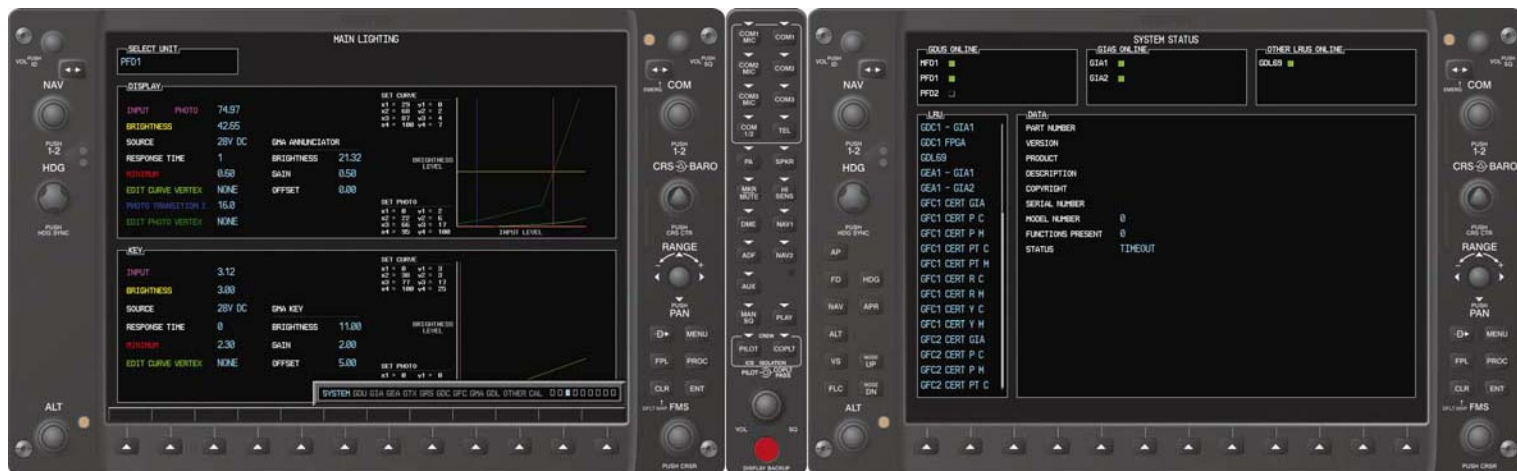


G1000 / GFC 700

Instructions for Continued Airworthiness

Mooney M20M/M20R



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RECORD OF REVISIONS

Revision	Revision Date	Description	ECO #
A	05/04/2006	Initial release for M20/GFC700 STC	-----

DOCUMENT PAGINATION

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IMPORTANT

All references to Mooney M20M aircraft made in this document equally apply to Mooney M20R aircraft, unless otherwise noted.

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1 INTRODUCTION

1.1 Content, Scope, Purpose

This document provides Instructions for Continued Airworthiness (ICA) for the Garmin G1000 Integrated Cockpit and GFC 700 Automatic Flight Control System (AFCS) as installed in the Mooney Model M20M and M20R.

This document satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Appendix G. Information in this document is required to maintain the continued airworthiness of the G1000 integrated cockpit system in Mooney M20M and M20R aircraft.

1.1.1 Applicability

This document applies to all Mooney Airplane Company, Inc., Model M20M and M20R aircraft equipped with the G1000 Integrated Cockpit system and GFC 700 AFCS. Modification of an aircraft by this Supplemental Type Certificate (STC) obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

1.2 Airworthiness Limitations

The G1000 Integrated Cockpit and GFC 700 AFCS are airworthy when installed, configured, and maintained in accordance with this document. This Airworthiness Limitations section is FAA-approved and specifies maintenance required under §§ 43.16 and 91.403 of Title 14 of the Code of Federal Regulations, unless an alternative program has been FAA-approved.

The GFC 700 possesses the following maintenance airworthiness limitations:

GFC 700 Limitations:

- Every 100 hours, perform a check to verify that flap-in-motion discrete inputs function correctly. Refer to Table 2-1.

There are no other maintenance airworthiness limitations associated with this type design change. The G1000/M20 Airplane Flight Manual Supplement defines all operating limitations.

