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# 1. INTRODUCTION

## 1.1 Purpose

This document is designed for use by the installing agency of the Garmin G500H PFD/MFD System as Instructions for Continued Airworthiness in response to Title 14 CFR Part 27.1529 and Part 27 Appendix A. This ICA includes information required by the operator to adequately maintain the Garmin G500H system installed under STC TBD.

## 1.2 Scope

This document identifies the Instruction for Continued Airworthiness for the modification of the rotorcraft for installation of the Garmin G500H PFD/MFD System installed under STC TBD.

## 1.3 Document Control

This document shall be released, archived, and controlled in accordance with the Garmin document control system. When this document is revised, refer to Section 2.15 for information on how to gain FAA acceptance or approval and how to notify customers of changes.

## 1.4 Permission to Use Certain Documents

Permission is granted to any corporation or person applying for approval of a Garmin G500H system to use and reference appropriate STC documents to accomplish the Instructions for Continued Airworthiness and show compliance with STC engineering data. This permission does not construe suitability of the documents. It is the responsibility of the applicant to determine the suitability of the documents for the ICA.

## 1.5 Definitions

The following terminology is used within this document:

- 1) **ACO:** Aircraft Certification Office
- 2) **ADC:** Air Data Computer
- 3) **AEG:** Aircraft Evaluation Group
- 4) **AHRS:** Attitude Heading Reference System
- 5) **CFR:** Code of Federal Regulations
- 6) **FAA:** Federal Aviation Administration
- 7) **ICA:** Instructions for Continued Airworthiness
- 8) **MFD:** Multi-Function Display
- 9) **PFD:** Primary Flight Display
- 10) **PMI:** Principal Maintenance Inspector
- 11) **STC:** Supplemental Type Certificate

## 2. INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

### 2.1 Introduction

Content, Scope, Purpose and Arrangement:	This document identifies the Instructions for Continued Airworthiness for the modification of the rotorcraft by installation of the Garmin G500H PFD/MFD System.
Applicability:	Applies to Robinson R44 series rotorcraft altered by installation of the Garmin G500H PFD/MFD System.
Definition of Abbreviations:	See Section 1.5
Precautions:	None
Units of measurement:	None
Referenced publications:	Garmin 190-01190-06 Rev. 2 " <i>G500H INSTALLATION MANUAL FOR ROBINSON R44 SERIES ROTOCRAFT</i> " or later revision  Garmin 190-01150-02, Rev. C " <i>G500H PILOT GUIDE</i> " or later revision
Additional Maintenance Data:	Garmin 005-W0227-00 Rev. 1 " <i>G500H Robinson R44 MAIN WIRE HARNESS ASSY DWG (REQ'D)</i> " or later revision  Garmin 005-W0227-01 Rev. 1 " <i>G500H ROBINSON R44 NAV1 HARNESS ASSY DWG (OPTL)</i> " or later revision  Garmin 005-W0227-02 Rev. 1 " <i>G500H ROBINSON R44 GPS2 HARNESS ASSY DWG (OPTL)</i> " or later revision  Garmin 005-W0227-03 Rev. 1 " <i>G500H ROBINSON R44 NAV2 HARNESS ASSY DWG (OPTL)</i> " or later revision  Garmin 005-W0227-04 Rev. 1 " <i>G500H ROBINSON R44 WX DATALINK HARNESS ASSY DWG (OPTL)</i> " or later revision  Garmin 005-W0227-05 Rev. 1 " <i>G500H ROBINSON R44 IRIDIUM DATALINK HARNESS ASSY DWG (OPTL)</i> " or later revision  Garmin 005-W0227-06 Rev. 1 " <i>G500H ROBINSON R44 VIDEO HARNESS ASSY DWG (OPTL)</i> " or later revision

Garmin 005-W0227-07 Rev. 1 “G500H  
ROBINSON R44 SERIAL ALTITUDE HARNESS  
ASSY DWG (OPTL)” or later revision

Garmin 005-W0227-08 Rev. 1 “G500H  
ROBINSON R44 TRAFFIC HARNESS ASSY DWG  
(OPTL)” or later revision

Garmin 005-W0227-09 Rev. 1 “G500H  
ROBINSON R44 GLARESHIELD HARNESS ASSY  
(REQD)” or later revision

Garmin 190-01190-00, Rev 2, “G500H ROBINSON  
R44 INSTALLATION DRAWING” or later revision

Retention:

This document, or the information contained within,  
will be included in the rotorcraft’s permanent  
records.

