

**MOONEY INTERNATIONAL CORPORATION
165 Al Mooney Road
KERRVILLE, TEXAS 78028**

**FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR**

**MOONEY M20S, M20R, M20TN, M20U, M20V
WITH
R-134a AIR CONDITIONER SYSTEM**

MODEL NO. _____

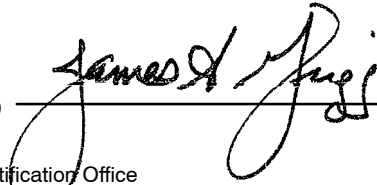
REG. NO. _____

SERIAL NO. _____

This Supplement must be attached to the FAA Approved Airplane Flight Manual when the R-134a Air Conditioner System is installed in accordance with Mooney International Corporation drawing number 770000. The information contained herein supplements or supersedes the information of the basic Airplane Flight Manual only in those areas listed herein. For Limitations, Procedures and Performance information not contained in this Supplement, consult the basic Airplane Flight Manual.

FAA APPROVED _____

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DATE: _____

17 July 2017



LOG OF REVISIONS

REV. NUMBER	PAGE NUMBER(S)	DESCRIPTION	FAA APPROVED	APR'VD DATE
A	All Pages 3 of 5 3 of 5, 4 of 5, 5 of 5 4 of 5, 5 of 5	Added M20S to Heading Added Model Applicability Added M20S Placard Added Data Relocated Data	Robert A. Romero for <i>MM Outley</i>	10/20/99
B	ALL 5, 6	Added M20TN TO HEADER Added M20TN to Text	<i>MM Outley</i>	4/10/2007
C	All 5, 7	Updated to "Mooney International Corporation" and incorporated M20U and M20V model aircraft. Added Part Numbers to decals in images.	<i>James J. Sigel</i>	1/25/2017

THE REVISED PORTIONS OF AFFECTED PAGES ARE INDICATED BY VERTICAL LINES IN THE MARGIN.

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SECTION I – GENERAL

The R-134a Air Conditioner System is designed to cool the aircraft cabin to desired temperature settings during all phases of flight operations. The air conditioner system may be used during any part of the flight. The system offers a choice of: 1) Fan only, HI or LOW speeds, or 2) Cabin cooling air, LO or MAX operation.



SECTION II – LIMITATIONS

■ **PLACARDS REQUIRED:** [M20S, M20R, M20TN, M20U, & M20V] - Located in full view of the pilot on instrument panel.

**MAG COMPASS
DEVIATION
MAY BE EXCESSIVE WITH
AIR COND OR BLOWER ON**

150056-(X)3030(Y)

[M20S ONLY] - Located in full view of the pilot on center console.

**AIR CONDITIONER SYSTEM MUST
BE OFF DURING TAKE OFF, CLIMB
BELOW 120 KIAS AND LANDING**

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SECTION III – EMERGENCY PROCEDURES

No changes to this Section.

SECTION IV – NORMAL

BEFORE TAXI

R-134a Air Conditioner System Operation

1. Air Conditioner Fan Switch SELECT – HI or LO speed (fan only)
or
2. Air Conditioner Cooling Switch SELECT – LO or MAX
3. Overhead Cabin Air butterfly control CLOSED
4. Forward Cabin Air Control CLOSED
5. Air Conditioner Switch SELECT OFF when desired

TAKEOFF

- Air-conditioning System (M20R, M20TN, M20U & M20V) ON or OFF, AS DESIRED
(M20S) [TAKEOFF & T/O CLIMBS] OFF

CLIMB

CLIMB (CRUISE) (SEE SECTION 5.0)

- [M20S, M20R, M20TN, M20U & M20V] – No change to this procedure.

CLIMB (BEST RATE V_y)

- [M20R, M20TN, M20U & M20V] – No change to this procedure.

[M20S] Air conditioner Switch OFF

CLIMB (BEST ANGLE V_x)

- [M20R, M20TN, M20U & M20V] – No change to this procedure.

[M20S] Air-conditioner Switch OFF

-CAUTION-

During higher than standard temperatures, it may be necessary to turn the Air Conditioning System OFF during climbs if engine operational temperatures cannot be maintained.

