GTN 625/635/650/725/750 and GMA 35
Instructions for Continued Airworthiness
as installed in

_____

(Make and Model Airplane)

Reg. No._____ S/N_____

Dwg. Number:
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Record of Revision

Rev.	Date	Description of Change
1	03/04/2011	Initial Release

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Purpose

This document is designed for use by the installing agency of the Garmin GTN 6XX/7XX Navigators and GMA 35 audio panel as Instructions for Continued Airworthiness in response to 14 CFR § 23.1529, and Part 23 Appendix G. This ICA includes information required by the operator to adequately maintain the Garmin GTN 6XX and 7XX Navigator and GMA 35 system installed under Approved Model List (AML) STC.

1.2 Scope

This document identifies the Instructions for Continued Airworthiness for the modification of the aircraft for installation of the Garmin GTN 6XX/7XX and GMA 35 installed under Approved Model List (AML) STC.

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 GTN 6XX/7XX and GMA 35 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) **AEG:** Aircraft Evaluation Group
3) **BIT:** Built-In Test
4) **COM:** Communications
5) **CFR:** Code of Federal Regulations
6) **FAA:** Federal Aviation Administration
7) **GPS:** Global Positioning System
8) **ICA:** Instructions for Continued Airworthiness
9) **IFR:** Instrument Flight Rules
10) **LED:** Light Emitting Diode
11) **LRU:** Line Replaceable Unit
12) **NAV:** Navigation
13) **MFD:** Multi-Function Display
14) **PMI:** Principal Maintenance Inspector
15) **POI:** Principal Operations Inspector
16) **STC:** Supplemental Type Certificate
17) **TSO:** Technical Standard Order
18) **TVS:** Transient Voltage Suppressor
19) **WAAS:** Wide Area Augmentation System

1.6 Terminology

Except where specifically noted, references made to the 'GTN' will equally apply to the GTN 625/635/650/725/750. Also, 'GTN 7XX' refers specifically to the GTN 725 and GTN 750, and 'GTN 6XX' refers specifically to the GTN 625, GTN 635, and GTN 650.

Throughout this document references will be made to 'metallic' and 'non-metallic' aircraft. For the purposes of this document, metal aircraft will be those with an aluminum skin. Non-metal aircraft will refer to all other aircraft. (e.g., aircraft with composite skin, or aircraft with tube and fabric construction.)

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 aircraft by installation of the Garmin GTN 6XX/7XX Navigators.
Applicability:	Applies to aircraft altered by installation of the Garmin GTN 6XX/7XX and GMA 35.
Definition of Abbreviations:	See Sections 1.5 and Section 1.6
Precautions:	None
Units of measurement:	None
Referenced publications *: * or later FAA Approved revisions	Garmin 190-01007-A3 Rev. 2, *"GTN 6XX/7XX AML STC Installation Manual"* Garmin 190-01007-03 Rev. A, *"GTN 725/750 Pilot's Guide"* Garmin 190-01004-03 Rev. A, *"GTN 625/635/650 Pilot's Guide"*
Retention:	This document, or the information contained within, will be included in the aircraft's permanent records.

The GTN 6XX/7XX AML STC Installation Manual (190-01007-A3) is referenced extensively throughout this document. To improve readability, references to the installation manual are abbreviated as GTN-IM.

2.2 Description of Alteration

The GTN navigators are a family of aviation panel mounted retro-fit products. GTN units utilize a touchscreen as the primary control interface. Traditional knobs and buttons have been minimized to simplify access to the color multi-function display (MFD), NAV and COM transceiver, and GPS/WAAS navigator functions.

The GTN 625/635/650 Navigators (Garmin Touch Navigation) are a new family of 2.65-inch tall aviation panel mounted retro-fit products that are intended to supersede the Garmin 400W Series Navigators. The GTN 6XX product family consists of the GTN 625 GPS/WAAS navigator, the GTN 635 GPS/WAAS/COM navigator, and the GTN 650 GPS/WAAS/NAV/COM navigator.

The GTN 725/750 Navigators (Garmin Touch Navigation) are a new family of 6.00-inch tall aviation panel mounted retro-fit products that are intended to supersede the Garmin 500W Series Navigators.

The GTN 7XX product family consists of the GTN 725 GPS/WAAS navigator, and the GTN 750 GPS/WAAS/NAV/COM navigator.

