

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

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

STC No. SA02193CH

FOR MOONEY M20R, M20S & M20U

Manual Number - 003700() M20S

Manual Number - 003600() - M20R

Manual Number - 003800() - M20R

Manual Number- 003810() - M20R

Manual Number - 003820() - M20U

MODEL _____

REG. NO. _____

SERIAL NO. _____

This supplement must be attached to the FAA approved Flight Manual when the airplane is modified for increased BHP (310 BHP) and by the installation of a Hartzell PHC-J3YF-1RF/F7693DF(B)-2 propeller and A-2295-10(P) spinner in accordance with STC SA2193CH or Mooney International Corporation Drawing 600534.

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 this supplement, consult the FAA approved Airplane Flight Manual.

FAA APPROVED: _____

Manager, Southwest Flight Test Section, AIR-713
Federal Aviation Administration
Fort Worth , TX

DATE: 11/14/2017

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SUPP0029



LOG OF REVISIONS

Revision Number	Review	Affected Pages	Description of Revision	FAA Approved	Date
IR	BWM	All	Initial Release		
A	BWM	All	Updated to latest flight test data	<i>Charles L Smalley</i>	
B	BWM	1 2 3 All All 8	Added R- Model Manual 003800 Added Warning note Revised maximum Cruise RPM to read Minimum Cruise RPM- 2500 Added Copyright note Name Change & Address Correction Add engine information for clarity	<i>Charles L Smalley</i>	3-7-2011
C	BWM	All	Name and Address Change	<i>Steven Lardinois</i>	4-17-2013
D	WDE	All 1 All All	Changed STC Owner's name to Mooney International Corporation Added MIC Drawing number Added M20U Model Effectivity Added M20U Manual 003820()		<i>11-14-2017</i>

NOTE:

All changes are indicated by a black vertical line along the left margin.

- WARNING -

USE OF THIS STC IS SUBJECT TO FEDERAL LAW 104-264 110 STAT.3256, SECTION 403. FEDERAL LAW PROHIBITS USE OF THE CONTENTS OF THIS STC WITHOUT PERMISSION OR LICENSE FROM THE OWNER MIDWEST MODIFICATIONS LLC..



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SECTION I – GENERAL

DESCRIPTIVE DATA

ENGINE

Number 1
 Manufacturer Continental Motors Incorporated
 Model Number IO-550-G modified per STCSE02930AT
 Optional Engine IO-550-N
 Number of Cylinders 6
 Displacement 550 Cu. In. (9014 cc)
 Maximum Continuous Power 310 BHP
 Maximum Continuous RPM 2700
 Maximum Recommended Cruise Power / RPM 262 BHP / 2550 RPM

FUEL SYSTEM

Type Fuel Injection
 Make CMI
 Fuel - Aviation Grade Gasoline 100 Octane / 100LL
 Total Capacity 95 U.S. Gal. (359.6 Liters)
 Usable 89 U.S. Gal. (336.9 Liters)

ENGINE OIL

Oil Specification MHS-24()
 and as approved by CMI. Reference Engine Maintenance & Operators Manual

All Temperatures 15W50 or 20W50
 Above 30° F (- 1° C) SAE 50
 Below 50° F (10° C) SAE 30 or 10W30
 Total Oil Capacity 8 Qts. (7.57 Liters)
 Oil Filter Full Flow

PROPELLER

Number 1
 Manufacturer Hartzell
 Model Number PHC-J3YF/F7693DF(B)-2
 Number of Blades 3
 Diameter (Max.) 76 in.
 (Min.) 75 in.
 Type Constant Speed
 Governor Model (McCauley) Hydraulically Controlled by Engine Oil
 Blade Angles @ 30.0 inch radius
 Low 16.5 ± 0.2 degrees
 High 38.0 ± 1.0 degrees

MAXIMUM CERTIFIED WEIGHT M20R & M20S

Gross Weight 3368 Lbs. (1528 Kg)
 Maximum Landing Weight 3200 Lbs. (1452 Kg)
 Baggage Area 120 Lbs. (54.4 Kg)
 Rear Storage 10 Lbs. (4.5 Kg)
 Cargo (Rear Seat Folded Down) 340 Lbs. (154.2 Kg)



SECTION II - LIMITATIONS

NOISE LIMITS

The certification noise level for the M20R and M20S modified in accordance with STC **SA02193CH** is 83.5 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.

POWER PLANT LIMITATIONS

Propeller Manufacturer Hartzell
Propeller Hub/Blade Model Number PHC-J3YF-1RF/F7693DF(B)-2
Number of Blades 3
Propeller Diameter: Hartzell
 Min 75 in.
 Max 76 in.

Engine Operating Limits for Takeoff and Continuous Operations:

- Green Arc - Normal Operating Range 2200 - 2699 RPM
- Red Line - Maximum Limit 2700 RPM
- Maximum Continuous Power 310 BHP

Fuel @ max power 150 / 160 Lbs/Hr

Propeller Operating Limits (Hartzell) 2700 RPM

NOTE:

Engine modification in accordance with STC SE02930AT.

No other changes



SECTION III – EMERGENCY PROCEDURES

GLIDE

The Hartzell propeller increases descent rate and decreases glide distance approximately 7%. When computing glide distances with the Hartzell propeller installed, **SUBTRACT** 7% to ground distance taken from the “MAXIMUM GLIDE DISTANCE MODEL M20R, M20S & M20U” charts.

PROPELLER OVERSPEED

Throttle AS REQUIRED to maintain RPM below 2700 RPM

SECTION IV – NORMAL PROCEDURES

Takeoff:

Power Full Throttle - 2700 RPM

Climb (Cruise):

Power 2550 RPM

Manifold Pressure 24 Inches Hg.

Climb (Best Rate) Vy:

Power Full Throttle / 2700 RPM

Airspeed 105 KIAS

Climb (Best Angle) Vx:

Power Full Throttle / 2700 RPM

Airspeed, Takeoff Speed at 50 Ft 75 KIAS

NOTE:

Engine modification in accordance with STC SE02930AT.

SECTION V – PERFORMANCE

Performance with the Hartzell three-blade PHC-J3YF-1RF/F7693DF(B)-2 propeller installed is as follows:

Takeoff Distance:

- Equal to or no less than AFM data

Time - Fuel - Distance to Climb:

- Equal to or no less than AFM data

100% Climb Performance:

- Use M20R, M20S & M20U chart for STC SA02193CH, page 7



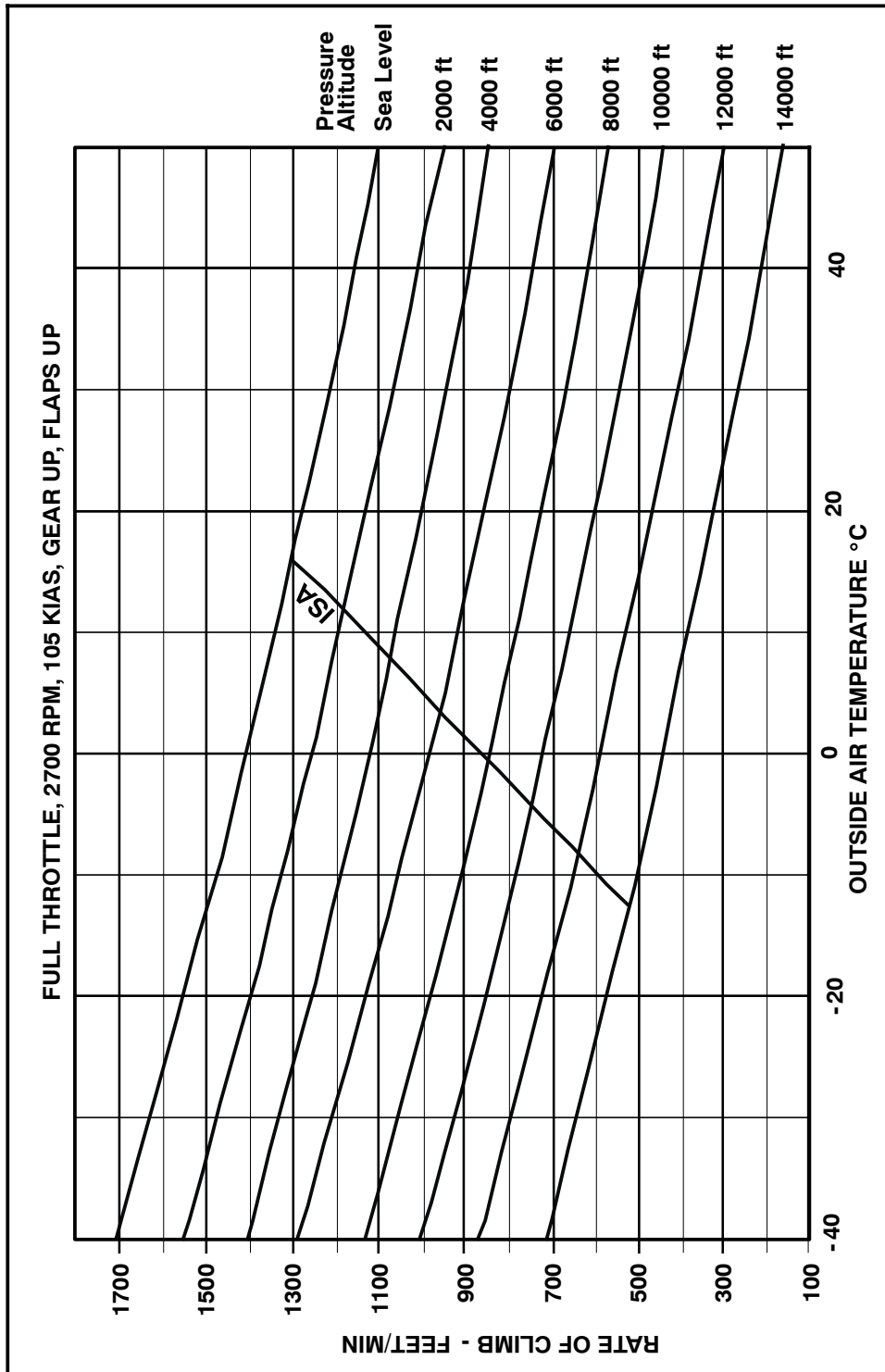


Figure 1 - FULL THROTTLE, 2700 RPM, 105 KIAS, GEAR UP, FLAPS UP

- CAUTION -

Higher power settings than those shown will result in an increase in fuel flows. Power settings, fuel consumption, and endurance range should be computed using the M20R performance charts. Higher power settings of the M20R will result in an increased fuel consumption causing a reduction in endurance time.



SECTION VI – WEIGHT AND BALANCE

The three-blade Hartzell propeller is approximately 11 pounds heavier than the two-blade McCauley. The STC installation instructions contain information for revising the aircraft weight and balance data.

SECTION VII – AIRPLANE AND SYSTEM DESCRIPTION

PROPELLER

The propeller is a three-blade, 76-inch, constant-speed unit that features aluminum blades in an aluminum hub. The spinner is fabricated from aluminum alloy. A more detailed description is found in Hartzell Manual 115N (Propeller Owner Manual).

SECTION VIII – HANDLING AND SERVICING

Routine propeller servicing is described in the latest revision of Hartzell Manual 115M (Propeller Owner Manual) provided with the propeller.

ENGINE MAINTENANCE

Refer to the following sections of TCM Maintenance Manual [Models IO-550-A,-B,-C,-G,-N,-P,-R] X30634A dated April 2001 and approved supplements for maintenance of the modified IO-550-G-PL engine as related to the power sections, induction system, fuel injection system, and ignition system

NOTE:

The fuel injection system as used on the modified IO-550-G-AP model is the same as used on the IO-550-N model and therefore is to be set up and adjusted to the values and settings published for the IO-550-N fuel system. See also TCM SID97-3E (or latest FAA approved revision) Procedures & Specs for Adjustment of TCM Continuous Flow Fuel Injection Systems for IO-550-N fuel system setup and adjustment procedure.

Aircraft modified by STC SA02193CH meets or exceeds data presented.

SECTION IX – SUPPLEMENTAL DATA

Add this supplement to this Section

SECTION X – SAFETY TIPS

No changes to Section X.