LANDING

Air-conditioning System (M20S) OFF

SECTION V – PERFORMANCE

TAKE OFF

The pilot is responsible for computation of Weight & Balance conditions, density altitude, wind conditions and runway conditions prior to departure. Brake HP reduction, with the Air Conditioning System ON, during takeoff has been determined to be 2 horsepower (HP) or 1% of total HP.

- For the M20R, M20TN, M20U and M20V, If runway conditions are: short, soft or grass and if pressure altitude or temperature or humidity are high, it is recommended that the Air Conditioner System be turned OFF during the takeoff portion of the flight. For the M20S -- Air Conditioner System OFF, for all Take-Offs and Take-Off Climbs.



CLIMB

The Maximum Rate of Climb performance is approximately 30ft. per minute lower with the Air Conditioning System switch ON and the system operating properly. The pilot should compute fuel burn, range and endurance data based on this reduced Rate of Climb factor.

CRUISE

Flight tests have determined that cruise performance with Air Conditioning System ON is reduced by 1.17%. The pilot should compute fuel burn, range and endurance data based on this cruise reduction factor.

LANDING

For the M20S -- Air Conditioner System OFF, for all Landings.

GENERAL CONSIDERATIONS

If the Air Conditioning System is not operating properly, all or any of the above factors may change. It is the pilots responsibility to monitor fuel burn, time in flight, and time to destination during all flight operations and make appropriate decisions to maintain a safe flight.

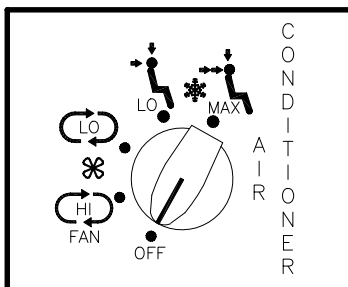
SECTION VI – WEIGHT AND BALANCE

The pilot should reference current weight and balance data in basic POH/AFM and compute proper aircraft weight and balance information prior to each flight.

SECTION VII – AIRPLANE & SYSTEM DESCRIPTIONS

GENERAL

The optional, R-134a Air Conditioning System operates on a closed vapor cycle concept. The components are designed light weight, and for high altitude and extreme temperature operations. Operation is simple; select the desired operation from a single switch (see Figure A/C 7-1) located on the lower console. The first position is all systems OFF. When the second position, HI fan, is selected, both evaporator fan motors are turned ON and high speed cabin air is directed through the four overhead cabin Wemacs and through the Flood Vent located in the top of baggage compartment bulkhead. When the third position, LO fan, is selected, high speed cabin air is directed through the overhead Wemacs and low speed cabin air is directed through the Flood Vent. When the fourth position, LO air conditioner, is selected, the compressor clutch is engaged, and high speed cooling air from the LH evaporator is directed through the overhead Wemacs and low speed cooling air from the RH evaporator is directed through the Flood Vent.



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FIGURE A/C 7-1

When the fifth position, MAX air conditioner, is selected, the compressor clutch is engaged, and high speed cooling air from both evaporators is directed through the overhead Wemacs and the Flood Vent. This is the maximum cooling air that can be circulated throughout the cabin area.



Movement of air over the condenser coil to cool the hot, high pressure R-134a compressed gas is provided through two screened duct openings located aft, below the horizontal stabilizer on both sides of the tailcone. The exit of condenser cooling air is through a fairing located on the bottom of the tailcone.

The R-134a system also removes a large percentage of moisture from the cabin air as well as removing dust and pollen particles from the cabin air.

Control of the refrigeration cycle, ON & OFF, is done with a pressure cycling switch. The switch senses refrigerant pressure on the suction (low) side of the system as an indicator of evaporator temperature.

Electrical power for the Air Conditioning System is supplied through two circuit breakers (C/B's). A 20 amp C/B, located on the C/B panel in the cabin, supplies power to the control switch for the evaporator blowers and compressor clutch. Another C/B, located on the aft radio shelf in the tailcone, supplies power for the condenser blower. These C/B's protect the air conditioning system wiring and any failure of the system which causes either C/B to trip will not affect the completion of the flight, except that the air conditioning system will not operate for the remainder of the flight. The air conditioning system should be checked out by a qualified technician at the earliest convenient time.

SECTION VIII – HANDLING & SERVICE

No change to this Section.

SECTION IX – SUPPLEMENTAL DATA

Add Air Conditioning System AFM Supplement to SECTION IX when system is installed.

SECTION X – SAFETY INFORMATION

No change to this Section.