The optional GMA 35 is an audio panel with a Marker Beacon receiver. The GMA 35 in conjunction with a GTN 7XX provide full audio panel capability, for communication and navigation radios, headsets, microphones, and speakers. The GMA 35 is mounted in a notch behind the GTN 7XX to free up mounting space in the flight deck instrument panel. Installation of the GTN, specific for the aircraft installation, is documented in GTN-IM.

2.3 Control, Operating, and Testing Information

See the *GTN 6XX Pilot's guide* and the *GTN 7XX and GMA 35 Pilot's Guide* for system operating information. See section 2.1 for document part numbers. See GTN-IM for a system description and system limitations.

See GTN-IM, Section 5 for checkout and self-test information. See GTN-IM, Section 5.10 for general ground checks and system test procedures.

2.4 Servicing Information

None. In the event of system failure, troubleshoot the GTN 6XX/7XX and GMA 35 in accordance with Section 2.6 Troubleshooting Information below.

2.5 Periodic Maintenance

The GTN and GMA 35 are designed to detect internal failures. A thorough self-test is executed automatically upon application of power to the units, and built-in tests (BIT) are continuously executed. Detected errors are indicated as failure annunciations, system messages, or a combination of the two.

Operation of the GTN 6XX/7XX and GMA 35 is not permitted unless the inspections described in this section have been completed within time intervals prescribed in Table 1 below. All antennas connected to the GTN should be maintained in accordance with appropriate inspection data for the antenna installation.

Table 1 - Maintenance Intervals

Item	Description/Procedure	Interval
Equipment Removal & Replacement	Removal and replacement of GTN or GMA units Removal and replacement instructions are contained in Section 2.7 of this document and in GTN-IM, Section 3.4.1.	**On Condition**
Cleaning the Front Panel	The front bezel, keypad, and display can be cleaned with a soft cotton cloth dampened with clean water. DO NOT use any chemical-cleaning agents. Care should be taken to avoid scratching the surface of the display.	**On Condition**
Display Backlight	The display backlight LEDs are rated by the manufacturer as having a usable life of at least 36,000 hours. This life may be more or less than the rated time depending on the operating conditions of the GTN. Over time, the backlight lamp may dim and the display may not perform as well in direct sunlight conditions. The user must determine by observation when the display brightness is not suitable for its intended use. Contact the Garmin factory repair station when the backlight lamp requires service.	**On Condition**

Item	Description/Procedure	Interval
Battery Replacement	The GTN has an internal keep-alive battery that will last about 10 years. The battery is used for GPS system information. Regular planned replacement is not necessary. The GTN will display a 'low battery' message when replacement is required. Once the low battery message is displayed, the battery should be replaced within 1 to 2 months. If the battery is not replaced and becomes totally discharged, the GTN unit will remain fully operational, but the GPS signal acquisition time may be increased. There is no loss of function or accuracy of the GTN unit with a dead battery. The battery must be replaced by the Garmin factory repair station or factory authorized repair station.	**On Condition**
Equipment Visual Check	Conduct a visual check of the GTN unit and its wire harness to ensure continued installation integrity. 1. Inspect the GTN unit(s) for security of attachment, including visual inspection of mounting racks and other supporting structure attaching the racks to aircraft instrument panel. Verify the countersunk fastener heads are in full contact with unit mounting rack holes. Re-torque to 8.5-9.5 in-lbs if required. 2. Inspect for signs of corrosion. 3. Inspect all knobs and buttons for legibility. 4. Inspect condition of wiring, shield terminations, routing, and attachment/clamping. 5. Check the fan intake slots on the sides and bottom of the GTN unit's bezel for dust, dirt, or obstructions. Clean as needed. 6. Conduct a visual check of the GPS/WAAS antenna cable overbraid in accordance with Section 8.2.1.3 of the GTN-IM. 7. Conduct a visual check of the WXR cable overbraid in accordance with Section 8.2.1.4 of the GTN-IM If installed.	**12 Calendar Months**
Test-TVS Lightning Protection	The GTN #1 main power input will have a TVS located at the LRU, for IFR non-metallic aircraft only. The TVS must be checked or replaced in accordance with section 8.2.1 of the GTN-IM.	**24 Calendar Months**
Test-Lightning Protection	The GTN #1 main power input and NAV power input will have a TVS located at the LRU, for IFR non-metallic aircraft only. The TVS must be replaced in accordance with section 8.2.1 of the GTN-IM. Conduct a visual check of the GPS/WAAS antenna cable overbraid in accordance with Section 8.2.1.3 of the GTN-IM. Conduct a visual check of the WXR cable overbraid in accordance with Section 8.2.1.4 of the GTN-IM if installed.	**After a suspected or actual lightning strike**

