CAA APPROVED
AIRPLANE FLIGHT MANUAL

MOONEY MARK 20

FIRST EDITION

MOONEY AIRCRAFT, INC.
Louis Schreiner Field - Kerrville, Texas

Serial No. _______________________
Registration No. N ________________

APPROVED ________________________
C. L. Johnston
Chief, Aircraft Engr. Division
Civil Aeronautics Adm.
Region 2

DATE OF APPROVAL August 24, 1956
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FOREWORD

This Manual has been prepared for the guidance of flight personnel who operate the Mooney MARK 20. It is hoped that all pilots will read the Manual thoroughly and use it as a ready reference.

It should be pointed out that the limitations in the Manual are mandatory and that the Manual must be kept in the airplane at all times.
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for C. L. Johnston
Chief, Aircraft Engineering Div.

H. H. Slaughter
OPERATING LIMITATIONS

Power Plant Limitations

Engine - Lycoming Model O-320
Limit For All Operations - 2700 RPM, 150 HP.

Maximum Allowable Temperatures - Degrees F
Cylinder Head 500
Oil 245

Fuel - 80 Octane Aviation Gasoline
Lean Manually For Best Power.
Auxiliary Electric Fuel Pump Provided.

Oil - 8 Quart Capacity
Above 40 Degrees F - SAE Number 50
Below 40 Degrees F - SAE Number 30

Propeller - Hartzell,
Hub - HE-82XG2-1B
Blades - 7636D-0, 7636D-2, 7636D-4
Diameter - 76 Inches, 7¼ Inches, 72 Inches
Pitch Settings (Measured At 3/4 Radius Station)
High - 26 Degrees
Low - 11.5 Degrees

Airspeed Limitations

Never Exceed Speed 183 MPH
Maximum Structural Cruising Speed 150 MPH
Maximum Maneuvering Speed 130 MPH
Maximum Gear Operating Speed 120 MPH
Maximum Gear Extended Speed 120 MPH
Maximum Flap Operating Speed 100 MPH

All Speeds Shown Are Calibrated Airspeeds.
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Instrument Dial Markings

Airspeed

Radial Red Line - 183 MPH
(Never Exceed Speed Which Is The Maximum Safe Airspeed)
Yellow Arc - 150 To 183 MPH
(Denotes Range Of Speeds In Which Operations Should Be Conducted With Caution And Only In Smooth Air)
Green Arc - 62 To 150 MPH
(Denotes Normal Operating Speed Range)
White Arc - 57 to 100 MPH
(Denotes Speed Range In Which Flaps May Be Safely Lowered)

Tachometer

Radial Red Line (Rated) 2700 RPM
Green Arc (Normal Operating Range) 2300 To 2500 RPM

Cylinder Head Temperature

Radial Red Line (Maximum) 500 Degrees F
Green Arc (Operating Range) 350 To 500 Degrees F

Oil Pressure

Radial Red Line (Minimum Idle) 25 PSI
Radial Red Line (Maximum) 85 PSI
Green Arc (Operating Range) 65 To 85 PSI

Fuel Pressure

Radial Red Line (Minimum) 0.5 PSI
Radial Red Line (Maximum) 5.0 PSI
Green Arc (Desired Range) 2.5 To 3.5 PSI

Oil Temperature

Radial Red Line (Maximum) 245 Degrees F
Green Arc (Operating Range) 100 To 230 Degrees F

Flight Load Factors

Maximum Positive Load Factors - 3.8
Maximum Negative Load Factors - No Inverted Maneuvers Approved.
Gross Weight & Center Of Gravity Limitations

Maximum Weight - 2450 Pounds

Center Of Gravity
Most Forward - 40.7 inches (12.8% MAC) Gear Down, 1930 Pounds.
Forward Gross - 47.0 inches (23.4% MAC) Gear Down, 2450 Pounds.
Rear Gross - 49.4 inches (27.4% MAC) Gear Down, 2450 Pounds

Datum - Center Line Of Nose Gear Attachment Belts. (Airplane Sta. 0)
33 inches Forward Of Wing Leading Edge At Wing Sta. 59.25.
(Inboard Edge Of Stall Strip)

Note - See Weight & Balance Section For Loading Schedule.

Flags

(1) This Airplane Must Be Operated As A Normal Category
Airplane In Compliance With The Approved Airplane
Flight Manual. No Acrobatics, Including Spins, Are
Approved.

(2) Maximum Speed, Landing Gear Extended - 120 MPH.
Maximum Speed For Operation Of Landing Gear - 120 MPH.