FAA APPROVED



Margaret Kline
Manager, Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

Date



1.3 Organization

The Instructions for Continued Airworthiness for this STC is composed of multiple documents. Table 1-1 defines the documents which compose a complete set of ICA for this STC.

Table 1-1. ICA Structure

Document	Part Number	ICA Content
G1000/GFC 700 Instructions for Continued Airworthiness	This Document (Principal Manual)	<ul style="list-style-type: none"> - Airworthiness Limitations - Maintenance Intervals - Inspection Requirements
G1000/GFC 700 System Maintenance Manual – M20	190-00638-01	<ul style="list-style-type: none"> - System Description - Control & Operation - Special Maintenance Considerations - Servicing Information - Troubleshooting Information - Removal & Replacement - Software/Configuration Loading - Return To Service
G1000/GFC 700 General Arrangement Drawing – M20M/R	005-00343-03	<ul style="list-style-type: none"> - Supporting Installation Diagrams
G1000/GFC 700 Pitch Servo Installation Drawing – M20M/R	005-00343-05	
G1000/GFC 700 Pitch Trim Servo Installation Drawing – M20M/R	005-00343-07	
G1000/GFC 700 Roll Servo Installation Drawing – M20M/R	005-00343-06	
G1000/GFC 700 Wiring Routing – M20M/R	005-00343-10	
G1000/GFC 700 Wiring Diagram – M20M/R	005-00343-04	
G1000/GFC 700 Electrical Removal – M20M/R	005-00343-30	
G1000/GFC 700 Structural Removal – M20M/R	005-00343-41	
G1000/GFC 700 Flap Logic Relay Track – M20M/R	005-00343-40	
G1000/GFC 700 Control Wheel Mod – M20M/R	005-00343-12	
G1000/GFC 700 Instrument Panel Mod – M20M/R	005-00343-11	
Mooney M20M Airplane Maintenance Manual	Mooney P/N 151	<ul style="list-style-type: none"> - Supporting Maintenance Data
Mooney M20R Airplane Maintenance Manual	Mooney P/N 160	

1.4 Revision & Distribution

This document is required for maintaining the continued airworthiness of the aircraft. Revisions to this document will be made by Garmin and will be distributed by Garmin per standard documentation revision procedures.

For the latest revision to this document, check Garmin’s web site at: www.garmin.com/ and click on ‘Dealers Only’.

NOTE

Only Garmin-authorized dealers and service centers are given access to the Dealer portion of the Web Site. If you do not have a Dealer Password, contact Garmin directly for the latest revision of this document.

2 Servicing Information

2.1 On Condition Servicing

G1000 LRU maintenance is ‘on condition’ only. No component-level overhaul is required for this type design change.

‘On Condition’ replacement and/or servicing should occur when an item exhibits conditions, symptoms, and/or abnormalities defined by the troubleshooting section in the G1000/GFC 700 System Maintenance Manual. Replacement and/or servicing should be made only after the technician troubleshoots the system to the extent determined necessary by using the guidance in this manual along with common avionics maintenance practices.

2.2 Recommended Tools

The following tools are needed to perform maintenance tasks on G1000/GFC 700 equipment:

- Mili-ohm Meter, OR
 - ✓ Agilent 34410A Ammeter or equivalent
 - ✓ Fluke 187 Voltmeter or equivalent
 - ✓ Power Supply capable of providing 1 amp current
- #2 Phillips Screwdriver
- 3/32” Hex Tool
- Digital Level (Required for AHRS ‘Procedure A’ Calibration)
- A VHF NAV/COM/ILS ramp tester or equivalent
- A transponder ramp tester or equivalent
- A pitot/static ramp tester
- Outdoor line-of-site to GPS satellite signals or GPS indoor repeater
- Headset/Microphone
- Ground Power Unit (Capable of supplying 28 Vdc)
- Servo Mount Slip Clutch Adjustment Tool – P/N 011-01085-00 or -01 (-01 is required for pitch and roll clutch adjustments)
- Calibrated Torque Wrench capable of measuring 0 – 70 in/lbs
- Flight Control Cable Tension Meter
- Standard Sockets & Wrenches (3/8”, 9/16”, and 13/16”)

2.3 Maintenance Intervals

The following table shows systems and items that must undergo tests or checks at specific intervals, either in flight hours or calendar months. If the interval is shown to be in flight time as well as calendar months, the first interval reached should be used as the limit.