## 2.2 Description of Alteration

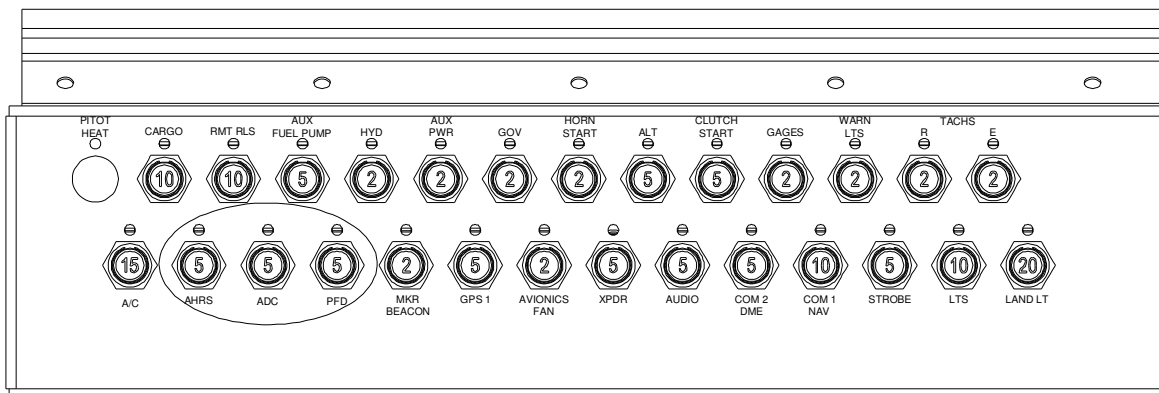
This STC upgrades existing avionics for the Robinson R44 series rotorcraft as summarized below.

The Garmin G500H Flight Display System consists of an instrument panel mounted GDU 620 display and remote mounted LRUs which provide data to the display. The GDU 620 provides controls for the G500H system and of a Primary Flight Display and Multifunction Display in the pilot’s primary field of view. Remote mounted LRUs include one GRS 77H AHRS, one GMU 44 Magnetometer, one GDC 74H ADC, and one GTP 59 OAT probe.

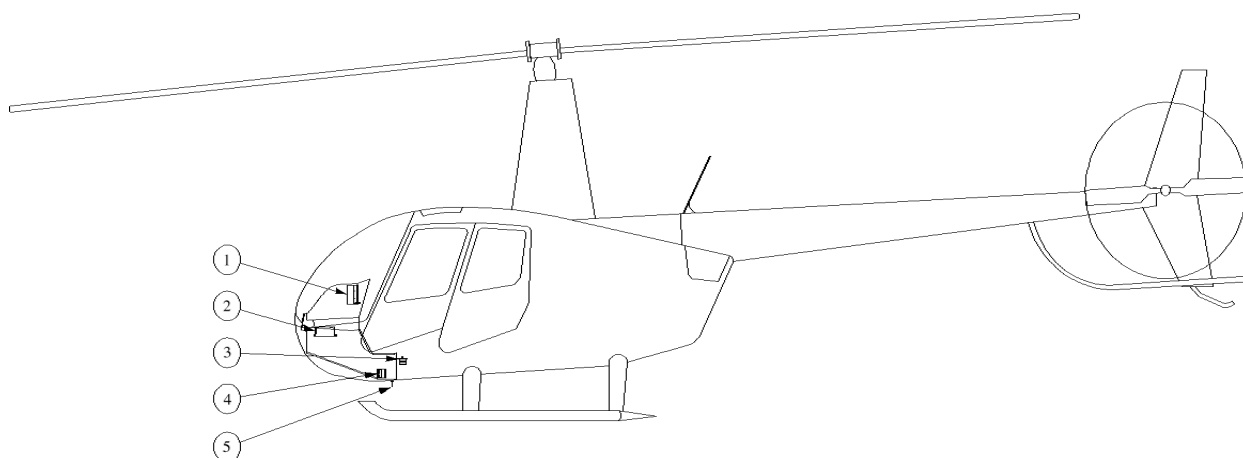
Rotorcraft modified under this G500H STC are restricted to VFR only. To clarify this operation limitation, a placard with the text, “THIS ROTORCRAFT IS APPROVED FOR DAY AND NIGHT VFR OPERATIONS” is required to be in the pilot’s view.

All installed G500H equipment is connected to a power bus that receives power as soon as the battery master switch is turned on.

Separate circuit breakers have been installed in the circuit breaker panel for the GDU 620 (PFD), GRS 77H / GMU 44 (AHRS), and GDC 74H (ADC) as circled below:



The installed G500H equipment can be accessed as described below:



1. GDU 620: FS 30.00, WL 42.5 Access or remove by removing the six screws in the bezel of the GDU 620.
2. GRS 77H: FS 19.25, WL 30.0 Access or remove by tilting the instrument shroud to its open position by removing four glareshield retaining screws.
3. GMU 44: FS 41.5, WL 19.75 Access or remove by lifting the pilots seat bottom.
4. GDC 74H: FS 39.25, WL 15.75 Access or remove by lifting the co-pilots seat bottom. Then remove the screws holding the divider plate to the forward half of the co-pilots seat box. Remove the divider plate to gain access to the GDC 74H.
5. GTP 59: FS 42.5, WL 13.5 Access or remove by removing the center access panel on the bottom of the helicopter.

### 2.2.1 Weight and Balance Information

Weight and Balance Robinson R44[1]				LONGITUDINAL[2]		LATERAL[3]	
ITEM	PART NUMBER		WEIGHT (LB)	ARM (IN)	MOMENT (IN-LB)	ARM (IN)	MOMENT (IN-LB)
1	011-01264-60	GDU 620 (Unit Only)	6.38	30.00	191.4	1.5	9.57
		GDU 620 (Installed connector)	7.04		211.2		10.56
2	011-00868-20	GRS 77H (Unit Only)	2.80	19.25	53.9	0.0	0.0
		GRS 77H (Installed with bracket and connector)	3.75		72.19		0.0
3	011-00870-10	GMU 44 (Unit Only)	0.35	41.50	14.53	17.5	6.13
		GMU 44 (Installed with bracket and connector)	0.51		21.17		8.93
4	011-00882-11	GDC 74H (Unit Only)	1.70	39.25	66.73	-11.5	-19.55
		GDC 74H (Installed with bracket and connector)	2.00		78.5		-23

- [1] A rotorcraft weight and balance is required after installation of the G500H system. Refer to installation manual P/N 190-01190-06 for additional information, including overall size and center of gravity location of all LRUs.
- [2] The longitudinal arm is measured in terms of the fuselage station (FS) number.
- [3] The lateral arm is measured in terms of the butt line (BL). The centerline of the helicopter is BL 0.00. The moment arms to the left side (looking forward) are negative (-) and the moment arms to the right side are positive (+).

### 2.3 Control, Operating Information

See the G500H Pilot's Guide or the Installation Manual, listed under the reference documentation in paragraph 2.1 of this document, for system operation and self-test information.

### 2.4 Servicing Information

Some metal structures of the GRS 77 may become magnetized if closely exposed to permanent magnets. While this will not affect the GRS 77 itself, it may slightly affect nearby magnetic instruments in the area (e.g. whiskey compass). Ordinary use of magnetic screwdrivers to tighten GRS 77 fasteners will not cause problems, but non-magnetic screw drivers are preferred. It is also recommended to use non-magnetic screwdrivers near the GMU 44 to prevent magnetizing any nearby metal structures.

In the event of system failure, troubleshoot the G500H system in accordance with Section 2.6 Troubleshooting Information.

### 2.5 Periodic Maintenance Instructions

Maintenance of the components installed by this STC is on condition, except as noted in the following table.

Item	Interval	Description/Procedure
GRS 77H AHRS	5 years	The GRS 77 utilizes an Earth magnetic field model which is updated once every five years as part of the Aviation Database maintained by the owner/operator. If the magnetic model is not current, the unit will issue an alert upon startup indicating the model has expired. The model can be updated by inserting an aviation database card with an updated IGRF model and powering on the system. A prompt will direct the user to press ENT to update the model.

Item	Interval	Description/Procedure
Garmin Glareshield Assembly	100 Hours/12 Calendar Months	<p>Coincident with upper console 100 hour inspection per Robinson Model R44 Maintenance Manual, Change 13 October 2006, or later ,page 2.16, perform -</p> <ol style="list-style-type: none"> <li>1. Visual inspection of composite glare shield assembly, Garmin PN 011-02759-00 (28VDC electrical system), or 011-02759-01 (14VDC electrical system) for damage. Inspect for loose rivets indicated by cracks in composite or aluminum components, or paint. Contact Garmin customer support for glare shield replacement components.</li> <li>2. Check tightness of instrument panel hinge mounting screws, glare shield shear web mounting screws, and vibration restraining bracket mounting screws. Re-torque loose fasteners per Section 1.320 of Robinson Model R44 Maintenance Manual, Change 13 October 2006, or later, page 1.22.</li> <li>3. Check tightness of mounting screws attaching instrument panel to glare shield. Re-torque loose fasteners per Section 1.320 of Robinson Model R44 Maintenance Manual, Change 13 October 2006, or later, page 1.22.</li> </ol>
GDU 620, GRS 77H, GDC 74H, GMU 44, GTP 59	100 Hours/12 Calendar Months	<p>Conduct a visual inspection (look for signs of wear, deterioration, or damage to wires, backshells, or connectors) on units and their wire harnesses to ensure installation integrity:</p> <ol style="list-style-type: none"> <li>1. Gain access to LRU (see section 2.2 for LRU locations)</li> <li>2. Inspect each unit for security of attachment.</li> <li>3. Inspect all knobs and buttons for legibility.</li> <li>4. Inspect condition of wiring, routing and attachment/clamping.</li> <li>5. Inspect integrity of shield terminations.</li> <li>6. Inspect for signs of corrosion on equipment and their rack installations.</li> </ol>



Item	Interval	Description/Procedure
GDU 620, GRS 77H, GDC 74H, GMU 44, GTP 59	Every 2200 flight hours or twelve (12) years, whichever is first	<p>Perform an electrical bonding test for each listed LRU:</p> <ol style="list-style-type: none"> <li>1. Gain access to the LRU (see General Arrangement Drawing for LRU location)</li> <li>2. Disconnect all harness connectors from the LRU</li> <li>3. Measure the resistance between the LRU and a nearby exposed portion of aircraft metallic structure. If any resistances are greater than the values below refer to section 3.5 of the Installation Manual, 190-01190-06 for the bonding preparation and the maximum resistance values that must be met. <ol style="list-style-type: none"> <li>a. For the GDU 620, verify the resistance is less than or equal to 40 milliohms</li> <li>b. For the GTP 59, verify the resistance is less than or equal to 5 milliohms</li> <li>c. For the remaining LRUs, verify the resistance is less than or equal to 20 milliohms</li> </ol> </li> <li>4. Reconnect all disconnected harness connectors and ensure they are secure</li> </ol> <p>Repeat for each listed LRU.</p>

## 2.6 Troubleshooting Information

If error indications are displayed on the GDU 620 display unit, consult the Troubleshooting section contained below:

### 2.6.1 G500H Troubleshooting

**Table 2-1. GDU 620 Troubleshooting Guide**

Problem	Cause	Solution
Unit does not power up – blank screen.	Improper wiring; circuit breaker open.	Ensure power is properly wired to the GDU 620 and the circuit breaker is closed.
	Unit intensity turned down.	Ensure that unit is not in manual intensity control mode with the intensity turned down.
All expected configuration pages are not displayed.	An Installer Unlock Card is not inserted into the GDU 620.	Insert the Installer Unlock Card P/N 010-00769-60 into the bottom slot of the GDU 620 and cycle power.
The GDC OAT probe type shows up as UNKNOWN	The RS-232 connection to the GDC 74H is not working.	Ensure that the GDC 74H RS-232 connection to the GDU is properly wired, and ensure that the GDC 74H circuit breaker is closed.
When loading software, the LRU software is not being displayed on the SOFTWARE UPLOAD page.	The software loader card is installed in the bottom slot of the GDU 620.	Insert the loader card in the top slot and cycle power to the GDU.
	The software loader card contains no information.	Repeat the process for making the software loader card.
Configuration errors are displayed on power-up, before the GDU enters normal mode.	The configuration module has not been updated.	Update the configuration module.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Vertical GPS deviation is not displayed on the GDU 620.	For 400W/500W Series units, the ARINC 429 vertical deviation labels are not being transmitted.	Enable Labels on the 400W/500W Series unit ARINC 429 configuration page.
Unable to control the GPS course when in OBS mode.	The GPS navigator is not correctly configured as LNAV1/2 or SYS1/2.	Configure the ARINC 429 inputs/outputs for LNAV1 (SYS1) or LNAV2 (SYS2) based upon whether the navigator is GPS1 or GPS2.
Data is not being received from an ARINC 429 device. (valid data is being received on the 429 input port as shown on the GDU 620 PORT MONITORING page)	ARINC 429 bus hi and low are swapped.	Verify wiring.
	Wrong device is connected to port on GDU 620.	Use correct ports (refer to interconnect details).
Data is not being received from an ARINC 429 device. (no data is being received on the 429 input port as shown on the GDU 620 PORT MONITORING page)	On the transmitting LRU, the ARINC 429 transmitter speed is not set correctly.	Set the ARINC 429 transmitter speed to correct speed.
	Wiring is not correct.	Check for continuity/shorts and correct as required.
Attitude and heading on GDU 620 red 'X' / GRS 77H resets during air data ground testing.	Attitude and heading errors/resets are possible if the air data tests are conducted indoors without a good GPS signal. With marginal or no GPS signals present, sudden changes in airspeed caused by using a pressure tester may result in attitude and heading errors and possibly cause the GRS 77H to reset. This occurs because the artificial changes in airspeed cause disagreement with the other sensor measurements internal to the GRS 77H. This sensor disagreement will not occur in the normal conditions of flight.	This is expected behavior and no troubleshooting is required if this occurs. To reduce the chances of inducing attitude and heading errors/resets while conducting the air data tests, ensure that the G500H is receiving good GPS signals.
Heading red 'X' during air data ground testing	Invalidation of heading is possible if the air data tests are conducted indoors, due to typical magnetic anomalies, even with a good GPS signal.	This is expected behavior and no troubleshooting is required if this occurs.

## 2.6.2 G500H Alerts

The G500H will display a number of alerts on the GDU 620 MFD. These are listed in the following table.

**Table 2-2. GDU 620 Alert Troubleshooting Guide**

Alert Text	Cause	Solution
<LRU> SERVICE	Specific LRU should be serviced, where <LRU> denotes specific LRU.	Return indicated LRU to Garmin for service.
AHRS1 GPS – AHRS 1 using backup GPS source.	AHRS is using the backup GPS information	Verify GPS1 power and check the wiring
AHRS1 GPS - AHRS is not receiving any GPS information	AHRS is not receiving any GPS information.	Verify GPS power and check the wiring
AHRS1 GPS – AHRS 1 operating in exclusively in no-GPS mode.	AHRS is not receiving any GPS information.	Ensure that at least one GPS has acquired a valid position.
		If GDU 620 does not have a valid position, verify wiring between GDU and GPS receiver, and configuration of GDU 620 and GPS receiver.
		If GDU has a valid GPS position, verify wiring between GDU and GRS. Also verify time mark wiring.
AHRS1 GPS – AHRS 1 not receiving backup GPS information.	AHRS is not receiving GPS information from GPS2.	Verify GPS2 power and check the wiring
AHRS1 SRVC	AHRS magnetic field model should be updated. Appears on ground only.	Update GRS 77H IGRF model (current model is with aviation database).
AHRS1 TAS	AHRS is not receiving true airspeed from ADC.	GDC not powered up. Close ADC C/B.
		GDC not receiving input from GTP 59 OAT probe. Verify wiring is correct.
		ARINC 429 connection from GDC 74H to GRS 77H is not working. Verify wiring is correct.
AUD NOT AVAIL	Audio system not available.	Contact Garmin Technical Support.
AUD SYS FAIL	Audio system failure	Contact Garmin Technical Support.
CAL LOST	Registry reports that it has lost calibration data.	Contact Garmin Technical Support.
CNFG MISMATCH – GDU 1-2 airframe configurations disagree.	<i>(Applicable only to dual GDU installations)</i> GDU in normal mode has received updated crossfill tags for configuration registry entries.	Restart both GDUs in configuration mode to automatically synchronize settings.
CNFG MODULE	The configuration module is inoperative.	Verify wiring to configuration module
		Replace configuration module
DATA LOST	Pilot stored data was lost.	Recheck data and settings.

Alert Text	Cause	Solution
DSCRT CONFIG – Discrete output configuration error.	A discrete output required by an interfaced system has not been configured.	Use the DISCRETE CONFIGURATION page in the SYS page group to configure the discrete outputs to match the installation.
		Verify wiring to the discrete
FAN 1 FAIL	Fan 1 has reported 0 RPM when it was powered with a PWM duty cycle higher than or equal to 10%	Inspect the GDU fan for an obstruction. Contact Garmin Technical Support.
FAN 2 FAIL	Fan 2 has reported 0 RPM when it was powered with a PWM duty cycle higher than or equal to 10%	Inspect the GDU fan for an obstruction. Contact Garmin Technical Support.
GDC CONFIG	The GDC configuration information stored in the GDC and the GDU 620 configuration module do not match.	With the GDU 620 in configuration mode, go to the GDC page in the GDL page group. Verify that the SET and ACTIVE configuration settings are the same. If not, use the SET>ACTV soft key to copy the configuration settings from the GDU 620 into the GDC.
GDL69	GDL 69 has failed	Verify wiring between the GDU and the GDL 69
		Check power and ground wires on GDL 69
GDL69 CONFIG	The GDL 69 configuration information stored in the GDL 69 and the GDU 620 configuration module do not match.	With the GDU 620 in configuration mode, go to the GDL 69 page in the GDL page group. Verify that the SET and ACTIVE configuration settings are the same. If not, use the SET>ACTV soft key to copy the configuration settings from the GDU 620 into the GDL 69.
	The GDL 69 configuration was updated using another LRU (e.g. the GMX 200 or 400W/500W).	Update the GDL 69 configuration using the GDU 620.
GDU CONFIG	This error appears whenever the GDU is replaced with a GDU that was configured for a different installation.	Cycle power to the GDU. This error automatically clears on the second power up with a different configuration module.
	Error in the configuration of the GDU 620.	
GDU (1/2) COOLING	Specific GDU has poor cooling, and power usage is being reduced.	Ensure fans on indicated GDU are functioning
		Ensure fans on indicated GDU are not obstructed
GDU (1/2) DB ERR	Error in specific database, where GDU (1/2) DB denotes specific database.	Load the correct database
GDU KEYSTK	GDU <KEY> key is stuck. The GDU has detected the <KEY> key as stuck, where <KEY> denotes a specific key.	

Alert Text	Cause	Solution
GDU (1/2) VOLTAGE	GDU supply voltage is below 12 VDC.	Increase the voltage above 12VDC.  This alert is normal in 14V aircraft that are running on the battery only and should clear once the aircraft engine is started and the alternator/generator is carrying the load.
GEO LIMITS	Location is too far north/south for GRS 77H magnetic compass.	
GPS(1/2)	Communication with GPS1 or GPS2 lost.	Ensure GPS (1/2) is turned on Verify RS-232 wiring from the GPS to the GDU 620.
GPS(1/2) PPS Failure	This alert will display if the PPS signal has not been received in more than 5 sec. If the unit is configured for dual GPSs then the side will be specified in the error.	Ensure GPS (1/2) is turned on Verify 1PPS wiring from the GPS to the GDU 620.
GSR FAIL	GSR has failed	Check if GSR power discrete is on and GSR status discrete is off at the same time Verify wiring between the GDU and the GSR Check power and ground wires on GSR 56
HDG FAULT	AHRS magnetometer fault has occurred.	GRS 77H not receiving information from GMU 44. Verify wiring to GMU 44.
HDG LOST	Heading from the GRS77/ GMU 44 is not valid.	Caused by a local magnetic anomaly. No action required.
<LRU> SERVICE	Specific LRU should be serviced, where <LRU> denotes specific LRU.	Return indicated LRU to Garmin for service.
MANIFEST	GDU has received product data for an LRU that should have a manifest entry, but is not in the manifest.  The LRU software P/N and version number in the manifest does not match the values being reported by that LRU.	Ensure the manifest is properly configured.  Update the LRU software to match the manifest Update the manifest to match the LRU software
NAV(1/2)	No navigation receiver data from Nav 1 or Nav 2.	
REGISTER GFDS	Data services are inoperative, register w/ GFDS.	Registered the GSR 56 with Garmin Flight Data Services to receive weather data.
SIMULATOR	The simulator mode is active.	Ensure P6202-36 is not grounded.
SVT DISABLED - Out of available terrain region.	Location is beyond region covered by terrain database.	
SVT DISABLED - Terrain DB resolution too low.	A 30 arc-second terrain database is being used.	Update the Supplemental Data card with the 9 arc-second terrain database.

Alert Text	Cause	Solution
SW MISMATCH	GDU software version strings do not match.	Verify the correct SW is loaded
TERRAIN DSP	Terrain, Airport Terrain, or Obstacle database error.	Update/Reload database
TRAFFIC FAIL	The traffic information system has failed.	The GDU 620 is not receiving traffic information from the traffic sensor. Verify wiring between GDU 620 and traffic sensor.
		The GDU 620 is receiving information from the traffic sensor, but the information is indicating that the traffic sensor has failed. Troubleshoot traffic system.
TRAFFIC STDBY	The traffic information system is in Standby mode while the aircraft is In-Air.	
TRK LOST	GPS1 TRK lost. HSI defaulted to GPS2 TRK.	

## 2.7 Removal and Installation Information

If any G500H LRUs are removed and reinstalled or a new unit is installed, verify that the LRU unit power-up self-test sequence is successfully completed and no failure messages are annunciated on the GDU 620 display.

If any work has been done on the rotorcraft that could affect the system wiring or any interconnected equipment, verify the G500H system unit power-up self-test sequence is successfully completed and no failure messages are annunciated on the GDU 620 display.

Whenever removing or installing units, remove power from the LRU by removing aircraft power or opening the LRU circuit breaker.

### 2.7.1 GDU™ 620 Unit

#### 2.7.1.1 Removal

1. Remove the six mounting screws from the bezel of the GDU 620.
2. Pull the GDU 620 far enough out from the instrument panel to access the three rear connectors.
3. Disconnect the rear connectors.
4. Remove the GDU 620.

#### 2.7.1.2 Installation

1. Visually inspect the connectors to ensure that there are no bent or damaged pins. Repair any damage.
2. Connect the rear connectors, ensuring that each slidlock is secured on both sides.
3. Set the GDU 620 into place.
4. Install the six mounting screws into the bezel of the GDU 620.

## NOTE



The installation configuration settings are stored in the configuration module and will be retained when the GDU 620 is replaced with a new unit. User settings, such as map orientation preferences, are stored internally and will be lost when the GDU 620 is replaced with a new unit.

### Original GDU 620 is Reinstalled

If the original GDU 620 is reinstalled, then no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair process. No configuration is required.

### New, Repaired or Exchange GDU 620 is Installed

If a new, repaired, or exchange GDU 620 unit is installed, then software must be loaded. No configuration is required.

## NOTE



Upon first power-up after installing a new GDU 620, it is normal to see a series of “LOADING...” messages appear on the screen. These messages indicate that the GDU 620 is updating its configuration settings from the configuration module.

Refer to Section 5 of the G500H STC Installation Manual for the GDU 620 Software Loading procedure (5.4.1), followed by the Manifest Configuration (5.5.6) and the Configuration Module Update (5.5.16).

### GDU 620 Configuration Module is Replaced

If the GDU 620 Configuration Module is replaced, the GDU 620 will update the configuration module from its internally-stored settings when the UPDT CFG soft key is pressed. If the GDU 620 is replaced at the same time as the Configuration Module, then the System Setup will need to be performed per Section 5.5 of the G500H Installation Manual.

### 2.7.1.3 Return to Service

After removing and reinstalling the GDU 620 per the instructions above, a return-to-service check should be performed.

1. Power up the GDU 620 and all interfaced systems in normal mode.
2. Verify that there are no red-Xs and that no alerts are present. If red Xs or alerts are present, troubleshoot using Section 2.6 of this ICA.

### 2.7.2 GRS 77H Unit

#### 2.7.2.1 Removal

1. Disconnect the GRS 77H connector.

## NOTE



Some metal structures of the GRS 77 may become magnetized if closely exposed to permanent magnets. While this will not affect the GRS 77 itself, it may slightly affect nearby magnetic instruments in the area (e.g. whiskey compass). Ordinary use of magnetic screwdrivers to tighten GRS 77 fasteners will not cause problems, but non-magnetic screw drivers are preferred.

2. Loosen the four Phillips thumbscrews with a screwdriver.
3. Gently lift the GRS 77H from the mounting plate (if the supports for the mounting plate are removed, the GRS 77H must be recalibrated)

#### 2.7.2.2 Installation

1. Place the GRS 77H on the mounting plate, ensuring the orientation is correct.
2. Fasten the unit to the plate using the Phillips thumbscrews. Recommended torque is 22-25 inch pounds.
3. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
4. Connect the connector to the GRS 77H, ensuring that each slidelock is secured on both sides.

#### Original GRS 77H is Reinstalled

If the original GRS 77H is reinstalled, then no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Reference Table 2-3 to determine whether recalibration is required.

#### New, Repaired, or Exchange GRS 77H is Installed

If a new, repaired, or exchange GRS 77H unit is installed then software must be loaded per Section 5.4.2 of the G500H STC Installation Manual. Reference Table 2-3 to determine whether recalibration is required.

#### GRS 77H Configuration Module is Replaced

If the GRS 77H Configuration Module is replaced, the GRS 77H must be re-calibrated. Reference Table 2-3.

#### 2.7.2.3 Return to Service

After removing and reinstalling the GRS 77H, the following return-to-service checks should be performed.

1. Power up the G500H system with the GDU 620 in normal mode.
2. Verify that the GDU displays valid heading and attitude within approximately one minute. Note that heading can remain invalid if the magnetometer is near a large metal structure such as a hangar wall or if the magnetometer is close to a large ground power cart.
3. Verify that no unexpected alerts are present. If alerts are present, troubleshoot using Section 2.6 of this ICA.



**Table 2-3. GRS 77H Calibration Criteria**

Condition	Calibrations Required	
	GRS 77H Pitch/Roll Offset See Section 5 of the G500H STC Installation Manual	GRS/GMU Magnetic Calibration See Section 5 of the G500H STC Installation Manual
GRS 77H AHRS was removed and/or replaced. The mounting tray was NOT removed and the mounting tray bolts were NOT loosened.	None Required.	
GRS 77H AHRS was removed and/or replaced. The mounting tray WAS removed and/or mounting tray bolts WERE loosened.	X	X
GRS 77H AHRS Configuration Module was replaced.	X	X

2.7.3 GMU 44 Unit

2.7.3.1 Removal

1. Gain access to the GMU 44 magnetometer.

**NOTE**



Some metal structures of the GMU 44 may become magnetized if closely exposed to permanent magnets; therefore it is recommended to use non-magnetic screwdrivers near the GMU 44 to prevent magnetizing any nearby metal structures.

2. Unscrew the three screws that hold the GMU 44 to its mounting rack.
3. Carefully lift the GMU 44 from the rack.
4. Disconnect the wiring harness.

2.7.3.2 Installation

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Connect the wiring harness to the GMU 44.
3. Lower the GMU 44 into the rack and secure the plate with the three Phillips screws.

Original GMU 44 is Reinstalled

If the original GMU 44 was reinstalled, then software loading is not required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Recalibration is required only if the mount for the magnetometer was changed. If the magnetometer mount was changed, refer to Section 5.6.2 of the G500H STC Installation Manual for the GRS 77H/GMU 44 Magnetic Calibration.

New, Repaired or Exchange GMU 44 is Installed

If a new, repaired, or exchange GMU 44 unit is installed, then software must be loaded and the GRS 77H/GMU 44 Magnetic Calibration must be performed. Refer to Section 5 of the G500H STC Installation Manual for instructions on software loading (5.4.2) and Magnetic Calibration (5.6.2).

## Return to Service

After removing and reinstalling the GMU 44, the following return-to-service checks should be performed.

1. Power up the G500H system with the GDU 620 in normal mode.
2. Verify that the GDU displays valid heading within approximately one minute. Note that heading can remain invalid if the magnetometer is near a large metal structure such as a hangar wall or if the magnetometer is close to a large ground power cart.
3. Verify that no unexpected alerts are present. If alerts are present, troubleshoot using Section 2.6 of this ICA.

### 2.7.4 GDC 74H Unit

#### 2.7.4.1 Removal

1. Disconnect the pitot/static plumbing from the rear of the unit. Reference G500H Installation Manual Section 2.5.3 and 3.2.6
2. Disconnect the single connector.
3. Remove the two (2) screws on the mounting plate near the pitot/static ports. Loosen the other two (2) screws.
4. Carefully remove the unit from its mounting location.

#### 2.7.4.2 Installation

1. Place the unit in the mounting tray.
2. Position the unit and fasten using the four (4) screws.
3. Connect the pitot/static plumbing. Reference G500H Installation Manual Section 2.5.3 and 3.2.6
4. Inspect the connector and pins for damage. Repair any damage.
5. Connect the connector to the unit, ensuring that each jackscrew is secured.

#### Original GDC 74H is Reinstalled

If the original GDC 74H is re-installed, then no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process.

#### New, Repaired or Exchange GDC 74H is Installed

If a new, repaired, or exchange GDC 74H unit is installed, then software must be loaded to the unit. Refer to Section 5.4.2 of the G500H STC Installation Manual for more information.

#### GDC 74H Configuration Module is Replaced

If the GDC 74H Configuration Module is replaced, the GDC 74H must be configured. Refer to Section 5.5.12 of the G500H STC Installation Manual

#### 2.7.4.3 Return to Service

After removing and reinstalling the GDC 74H, the following return-to-service checks must be performed.

1. Power up the G500H system with the GDU 620 in normal mode.
2. Verify that the GDU displays valid air data within approximately one minute.
3. Verify that no unexpected alerts are present. If alerts are present, troubleshoot using Section 2.6 of this ICA.
4. Perform a leak check of the pitot-static system and functional check in accordance with the G500H STC Installation Manual sections 3.2.6 and 5.8.2. Observe the airspeed, altitude, and vertical speed for proper operation.

## 2.8 Diagrams

Rotorcraft specific LRU locations and wire routing diagrams are contained in the Garmin Reference Publications listed in Section 2.1 of this document. Point to point wiring diagrams are in Appendix D of the G500H STC Installation Manual. Refer to the G500H Post-Installation Checkout Log retained in the rotorcraft permanent records for a list of the interfaced equipment and port configurations.

## 2.9 Special Inspection Requirements

### 2.9.1 Post-Lightning Strike Inspection

In the event of a suspected or actual lightning strike to the aircraft, the GTP 59 OAT Probe and its associated installation shall be inspected.

The probe and the surrounding installation shall be inspected to ensure that there is no structural damage around the areas where lightning may have attached. If there is visible sign of damage to the probe then it must be replaced.

Verify that OAT is displayed on the GDU 620 PFD normally.

## 2.10 Application of Protective Treatments

Apply Flat Black Imron 373-P-29950 Polyurthane Enamel from Dupont to the glareshield and instrument panel as required.

Apply any one of the following corrosion protection to the metal brackets as needed:

- Epoxy Primer, Chemical and Solvent Resistant Per MIL-P-23377
- Alkyd Base One Component Primer, Per Federal Specification TT-P-1757
- Chemical Conversion Coating Per MIL-DTL-81706

## 2.11 Data Relative to Structural Fasteners

Refer to the following table for data on the location, type, and torque values for structural fasteners.

Location  (see section 2.2)	FASTENER TYPE AND TORQUE			
	6-32 Screw  12-15 inch-pounds	8-32 Screw  12-15 inch-pounds	10-32 Screw  22-25 inch-pounds	NUT, 5/16", HEX, SKIRT  100±20 inch-pounds
Instrument Panel, Instruments	X	X		
GDU 620	X			
GRS 77H	X		X	
GDC 74H		X	X	
GMU 44	X	X		
GTP 59				X

## **2.12 Special Tools**

For electrical bonding testing, a milliohm meter is required.

## **2.13 Additional Instructions**

None

## **2.14 Overhaul Period**

The system does not require overhaul at a specific time period. Power on self-test and continuous BIT will monitor the health of the G500H system. If any LRU indicates an internal failure, the unit may be removed and replaced. See the troubleshooting section contained in the G500H STC Installation Manual, listed under reference documentation in paragraph 2.1 of this document.

## **2.15 ICA Revision and Distribution**

To revise this ICA, a letter must be submitted to the ACO along with the revised ICA. The ACO will obtain AEG acceptance, and approve any revision to the Airworthiness Limitations in Section 3. After FAA acceptance/approval, Garmin will release the revised ICA for customer use, and provide any required notification of the revision.

The latest revision of this document will be available through any Garmin dealer or from Garmin customer assistance. A Garmin Service Bulletin, describing ICA revision, will be sent to dealers if revision is determined to be significant.

## **2.16 Assistance**

FAA Flight Standards Inspectors or the certificate holder's PMI have the required resources to respond to questions regarding this ICA. In addition, the customer may refer questions regarding this equipment and its installation to the manufacturer, Garmin. Garmin customer assistance may be contacted during normal business hours via telephone 913-397-8200 or email from the Garmin web site at [www.garmin.com](http://www.garmin.com).

## **2.17 Implementation and Record Keeping**

Modification of an rotorcraft by this Supplemental Type Certificate obligates the rotorcraft operator to include the maintenance information provided by this document in the operator's rotorcraft maintenance manual and/or the operator's rotorcraft scheduled maintenance program.

## **3. AIRWORTHINESS LIMITATIONS**

There are no additional Airworthiness Limitations as defined in 14 CFR § 27, Appendix A. A27.4 that result from this modification. The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.