(ii)(iii)(iv)(v)(vi), 23.1311(a)(1)(2)(5)(6)(b)(c), 23.1321(a)((c)(d)(1), 23.1331(a)(b)(1)(2)(c), thereby leaving no operational systems dependent on a Primary or Standby (if equipped) Vacuum system, then the Primary and Standby (if equipped) Vacuum pumps and associated lines, manifolds, etc may be removed from the aircraft. Refer to engine manufacturer's instructions of removal and capping off of engine driven vacuum pumps.

.....END.....