Table 2-1. Maintenance Intervals

Item	Description/Procedure	System Maint. Manual Section No.	Interval
G1000 Equipment			
G1000 System	Complete Visual Inspection	4.2	Aircraft Annual
GDU 1040 PFD	Removal & Replacement.	6.1	On Condition
GDU 1042 MFD		6.2	
GMA 1347		6.3	
GIA 63 IAU (Qty. 2)		6.4	
GEA 71 EAU		6.5	
GTX 33 Mode S Transponder	Removal & Replacement.	6.5	24 Months
	Test according to Title 14 CFR §§ 91.411 and 91.413 as well as Part 43 Appendix F.	7.5.3	
GDC 74A	Removal & Replacement.	6.6	On Condition
	Altimeter (system) test according to Title 14 CFR § 91.411 and Part 43 Appendix E.	7.6.3	24 Months
	Airspeed Function Test.		2000 Hours or 48 Months
	Vertical Speed Function Test.		2000 Hours or 48 Months
GRS 77 AHRS	Magnetic variation database update.	6.8	On Condition
	Removal & Replacement.	4.5	
GMU 44 Magnetometer	Removal & Replacement (with a new serial number unit).	7.7.6	
GDL 69/69A (Optional)	Removal & Replacement.	7.9.3	
G1000 Accessories			
Configuration Module Replacement (Qty 4)	Removal & Replacement.	6.13	On Condition
GEA 71 Backshell Thermocouple	Removal & Replacement.	6.14	
OAT Probe	Removal & Replacement.	6.7	
Mid-Continent Standby Attitude Ind.	Removal & Replacement: Refer to appropriate Mooney M20 Maintenance Manual.	N/A	
PFD, MFD, & GIA Cooling Fans (Qty 3)	Removal & Replacement: Refer to Mooney G1000 System Installation Drawing, 950300.	N/A	

Item	Description/Procedure	System Maint. Manual Section No.	Interval
GFC 700 AFCS			
GFC 700 AFCS System	Complete Visual Inspection	4.2	Aircraft Annual
Flap Discrete Function Check*	Test the flap-in-motion discrete inputs to the G1000 to verify proper operation.	4.8	100 Hours or Annual
GSA 81 Servos (all)	Removal & Replacement.	6.11	On Condition
	Clean and Apply Grease to Output Gears.	4.6	1000 Hours or 36 Months
Pitch Bridle Cable	Removal & Replacement.	Refer to Pitch Servo Installation Drawing 005-00343-03.	On Condition
Pitch Trim Chain	Removal & Replacement.	Refer to Pitch Trim Servo Installation Drawing 005-00343-07.	On Condition
GSM 85 Servo Mounts (all)	Removal & Replacement.	6.12	On Condition
	Check Slip Clutch Torque (adjust if necessary)	4.7	500 Hours or 12 Months

***Denotes Airworthiness Limitation Maintenance Requirement (See Section 1.2)**

Item	Description/Procedure	System Maint. Manual Section No.	Interval
Engine/Airframe Sensors			
MAP Sensor	Removal & Replacement: Refer to appropriate Mooney M20 Maintenance Manual.	N/A	On Condition
Oil Pressure Sensor			
Oil Temperature Sensor			
Tach Sensor			
Fuel Flow Sensor			
CHT Probes (Qty 6)			
EGT Probes (Qty 6 M20M) (Qty 7 M20R)			
TIT Probe (M20R)			
Battery Current Sensor			
Fuel Tank Quantity Sending Units – G1000 Fuel Tank Recalibration	Removal & Replacement: Refer to appropriate Mooney M20 Maintenance Manual. New replacement fuel quantity probe(s) must be recalibrated .	4.4	
G1000 Lightning Protection			
TVS Unit Replacement	Replace the voltage suppressor unit. Refer to G1000/GFC 700 Wiring Diagram – M20M/R. The Standby Attitude Indicator Voltage Suppressor is located behind instrument panel near the Standby Attitude Indicator harness connector.	N/A	Replace After Suspected / Actual Lighting Event
Visual Inspection	Complete Visual Inspection	4.2	Aircraft Annual
Electrical Bonding Test	Perform an electrical bonding resistance check of all G1000 equipment.	4.3.2	1000 Hours and After Suspected / Actual Lighting Event

----- END -----