(3) (On Storm Window) Do Not Open Above 150 MPH (Revision A)

(4) Rear Tank Must Be Used First In Level Flight (Cruising).
Do Not Use For Take-Off, Climb Or Landing.

(5) Load In Accordance With Loading Schedule.
Maximum Baggage Allowable - 130 lbs.

(6) Cowl Flap - Pull To Open - Do Not Open Above 150 MPH (Rev. A)

(7) In Case Of Engine Fire Turn Cabin Heater Off. (Rev. B)
OPERATING PROCEDURES

Pre-Flight

- Check Oil (6 Qts. Min.)
- Check Fuel & Secure Filler Caps
- Drain Gascolator and 4 quick drains
- Inspect Airplane for Defects

Starting

- Check to Assure Gear is LOCKED
- Fasten Seat Belts
- Fuel Valve ON (Right or Left Main)
- Master Switch ON
- Mixture Rich
- Brakes Set
- Magneto Switch On Both
- Clear Prop Visually & Verbally
- Pump Throttle to Prime
- Engage Starter
- Check Oil Pressure After Engine Starts
- Open Cowl Flaps

Take-Off

- Check Fuel Quantity & Pressure Gauges
- Check Instruments
- Check Trim
- Check Cowl Flaps
- Set Wing Flaps as Necessary
- Check Mags at 1500 RPM
- Check Carb. Heat - Return to OFF
- Check Governor & Prop Operation
- Governor Control Full Forward
- Secure Window & Door
- Apply Full Throttle

After Take-Off

- Initial Climb-Out at 90 MPH (Minimum Speed for Cooling)
- Gear UP
- Normal Cruise 2400 RPM and 24" Manifold Pressure
- Close Cowl Flaps when Cruise Speed is Attained
- Lean for Best Power

Before Landing

- Fuel Selector to Full Main Tank
- Mixture Rich
- Carb. Heat ON
- Reduce Speed to 120 MPH
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April 3, 1956 - Revision A

Before Landing (Continued)

Gear DOWN And LOCKED
Governor Control Full Forward
Apply Flaps at 100 MPH
Open Cowl Flaps (Revision A)
Trim as Necessary

Stopping

Reduce RPM to 1000
Mixture Full Lean
Magneto Switches OFF (After Engine Stops)
Master Switch OFF
The following Performance Data Charts are included for the pilot's convenience in 
the selection of cruising conditions to obtain the best performance from the 
airplane under the conditions prevailing for each flight. The charts were pre-
pared from accurate flight test results, and duplicate results may be obtained by 
careful selection of operating condition parameters by the average pilot.

The charts are based upon standard altitude conditions, that is, with an outside 
air temperature of 59°F at sea level, decreasing 3.6°F per thousand feet of 
altitude. The Horse Power Charts include the installation losses of pressure and 
temperature, and vary slightly from the basic Lycoming Charts. All performance 
is in the clean configuration, that is, with flaps and landing gear retracted. 
The Charts include:

Rate of Climb plotted against standard altitude

True Air Speed and Range plotted against standard altitude and various percentages of power

Horsepower at 2450 RPM at Various Manifold Pressures plotted against standard altitude

Horsepower at 2350 RPM at Various Manifold Pressures plotted against standard altitude

The recommended limitations of power and other operating notes are included on 
the charts. The range data on page 3 is based upon the use of full tanks, 
(49 gallons) and allows for the climb to altitude and provides for a 15 minute 
margin at the end of the flight, with normal use of the mixture control while 
cruising.

Example A. Maximum Optimum Cruise

With maximum recommended cruise RPM of 2450 and maximum cruise power of 75%, 
from page 4, select 4900 feet and 23.7" Hg (full throttle). On page 3, 
read 165 MPH true airspeed and 756 miles range at 4900 ft. at 75% power.

Example B. Economical Cruise

Say approximately 150 MPH true air speed with near maximum range is desired. 
From page 3, select 150.5 MPH at 10000 Ft. at 55% power and read 890 miles 
range. From page 5 at minimum recommended cruising RPM of 2350, at 55% 
power at 10000 Ft., read required manifold pressure of 18.5" Hg.
GROSS WEIGHT RATE OF CLIMB
SPEED 4 FLAPS RETRACTED

NOTE: IN COLDER THAN STANDARD
AIR CLIMB IS GREATER. IN WARMER
THAN STANDARD AIR CLIMB IS LESS.

FULL THROTTLE AT 2700 KPH
(MAXIMUM RATING)

FULL THROTTLE AT 2555 RPM
(RECOMMENDED)

RATE OF CLimb: FEET PER MIN