Item	Description/Procedure	Interval
Test-Bonding Check (IFR-certified aircraft only)	Perform an electrical bonding check: 1. Perform electrical bond check between the GTN and nearby exposed portion of the aircraft metallic structure and verify that it is less than 10 milliohms. 2. Remove GTN unit from mounting rack. 3. Measure the resistance between the mounting rack and nearby exposed portion of aircraft metallic structure and verify it is less than 10 milliohms. 4. Reinstall the GTN unit in the mounting rack. In the event of bonding test failure, remove the GTN rack and clean the attachment points at both the GTN rack and the aircraft structure per section 2.5.4 of the GTN-IM and reattach the rack to the rails in the panel. Re-verify the resistance between the mounting rack and nearby exposed portion of aircraft metallic structure and ensure it is less than 2.5 milliohms.	**Every 2000 flight hours or ten (10) years, whichever is first**

2.6 Troubleshooting Information

If error indications are displayed on the GTN 6XX or 7XX, consult the GTN-IM, Section 6, Troubleshooting. Refer to the GTN System Configuration and Checkout Log retained in the aircraft permanent records for a list of the interfaced equipment and system configuration data (example log provided in GTN-IM).

2.7 Removal and Replacement Information

For GTN removal and replacement instructions, refer to GTN-IM Section 3.4.1.1 and Section 3.4.1.2. For GMA 35 removal and replacement instructions, refer to GTN-IM Section 3.4.1.3 and Section 3.4.1.4.

If any GTN LRUs are removed and reinstalled, verify that the LRU unit power-up self-test sequence is successfully completed and no failure messages are annunciated.

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

Refer to Appendix A of this document or the GTN 6XX/7XX System Configuration and Checkout Log retained in the aircraft permanent records for GTN equipment location.

Refer to the GTN-IM for particular LRU removal/installation procedures and special handling precautions.

2.8 Diagrams

Aircraft specific LRU locations and wire routing diagram are contained in Appendix A of this document.

GTN-IM Appendix B provides diagrams showing sample installation for LRU locations. Appendix E provides point-to-point wiring diagrams for the GTN and interfaced equipment. Appendix F provides point-to-point wiring diagrams for the GMA 35 and interfaced equipment.

Refer to the GTN System Configuration and Checkout Log retained in the aircraft permanent records for a list of the interfaced equipment and unit configuration data (example log provided in GTN-IM).

2.9 Special Inspection Requirements

2.9.1 Lightning Protection Checks

In the event of a suspected or actual lightning strike to the aircraft, the checks outlined in Table 1 for Test-Lightning Protection must be completed.

2.10 Application of Protective Treatments

None. N/A.

2.11 Data Relative to Structural Fasteners

None. N/A.

2.12 Special Tools

For electrical bonding testing, a milli-ohm meter is required.

2.13 Additional Instructions

Refer to GTN-IM Section 3.7 for Electrical Load information applicable to the GTN and GMA 35.

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 GTN system. If any LRU indicates an internal failure, the unit may be removed and replaced. See GTN-IM, Section 6 for Troubleshooting information.

2.15 ICA Revision and Distribution

To revise this ICA, Garmin will follow the Garmin ODA procedures manual SOP-055/ACP-016 for Instructions for Continued Airworthiness. The latest revision of this ICA document is available on the Garmin website (www.garmin.com). A Garmin Service Bulletin describing ICA revision will be sent to Garmin dealers if a revision is determined to be significant.

2.16 Assistance

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.

2.17 Implementation and Record Keeping

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

3. AIRWORTHINESS LIMITATIONS SECTION

There are no additional Airworthiness Limitations as defined in 14 CFR § 23, Appendix G. G23.4 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.

