MOONEY AIRPLANE COMPANY, INC.
LOUIS SCHREINER FIELD
KERRVILLE, TEXAS 78028

FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR
AIRPLANE FLIGHT MANUAL # 3800
FOR
MOONEY AIRPLANE COMPANY MODEL
M20R [OVATION 2]
WITH
McCAULEY 3A32C418/(G)-82NRC-9
THREE BLADED PROPELLER HUB/BLADES INSTALLED

MODEL NO._____________________________________________________
REG. NO._______________________________________________________
SERIAL NO._____________________________________________________

This Supplement must be inserted into the applicable FAA Approved Pilot's Operating Handbook and
Airplane Flight Manual [POH/AFM] when the McCauley 3 Blade Propeller Hub and Blades, P/N
3A32C418/(G)-82NRC-9 is installed in the Mooney M20R, Mooney Ovation 2 in accordance with
Mooney Type Design Data, Drawing No. 680030. The information contained herein supplements or
supersedes the basic manual only in those areas listed herein. For limitations, procedures and
performance information not contained in the supplement, consult the basic POH/AFM. The pilot
should become thoroughly familiar with this Supplement as well as the Pilot's Operating Handbook for
this equipment, if applicable, issued by the manufacturer of the equipment covered by this
Supplement.

FAA APPROVED: Michele M. Owsley 2/3/08

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FIGURE 1 - 1 THREE VIEW – M20R
[S/N 29-0183, 29-0200 THRU 29-TBA]
MOONEY AIRPLANE COMPANY, INC
M20R [OVATION 2]

AFM SUPPLEMENT

McCULEY 3 BLADE PROPELLER

SECTION I - GENERAL

PROPELLER

Number ............................................................................................................................................ 1
Manufacturer ..................................................................................................................................... McCauley
Model Number .............................................................................................................................. 3A32C418/G-82NRC-9 *
Number of Blades .................................................................................................................................. 3
Diameter (1/2 in. cutoff allowed) ........................................................................................................... 73 in. (185.4 cm)
Type ..................................................................................................................................................... Constant Speed Governor (McCauley) ............................................................................................................ Hydraulically controlled by engine oil

Blade Angles @ 30.0 in. Sta.:
Low ..................................................................................................................................................... 16.1 degrees +/- 0.2 degrees
High ..................................................................................................................................................... 40 degrees +/- 0.5 degrees

* Refer to TCDS for engine/propeller configuration required.

STANDARD AIRPLANE WEIGHTS

Basic Empty Weight ............................................................................................................................... See POH
Useful Load ........................................................................................................................................... Varies with installed equipment.

SECTION II - LIMITATIONS

NOISE LIMITS

The certificated noise level for the Mooney M20R, S/N 29-0183, 29-0200 THRU 29-TBA, with McCauley 3 Bladed Propeller, 3A32C418/(G)-82NRC-9, at 3368 lbs. (1528 Kg.) maximum weight is 72.6 dB(A). No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of, any airport.

Number of Propellers ............................................................................................................................... 1
Propeller Manufacturer ............................................................................................................................. McCauley
Propeller/Blade Model Number .................................................................................................................. 3A32C418/G-82NRC-9
Number of Blades .................................................................................................................................... 3
Propeller Diameter: McCauley
Min ......................................................................................................................................................... 72.5 In. (184.2 cm)
Max ......................................................................................................................................................... 73. In. (185.4 cm)
McCauley - Propeller Blade Angles @ 76.2 cm (30.0 In.) sta.:
Low ....................................................................................................................................................... 16.1 Degrees +/- 0.2 Degrees
High ....................................................................................................................................................... 40.0 Degrees +/- 0.5 Degrees
Propeller Operating Limits (McCauley) ..................................................................................................... 2500 RPM

* Refer to TCDS for engine/propeller configuration required.

** 100LL fuel is calibrated at 5.82 lb/gal. (.69 Kg/l)
100 octane fuel is calibrated at 6.0 lb/gal. (.72 Kg/l)

SECTION III EMERGENCY PROCEDURES -- NO CHANGE

SECTION IV NORMAL PROCEDURES -- NO CHANGE

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SECTION V - PERFORMANCE

TAKEOFF DISTANCE - HARD SURFACE

**NOTE:**
1. MAXIMUM RECOMMENDED CROSSWIND IS 13 KNOTS.
2. CONDITIONS OF HIGH ELEVATION CAN RESULT IN AN INCREASE OF 500 FT TO THE TAKEOFF DISTANCE.

**ASSOCIATED CONDITIONS:**
- CAT: 15 C
- WT: 3500 LBS
- AS: 50 KIAS
- WT: 3500 LBS
- AS: 50 KIAS
- WT: 3500 LBS
- AS: 50 KIAS
- WT: 3500 LBS
- AS: 50 KIAS

**GROUND ROLL:**
- 1500 FT (46 M)
- 2000 FT (61 M)
- 2500 FT (76 M)
- 3000 FT (91 M)
- 3500 FT (107 M)
- 4000 FT (122 M)
- 4500 FT (137 M)
- 5000 FT (152 M)

**TAKEOFF WEIGHT (LBS):**
- 2750 LBS (1251 KG)
- 3000 LBS (1361 KG)
- 3250 LBS (1471 KG)
- 3500 LBS (1591 KG)
- 3750 LBS (1701 KG)
- 4000 LBS (1814 KG)
- 4250 LBS (1965 KG)
- 4500 LBS (2015 KG)

**TAKEOFF SPEED (KIAS):**
- 50 KIAS
- 50 KIAS
- 50 KIAS
- 50 KIAS
- 50 KIAS
- 50 KIAS
- 50 KIAS
- 50 KIAS

**TAKEOFF DISTANCE - FEET:**
- 1000 FT
- 1500 FT
- 2000 FT
- 2500 FT
- 3000 FT
- 3500 FT
- 4000 FT
- 4500 FT

**OUTSIDE AIR TEMPERATURE (DEGREES):**
- 0°C
- 15°C
- 30°C
- 45°C
- 60°C
- 75°C
- 90°C
- 105°C

**WEIGHT (KG):**
- 1224
- 1408
- 1744
- 2080
- 2416
- 2752
- 3088
- 3424
<table>
<thead>
<tr>
<th>RPM/MP</th>
<th>2400/22.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Flow</td>
<td>15.6 (Best Power)</td>
</tr>
</tbody>
</table>

**M20R CRUISE POWER SETTINGS AND FUEL FLOWS**

1. **BEST POWER** is 50°F Rich of Peak.  2. **ECONOMY CRUISE** is 50°F Lean of Peak.

<table>
<thead>
<tr>
<th>Pressure Altitude (Feet)</th>
<th>Best ECON.</th>
<th>Best POWER</th>
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<tbody>
<tr>
<td>Fuel Flow</td>
<td>15.2</td>
<td>17.5</td>
</tr>
<tr>
<td>Std. Day</td>
<td>15°C 59°F</td>
<td>15°C 59°F</td>
</tr>
<tr>
<td>Std. Temp.</td>
<td>27.0</td>
<td>24.7</td>
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</table>

<table>
<thead>
<tr>
<th>MANIFOLD PRESSURE - INCHES OF MERCURY</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.0</td>
</tr>
<tr>
<td>25.7</td>
</tr>
<tr>
<td>25.2</td>
</tr>
<tr>
<td>24.7</td>
</tr>
<tr>
<td>22.5</td>
</tr>
<tr>
<td>20.2</td>
</tr>
<tr>
<td>19.5</td>
</tr>
<tr>
<td>18.1</td>
</tr>
<tr>
<td>16.1</td>
</tr>
<tr>
<td>15.0</td>
</tr>
<tr>
<td>13.3</td>
</tr>
</tbody>
</table>

**NOTE:** Add .4" MP for each 10°C (18°F) OAT above standard day temperature. Subtract .4" MP for each 10°C (18°F) below standard day temperature. If OAT above standard precludes obtaining the desired MP, use the next higher RPM/MP with appropriate temperature correction to MP.
Clean Configuration, 890 Gallons (337 Liters) (74 Imp. Gal.) Usable Fuel
Zero Wind, Range includes Warmup, Taxi, Takeoff,
Max Power Climb, Descent, Plus 45 Minutes Reserve at Cruise Power

2400 RPM - 75% thru 45% Power Settings
2500 RPM - 65% Power Setting
BEST POWER = ____________
BEST ECONOMY = ____________

EXAMPLE:
PRESS ALT 10000 FT
DAT -10°C
POWER 65% PWR/2400 RPM/BEST POWER
RANGE 970 N.M. (1795 KM)

RANGE - NAUTICAL MILES
(KILOMETERS = NAUTICAL MILES X 1.852)

CAUTION
IT IS RECOMMENDED THAT OPERATOR
CALCULATE RANGE FOR ACTUAL CONDITIONS. 3200 LBS (1452 KG)

PAGE 13 OF 16
Clean Configuration, 890 Gallons (337 Liters) (74 Imp. Gal.) Usable Fuel
Zero Wind - Endurance Includes Warmup, Taxi, Takeoff.
Max Pwr. Climb, Descent, Plus 45 Minutes Reserve at Cruise Power

CAUTION
Operator should compute endurance based on actual conditions.

ENDURANCE
(Standard Day)
3200 LBS (1452 KGS)

2400 RPM - 75% thru 45% POWER SETTINGS
2500 RPM - 85% POWER SETTING
BEST POWER =
BEST ECONOMY =

EXAMPLE:
PRESS ALT 11000 FT
POWER 65%
(2400 RPM/BEST POWER)

ENDURANCE 5.65 HOURS

Sea Level 2 4 6 8 10 12 14 16 18 20
PRESSURE ALTITUDE - (FEETx1000)

6 7 8 9 10
ENDURANCE - HOURS
### Equipment List

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Description</th>
<th>Ref. Drawing</th>
<th>Weight (Kg)</th>
<th>Weight (Lbs)</th>
<th>Arm (Cm)</th>
<th>Arm (In)</th>
<th>Mark If Instld</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Powerplant &amp; Accessories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>Engine - TCM 10-550-G(6), includes: Starter, alternator, exhaust, induct. syst., alt. air, eng. mt., full oil, prop. gov.</td>
<td>600270</td>
<td>249.3</td>
<td>549.5</td>
<td>159.16</td>
<td>-23.29</td>
<td>X</td>
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<tr>
<td>2B</td>
<td>Propeller * - constant speed: McCauley - hub-2A34C241 blades (2) 82PGC-6, w/ spinner</td>
<td>680030</td>
<td>29.5</td>
<td>65.0</td>
<td>-125.7</td>
<td>-49.5</td>
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<td>3B</td>
<td>Propeller * - constant speed: McCauley - hub-3A32C418 blades (3) 82NRC-9, w/ spinner</td>
<td>680030</td>
<td>34.7</td>
<td>76.6</td>
<td>-125.7</td>
<td>-49.5</td>
<td></td>
</tr>
</tbody>
</table>

* Refer to Section I & II for engine/propeller configuration.
SECTION VII - DESCRIPTION

PROPELLER

The propeller is a three blade, metal, constant speed unit. Propeller rotational speed (RPM) is maintained by a balance of air load, oil pressure and engine rotational forces. The propeller governor regulates a flow of high pressure engine oil to a piston in the propeller dome. The piston is linked by a sliding rod and fork arrangement to propeller blades. Governor oil pressure, acting on a piston and spring, increase propeller blade pitch, thus decreasing propeller and engine RPM. As oil pressure is reduced, centrifugal twisting moments on the propeller blades decrease propeller blade pitch and increase RPM.

In cruise, always use the power setting charts provided in SECTION V.

SECTION VIII - HANDLING & SERVICE - NO CHANGE

SECTION IX - SUPPLEMENTAL DATA
ADD McCauley 3 Blade Propeller AFM Supplement

SECTION X - NO CHANGE