APPENDIX A - EQUIPMENT LOCATION AND WIRE ROUTING

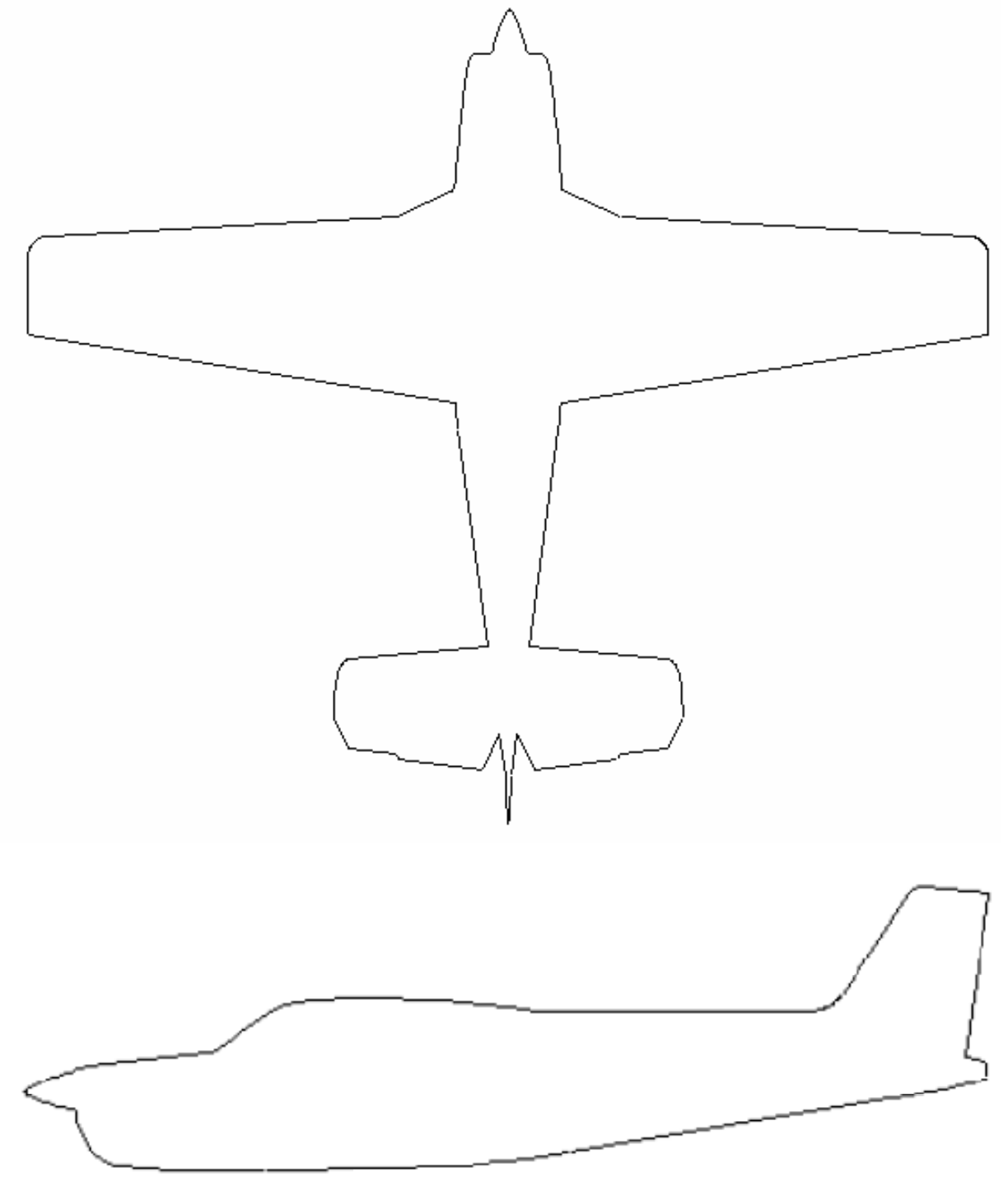
A.1 LRU LOCATIONS

The table below describes the locations of the GTN 6XX/7XX and GMA 35. Check all that apply.

LRU	LRU included in this installation?	Description of Location
GTN 625 #1	☐ Yes ☐ No	
GTN 625 #2	☐ Yes ☐ No	
GTN 635 #1	☐ Yes ☐ No	
GTN 635 #2	☐ Yes ☐ No	
GTN 650 #1	☐ Yes ☐ No	
GTN 650 #2	☐ Yes ☐ No	
GTN 725 #1	☐ Yes ☐ No	
GTN 725 #2	☐ Yes ☐ No	
GTN 750 #1	☐ Yes ☐ No	
GTN 750 #2	☐ Yes ☐ No	
GMA 35	☐ Yes ☐ No	

A.2 WIRE ROUTING – SINGLE-ENGINE

The following diagram depicts approximate location of all LRUs and antenna(s) along with the wire routing for the GTN 6XX/7XX and GMA 35 throughout the aircraft structure for a single-engine aircraft:



A.3 WIRE ROUTING – TWIN-ENGINE

The following diagram depicts approximate location of all LRUs and antenna(s) along with the wire routing for the GTN 6XX/7XX and GMA 35 throughout the aircraft structure for a twin-engine aircraft: