GARMIN

GARMIN G1000 NXi

System Maintenance Manual

King Air 300 Series

Includes Instructions for Continued Airworthiness
for STC SA01535WI-D

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Garmin International, Inc.
1200 E. 151st Street
Olathe, KS 66062 USA
Telephone: 913.397.8200
www.garmin.com

Garmin (Europe) Ltd.
Liberty House, Bulls Copse Road
Hounsdown Business Park
Southampton, SO40 9RB, UK
Phone: +44 (0) 23 8052 4000
Fax: +44 (0) 23 8052 4004

Garmin AT, Inc.
2345 Turner Rd., SE
Salem, OR 97302 USA
Telephone: 503.581.8101

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DOCUMENT PAGINATION

Section	Pagination
Table of Contents	i – ix
Section 1	1 – 6
Section 2	7 – 44
Section 3	45 – 94
Section 4	95 – 137
Section 5	138 – 227
Section 6	228 – 257
Section 7	258 – 339
Section 8	340 – 371
Section 9	372 - 389

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WARNING

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CAUTION

The GDU lens is coated with a special anti-reflective coating that is very sensitive to skin oils, waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

IMPORTANT

All G1000 screen shots used in this document are current at the time of publication. Screen shots are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.

TABLE OF CONTENTS

PARAGRAPH **PAGE**

LIST OF ILLUSTRATIONS

FIGURE **PAGE**

LIST OF TABLES

1. INTRODUCTION

1.1 Content, Scope, Purpose

This document provides Instructions for Continued Airworthiness (ICA) for the NXi configuration of the Garmin G1000 Integrated Flight Deck including the GFC700 Automatic Flight Control System (AFCS) as installed in the Beechcraft King Air 300 Series, under STC SA01535WI-D. 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 and GFC700.

Throughout this document, the GFC 700 autopilot system is included in the G1000NXi system description and is identified separately only when needed.

References to “300 Series” throughout this document include 300, 300C, B300, B300C, B300GT, and B300CGT models. Items in this document that are aircraft model(s) specific will identify the model(s) instead of “300 Series”.

References to “Beechcraft” throughout this document include other Manufacturer names including Textron Aviation, Hawker Beechcraft, and Raytheon.

1.1.1 Applicability

This document applies to all King Air Model 300 Series aircraft equipped with the G1000NXi system. All G1000NXi King Air 300 Series airplanes are configured per General Arrangement drawing 005-00629-N2 Rev 1 or subsequent.

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.

Aircraft modified by this STC have been shown to qualify for operation in Reduced Vertical Separation Minimum (RVSM) airspace as a group aircraft in accordance with Title 14 of the Code of Federal Regulations (14 CFR) Part 91, Appendix G, “Operations in Reduced Vertical Separation Minimum (RVSM) Airspace”, and Federal Aviation Administration (FAA) Document No. 91-RVSM, Change 2 dated 2/10/2004, “Guidance Material On the Approval Of Operators/Aircraft For RVSM Operations”. This qualification is based on analysis of the configuration and performance of the air data, automatic altitude control, altitude alerting, and altitude reporting systems. These systems must be maintained in accordance with the inspections and tests specified in this document and other current maintenance practices to guarantee continued compliance to RVSM specifications.

1.1.2 Identifying an STC Configuration

The General Arrangement drawing lists the G1000 System Software Version numbers approved for this STC. This section shows where to find the installed software version and airframe type in the G1000 system for service if the technician is unsure of what G1000 software and configuration is installed.

1. Place the G1000 system in configuration mode (reference Section 3.1 for instructions).
2. On PFD1, go to the MANIFEST CONFIGURATION page in the SYSTEM page group. In the SYSTEM field the G1000 system software part number and version number that is installed is shown.
3. Next go to the GDU page group and turn to the AIRFRAME CONFIGURATION page. The airframe series, engine, and prop types are listed in the AIRFRAME box.

EXAMPLE:

For a configuration that loaded "**King Air B300 PT6A-60A**", the AIRFRAME section will display:

SERIES:	B300
ENGINE:	PT6A-60A
PROP:	HARTZELL 4

1.2 Organization

The following outline briefly describes the organization of this manual:

Section 2: System Description
Provides a complete description of the type design change associated with installing the G1000 integrated cockpit system in the King Air 300 Series. An overview of the G1000 system interface is also provided.

Section 3: Software and Configuration
Provides software and configuration loading instructions for a complete system software load.

Section 4: Instructions for Continued Airworthiness
Provides maintenance instructions for continued airworthiness of the G1000 system.

Section 5: Troubleshooting
Provides troubleshooting information to aid in diagnosing and resolving potential problems with the G1000 system.

Section 6: Equipment Removal & Replacement
Gives instructions for the removal and replacement of G1000 equipment.

Section 7: Garmin G1000 LRU Replacement/Configuration & Testing
Gives instructions for loading software, configuring, and testing of G1000 equipment.

Section 8: Subsystem Functional Checks
Gives instructions for testing G1000 subsystems.

Section 9: G1000 System Return to Service Procedure
Specifies return-to-service procedures to be performed upon completion of maintenance of the G1000 system.

1.3 Definitions/Abbreviations

ADAHRS: Air Data and Attitude Heading Reference System
ADF: Automatic Direction Finder
ADS-B: Automatic Dependent Surveillance – Broadcast
ADTS: Air Data Test Set
AFCS: Automatic Flight Control System
AFM: Airplane Flight Manual
AFMS: Airplane Flight Manual Supplement
AHRS: Attitude Heading Reference System
CDU: Control Display Unit
CFR: Code of Federal Regulations
DME: Distance Measuring Equipment
EAU: Engine/Airframe Unit
ESP: Electronic Stability and Protection
FIS-B: Flight Information Services – Broadcast
FS: Flight Stream™
GPS: Global Positioning System
GPWS: Ground Proximity Warning System
HSDB: High-Speed Data Bus (Ethernet)
IAU: Integrated Avionics Unit
ICS: Inter-Com System
ITT: Interstage Turbine Temperature
LRU: Line Replaceable Unit
MFD: Multi-Function Display
MMC: Multi-Media Card
OAT: Outside Air Temperature
PED: Personal Electronic Device
PFD: Primary Flight Display
PVT: Position Velocity Time
RVSM: Reduced Vertical Separation Minimum
STBY: Standby
STBY ATT: Standby Attitude Indicator
STBY ALT: Standby Altimeter
STBY A/S: Standby Airspeed Indicator
STC: Supplemental Type Certificate
TAWS: Terrain Awareness & Warning System
TIS: Traffic Information Services
TIS-A: Traffic Information Services – A
TIS-B: Traffic Information Services – Broadcast
WAAS: Wide Area Augmentation System
VHF: Very High Frequency

1.4 Units of Measure

Unless otherwise stated, all units of measure are English units.

1.5 Publications

The following documents are required by this maintenance manual to perform maintenance. It is the responsibility of the owner / operator to ensure latest versions of these documents are used during operation, servicing or maintenance of the airplane.

Table 1-1, Required Documents

Part Number	Garmin Document
005-00629-00	Master Drawing List, Garmin G1000/GFC 700 in Beechcraft Model 300/B300 Series King Air
005-00629-N2	General Arrangement, G1000/GFC 700, King Air 300/B300 Series
005-00629-40	Main Instrument Panel Installation, King Air 300/B300
005-00629-41	Pedestal Re-Configuration, King Air 300/B300
005-00629-42	GWX Radar Install, King Air 300/B300
005-00629-43	Antenna Install, King Air 300/B300
005-00629-44	Electrical Equipment Install, Nose Bay, King Air 300/B300
005-00629-45	Roll Servo Install, King Air 300/B300
005-00629-46	Yaw & Pitch Servo Install, King Air 300/B300
005-00629-48	Pitch Trim Servo Install, King Air 300/B300
005-00629-49	Magnetometer Install, King Air 300/B300
005-00629-50	OAT Sensor Install, King Air 300/B300
005-00629-52	Optional Equipment Install, Tail Shelf, King Air 300/B300
005-00629-54	Wire Harness Installation, Nose, King Air 300/B300
005-00629-55	Wire Harness Installation, Cabin, King Air 300/B300
005-00629-56	Wire Harness Installation, Tail, King Air 300/B300
005-00629-57	Control Wheel Modification, King Air 300/B300
005-00629-59	Circuit Breaker Panel Modification, King Air 300/B300
005-00629-61	Lighting Modification, King Air 300/B300
005-W0226-00	Wiring Diagram, G1000/GFC 700, King Air 300/B300
	Beechcraft Documents
101-590097-9	Super King Air 300 and 300LW Maintenance Manual
101-590097-15	Super King Air 300 and 300LW Wiring Diagram Manual
101-590097-161	Super King Air 300 Airworthiness Limitations Manual
130-590031-7	Super King Air B300 and B300C Electrical Wiring Diagram Manual
130-590031-11	Super King Air B300 and B300C Maintenance Manual
130-590031-197	Super King Air B300 and B300C Avionics Wiring Diagram Manual (Proline 21)
130-590031-211	Super King Air B300 and B300C Airworthiness Limitations Manual
101-590097-13	King Air Series Component Maintenance Manual
98-39006	King Air Structural Inspection and Repair Manual
	Other Documents
85-292-1-1033	Signal Conditioner Installation Manual (Meggitt Sensing Systems)
9016182	Mid-Continent Instruments - Installation Manual and Operating Instructions, 4200 Series Attitude Indicator
TP-336	L-3 Avionics Systems – Emergency Power Supply Installation Manual, PS-835

The following publications are recommended to be on hand during the performance of maintenance activities.

Table 1-2, Reference Publications

Part Number	Garmin Document
190-00716-N2	Airplane Flight Manual Supplement, G1000/GFC 700, Textron Aviation King Air 300/300LW King Air
190-00716-N3	Airplane Flight Manual Supplement, G1000/GFC 700, Textron Aviation King Air B300/B300C King Air
190-02042-00	G1000 Cockpit Reference Guide for the King Air 300 Series
190-00355-04	GDL 69 Series SiriusXM Satellite Radio Activation Instructions
190-00303-10	GRS77/GMU44 Installation Manual
190-00303-72	GSA8X/GSM85(A) Installation Manual
190-00303-83	GSM 86 Servo Gear Box Installation Manual
190-00313-63	GMU 44 Installation Location Magnetic Interference Survey Procedure
190-00313-12	Circular Connector (and Configuration Module) Installation Instructions
190-01091-00	GRS 7800 Installation Manual
190-01277-00	GRA 5500 Installation Manual
190-01639-00	GSU 75 Installation Manual

Generic installation manuals for individual Garmin LRUs are also available through the ‘Dealer Resource Center’ section of the Garmin web site; refer to Section 1.6 for details.

1.6 Revision and Distribution

This document is required for maintaining the continued airworthiness of the aircraft. When this document is revised, every page will be revised to indicate current revision level.

Garmin Dealers may obtain the latest revision of this document on the Garmin Dealer Resource Center website.

Owner/operators may obtain the latest revision of this document from the https://fly.garmin.com/ Support page, or by contacting a Garmin dealer, contacting Garmin Product Support at 913-397-8200, toll free 866-739-5687, or using around the world contact information on https://fly.garmin.com/.

A Garmin Service Bulletin describing the revision to this document will be sent to Garmin dealers if the revision is determined to be significant.

2. SYSTEM DESCRIPTION

2.1 Equipment Descriptions

2.1.1 GFC 700 Operation

The GFC 700 is a fail-passive digital flight control system composed of multiple G1000 LRUs and servos. The following functions are provided by the GFC 700 in this installation:

- Flight Director
- Autopilot
- Pitch Trim
- Yaw Damper
- Electronic Stability and Protection (optional)

Flight Director:

The Flight Directors operate within the GIA 63Ws and use data from the G1000 system, including air, attitude and flight data, to calculate commands for display to the pilot and for the Autopilot. Flight director command bars and mode annunciations are sent to the PFDs through a high-speed Ethernet connection for display to the pilot and copilot. The flight directors operate independently of the autopilot and allow the pilot to hand-fly the command bars, if desired. The GMC 710 allows the pilot to switch the active director between flight director #1 (GIA1) and flight director #2 (GIA2).

Autopilot:

The autopilot operates within one high-speed GSA 80 servo (pitch trim), two GSA 80 servos (pitch and roll), and one GSA9000 servo (yaw). Flight director data is processed within the servos and turned into aircraft flight control surface commands. The autopilot cannot operate unless the flight director is engaged.

Manual Electric Trim:

When the autopilot is not engaged, the pitch trim servo may be used to provide a Manual Electric Pitch Trim (MEPT) function. This allows the pilot or co-pilot to adjust pitch trim from the PITCH TRIM switch on the control wheel in lieu of using the elevator trim wheel. Trim speeds are scheduled to provide easier control over a wide speed or configuration range. The PITCH TRIM switch is split into two halves. The left half arms MEPT. The right half controls direction. Both halves must be actuated at the same time to command the pitch trim servo to operate. If only one half of the PITCH TRIM switch is actuated for more than 3 seconds, a red PTRM message will appear on the PFDs.

Yaw Damper:

The yaw damper reduces Dutch roll tendencies and coordinates turns. It can operate independently of the autopilot and may be used during normal hand-flight maneuvers.

Electronic Stability and Protection:

Electronic Stability and Protection (ESP) is an optional function that is intended to assist the pilot in maintaining the airplane in a safe flight condition within the aircraft flight envelope. This envelope is defined by pitch, roll, and airspeed. This feature is only active when in flight and the autopilot is off.

Underspeed Protection:

Underspeed Protection (USP) is available when the optional ESP system is installed and the autopilot is on. It is designed to discourage aircraft operation below minimum established airspeeds. When the aircraft decelerates to stall warning, the autopilot will provide input causing the aircraft to pitch down and wings to level. The pitch down force will continue until the aircraft reaches a pitch attitude at which IAS equals the IAS at which stall warning turns off, plus two knots.

2.1.2 GDU 1050A PFD (2) & GDU 1550 MFD

Two Garmin GDU 1050A displays and one GDU 1550 display are installed in the King Air instrument panel. The GDU 1050A units, 10.4 inch LCD displays with 1024x768 resolution, are configured as PFD 1 and PFD 2; the GDU 1550 unit, a 15 inch LCD display with 1400 x1050 resolution, is configured as a MFD. All displays provide control and display of nearly all functions of the G1000 integrated cockpit system. The PFD displays are located on either side of the MFD, with the stand-by instruments located between the Pilot's PFD (PFD 1) and the MFD. GMA 1347D Audio Panels are located outboard of each PFD. Additionally, a GMC 710 AFCS Controller is located in the upper instrument panel, above the MFD, and a GCU 477 is installed in the pedestal. The GCU 477 provides the control interface for the MFD.

The GDU 1550 communicates with the GDU 1050A units, GDL 69A /GDL69 SXM datalink, GWX68 or GWX 70 weather radar, optional GDL59 Wi-Fi datalink and optional GTS 820/850 or GTS Processor traffic through a high-speed data bus (HSDB) Ethernet connection. The GDU 1550 communicates with the GCU 477 via RS-232 digital interface.

The GDU 1050A units communicate with each other and the GIA 63W units through a high-speed data bus (HSDB) Ethernet connection.

PFD 1 receives primary electrical power from No. 1 Triple Fed Bus and secondary electrical power from Center Bus. PFD 2 receives electrical power from No. 3 Triple Fed Bus. Electrical power to the MFD is provided by No. 2 Triple Fed Bus. The displays will power-up immediately with external or aircraft power or battery operation.

All displays are installed in the King Air panel using ¼-turn fasteners. Three CDU cooling fans are also installed behind the panel for PFD and MFD cooling.

Figure 2-1, Display Units

2.1.3 Flight Stream 510

The Flight Stream™ 510 (FS 510) is a Wi-Fi/Bluetooth capable multi-media card (MMC) installed the bottom SD slot of the MFD. It sends position, velocity, time, attitude, heading, FIS-B, TIS-B traffic, Sirius XM audio control, Sirius XM weather data, and flight plan transfer to mobile devices via Bluetooth. The FS 510 can also interface with a mobile device via Wi-Fi pairing for the purposes of updating databases used by the GDU(s). Bluetooth and Wi-Fi are mutually exclusive with only one interface functional at a time. Connecting via Wi-Fi requires a pilot-configurable Wi-Fi Protected Access WPA2 security password. By updating databases wirelessly, new databases may be transferred to the G1000 system without taking the data card out of the aircraft.

Figure 2-2, Flight Stream 510

2.1.4 GMA 1347D Audio Panel (2)

The Garmin GMA 1347D Audio Panel integrates NAV/COM digital audio, intercom system and marker beacon controls. The 300 Series installation includes two GMA 1347D panels. The GMA 1347D panels provide control of all cockpit intercom/mic systems as well as NAV/COM/ILS audio. The units also provide display reversion mode control through a large red button. Warning and alert audio received by the GMA 1347Ds is processed by and received from the GIA 63W Integrated Avionics Units (IAUs). Electrical power to GMA 1 is provided from No. 1 Triple Fed Bus. Electrical power to GMA 2 is provided from No. 3 Triple Fed Bus. GMA 1 and GMA 2 will be powered immediately with external or aircraft power or battery operation. The GMA 1347D units interface with the existing marker beacon antenna, as well as existing mic and phone jacks and oxygen mask mic.

Figure 2-3, Audio Panel

2.1.5 GMC 710 AFCS Control Unit

The dedicated AFCS controls on the GMC 710 allow crew control interface with the various GFC 700 autopilot / flight director functions. GMC 710 controls are discussed in detail in the G1000 King Air 300 Series Cockpit Reference Guide. The GMC 710 is powered by the No. 1 Triple Fed Bus.

Figure 2-4, AFCS Controller

2.1.6 GCU 477 FMS Control Unit

The GCU 477 functions as the primary control interface to the GDU 1550 MFD. The GCU 477 provides alphanumeric, softkey, and flight planning function keys used to interface with the G1000; the MFD does not possess any knobs or controls other than softkeys. The GCU 477 is powered by the No. 3 Triple Fed bus. The GCU 477 also provides the crew with the added functionality of tuning their receivers via the GCU as well as the PFD. Detailed instructions regarding the controls are discussed in the G1000 Cockpit Reference Guide.

Figure 2-5, FMS Controller

2.1.7 Transponder (2)

The Garmin GTX 33( ), GTX 3000, GTX 345R, or GTX 335R transponders communicate with the on-side GIA 63W through RS-232 digital interface.

This STC installation allows for installation of two GTX 33 transponders, two GTX 33D diversity transponders, one of each GTX 33/GTX 33D, two GTX 3000, two GTX 335R, one of each GTX 345R/335R, or one of each GTX 345R/33() transponders. Mixing between the GTX 33 and GTX 3000 transponders is not permissible. The GTX 345R provides ADS-B In capability.

The GTX 345R also communicates with the G1000 Avionics through an HSDB interface connected to PFD1. When installed, the GTX 345R communicates and controls the GTS Processor through the HSDB interface for all TAS/TCAS I operations. The GTX 345R mixes and coordinates the TAS/TCAS I targets with TIS-B targets to provide one coordinated traffic display to the crew. The GTX 345R does not support TCAS II. It also communicates with and controls A429 interface non-Garmin TAS/TCAS I traffic units if installed.

The GTX 345R can also provide PVT and Traffic data via a Bluetooth interface for cabin entertainment purposes.

For TCAS II operations, the GTX 3000 transponder communicates with the GTS Processor through ARINC 429 digital interfaces (transmit and receive). Only the GTX 3000 supports TCAS II operations with the GTS Processor.

The transponder units are mounted on the upper avionics equipment shelf in the tail section of the airplane. Power is provided by the No. 1 GTX from Triple Fed Avionics Bus. The No. 2 GTX is powered from Left Gen Avionics Bus. All GTX transponders (non-diversity and diversity) interface with a transponder antenna mounted to the bottom of the fuselage. Each GTX diversity transponder (GTX33D and GTX 3000) interfaces to a transponder antenna mounted to the top of the fuselage.

GTX 33()

GTX 3000

GTX 345R/GTX 335R

Figure 2-6, Transponders

2.1.8 GIA 63W Integrated Avionics Unit (2)

Two Garmin GIA 63W Integrated Avionics Units (IAUs) contain the VHF COM/NAV receivers, WAAS GPS receiver, Flight Director, and system integration microprocessors. The GIAs also serve as a communication interface to all other G1000 LRUs in the system. Each GIA 63W communicates directly with the on-side GDU 1050A display using a HSDB Ethernet connection. Both GIAs are located remotely in the nose equipment bay.

GIA 1 receives primary electrical power from No. 1 Triple Fed Bus and a secondary electrical power supply from Center Bus. GIA 2 receives electrical power from No. 3 Triple Fed Bus. The GIA 1's COM power supply (COM 1) is provided by No. 1 Triple Fed Bus. GIA 2's COM power supply (COM 2) is provided by No. 3 Triple Fed Bus. Therefore, both GIAs power-up immediately with external or aircraft power or battery operation.

Both GIA 63Ws interface to the following equipment:

- Existing VOR/LOC/Glideslope Antenna System
- Existing VHF COM #1 & #2 Antennas
- GA 36 and GA 37 GPS/WAAS Antennas
- GMA 1347D, #1 & #2
- GEA 71, #1 & #2
- GSA 80 and GSA 9000 Servo Motors
- GRS 77 or GRS 7800, #1 & #2 and a GDC 7400 #1 & # 2 } or GSU 75 #1 & #2 (ADAHRS)
- A429 Interface Traffic Systems (if installed)

The GIA 63W #1 interfaces to the following additional equipment:

- GTX 33( )#1, GTX 3000 #1, GTX 345R #1, or GTX 335R#1
- DME 42 (if installed)
- GSR 56 (if installed per stand-alone configuration)
- GDU 1050A #1

The GIA 63W #2 interfaces to the following additional equipment:

- GTX 33( )#2, GTX 3000 #2, or GTX 335R#2
- ADF (if installed)
- Stormscope (if installed)
- Radar Altimeter (if installed)
- GDU 1050A #2

Figure 2-7, GIA unit

2.1.9 GEA 71 Engine/Airframe Unit (2)

The Garmin GEA 71 Engine/Airframe Units provide engine/airframe data to the G1000 system. Data received from transducers/sensors is processed and sent to GIA 63Ws (via RS-485 digital interface), and subsequently to the GDU 1550 MFD. Engine parameters are normally displayed on the MFD. In the event of MFD failure, the engine parameters can be displayed on PFD 1 and/or PFD 2 using display reversion. The GEAs are located behind the instrument panel and is mounted in a vertical orientation. Electrical power to GEA 1 is provided from No. 1 Triple Fed Bus and to GEA 2 from No. 2 Triple Fed Bus. Both GEA units will power-up immediately with external or aircraft power or battery operation.

Each GEA interfaces to the following sensors for its onside engine:

- Oil Pressure Sensor
- Oil Temperature Sensor
- Fuel Flow Sensor (via onside Signal Conditioner)
- Turbine Speed Sensor (via onside Signal Conditioner)
- Propeller Speed Sensor (via onside Signal Conditioner)
- Torque Sensor
- Interstage Turbine Temperature (ITT) Sensor

Figure 2-8, GEA unit

2.1.10 GSU 75B ADAHRS (2)

The GSU 75 ADAHRS is a combined Air Data and AHRS system. The units are mounted in the nose equipment bay, contain advanced tilt sensors, accelerometers, rate sensors, static pressure sensors, and pitot pressure sensors. The GSU 75B(s) receive GPS data from onside and offside GIA 63W(s), and magnetic heading from the onside GMU 44 Magnetometer. The #2 GSU ADAHRS units can provide heading data to an approved third party TCAS II device through an ARINC 429 digital interface.

GSU 1 receives primary electrical power from the No. 1 Triple Fed Bus and a secondary power supply from the Center Bus. GSU 2 receives electrical power from the No. 3 Triple Fed Bus. The GSU(s) provide electrical power to the onside GMU 44 Magnetometer and the onside GTP 59 OAT probe.

GSU 1 and GSU 2 connect to existing pitot/static ports. Refer to Figure 2-28 for a schematic of the aircraft's pitot/static system and its connections to the G1000 STC installed equipment.

Each GSU 75B provides the following information via ARINC 429 busses to both the onside and offside GIA 63W(s) and PFD(s). GSU #1 also provides this information to the MFD.

- Aircraft altitude and airspeed
- Aircraft vertical speed, Mach and outside air temperature
- Aircraft heading, pitch and roll
- Aircraft yaw, pitch and roll rates
- Aircraft body-axis accelerations
- Rates of change of heading, pitch and roll
- Aircraft accelerations expressed in a local level frame of reference

GSU 75B(s) are installed in lieu of separate ADC (GDC 7400) and AHRS (GRS 77 or GRS 7800). For this STC, mixed ADAHRS and ADC/AHRS configurations are not permitted.

IMPORTANT!

Aircraft modified by this STC are eligible to be approved for RVSM operation. RVSM critical maintenance instructions contained in this document must be followed in order to guarantee performance within RVSM specifications.

Figure 2-9, GSU-75B ADAHRS with Connector and Mounting Tray

2.1.11 Digital Air Data Computer (2) (optional)

The optional Garmin GDC 7400 air data computers may be installed along with AHRS units in lieu of GSU 75B(s). The GDC(s) compile information from the pitot/static system and outside air temperature (OAT) sensors to provide digital air data computations to the G1000 system. The GDC communicates with the GIA 63W, GDU 1050A, and GRS 77/7800 using ARINC 429 digital interface. The unit is mounted behind the instrument panel. GDC 1 also communicates using ARINC 429 with the GDU 1550 MFD. GDC 1 receives primary electrical power from the Essential Bus and a secondary power supply from Dual Fed Bus No. 1. GDC 2 receives power from Dual Fed Bus No. 2. GDC 1 and GDC 2 connect to existing pitot/static ports. Refer to Figure 2-27 for a schematic of the aircraft's pitot/static system and its connections to the G1000 STC installed equipment.

IMPORTANT!

Aircraft modified by this STC are eligible to be approved for RVSM operation. RVSM critical maintenance instructions contained in this document must be followed in order to guarantee performance within RVSM specifications.

Figure 2-10, GDC 7400 Air Data Computer

2.1.12 OAT Probe (2)

The Garmin GTP 59 OAT Probes provide the GSU 75B or optional GDC 7400 with outside air temperature data. The OAT probes are mounted to the bottom of the fuselage at F.S. 113.5.

Figure 2-11, OAT probe

2.1.13 Attitude & Heading Reference System (2) (optional)

The optional Garmin GRS 77 AHRS or GRS 7800 AHRS units may be installed along with ADC units in lieu of GSU 75B(s). They provide attitude and heading information to the G1000 system. The units, mounted in the nose equipment bay, contain advanced tilt sensors, accelerometers, and rate sensors. The unit interfaces with the Garmin Air Data Computers and GMU44 Magnetometer and utilizes GPS signals from the GIA 63Ws. Actual attitude and heading information is sent using ARINC 429 digital interface to both GDU 1050As and GIA 63Ws. The GRS interfaces with and provides power to the GMU 44 Magnetometer. The GRS supplies attitude and heading information directly to the PFDs, MFD, and GIAs. The #2 GRS AHRS units can provide heading data to an approved third party TCAS II device through an ARINC 429 digital interface.

Additionally, the GRS 7800 AHRS provides heading with or without the aiding of the Garmin GMU 44 magnetometer. When operating without the aid of the magnetometer, the GRS 7800 is functionally similar to that of a Directional Gyro.

GRS 1 receives primary electrical power from No. 1 Triple Fed Bus and a secondary power supply from the Center Bus. GRS 2 receives electrical power from No. 3 Triple Fed Bus.

GRS 77 **GRS 7800**

Figure 2-12, AHRS

2.1.14 GMU 44 Magnetometer (2)

The GMU 44 provides horizontal and vertical magnetic field information to the GSU or GRS. This allows heading to be calculated and provides assistance during ADAHRS/AHRS alignment. The GMU 44 units are mounted in the tailcone or in the horizontal stabilizer. The 011-00870-20 GMU 44 units may only be installed in the horizontal stabilizer. The GMU 44 units were modified to account for low clearance installations and have a 90-degree pig-tail harness versus the straight harness on the 011-08870-10 GMU 44 units. The units receive power directly from the GSU/GRS units and communicate with the GSU/GRS units via an RS-485 digital interface.

GMU 44 -00 & -10 Unit **GMU 44 -20 Unit**

Figure 2-13, Magnetometer

2.1.15 GDL 69A/69A SXM Datalink

The GDL 69A/69A SXM provides the interface to the GWX 68 or GWX 70 weather radar and optional GDL59 Wi-Fi datalink by acting as a communications hub between the MFD and GWX 68/GWX 70 and GDL 59 via HSDB. The GDL 69A/69A SXM also provides SiriusXM Radio weather and music entertainment through means of a dedicated satellite data link. The GDL 69A/69A SXM is mounted behind the instrument panel. Power to the GDL 69A/69SXM is received from Right Gen Avionics Bus. The GDL 69A/69A SXM sends weather data through the HSDB bus to the MFD, where the data link interface is controlled. Digital audio is sent directly to the GMA 1347D Audio Panel.

Optional remote control (GRC 10) and remote control transceiver (GRT 10) may be interfaced with the GDL 69A/69A SXM. Installation of the GRC 10 and GRT 10 is in accordance with Garmin STC SA01487SE or other approved data. Refer to the approved Instructions for Continued Airworthiness information for these units. It is recommended that GRT 10 be powered from the Entertainment Bus.

Figure 2-14, GDL 69A/69A SXM Datalink

2.1.16 GDL 59 Wi-Fi Datalink (optional)

The GDL 59 provides a POTS (plain old telephone service) phone interface and a high speed data link between the aircraft systems and ground computers while the aircraft is on the ground using the IEEE 802.11g (“Wi-Fi”) protocol. The GDL 59 also provides the interface to an optional GSR 56 satellite datalink, which adds airborne low speed data link and voice communication capability. The GDL 59 unit interfaces to the Garmin Integrated Flight Deck via the GDL 69A or PFD 2 using HSDB. The GDL 59 is located in the aft cabin floor area, just forward of the cabin door or on the upper avionics equipment shelf in the tail section. The GDL 59 is powered from the Right Gen Avionics bus.

Figure 2-15, GDL 59 Wi-Fi Datalink

2.1.17 GSR 56 Satellite Receiver (optional)

The GSR 56 provides airborne low speed data link and voice communication capability to Garmin Integrated Flight Deck installations. The GSR 56 contains a transceiver that operates on the Iridium Satellite network. The GSR 56 interfaces directly to the GDL 59 via an RS-232 interface or may be installed as a stand-alone unit with an interface to GIA 1. The GSR 56 is located in the aft cabin floor area, just forward of the cabin door or on the upper avionics equipment shelf in the tail section. The GSR 56 is powered from the Avionics No. 2 bus. With relocation to the tail section, the GSR 56 has an internal heater powered from the Right Gen Avionics Bus.

Figure 2-16, GSR 56 Satellite Receiver

2.1.18 GSD 41 Data Concentrator (optional)

The GSD 41 interfaces to various airframe discrete outputs to support third party systems such as Flight Data Recorders. The GSD 41 is located on the avionics shelf in the tail area. The GSD 41 is powered from No. 2 Triple Fed Bus.

Figure 2-17, GSD 41 Data Concentrator

2.1.19 GTS 820/850 Traffic System (optional)

The GTS 820/850 is a traffic surveillance system that uses active interrogation of Mode S and Mode C transponders to provide traffic advisories to the pilot. The GTS 820 is a TAS unit; the GTS 850 is a TCAS I unit. The installation includes a top directional antenna (GA 58) paired with a GPA 65 power amplifier / low noise amplifier (PA/LNA) unit and a bottom, unamplified GA 58 antenna. The GTS 820/850 is located in the nose avionics bay on the top, left shelf. The GPA 65 is located in the left sidewall area, just in front of the most forward cabin window. The GTS 820/850 traffic system is powered from the Right Gen Avionics bus.

Figure 2-18, GTS 820/850 Traffic System

2.1.20 GTS Traffic Processor (optional)

The GTS Traffic Processor is a microprocessor-based Line Replaceable Unit that uses active interrogations of Mode S and Mode A/C transponders to provide Traffic Advisories and Resolution Advisories (GTS 8000 only) to the pilot. When installed, the GTS Processor can be configured as TAS (GTS 825), TCAS I (GTS 855), or TCAS II (GTS 8000). The GTS traffic processor is installed in the nose avionics bay. The GTS interfaces to the GA 58 traffic antennas which are mounted on the upper and lower fuselage. The GTS traffic processor also interfaces with the GTX 3000 (when installed) through ARINC 429 digital data lines. When a GTX 345R is installed, The GTX communicates with the GTS processor via the G1000 HSBD bus. The GTS traffic processor is powered from the Right Gen Avionics Bus.

Figure 2-19, GTS Traffic Processor

2.1.21 Weather Radar

The GWX 68 or optional GWX 70 Airborne Weather Radar provides weather radar data output to the GDU 1550 MFD and to the GDU 1050A PFD(s). The GWX is mounted forward of the forward bulkhead at F.S. 30. Power to the GWX is received from the Left Gen Avionics bus. In most installations, data received from the GWX is routed by HSDB through the GDL 69A data link unit to the MFD (if a GDL 69 unit is installed) or otherwise wired direct to the MFD via high-speed data bus (Ethernet).

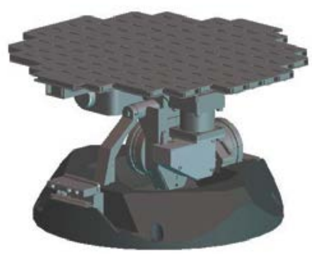


Figure 2-20, Weather Radar

2.1.22 GSA 80 Servos and GSM 86 Servo Gearboxes (3)

The Garmin GFC 700 AFCS uses GSA 80 high torque servos to automatically control aircraft pitch, pitch trim, and roll. The pitch trim variant of the GSA 80 is a high speed servo actuator. The GSA 80 contains a motor-control and monitor circuit board, as well as a solenoid and a brushless DC motor. The GSA 80 servo receives serial RS-485 data packets from the GIA 63Ws. The roll servo is located in the forward cabin lower fuselage at F.S. 185. The pitch, yaw, and pitch trim servos are located in the tail. The roll servo is located in the forward cabin lower fuselage near the wing front spar. The pitch and pitch trim servos are located in the tail. Power to the servos is received from No. 2 Triple Fed Bus. All servos mount to Garmin GSM 86 Servo Gearboxes. The GSM 86 is responsible for transferring the output torque of the GSA 80 servo actuators to the mechanical flight control surface linkage. The GSM 86 has a clutch cartridge that cannot be adjusted to a different torque value.

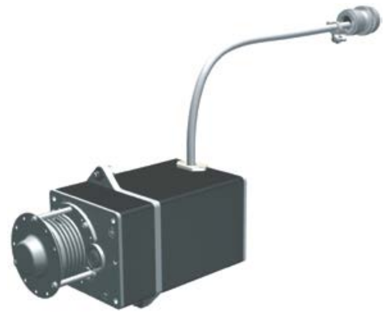


Figure 2-21, Servo

2.1.23 GSA 9000 Servo and GSM 9100 Servo Gearbox

The Garmin GFC 700 AFCS uses a GSA 9000 servo to control aircraft yaw damper/turn coordination and rudder boost. The GSA 9000 contains a motor-control and monitor circuit board, as well as a solenoid and a brushless DC motor. The GSA 9000 servo receives serial RS-485 data packets from the GIA 63Ws. The GSA 9000 yaw servo is located in the tail. Power to the servo is received from No. 2 Triple Fed Bus. The servo mounts to a Garmin GSM 9100 Servo Gearbox. The GSM 9100 is responsible for transferring the output torque of the GSA 9000 servo actuator to the mechanical flight control surface linkage.

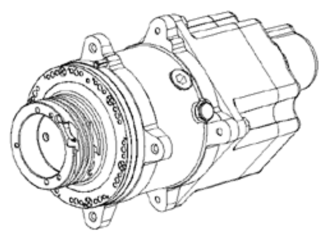


Figure 2-22, GSA 9000 / GSM 9100

2.1.24 GRA 5500 Radar Altimeter

The GRA 5500 Garmin Radar Altimeter is designed to calculate the height Above Ground Level (AGL) of the aircraft which is displayed on the PFDs. For King Air installations, the GRA 5500 is configured to output the value height Above Ground Level to the pilot through the GDU. The GRA interfaces to the existing radar altimeter antennas and GIA #2 via the ARINC 429 or RS-422 digital bus. The GRA 5500 is located below the lower avionics equipment shelf in the tail section. The GRA 5500 is powered from the Right Gen Avionics Bus.

Figure 2-23, GRA 5500 Radar Altimeter

2.1.25 Garmin G36 and 37 GPS/WAAS Antennas

This installation uses one G36 GPS/WAAS antenna and a G37 GPS/WAAS/XM antenna. The antennas are located in the upper, forward cabin.

2.1.26 Signal Conditioner (2)

Each GEA 71 receives signals from its on-side engine turbine speed sensor, propeller speed sensor and fuel flow sensors via a Meggitt Signal Conditioner, p/n 85-292-4. This unit converts the signals from the engine sensors to a signal usable by the GEA 71. These units are installed behind the instrument panel. Electrical power to the No. 1 Engine Signal Conditioner is provided from No. 1 Triple Fed Bus and to the No. 2 Engine Signal Conditioner from No. 2 Triple Fed Bus. Both signal conditioners will power-up immediately with external or aircraft power or battery operation.

2.1.27 Standby Indicators

This STC has two options for standby primary flight indications. The first option is a Mid-Continent Instruments MD 302 Standby Attitude Module that provides attitude, airspeed, and altitude indications in one electronic assembly. The second option consists of three separate mechanical indicators, one each for airspeed, altitude, and attitude.

2.1.27.1 Mid-Continent Instruments MD 302 Standby Attitude Module (SAM)

Mid-Continent Instruments, part number 6420302-2, is an electronic 3-in-1 standby indicator assembly instrument with two 2.4” diagonal LCD displays provides standby altitude, airspeed, and attitude information to the cockpit. It is powered from Standby Instrument Bus and the emergency standby battery. Lighting Control is connected to the No.1 Dual Fed Bus. It receives static and pitot pressures from the right-hand pitot/static system. The MD 302 is a standalone unit and does not interface to any G1000 avionics. The MD302 is installed on the main instrument panel, between the pilot’s PFD and the MFD.

Figure 2-24, MD 302 Standby Attitude Module

2.1.27.2 Mechanical (Analog) Standby Indicators

2.1.27.2.1 Standby Airspeed Indicator

An optional Standby Airspeed indicator (part numbers listed on General Arrangement drawing) is installed between PFD 1 and the MFD. The standby airspeed indicator does not require electrical power for normal operation except for internal instrument lighting, which is powered from No. 3 Triple Fed Bus and the emergency standby battery. This unit is connected to the right-side pitot/static system.

2.1.27.2.2 Standby Altimeter

An optional standby altimeter (part numbers listed on General Arrangement drawing) is installed between PFD 1 and the MFD. This unit incorporates a vibrator to ensure accurate display altitude information. The vibrator is powered by No. 3 Triple Fed Bus and the emergency standby battery. Internal lighting of this unit is powered from Left Gen Bus and the emergency standby battery. This unit is connected to the right-side static system.

2.1.27.2.3 Standby Attitude Indicator

The optional Mid-Continent Electric Attitude Indicator (part number listed on General Arrangement drawing) is used as the standby attitude indicator. It is powered by No. 3 Triple Fed Bus and the emergency standby battery. Gyro power and internal lighting of this unit is powered from Left Gen Bus and the emergency standby battery.

2.1.28 L-3 PS-835 (C or D Model) Emergency Standby Battery

In the event of loss of all normal electrical power, the battery is designed to provide 24 Vdc (nominal) emergency power source for the following items:

- standby attitude indicator (operation and internal lighting)
- standby altimeter (vibrator and internal lighting)
- standby airspeed indicator (lighting only)
- pilot side glareshield lighting
- magnetic compass

The aircraft power buss provides a trickle charge to the PS-835 under normal conditions. This battery is installed in the nose avionics bay. It is controlled using the standby battery switch indicator on the instrument panel.

2.2 G1000 Optional Interfaces

Optional equipment interfaces include lightning detection, traffic systems, radar altimeter, ADF systems and DME systems. The G1000 also provides a general purpose ARINC bus for use with third party entertainment and cabin equipment. Refer to wiring diagram listed in Table 1-1, for specific interface information.

2.3 Electrical Power Distribution

This airplane uses a multi-bus system, as detailed below and in Figure 2-25. This Figure shows the system post installation of this STC. Although this STC made several bussing changes to the distribution system, the core electrical generation and distribution system remains unchanged from the basic airplane design. Figure 2-26 shows the power sources for all equipment used by this STC. Each bus used or modified by this installation is described below.

Left and Right Generator Buses: The left and right generator buses receive power from their respective left and right generators. The left and right generator buses also support Center Buses and Left Gen and Right Gen Avionics Buses, respectively.

Triple Fed Bus: The Triple Fed bus is powered by left and right generator buses and the battery bus.

Avionics Buses: The Left Gen Avionics bus is powered from the Left Generator Bus via the Avionics No. 1 relay. The Right Gen Avionics Bus is powered from the Right Generator Bus via the Avionics No. 2 relay. The Triple Fed Avionics Bus is powered from the Triple Fed bus via the Avionics No. 3 relay. All avionics relays are controlled using the Avionics Master Switch.

Left and Right Engine Instrument Buses: On serial numbers FL-120, FL-122 through FL-380, FL-382, FM-009 through FM-11, the electrical system includes the L ENG INSTR and R ENG INSTR buses. On all other serial numbers, these two buses are not installed and engine instruments are powered directly from the Triple Fed Buses.

Emergency Standby Battery: The Standby Emergency Battery (STBY BATT) system in the King Air 300/B300 is designed to provide uninterrupted DC power to the Standby Attitude indicator (including gyro motor and internal instrument lighting), the Standby Altimeter (including vibrator and internal instrument lighting), standby airspeed indicator internal instrument lighting and internal instrument lighting for the magnetic compass from the L-3 PS-835(C or D Model) Emergency Standby Battery. This standby battery power is independent from the normal electrical system and provides redundant power for the standby instruments in the event that all other electrical power is lost.

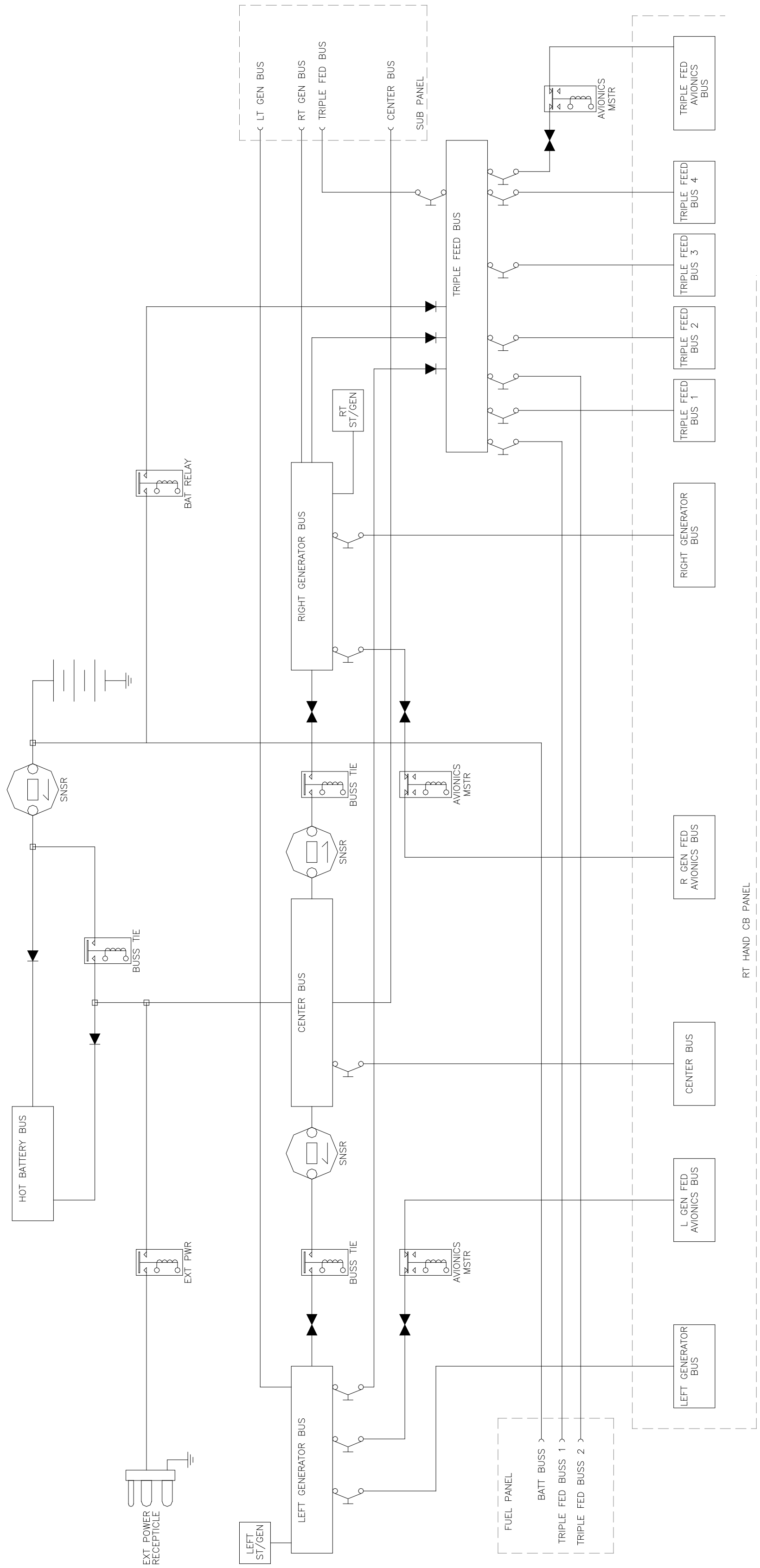


Figure 2-25, 300 Series Electrical Distribution (Post G1000 STC)

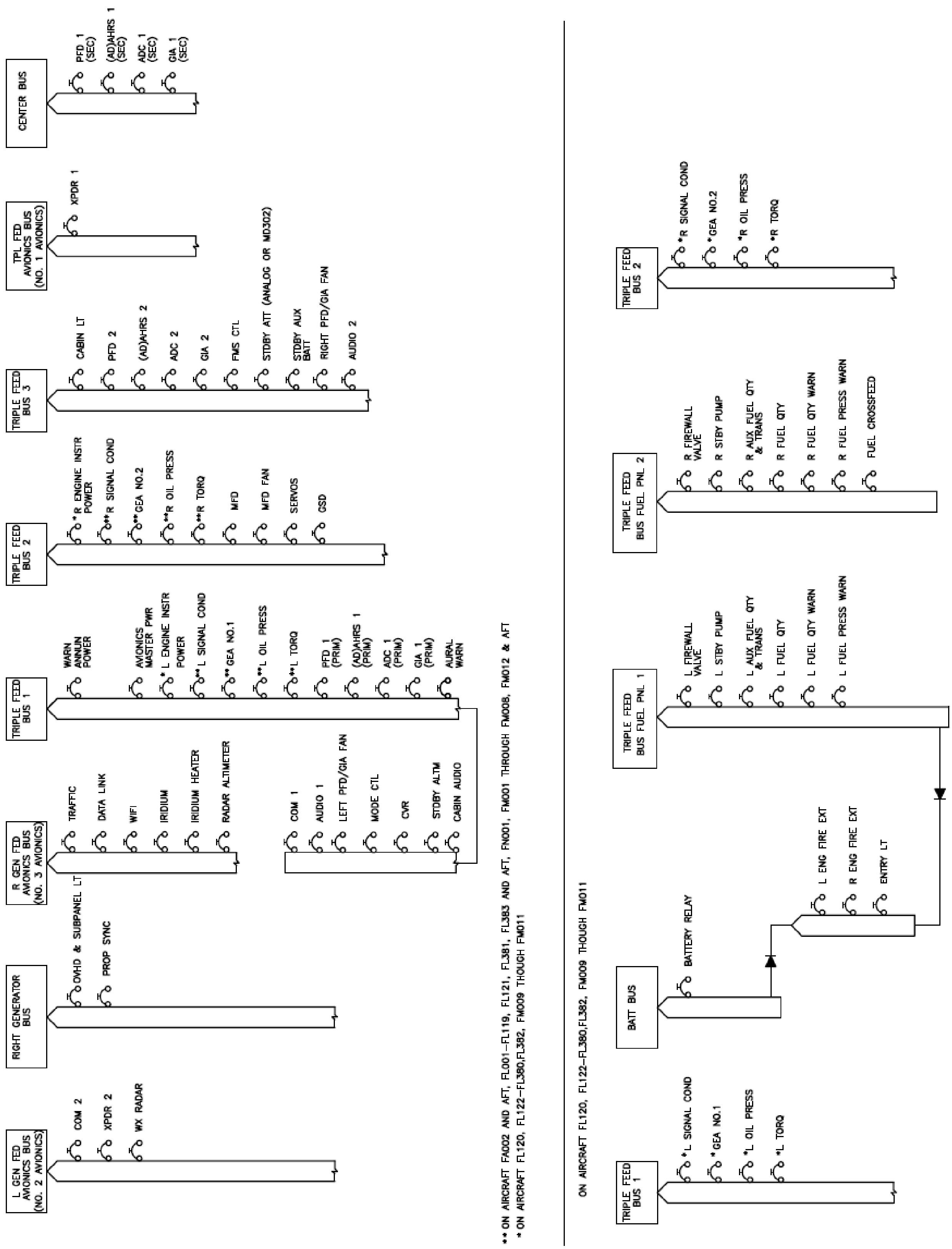


Figure 2-26, G1000 Component Power Sources

2.4 Electrical Load Utilization

The following chart lists the electrical equipment and their associated loads for each of the standard and optional items installed on the King Air 300 series airplanes with the installation of G1000. The loads specified are used to verify the electrical buses, generating system and batteries are operated within their limits and capacity. For electrical load test procedure and electrical load test report, refer to Garmin documents 190-00716-N0 (Post Installation Checkout Procedure King Air 300 Series) and 005-00629-22 (Electrical Load Test Report G1000 integrated Avionics System Hawker/Beechcraft Model 300/B300 King Air) respectively.

Table 2-1, Electrical Loads

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
Battery Bus				
Left Generator Bus				
Avionics Left Generator Bus				
GIA 63W – COM #2	1	4.3 A Max See Note	011-01105-20	0.3 A – Not Transmitting 4.3 A – Transmitting
GTX 33 Transponder #2 or GTX 33D Transponder #2 or GTX 3000 Transponder #2 or GTX 335R #2	1	1.6 A	011-00779-30	
		1.6 A	011-00779-21	
		1.6 A	011-01997-00	
		0.29 A	011-03301-00	
GWX 68 Weather Radar or GWX 70 Weather Radar	1	2.0 A	011-00883-20	
		2.5 A	011-01768-00	
Right Generator Bus				
Avionics Right Generator Fed Avionics Bus				

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
GDL 69A XM Data Link or GDL 69A SXM Data Link	1	0.35 A	011-00987-00	
			011-03177-10	
GDL 59 Wi-Fi	1	0.572 A	011-01746-00	
GTS Processor or GTS 820 Traffic Processor or GTS 850 Traffic Processor	1	2.5 A	011-02571-00	
		1.6 A	011-01446-00	
		1.6 A	011-01553-00	
GRA 5500 Radio Altimeter	1	0.5A	011-02537-00	
GSR 56 Iridium/Iridium Heater	1	1.86A	011-02268-00 or 011-02268-01	
Center Bus				
GDU 1050A PFD #1	1	0.9 A Max See Notes	011-03470-10	Secondary power input 0.7 A above -15°C 0.9 A below -15°C

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
GRS 77/GMU 44 – AHRS #1 or GRS 7800/GMU 44 – AHRS #1 or GSU 75B/GMU 44 ADAHRS #1	1	0.3 A See Note	GRS 77: 011-00868-10 GMU 44: 011-00870-10 011-00870-20	Secondary power input
		0.45 A See Note	GRS 7800: 011-02278-00 GMU 44: 011-00870-10 011-00870-20	Secondary power input
		0.38 A See Note	GSU 75B: 011-03094-40 GMU 44: 011-00870-10 011-00870-20	Secondary power input
GDC 7400 - ADC #1	1	0.230 A See Note	011-02337-00 011-02337-01	Secondary power input
GIA 63W – NAV #1	1	1.0 A See Note	011-01105-20	Secondary power input
No. 1 Triple-Fed Bus				
PFD #1 - Cooling Fan	1	0.1 A	305468-00 (Sandia P/N) or 013- 00102-00 (Garmin P/N)	
GIA 63W #1 - Cooling Fan	1	0.4 A	305467-00 (Sandia P/N) or 013-00103-00 Garmin P/N)	

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
GIA 63W – NAV #1	1	1.0 A	011-01105-20	Primary power input
GIA 63W – COM #1	1	4.3 A Max See Notes	011-01105-20	Primary power input 0.3 A – Not Transmitting 4.3 A – Transmitting
GMC 710 – AFCS Controller	1	0.16 A	011-01020-10	
GRS 77/GMU44 –AHRS #1 or GRS7800/GMU44 – AHRS #1 or GSU 75B/GMU44 ADAHRS #1	11	0.3 A See Note	GRS 77: 011-00868-10 GMU 44: 011-00870-10 011-00870-20	Primary power input
		0.45 A See Note	GRS 7800: 011-02278-00 GMU 44: 011-00870-10 011-00870-20	
		0.38 A See Note	GSU 75B: 011-03094-40 GMU 44: 011-00870-10 011-00870-20	
GDC 7400 #1	1	0.230 A	011-02337-00 011-02337-01	Primary power input
GDU 1050A – PFD #1	1	0.9 A Max See Notes	011-03470-10	Primary power input 0.7 A above -15°C 0.9 A below -15°C
GMA 1347D #1 – Audio Panel	1	1.75 A	011-01257-20	Primary power input

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
Meggitt Sig Cond #1	1	0.032 A	85-292-4	
GEA 71 #1	1	0.5A	011-00831-00	
No. 2 Triple-Fed Bus				
GSA 80 – Roll Servo	1	1.61 A	011-00877-20	
GSA 80 – Pitch Servo	1	1.61 A	011-00877-20	
GSA 9000 – Yaw Servo	1	1.80 A	011-02213-00 011-02213-10	
GSA 80 – Pitch Trim Servo	1	1.61 A	011-00877-21	
MFD Cooling Fan	1	0.1 A	305468-00 (Sandia P/N) or 013-00102-00 (Garmin P/N)	
GDU 1550 – MFD	1	1.2 A Max See Note	011-03472-00	0.9 A – Temp above -15°C 1.2 A – Temp below -15°C
GSD 41	1	0.5 A	011-01457-00	
GEA 71 #2	1	0.5A	011-00831-00	
No.3 Triple Fed Bus				
GDU 1050A – PFD #2	1	0.9 A Max See Notes	011-03470-10	0.7 A above -15°C 0.9 A below -15°C

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
GRS 77/GMU 44 – AHRS #2 or GRS 7800/GMU 44 – AHRS #2 or GSU 75B/GMU 44 ADAHRS #2	1	0.3 A Total	GRS 77: 011-00868-10 GMU 44: 011-00870-10 011-00870-20	
		0.45 A Total	GRS 7800: 011-02278-00 GMU 44: 011-00870-10 011-00870-20	
		0.38 A	GSU 75B: 011-03094-40 GMU 44: 011-00870-10 011-00870-20	
GDC 7400 – ADC #2	1	0.230 A	011-02337-00 011-02337-01	
GIA 63W – NAV #2	1	1.0 A	011-01105-20	
GMA 1347D #2 – Audio Panel	1	1.75 A	011-01257-20	
GCU 477 – FMS CTL	1	0.085 A	011-01428-00	
Standby Battery	1	See Note	501-1228-03 or 501-1228-04	2.5 A for model PS-835C 5 A for model PS-835D
PFD #2 – Cooling Fan	1	0.1 A	305468-00 (Sandia P/N) or 013-00102-00 (Garmin P/N)	

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
GIA #2 – Cooling Fan	1	0.4 A	305467-00 (Sandia P/N) or 013-00103-00 (Garmin P/N)	
Meggitt Sig Cond #2	1	0.032 A	85-292-4	
Avionics Bus Triple-Fed				
GTX 33 Transponder #1 or GTX 33D Transponder #1 or GTX 3000 Transponder #1 or GTX 335R #1 or GTX 345R #1	1	1.6 A 1.6 A 1.6 A 0.29 A 0.36 A	011-00779-30 011-00779-21 011-01997-00 011-03301-00 011-03303-00	
Standby Battery Bus				
MD 302 Standby Indicator	1	0.22 A	6420302-2	0.9 A max when charging and heating battery.
Standby Attitude Indicator	1	0.25 A	4200-11 (MOD 2)	

Equipment	Units Used	Each Unit (Amps DC)	Part Number	Notes
Standby Altimeter	1	See Note	3A43.22.35F.28.1.FU (Thommen P/N), or	Vibrator 0.030 A Lighting 0.096 A
		0.157 A total	16650-1172 Aerosonic P/N)	
Standby Airspeed Indicator	1	0.050 A	MD25-300 (Mid-Continent Inst P/N), or	
		0.050 A	25030-0184 (Aerosonic Corp P/N)	

2.5 Pitot/Static System

The following schematics shows the pitot-static system as modified by this installation:

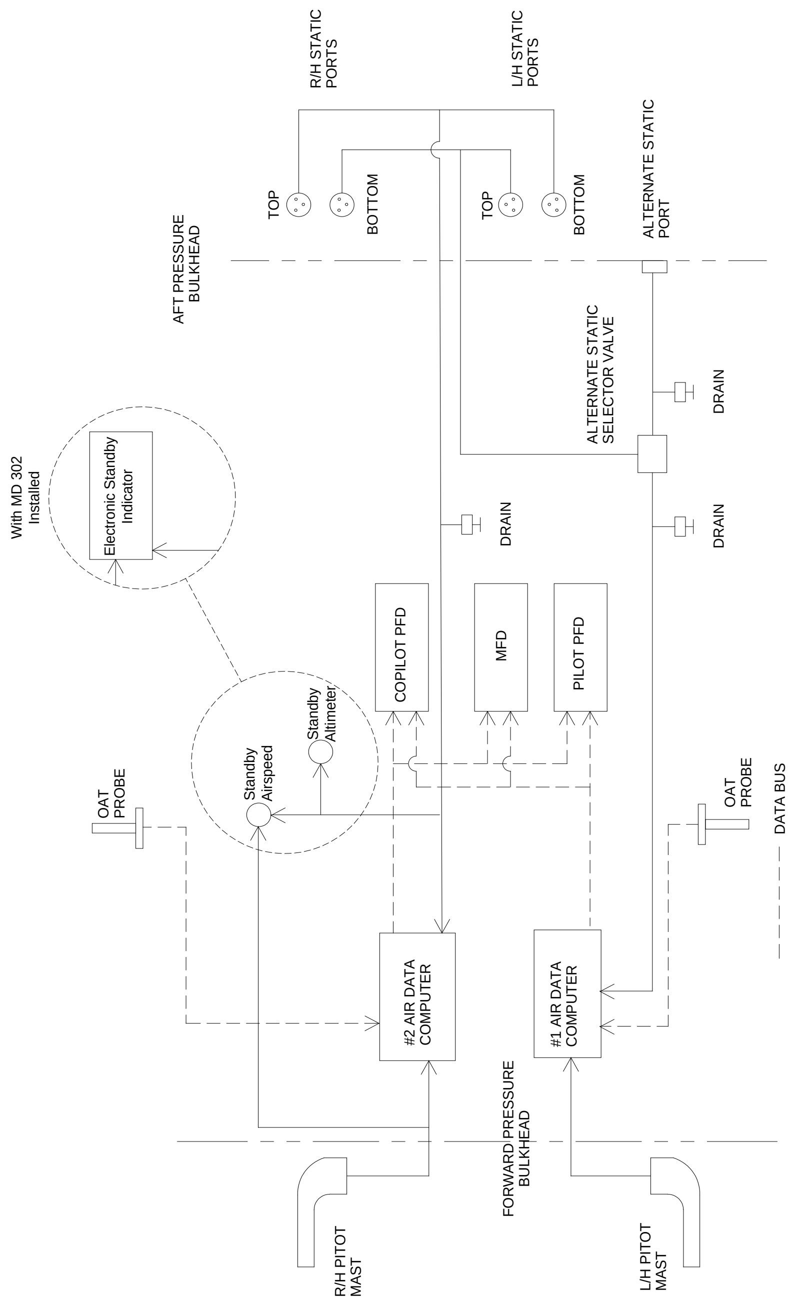


Figure 2-27, Pitot/Static System with ADC(s) and AHRS(s) Installed

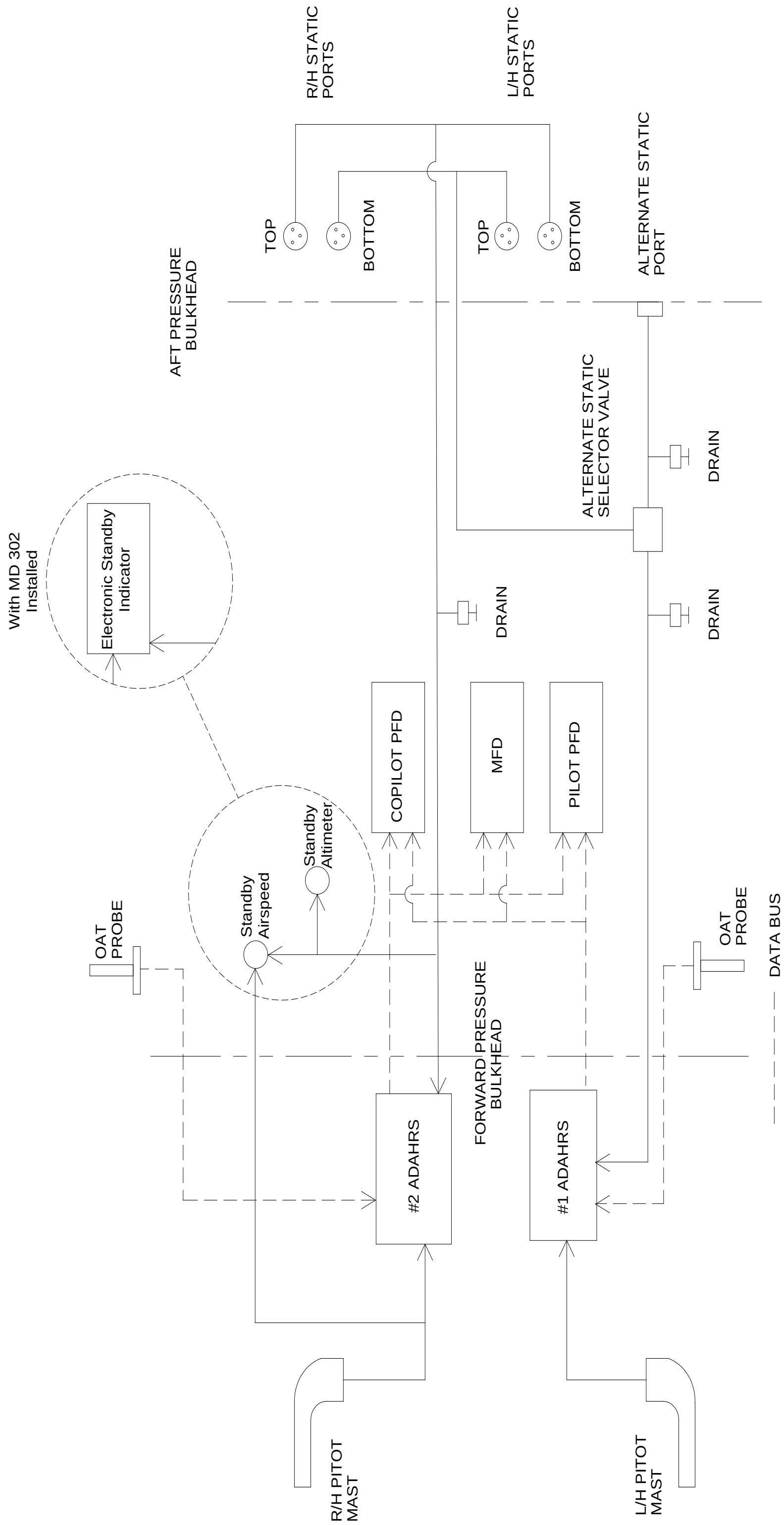


Figure 2-28, Pitot/Static System with GDU 75B ADAHRS(s) Installed

2.6 Shield Block Grounds

The connectors on Garmin G1000 LRUs utilize the Shield Block grounding system to provide necessary ground reference to wire shielding and/or transducers. The shield block termination method allows multiple grounds to be terminated directly to a block mounted to the connector backshell assembly. Shielding and grounding requirements for all other LRUs and connectors are shown in the respective install drawings.

2.7 G1000NXi /GFC700 Block Diagrams

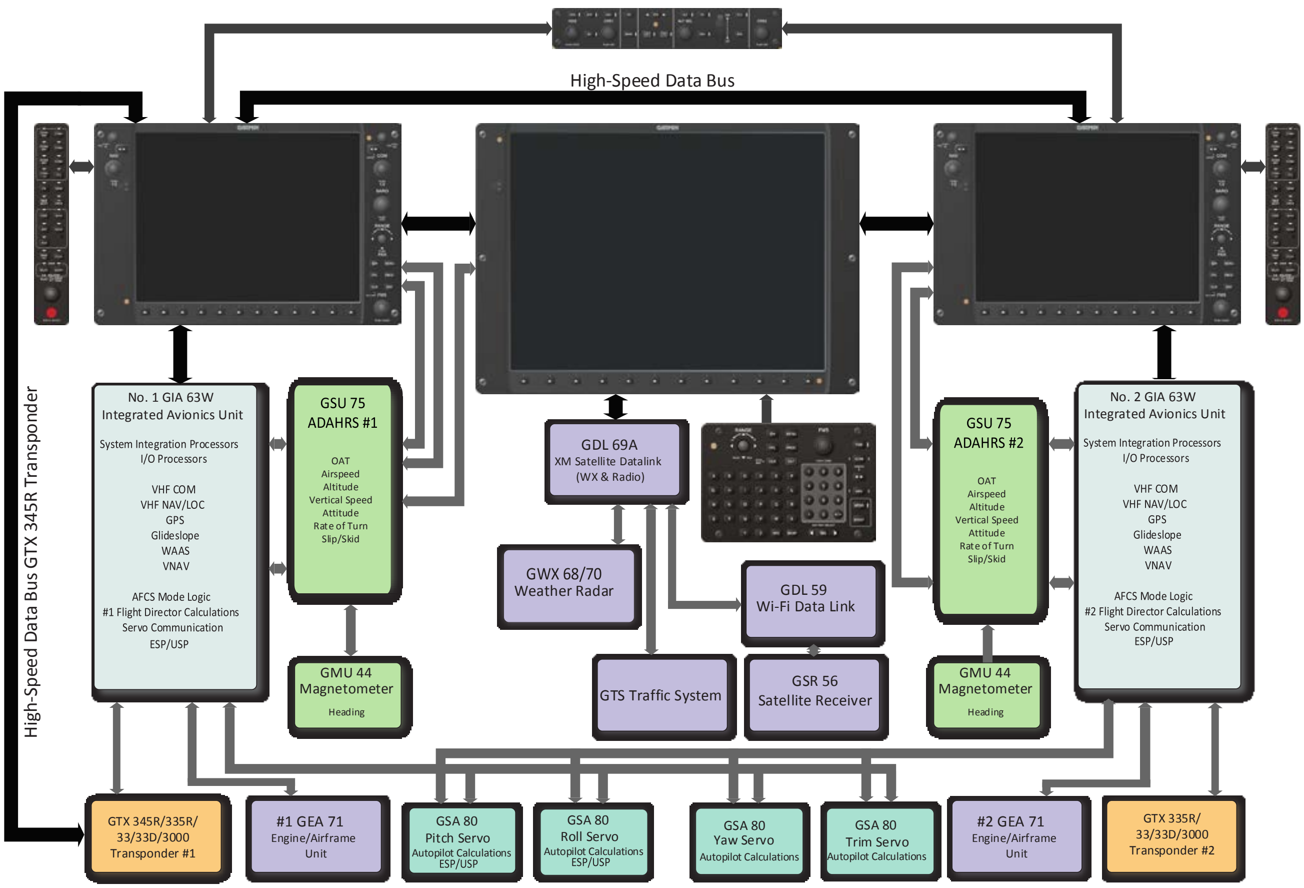


Figure 2-29, G1000NXi/GFC 700 Block Diagram with GSU 75B ADAHRS

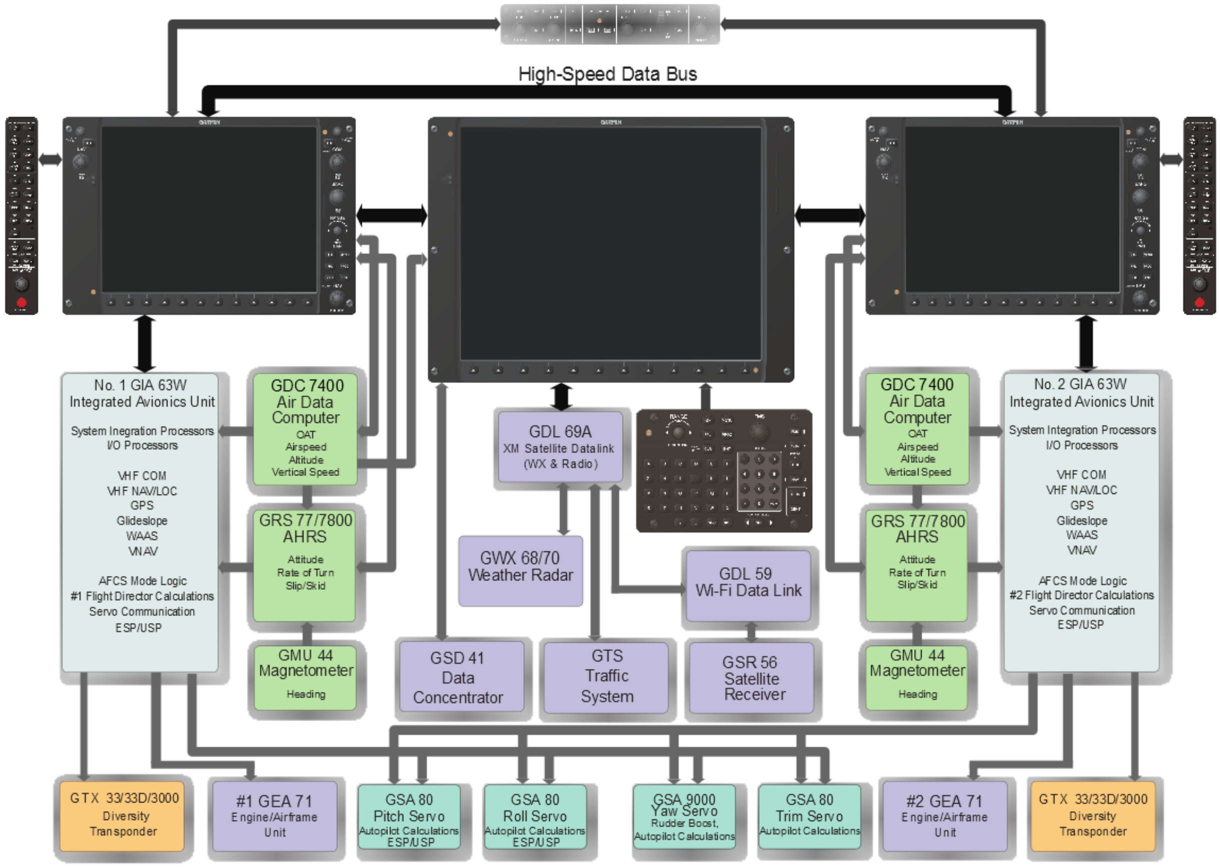


Figure 2-30, G1000NXi/GFC 700 Block Diagram with Separate ADC and AHRS

2.8 GDU 1050A and GDU 1550 Displays

Figure 2-31 and Figure 2-32 provide identification of the GDU 1050A PFD and GDU 1550 MFD controls.

Figure 2-31, GDU 1050A Control Interface

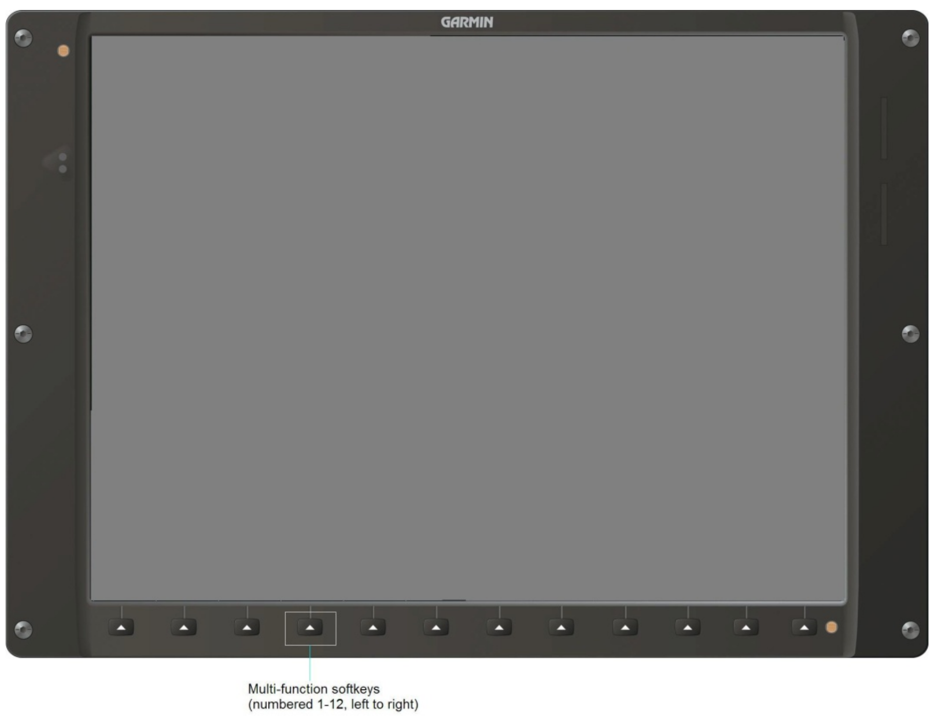


Figure 2-32, GDU 1550 Control Interface

2.9 Softkeys

Some pages have commands or selections that are activated by the GDU 1050A and GDU 1550 softkeys. If a softkey is associated with a command, that command will be displayed directly above the key. A grayed-out softkey shows a command that is unavailable. A softkey that is highlighted (green bar) shows the current active selection.

Figure 2-33, G1000 Softkeys

2.10 FMS Knob

The FMS knob is the primary control for the G1000 system.

To cycle through different configuration screens:

To change page groups: Rotate the large FMS knob.

To change pages in a group: Rotate the small FMS knob.

To activate the cursor for a page, press the small FMS knob directly in, as one would push a regular button.

To cycle the cursor through different data fields, rotate the large FMS knob.

To change the contents of a highlighted data field, rotate the small FMS knob. This action either brings up an options menu for the particular field, or in some cases allows the operator to enter data for the field.

To confirm a selection, press the **ENT** key.

To cancel a selection, press the small FMS knob in again, deactivating the cursor. The **CLR** key may also be used to cancel a selection or deactivate the cursor.

2.11 GCU 477 - MFD Controller

The MFD controls are located on the GCU 477 as shown in the following figure:

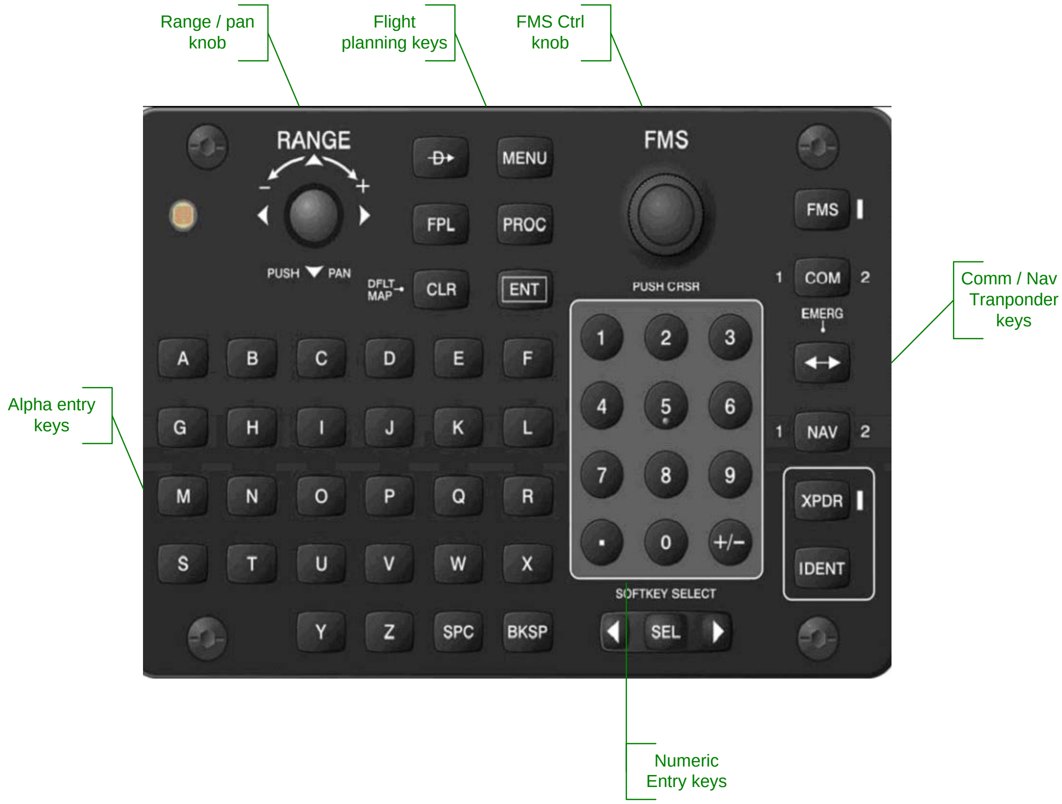


Figure 2-34, MFD Controls (GCU 477 shown)

2.12 GMC 710 - AFCS Controls

The dedicated AFCS controls located on the GMC 710 are discussed in detail in the G1000 Cockpit Reference Guide. The following figure is provided for reference:

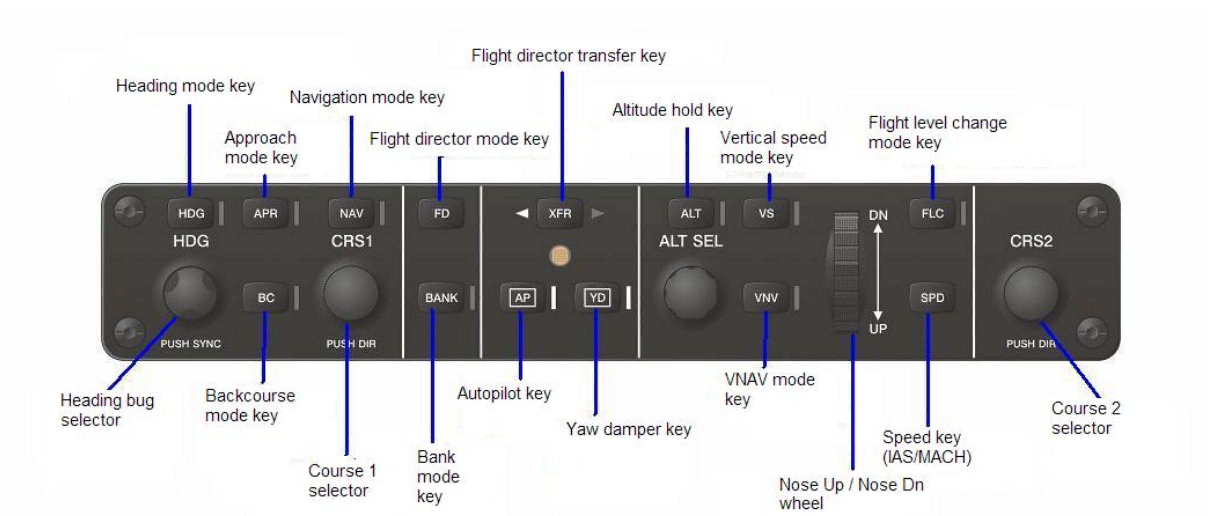


Figure 2-35, AFCS Controls (GMC 710 shown)

2.13 GMA 1347D Audio Panel

The following Figure shows the audio panel controls.

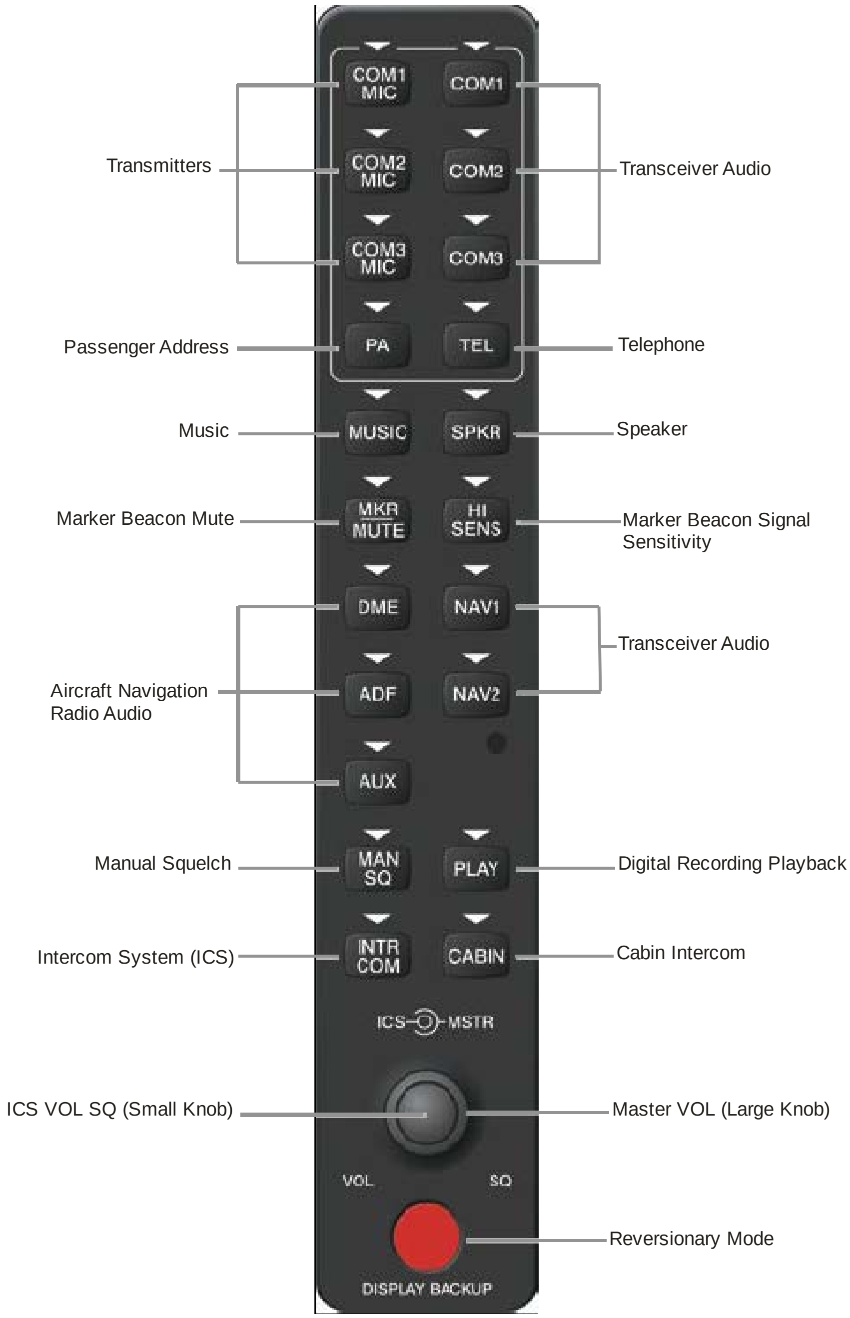


Figure 2-36, GMA 1347D Controls

2.14 G1000 Normal Mode

To start the G1000 system in Normal Mode:

1. With a ground power unit connected to the external power receptacle, turn ON the BAT (battery) and EXT PWR switches. The following G1000 equipment is powered on:
   - PFD displays & MFD display
   - GSU 75 ADAHRS or GRS 77/GRS 7800 AHRS Units
   - GDC 7400 Air Data Computers (if installed)
   - GIA #1 and GIA #2 (COM listed separately)
   - GEA 71 Engine/Airframe Units
   - GCU 477 FMS Control Unit
   - GMC 710 Autopilot Control Unit
   - GMA 1347D Digital Audio Panel Units
   - GSA Servos
   - GSD 41 Data Concentrator (Optional)
2. Turn ON the AVIONICS MASTER switch. The following G1000 equipment is powered on:
   - GTX Mode S Transponders
   - GDL 69A Datalink Unit
   - GWX 68 or GWX 70 Weather Radar Unit
   - GTS 820/850 or GTS Processor Traffic System
   - GDL 59 / GSR 56 Wi-Fi/Satellite (Optional)
   - GRA 5500 Radar Altimeter (Optional)

The G1000 system is now powered in the normal mode. In the normal operating mode, data fields that are invalid have large red X's through them. A valid field does not display a red X. Allow the displays to initialize for approximately one minute for the red X's to be removed.

The GDC 7400 air data computers may require a longer initialization period than other G1000 units. This longer initialization period may cause the airspeed, altitude, vertical speed, and OAT fields to be invalid during PFD power-up which is normal until the GDC 7400 units are initialized.

The PFDs and MFD will function as specified in the G1000 Cockpit Reference Guide when the system has been correctly installed and configured.

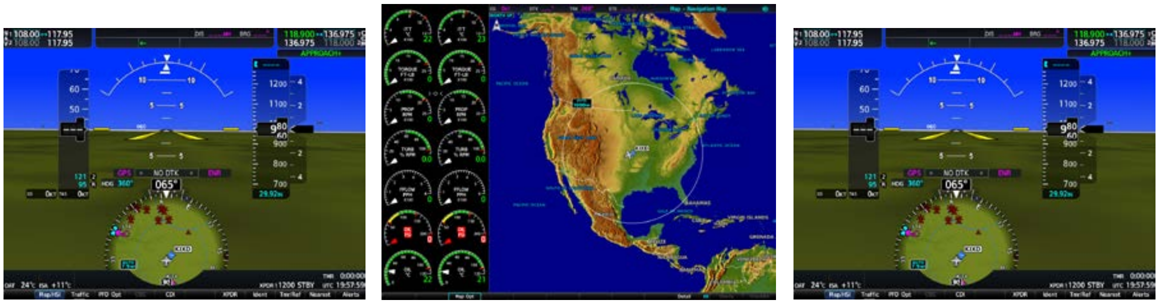


Figure 2-37, Normal Mode

2.15 Reversionary Mode

Reversionary mode allows for display of information related to safe flight in the event of a display communication or hardware failure. The pilot's PFD automatically goes into reversionary mode when communication to the MFD is lost. Manual reversionary mode allows the operator to force the pilot or copilot's PFD into reversionary mode by pressing the large red button labeled 'DISPLAY BACKUP' on the respective GMA 1347D audio panel.

NOTE

When the 'DISPLAY BACKUP' button is pushed to exit reversionary mode, there is a 5-second delay until the display returns to normal mode. If the 'DISPLAY BACKUP' button is pushed again during this 5-second delay, the display will reset the five second delay timer.

Figure 2-38, Automatic Reversion with MFD failure

Figure 2-39, Manual Reversion with pilot PFD failure

3. Software and Configuration

3.1 Configuration Mode Overview

Throughout this document, references are made to the PFD1, PFD2 and/or MFD being in configuration mode. The configuration mode exists to provide the avionics technician with a means of configuring, checking, and calibrating various G1000 sub-systems. Troubleshooting and diagnostics information can also be viewed in this mode.

To start the G1000 system in configuration mode, follow these steps:

1. Apply power to the G1000 system by applying aircraft EXT power, selecting the AVIONICS MASTER PWR and BATT switches to ON.
2. Pull the MFD, PFD1 (PRI), PFD1 (SEC) and PFD2 circuit breakers.
3. Press and hold the ENT key on PFD2 (co-pilot) while applying power using the PFD2 circuit breaker.
4. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD2.
5. Press and hold the far right softkey on the MFD while applying power using the MFD circuit breaker. (Note that the ENT key on the GCU 477 MFD controller may be used after initial software loads.)
6. Release the softkey after 'INITIALIZING SYSTEM' appears in the upper left corner of the MFD.
7. Press and hold the ENT key on PFD1 (pilot) while applying power using the PFD1 (PRI) circuit breaker.
8. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD1.

CAUTION:

The Configuration Mode contains certain pages and settings that are critical to aircraft operation and safety. These pages are protected and cannot be modified, unless the technician is properly authorized and equipped. However, most protected pages are viewable to allow system awareness for troubleshooting.

NOTES

If the specific procedure requires an SD card to be in the top slot of the PFD/MFD, this card must be inserted prior to applying power to the PFD/MFD. Any time a card is inserted, the power to the PFD/MFD must be cycled.

For a complete description and breakdown of each Configuration Mode page, refer to the G1000 System Maintenance Manual listed in Table 1-2.

3.1.1 SET>ACTV Configuration

Throughout the configuration mode pages, there are SET and ACTIVE columns for input/output settings and other parameters.

SET: Refers to a setting or group of settings that reside in PFD Internal Memory and/or the Master Configuration Module.

ACTIVE: Refers to an 'active' setting or parameter currently being used by the LRU. LRUs store the 'active' settings within internal memory.

Data can be manually copied from one column to the other (and consequently from PFD memory to the LRU memory and vice-versa) by using the following two softkeys, when available:

- SET>ACTV (read 'Set to Active') softkey: Allows the installer to send the information in the SET column (data stored in the master config module) to the ACTV column (data used by LRU).
- ACTV>SET (read 'Active to Set') softkey: Causes the LRUs current settings to be copied to the master configuration module as SET items.

CAUTION:

The ACTV>SET softkey must be used with caution! If an improperly configured unit is installed, this softkey causes the wrong configuration to replace the correct aircraft configuration.

In the first example shown in Figure 3-1 the SET columns do not match the ACTIVE columns. The inequality between SET and ACTIVE indicates a configuration mismatch. By pressing the SET>ACTV softkey, this copies the SET column to the LRU unit's configuration memory. The settings then become the ACTIVE settings for the LRU being configured.

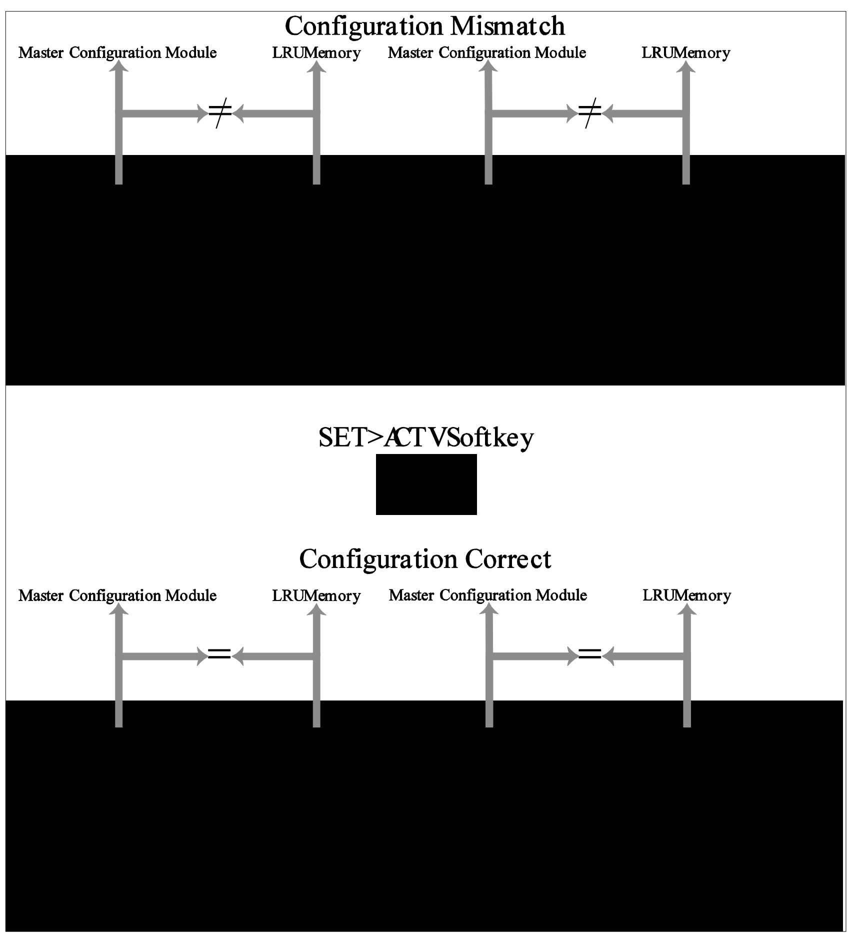


Figure 3-1, SET>ACTV Diagram

When troubleshooting the system, technicians can look for inequalities between SET and ACTIVE columns. Certain problems can be resolved simply by pressing the SET>ACTV softkey, which reloads settings to the specific LRU from the PFD. (Note that this can also be accomplished by reloading the configuration files for the LRU. Section 7 describes this process for each LRU).

A blank active column, as shown in Figure 3-2, represents loss of communication between the display and the particular unit. See Section 5 for more details on troubleshooting.

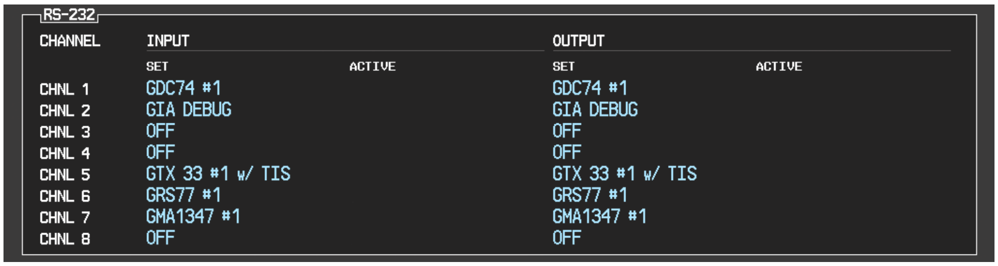


Figure 3-2, Loss of Communication

3.1.2 Configuration Prompts

When configuration settings are changed, the technician receives on-screen prompts and/or confirmations such as those shown in Figure 3-3.

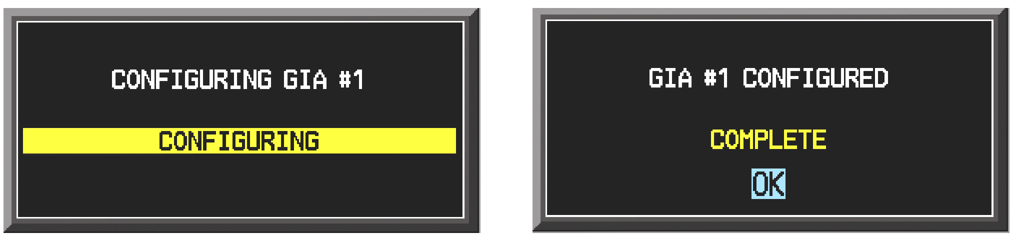


Figure 3-3, Configuration Status

3.1.3 Data Transmission Indicators

Several configuration screens utilize an indicator light system to show discrete (ON/OFF) data and/or hardware component status. Unless otherwise noted, the following applies to all such status indicators:

- Green Checkmark: Expected data is successfully received and is ON. A green check could also indicate that the parameter/component is working correctly.
- Red X: Expected data is not received. A red X could also indicate that a parameter/component is invalid.
- White N/A: Expected data is OFF, or no data is expected.

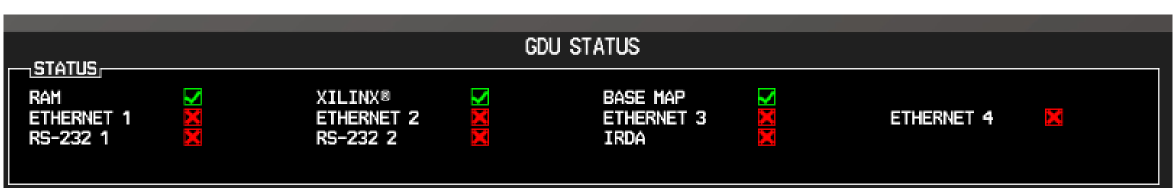


Figure 3-4, Data Transmission Indicators

3.1.4 Configuration Mode Navigation

Using the FMS knob as described in Section 2.10, a user can navigate through different pages and page groups in the Configuration Mode. For complete description and breakdown of each page, refer to the G1000 System Maintenance Manual listed in Table 1-2.

System Page Group		
1. System Status	7. Transaction Log	13. System Data Path Configuration
2. Time Configuration	8. Aircraft Configuration	14. System Setup
3. Lighting Configuration	9. File Manager	15. Manifest Configuration
4. System Audio	10. Diagnostics Terminal	16. Maintenance Log
5. System Upload	11. OEM Diagnostics	17. Configuration Manager
6. LRU Replacement	12. System Configuration	
GDU Page Group		
1. Serial Configuration	6. Diagnostics	11. Airframe Configuration
2. CDU Status Page	7. Ethernet Test	12. TAWS Configuration
3. Key Test	8. Video Test	13. SurfaceWatch Configuration
4. FS 510 Test	9. Alert Configuration	14. XHTML Test
5. CDU Calibration	10. DAT Configuration	
GIA Page Group		
1. Serial Configuration	3. GIA I/O Configuration	5. GIA Status Page
2. GIA RS-485 Configuration	4. GIA COM Setup Page	6. GIA CAN Configuration
GEA Page Group		
1. Engine Configuration	2. GEA Status Page	3. GEA Configuration
GTX Page Group*		
1. Serial Configuration	2. Transponder Configuration	
GTX Page Group (Aircraft equipped with GTX 3000)*		
1. Transponder Airframe Config	2. Transponder Wiring Config	
GTX 3X5 Page Group*		
1. Transponder Airframe Config	2. Transponder Wiring Config	Transponder Diagnostics
GRS Page Group		
1. Inputs Configuration	2. GRS / GMU Calibration	3. GRS Flight Data Log**
ADC Page Group		
1. ADC Configuration	2. GDC Configuration***	
GFC Page Group		
1. GFC Configuration	2. GFC Status	
GMA Page Group		
1. GMA Configuration		

GDL Page Group	
1. GDL 69 Configuration	3. GDL 59 Configuration*
2. GDL 59 Status*	4. GSR 56 Configuration*
RMT Page Group	
1. Remote Controller Status	
GWX Page Group	
1. GWX Configuration	
GTS Page Group *	
1. GTS Configuration	
GRA Page Group	
1. GRA Configuration	
OTHER Page Group *	
1. Stormscope	
CAL Page Group	
1. Fuel Tank Calibration	3. HSCM Calibration
2. Flaps & Trim Calibration	4. DAT Calibration

* Appears only if option is installed.

** Appears only of GSU 75B is installed.

*** Does not appear if GSU 75B installed.

3.2 G1000 System Software Information

NOTE

The following sections provide a detailed description of loading all G1000 software and configuration files, which may be excessive for individual LRU removal and replacement. If removing and replacing individual LRUs, refer to Section 6 of this manual for the necessary steps.

3.2.1 G1000 Software Image

All software and configuration files were certified by Garmin and are considered part of FAA-approved Type Design data. Approved software and hardware definitions for each STC Configuration are defined on the appropriate General Arrangement drawing listed in Table 1-1.

G1000 software and configuration files are controlled via the approved software image part number listed on the General Arrangement drawing listed in Table 1-1. This software image is loaded into the G1000 using a software loader card. The installer shall create this software loader card by downloading the approved software image in accordance with Section 3.2.2.

NOTE

Only SanDisk brand SD cards are recommended for use with the G1000 system. Other brand cards have not been tested by Garmin.

IMPORTANT!

To satisfy the G1000/GFC700 STC requirements for the 300 Series aircraft, it is critical that the technician install correct software image part number when servicing the G1000 system.

Approved software image part numbers are defined on the appropriate General Arrangement drawing (see Table 1-1).

CAUTION:

Be cautious when using software loader cards during maintenance. The G1000 system immediately initializes the card upon power-up. On-screen prompts must be given careful attention in order to avoid potential loss of data. Always read through procedures given in Sections 5, 6 and 7 before attempting to use the software loader cards.

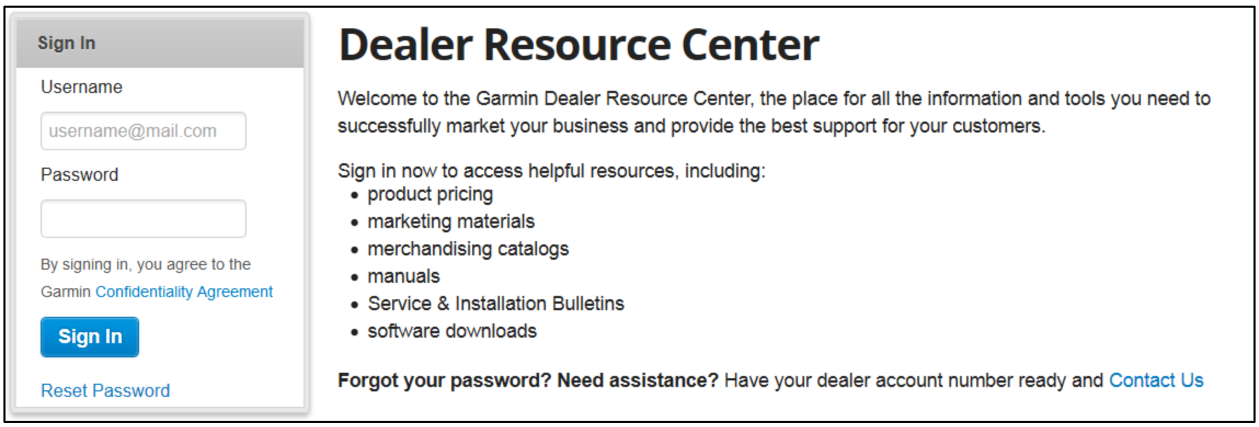
3.2.2 Loader Card Creation

The software image is an executable self-extracting file which builds the correct file structure onto an SD card for use loading software to the G1000 System. To obtain the current file follow the procedures outlined below.

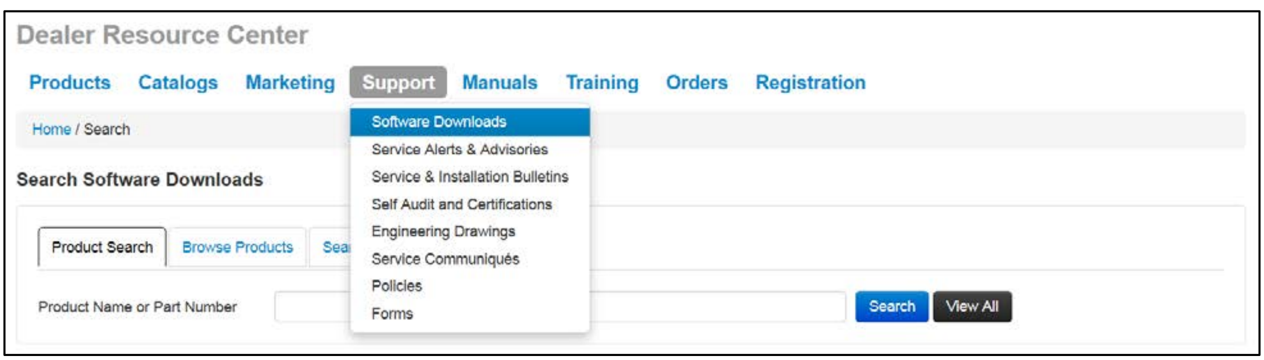
NOTE

In order to create a King Air 300 Series system loader card, the installer completing these procedures must be an authorized Garmin King Air Service Center to gain access to the necessary data via the Garmin website.

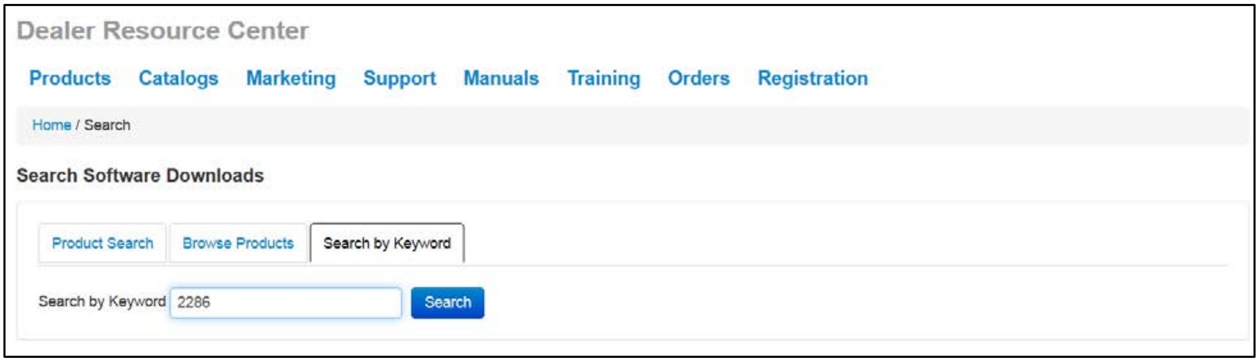
1. Go to www.garmin.com and click on the Dealer Resource Center link in the lower portion of the home page. Enter your Garmin Dealer username and password.



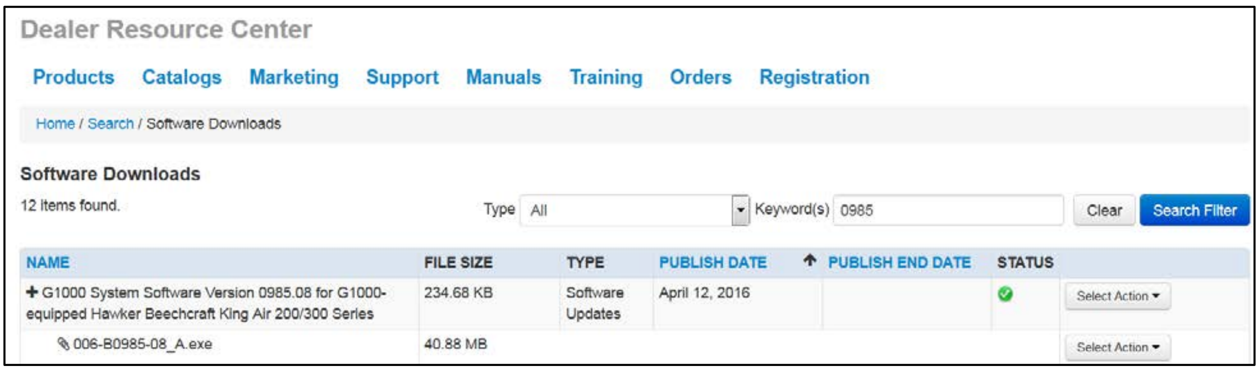
2. Select **Support** button then select **Software Downloads**.



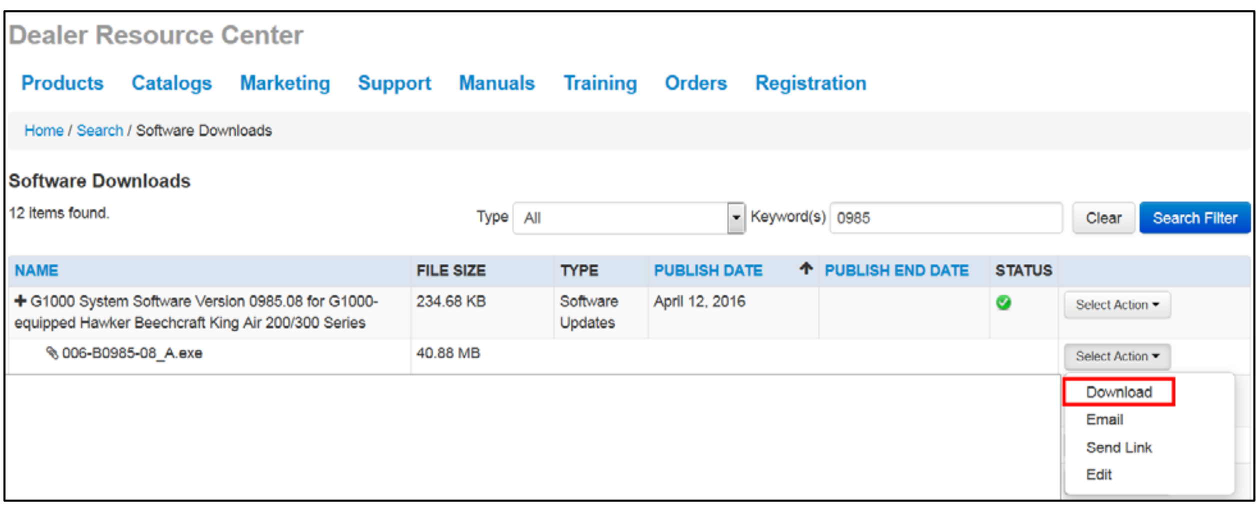
3. Choose Search by Keyword tab and enter “**2286**”. Then click on the **Search** button.



4. A screen similar to the one shown below will appear. The numbers shown are for example only.

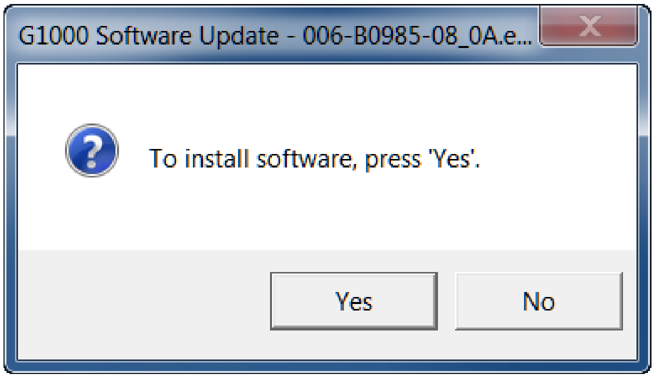


5. **Click** on the **Select Action** button for software file 006-B2286-0(X)_0A.exe (the (X) is the number from the General Arrangement drawing software part number needed for this installation) and choose **Download** to save the software file to the local hard drive.

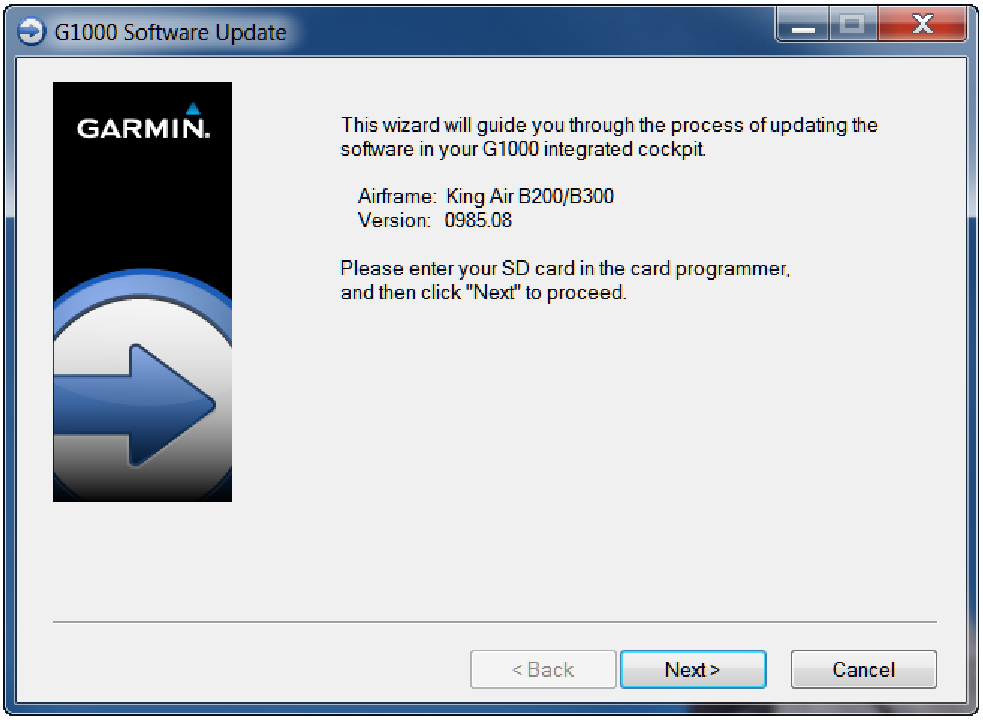


6. After the file is downloaded, close the web browser.

7. Insert a blank (empty) SD card in the card reader. The loader card program will delete all files on the SD card before loading G1000 system software files on it if the card is not blank.
8. **Double-click** the .exe file that was downloaded onto the local hard drive. The following window will pop-up on the screen. Click **Yes** to continue.

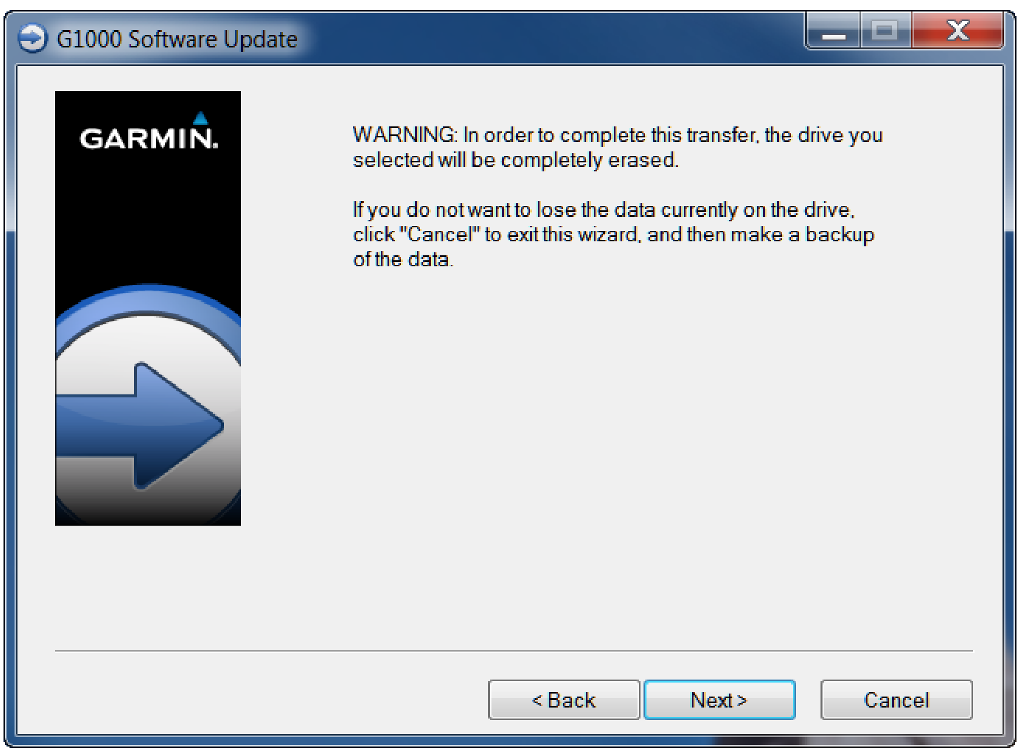


9. Follow the on screen prompts to continue.

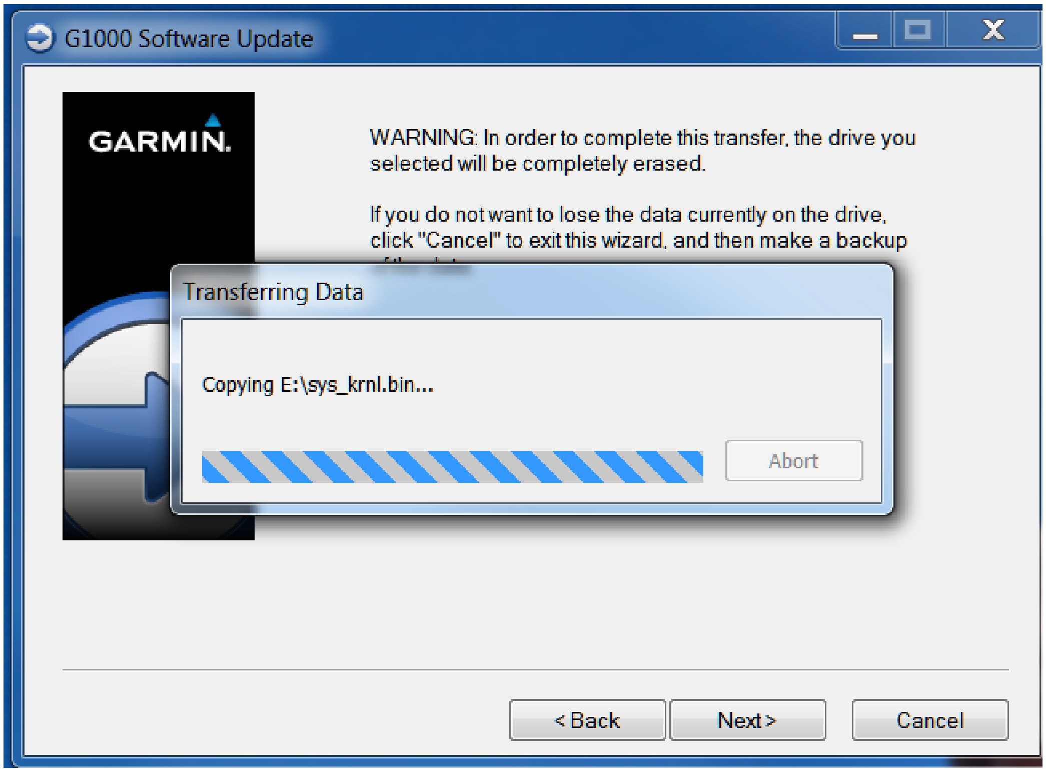


10. Select the SD card reader drive and click **Next>**.

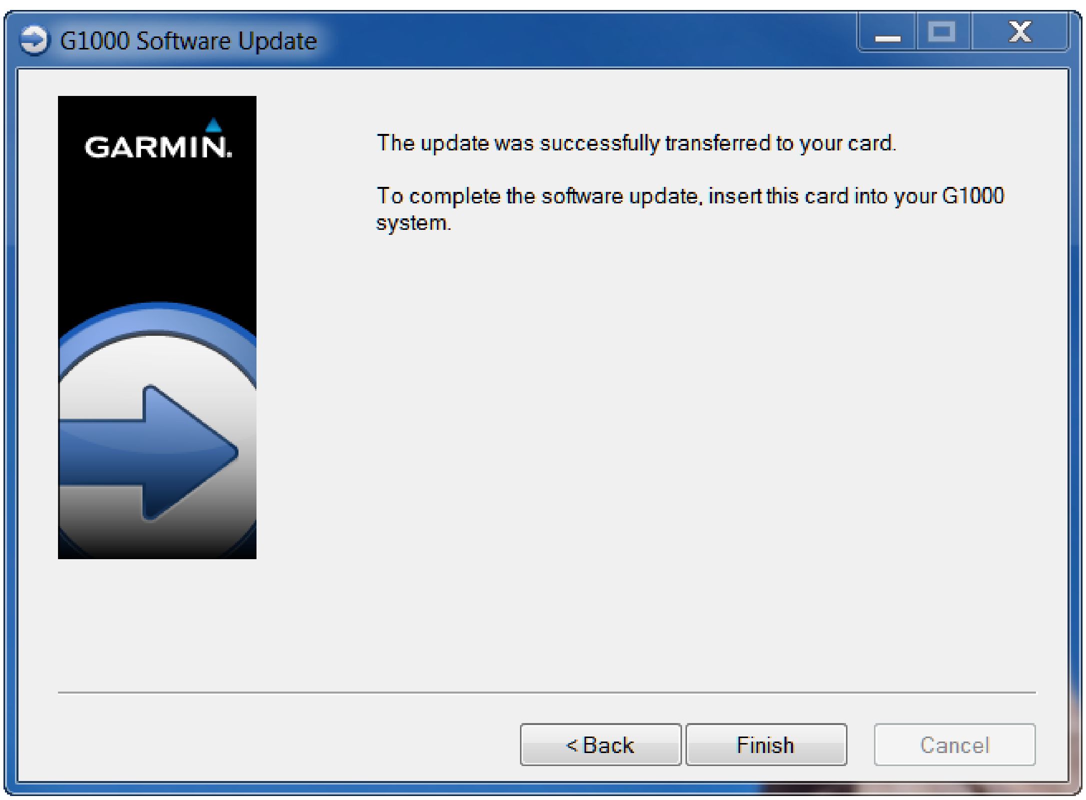
11. Follow the on screen prompts to continue.



12. The program will make the SD loader card and prompt you when it's done.



13. Once successfully completed, the following window will display. Click **Finish** to close the program. The SD card can then be removed from the computer and is ready for use in the aircraft.



3.2.3 Software Files

Software files are defined by part number and version number on the General Arrangement drawing. Each G1000 system LRU reports the software version it currently contains to the user in two places.

- Normal System Mode: The **Aux – System Status** page lists each LRU and the reported software version.
- Configuration Mode: The **System Status** page (System page group) reports more detailed LRU information, including software version, part number, and LRU status.

Software files are loaded to LRUs from the PFD1 System Upload page in configuration mode.

3.2.4 Configuration File Descriptions

There are configuration files for baseline settings and various options. Configuration files contain preset selections for input/output channels, aircraft-specific settings, and LRU-specific settings.

IMPORTANT!

Certain software and configuration files are REQUIRED to be re-loaded during maintenance that involves removal and replacement of G1000 equipment.

Refer to Section 7 for re-configuration requirements for each individual G1000 LRU. Pay special attention to the selection of option files for the units to assure a complete load.

3.2.5 Configuration File Storage

The G1000 system is designed to store all configuration settings in various places so that the configuration is retained in the aircraft during maintenance of units.

During system configuration, each file is sent directly to the applicable LRU where it is stored in local LRU memory (reference Figure 3-5.). Each file is also stored in the PFD internal memory. The applicable PFD also sends a copy of all configuration files to the 'Master Configuration module', located in the connector backshell (see Section 6.17). If the PFD is replaced, the configuration module retains all configuration files in the aircraft.

The GSU 75B, GRS 77/7800, GMU 44, and GDC 7400 configuration/calibration (reference Figure 3-6) is different than the LRU's shown in Figure 3-5.

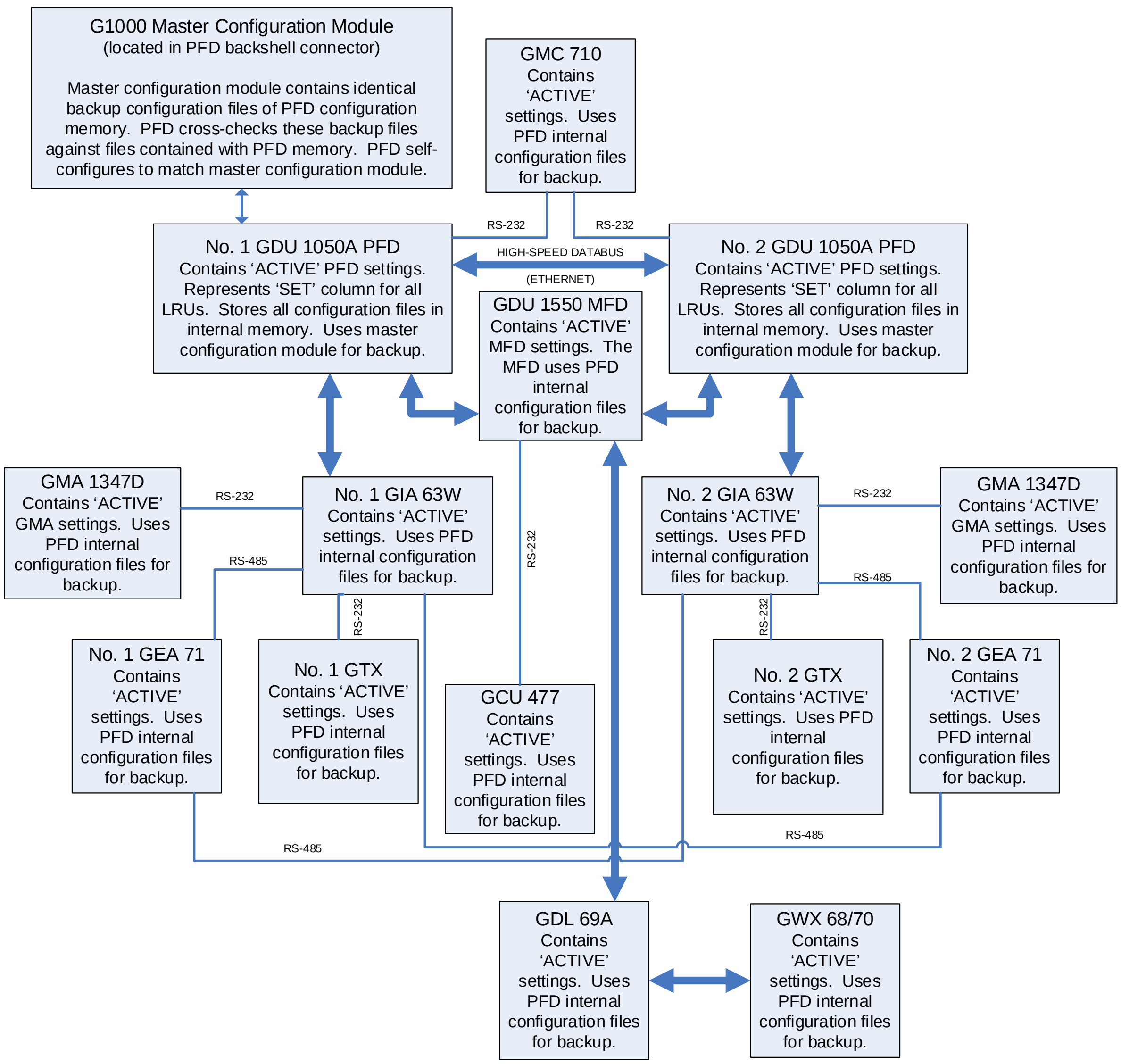


Figure 3-5, G1000 LRU Configuration File Storage

GRS 77/7800 AHRS and GMU 44 Magnetometer do not have a configuration file. However, the GRS does store calibration data acquired during the post installation checkout, which are characteristic to the specific installation. A copy of this calibration data is stored in the GRS configuration module. While performing maintenance on these units, re-calibration may be required. See Section 7.10 for more information on re-calibration criteria.

The GSU 75B ADAHRS air data configuration file is loaded directly to GSU 75B internal memory. A copy of the file is stored in the GSU 75B configuration module. The GSU also stores AHRS calibration data acquired during the post installation checkout, which is characteristic to the specific installation. A copy of this calibration data is stored in the GSU configuration module. While performing maintenance on this unit, re-calibration may be required. See Section 7.10 for more information on re-calibration criteria.

The GDC 7400 air data computer configuration file is loaded directly to GDC 7400 internal memory and there is no configuration module for the GDC 7400.

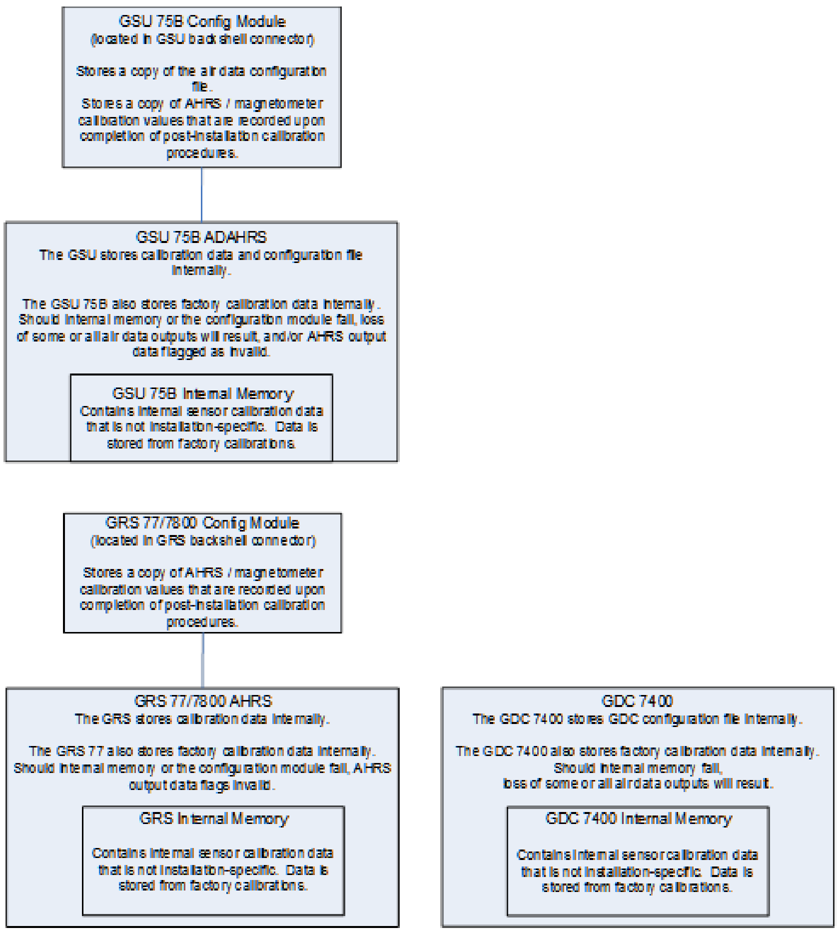


Figure 3-6, GSU/GRS/GDC Configuration Settings Storage

3.3 Configuration Mode

Throughout this document, references are made to the PFD1, PFD2 and/or MFD being in configuration mode. To start the G1000 system in configuration mode, follow these steps:

1. With the G1000 system off, open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Connect external power to the aircraft and energize the aircraft and avionics electrical busses.
3. Press and hold the **ENT** key on PFD2 (copilot) and close the PFD2 circuit breaker.
4. Release the **ENT** key after ‘INITIALIZING SYSTEM’ appears in the upper left corner of PFD2.
5. Press and hold the **#12** (far right) softkey on the MFD and close the MFD circuit breaker.
6. Release the **#12** softkey after ‘INITIALIZING SYSTEM’ appears in the upper left corner of MFD.
7. Press and hold the **ENT** key on PFD1 (pilot) and close the PFD1 (PRI) circuit breaker.
8. Release the **ENT** key after ‘INITIALIZING SYSTEM’ appears in the upper left corner of PFD1.

NOTE

If a software loader card is inserted in the top slot of the display before it is powered on, the display will automatically enter configuration mode and it is not needed to press and hold a softkey at power-on.

3.4 G1000 Hardware/Software Compatibility Check

Before installing software, the technician must first ensure that hardware part numbers are compatible with the G1000 system software image that is to be used. The General Arrangement drawing shows all available combinations of hardware and software part numbers.

A G1000 system loader card is required to install software and configuration settings to a newly installed G1000 system. The part number of the software image used to create the loader card is directly associated with the combination of software file part numbers and version levels that are defined on the General Arrangement drawing. Should software part numbers or versions change, a new software image part number is issued.

IMPORTANT

After verifying hardware/loader card compatibility, record the software image part number and all LRU hardware part numbers in the appropriate aircraft records before proceeding.

NOTE

Throughout the next section of this document, screen shots and examples are used to illustrate the software and configuration loading process. These screen shots are provided as reference only. Always refer to the General Arrangement drawing for the correct software file names, versions and part numbers.

3.5 Equipment Verification (Third Party/Optional Equipment Documentation)

Use the configuration/software checklist in Section 3.6 to determine what configuration software files to load for the aircraft installation. It is extremely important to know exactly what equipment the aircraft is equipped with and how it is connected before loading any files. Loading the incorrect files could lead to longer down time and unplanned removal of equipment.

- Third Party STCs such as such as BLR Winglet configuration. Find the AFMS part number for the STCs that are installed in the aircraft documentation as it is important to determine which configuration files to load for proper engine and airspeed instrument markings. **This information is required for Section 3.6**.
- Garmin optional equipment (i.e. GDC 7400, GRS 77 or 7800 AHRS or GSU 75 ADAHRS, GTX 33 or GTX 3X5 transponder, etc.). Section 3.5.1 helps find which units are installed without a physical inspection.
- Third party avionics equipment interfaced to G1000 (ADF, DME, non-Garmin traffic systems, WX-500, etc.). To determine if the third party equipment is installed, check the circuit breaker panel for circuit breakers for the units, and check for G1000 controls for the third party devices. See the Garmin King Air 300 Series Pilot's Guide P/N 190-02043-00 for instructions how to find the G1000 controls for the third party device. If the G1000 control and/or unit circuit breaker is not present for a third party device, it is not installed.
- Ethernet connections used for select Garmin units (i.e. Connected to GDL 69, PFD1, MFD, or PFD2 Ethernet ports). See Section 3.5.2 for guidance how to determine which Ethernet connections are used.
- Check if Autopilot Electronic Stabilization and Protection (ESP) feature is installed. See Section 3.5.3 for guidance how to check if ESP is installed.

3.5.1 Determining Installed Garmin Units

Use the table in Appendix A to determine what the unit part number is based on the unit's serial number reported on the MFD Aux - System Status page in Normal mode or PFD1 System Status page in Config mode. This table lists the units that have different loader card option files so the installer can choose the correct file without requiring the unit to be physically inspected.

Figure 3-7, Garmin Unit S/N Location

For Garmin units that S/N checking is not required but the technician needs to see if they are installed such as GSR 56, check for the presence of the unit in the LRU Information list. If the unit is not listed, it is not installed.

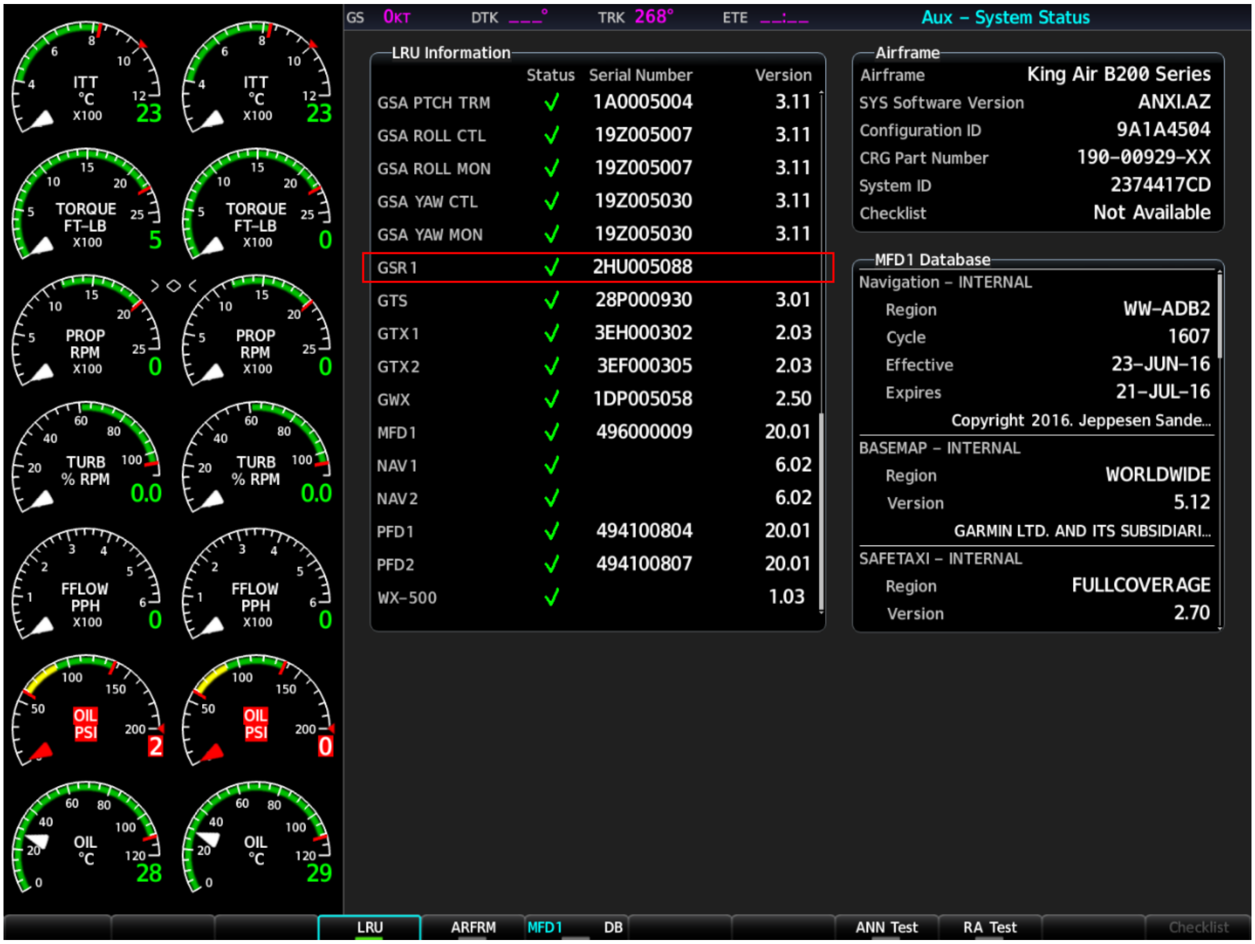


Figure 3-8, Garmin Unit Listed if Installed

3.5.2 Determining Garmin Unit Ethernet Connections

Place the displays in config mode and go to PFD1 SYSTEM DATA PATHS page. Press the HSDB softkey at the bottom of the screen and the Ethernet connections will be shown.

Figure 3-9, Ethernet Connections Page

3.5.3 Determining if Autopilot ESP is Installed

To check if the aircraft has ESP installed, go to the MFD Aux - System Setup page and press the “Setup 2” softkey at the bottom of the screen. If the “Stability and Protection” field is present, the aircraft has ESP installed. If the field is not present, the aircraft does not have ESP installed.

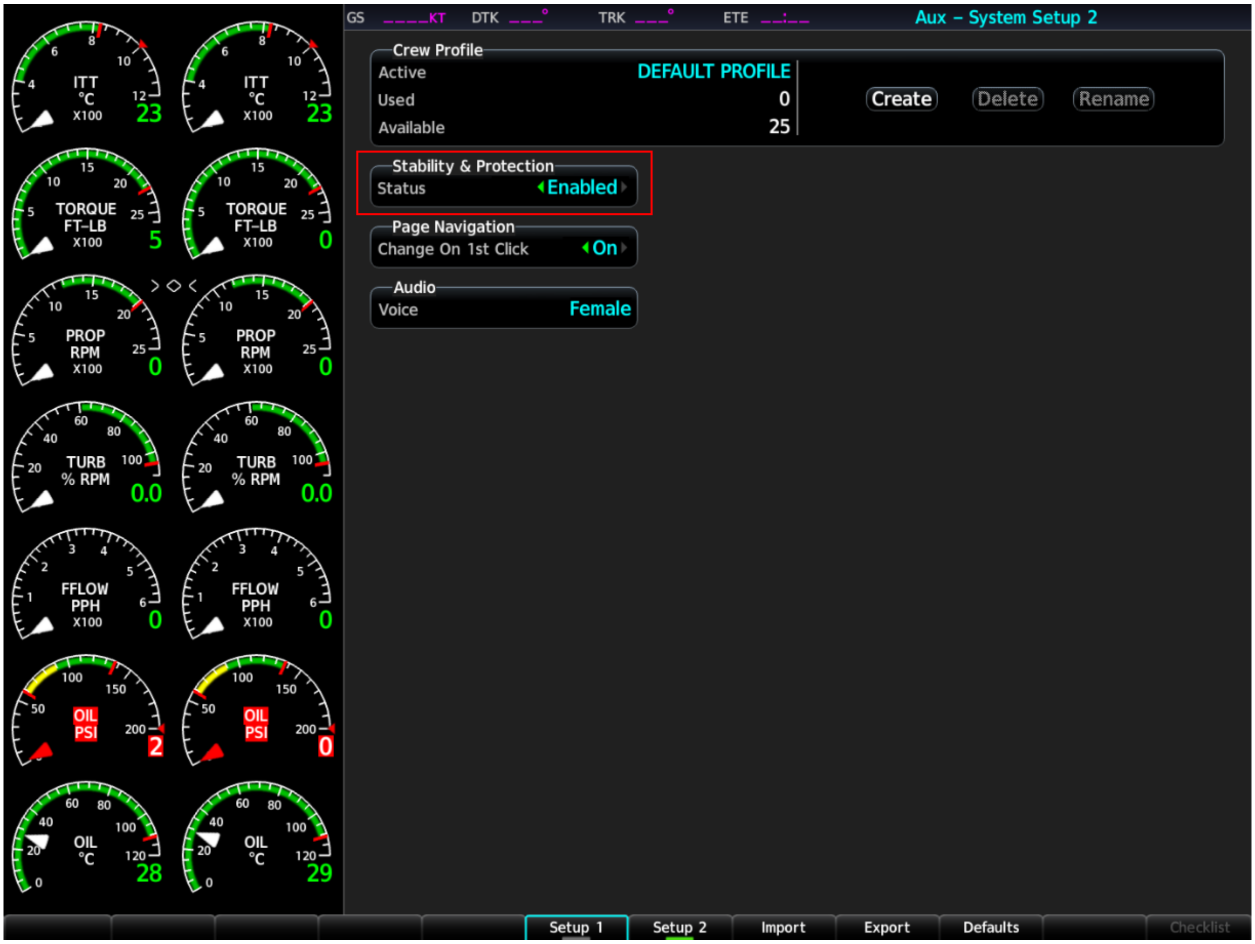


Figure 3-10, ESP Status Field

3.6 Configuration Checklist

This sheet should be completed and maintained with the aircraft permanent records. Some loader card options are not shown here if they are not used for initial 300 Series software load.

Date: ______________________________

Aircraft Make: ____________________________

Aircraft Registration: ______________________

Aircraft Serial #: ___________________________

Loader Card Version: _____________________

03) 300 Series Engine-Prop

(One selection only)

☐ King Air 300 PT6A-60 Hartzell 4-Blade
☐ King Air B300 PT6A-60 Hartzell 4-Blade

04) AHRS-Air Data

(Choose either the GSU 75B option or two selections for GRS and GDC combination)

☐ King Air - GDC 7400 ADC
☐ King Air - GRS 77 AHRS and GMU 44 Magnetometer
☐ King Air - GRS 7800 AHRS and GMU 44 Magnetometer
☐ King Air - GSU 75B ADAHRS and GMU 44 Magnetometer

05) Autopilot

(One selection only)

☐ King Air 300 Series GFC700 - ESP Installation (No AOA)
☐ King Air 300 Series GFC700 - Non ESP Installation
☐ King Air B300 Series GFC700 - ESP Installation (No AOA)
☐ King Air B300 Series GFC700 - Non ESP Installation

06) Garmin Transponders

(One selection only)

☐ King Air - Dual GTX 33 Transponders and No GTS Unit Installed
☐ King Air - Dual GTX 33 Transponders With GTS Unit Installed
☐ King Air - Dual GTX 3000 Transponders
☐ King Air - Dual GTX 335R Transponders and No GTS Unit Installed
☐ King Air - Dual GTX 335R Transponders With GTS Unit Installed
☐ King Air -GTX 345R and GTX 33 Transponders and No Active Traffic Source
☐ King Air - GTX 345R and GTX 33 Transponders With GTS Unit Installed
☐ King Air - GTX 345R and GTX 33 Transponders With SkyWatch 429 Traffic
☐ King Air - GTX 345R and GTX 33 Transponders With Honeywell 429 Traffic
☐ King Air - GTX 345R and 335R Transponders and No Active Traffic System
☐ King Air - GTX 345R and 335R Transponders With GTS Unit Installed
☐ King Air - GTX 345R and 335R Transponders With SkyWatch 429 Traffic
☐ King Air - GTX 345R and 335R Transponders With Honeywell 429 Traffic

07) Connext - SXM

(Multiple selections possible)

☐ King Air - GDL69A Legacy
☐ King Air - GDL69A SXM
☐ King Air - GDL59 Stand Alone (Connected to GDL 69)
☐ King Air - GDL59 Stand Alone (Connected to PFD2)
☐ King Air - GSR56 Stand Alone, Voice/SMS/Connext
☐ King Air - GSR56 Stand Alone, Voice/SMS Only
☐ King Air - GSR56 and GDL59 (GDL 59 connected to GDL69), Voice/SMS/Connext
☐ King Air - GSR56 and GDL59 (GDL 59 connected to PFD2), Voice/SMS/Connext
☐ King Air - GSR56 and GDL59 (GDL59 connected to GDL69), Voice/SMS Only
☐ King Air - GSR56 and GDL59 (GDL59 connected to PFD2), Voice/SMS Only
☐ Disable Flight Stream 510

08) Radar

(Up to two selections possible)

- ☐ King Air - GRA 5500 Radar Altimeter
- ☐ King Air - GWX 68 (Connected to GDL69)
- ☐ King Air - GWX 68 (Connected to MFD)
- ☐ King Air - GWX 70 (Connected to GDL69)
- ☐ King Air - GWX 70 (Connected to MFD)

09) Garmin Traffic Systems

(One selection if GTS installed or skip if using third party traffic device)

- ☐ King Air – GTS 820/850 Traffic System (Connected to GDL69)
- ☐ King Air - GTS Traffic Processor TAS/TCAS I (Connected to GDL69), No GTX 345R
- ☐ King Air - GTS Traffic Processor TAS/TCAS I (Connected to PFD1), No GTX 345R
- ☐ King Air - GTS Traffic Processor TAS/TCAS I (Connected to GDL69), With GTX 345R
- ☐ King Air - GTS Traffic Processor TAS/TCAS I (Connected to PFD1), With GTX 345R
- ☐ King Air - GTS Traffic Processor TCAS II (Connected to GDL69)
- ☐ King Air - GTS Traffic Processor TCAS II (Connected to PFD1)

10) Garmin Feature Support

(Multiple selections possible if installing TAWS-A)

- ☐ King Air - TAWS-A Support[1]
- ☐ King Air - TAWS-A Voice No Callout Installation Option[2]

11) Non-Garmin Options

(Multiple selections possible)

- ☐ King Air - ADF Option
- ☐ King Air - DME Option
- ☐ King Air - FDR Option
- ☐ King Air - RAD ALT Option (429 Interface)
- ☐ King Air - Non-Garmin TCAS II System Option
- ☐ King Air - Traffic System Option (429 Interface), No GTX 345R
- ☐ King Air - V1 Airspeed Option
- ☐ King Air 300 - BLR Winglet STC
- ☐ King Air - Lightning System Option

Unlock Card Options

(Multiple selections possible)

- ☐ TAWS-B (010-00330-51)
- ☐ ChartView Only (010-00330-50)
- ☐ Synthetic Vision (010-00330-55)
- ☐ TAWS-A (010-00330-56)
- ☐ Enhanced AFCS (010-00330-5A)
- ☐ GTS Traffic TAS to TCAS I (010-00330-A1)
- ☐ GTS Traffic TAS to TCAS II (010-00330-A2)
- ☐ GTS Traffic TCAS I to TCAS II (010-00330-A3)
- ☐ Search and Rescue (010-00330-59)
- ☐ Surface Watch (010-00330-KA)
- ☐ GWX 70 Turbulence Detection (010-00330-J3)
- ☐ GWX 70 Ground Clutter Suppression (010-00330-J4)
- ☐ Dual Charts (010-00330-KB)

Notes:

[1] This selection configures the TAWS-A gear and flap messages. An unlock card is still required to unlock feature after loading this file.

[2] Disables 1, 2, 3, and 4 hundred foot callouts if desired.

3.7 G1000 Software/Configuration Procedure

This section summarizes the procedures required to load software and configuration files to the G1000. It is intended to work as a central guide for technicians to use while performing maintenance on the aircraft. In sections of this manual where software is required to be reloaded, these sections will make reference back to this section for instructions. The technician should use proper judgment regarding the context of maintenance required while following this section.

The following diagram depicts an overview of the software/configuration sequence for the G1000 system. This applies mostly to a new G1000 system software installation by Service Bulletin and is for informative purposes only.

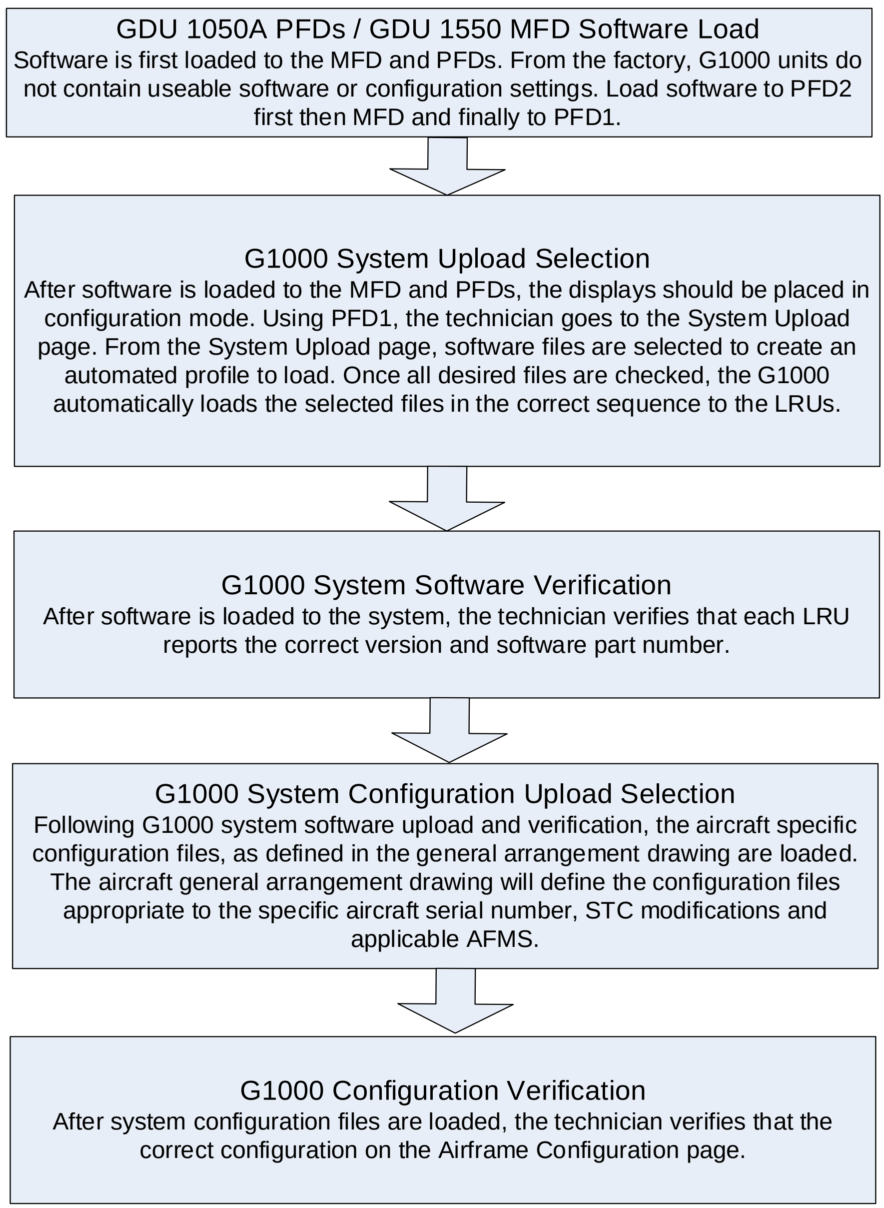


Figure 3-11, Software/Configuration Overview

3.8 System Software and Configuration Load

3.8.1 System Power Up

Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.

DO NOT RELY ON THE AIRCRAFT BATTERY TO LOAD SOFTWARE. DO NOT USE A BATTERY CHARGER AS AN EXTERNAL POWER SOURCE DUE TO ELECTRICAL NOISE IT MAY INJECT IN THE G1000 SYSTEM.

Power loss during a software upgrade may cause a LRU to become corrupted and unresponsive requiring replacement. Remove power only when told to do so in the procedure.

3.8.2 MFD & PFD Software Load

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Remove Garmin database cards from bottom slots of PFD1, MFD, and PFD2 if present.
3. Insert the software loader card into PFD2 top card slot.
4. Turn on Avionics electrical busses.
5. Close the PFD2 circuit breaker.
6. When the “DO YOU WANT TO UPDATE SYSTEM FILES?” prompt appears, press the **YES** softkey.

7. After the new GDU software is loaded to PFD2, a “DO YOU WANT TO UPDATE THE SPLASH SCREEN?” prompt may appear. If it does, press the **NO** softkey. The splash screen will be loaded later in this procedure.

8. When complete, the PFD2 starts in configuration mode displaying the “System Status” page. Open PFD2 circuit breaker.
9. Remove the loader card from PFD2 and insert it into the top card slot on the MFD.
10. Repeat Steps 5 through 8 for the MFD using the MFD circuit breaker. The MFD does not have an ENT key, so instead use softkey #12 for ENT when stated above.
11. When MFD update is complete, open the MFD circuit breaker, remove the loader card from the MFD and insert it into the PFD1 top card slot.
12. Repeat Steps 5 through 8 for PFD1 using the PFD (PRI) circuit breaker. When complete, leave PFD1 on with the loader card remaining in the top card slot.
13. Start the MFD and PFD2 in configuration mode by pressing and holding the **ENT** key or softkey #12 when closing the circuit breakers. Release the key when the words “INITIALIZING SYSTEM” appear on the screen.

3.8.3 01) Baseline Software and Configuration Load

IMPORTANT

If the aircraft being modified has incorporated any modifications beyond factory configuration that effect engine or airspeed limitations, your configuration may not be supported at this time. It is the responsibility of the installer to ensure compatibility with existing modifications.

Do not allow power to be removed from the system when loading software. Remove power only when instructed by the following procedures.

As a general rule, all displays should be in the same mode (configuration or normal) unless instructed otherwise.

Follow the order of software and configuration loading, do not skip or rearrange steps.

Do not operate or turn off MFD and/or PFD2 while loading software and configuration files unless specifically instructed to do so. A failed or cancelled load may result.

If an incorrect configuration file is loaded at any time during this procedure, STOP and start the configuration load over at Step 2 in this Section.

1. Ensure all avionics circuit breakers are closed and the G1000 system is fully powered.
2. On PFD1, go to the SYSTEM UPLOAD page using the small FMS knob.
3. Push in the PFD1 FMS knob to activate the cursor in the Group field. Rotate the small FMS knob to activate the drop-down menu. Rotate the small FMS knob to highlight **"01) Baseline"** in the drop-down menu and press the **ENT** key to select it.
4. Once **"01) Baseline"** is selected, the cursor moves to the ITEM window. Rotate the small FMS knob to activate the drop-down menu. Highlight **"King Air 200-300 Series Baseline Load"** and press the **ENT** key to select it. The PRODUCT field will then populate.

NOTES

The PRODUCT window displays information regarding each G1000 LRU. The LRU column depicts the reported software version of the LRU (may be blank if PFD1 cannot communicate with the unit yet until after config files are loaded). The CARD VERS column shows the LRU software version stored on the Loader Card.

The SOFTWARE column may or may not have all boxes checked automatically. For the initial software load in the system all software boxes should be checked to load all files. This is done by pressing the CHK ALL softkey when instructed below.

The CONFIGURATION column defaults to having all unit configuration boxes checked.

The hardware serial number is used to determine appropriate software for the GIA COM, GIA NAV, GMU 44, and GSA 8X units. Until the system configuration loads sufficiently to access and read these units, they may show a "INV" invalid status under the LRU VERS and CARD VERS columns with up to two line items per item (representing different hardware configurations). After the configuration files are loaded, the units will update and remove the "INV" status and will load automatically.

5. Press the **CHK All** softkey.
6. Press the **Load** softkey.

Monitor the loading progress and verify the software load completes without errors as indicated by the following:

- Green "PASS" or White "N/A" in all Configuration and Software columns.
- "Upload Complete………….COMPLETE" in the summary box.

7. Press the **ENT** key to acknowledge the "Upload Complete" box.

3.8.4 03) 300 Series Engine-Prop Software and Configuration Load

Follow this procedure to configure the airframe type.

1. Move the cursor to the Group window and rotate FMS inner knob to display drop down menu. Highlight **"03) 300 Series Engine-Prop"** and press the **ENT** key to select it.
2. The cursor should automatically move to the ITEM window. Rotate the small FMS knob to highlight the appropriate airframe, engine, and prop combination that was checked on the Configuration checklist in Section 3.6, in the 03) 300 Series Engine-Prop checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.
4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the "CARD COPY" configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.

NOTE

Not all propellers are available for selection with each airframe and engine configuration. Only those props that are approved for installation on a particular airframe/engine are available in the drop down selection window.

6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” or White “N/A” in all Configuration and Software columns.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.

3.8.5 04) AHRS – Air Data Software and Configuration Load

Follow this procedure to configure the AHRS, Air Data, or ADAHRS units in the aircraft.

1. Move the cursor to the Group window and rotate FMS inner knob to display drop down menu. Highlight **“04) AHRS – Air Data”** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in Section 3.6 in the 04) AHRS-Air Data checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.
4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the “CARD COPY” configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. If two selections were made for this section on the Configuration checklist (one AHRS and one ADC), repeat steps 2-7 to load the second file.

3.8.6 05) Autopilot Software and Configuration Load

Follow this procedure to configure the autopilot type and GSM servo mounts installed.

1. Move the cursor to the Group window and rotate FMS inner knob to display drop down menu. Highlight **“05) Autopilot”** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in Section 3.6 in the 05) Autopilot checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.

4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the “CARD COPY” configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Rotate the large FMS knob to highlight the ITEM window and select the second file on the Configuration checklist. Repeat steps 2-7 to load the second file.

3.8.7 06) Garmin Transponders Software and Configuration Load

Follow this procedure to configure the Garmin transponders.

1. Rotate the large FMS knob until the Group field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **“06) Garmin Transponders”** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the item that was checked on the Configuration checklist in Section 3.6 in the 06) Garmin Transponders checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.
4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the “CARD COPY” configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.

3.8.8 07) Connext –SXM Software and Configuration Load

Follow this procedure to configure FS 510, GDL69A, GDL59, and GSR 56 options if installed.

1. Rotate the large FMS knob until the Group field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **“07) Connext - SXM”** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in Section 3.6 in the 07) Connext - SXM checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.

4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the “CARD COPY” configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete………….COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. If multiple selections were made for this section on the Configuration checklist, repeat steps 2-7 to load each additional item on the Configuration checklist.

3.8.9 08) Radar Software and Configuration Load

Follow this procedure to configure GWX 70 and GRA 5500 if installed.

1. Rotate the large FMS knob until the Group field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **“08) Radar”** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in Section 3.6 in the 08) Radar checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.
4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the “CARD COPY” configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete………….COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. If two selections were made for this section on the Configuration checklist, repeat steps 2-7 to load the second item.

3.8.10 09) Garmin Traffic Systems Software and Configuration Load

Follow this procedure to configure Garmin Traffic Systems if installed.

NOTE

The G1000 can only be configured for TIS <u>or</u> TAS/TCAS but not both. Performing this procedure will automatically disable the TIS function. Configuration of the GTS Processor will require entering the aircraft registration number into the unit using Section 3.10 “Aircraft Registration Number Entry”.

1. Rotate the large FMS knob until the Group field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **"09) Garmin Traffic Systems"** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the item that was checked on the Configuration checklist in Section 3.6 in the 09) Garmin Traffic Systems checklist group and press the **ENT** key to select it.
3. Press the **CHK All** softkey.
4. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the "CARD COPY" configuration check box. Press the **ENT** key to uncheck the configuration check box.
5. Press the **Load** softkey.
6. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
7. Press the **ENT** key to acknowledge the "Upload Complete" box.

3.8.11 10) Garmin Feature Support Configuration Load

This section applies only to installations with the TAWS-A option. The procedures outlined in this section must be followed to load the necessary configuration files required to enable TAWS-A gear and flap messages. A TAWS-A enablement card is also required for this option.

NOTE

TAWS-A Voice No Callout applies only to installations with the TAWS-A option. If TAWS-A voice callouts (400, 300, 200, and 100 feet) are not desired, follow the procedures outlined in this section to load the necessary configuration files to disable TAWS-A voice callouts.

1. Rotate the large FMS knob until the Group field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **"10) Garmin Feature Support"** and press the **ENT** key to select it.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in Section 3.6 in the 10) Garmin Feature Support checklist group and press the **ENT** key to select it.
3. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the "CARD COPY" configuration check box. Press the **ENT** key to uncheck the configuration check box.
4. Press the **LOAD** softkey.
5. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
6. Press the **ENT** key to acknowledge the "Upload Complete" box.

7. If TAWS-A Voice No Callout option is desired, repeat steps 2-6 to load the "King Air - TAWS-A Voice No Callout Installation Option" file.

3.8.12 11) Non Garmin Options Configuration Load

Follow this procedure to configure non-Garmin items if installed.

1. Rotate the large FMS knob until the GROUP field is highlighted, rotate the small FMS knob to activate the drop down menu. Rotate the small FMS knob and select **"11) Non Garmin Items"** and press the **ENT** softkey.
2. In the ITEM window, rotate the small FMS knob to highlight the first item that was checked on the Configuration checklist in section 3.6 in the 11) Non-Garmin Options checklist group and press the **ENT** key to Select it.
3. In the PRODUCT window, move the cyan selection box down with the large FMS knob to highlight the "CARD COPY" configuration check box. Press the **ENT** key to uncheck the configuration check box.
4. Press the **Load** softkey.
5. Monitor the loading progress and verify the software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
6. Press the **ENT** key to acknowledge the "Upload Complete" box.
7. If multiple selections were made for this Section on the Configuration checklist, repeat steps 2-6 to load each additional option.

3.8.13 Save Configuration

1. Press the **UPDT CFG** softkey at the bottom of the SYSTEM UPLOAD page.
2. Press the **ENT** key to select YES in the pop-up window to start the update.
3. When the config module update is done, press the **ENT** key to select OK in the pop-up window to close it.
4. Open PFD 1 circuit breaker, remove the software loader card and continue to the next Section.

3.9 Feature Enablement

This section describes how to unlock or enable optional features. The installer will only load the sections for the features they require. For installing all feature enablement cards, PFD1, PFD2, and the MFD must be in configuration mode.

The G1000 has various features that require the use of unlock/enable cards to activate the feature. Throughout this document these cards are generically referred to as 'enablement cards'. In some cases, the actual label on the physical card may say 'unlock'.

If uncertain what SD Card to use, the technician must verify the card part number on the General Arrangement drawing prior to use to assure the correct feature is unlocked.

3.9.1 ChartView Feature Enablement

Follow this procedure to activate the ChartView-only display feature. This feature disables display of Garmin FliteCharts. **If Dual Charts feature is desired instead, go to Section 3.9.2.**

NOTES

The required ChartView databases are subscription-based and need to be procured by the installing agency from the Garmin or Jeppesen website. The ChartView database is not present in a new display.

1. Insert the ChartView Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Configuration Files**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**Enable ChartView**" and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
7. Press the **ENT** key to acknowledge the "Upload Complete" box.
8. Open PFD1 circuit breaker and remove the ChartView enablement card.

3.9.2 Dual Charts Enablement

Follow this procedure to enable the Dual Charts display feature. This enables the pilot to switch between Garmin FliteCharts and Jeppesen ChartView products on the MFD.

1. Insert the Dual Charts Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.

3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Enable_DualCharts**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**Dual Charts Feature Enable**" and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
7. Press the **ENT** key to acknowledge the "Upload Complete" box.
8. Open PFD1 circuit breaker and remove the Dual Charts enablement card.

3.9.3 SurfaceWatch Feature Enablement

Follow this procedure to enable the SurfaceWatch feature.

1. Insert the SurfaceWatch Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Enable_SurfaceWatch**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**SurfaceWatch Feature Enable**" and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
7. Press the **ENT** key to acknowledge the "Upload Complete" box.
8. Open PFD1 circuit breaker and remove the SurfaceWatch enablement card.

3.9.4 GWX 70 Radar Turbulence Detection Feature Enablement

Follow this procedure to enable the GWX 70 Turbulence Detection feature.

1. Insert the GWX 70 Turbulence Detection Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Enable_TD**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**GWX 70 Turbulence Detection Enable**" and press the **ENT** key to select it.
5. Press the **Load** softkey.

6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.
   - “Upload Complete………….COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove the Turbulence Detection enablement card.

3.9.5 GWX 70 Ground Clutter Suppression Feature Enablement

Follow this procedure to enable the GWX 70 Ground Clutter Suppression feature.

1. Insert the GWX 70 Ground Clutter Suppression Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**Enable_GCS**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**GWX 70 Ground Clutter Suppression Enable**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.
   - “Upload Complete………….COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove the Ground Clutter Suppression enablement card.

3.9.6 TAWS-B Feature Enablement

Follow this procedure to enable the TAWS Class B feature. If TAWS-A is required instead, go to Section 3.9.7.

1. Insert the TAWS-B Enablement card in the top slot of PFD1 and power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**Configuration Files**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**Enable TAWS-B**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.

- “Upload Complete………….COMPLETE” in the summary box.

7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove the TAWS-B enablement card.

3.9.7 TAWS-A Enablement

Follow this procedure to enable the TAWS Class A feature.

NOTES

Ensure that the King Air - TAWS-A Support Configuration file has been loaded per Section 3.8.11 and that a Radar Altimeter Option (King Air - GRA 5500 Radar Altimeter or King Air - RAD ALT Option (429 Interface)) Configuration file has been loaded.

1. Insert the TAWS-A Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**Configuration Files**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**Enable TAWS-A**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.
   - “Upload Complete………….COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove TAWS-A enablement card.

3.9.8 Synthetic Vision System Enablement

Follow this procedure to enable the Synthetic Vision feature.

1. Insert the SVS Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**Configuration Files**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**Enable SVS Dual PFD**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.

- "Upload Complete…………COMPLETE" in the summary box.

7. Press the **ENT** key to acknowledge the "Upload Complete" box.
8. Open PFD1 circuit breaker and remove SVS enablement card.

3.9.9 Enhanced AFCS (ESP) Enablement

Follow this procedure to enable the Electronic Stability and Protection (ESP) feature.

NOTE

Ensure that the King Air 200/B300 Series GFC700 - ESP Installation (No AoA) or King Air 200/B300 Series GFC700 - ESP Installation (with AoA) Configuration file has been loaded.

1. Insert the Enhanced AFCS Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Enhanced AFCS**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**Enable Enhanced AFCS**" and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
7. Press the **ENT** key to acknowledge the "Upload Complete" box.
8. Open PFD1 circuit breaker and remove Enhanced AFCS enablement card.

3.9.10 Search and Rescue Enablement

Follow this procedure to enable the Search and Rescue (SAR) feature.

1. Insert the SAR Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **"System Upload"** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**Enhanced SAR**" and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight "**Enhanced Search and Rescue**" and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.

- “Upload Complete…………COMPLETE” in the summary box.

7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove SAR enablement card.

3.9.11 GTS TCAS I Enablement

Follow this procedure to enable Garmin GTS TCAS I feature. If TCAS II is desired instead, go to Section 3.9.12.

1. Insert the TCAS I Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**GTS Processor Enablement**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**GTS Processor TAS to TCAS I Enablement**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove the Enhanced TCAS I enablement card.

3.9.12 GTS TCAS II Enablement

Follow this procedure to enable the Garmin GTS TCAS II feature.

1. Insert the TCAS II Enablement card in the top slot of PFD1, power on PFD1 in configuration mode.
2. On PFD1, select the **“System Upload”** page using the small FMS knob.
3. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight “**GTS Processor Enablement**” and press the **ENT** key to select it.
4. In the ITEM window, rotate the small FMS knob to highlight “**GTS Processor TAS to TCAS II Enablement**” and press the **ENT** key to select it.
5. Press the **Load** softkey.
6. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration column for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
7. Press the **ENT** key to acknowledge the “Upload Complete” box.
8. Open PFD1 circuit breaker and remove the Enhanced TCAS II enablement card.

3.9.13 Flight Stream 510

This file is designed to allow the installer to re-enable the Flight Stream 510 if it was previously disabled. This file is not required to enable Flight Stream 510 if it was not previously disabled. Flight Stream 510 is enabled by default in the baseline configuration.

1. Insert the software loader card in the top slot of PFD1, power on PFD1 in configuration mode.
2. Press the **NO** softkey (number 11 softkey) to acknowledge the following prompt.

3. On PFD1, select the **"System Upload"** page using the small FMS knob.
4. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**07) Connext - SXM**" and press the **ENT** key to select it.
5. In the ITEM window, rotate the small FMS knob to highlight "**Enable Flight Stream 510**" and press the **ENT** key to select it.
6. Press the **CHK ALL** softkey.
7. In the product window, move the cursor to highlight "**CARD COPY**". Press the **ENT** key to uncheck the configuration check box.
8. Press the **Load** softkey.
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration column for each item loaded.
   - "Upload Complete…………COMPLETE" in the summary box.
10. Press the **ENT** key to acknowledge the "Upload Complete" box.
11. Open PFD1 circuit breaker and remove the software loader card.

3.9.14 FliteCharts Enablement

This file is designed to allow the installer to revert the Charts options back to the default FliteCharts setting if Dual Charts or ChartView features were previously enabled. This file is not required to enable FliteCharts if Dual Charts or ChartView were not previously enabled. FliteCharts is enabled by default in the baseline configuration.

1. Insert the software loader card in the top slot of PFD1, power on PFD1 in configuration mode.
2. Press the **NO** softkey (number 11 softkey) to acknowledge the following prompt.

3. On PFD1, select the **"System Upload"** page using the small FMS knob.
4. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**10) Garmin Feature Support**" and press the **ENT** key to select it.
5. In the ITEM window, rotate the small FMS knob to highlight "**Activate Garmin FliteCharts Only (Disables Dual Charts and ChartView**" and press the **ENT** key to select it.

6. Press the **CHK ALL** softkey.
7. In the product window, move the cursor to highlight "**CARD COPY**". Press the **ENT** key to uncheck the configuration check box.
8. Press the **Load** softkey.
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration column for each item loaded.
    - "Upload Complete…………COMPLETE" in the summary box.
10. Press the **ENT** key to acknowledge the "Upload Complete" box.
11. Open PFD1 circuit breaker and remove the software loader card.

3.9.15 TAWS-A Voice Callout Enablement

This file is designed to allow the installer to re-enable the 1, 2, 3, and 4 hundred foot callouts if the no voice callout option was loaded previously. This file is not required to enable the voice callouts if the no voice callout option was not loaded previously. The voice callouts are enabled by default in the baseline configuration.

1. Insert the software loader card in the top slot of PFD1, power on PFD1 in configuration mode.
2. Press the **NO** softkey (number 11 softkey) to acknowledge the following prompt.

3. On PFD1, select the **"System Upload"** page using the small FMS knob.
4. Push in the FMS knob to activate the curser in the Group field. Rotate the small FMS knob to highlight "**10) Garmin Feature Support**" and press the **ENT** key to select it.
5. In the ITEM window, rotate the small FMS knob to highlight "**Activate Garmin FliteCharts Only (Disables Dual Charts and ChartView**" and press the **ENT** key to select it.
6. Press the **CHK ALL** softkey.
7. In the product window, move the cursor to highlight "**CARD COPY**". Press the **ENT** key to uncheck the configuration check box.
8. Press the **Load** softkey.
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration column for each item loaded.
    - "Upload Complete…………COMPLETE" in the summary box.
10. Press the **ENT** key to acknowledge the "Upload Complete" box.
11. Open PFD1 circuit breaker and remove the software loader card.

3.9.16 POTS Handset Configuration

Follow this procedure to enable a POTS handset if installed. Note that the GDL 59 Wi-Fi data link option must be loaded per Section 3.8.8 prior to loading the POTS handset configuration.

1. Power on PFD1 in configuration mode.
2. On the PFD1, select GDL page group using the large FMS knob.
3. Using the small FMS knob select the GDL 59 Configuration page.
4. Activate the cursor. Use the large FMS knob to select POTS CONNECTED in the PHONE SETTINGS field.
5. Use the small FMS knob to select **YES** and press the **ENT** key.
6. After GDL 59 is configured, press the **ENT** key.

3.10 Aircraft Registration Number Entry

NOTE

Steps to complete the aircraft registration entry are dependent on transponder equipment installed. Choose the appropriate procedure from Section 3.10.1 or 3.10.2 to complete the aircraft registration entry.

3.10.1 Equipped with Dual GTX 33s or GTX 3000s

1. Power on PFD1 in configuration mode. Select the **AIRCRAFT CONFIGURATION** page on PFD1.
2. Activate the cursor to select the ”**AIRCRAFT REGISTRATION**” field and enter the aircraft's tail number.
3. For non-US "N" number aircraft registrations, rotate the large FMS knob to select the "**ICAO ADDRESS**" and enter the aircraft's 24 bit ICAO address. US "N" number aircraft registrations are automatically decoded and entered in this field, do not change the number.
4. If applicable, rotate the large FMS knob to select the "**ICAO REGION**" field and select the ICAO region. Otherwise, leave at "NONE".
5. If applicable, rotate the large FMS knob to select the ”**DOMAIN IDENTIFIER**” field and enter the number. Otherwise, leave blank.
6. Rotate the large FMS knob to select the "**VFR CODE**" field and enter the desired code that will become active when the VFR key on a PFD is pressed.
7. For GTX 33 units only, press the **Set GTX1** softkey and acknowledge the PFD1 prompt by pressing the **ENT** key. Repeat for the **Set GTX2** softkey.
8. For GTX 3000 units only, press the **SET GTX** softkey and acknowledge the PFD1 prompt by pressing the **ENT** key.
9. Press the **Set GTS** softkey (if present) and acknowledge the PFD1 prompt by pressing the **ENT** key.
10. After completing transponder configuration, deactivate the cursor.

3.10.2 Equipped with Dual GTX 3X5s

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD1 in configuration mode.
3. Press the **NO** softkey (number 11 softkey) to acknowledge the following prompt.

   DO YOU WANT TO UPDATE SYSTEM FILES?
   NO WILL BE ASSUMED IN 30 SECONDS.

4. On PFD1, select the **AIRCRAFT CONFIGURATION** page.
5. Activate the cursor to select the **"AIRCRAFT REGISTRATION**" field and enter the aircraft's tail number.
6. For non-US "N" number aircraft registrations, rotate the large FMS knob to select the **"ICAO ADDRESS**" and enter the aircraft's 24 bit ICAO address. US "N" number aircraft registrations are automatically decoded and entered in this field, do not change the number.
7. If applicable, rotate the large FMS knob to select the "**ICAO REGION**" field and select the ICAO region. Otherwise, leave at "NONE".
8. If applicable, rotate the large FMS knob to select the "**DOMAIN IDENTIFIER**" field and enter the number. Otherwise, leave blank.
9. Rotate the large FMS knob to select the "**VFR CODE**" field and enter the desired code that will become active when the VFR key on a PFD is pressed.
10. Press the **SET GTS** softkey (if present) and acknowledge the prompt by pressing the **ENT** key.
11. Deactivate the cursor.
12. Rotate large FMS knob to select "**GTX 3X5**" configuration page group.
13. On the "**Transponder Airframe Configuration**" page, verify the GTX1 and GTX 2 boxes at the top of the page are green and the tail number, ICAO address, and VFR code that were entered previously are correct.

3.10.3 Equipped with Single GTX 345R (#1) and Single GTX 33 (#2)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD1 in configuration mode.
3. Press the **NO** softkey (number 11 softkey) to acknowledge the following prompt.

   DO YOU WANT TO UPDATE SYSTEM FILES?
   NO WILL BE ASSUMED IN 30 SECONDS.

4. Select the **AIRCRAFT CONFIGURATION** page on PFD1.
5. Activate the cursor to select the "**AIRCRAFT REGISTRATION**" field and enter the aircraft's tail number.
6. Rotate the large FMS knob to select the **"ICAO ADDRESS**" and enter the aircraft's 24 bit ICAO address.
7. If applicable, rotate the large FMS knob to select the "**ICAO REGION**" field and select the ICAO region. Otherwise, leave at "NONE".

8. If applicable, rotate the large FMS knob to select the "**DOMAIN IDENTIFIER**" field and enter the number. Otherwise, leave blank.
9. Rotate the large FMS knob to select the "**VFR CODE**" field and enter the desired code that will become active when the VFR key on a PFD is pressed.
10. Press the **Set GTX2** softkey and acknowledge the PFD1 prompt by pressing the **ENT** key.
11. Press the **Set GTS** softkey (if present) and acknowledge the PFD1 prompt by pressing the **ENT** key.
12. Deactivate the cursor.
13. Rotate large FMS knob to select "**GTX 3X5**" configuration page group.
14. Rotate the small FMS knob to select "**Transponder Airframe Configuration**" page.
15. Verify the GTX1 box at the top of the page is green and the tail number, ICAO address, and VFR code that were entered previously are correct.

3.11 Configuration Manager

1. On PFD1, rotate the large FMS knob to select "**SYSTEM**" configuration page group.
2. Rotate the small FMS knob to select Configuration Manager page.
3. Press the softkey labelled **CNFM CFG** on PFD1.
4. Press the **ENT** key on PFD1 to select OK when prompted to confirm configuration as expected configuration.
5. Open MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.

3.12 Splash Screen Loading

When all software and configuration has been loaded, the splash screens must be loaded to all display units (PFD1, PFD2 and MFD).

1. Insert the software loader card in the upper slot of PFD2.
2. Close PFD2 circuit breaker.
3. When prompted to update system files, press the **NO** softkey.
4. When prompted to update splash screen files, press the **YES** softkey.
5. When the SYSTEM STATUS page appears, **open** the PFD2 circuit breaker.
6. Remove the loader card from PFD2 and insert it into the upper slot of the MFD.
7. Close MFD circuit breaker.
8. When prompted to update system files, press the **NO** softkey.
9. When prompted to update splash screen files, press the **YES** softkey.
10. When the SYSTEM STATUS configuration page appears, **open** MFD circuit breaker.
11. Remove the loader card from the MFD and insert it into the upper slot of PFD1.
12. Close PFD 1 (PRI) circuit breaker.
13. When prompted to update system files, press the **NO** softkey.

14. When prompted to update splash screen files, press the **YES** softkey.
15. Open PFD 1 (PRI) circuit breaker.

3.13 Clearing Default User Settings

1. Open MFD, PFD1 PRI, PFD1 SEC, and PFD2 circuit breakers.
2. While holding the CLR button on PFD1, close PFD1 PRI circuit breaker.
3. When prompted to clear user settings, select the YES softkey.
4. When user settings have been cleared appears on the screen, Open PFD1 PRI circuit breaker.
5. While holding the second key from the right side (#11 softkey) of the MFD, close the MFD circuit breaker.
6. When prompted to clear user settings, select the YES softkey.
7. When user settings have been cleared appears on the screen, open MFD circuit breaker.
8. While holding the CLR button on PFD 2, close the PFD2 circuit breaker.
9. When prompted to clear user settings, select the YES softkey.
10. When user settings have been cleared appears on the screen, open PFD2 circuit breaker.

3.14 Database Loading

Follow this procedure to load the databases.

1. Obtain the following databases from fly.garmin.com and install on a blank 16GB or larger card, or by obtaining Garmin SD Card P/N 010-00474-50 which contains some of the databases below. Databases with an (*) asterisk are not included on the P/N 010-00474-50 SD card. If obtaining the databases from fly.garmin.com and using SD cards smaller than 16GB, you may need to use multiple cards (or reuse one) to load all the databases into the G1000 system.
    a. Terrain (Worldwide, 4.9 Arc Second, TBD2 format)
    b. Obstacle (US/Canada/Europe, OBD2 format)
    c. AOPA Airport Directory (US)
    d. AC-U-KWIK Airport Directory*
    e. SafeTaxi (US, North America*, Canada*, Europe*, Full Coverage*)
    f. Basemap (Worldwide)
    g. Garmin FliteCharts (US, Canada*, Europe*)
    h. Jeppesen ChartView*
    i. IFR/VFR Charts (US)
    j. Navigation*
2. With the displays off, insert the SD card with the databases into the MFD top slot.
3. Apply power to the PFD1, MFD, and PFD2.

4. On the MFD, database verification messages may appear. If so, follow the on-screen instructions to continue.
5. Go to the MFD Aux - Databases page to monitor the automatic database update progress. The new databases will show “Syncing” to the Standby column. After the databases are synchronized, the system will verify them for use by showing “Verifying” in the Standby column. After the databases are verified, a cyan double arrow symbol will appear between the Standby and Active columns to show which databases will be transferred to Active use on the next power cycle.

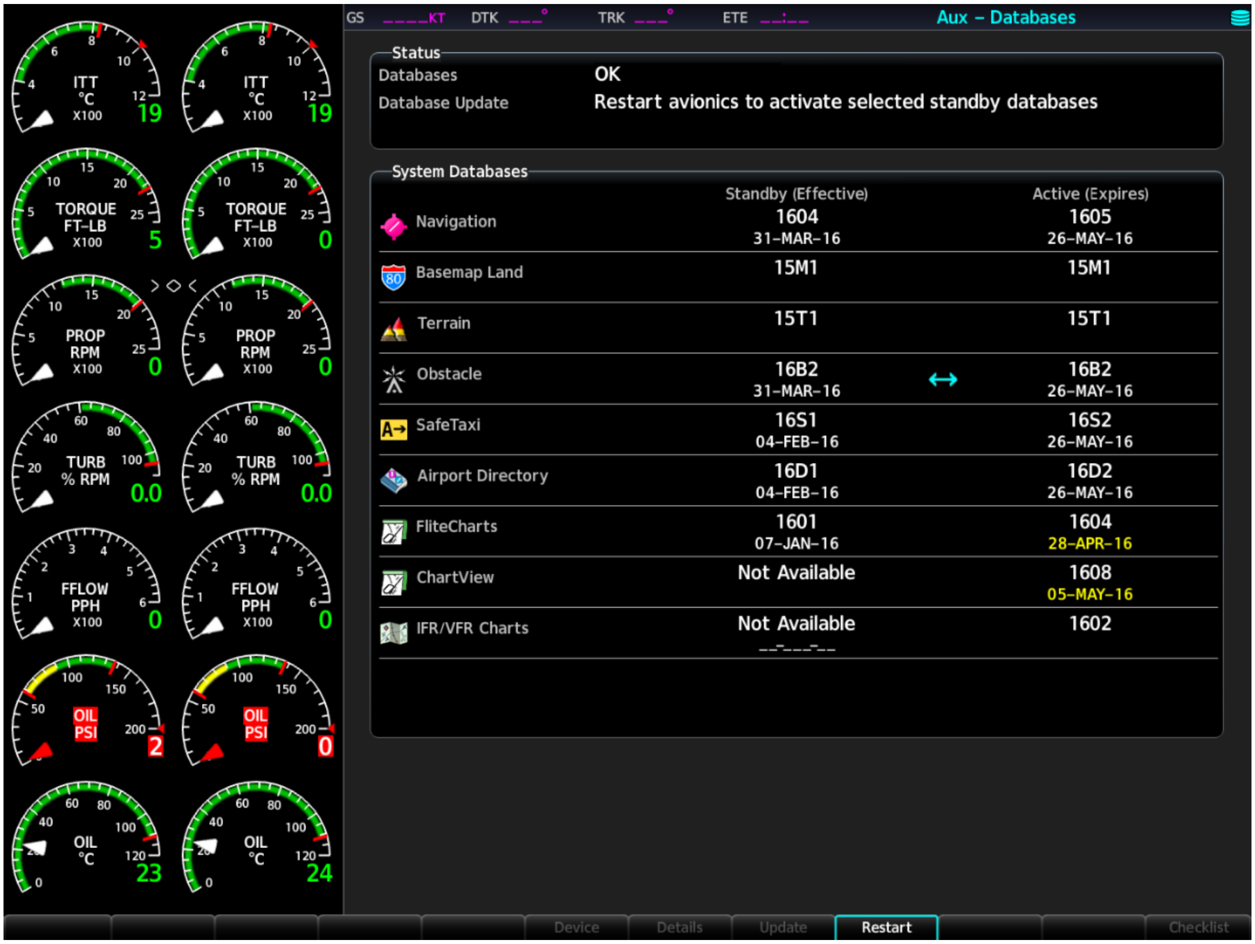


Figure 3-12, MFD Aux - Database Page DB Transfer

6. When all database updates are complete, the Database Update field at the top of the screen will say, “Restart avionics to activate selected standby databases.” If the engines are not running, a **Restart** softkey appears at the bottom of the MFD. Press **Restart** to cycle power on the displays. If the Restart softkey is not present, turn **OFF** PFD1, MFD, and PFD2.
7. Remove the database update card from the top slot of the MFD.
8. Turn **ON** the displays.
9. The displays may state they are verifying databases at power-up. If so, follow the on-screen instructions to continue.

10. Go to the MFD Aux - Databases page and verify the uploaded databases transferred from the Standby column to the Active column. If any did not transfer, follow these steps to initiate a manual transfer -
    a. Push the FMS knob on the GCU controller to turn on the curser.
    b. Turn the FMS knob to highlight the database to transfer to the Active column.
    c. Press the **ENT** key on the GCU and a cyan double arrow will appear between the Standby and Active columns.
    d. Restart the displays.
    e. Go to the MFD Aux - Databases page and confirm the databases transferred.

3.15 Configuration of Navigation Map for Traffic System

1. With the MFD in normal mode, use the GCU FMS knob to select the Navigation Map page then press GCU MENU key to display the PAGE MENU.
2. Turn the small right knob to select or verify selected ‘Map Setup’ and press the **ENT** key and verify **TRAFFIC** is selected ON.
3. Verify the flashing cursor highlights the GROUP field.
4. Turn the GCU small FMS knob to select Traffic and press **ENT** on GCU.
5. If not already selected, use the GCU FMS knob to make the following selections:
    - Traffic – On
    - Traffic Mode – All Traffic
    - Traffic Symbols – 150NM
    - Traffic Labels – On 150NM
6. Return to the Map Page by pressing the GCU FMS knob or momentarily pressing and holding the **CLR** key. Deactivate cursor.

3.16 Enter Flight ID for GTX 3000 Installations

1. On PFD1, press the TMR/REF softkey.
2. Use the large FMS knob and scroll to the bottom of the window and highlight the FLIGHT ID field.
3. Use the FMS knobs to enter the aircraft registration and press the ENT key to save.

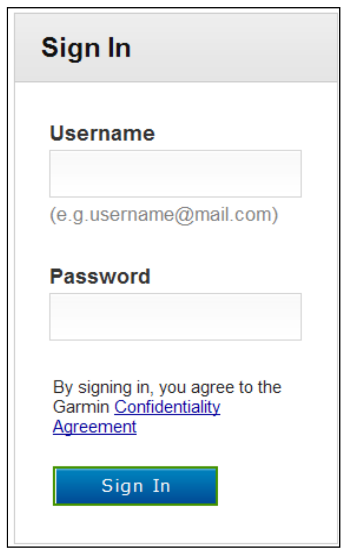
3.17 GRA 5500 Legacy Software and Configuration (Non Integrated)

Follow this section to download and install software and configure the GRA 5500 using the retrofit installation tool. This section is only needed for Non-integrated GRA 5500 installations that do not use the RS-422 connection to the GIA. These instructions are also found in the GRA 5500 Installation Manual Garmin P/N 190-01277-00.

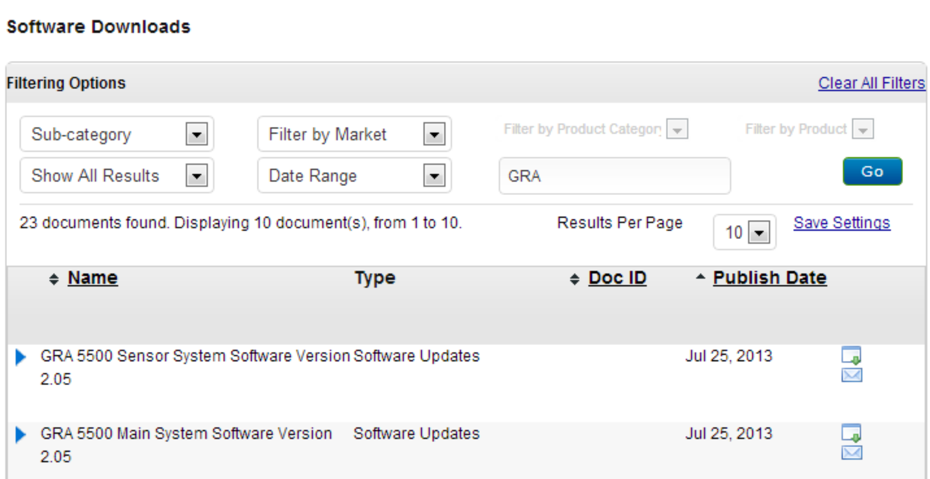
3.17.1 GRA Software Download

This section describes the GRA 5500 software loading process for airplanes that had previously installed the G1000 system and subsequently upgraded to the NXi but chose not install the additional wiring to the optional GRA 5500.

1. Go to www.garmin.com and click on the Dealer Resource Center link in the lower portion of the home page. Enter username and password.



2. Select Technical Tools then select Software Downloads.
3. In the Keyword(s) filter, enter "GRA" and click on the Go button.
4. A screen similar to the one shown below will appear. The numbers shown are for example only.



5. Click on the download symbol for the appropriate Sensor and Main software version part numbers based upon the information provided in The General Arrangement drawing and save the files to the local hard drive.

3.17.2 Downloading and Installing the GRA 5500 Retrofit Installation Tool

GRA 5500 configuration, calibration, diagnostics, and software upgrades are performed (in retrofit/non-GIFD installations) using a personal computer (installed with Microsoft Windows XP or later) and the GRA 5500 Retrofit Installation Tool, Garmin part number 006-A0451-00. This tool is also used to assist in the diagnosis and resolution of asserts found in the GRA 5500 assert log during the installation process and during post-installation flight operation. The tool is available for download from the Dealer Resource Center portion of the Garmin website (www.garmin.com). See the accompanying “readme” file in the tool installation directory for the latest instructions.

NOTE

A standard USB-A plug to USB-B plug commercial cable (not provided) is required to interface between a personal computer USB-A receptacle and the GRA 5500 USB-B receptacle installed in the wiring harness.

PC Installation of the Installation Tool:

1. Once downloaded, launch the installation file from the directory in which it is stored (or use the web browser’s download shortcuts).
2. The GRA 5500 Retrofit Installation Tool Setup Wizard will begin.
3. Click “Next” as prompted by the setup wizard, and adjust any settings (e.g. installation directory) as needed.
4. The last screen of the setup wizard will show “Installation Complete.” Click the “Close” button to close the setup wizard.

3.17.3 GRA 5500 Setup

The following actions must be performed to load the correct software versions and configure the GRA for the installation:

1. Connect a PC that has the **GRA 5500 Retrofit Installation Tool** installed to the GRA 5500 via a USB cable to the installed USB Pigtail located near the GRA 5500.
2. Start the GRA 5500 Retrofit Installation Tool from the “**Start Menu**” shortcut, or launch the application from its program folder.
3. Power-up the GRA 5500 by applying aircraft power.
4. The connection status in the lower, right-hand corner of the GRA 5500 Retrofit Installation Tool will transition from “**Not Connected**,” to “**Connecting**,” and finally to “**Connected**” once the GRA 5500 is powered.
5. On the Status tab, click “**Initiate Calibration Procedure**”

6. Verify that the GRA 5500 Retrofit Installation Tool display a progress dialog during the calibration procedure and automatically close once the calibration procedure is completed.
7. Verify that the information displayed in the status bar indicates “0 ft” and “Normal”.
8. Go to the Software tab. Check the main system and sensor system software versions reported by the unit to the General Arrangement drawing. If they do not match, load the software versions listed on the General Arrangement drawing by performing the following:
    a. Depending on the method of receiving updated software region files, it may be required to extract the files to a directory on the PC that is/will be connected to the GRA 5500. The GRA 5500 Retrofit Installation Tool will only recognize Garmin Aviation binary region files (.bin).
    b. Enter the directory where these downloaded files are stored, or click the “Browse” button to locate the directory.
    c. Once the directory is selected, the GRA 5500/55 Retrofit Installation Tool will display a list of all valid software region files in the directory. If no software region information is displayed in the list, the selected directory does not contain valid software region files. Make sure the files have been properly extracted (to .bin files), and have not been corrupted during transfer.
    d. Select the region to upload to the unit by clicking on the entry in the list. The entry should be highlighted to indicate its selection.
    e. Click the “Upload Selected Software Regions” button to initiate the update procedure. This will produce a progress dialog indicating the software update progress. Once the software update has completed the GRA 5500 will be automatically restarted to reload the new software.
    f. Once the progress dialog has closed, check the “Current Software” section to verify that the previously selected software regions have been successfully updated. The “Current Software” section displays product information for each software region currently loaded on the GRA 5500. Each region is shown with its corresponding Garmin part number and software release version.
9. If any errors are encountered in the software load process or configuration, troubleshoot the issue using the GRA 5500 Installation Manual, Garmin P/N 190-01277-00.

3.18 Interface Confirmation

3.18.1 Lightning System Configuration Load Confirmation

Coordinate the StormScope configuration with Section 8.2 “Stormscope Functional Check”.

1. With PFD1 in configuration mode, use the PFD1 large FMS knob to select OTHER and the Stormscope configuration page.

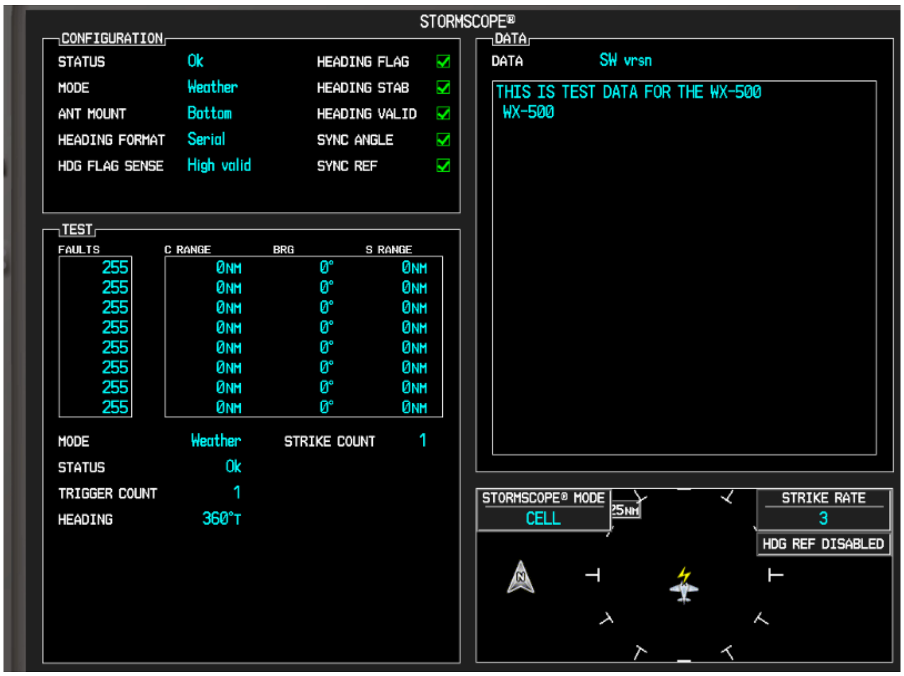


Figure 3-13, Stormscope Configuration Page

2. Activate the cursor to highlight the DATA field. Use the small FMS knob to open the drop down menu then select ‘Config’ and press ENT key on the PFD1.

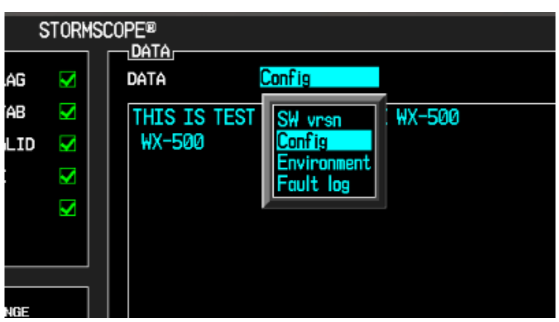


Figure 3-14, Stormscope Configuration

3. Verify that the DATA window shows the following:

Hdg: None:	J3-1	Jumper
	J3-2	Jumper
Hdg Valid Flag		No Fla
Flag Sense		+invld
	J3-4	Open
Hdg Value	<aircraft heading>	
Inhibit Line	Off	
Antenna Mount	Bottom	
	J3-3	Open

4. Deactivate the cursor.

NOTE

The DATA window is only updated once every five seconds.

3.19 MD 302 Configuration and Sensor Calibration

NOTE

In the MD 302 Configuration Mode, any changes made to any settings will NOT be saved until you select ACCEPT CHANGES in the menu prior to exiting the Configuration Mode.

3.19.1 MD 302 Configuration

1. **Open** STBY INSTR circuit breaker.
2. **Press and hold** the MD 302 control knob on the front of the unit.
3. **Close** STBY INSTR circuit breaker.
4. **Release** the control knob when the introduction screen appears.
5. In the CONFIGURE MENU, select **CONFIGURE DISPLAY** by rotating the control knob to highlight the option and press the control knob to select it.
6. In the CONFIGURE DISPLAY menu, select **AIRSPEED UNITS**.
7. Select **KNOTS**.
8. In the CONFIGURE DISPLAY menu, select **EXIT.**
9. In the CONFIGURE MENU, select **CONFIGURE AIRCRAFT**.
10. Select **PANEL TILT**.

a. If the aircraft was not previously equipped with Collins Pro Line 21 avionics installed at the Beechcraft factory when the aircraft was new, set the tilt value to **00.0** degrees.

b. If the aircraft had Collins Pro Line 21 avionics installed at the Beechcraft factory when the aircraft was new, set the tilt value to **04.0** degrees.

11. In the CONFIGURE AIRCRAFT menu, select **PANEL ROLL**.
12. Set the value to **0.0** degrees.
13. In the CONFIGURE AIRCRAFT menu, select **RANGE MMO**.
14. Set the value to **0.580** MACH.
15. In the CONFIGURE AIRCRAFT menu, select **RANGE MARKINGS** per the Table below for the aircraft model and propeller combination installed.

Range Marking #	Range Marking Type	Range Marking Color	300 (No Winglets) KIAS Value		300 (With Winglets) KIAS Value		B300, B300C KIAS Value	
			V1	V2	V1	V2	V1	V2
1	RAD	RED	92	None	95	None	94	None
2	FULL	WHITE	81	100	81	100	81	96
3	HALF	WHITE	100	157	100	157	96	158
4	RAD	BLUE	122	None	122	None	125	None
5	FULL	BAR	259	None	259	None	263	None

16. **Enter** the range markings for the airframe model and propeller combination required:

a. Highlight the row that needs to be edited and press the control knob to select.

b. Highlight the TYPE field and press the control knob to select the field to edit. The field background will change to green showing that it can be edited.

c. Choose the color bar TYPE needed (HALF, FULL or RAD (radial)) and press the control knob to select.

d. Highlight the CLR field and select to enter the color needed (RED, WHI (white), BLU (blue), or BAR (barber pole)).

e. Highlight the V1 field and select to enter the value needed. There are three digits that need to be entered. Turn the control knob to change the first digit to the value needed and press the control knob to set. Repeat for the second and third digits.

f. Highlight the V2 field and select to enter the value needed using the same procedure as V1. Not all V2 values will be set, the RAD and FULL TYPES automatically update V2 value based on the V1 value entered and are not changeable.

NOTES

- The V1 value is the start or lower limit of the color bar range and the V2 value is the upper limit.
- When the **RAD** (radial) TYPE is selected, the V1 and V2 values will be the same. The installer can only set the V1 value, the V2 value will be grayed out and unchangeable.
- When the **FULL** TYPE and **BAR** (barber pole) CLR is selected, V2 will automatically default to MAX and is unchangeable.
- For unused rows, the TYPE should be set to **OFF**, the CLR should be set to **BLU**, and V1 and V2 values should be set to "**000**".

g. Continue in sequence through all rows to enter the color bands needed and select **EXIT** when done.

17. In the CONFIGURE AIRCRAFT menu, select **VNE TABLE**.
18. **Enter** the table information below.

	300		B300	
#	ALT(FT)	KTS	ALT(FT)	KTS
1	00000	259	00000	263
2	21000	259	21000	263
3	25000	239	25000	242
4	30000	214	30000	217
5	35000	191	35000	194
6	UNUSED	000	UNUSED	000
7	UNUSED	000	UNUSED	000

19. Select **EXIT** when done entering the table.
20. Select **EXIT** in the CONFIGURE AIRCRAFT menu.
21. In the CONFIGURE MENU, select **CONFIGURE BARO SYNC**.
22. Select **OFF**.
23. In the CONFIGURE MENU, select **CONFIGURE DIMMING**.
24. Select **DIMMING CONTROL**.
25. Select **EXT 28V**.
26. In the CONFIGURE DIMMING menu, select **DIMMING CURVE**.

27. **Set** the seven dimming points below by setting the point at the bottom of the scale and counting the number of clicks up from 0. The active point that can be adjusted is colored yellow. To move to the next point to change, press the control knob.

Point 1	1
Point 2	5
Point 3	35
Point 4	100 (top of scale)
Point 5	100 (top of scale)
Point 6	100 (top of scale)
Point 7	2

28. In the CONFIGURE DIMMING menu, select **EXIT.**
29. In the CONFIGURE MENU, select **CONFIGURE DISPLAY**.
30. Select **ROLL DISPLAY**.
31. Select **FIXED POINTER**.
32. In the CONFIGURE DISPLAY menu, select **AIRSPEED MINIMUM**.
33. Select **40 KNOTS**.
34. In the CONFIGURE DISPLAY menu, select **DISPLAY ORIENTATION**.
35. Select **VERTICAL RIGHT**.
36. In the CONFIGURE DISPLAY menu, select **HORIZON DISPLAY**.
37. Select **SHADED**.
38. In the CONFIGURE DISPLAY menu, select **EXIT.**
39. In the CONFIGURE MENU, select **CONFIGURE HEADING**.
40. Select **DISPLAY OFF**.
41. In the CONFIGURE MENU, select **ACCEPT CHANGES**.

NOTE

After selecting ACCEPT CHANGES, the unit will automatically reset and enter Flight Mode.

42. **Press and hold** the control knob until the OPTIONS MENU appears.
43. Select **INFO >**.
44. Select **REVIEW CFG**.
45. Scroll down to the DIMMING CURVE section and confirm the lighting values entered in Step 27. If any values are incorrect, reenter the dimming curve configuration to correct.

3.19.2 Sensor Calibration

1. Connect pitot/static test equipment to the aircraft. Leave the aircraft at ground altitude and zero airspeed to allow the MD 302 to enter configuration mode. It will not enter configuration mode if it senses an airspeed input from the pitot/static test equipment.
2. **Open** STBY INSTR circuit breaker.
3. **Press and hold** the MD 302 control knob on the front of the unit.
4. **Close** STBY INSTR circuit breaker.
5. **Release** the control knob when the introduction screen appears.
6. In the CONFIGURE MENU select **CALIBRATE PRESSUES**.
7. Using the pitot/static test set, apply an altitude of 5000 ft. and airspeed of 120 knots. Allow the altitude and airspeed to stabilize at these values before continuing.
8. Select **CALIBRATE ALTITUDE**.
9. Select **YES** when CALIBRATING ALTITUDE prompt is displayed.
10. When calibration is complete return to **CALIBRATE PRESSURES**.
11. Select **CALIBRATE AIRSPEED**.
12. Select **YES** when CALIBRATING AIRSPEED prompt is displayed.
13. When calibration is complete return to **CONFIGURE MENU**.
14. Select **ACCEPT CHANGES**.
15. MD 302 setup is complete.

4. Instructions for Continued Airworthiness

4.1 Airworthiness Limitations

The G1000 Integrated Flight Deck including the GFC 700 AFCS is airworthy when installed, configured, and maintained in accordance with this section.

The G1000 and GFC 700 systems possess the following maintenance airworthiness limitations. The intervals for the airworthiness limitations are shown in maximum number of hours between checks, as required for certification. Table 4-1 aligns these requirements with the King Air Phase Inspection Program. These limitations were derived from the certification data.

GFC 700 Limitations:

- Every 220 hours, perform a Trim Annunciator Check per Section 4.12.
- Every 3,000 hours, perform a GSM 86 Slip Clutch Torque Check per Section 4.9.
- Every 20 years from date of installation, remove the GSM 9100 yaw servo gear box and send to a properly rated and qualified FAA Approved Repair Station for drive shaft seal replacement.

G1000 Limitations:

- Every 220 hours, perform a Weight on Wheels and Low Speed Awareness Band Check per Section 8.11.
- Every 220 hours, perform a G1000 Redundant Connection Check per Section 4.10.
- Every 820 hours, perform an Engine Data Check per Section 4.11.
- Every 820 hours, perform the G1000 Miscompare Checks per Section 4.13.
- At 10,000 cycles and every 1,000 cycles thereafter, perform an exterior skin inspection around antennas per Section 4.18.

Other Limitations:

- Every 220 hours, perform the Standby Instrument Electrical Power Checks per Section 9.9.
- Every 220 hours or 6 Calendar Months (whichever occurs first), perform Standby Battery Charge Check per Section 4.16.1.

There are no other airworthiness limitations associated with this type design change (STC SA01535WI-D). The Garmin G1000 King Air 300 Series Airplane Flight Manual Supplements define all operating limitations for this STC.

The 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.

Paul Mast — 2-17-17

FAA APPROVED — Paul Mast, STC Unit Administrator, ODA-240087-CE — Date

4.2 Servicing Information

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

A "cycle" for the purposes of determining inspection requirements is defined as: Engine start-up and increase to full or partial power (as required during a normal flight), one landing gear retraction and extension and a complete shutdown.

4.2.1 On Condition Servicing

'On Condition' replacement and/or servicing should occur when an item exhibits conditions, symptoms, and/or abnormalities defined in Section 5 of this 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.

IMPORTANT!

It is impossible to provide guidance for every conceivable failure scenario within the scope of this manual. Every effort has been made to provide comprehensive guidance for possible failures. The information in this document should always be combined with sound aviation maintenance practices and a thorough knowledge of the system. Use sound avionics maintenance practices when working around or on G1000 equipment.

The remainder of this document is organized in the following fashion:

- Section 4.3 lists maintenance requirements related to the G1000 system.
- Section 6 gives instructions regarding the removal and replacement of physical G1000 equipment and parts.
- Section 7 gives configuration and testing instructions to be accomplished if G1000 equipment or parts are removed or replaced.
- Section 9 specifies system return-to-service procedures.

The beginning of Section 6 provides instructions to check the software part number and version of each LRU before removing a unit. Procedures in Section 7 require the same check after LRU replacement and software loading.

IMPORTANT!

All structural repairs associated with this installation are to be addressed in accordance with the Beechcraft Structural Inspection and Repair Manual listed in Table 1-1.

NOTE

After replacing or servicing electrical components near the GMU 44 magnetometers, the Magnetometer Interference Test (reference Section 5) and Magnetometer Calibration Procedure (reference Section 7) must be performed.

4.2.2 Required Tools

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

- Calibrated Milliohm meter, OR
    - Agilent 34410A Ammeter or equivalent
    - Fluke 187 Voltmeter or equivalent
    - Variable DC Power Supply capable of providing 1 amp current
- #2 Non-Magnetic Phillips Screwdriver
- 3/32” Hex tool
- Calibrated digital level (Required for AHRS ‘Procedure A’ Calibration)
- Calibrated VHF NAV/COM/ILS ramp tester or equivalent
- Calibrated transponder ramp tester or equivalent
- Calibrated 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)
- Calibrated Flight Control Cable Tension Meter or equivalent
- 2 Amp, 24 V, DC Power Supply
- Calibrated torque wrench capable of measuring 0 – 70 in/lbs
- Standard sockets & wrenches (3/8”, 9/16”, and 13/16”)
- Calibrated digital thermometer suitable for measuring ambient temperature
- Laptop with RS232 emulation software
- M22885/108T8234 extraction tool
- An 0.060” 6-Spline wrench

4.2.3 Special Tools

The following tools may be needed to perform maintenance tasks on G1000 equipment and/or installation:

- Servo Gearbox Slip Clutch Adjustment Tool – Garmin P/N T10-00110-01
- WX-PA portable analyzer kit, Part Number 78-8060-5791-1 (If Stormscope is installed)
- Gauging Equipment Tool SPF-4 (A1M-BCH-GE)*
- If the GRA 5500 radar altimeter is installed without RS-422 connections to GIA2, obtain GRA 5500 Sensor and Main Software from the Garmin Dealer Resource Center at www.garmin.com and load with the GRA Retrofit Installation Tool part number 006-A0451-00. Download the software part number and versions listed in the General Arrangement Drawing for the GRA 5500. Instructions to download the GRA software and using the GRA Retrofit Installation Tool are in Section 3.17.

* The gauging equipment tool is used for the static port inspection for RVSM compliant aircraft only. This tool is available from Beechcraft. Any alternate tool authorized in the King Air 300 Series Maintenance Manual for RVSM static port measurements may be substituted for this tool. Refer to Chapter 34-10-00 of the King Air 300 Series Maintenance Manual for more details.

4.3 Maintenance Intervals

Table 4-1 shows systems and items, installed by this STC, which must undergo tests or checks at specific intervals. 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.

The inspection time tables used for this STC are aligned with the existing maintenance 200 hr phase inspection program used in the current King Air 300 Series Maintenance Manual. A complete inspection cycle for the King Air 300 Series is 800 hours or 24 calendar months, divided into the following four phases:

Inspection Phase 1: To be performed at 200 hours and every 800 hours thereafter.

Inspection Phase 2: To be performed at 400 hours and every 800 hours thereafter.

Inspection Phase 3: To be performed at 600 hours and every 800 hours thereafter.

Inspection Phase 4: To be performed at 800 hours and every 800 hours thereafter.

Those inspections that are based on flight time, calendar elapsed time or cycles shall have specific intervals stated in Table 4-1.

IMPORTANT!

As allowed in the King Air 300 Series Maintenance Manual, a tolerance of +/- 20 hours for all phase inspections.

Special Inspection Items - Calendar limited inspections have a tolerance of ± 12 days per 12 calendar months.

The intention of Garmin is to align this maintenance program as best possible with the existing King Air 300 Series inspection program. For a complete description of the King Air inspection program, refer to the Beechcraft King Air 300 Series Maintenance Manual listed in Table 1-1.

Table 4-1, Maintenance Intervals

Item	Description/Procedure	Manual Section No.	Interval
G1000/GFC700 Equipment			
G1000/GFC700 System Visual Inspections	Complete Visual Inspection of GWX 68 or GWX 70 Equipment and Wiring located in Nose Section	4.4 (Table 4-3)	Phase 4
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Nose Avionics Compartment	4.4 (Table 4-4)	Phase 4
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Pilot's Compartment	4.4 (Table 4-5)	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located on and behind Instrument Panel	4.4 (Table 4-6)	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Cabin	4.4 (Table 4-7)	Phase 3
	Complete Visual Inspection of G1000/GFC700 Equipment and Wiring located in Rear Fuselage and Empennage	4.4 (Table 4-8)	Phase 4

Item	Description/Procedure	Manual Section No.	Interval
GFC700 Periodic Check	Verify proper operation of the GFC700 by performing the following: Pre-Flight Test AFCS Switch Checks Autopilot Clutch Overpower Check Autopilot Operation Checks	9.11.1, 9.11.2, 9.11.3, 9.11.5	Phase 2 and 4
TAWS Functional Check	Periodic TAWS function check	8.3	Phase 4
GDU 1050A PFD (Qty 2)	Removal & Replacement	6.1	On Condition
GDU 1550 MFD			
GMA 1347D (Qty 2)	Removal & Replacement	6.2	On Condition
	GMA 1347D Test	7.2.3	Phase 2 and 4
	Landing Gear Aural Alert Check	7.2.4	Phase 2 and 4
	SiriusXM Audio Suppression Check	7.2.5	Phase 2 and 4
GIA 63W IAU (Qty 2)	Removal & Replacement	6.3	On Condition
GEA 71 EAU (Qty 2)		6.4	
GTX 335R, GTX 345R, GTX 33( ), or GTX 3000 Transponder (Qty 2)	Removal & Replacement	6.5	On Condition
	Special Inspection - Perform GTX 335R, GTX 345R, GTX 33( ), or GTX 3000 test.	7.5.4	24 Calendar Months
GDC 7400 Air Data Computer (Qty 2)	Removal & Replacement	6.7	On Condition
	Special Inspection – Perform Air Data Test.	7.7.3	24 Calendar Months
RVSM checks	Special inspection – Perform RVSM Checks	8.12	24 Calendar Months
	Perform RVSM checks when: • a static port is removed/installed • the RVSM critical region is repaired or painted	8.12	On Condition
GSU 75B ADAHRS (Qty 2)	Removal & Replacement	6.9	On Condition
	Magnetic variation database update.	4.6	On Condition
	Special Inspection – Perform Air Data Test.	7.7.3	24 Calendar Months
	Remove nose compartment pitot/static line caps at T-fittings located forward of GSU 75B units and check for moisture. Refer to Garmin drawing 005-00629-44 for line cap part numbers if replacements are needed and for torque information.	N/A	24 Calendar Months

Item	Description/Procedure	Manual Section No.	Interval
GSU 75B, GRS 77, or GRS 7800 AHRS/ADAHRS (Qty 2)	Removal & Replacement	6.9	On Condition
	Magnetic variation database update.	4.6	
GMU 44 Magnetometer (Qty 2)	Removal & Replacement	6.10	
GDL 69A or GDL 69A SXM		6.11	
GWX 68 or GWX 70		6.16	
GMC 710		6.15	
GCU 477		6.14	
GTS 820/850 Traffic Unit		6.31	
GTS Traffic Processor		6.31	
GRA 5500		6.36	
GPA 65 PA/LNA Unit		6.32	
GDL 59 Wi-Fi Datalink		6.34	
GSR 56 Satellite Receiver		6.35	
GSD 41 Data Concentrator		6.37	
G1000 Cooling Fan Fail Annunciation Check	Verify the operation of the fan power and fan speed monitoring circuits for GIA1 fan and GIA2 fan.	9.4	820 hours max
G1000 Cooling Fan Fail Annunciation Check	Verify the operation of the fan power and fan speed monitoring circuits for PFD1 fan, MFD fan and PFD2 fan and fan fail messages.	9.4	
Nose Avionics Compartment Fans Operational Check	Functional test of the GIA1 and GIA2 ported fans. Verify airflow from all fan ports.	4.14	
Instrument Panel Fans Operational Check	Functional test of the PFD1, MFD and PFD2 cooling fans. Verify airflow from each fan.	4.15	
G1000 Redundant Connection Check*	Verify PRI and SEC power sources for PFD 1, GIA 1, GSU 1 (or GRS 1, and GDC 1). Verify secondary paths for ADAHRS (or AHRS and ADC), engine parameters and GPS data. Verify the operation of PFD and MFD Ethernet connections. Verify ARINC connection between GSU 1 (or ADC 1 and GRS 1) and MFD. Verify DISPLAY BACKUP button function.	4.10	220 hours max
Engine Data Check*	Verify engine data is available and accurate with GIA 1 or GIA 2 inoperative.	4.11	820 hours max

Item	Description/Procedure	Manual Section No.	Interval
Trim Annunciator Check*	Verify trim annunciators function properly.	4.12	220 hours max
G1000 Miscompare Check*	Verify attitude, airspeed, and altitude miscompare monitors function properly.	4.13	820 hours max
G1000 Alerts	Check for and troubleshoot any alerts provided in the alert window per the referenced manual section.	5	On Condition
GPS/WAAS Antennas	Removal & Replacement Refer to Master Drawing List, listed in Table 1-1, for installation drawings.	6.19	On Condition
Diversity Transponder Antenna		6.20	
Iridium antenna		6.21	
Wi-Fi Antenna		6.22	
GA 58 Traffic Antennas		6.33	
Flaps-in-motion Discrete Input Check	Test the Flaps-in-motion discrete inputs to the G1000 to verify proper operation.	4.8	Phase 1, 2, 3 & 4
GSA 80 and GSA 9000 Servos	Removal & Replacement. Refer to Master Drawing List, listed in Table 1-1, for installation drawings.	6.12	On Condition
GSM 86 and GSM 9100 Servo Gear Box	Removal & Replacement. Refer to the servo install drawings listed in Master Drawing List, listed in Table 1-1.	6.13	On Condition
GSM 86 Servo Gear Box Slip Clutch Torque Check *	For installations with the GSM 86 servo gearbox, verify that the pitch, roll, yaw and pitch trim GSM 86 slip clutch torque values are within acceptable limits	4.9	Special 3,000 hours max
GSM 9100 Servo Gear Box	Remove the GSM 9100 yaw servo gear box and send to an Authorized Repair Facility for servicing.	6.13	Special 20 years max
Rudder Boost Operation Check	Verify the Rudder Boost operation and annunciation.	4.17	Phase 1, 2, 3 & 4
WOW and Low Speed Awareness Band Check*	Verify the integrity of the wiring interface between the landing gear safety switch assembly and the No. 1 and No. 2 GIA inputs and the air ground status logic.	8.11	220 hours max
Exterior skin inspection around antennas*	Inspect the exterior skin around antennas for cracks and loose and missing fasteners.	4.18	Special 10,000 cycles (initial) 1,000 cycles (repeat)

* **Denotes Airworthiness Limitation Maintenance Requirement (See Section 4.1)**

Item	Description/Procedure	Manual Section No.	Interval
G1000 Accessories			
Configuration Module Replacement (Qty 5)	Removal & Replacement.	6.17	On Condition
GEA 71 Backshell Thermocouple (Qty 2)	Removal & Replacement.	6.18	
GTP 59 OAT Probe (Qty 2)	Removal & Replacement.	6.8	
PFD, MFD, and GIA Cooling Fans (Qty 5)	Removal & Replacement Refer to Master Drawing List, listed in Table 1-1, for installation drawings.	N/A	
Annunciator/Switch – Emergency Frequency	Removal & Replacement.	6.25	
G1000 Lightning Protection			
Electrical Bonding Test	Perform the Phase 3 electrical bonding resistance check of G1000 equipment.	4.5.3	Phase 3
	Perform the Phase 4 electrical bonding resistance check of G1000 equipment.	4.5.4	Phase 4
Lightning Strike to GTP 59 OAT Probe or Antenna - Actual or Suspected	Inspect the antenna/probe and surrounding installation per Table 4-9.	4.4	On Condition
Lightning Strike to the Aircraft	Inspect the GIA cooling fan discrete output to the GIA.	4.4 (Table 4-9)	On Condition
Engine/Airframe Sensors			
ITT Thermocouple Cable (Qty 2)	Removal & Replacement: Refer to King Air 300 Series Maintenance Manual listed in Table 1-1.	N/A	On Condition
Oil Pressure Sensor (Qty 2)			
Oil Temperature Sensor (Qty 2)			
Torque Transmitter (Qty 2)			
Fuel Flow Transmitter (Qty 2)			
Prop Tachometer (Qty 2)			
Engine Speed Tachometer (Qty 2)			
Signal Conditioner (Qty 2)	Removal & Replacement	6.23	On Condition
Annunciator/Switch – Prop Sync		6.24	

Item	Description/Procedure	Manual Section No.	Interval
Other Equipment			
Mechanical Standby Airspeed Indicator	Removal & Replacement	6.28.1	On Condition
	Static pressure system test according to 14 CFR 91.411 and Part 43 Appendix E.	N/A	24 Calendar Months
Mechanical Standby Altimeter	Removal & Replacement	6.28.2	On Condition
	Test according to 14 CFR 91.411 and Part 43 Appendix E.	N/A	24 Calendar Months
Mechanical Standby Attitude Indicator	Removal & Replacement	6.28.3	On Condition
MD 302 Electronic Standby Instrument	Removal & Replacement	6.27.1	On Condition
	Test according to 14 CFR 91.411 and Part 43 Appendix E.	N/A	24 Calendar Months
MD 302 Configuration Module	Removal & Replacement	6.27.2	On Condition
L-3 PS-835(C or D) Standby Battery	Removal & Replacement	6.26	On Condition
	Capacity test of standby battery.	4.16.2	12 Calendar Months
Standby Battery Charge Check*	Verify the standby battery is being charged.	4.16.1	220 hours max or 6 Calendar Months, whichever comes first
Standby Instrument Electrical Power Checks*	Verify STBY ATT & STBY ALT vibrator operate and STBY ATT, STBY ALT & STBY A/S illumination function on aircraft power and standby battery power. (Note: standby compass checked during existing maintenance)	9.9	220 hours max
Annunciator/Switch - Standby Battery	Removal & Replacement	6.24	On Condition

4.3.1 Discontinued Maintenance

Table 4-2 shows a list of inspections and tests that are listed in the King Air 300 Series Maintenance Manual, but may be no longer required post incorporation of this STC. It is the responsibility of the installer to ensure that there are no post factory installations that would require these checks to remain.

Table 4-2, Discontinued Maintenance Intervals

Item	Description/Procedure	Manual	Interval
AC Inverter	Operational Check	Phase Inspections	Phases 1, 2, 3 & 4

* **Denotes Airworthiness Limitation Maintenance Requirement (See Section 4.1)**

IMPORTANT!

For installed equipment not listed in this maintenance manual, use the inspection procedures set forth in Chapter 05 of the King Air 300 Series Maintenance Manual, or other appropriate maintenance manual, as the requirements set forth by those manuals are still applicable. The requirements set forth by this document take precedence over those set forth by the King Air 300 Series Maintenance Manual, or other appropriate maintenance manual, in cases where the requirements conflict.

4.4 Visual Inspection

Perform a visual inspection in accordance with requirements in Table 4-1. Check for corrosion, damage, or other defects for each of the items listed in Table 4-3 through Table 4-8. Replace any damaged parts as required. Inspection may require the temporary removal of a unit or units to gain access to connectors. Follow guidance in Section 6 for equipment removal and replacement. Refer to the King Air 300 Series Maintenance Manual listed in Table 1-1 for instructions on removing any access panels.

NOTE

It is recommended that the Phase 3 and Phase 4 electrical bonding checks contained in Section 4.5 are conducted after the Phase 3 and 4 visual inspections while access to these zones is still open.

Table 4-3, Nose Section Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access via the Radome for the following Inspection:		
GWX 68 or GWX 70	a) Inspect the GWX 68 or GWX 70 unit, mount, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Inspect wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Nose Wire Harness Routing drawing, listed in Table 1-1.	

Table 4-4, Nose Avionics Compartment Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access via the Nose Equipment Compartment access panel for the following Inspection:		
GRS 77 or GRS 7800 (Qty 2) (if installed)	Inspect the GRS 77 or GRS 7800 units, racks, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GSU 75B (Qty 2) (if installed)	a) Inspect the GSU 75B units, racks, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Visually inspect the pitot/static plumbing and ensure it is secure and in good condition and routed to provide positive moisture drainage.	
GIA 63W (Qty 2)	Inspect the GIA 63W units, racks, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	

Item	Description/Procedure	Initials
Standby Battery	a) Inspect the standby battery, rack and connectors for corrosion, or other defaults. b) Inspect the standby battery fuses and associated bracket for corrosion or other defects.	
GIA Avionics Fan (Qty 2)	Inspect remote avionics fans and hoses for dirt accumulation and other damage. Remove excess dirt as required.	
GTS 820/850 Traffic or GTS Traffic Processor (option)	Inspect the GTS 820/850 or GTS Traffic Processor unit (if installed), rack and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
LMD Rack and Modules	Inspect the LMD rack, modules, and terminations for corrosion or other defects.	
Nose Wiring harness	a) Inspect bulkhead connectors for security of attachment, corrosion or other defects. b) Inspect wire and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Nose Wire Harness Routing drawing, listed in Table 1-1 . Pay particular attention to possible areas of wire chafing such as the middle shelf feed-through hole, wheel well protrusion etc. c) Inspect Ground blocks for security of attachment, corrosion or other defects. d) Ensure all connectors are securely fastened.	

Table 4-5, Pilot's Compartment Visual Inspection Procedure

Item	Description/Procedure	Initials
Placards	Inspect that all required placards are installed on the left and right control wheels. Placards must be legible, secure and in good condition. Refer to the Control Wheel Modification drawing listed in Table 1-1.	
Locate equipment in the aft pedestal for the following inspection.		
GCU 477	Inspect the GCU 477 unit and connector for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
ADF control unit (relocated by STC)	Inspect the ADF control unit and connector for corrosion or other defects. Check the integrity of the SHIELD ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
Pedestal Wiring	Inspect all visible wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-1.	
GTP 59 (Qty 2)	a) Inspect the GTP 59 units and connectors for corrosion or other defects. Check the integrity of the SHIELD ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Inspect wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-1.	

Table 4-6, Instrument Panel G1000 Equipment Visual Inspection Procedure

Item	Description/Procedure	Initials
Gain access to behind the instrument panel by removing the PFDs and MFD (see below). Gain access to circuit breaker panels by removing the screws which fasten the edge lit overlays to the panels		
GDU 1050A PFD (Qty 2) & GDU 1550 MFD	a) Inspect the PFDs and MFD for any visual damage to the display screens or bezels including buttons and control knobs. b) Remove the MFD and PFDs as described in Section 6. c) Inspect the mounting surface and connector for corrosion, heavy oxidation, or other damage. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. d) Do not reinstall GDUs at this time. GDU cutouts provide access for visual inspections below.	
G1000 Wiring harness	a) Inspect all fwd bulkhead connectors for security of attachment b) Inspect all instrument panel wiring and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-1. Pay particular attention to possible areas of wire chafing. c) Inspect all other exposed G1000 System wiring and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-1. Pay particular attention to possible areas of wire chafing.	
GDC 7400 Air Data Computer (Qty 2) (If installed)	a) Visually inspect each GDC7400 unit, mount, and connector for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment. b) Visually inspect the pitot/static plumbing and ensure it is secure and in good condition and routed to provide positive moisture drainage.	
GEA 71 Engine/ Airframe Unit (Qty 2)	Inspect the GEA 71 unit, rack, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GMA 1347D (Qty 2)	Inspect the GMA 1347D unit (including face of unit), rack and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
PFD and MFD Fans (Qty 3)	Inspect fans for accumulation of dirt and other damage. Remove excess dirt as required.	
GDL 69A or GDL 69A SXM	Inspect the GDL 69A unit, rack, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GMC 710	Inspect the GMC 710 unit (including face of the unit), mount, and connectors for corrosion or other defects. Check the integrity of the SHIELD BLOCK ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
Signal Conditioner (Qty 2)	Inspect the signal conditioner unit, mount, and connectors for corrosion or other defects.	
MD 302 Standby Indicator	a) Inspect the standby attitude indicator unit (including face of unit) and connector for corrosion or other defects. Check the integrity of the harness connector assembly in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraphs 11-96 and 11-100 and the Cabin Wire Harness Routing drawing, listed in Table 1-1. b) Visually inspect the plumbing and harness connector assembly, and ensure it is secure and in good condition.	
Mechanical Standby Attitude Indicator	Inspect the standby attitude indicator unit (including face of unit) and connector for corrosion or other defects. Check the integrity of the harness connector assembly in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraphs 11-96 and 11-100 and the Cabin Wire Harness Routing drawing, listed in Table 1-1.	

Item	Description/Procedure	Initials
Mechanical Standby Airspeed Indicator	a) Inspect the standby airspeed indicator unit (including face of unit) and connector for corrosion or other defects. b) Visually inspect the plumbing and harness connector assembly, and ensure it is secure and in good condition.	
Mechanical Standby Altimeter	a) Inspect the standby altimeter indicator unit (including face of the unit) and connector for corrosion or other defects. b) Visually inspect the plumbing and harness connector assembly, and ensure it is secure and in good condition.	
Circuit Breaker Panels	a) Inspect circuit breaker panel wiring and circuit breakers for chafing, damage, other defects and proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96, the appropriate Circuit Breaker Panel Modification drawing, listed in Table 1-1, and the Cabin Wire Harness Routing drawing, listed in Table 1-1. Pay particular attention to possible areas of wire chafing. b) Inspect edge lit overlay panels for damage or defect. c) Reinstall the circuit breaker edge lit overlays to the circuit breaker panels.	
Placards	Inspect that all required placards are installed. Placards must be legible, secure and in good condition. Refer to the Main Instrument Panel Installation drawing listed in Table 1-1.	
Reinstall the MFD and PFDs as described in Section 6.		

Table 4-7, Cabin Area Visual Inspection Procedure

Item	Description/Procedure	Initials
Antennas	Inspect all external antennas for leading edge erosion and condition of base seals (GPS/WAAS, top diversity transponder(s), Iridium, top and bottom GA 58 traffic antennas, if installed)	
To gain access for the following Inspections, remove floorboards in cabin at FS 185.00 and FS 246.750		
Cabin Wiring Harness	Inspect all exposed wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Cabin Wire Harness Routing drawing, listed in Table 1-1.	
GFC 700 Equipment	a) Using a flashlight, inspect the roll servo, servo gearbox, connectors, support structure, and control cables to ensure that no corrosion, chafing, cracks, or other defects exist. b) For the roll servo gearbox, check that the retaining bolt for the slip clutch cartridge is not damaged or loose. c) Have an assistant manually move the aileron control surfaces from stop to stop and visually observe the servo and control cabling/chain. Ensure there is no binding in the control cabling or chain, and that the capstan/sprocket rotates freely. d) Check the servo control cables in accordance with AC 43.13-1B, Chapter 7, Section 8, Paragraph 7-149 to ensure no fraying, corrosion, or other damage exists. If the condition of any cable is questionable, replace it with a new one. e) Check the tension on the control cables. Refer to the Roll Servo Install drawing, listed in Table 1-1, for cable tension specifications: f) Ensure that each cable is correctly attached to the clamps. g) Follow recommended checks for checking main control cables, following the instructions in Chapter 27, Flight Controls, of the King Air 300 Series Maintenance Manual. h) Reinstall the access panels if no other maintenance is to be performed.	
To gain access for the following inspection, remove the left cabin sidewall panel at FS 158.		
GPA 65 (GTS 820/850 traffic option only)	Inspect the GPA 65 PA/LNA unit (if installed), brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	

Table 4-8, Rear Fuselage and Empennage Visual Inspection Procedure

Item	Description/Procedure	Initials
Wi-Fi Antenna	Inspect the external Wi-Fi antenna (if installed) for leading edge erosion and condition of base seals.	
To gain access for the following Inspections, refer to the servo installation drawings and the King Air 300 Series Maintenance Manual, listed in Table 1-1.		
Tail Wiring Harness	a) Inspect all exposed wire harness for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Tail Wire Harness Routing drawing, listed in Table 1-1. Pay particular attention to possible areas of wire chafing. b) Verify security of aft bulkhead connectors.	
GFC 700 Equipment	a) Using a flashlight, inspect the servos, servo gearboxes, connectors, support structure, and control cables to ensure that no corrosion, chafing, cracks, or other defects exist. b) For pitch and pitch trim servo gearboxes, check that the retaining bolt for the slip clutch cartridge is not damaged or loose. c) For the GSM 9100 yaw servo mount, verify the following are tightly secured: two capstan retaining screws, six drive shaft seal screws, and hole plug. If any of these items are missing or loose, remove the servo mount and send to an Authorized Service Center for repair. Also visually inspect the hydrophobic vent and remove any obstructions if present. d) Have an assistant manually move the control surfaces and elevator trim wheel from stop to stop and visually observe the corresponding servo and control cabling. Ensure there is no binding in the control cabling, and that the capstan rotates freely. e) Check the servo control cables in accordance with AC 43.13-1B, Chapter 7, Section 8, Paragraph 7-149 to ensure no fraying, corrosion, or other damage exists. If the condition of the cable is questionable, replace it with a new one. f) Check the tension on the control cables. Refer to the respective servo installation drawing listed in Table 1-1 for cable tension specifications. g) Ensure that each cable is correctly attached to the clamps. h) Follow recommended checks for checking main control cables, following the instructions in Chapter 27, Flight Controls, of the King Air 300 Series Maintenance Manual, listed in Table 1-1. i) Reinstall the access panels if no other maintenance is to be performed.	
The GMU 44 units are mounted in the tailcone or the horizontal stabilizer. Refer to Section 6.10 for details on gaining access to the GMU.		
GMU 44 (Qty 2)	For each GMU 44, do the following: a) Remove the three Phillips screws holding the GMU to the mounting bracket. Be sure to use a non-magnetic screwdriver to avoid harming the GMU. b) Carefully remove the assembly, taking care not to damage unit or wiring, and inspect the GMU 44 and mounting plate. c) Inspect the mounting hardware and GMU 44 for corrosion or other damage. d) Inspect all exposed GMU wiring and ensure no chafing, wear, or other damage exists in accordance with AC 43.13-1B, Chapter 11, Section 8, Paragraph 11-96 and the Wire Harness Installation, Tail drawing, listed in Table 1-1. Pay particular attention to possible areas of wire chafing. e) Reinstall the GMU 44.	
GRA 5500 Radar Altimeter	Inspect the GRA 5500 unit (if installed) and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shield and their attachment.	
GTX 335R, GTX 345R, GTX 33 ( ) or GTX 3000 (Qty 2)	Inspect the GTX units, shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GDL 59 (Wi-Fi option only)	Inspect the GDL 59 unit (if installed), shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	
GSR 56 (iridium option only)	Inspect the GSR 56 unit (if installed), shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	

Item	Description/Procedure	Initials
GSD 41 (FDR option only)	Inspect the GSD 41 unit (if installed), shelf, brackets and connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.	

Table 4-9, Lightning Strike Inspection Procedure

Item	Description/Procedure	Initials
GTP 59 OAT Probe or Antenna	A post lightning strike inspection must be done for a suspected or actual lightning strike to antennas or the OAT probes. Inspect antenna/probe and surrounding installation 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 or antenna, then it should be replaced per Section 6. Refer to the Beechcraft Structural Inspection and Repair Manual listed in Table 1-1 for any aircraft structural repairs.	
GMU 44 (Qty 2)	A "Magnetometer Interference Test" per Section 5.17.4 and "GSU 75B, GRS 77, or GRS 7800 and GMU 44 Magnetic Calibration" per Section 7.10.3 must be performed after a suspected or actual lightning strike. A lightning strike can result in a change in the magnetic properties of steel components in the area of the magnetometers which can cause unacceptable magnetic interference levels.	
GIA Fans	Verify the GIA cooling fan discrete out is correctly activating when the fan is not working by performing tests per Section 9.4.	

4.5 Electrical Bonding Test

The following bonding tests are provided for G1000-equipped King Air 300 Series aircraft as a requirement beyond what is given in the aircraft maintenance manual. The electrical bonding checks are split into two tests, Phase 3 Electrical Bonding Test and Phase 4 Electrical bonding test. This places the bonding test requirement for each G1000 LRU in the same phase as the visual inspection of that zone to minimize access requirements.

4.5.1 Requirements

All G1000 equipment must be installed. Gain access for the procedure listed below in Section 4.5.3 and 4.5.4 as required and in accordance with the aircraft maintenance manual. It is recommended that these tests are conducted after visual inspection of the zone to minimize access requirements.

4.5.2 Test Equipment

A milliohm meter and Kelvin probes are recommended for this test. However, an alternate method may be used to provide equivalent results by using the following procedure and a standard voltmeter, power supply with adjustable current limit, and ammeter. The test set up for this alternate method is described below.

All test equipment used for the bond checks must be calibrated.

1. Connect the positive lead of the power supply to airframe ground. Connect/touch the positive lead of the voltmeter to the same point.

NOTE

Ensure that the voltmeter and power supply probes do not touch, so as not to induce contact resistance.

2. Touch negative lead of power supply to each of the test points listed while performing Step 3. At each required point, configure the power supply to produce 1 amp before measuring voltage. (Use an ammeter to ensure current is within *minimum* of 1 amp ±100 milliamp at each point). Do not allow the reference current to exceed 1.5 amps for safety.
3. With the current set to 1A, the voltage reading will be the value of the bonding resistance. Set the voltmeter to measure millivolts and null the reading. Measure the voltage from airframe ground (step 1) to each required test points and record the voltage. (Perform Step 2 at each required point and ensure that *minimum* of 1 amp ±100 milliamp is present when measuring the voltage.)

   TIP: When a 1A current is used all the millivolt readings are the same as mΩ, and required no further calculation of bond resistance. If 1 amp reference current cannot be maintained and is higher divide the measured voltage by current to get the resistance value. Alternatively, calculate the percentage increase in current and then reduce the measured voltage reading by the same percentage. Example: If the measured current is 1.2 amps, (20% high from the desired 1 amp current) and the measured voltage is 3.0 mV, then the value recorded will be 3 mV reduced by 20% which is 2.5 mV which is the same as 2.5 mΩ.

4.5.3 Phase 3 Electrical Bonding Procedure

Using one of the two measurement methods in Section 4.5.2 record the bonding measurement for the following equipment. Some equipment in the list is optional and may not be installed.

Ensure that the PFD1 unit, PFD2 unit, MFD unit, and GMC 710 test points, no more than 30 mΩ is present. Ensure that at other unit test points, no more than 5 mΩ is present.

Pilot Compartment

- Top metal case of PFD 1: ___________ mΩ
- PFD1 Cooling fan metal base: ___________ mΩ
- Top metal case of PFD 2: ___________ mΩ
- PFD2 Cooling fan metal base: ___________ mΩ
- Top metal case of MFD: ___________ mΩ
- MFD Cooling fan metal base: ___________ mΩ
- Top metal case of GMA 1347D #1: ___________ mΩ
- Top metal case of GMA 1347D #2: ___________ mΩ
- Top metal case of GMC 710: ___________ mΩ
- GEA 71 #1 body: ___________ mΩ
- GEA 71 #2 body: ___________ mΩ
- GDC 7400 #1 body (if installed): ___________ mΩ
- GDC 7400 #2 body (if installed): ___________ mΩ
- OAT 1 Probe base nut (inside fuselage): ___________ mΩ
- OAT 2 Probe base nut (inside fuselage): ___________ mΩ
- GDL 69A body: ___________ mΩ
- Engine Signal Conditioner #1 near mounting holes of case: ___________ mΩ

- Engine Signal Conditioner #2 near mounting holes of case: __________ mΩ
- Top metal case of GCU 477: __________ mΩ

Cabin Compartment

- GSA 80 (Roll) Servo body: __________ mΩ
- GPA 65 body (if installed): __________ mΩ

4.5.4 Phase 4 Electrical Bonding Procedure

Using one of the two measurement methods in Section 4.5.2 record the bonding measurement for the following equipment. Some equipment in the list is optional and may not be installed.

Ensure that at each other test point, no more than 5 mΩ is present.

Nose Section

- GWX 68 or GWX 70 body: __________ mΩ

Nose Avionics Compartment

- GIA 1 top: __________ mΩ
- GIA 2 top: __________ mΩ
- GSU 75B, GRS 77, or GRS 7800 #1 metal base: __________ mΩ
- GSU 75B, GRS 77, or GRS 7800 #2 metal base: __________ mΩ
- Standby battery: __________ mΩ
- GTS 820/850/Processor metal base: __________ mΩ

Rear Fuselage and Empennage

- GMU 44 #1 metal base: __________ mΩ
- GMU 44 #2 metal base: __________ mΩ
- GSA 80 (Pitch) Servo body: __________ mΩ
- GSA 80 (Pitch Trim) Servo body: __________ mΩ
- GSA 9000 (Yaw) Servo body: __________ mΩ
- GRA 5500 Radar Altimeter __________ mΩ
- GTX 335R #1, GTX 345R #1, GTX 33 #1, or GTX 3000 #1 top: __________ mΩ
- GTX 335R #2, GTX 33 #2, or GTX 3000 #2 top: __________ mΩ
- GDL 59 top: __________ mΩ
- GSR 56 metal base: __________ mΩ
- GSD 41 top: __________ mΩ

Antennas

Test points are between the inside connector body and nearby exposed structure with coaxes disconnected.

- GA 36 (GPS #1): __________ mΩ
- GA 37 (GPS #2): __________ mΩ
- GA 58 (GTS Traffic): __________ mΩ

4.6 GSU 75B, GRS 77, or GRS 7800 Earth Magnetic Field Updates

The GSU 75B, GRS 77, or GRS 7800 utilizes an Earth magnetic field model which is updated once every five years. The update is expected to be available from Garmin every five years, as long as the GSU 75B, GRS 77, or GRS 7800 remain Garmin-supported products.

The G1000 system alerts the operator that the magnetic field database is out of date by issuing the message "AHRS SERVICE – AHRS Magnetic-field model needs update". Garmin will distribute updates as part of the navigation database cycle. If the IGRF model in the update is newer than the model installed, a prompt will appear for each GRS/GSU (Select "OK" to update the IGRF Magnetic Field Model). Use the FM Knob and ENT key to select "OK".

4.7 GSA 80 Greasing Procedure

The GSA 80 servo greasing procedure is required only when the GSA 80 is removed and reinstalled. Refer to Section 6.12 for details.

4.8 Flaps-in-motion Discrete Input Check

To perform this check, all G1000 and GFC 700 equipment must be installed and operational. Start PFD1 in Configuration Mode and go to the GIA Page Group and select the GIA I/O Configuration Page using the FMS knob. Perform the following checks:

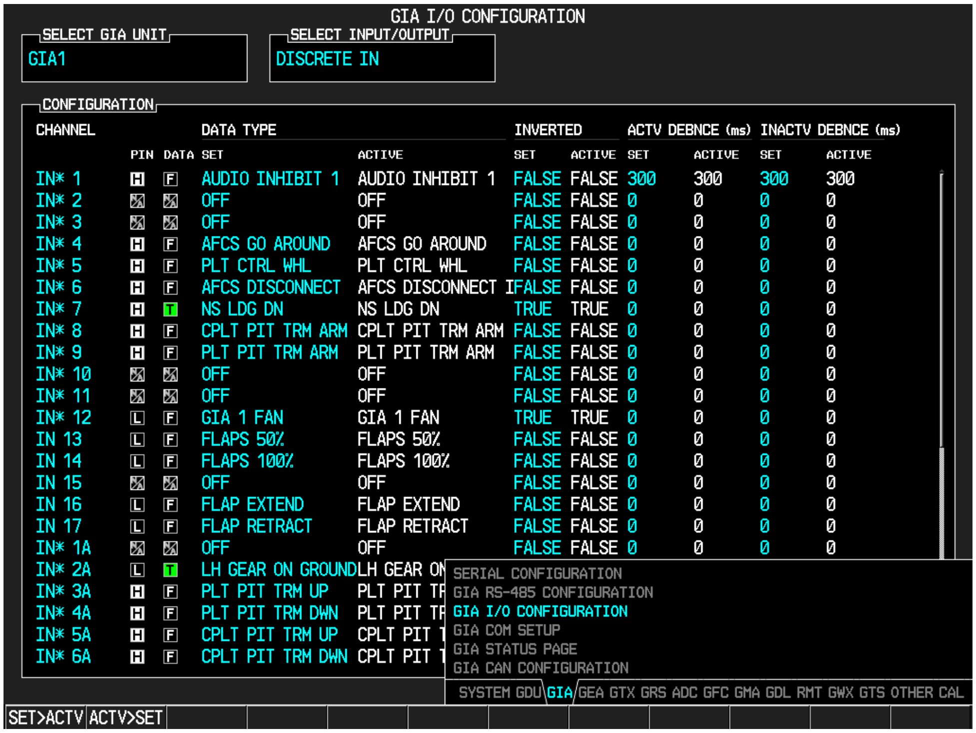


Figure 4-1, GIA I/O Page

False	Invalid	True	Valid

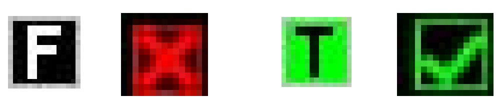


Figure 4-2, Discrete Indications

1. Verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
2. Extend the flaps down. While the flaps are traveling down, check that the DATA indicator of the discrete input labeled ‘FLAP EXTEND’ changes to a valid condition.
3. When the flap motion is completed, verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
4. Retract the flaps up. While the flaps are traveling up, check that the DATA indicator of the discrete input labeled ‘FLAP RETRACT’ changes to a valid condition.
5. When the flap motion is completed, verify the DATA indicators of the discrete inputs labeled ‘FLAP EXTEND’ and ‘FLAP RETRACT’ show an invalid condition.
6. Repeat steps 1 through 5 for GIA2.
7. The flap discrete input check is complete.

4.9 GSM 86 Slip Clutch Torque Check Procedure

Perform the test per Sections 4.9.1 (preferred) or 4.9.2. To perform the procedure, all G1000 system equipment must be installed and operational.

4.9.1 Automated Slip Clutch Test Procedure

1. Before starting test, select the AVIONICS MASTER PWR, EXT PWR, and BATT switches to OFF.
2. Press and hold the ENT key on PFD1 while selecting the AVIONICS MASTER PWR, EXT PWR, and BATT switches to ON.
3. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD1.

(Steps 1 through 3 put PFD1 in Configuration Mode and PFD2 / MFD in normal mode.)

4. With the MFD in Normal Mode, press the red DISPLAY BACKUP button on the pilot's GMA audio panel to place the MFD in reversion mode.
5. With PFD1 in Configuration Mode, go to the GFC Page Group and select the GFC STATUS page using the FMS knobs.

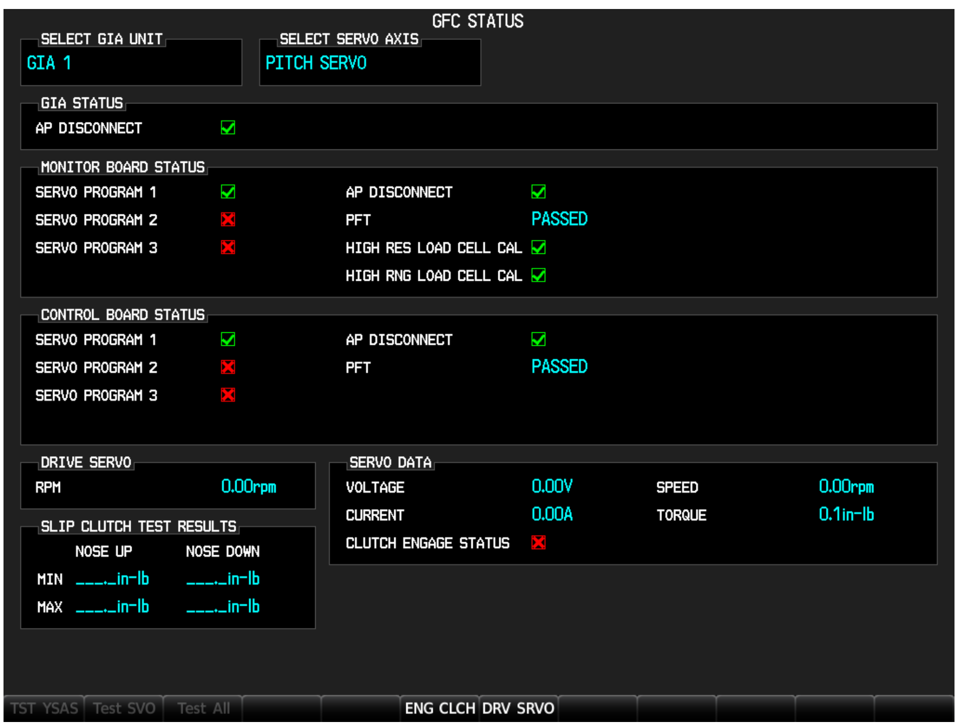


Figure 4-3, GFC Status Page

IMPORTANT!

It is highly recommended that the following test be performed at temperatures between 50° F and 120° F.

6. Use GIA 1 in the SELECT GIA UNIT field for these tests. Use the FMS knob to select the desired servo (Pitch, Roll, Yaw or Pitch Trim).
7. Verify that the Monitor Board and Control Board PFT status fields show PASSED.

8. Verify that the aircraft control surface to be checked is free to travel throughout its range of motion.
9. Press the **Test SVO** softkey on the PFD. Follow prompts to begin the test.

IMPORTANT!

If the test must be stopped, firmly grasp the aircraft control being moved and press the red AP DISC switch on the aircraft control wheel. If an abnormal disconnect of a servo occurs, reset the AFCS SERVO circuit breaker and repeat the test.

10. When test is completed, verify the CLUTCH TEST PASS message is displayed on the MFD.
11. Repeat steps 6 through 10 for each servo axis (Pitch, Roll, and Pitch Trim). Yaw is not tested.
12. If the CLUTCH TEST FAIL message is displayed on the MFD for any axis, repeat the test twice in the failed axis. If the tests do not pass, the GSM 86 slip clutch cartridge must be removed from the aircraft and either be retested using the Manual Slip Clutch Test Procedure or replaced.

4.9.2 Manual Slip Clutch Test Procedure

This test is an alternative to the automated and manual slip clutch test procedures. The GSM 86 servo gearbox does not have an adjustable slip clutch; however, the torque value can be measured using this procedure.

IMPORTANT!

This adjustment requires the use of the Garmin servo adjustment fixture, P/N T10-00110-01. For detailed operating instructions for the fixture, refer to GSA8X / GSM85(A) Installation Manual, listed in Table 1-2.

It is highly recommended that the following test be performed at temperatures between 50° F and 120° F.

1. Remove the GSM 86 servo gearbox as per Section 6.13.
2. Place the GSM 86 servo gearbox on the slip-clutch adjustment fixture and secure with the toggle clamps. Install the fixture cable between the capstan under test and the fixture capstan. Remove the slack in the cable using the tension adjustment knob. Tighten the two wingnuts on bottom of fixture while holding the top thumbscrews.
3. Attach a socket to a calibrated torque wrench of appropriate range and place on top of the fixture capstan. Adjust the wrench support fixture so that it contacts the handle in the appropriate location.
4. Connect a 2 Amp, 24 V, DC power supply to the fixture.
5. Place the solenoid switch to "on" and move the direction switch to the clockwise or counter-clockwise position. Allow the clutch to rotate at least one revolution in each direction (note: the capstan itself is fixed.)
6. Observe the torque reading for at least two full revolutions in each direction. Ensure the minimum and maximum torque readings are within the tolerance specified.
7. If the minimum and maximum torque values are within the specified range in Table 4-10, the GSM slip clutch is acceptable. Reinstall the GSM 86 servo gearbox per Section 6.13.
8. If the minimum and maximum torque values are not within the specified range in Table 4-10, the GSM 86 slip clutch cartridge must be replaced.

Table 4-10, GSM 86 Slip Clutch Torque Settings

Servo	Pitch Trim	Pitch	Roll
GSM 86	66 -9/+10 in-lbs	32 ± 4 in-lbs	135 ±20 in-lbs

4.10 G1000 Redundant Connection Check

Perform the following steps to verify the following:

(A) The primary (PRI) and secondary (SEC) power sources for GIA 1, GRS 1, PFD 1, and GDC 1.

(B) The AHRS and ADC data path to PFD.

(C) PFD and MFD Ethernet connection (includes ARINC connection between ADC and MFD and DISPLAY BACKUP button function).

(D) Engine data availability to the displays and GPS data availability to the AHRS with either GIA inoperative.

(A) PRI and SEC power sources for PFD 1, GIA 1, GSU 1, GRS 1 and GDC 1 check

1. Connect a ground power unit to the external power receptacle and turn on the ground power unit.
2. Set the BAT, EXT PWR, and AVIONICS MASTER PWR switches to ON.
3. With the G1000 system in normal mode, pull the following circuit breakers on the right hand circuit breaker panel:
    - PFD 1 (PRI)
    - AHRS 1 (PRI) or ADAHRS 1 (PRI)
    - ADC 1 (PRI) if installed.
    - GIA 1 (PRI)
4. Wait at least 5 seconds, then verify the data on PFD1 remains valid and the following alert messages are not present:
    - GIA 1 FAIL (or any related message such as COM1, NAV1, XPDR1, GPS1)
    - AHRS 1 FAIL
    - ADC 1 FAIL
    - FAILED DATA PATH
5. Close the circuit breakers listed in step 3.
6. Repeat step 4.
7. Pull the following circuit breakers on the right hand circuit breaker panel:
    - PFD 1 (SEC)
    - AHRS 1 (SEC) or ADAHRS 1 (SEC)
    - ADC 1 (SEC) if installed
    - GIA 1 (SEC)
8. Wait at least 5 seconds, then repeat step 4.
9. Close the circuit breakers listed in step 7.

(B) AHRS and ADC data path check

1. Verify there are no AHRS loss of data messages, such as:
    - AHRS not receiving any GPS information
    - AHRS not receiving backup GPS information
    - AHRS using backup GPS source
2. Place the G1000 in configuration mode.
3. In the GIA page group, go to the GIA RS-232/ARINC 429 CONFIG page.
4. With GIA1 selected in the SELECT UNIT window, verify the following indicators are green:
    - RS232 Channel 1 [(GDC72 #1) or (GDC74 #1)]
    - RS232 Channel 6 [(GRS79 #1), (GRS77 #1), or (GRS7800 #1)]
    - ARINC 429 IN2 [(GSU75 #2), (GRS77 #2) or (GRS7800 #2)]
    - ARINC 429 IN5 [(GDC74 #1)] (only if a GDC 7400 installed)
    - ARINC 429 IN6 [(GSU75 #1), (GRS77 #1), or (GRS7800 #1)]

   (Ref. Section 5.1.1.2.)
5. With GIA2 selected in the SELECT UNIT window, verify the following indicators are green:
    - RS232 Channel 1 [(GDC72 #2) or (GDC74 #2)]
    - RS232 Channel 6 [(GRS79 #2), (GRS77 #2), or (GRS7800 #2)]
    - ARINC 429 IN2 [(GSU75 #1), (GRS77 #1), or (GRS7800 #1)]
    - ARINC 429 IN5 [(GDC74 #2)] (only if a GDC 7400 is installed)
    - ARINC 429 IN6 [(GSU75 #2), (GRS77 #2), or (GRS7800 #2)]

   (Ref. Section 5.1.1.2.)
6. In the GDU page group, go to the GIA RS-232/ARINC 429 CONFIG page.
7. With PFD1 selected in the SELECT UNIT window, verify the following indicators are green:
    - ARINC 429 IN1 [(GSU75 #1), (GRS77 #1), or (GRS7800 #1)]
    - ARINC 429 IN2 [(GDC72 #1) or (GDC74 #1)]

   (Ref. Section 5.1.1.1.)
8. With PFD2 selected in the SELECT UNIT window, verify the following indicators are green:
    - ARINC 429 IN1 [(GSU75 #2), (GRS77 #2), or (GRS7800 #2)]
    - ARINC 429 IN2 [(GDC72 #2) or (GDC74 #2)]

   (Ref. Section 5.1.1.1.)
9. Restart the G1000 in normal mode.

(C) PFD and MFD Ethernet connection check (includes ARINC connection check between ADC1 and MFD and between GRS1 and MFD, and the DISPLAY BACKUP button check)

1. On the right hand circuit breaker panel, open the MFD circuit breaker:
2. Verify NAV 1, COM 1, NAV 2, and COM 2 remain valid on both PFD 1 and PFD 2.
3. Close the MFD circuit breaker and wait for MFD to initialize.
4. Open the PFD 2 circuit breaker.
5. Press the DISPLAY BACK UP button on the Pilot's GMA 1347D audio panel.
6. Verify NAV 2 and COM 2 are each replaced by a red X and NAV 1 and COM 1 remain valid on both the MFD and PFD 1.
7. Press the DISPLAY BACK UP button on the Pilot's GMA 1347D audio panel to return to normal mode.
8. Close the PFD 2 circuit breaker and wait for PFD 2 to initialize.
9. Open the PFD 1 (PRI) and PFD 1 (SEC) circuit breakers.
10. Press the DISPLAY BACK UP button on the Co-pilot's GMA 1347D audio panel.
11. Verify NAV 1 and COM 1 are each replaced by a red X and NAV 2 and COM 2 remain valid on both the MFD and PFD 2.
12. Verify ADC 1 data and GRS 1 data can be displayed on the MFD.
13. Press the DISPLAY BACK UP button on the Co-pilot's GMA 1347D audio panel to return to normal mode.
14. Close the PFD 1 (PRI) and PFD 1 (SEC) circuit breakers and wait for PFD 1 to initialize.

(D) Engine data availability to the displays and GPS data availability to the AHRS with either GIA inoperative check

1. Open GIA1 primary and secondary CBs.
2. Verify the following:
    - NAV 1 and COM 1 tuning fields on PFD 1 and PFD 2 are invalid (red X).
    - L/R engine data remains valid.
    - XPDR1 is Inoperative.
    - GMA1 is Inoperative.
    - AHRS1 is using backup GPS source.
    - AHRS2 not receiving backup GPS Information.
    - An amber BOTH ON GPS2 is displayed on PFD 1 and PFD 2.
    - AHRS and ADC data remain valid on PFD 1 and PFD 2.
3. Close GIA1 primary and secondary CBs. Allow system to re-acquire satellites and return to normal display modes.
4. Open GIA2 CB.
5. Verify the following:
    - NAV 2 and COM 2 tuning fields on PFD 1 and PFD 2 are invalid (red X).

- L/R engine data remains valid.
- XPDR 2 is Inoperative.
- GMA 2 Is Inoperative.
- AHRS 2 is using backup GPS source.
- AHRS 1 not receiving backup GPS Information.
- An amber BOTH ON GPS1 is displayed on PFD 1 and PFD 2.
- AHRS and ADC data remain valid on PFD 1 and PFD 2.

6. Close GIA2 CB. Allow system to re-acquire satellites and return to normal display modes.
7. Open GIA1 primary and secondary CBs and GIA2 CB.
8. Verify the following:
   - NAV 1, COM 1, NAV 2, and COM 2 flag invalid on both PFD 1 and PFD 2.
   - GPS CDI flags DR on PFD.
   - NAV 1 & NAV 2 CDI loses deviation bar.
   - XPDR field flags invalid on PFD.
   - Engine Instrument field flags invalid on MFD.
   - All AHRS & ADC fields remain valid.
   - Red AFCS status annunciation given.
   - If equipped with TAWS, TAWS FAIL annunciation given.
   - If equipped with ADF and/or DME, ADF/DME windows flag invalid.
9. Restore power to both GIA units. The G1000 Redundant Connections Check is complete.

4.11 Engine Data Check

Accomplish this section to verify the engine data availability and validity for ITT and torque. Remove the left and right engine cowling (Ref. King Air 300 Series Maintenance Manual, Chapter 71-10-00) to gain access to the engine harness connectors and reinstall cowling when testing is complete. Required test equipment is provided in Table 4-11. Any product conforming to the specification listed may be used.

Test Equipment	Requirement
Calibrated DC Power Supply	0-100 mVDC, 0-10 VDC
ITT Tester	200C-1200C

Table 4-11, Engine Data Check Test Equipment

4.11.1 ITT

1. Disconnect all thermocouple wires except for the Alumel-Green #10 and Chromel-White #8 leads from the left hand engine thermocouple junction block mounted to the gas generator case.
2. Connect the DC Power Supply or ITT Tester (or equivalent) across the Alumel-Green #10 (-) and Chromel-White #8 (+) leads of the thermocouple junction block. Make sure the polarity of the Alumel and Chromel leads are strictly observed when making connections.
3. Apply external power to aircraft and start the G1000 in normal mode.
4. Verify the gauge indications at the test points in Table 4-12 are within specified tolerances.

NOTE

If the ITT Tester is not temperature compensated or if using the DC Signal method, use the chart shown in Figure 4-4 to convert the ambient temperature to millivolts and subtract from the DC Signal value in Table 4-12.

Test Point (degC)	DC signal (mV, subtract temp offset)	Indication (degC)
200	8.137	200 +/- 17
400	16.395	400 +/- 17
600	24.902	600 +/- 12
800	33.277	800 +/- 7
1000	41.269	1000 +/- 12
1200	48.828	1200 +/- 17

Table 4-12, ITT Indication Test Points

5. On the right hand circuit breaker panel, open the GIA1 (PRI) and GIA1 (SEC) circuit breakers, and verify the last observed ITT indication remains unchanged. Reset the GIA1 (PRI) and GIA1 (SEC) circuit breakers.
6. Repeat Table 4-12 test for the right engine gauge using the right engine thermocouple junction block.
7. Pull the GIA 2 circuit breaker, and verify the last observed ITT indication remains unchanged. Reset the GIA 2 circuit breaker.
8. Turn off the G1000 system and remove external power from aircraft.
9. Reconnect all thermocouple wires to the junction blocks and torque nuts per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77-00-00.

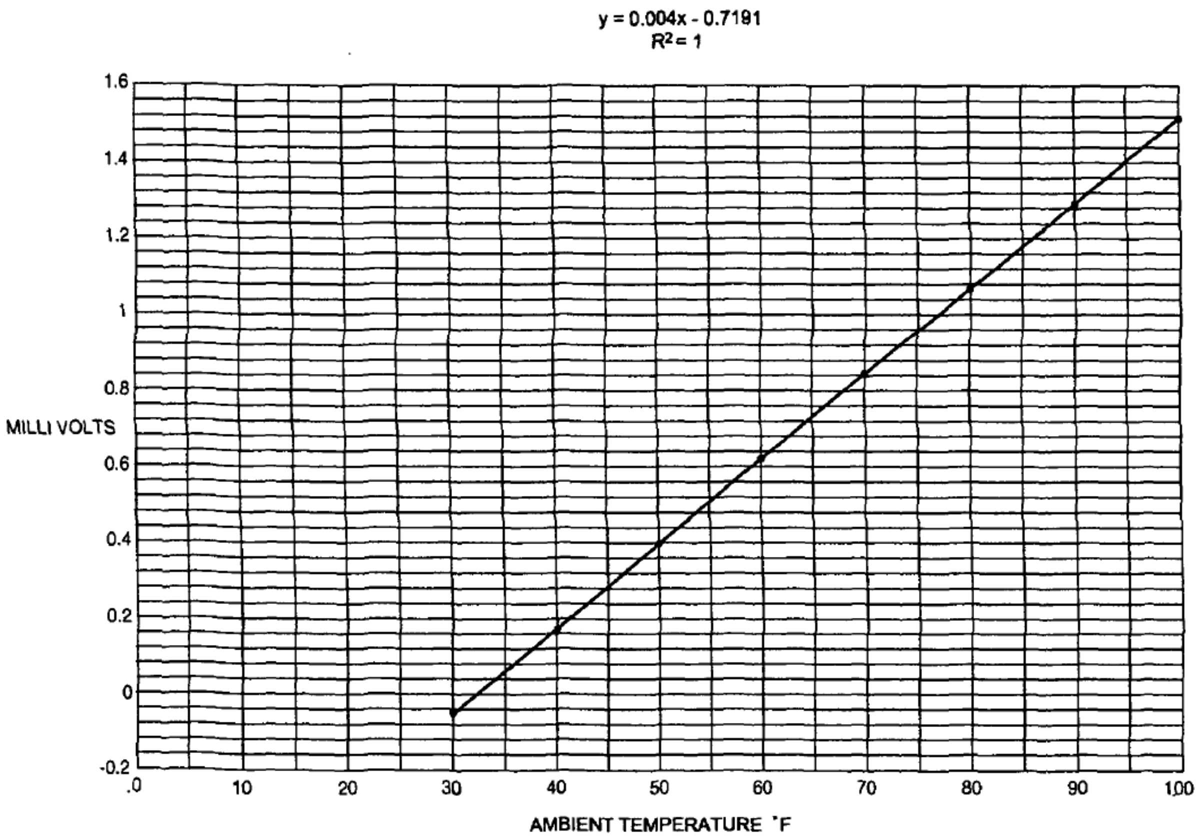


Figure 4-4, Ambient Temperature Conversion Chart

4.11.2 Torque

1. Disconnect the left engine firewall connector J102 and right engine firewall connector J103.
2. Inject a DC voltage into GEA 1 by connecting the DC power supply to the left engine firewall connector-pins J102-C (HI) and J102-R (LO).
3. Apply external power to aircraft and start the G1000 system in normal mode.
4. Verify the gauge indications at the test points in Table 4-13 are within the specified tolerances.

Test Point (VDC)	Torque Indication (%)
0.000 +/- .02	0 +/- 2
1.035 +/- .02	42 +/- 2
1.725 +/- .02	75 +/- 2
2.300 +/- .02	100 +/- 2

Table 4-13, Torque Indication Test Points

5. On the right hand circuit breaker panel, open the GIA1 (PRI) and GIA1 (SEC) circuit breakers, and verify the last observed torque indication remains unchanged. Reset the GIA1 (PRI) and GIA1 (SEC) circuit breakers.
6. Repeat Table 4-13 test for the right engine by injecting a DC voltage into GEA 2 by connecting the DC power supply to the right engine firewall connector-pins J103-C (HI) and J103-R (LO).
7. Pull the GIA 2 circuit breaker, and verify the last observed torque indication remains unchanged. Reset the GIA 2 circuit breaker.
8. Turn off the G1000 system and remove external power from aircraft.
9. Reinstall and safety the left J102 and right J103 engine firewall connectors.

4.12 Trim Annunciator Check

This procedure checks the pitch trim (**PTRM**) annunciation from both GIA 1 and GIA 2 and the mis-trim AFCS status alerts.

1. Ensure the G1000 is in normal mode, autopilot is not engaged, and the AFCS mode controller XFR key is selected to the pilot side.
2. Press the left part of the pilot’s pitch-trim switch upwards for approximately 10 seconds and verify that the red **PTRM** annunciation is displayed on both PFD 1 and PFD 2.
3. Release the switch and wait for the **PTRM** annunciation to clear.
4. Press the left part of the pilot’s pitch-trim switch downwards for approximately 10 seconds and verify that the red **PTRM** annunciation is displayed on both PFD 1 and PFD 2.
5. Release the switch and wait for the **PTRM** annunciation to clear.
6. Repeat Steps 2 through 5 for the right part of the pilot’s pitch-trim switch.
7. Repeat Steps 2 through 6 for the copilot’s pitch-trim switch.
8. Using the AFCS mode controller, select copilot side by pressing the XFR key on the mode controller (changes active GIA to GIA 2).
9. Repeat Steps 2 through 7 and verify annunciations are displayed on both PFD 1 and PFD 2.
10. Using the AFCS mode controller, re-select pilot side by pressing XFR key on the mode controller (changes active GIA back to GIA 1).
11. Hold the control yoke with elevators and ailerons in the neutral positions (control wheel level and at the mid-point position between full forward and full aft). Position the pitch trim wheel to 0° degrees.

12. Press the Go Around button on the throttle and engage the autopilot. Apply a forward load on the control yoke. Verify that the pitch trim wheel rotates in the UP direction.
13. Disengage the autopilot and flight director. Use the pitch-trim switch (or the pitch-trim wheel) to trim full down.
14. Hold the control yoke in the full forward position.
15. Engage the autopilot, apply firm aft pressure on the control yoke for approximately 10 seconds, allowing the pitch-trim wheel to move freely. Verify that the amber **ELE↓** annunciator is displayed on both PFD 1 and PFD 2.
16. Disengage the autopilot and use the pitch-trim switch (or the pitch-trim wheel) to trim full up.
17. Move the control yoke to the full aft position and hold.
18. Press the Go Around button on the throttle and engage the autopilot. Apply firm forward pressure on the control yoke for approximately 10 seconds, allowing the pitch-trim wheel to move freely. Verify that the amber **ELE↑** annunciator is displayed on both PFD 1 and PFD 2.
19. Disengage the autopilot.

NOTE

If the **ELE** annunciation appears during any of the following steps, reset the trim wheel and repeat the test step.

20. Use the pitch-trim switch (or the pitch-trim wheel) to trim full down.
21. Hold the elevator in the neutral position (control wheel at the mid-point position between full forward and full aft), press the **HDG** and **ALT** buttons on the mode controller and center the heading bug.
22. Engage the autopilot and turn the heading knob to set the heading bug to the right of center. Hold the control yoke centered for approximately 10 seconds. Verify that the amber **AIL→** annunciator is displayed on both PFD 1 and PFD 2.
23. Turn the heading knob to set the heading bug to the left of center. Hold the control yoke centered for approximately 10 seconds. Verify that the amber ←**AIL** annunciator is displayed on both PFD 1 and PFD 2.
24. Disengage the autopilot and clear all flight director modes.
25. Ensure the aircraft is on the ground and the nose wheel is approximately straight.

NOTE

In the following steps, slow, continuous rudder pedal movement is needed to overcome clutch torque. If pedal movement is stopped before the annunciation is displayed, return the rudder pedals to the neutral position and repeat step.

26. Engage the yaw damper.
27. Begin to apply pressure slowly to the right rudder pedal. When pedal resistance is felt, continue to apply pressure slowly for approximately 20 to 30 seconds.
28. Verify that the amber ←RUD annunciator is displayed on both PFD 1 and PFD 2.

29. Reposition the rudder pedals to the neutral position.
30. Begin to apply pressure slowly to the left rudder pedal. When pedal resistance is felt, continue to apply pressure slowly for approximately 20 to 30 seconds.
31. Verify that the amber RUD→ annunciator is displayed on both PFD 1 and PFD 2.
32. Reposition the rudder pedals to the neutral position.
33. Disengage yaw damper.
34. The Trim Annunciator Check is complete.

4.13 G1000 Miscompare Checks

This procedure will check the AHRS, airspeed and altitude miscompare monitors. Accomplish the following checks with the aircraft positioned where it can receive GPS signals and magnetic heading. Access to AHRS 1/ADAHRS 1 and AHRS 2/ADAHRS 2 is required during this test.

1. Unfasten the AHRS 1/ADAHRS 1 and 2 units and set loose in their racks. Do not disconnect connectors or pitot/static lines.
2. Connect a pitot/static test set to the aircraft left side pitot and static ports (pilot's side). Do not connect a pitot/static test set to the right side pitot/static ports (copilot's side) at this time.
3. Ensure the G1000 is operating in normal mode.
4. Set the baro-correction on PFD 1 and PFD 2 to STD.
5. On the AFCS mode controller, press the ALT, HDG, and AP buttons and verify autopilot engages.
6. Slowly increase the altitude to simulate an altitude miscompare of greater than 200 ft. Verify PFD 2 altitude does not increase, autopilot does not disconnect, and an amber ALT box is displayed in the altitude tape of PFD 1 and PFD 2.
7. Reduce left side altitude to ambient pressure. Verify the amber ALT box is removed from both PFD(s).
8. Repeat Steps 6 and 7 except reducing the altitude to simulate a miscompare greater than 200ft.
9. Connect a pitot/static test set to the right side pitot and static ports (copilot's side).
10. Use the pitot/static test set to simulate an airspeed of 85 kts for the left (pilot's) side and 95 kts for the right (copilot's) side. Verify the autopilot does not disconnect and an amber IAS box is displayed on the airspeed tape of PFD 1 and PFD 2.
11. Use the pitot/static test set to simulate an airspeed of 95 kts for the left (pilot's) side and 85 kts for the right (copilot's) side. Verify the autopilot does not disconnect and amber IAS box is displayed on the airspeed tape of PFD 1 and PFD 2.
12. Reduce the airspeeds to 0 kts.
13. Slowly rotate AHRS 1/ADAHRS 1 along the lateral (pitch) axis to a pitch attitude of greater than 5 degrees, verify the following:
    - PFD 2 pitch attitude does not change
    - An amber PIT box is annunciated on PFD1 and PFD2 adjacent to the pitch scale.
    - Autopilot disconnects at approximately 5° miscompare

- The autopilot disconnect audio alert (two hi-low tones) sounds
- A red flashing AP annunciator on PFD 1 and PFD 2
- Flight director command bars remain in view with autopilot in HDG and ALT mode

14. Return AHRS 1/ADAHRS 1 to normal attitude and verify that attitude display on PFD 1 displays current aircraft attitude.
15. Use the AFCS mode controller to re-engage autopilot.
16. Slowly rotate AHRS 1/ADAHRS 1 along the longitudinal (roll) axis to a roll attitude of greater than 5 degrees, verify the following:
    - PFD 2 roll attitude does not change
    - An amber ROL box is annunciated on PFD 1 and PFD 2 adjacent to the roll scale.
    - Autopilot disconnects at approximately 5° roll miscompare
    - The autopilot disconnect audio alert (two hi-low tones) sounds
    - A red flashing AP annunciator on PFD 1 and PFD 2
    - Flight director command bars remain in view with autopilot in HDG and ALT mode
17. Return AHRS 1/ADAHRS 1 to normal attitude and verify that attitude display on PFD1 displays current aircraft attitude.
18. Repeat Steps 13 through 17 for AHRS 2/ADAHRS 2. For this test, PFD 1 attitude should not change and PFD 2 attitude should be used as the AHRS 2/ADAHRS 2 reference.
19. Reinstall AHRS/ADAHRS 1 and 2 units in their racks per Section 6.9.
20. The G1000 Miscompare checks are complete. If no further air data tests are required, disconnect pitot/static test sets.

4.14 Nose Avionics Compartment Fans Operational Check

This procedure will verify that airflow is present from the ported avionics cooling fans to the #1 and #2 GIA units. The fan speed monitoring circuits and annunciations are checked by the G1000 Cooling Fan Fail Annunciation Check in Section 9.4 and a Visual Inspection of the fan and its hoses is accomplished in Section 4.4. This check requires the G1000 to be powered on.

1. Gain access to the nose avionics compartment.
2. Disconnect cooling fan hose from the pilot side GIA and verify airflow is present.
3. Reconnect the cooling fan hose to the GIA and secure using MS3367-5-9 cable tie.
4. Repeat Steps 2 through 3 for the copilot side GIA.
5. The Nose Avionics Compartment Fans Operational Check is complete.

4.15 Instrument Panel Fans Operational Check

This procedure will verify that airflow is present from the PFD1, MFD and PFD2 cooling fans. The fan speed monitoring circuits and annunciations are checked by the G1000 Cooling Fan Fail Annunciation Check in Section 9.4. This check requires the G1000 to be powered on.

1. Remove PFD1 as described in Section 6.1, steps 1 and 2 (*Removal*).
2. Identify the PFD1 cooling fan and verify airflow is present.
3. Reinstall PFD1 as described in Section 6.1, steps 2 through 4 (*Reinstallation*).
4. Repeat Steps 1 through 3 for the MFD and PFD2.
5. The Instrument Panel Fans Operational Check is complete.

4.16 Standby Battery Periodic Checks

4.16.1 Charge Check

Refer to the PS-835 Emergency Power Supply Installation Manual listed in Table 1-1.

With the PS-835 battery installed in the aircraft, connect 28VDC ground power to the aircraft. Turn the ground power and aircraft power on, then verify all four Battery Voltage LEDs are lit to indicate the battery is being charged (see Figure 4-5).

With the PS-835 battery installed in the aircraft and no ground or aircraft power on, press the TEST SWITCH (Figure 4-5, Item 4) into TEST position for 5 seconds. The PS-835 indicates that it is adequately charged when the VOLTAGE LEVEL 24Vdc LED (Figure 4-5, Item 2) illuminates momentarily, AND the 20Vdc LED (Figure 4-5, Item 6) remains lit during the test. If the VOLTAGE LEVEL 24Vdc LED does not, at least momentarily, illuminate while the 20Vdc LED is illuminated, perform the Section 4.16.3 Cell Isolation Test because the battery is incapable of providing adequate power.

Table 4-14, Standby Battery Required Equipment

DESCRIPTION	VENDOR/SPECIFICATION
Power Supply	0-30 VDC, 20A capacity
DVM	Fluke Model 8050A
Load Resistor	7Ω +/- 1% 250 watt
Stopwatch	Capable of measuring to the minute

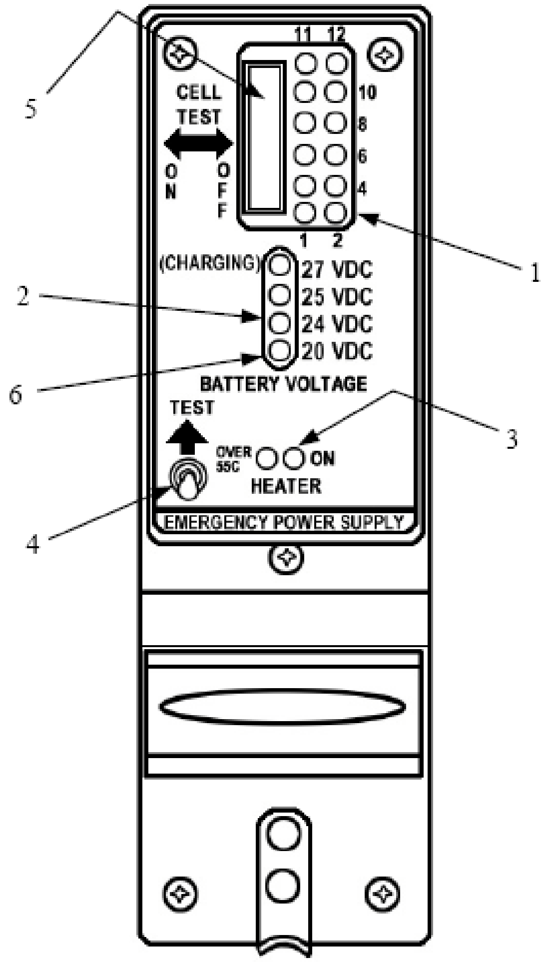


Figure 4-5, Standby Battery

4.16.2 Capacity Test

NOTE

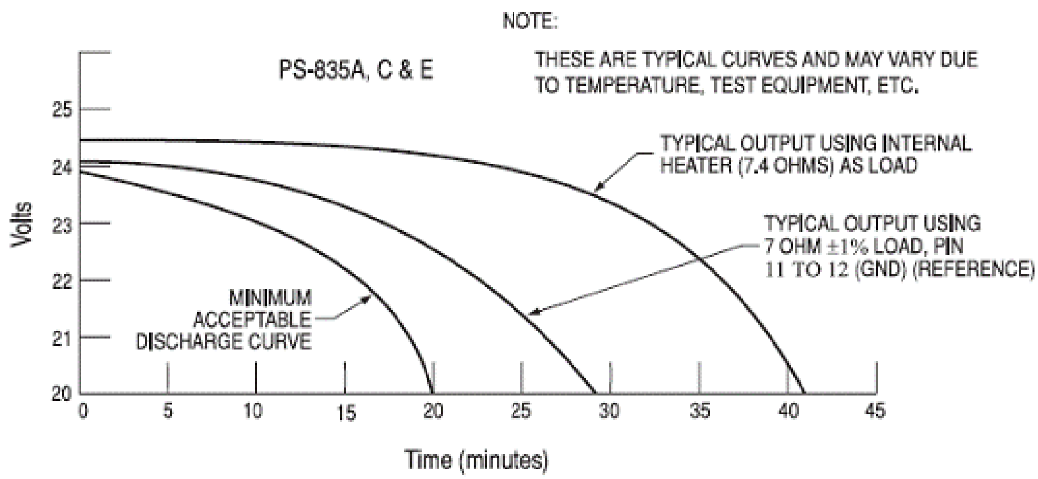
The PS-835 Emergency Power Supply must have completed a full charge prior to any discharge testing. This test is performed with the battery removed from the aircraft.

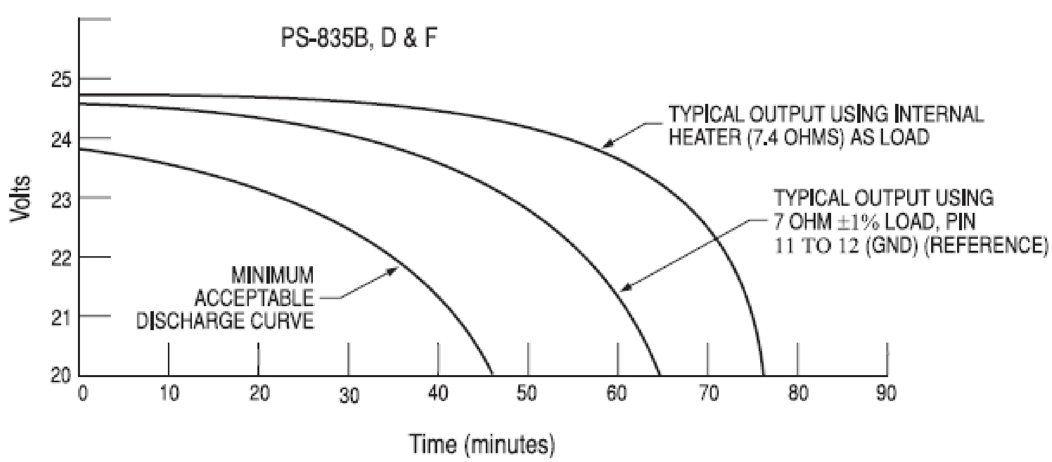
A. Press and hold TEST SWITCH (Figure 4-5, Item 4) and observe the OUTPUT VOLTAGE MONITOR LED's.

1. If the 24VDC OUTPUT VOLTAGE MONITOR LED comes on, proceed with Discharge Test procedure.
2. If OUTPUT VOLTAGE MONITOR LED's do not come on, check fuses at bracket next to battery and replace if blown. Perform Cell Isolation Test if no fuses are blown.

B. Discharge Test (Load Resistor)

1. Prepare for test by first constructing an X-Y graph similar to the one shown below. If possible, use pre-printed graph paper to create a record of the discharge period along the X-axis and voltage readings along the Y-axis.





2. Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the ON position. If the INDIVIDUAL CELL MONITOR LED DS12 is the only LED not illuminated, proceed to the Cell Isolation Test.

3. Connect Digital Voltmeter leads to J1 connector pins 11 (+) and 7 (-).
4. Connect the Load Resistor across J1 connector pins 11 (+) and 7 (-) and start timing the discharge period with a stopwatch.
5. Monitor and plot voltage values at 10-minute intervals.
6. Note voltage on Digital Voltmeter at 48.0 minutes (PS-835D) or at 20.0 minutes (PS-835C). This voltage must be greater than 20.0 Vdc.
    a. All INDIVIDUAL CELL MONITOR LED’s (Figure 4-5, Item 1) must remain on.
    b. Any LED that does go OFF will represent a defective individual cell, which must be replaced.
7. Remove the Load Resistor from J1 connector pins 11 (+) and 7 (-).
8. Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the OFF position.
9. Compare the voltage vs. time plot created during this test to that of curve identified as typical for the External Load test method on the chart above. If the plot reveals a discharge curve that meets or exceeds the MINIMUM ACCEPTABLE DISCHARGE CURVE, the unit is considered satisfactory.
10. If unit discharge plot is satisfactory and no other failures were revealed, perform the Charging Procedure within 2 hours of completion of the discharge test. Return the unit into service.

4.16.3 Cell Isolation Test

NOTE

No power should be applied to PS-835 Emergency Power Supply during test. This test is performed with the battery removed from the aircraft.

A. Press and hold TEST SWITCH (Figure 4-5, Item 4). If no OUTPUT VOLTAGE MONITOR LED's come on:
    1. Position all INDIVIDUAL CELL DIP SWITCHES (Figure 4-5, Item 5) to the ON position.
    2. Press and hold TEST SWITCH (Figure 4-5, Item 4) and observe the INDIVIDUAL CELL MONITOR LED's (Figure 4-5, Item 1).
        a. If all INDIVIDUAL CELL MONITOR LED’s come on except DS12, the unit is damaged and requires repair at an authorized repair station.
        b. If all INDIVIDUAL CELL MONITOR LED’s are on, a low-battery voltage condition exists.

B. Perform the Charging Procedure. See 4.16.4.

4.16.4 Charging Procedure

(Constant-Voltage Charging Method)

Locally manufacture a power cable using 16AWG wire and the appropriate mating connector. Include a Diode (15 Adc (min), 50.0 PIV or greater) to prevent battery discharge in case of loss of power from the power source. Using the external power supply apply 30.0 Vdc (10A maximum current limited) to J1 connector pins 11 (+) and 7 (-) and charge the unit for 16 hours. The batteries should reach 80% capacity within 1 hour and full charge at 16 hours.

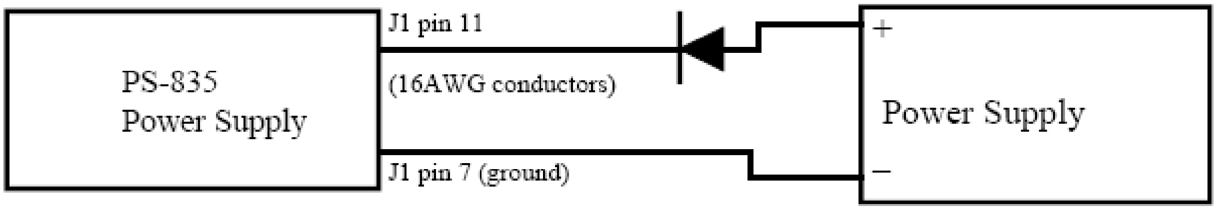


Figure 4-6, Power Supply Connection

4.17 Rudder Boost Operational Check

1. Place the RUDDER BOOST switch to the OFF position. For Model 300 aircraft, set the left and right bleed air control switches to the OPEN position.
2. Verify the amber RUD BOOST OFF annunciator on the aircraft's caution and advisory panel is illuminated.
3. Place the RUDDER BOOST switch to the RUDDER BOOST position. Verify the amber RUD BOOST OFF annunciator on the aircraft caution and advisory panel is extinguished.
4. Pull GIA 1 primary and secondary circuit breakers. Verify RUD BOOST OFF annunciator is extinguished.
5. Pull GIA 2 circuit breaker. Verify RUD BOOST OFF annunciator illuminates.
6. Reset GIA 1 and GIA 2 circuit breakers. Verify RUD BOOST OFF annunciator extinguishes.
7. Pull the AFCS SERVO circuit breaker. Verify RUD BOOST OFF annunciator illuminates.
8. Reset AFCS SERVO circuit breaker. Verify RUD BOOST OFF annunciator extinguishes.
9. Press and hold the AP/DISC switch on the pilot's control wheel and verify RUD BOOST OFF annunciator illuminates.
10. Release the AP/DISC switch and verify the RUD BOOST OFF annunciator extinguishes.
11. Repeat steps 9-10 for the copilot's control wheel.

NOTE

Steps 12-15 are only applicable to Model 300 aircraft.

12. Place the L BLEED AIR CONTROL SWITCH in the PNEU & ENVIR OFF position. Verify RUD BOOST OFF annunciator illuminates.
13. Place the L BLEED AIR CONTROL SWITCH in the OPEN position. Verify RUD BOOST OFF annunciator extinguishes.
14. Place the R BLEED AIR CONTROL SWITCH in the PNEU & ENVIR OFF position. Verify RUD BOOST OFF annunciator illuminates.
15. Place the R BLEED AIR CONTROL SWITCH in the OPEN position. Verify RUD BOOST OFF annunciator extinguishes.

4.18 Exterior Skin Inspection Around Antennas

Perform a visual inspection of the exterior skin for cracks and loose and missing fasteners in an area at least 1-inch around the following antennas:

- GA 36 GPS antenna
- GA 37 GPS/XM antenna
- GA 58 Traffic Antenna, Upper (if Garmin traffic system is installed)
- GA 58 Traffic Antenna, Lower (if Garmin traffic system is installed)
- Transponder Antenna, Upper #1 (if Garmin GTX 33D or GTX 3000 transponder is installed)
- Transponder Antenna, Upper #2 (if Garmin GTX 33D or GTX 3000 transponder is installed)
- Iridium Antenna (if Garmin GSR 56 satellite receiver is installed)
- Wi-Fi Antenna (if Garmin GDL 59 Wi-Fi data link is installed)

The antennas do not need to be removed to perform this inspection.

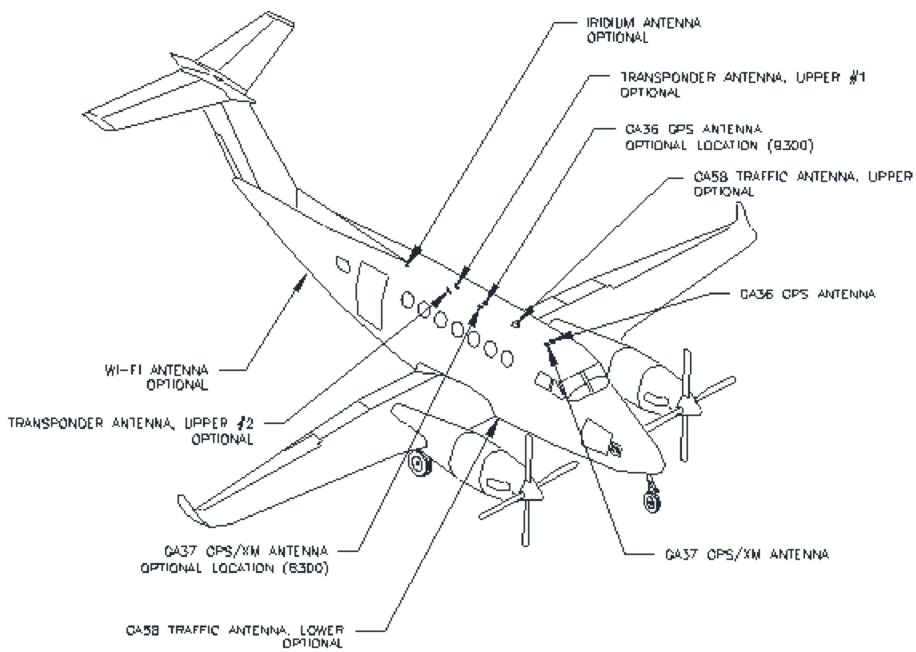


Figure 4-7, Exterior Skin Inspection Around Antennas

Should damage be detected in any structural component during this inspection, all adjacent structures must be carefully investigated for indications of related damage. All damage must be repaired using data obtained from the Structural Inspection and Repair Manual (SIRM), Beechcraft Repair Design Office (RDO), or other approved sources.

5. TROUBLESHOOTING

This section provides instructions and guidance for G1000 system troubleshooting as installed in the King Air 300 Series.

IMPORTANT!

Sections 6, 7 and 9 provide detailed instructions on equipment removal, replacement, configuration, and return-to-service testing. Anytime a G1000 component or LRU is removed, swapped, or replaced, the technician must follow the procedures given in Sections 6, 7 and 9 to ensure proper operation of the system.

Troubleshoot the G1000 system by first identifying, then isolating the specific failure to the responsible LRU. There are several indications that the G1000 presents to the pilot or technician, showing overall system condition. A course of action should be determined based on the information presented on the display. This section shows possible scenarios likely to be encountered during normal operation and gives troubleshooting guidance to the technician to resolve problems.

Figure 5-1, Aux – System Status Page

The **Aux – System Status** page displays the following information for each LRU and sub-function:

- Status: A green check is displayed for properly operating LRUs. A red 'x' appears when an internal LRU fault is detected and it has taken itself offline, or if the MFD cannot communicate with the LRU.
- Serial Number: Each LRU serial number is displayed (functions such as GPS and GS are contained within an LRU; therefore, serial numbers are not shown for these).
- Current SW Version Loaded.

When troubleshooting, first check to ensure that each LRU status is 'green' and that the correct software is loaded in each unit. Additional airframe and database information is also displayed on this page.

5.1 System Annunciations

If data fields become invalid due to an LRU failure, the PFD/MFD typically annunciates the failure with a large red X, as shown in Figure 5-2.

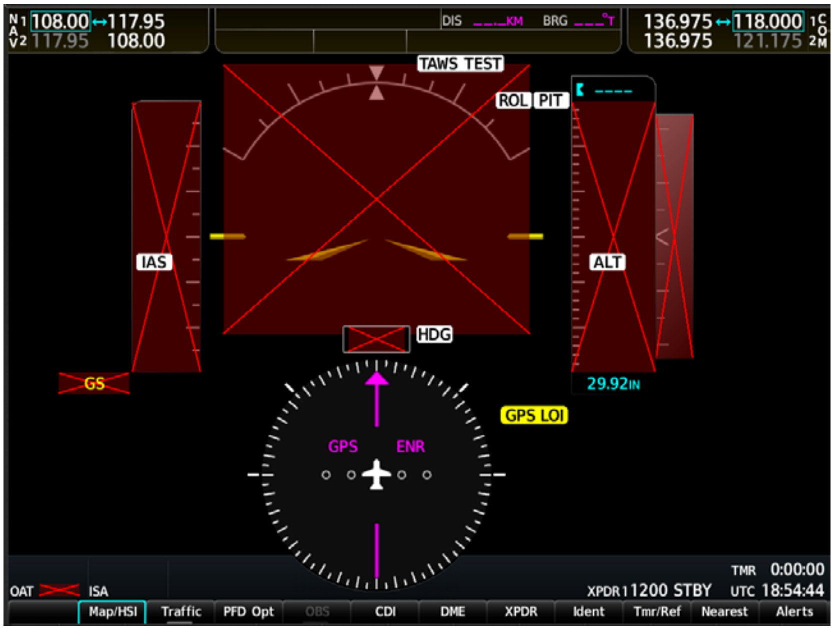


Figure 5-2, System Annunciations

5.1.1 Failed Path Messages

The following message indicates there is a data path connected to the GDU (PFD1, PFD1, or MFD) or the GIA 63W (1 or 2) that has failed.

FAILED PATH – A data path has failed.

The **FAILED PATH** message is triggered by a timeout of any one digital channel. The channels that are checked are listed on these pages in config mode:

1) GDU RS-232 / ARINC 429 CONFIG (PFD1/2, and MFD)
2) GIA RS-232 / ARINC 429 CONFIG (GIA1 and GIA2)

3) GIA CAN / RS-485 CONFIGURATION (GIA1 and GIA2)

IMPORTANT!

Once the FAILED PATH message has been triggered, it will remain on the list of messages until the next power cycle. This latching was implemented so that for intermittent failures, the message would remain at the end of the flight (to alert maintenance crew). Also, this keeps the crew from having to acknowledge message repeatedly in the case of intermittent failures.

The box next to each channel indicates the current status of the channel per the below:

- Red X = data path is known to be failed
- Amber question mark (?) = data path status is unknown
- Green checkmark (✓)= data path is known to be good

The applicable data paths can be verified by viewing the following configuration mode pages.

5.1.1.1 GDU RS-232 / ARINC 429 CONFIG Page

PFD 1 RS-232

Channel	LRU	Indicator	Status
CHNL 2	GMC 710	Green	PFD1/GMC 710 data path is functioning correctly.
		Red	PFD1/GMC 710 data path is not functioning correctly. • Verify GMC710 is powered on. o If GMC 710 will not power on, remove unit and verify power and ground are present at the GMC connector. ▪ If power or ground is not present, troubleshoot aircraft wiring for faults. ▪ If power and ground are present, replace GMC 710. • Load PFD1 and GMC 710 configuration files. • Swap PFD1and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Check the PFD1/GMC 710 interconnect wiring for faults. Replace GMC 710 if problem remains.
		Amber	PFD1/GMC 710 data path functionality is unknown. Reload PFD1 configuration file.

PFD 1 ARINC 429

Channel	LRU	Indicator	Status
IN 1	GRS 77 or GRS 7800 or GSU 75 #1	Green	PFD1/GRS or GSU 1 data path is functioning correctly.
		Red	PFD1/GRS or GSU 1 data path is not functioning correctly. • Verify GRS or GSU 1 status is "OK" using the **Aux – System Status** page on the MFD. If it is not, correct condition before proceeding, reference GRS troubleshooting sections. o Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. • Load PFD1 configuration file. • Swap PFD1 and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. Check the PFD1/ GRS or GSU 1 interconnect wiring for faults.
		Amber	PFD1/GRS or GSU 1 data path functionally is unknown. Reload PFD1 configuration file.
IN 2	GDC7400 or GDC 72 #1	Green	PFD1/GDC #1 data path is functioning correctly
		Red	PFD1/GDC #1 data path is not functioning correctly. • Verify GDC #1 status is "OK" using the **Aux – System Status** page on the MFD. If it is not, correct condition before proceeding, reference GDC troubleshooting sections. • Load PFD1 and GDC #1 configuration files. • Swap PFD1 and PFD2 to confirm if the problem is in the original PFD1. o Replace original PFD1 if box turns green after swapping displays. • Check the PFD1/GDC #1 interconnect wiring for faults. Replace GDC #1 if problem remains.
		Amber	PFD1/GDC #1 data path functionality is unknown. Reload PFD1 configuration file.

PFD 2 RS-232

Channel	LRU	Indicator	Status
CHNL 2	GMC 710	Green	PFD2/GMC 710 data path is functioning correctly.

		Red	PFD2/GMC 710 data path is not functioning correctly.
			• Verify GMC 710 is powered on.
			  o If GMC 710 will not power on, remove unit and verify power and ground are present at the GMC connector.
			    ▪ If power or ground is not present, troubleshoot aircraft wiring for faults.
			    ▪ If power and ground are present, replace GMC 710.
			• Load PFD2 and GMC 710 configuration files.
			• Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2.
			  o Replace original PFD2 if box turns green after swapping displays.
			• Check the PFD2/GMC 710 interconnect wiring for faults.
			Replace GMC 710 if problem remains.

		Amber	PFD2/GMC 710 data path functionality is unknown. Reload PFD2 configuration file.

PFD 2 ARINC 429

Channel	LRU	Indicator	Status
IN 1	GRS 77 or GRS 7800 or GSU 75 #2	Green	PFD2/GRS or GSU 2 data path is functioning correctly.
		Red	PFD2/GRS or GSU 2 data path is not functioning correctly. • Verify GRS or GSU 2 status is “OK” using the **Aux – System Status** page on the MFD. If it is not, correct condition before proceeding, reference GRS troubleshooting sections. o Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. • Load PFD2 configuration file. • Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2. o Replace original PFD2 if box turns green after swapping displays. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. • Check the PFD2/GRS or GSU 2 interconnect wiring for faults.
		Amber	PFD2/GRS or GSU 2 data path functionality is unknown. Reload PFD2 configuration file.
IN 2	GDC 7400 or GDC 72 #2	Green	PFD2/GDC #2 data path is functioning correctly.
		Red	PFD2/GDC #2 data path is not functioning correctly. • Verify GDC #2 status is “OK” using the **Aux – System Status** page on the MFD. If it is not, correct condition before proceeding, reference GDC troubleshooting sections. • Load PFD2 and GDC #2 configuration files. • Swap PFD2 and PFD1 to confirm if the problem is in the original PFD2. o Replace original PFD2 if box turns green after swapping displays. • Check the PFD2/GDC #2 interconnect wiring for faults. Replace GDC #2 if problem remains.
		Amber	PFD2/GDC #2 data path functionality is unknown. Reload PFD2 configuration file.

MFD1 RS-232

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GCU 477</td><td>Green</td><td>MFD1/GCU 477 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>MFD1/GCU 477 data path is not functioning correctly.
• Verify GCU 477 is powered on.
o If GCU 477 will not power on, remove unit and verify power and ground are present at the GCU connector.
▪ If power or ground is not present, troubleshoot aircraft wiring for faults.
▪ If power and ground are present, replace GCU 477.
• Load MFD1 and GCU 477 configuration files.
• Check the MFD1/GCU 477 interconnect wiring for faults.
• Replace GCU 477.
Replace MFD if problem remains.</td></tr>
<tr><td>Amber</td><td>MFD1/GCU data path functionality is unknown. Reload MFD1 configuration file.</td></tr>
</table>

5.1.1.2 GIA RS-232 / ARINC 429 CONFIG Page

GIA1 RS-232

Channel	LRU	Indicator	Status
CHNL 1	GDC 72 or GDC7400 #1	Green	GIA1/GDC #1 data path is functioning correctly.
		Red	GIA1/GDC #1 data path is not functioning correctly. • Load GIA1 and GDC #1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GDC #1 interconnect wiring for faults. Replace GDC #1 if problem remains.
		Amber	GIA1/GDC #1 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 2	GRS 77 or GRS 7800 or GRS 79 #2 (output only)	White N/A	GIA1/GRS or GSU 2 output data path is not monitored. A white N/A box is normal.
CHNL 5	GTX 33ES or GTX 3000 or GTX 3x5 #1	Green	GIA1/GTX 1 data path is functioning correctly.
		Red	GIA1/GTX 1 data path is not functioning correctly. • Load GIA1 and GTX 1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GTX 1 interconnect wiring for faults. Replace GTX 1 if problem remains.
		Amber	GIA1/GTX 1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 RS-232 (continued)

Channel	LRU	Indicator	Status
CHNL 6	GRS 77 or GRS 7800 or GRS 79 #1	Green	GIA1/GRS or GSU 1 data path is functioning correctly.
		Red	GIA1/ GRS or GSU 1 data path is not functioning correctly. • Load GIA1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1. o Replace original GRS1 if box turns green after swapping units. Check the GIA1/GRS or GSU 1 interconnect wiring for faults.
		Amber	GIA1/GRS or GSU 1 data path functionality is unknown. Reload GIA1 configuration files.
CHNL 7	GMA 1347 #1	Green	GIA1/GMA 1347D #1 data path is functioning correctly.
		Red	GIA1/GMA 1347D #1 data path is not functioning correctly. • Load GIA1 and GMA 1347D #1 configuration files. • Swap GMA 1347D #1 and GMA 1347D #2, reconfigure both GMA's to their new locations, to confirm if the problem is in the original GMA 1347D #1. o Replace original GMA 1347D #1 if box turns green after swapping units. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. Check the GIA1/GMA 1347D #1 interconnect wiring for faults.
		Amber	GIA1/GMA 1347D #1 data path functionality is unknown. Reload GIA1 configuration files.

GIA1 ARINC 429

Channel	LRU	Indicator	Status
IN 2	GRS 77 or GRS 7800 or GSU 75 #2	Green	GIA1/GRS or GSU 2 data path is functioning correctly.
		Red	GIA1/GRS or GSU 2 data path is not functioning correctly. • Reload GIA1 configuration file. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS2. o Replace original GRS2 if box turns green after swapping units. • Check the GIA1/GRS or GSU 2 interconnect wiring for faults.
		Amber	GIA1/GRS or GSU 2 data path functionality is unknown. Reload GIA1 configuration files.
IN 5	GDC7400 #1	Green	GIA1/GDC #1 data path is functioning correctly.
		Red	GIA1/GDC #1 data path is not functioning correctly. • Load GIA1 and GDC #1 configuration files. • Swap GIA1 and GIA2, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA1 if box turns green after swapping units. • Check the GIA1/GDC #1 interconnect wiring for faults. Replace GDC #1 if problem remains.
		Amber	GIA1/GDC #1 data path functionality is unknown. Reload GIA1 configuration files.

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 6</td><td rowspan="3">GRS 77 or GRS 7800 or GSU 75 #1</td><td>Green</td><td>GIA1/GRS or GSU 1 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA1/GRS or GSU 1 data path is not functioning correctly.
Load GIA1 configuration files.
Swap GIA1 and GIA2, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA1.
Replace original GIA1 if box turns green after swapping units.
Swap GRS1 and GRS2 (no reconfiguration required, ref. GRS Configuration and Testing sections) to confirm if the problem is in the original GRS1.
Replace original GRS1 if box turns green after swapping units.
Check the GIA1/GRS or GSU 1 interconnect wiring for faults.</td></tr>
<tr><td>Amber</td><td>GIA1/GRS or GSU 1 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

GIA2 RS-232

Channel	LRU	Indicator	Status
CHNL 1	GDC 72 or GDC 7400 #2	Green	GIA2/GDC #2 data path is functioning correctly.
		Red	GIA2/GDC #2 data path is not functioning correctly. • Load GIA2 and GDC #2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Check the GIA1/GDC #2 interconnect wiring for faults. Replace GDC #2 if problem remains.
		Amber	GIA2/GDC #2 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 2	GRS 77 or GRS 7800 or GRS 79 #1 (output only)	White N/A	GIA2/GRS or GSU 1 output data path is not monitored. A white N/A box is normal.
CHNL 5	GTX 33ES or GTX3000 or GTX 3x5 #2	Green	GIA2/GTX 2 data path is functioning correctly.
		Red	GIA2/GTX 2 data path is not functioning correctly. • Load GIA2 and GTX 33 or GTX 3000 #2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Check the GIA2/GTX 2 interconnect wiring for faults. Replace GTX 2 if problem remains.
		Amber	GIA2/GTX 2 data path functionality is unknown. Reload GIA2 configuration files.

GIA2 RS-232 (continued)

Channel	LRU	Indicator	Status
CHNL 6	GRS 77 or GRS 7800 or GRS 79 #2	Green	GIA2/GRS or GSU 2 data path is functioning correctly.
		Red	GIA2/GRS or GSU 2 data path is not functioning correctly. • Load GIA2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA1. o Replace original GIA2 if box turns green after swapping units. • Swap GRS2 and GRS1 (no reconfiguration required) to confirm if the problem is in the original GRS2. o Replace original GRS2 if box turns green after swapping units. Check the GIA2/GRS or GSU 2 interconnect wiring for faults.
		Amber	GIA2/GRS or GSU 2 data path functionality is unknown. Reload GIA2 configuration files.
CHNL 7	GMA 1347D #2	Green	GIA2/GMA 1347D #2 data path is functioning correctly.
		Red	GIA2/GMA 1347D #2 data path is not functioning correctly. • Load GIA2 and GMA 1347D #2 configuration files. • Swap GMA 1347D #2 and GMA 1347D #1, reconfigure both GMA's to their new locations to confirm if the problem is in the original GMA 1347D #2. o Replace original GMA 1347D #2 if box turns green after swapping units. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. Check the GIA1/GMA 1347D #2 interconnect wiring for faults.
		Amber	GIA1/GMA 1347D #2 data path functionality is unknown. Reload GIA2 configuration files.

GIA2 ARINC 429

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">IN 2</td><td rowspan="3">GRS 77 or GRS 7800 or GSU 75 #1</td><td>Green</td><td>GIA2/GRS 77 or GRS 7800 #1 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA2/GRS or GSU 1 data path is not functioning correctly.
Reload GIA2 configuration file.
Swap GIA2 and GIA1, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA2.
Replace original GIA2 if box turns green after swapping units.
Swap GRS1 and GRS2 (no reconfiguration required) to confirm if the problem is in the original GRS1.
Replace original GRS1 if box turns green after swapping units.
Check the GIA2/GRS or GSU 1 interconnect wiring for faults.</td></tr>
<tr><td>Amber</td><td>GIA2/GRS or GSU 1 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
<tr><td rowspan="3">IN 5</td><td rowspan="3">GDC7400 #2</td><td>Green</td><td>GIA2/GDC #2 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA2/GDC #2 data path is not functioning correctly.
Load GIA2 and GDC #2 configuration files.
Swap GIA2 and GIA1, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA2.
Replace original GIA2 if box turns green after swapping units.
Check the GIA2/GDC #2 interconnect wiring for faults.
Replace GDC #2 if problem remains.</td></tr>
<tr><td>Amber</td><td>GIA2/GDC #2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

Channel	LRU	Indicator	Status
IN 6	GRS 77 or GRS 7800 or GSU 75 #2	Green	GIA2/GRS or GSU 2 data path is functioning correctly.
		Red	GIA2/GRS or GSU 2 data path is not functioning correctly. • Load GIA2 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Swap GRS2 and GRS1 (no reconfiguration required) to confirm if the problem is in the original GRS2. o Replace original GRS2 if box turns green after swapping units. • Check the GIA2/GRS or GSU 2 interconnect wiring for faults.
		Amber	GIA2/GRS or GSU 2 data path functionality is unknown. Reload GIA2 configuration files.

5.1.1.3 GIA CAN / RS-485 CONFIGURATION Page

GIA1 RS-485

<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 1</td><td rowspan="3">GEA1</td><td>Green</td><td>GIA1/GEA1 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA1/GEA1 data path is not functioning correctly.
• Verify GEA1 is powered on using the GEA Status page.
• Load GIA1 and GEA1 configuration files.
• Swap GIA1 and GIA2, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA1.
o Replace original GIA1 if box turns green after swapping units.
• Swap GEA1 and GEA2, reconfigure both GEA’s to their new locations to confirm if the problem is in the original GEA1.
o Replace original GEA1 if box turns green after swapping units.
Check the GIA1/GEA1 interconnect wiring for faults.</td></tr>
<tr><td>Amber</td><td>GIA1/GEA1 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
<tr><td rowspan="3">CHNL 2</td><td rowspan="3">GEA2</td><td>Green</td><td>GIA1/GEA2 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA1/GEA2 data path is not functioning correctly.
• Verify GEA2 is powered on using the GEA Status page.
• Load GIA1 and GEA2 configuration files.
• Swap GIA1 and GIA2, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA1.
o Replace original GIA1 if box turns green after swapping units.
• Swap GEA2 and GEA1, reconfigure both GEA’s to their new locations to confirm if the problem is in the original GEA2.
o Replace original GEA2 if box turns green after swapping units.
Check the GIA1/GEA2 interconnect wiring for faults.</td></tr>
<tr><td>Amber</td><td>GIA1/GEA2 data path functionality is unknown. Reload GIA1 configuration files.</td></tr>
</table>

Channel	LRU	Indicator	Status
CHNL 4	GFC 700	Green	GIA1/GFC 700 data path is functioning correctly.
		Red	GIA1/GFC 700 data path is not functioning correctly. • Load GIA1 configuration files, GIA Gains file and GSA software and gains file (if LRU and Card versions are different). Reference GFC section for further troubleshooting.
		Amber	GIA1/GFC 700 data path functionality is unknown. Reload GIA1 configuration files.

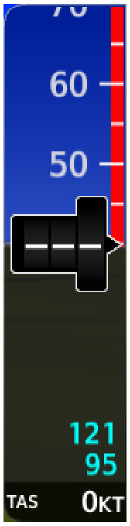
GIA2 RS-485

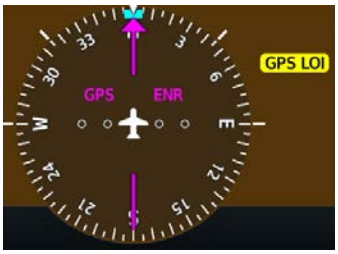
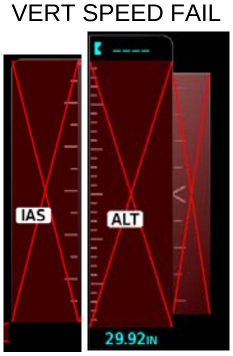
Channel	LRU	Indicator	Status
CHNL 1	GEA1	Green	GIA2/GEA1 data path is functioning correctly.
		Red	GIA2/GEA1 data path is not functioning correctly. • Verify GEA1 is powered on using the GEA Status page. • Load GIA2 and GEA1 configuration files. • Swap GIA2 and GIA1, reconfigure both GIA's to their new locations to confirm if the problem is in the original GIA2. o Replace original GIA2 if box turns green after swapping units. • Swap GEA1 and GEA2, reconfigure both GEA's to their new locations to confirm if the problem is in the original GEA1. o Replace original GEA1 if box turns green after swapping units. Check the GIA2/GEA1 interconnect wiring for faults.
		Amber	GIA2/GEA1 data path functionality is unknown. Reload GIA2 configuration files.

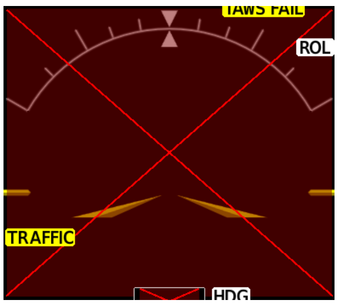
<table>
<tr><th>Channel</th><th>LRU</th><th>Indicator</th><th>Status</th></tr>
<tr><td rowspan="3">CHNL 2</td><td rowspan="3">GEA2</td><td>Green</td><td>GIA2/GEA2 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA2/GEA2 data path is not functioning correctly.
• Verify GEA2 is powered on using the GEA Status page.
• Load GIA2 and GEA2 configuration files.
• Swap GIA2 and GIA1, reconfigure both GIA’s to their new locations to confirm if the problem is in the original GIA2.
    o Replace original GIA2 if box turns green after swapping units.
• Swap GEA2 and GEA1, reconfigure both GEA’s to their new locations to confirm if the problem is in the original GEA2.
    o Replace original GEA2 if box turns green after swapping units.
Check the GIA2/GEA2 interconnect wiring for faults.</td></tr>
<tr><td>Amber</td><td>GIA2GEA2 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
<tr><td rowspan="3">CHNL 4</td><td rowspan="3">GFC 700</td><td>Green</td><td>GIA2/GFC 700 data path is functioning correctly.</td></tr>
<tr><td>Red</td><td>GIA2/GFC 700 data path is not functioning correctly.
• Load GIA2 configuration files, GIA Gains file and GSA software and gains file (if LRU and Card versions are different).
Reference GFC section for further troubleshooting.</td></tr>
<tr><td>Amber</td><td>GIA2/GFC 700 data path functionality is unknown. Reload GIA2 configuration files.</td></tr>
</table>

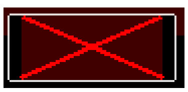
5.1.2 System Failure Troubleshooting

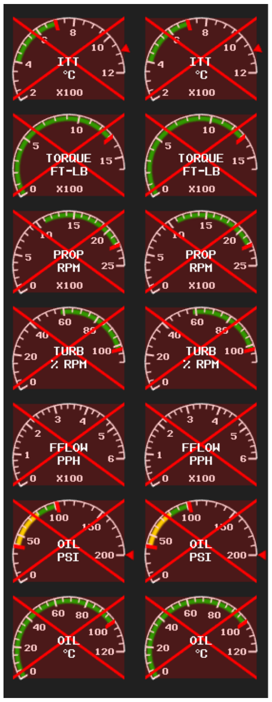
The following table provides basic troubleshooting guidance for LRU failures. Refer to G1000 Wiring Diagram, listed in Table 1-1, as needed to verify interconnects.

Invalid Data Field	Associated LRU(s)	Solution
Low Speed Awareness Band permanently displayed 	GDU	• With aircraft weight on wheels and the G1000 in Configuration Mode, check that the RH GEAR ON GROUND Discrete In indication for GIA2, on GIA I/O CONFIGURATION page is illuminated. • With aircraft weight on wheels and the G1000 in Configuration Mode, check that the LH GEAR ON GROUND Discrete In indication for GIA1, on GIA I/O CONFIGURATION page is illuminated. • If both indications are illuminated Green, switch GIA1 and GIA2, to verify location of problem: ✓ If problem is resolved, replace faulty unit. ✓ If indication is not illuminated, check for wiring faults between the GIAs and aircraft squat switch system.
Low Speed Awareness Band permanently inhibited 	GDU	• With aircraft weight on wheels and the G1000 in Configuration Mode, check that the RH GEAR ON GROUND Discrete In indication for GIA2, on GIA I/O CONFIGURATION page is illuminated. • With aircraft weight on wheels and the G1000 in Configuration Mode, check that the LH GEAR ON GROUND Discrete In indication for GIA1, on GIA I/O CONFIGURATION page is illuminated. • If both indications are illuminated Green, switch GIA1 and GIA2, to verify location of problem: ✓ If problem is resolved, replace faulty unit. ✓ If indication is not illuminated, check for wiring faults between the GIAs and aircraft squat switch system.
NAV1 & COM1  	GIA1	• Check configuration settings for GIA1 and PFD1. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows GIA1, replace GIA1. • Check Ethernet interconnect from GIA1 to PFD1. ✓ If problem persists, replace PFD.

Invalid Data Field	Associated LRU(s)	Solution
NAV2 & COM2  	GIA2	• Check configuration settings for GIA2 and PFD2. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows GIA2, replace GIA2. • Check Ethernet interconnect from GIA2 to PFD2. ✓ If problem persists, replace PFD.
GPS LOI 	GIA1 or GIA2	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS1 and GPS2 signal strength on **Aux – GPS Status** page. Refer to GIA GPS section if GPS cannot acquire a position lock for troubleshooting. • Check corresponding GPS antenna and cable for faults. • Check Ethernet interconnect between the PFD1 to GIA1 or PFD2 to GIA2 for faults. • Swap GIA1 and GIA2, to verify location of problem: ✓ If problem follows the GIA, replace the GIA. ✓ If problem persists, replace the PFD1 or PFD2.
XPDR FAIL 	GTX 335R, GTX 345R, GTX 33( ), or GTX 3000	• Check GTX 335R/345R/33/33D/3000 configuration settings for GIA1 and GIA2. • Check GTX 335R/345R/33D/3000 and GIA1 interconnect. • Check GTX 335R/345R/33D/3000 and GIA2 interconnect. • Perform a SET>ACTV configuration reset on the GTX Config page for each GTX, and verify the aircraft registration is present. • Replace GTX 335R/345R/33/33D/3000. ✓ If problem persists, replace GIA.
TAS FAIL AIRSPEED FAIL ALTITUDE FAIL VERT SPEED FAIL 	GSU 75B or GDC 7400	• Inspect GSU 75B/GDC 7400 pitot/static plumbing integrity. • Inspect pitot/static ports and associated equipment for faults. • For TAS failure, also check GTP 59 probe. • Check GSU 75B/GDC 7400 configuration settings for the PFDs, MFD, GIA1, and GIA2. ✓ If problem persists, replace the GSU 75B/GDC 7400.
OAT 	GTP 59 GSU 75B, or GDC 7400	• Check OAT probe wiring and connectors for faults. • Replace GSU 75B/GDC 7400 with a known good unit: ✓ If problem persists, replace the GTP 59**.**

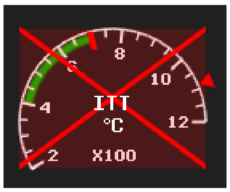
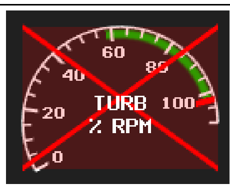
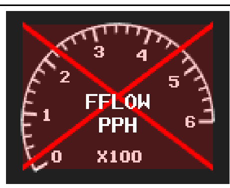
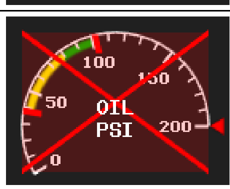
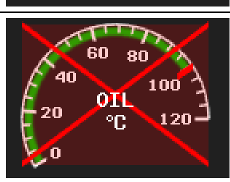
Invalid Data Field	Associated LRU(s)	Solution
ATTITUDE FAIL 	GSU 75B, GRS 77, or GRS 7800	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle GSU 75B, GRS 77, or GRS 7800 power to restart initialization. • Ensure GSU 75B, GRS 77, or GRS 7800 connecter is secure and proper wire harness strain relief is provided. • Ensure the GSU 75B, GRS 77, or GRS 7800 is fastened down tightly in it's mounting rack and that the mounting rack is not loose (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Ensure GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. This is particularly important for an ATTITUDE FAIL that appears during ground operation only. • Perform an Engine Run-Up Test to check if engine vibration is causing the GSU 75B, GRS 77, or GRS 7800 to go offline. • Load configuration files to the PFD, MFD, GIA1, and GIA2. • Calibrate the GSU 75B, GRS 77, or GRS 7800 (Pitch/Roll Offset and Magnetometer Calibration). • Replace GSU 75B, GRS 77, or GRS 7800. ✓ If problem persists replace GSU 75B, GRS 77, or GRS 7800 configuration module. ✓ Contact Garmin Aviation Product Support if condition continues after replacing the GSU 75B, GRS 77, or GRS 7800 and config module for additional assistance.

Invalid Data Field	Associated LRU(s)	Solution
HDG FAIL 	GSU 75B, GRS 77, or GRS 7800 & GMU 44	• Ensure metal objects (tool boxes, power carts, etc.) are not interfering with the magnetometer and aircraft is not in hangar, near other buildings, parked over metal drainage culverts or on hard surfaces that may contain steel reinforcements • The GMU 44 magnetometers located in the tail cone are vulnerable to magnetized rudder torque tube lower fittings and control rod ends. This magnetism may be caused by an improperly functioning aircraft static discharge system which is dependent on static dischargers (wicks) and electrical bonding of the static dischargers and surrounding structure. The bonding straps on the elevators and rudder should be visually inspected to verify they are not missing, broken or frayed. Refer to the King Air 300 Series Maintenance Manual, chapter 23-60-00, to verify the following items are within specification: 1. The resistance from the tip to the base of each static discharger 2. The resistance between the base of each static discharger and the surface to which it is attached 3. The resistance between the elevators/rudder and the airplane structure • Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Cycle power after moving aircraft away from metal objects to determine if metal objects were the source of the interference. Allow up to five minutes for the heading to reinitialize. • Perform a Magnetometer Interference Test to check for interference from onboard electrical system components (e.g. NAV lights). Pay particular attention to any new electrical devices that have been installed since the aircraft was new. Correct any discrepancies that do not allow this test to pass before continuing. • Ensure GSU 75B, GRS 77, or GRS 7800 and GMU 44 connectors are secure. • Check the wiring and any inline connectors between the GSU/GRS and GMU for faults. • Recalibrate the GMU 44, • Load configuration files to the PFD1, PFD2, GIA1, and GIA2 ✓ If problem persists replace the GMU 44. ✓ If problem persists, replace the GSU 75B, GRS 77, or GRS 7800.
	GSU 75B, GRS 77, or GRS 7800 & GMU 44	• If this message persists longer than five minutes, perform AHRS calibration procedures as described in Section 7.10.

Invalid Data Field	Associated LRU(s)	Solution
Engine/Airframe Sensors (All Invalid) 	GEA 71 & GIA 63W	• If software was loaded to a new GDU display, be sure that the user settings for the replaced display were cleared. Clear user settings by pressing the CLR key on the replaced display while applying power to it. Acknowledge the on-screen prompt by pressing the ENT key or the right-most softkey. • Check for GEA related Alert messages on the PFD. Correct any Alerts concerning software or configuration errors by reloading software or configuration as noted. • Verify GEA internal power supply, configuration, and calibration status in configuration mode. ✓ The internal power supply, configuration and calibration boxes should be green. If they are red, replace the GEA 71. • Verify internal, external, and reference voltages listed in the Main Analog and I/O A Analog boxes are not dashed out (does not include Aircraft Power 1 and 2). ✓ If any voltages are dashed out, replace the GEA. • Ensure the GEA is online (green checkmark on the **Aux – System Status** page). ✓ If GEA is not online verify unit is receiving power at the rack connector. ✓ Check the GIA/GEA interconnects for faults. ✓ Reload configuration files to both GIA's and the GEA. • If problem persists, replace the GEA 71.

5.1.3 Engine/Airframe Instrument Failures

The following table provides guidance for troubleshooting individual engine/airframe sensor failures. Be sure to also follow previous guidance given for the GEA 71. The technician should troubleshoot to isolate the fault by checking sensor-to-GEA wiring, replacing the suspect sensor, and finally by replacing the GEA 71. Replace one part at a time. Refer to Section 7.4.3 to check for correct operation of the sensors and GEA 71 after any part has been replaced. Refer to G1000 Wiring Diagram and King Air 300 Series Maintenance Manual (listed in Table 1-1) as needed.

Invalid Field	Sensor	Possible Solutions (for applicable engine/system)
	ITT	• Check thermocouple cable. • Replace thermocouple cable. • Replace GEA 71.
	Torque	• Check torque transmitter – GEA wiring. • Check power input to torque transmitter. • Replace torque transmitter. • Replace GEA 71.
	Prop RPM	• Check prop tachometer – Signal Conditioner wiring. • Check Signal Conditioner – GEA wiring. • Check power input to Signal Conditioner. • Replace prop tachometer sensor. • Replace Signal Conditioner. Refer to Section 6.23. • Replace GEA 71.
	Turbine RPM	• Check engine speed tachometer – Signal Conditioner wiring. • Check Signal Conditioner – GEA wiring. • Check power input to Signal Conditioner. • Replace engine speed tachometer sensor. • Replace Signal Conditioner. Refer to Section 6.23. • Replace GEA 71.
	Fuel Flow	• Check Signal Conditioner unit wiring. • Check power input to Signal Conditioner • Replace fuel flow transmitter. • Replace Signal Conditioner. Refer to Section 6.23. • Replace GEA 71.
	Oil Pressure	• Check oil pressure sensor – GEA wiring. • Replace oil pressure sensor. • Replace GEA 71.
	Oil Temperature	• Check oil temperature sensor – GEA wiring. • Replace oil temperature sensor. • Replace GEA 71.

5.1.4 ADF/DME Failure

A DME or ADF failure is represented by the following red X's. Refer to G1000 Wiring Diagram and King Air 300 Series Maintenance Manual (listed in Table 1-1,) as needed.

Invalid Field	Sensor	Solutions
 or 	ADF	• Ensure that GIA 63 #2 is properly functioning. • Reload the ADF option configurations. • Check for proper operation of the ADF receiver. Ensure that the receiver is receiving power. • Check ADF – GIA2 interconnect. • For other failures of the ADF system, refer to King Air 300 Series Maintenance Manual, listed in Table 1-1.
 	DME	• Ensure that GIA 63 #1 is properly functioning. • Reload the DME option configurations. • Check for proper operation of the DME receiver. Ensure that the receiver is receiving power. • Check DME – GIA1 interconnect. • For other failures of the DME system, refer to the King Air 300 Series Maintenance Manual, listed in Table 1-1.

5.2 G1000 Alerting System

Figure 5-3, Alerts & Annunciations

The G1000 Alert System conveys alerts to the pilot using combinations of the following features:

Alert Window:

The Alert window displays alert text messages. Pressing the Alerts softkey displays the Alerts window. Pressing the ALERTS softkey again removes the Alerts window from the display.

Softkey Annunciation:

When the G1000 Alerting System issues an alert, the Alerts softkey is used as a flashing annunciation to accompany the alert. During the alert, the Alerts softkey label flashes between white letters on black to black letters on a white. The flashing continues until the alert is acknowledged by a press of the Alerts softkey. The alerts softkey remains black letters on white until the condition causing the alert is corrected, or a new alert triggers the flashing.

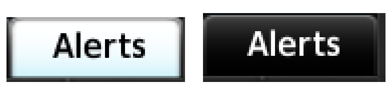


Figure 5-4, Alerts Softkey Annunciation

System Failure Annunciations:

Typically, a large red X appears in windows when a failure is detected in the LRU providing the information to the window.

5.3 Aural & Audio Alerts

The G1000 system is capable of issuing audio and aural (voice) alerts for various situations. The following alerts are utilized by the G1000:

Alert Name	Purpose
Traffic (voice)	Traffic Advisory
No Traffic (voice)	Traffic Unavailable
"Minimums, Minimums" (voice)	Minimums Aural Alert
Alt Alert (aural)	Altitude Alerting Function
"Caution Terrain, Caution Terrain" (voice) *and* "Terrain Ahead, Terrain Ahead" (voice)	TAWS **Caution** alert: Reduced required terrain clearance Or Imminent impact with terrain.
"Terrain Terrain, Pull Up Pull Up" (voice) *and* "Terrain Ahead Pull Up, Terrain Ahead Pull Up" (voice)	TAWS **Warning** alert: Reduced required terrain clearance Or Imminent impact with terrain.
"Terrain Terrain" (voice)	TAWS **Caution** alert: GPWS mode 2, Excessive Closure Rate
"Too Low Terrain" (voice)	TAWS **Caution** alert: GPWS mode 4A/B/C, Flight into terrain, takeoff or high speed
"Too Low Gear" (voice)	TAWS **Caution** alert: GPWS mode 4A/B, Flight into terrain, gear not extended
"Too Low Flaps" (voice)	TAWS **Caution** alert: GPWS mode 4B, Flight into terrain, flaps not extended
"Sink Rate" (voice)	TAWS **Caution** alert: GPWS mode 1, Excessive Descent Rate
"Pull Up" (voice)	TAWS **Warning** alert: GPWS mode 1 or 2, Excessive Descent Rate Or Excessive Closure Rate
"Don't Sink" (voice) *or* "Too Low Terrain" (voice)	TAWS **Caution** alert: GPWS mode 3, altitude loss after takeoff or go-around
"Glide Slope" (voice) *or* "Glide Path" (voice)	TAWS **Caution** alert: GPWS mode 5, Glide Slope/Path deviation
"Five Hundred" (voice) *or* "Four Hundred" (voice) *or* "Three Hundred" (voice) *or* "Two Hundred" (voice) *or* "One Hundred" (voice)	TAWS voice callout: GPWS mode 6, voice callout as appropriate per altitude
"Caution Obstacle, Caution Obstacle" (voice) *or* "Obstacle Ahead, Obstacle Ahead " (voice)	TAWS **Caution** alert: Reduced required obstacle clearance Or Imminent impact with obstacle.
"Obstacle Obstacle Pull Up Pull Up" (voice) or "Obstacle Ahead Pull Up, Obstacle Ahead Pull Up" (voice)	TAWS **Warning** alert: Imminent impact with obstacle.
"TAWS System Failure" (voice)	TAWS status alert: Terrain failure
"TAWS Not Available" (voice)	TAWS status alert: Terrain not available
"TAWS System Test, OK" (voice)(If passed) or "TAWS System Failure" (voice) (If test failed)	TAWS status alert: Terrain self-test
"TAWS Available" (voice)	TAWS status alert: Terrain available
"Vertical Track" (voice)	Vertical navigation alerting function
*"Climb, Climb" (voice)	TCAS II Resolution Advisory: Climb at the rate depicted by the solid green bar on the vertical speed tape on the PFD.
*"Descend, Descend" (voice)	TCAS II Resolution Advisory: Descend at the rate depicted by the solid green bar on the vertical speed tape on the PFD.

Alert Name	Purpose
*"Monitor Vertical Speed" (voice)	TCAS II Resolution Advisory: Verify vertical speed is out of the solid red bar on the vertical speed tape on the PFD.
*"Level Off, Level Off" (voice)	TCAS II Resolution Advisory: Reduce vertical speed to zero feet per minute.
*"Clear of Conflict" (voice)	TCAS II Resolution Advisory: Range is increasing and separation is adequate to return to the applicable clearance unless otherwise directed by ATC.
*"Climb, Crossing Climb, Climb, Crossing Climb" (voice)	TCAS II Resolution Advisory: Climb at the rated depicted by the solid green bar on the vertical speed tape on the PFD. Safe separation is achieved by climbing through the threat's flight path.
*"Descend, Crossing Descend, Descend, Crossing Descend" (voice)	TCAS II Resolution Advisory: Descend at the rated depicted by the solid green bar on the vertical speed tape on the PFD. Safe separation is achieved by descending through the threat's flight path.
*"Maintain Vertical Speed, Maintain" (voice)	TCAS II Resolution Advisory: Maintain the existing climb or descent rate as depicted by the solid green bar on the vertical speed tape on the PFD. Safe separation is achieved by not altering the existing vertical speed.
*"Maintaining Vertical Speed, Crossing Maintain" (voice)	TCAS II Resolution Advisory: Maintain the existing climb or descent rate as depicted by the solid green bar on the vertical speed tape on the PFD. Safe separation is achieved by not altering the existing vertical speed and climbing or descending through the threat's flight path.
*"Increase Climb, Increase Climb" (voice)	TCAS II Resolution Advisory: Climb at the rate depicted by the solid green bar on the vertical speed tape on the PFD. Received after a "CLIMB" resolution advisory and indicates additional climb rate is required to achieve safe vertical separation from the maneuvering threat aircraft.
*"Increase Descent, Increase Descent" (voice)	TCAS II Resolution Advisory: Descent at the rate depicted by the solid green bar on the vertical speed tape on the PFD. Received after a "DESCEND" resolution advisory and indicates additional Descent rate is required to achieve safe vertical separation from the maneuvering threat aircraft.
*"Climb – Climb Now, Climb – Climb Now" (voice)	TCAS II Resolution Advisory: Climb at the rate depicted by the solid green bar on the vertical speed tape on the PFD. Received after a "DESCEND" resolution advisory and indicates a reversal in direction is required to achieve safe vertical separation from the maneuvering threat aircraft.
*"Descend – Descend Now, Descend – Descend Now" (voice)	TCAS II Resolution Advisory: Descend at the rate depicted by the solid green bar on the vertical speed tape on the PFD. Received after a "CLIMB" resolution advisory and indicates a reversal in direction is required to achieve safe vertical separation from the maneuvering threat aircraft.

*These aural alerts are specific to installations with the GTS Processor configured as a GTS 8000 (TCAS II) unit. For installations of other approved TCAS II systems, these alerts and visual indications may be slightly different. For instance, "MONITOR VERTICAL SPEED" in the GTS processor installation is "ADJUST VERTICAL SPEED" for the third-party TCAS II installation.

5.4 King Air 300 Series Specific Alerts

The following alerts are configured specifically for the King Air 300 Series installation:

5.4.1 ANNUNCIATION Alerts

Message Alert	Solution
TAWS GEAR FAULT – Landing Gear detected in the DOWN position	• Check the gear down wiring input to the GIAs. Refer to G1000 Wiring Diagram, listed in Table 1-1.
TAWS FLAP FAULT – Flaps detected in the LDG position	• Check the flap full down wiring input to the GIAs. Refer to G1000/ Wiring Diagram, listed in Table 1-1.
WOW Invalid	• Ensure that the GIA1 (PRI) and (SEC) and GIA2 circuit breakers are closed. • Check weight on wheels switch inputs to GIA1 and GIA2. Refer to G1000 Wiring Diagram, listed in Table 1-1,
WOW Fault	• Ensure that the GIA1 (PRI) and (SEC) and GIA2 circuit breakers are closed. • Check weight on wheels switch inputs to GIA1 and GIA2. Refer to G1000 Wiring Diagram, listed in Table 1-1.
AVN 1 FAN FAIL – Avionics cooling fan #1 is inoperative.	• Ensure that the PFD/GIA FAN (LEFT and RIGHT) and MFD FAN circuit breakers are closed. • Check cooling fan wiring. Refer to G1000/GFC 700 Wiring Diagram, listed in Table 1-1, • Replace cooling fan. Refer to Sections 6.29 and 6.30.
AVN 2 FAN FAIL – Avionics cooling fan #2 is inoperative.	
PFD 1 FAN FAIL – PFD #1 cooling fan is inoperative.	
PFD 2 FAN FAIL – PFD #2 cooling fan is inoperative.	
MFD FAN FAIL – MFD cooling fan is inoperative.	
ESP FAIL – ESP is inoperative.	Troubleshoot the GFC 700 AFCS. Refer to Section 5.7.
ESP OFF – ESP selected off.	• Check that the MFD **Aux – System Setup 2** page shows “Stability & Protection” status is “ENABLED”.
ESP DEGRADE - ESP IAS mode is inoperative.	• Ensure ADC1 and ADC2 circuit breakers are closed and units are providing valid airspeed data.
ESP CONFIG – ESP config error. Config service req’d.	• Ensure that the correct ESP Support was installed per Section 3.8.6. • Ensure that the “Enhanced AFCS unlock card” has been installed per Section 3.9.9. • If the ESP option needs to be removed, reload the baseline configuration for the specific airframe and all applicable options as described in Section 3.8. Reloading the baseline configuration disables all previously enabled options.

NOTE

From this point forward, all message alerts presented are common to all G1000 systems and are not specific to the King Air 300 Series. Messages are grouped according to LRU.

5.5 TAWS Troubleshooting

Annunciation	Cause	Solution
TAWS FAIL	A TAWS system failure has occurred.	• If message occurred on the first power up after unlocking TAWS, cycle power to initialize TAWS. • Ensure each GDU contains the correct database data card. • Ensure the G1000 is configured for TAWS: ✓ If the system is not configured for TAWS, configure per Section 3.9. • Verify GIAs are online. • Ensure a database or GDU SW mismatch has not occurred. ✓ If a mismatch has occurred, load correct database/software files or replace the terrain card.
TAWS TEST	TAWS system is currently being tested.	N/A – Test will be conducted up to two minutes
TAWS INH	TAWS system alerting is disabled	Enable TAWS system alerting by pressing the INHIBIT softkey on the **Map – TAWS Map** page.
TAWS N/A	GPS system integrity not high enough to enable TAWS	• Ensure valid GPS position is received from the **Aux – GPS Status** page. • Check GPS antenna & associated coaxial cabling. • Troubleshoot GIAs.
GPWS FAIL	A GPWS system failure has occurred.	• Verify GIAs are online. • Verify radar altimeter input is valid. • Verify baro altitude and vertical speed input are valid.

5.6 Synthetic Vision and Pathways Troubleshooting

The SVS/Pathways software feature requires the following G1000 sensors/data to be valid:

- AHRS
- Heading
- GPS Position
- 9 Arc-Second Terrain Data

In the event that one the above items fails or is unavailable, the SVS/Pathways feature is automatically removed from the PFD. The following table describes possible symptoms associated with the SVS/Pathways feature, and provides corresponding actions for troubleshooting:

Table 5-1, SVS Troubleshooting

Symptom	Recommended Action
"SYN VIS" softkey does not appear on PFD softkey tier.	Follow the steps in Section 3.9.8 to reactivate the SVS/Pathways feature.
3D terrain presentation does not appear on PFD.	• Verify that P/N 010-00330-43 terrain data cards are installed in the lower slot of the PFD and MFD. • Verify that the alert messages shown in Table 5-2 are not displayed on the PFD Alerts Window. If so, follow the solutions described in Table 5-2. • Verify that the G1000 AHRS and heading data are valid on the PFD. Verify that a valid GPS 3D position solution is being received. Troubleshoot these systems in accordance with Sections 5.12.4 and 5.17. • If a terrain database update has just been performed, allow the system time to initialize and verify the data. When the databases have been verified, the current database cycle and version are reported on the MFD **Aux – System Status** page.

The following table provides SVS/Pathways specific alert messages which may appear in the Alerts Window on the PFD (press the ALERTS softkey on the PFD to view the Alerts Window):

Table 5-2, SVS-Related Alert Messages

Failure Message	Cause	Solution
SVS – SVS DISABLED: Out of available terrain region.	SVS is disabled because the aircraft exceeded the boundaries of the loaded terrain database.	Geographical operation limitations are defined in the AFMS listed in Table 1-1. Ensure that operations are within this geographic area.

5.7 GFC 700 AFCS Troubleshooting

The GFC 700 is a digital Automatic Flight Control System (AFCS) which is integrated into various components of the G1000. This section touches upon key items to note while troubleshooting the GFC 700.

Should a problem be encountered during the operation of the GFC 700, the pilot and technician should first evaluate the overall status and condition of the G1000 system at the **Aux – System Status** page (on MFD). Any alert messages, annunciations, or other abnormal behaviors should be noted in an effort to pinpoint the fault. The object is to locate the fault within a LRU or LRUs in efforts to replace the faulty equipment.

The GFC 700 AFCS Annunciation field is located above the altitude tape on the PFD as shown:

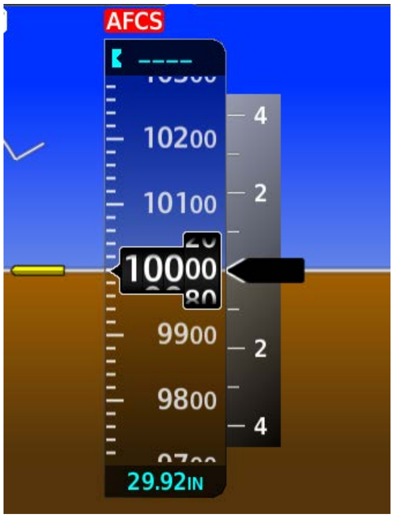


Figure 5-5, AFCS Annunciation Field

5.8 General Troubleshooting

The following annunciations may appear in the AFCS Annunciation field:

Table 5-3, AFCS Annunciation Troubleshooting

Annunciation	Condition	Resolution
AFCS	AFCS System Failure	• Confirm AFCS Servos circuit breaker IN • Ensure that the G1000 system is in proper working order. Check specifically for proper operation of the: ✓ GIA 63 Integrated Avionics Units ✓ GRS 77 or GRS 7800 AHRS or GSU 75B ADAHRS Units ✓ GDC 7400 Air Data Computers ✓ All GSA 80 Servos • Check that no red X's are present on the MFD and PFD displays. • Check that no related alert messages are present on the PFD displays (press the ALERTS softkey). • Go to the **Aux – System Status** page on the MFD and verify that all LRUs have a 'green' check (see Section 5). • In Configuration mode, review the GFC 700 equipment status, software, and certification gains. • Reload software, configuration, and certification gains to the GIAs and GSA 80 servos. • Check the GFC Status page for additional GFC 700 system information. • Review the fault and assert logs for the GIAs and servos (see Section 5.8.2) • Isolate the fault to an LRU. Replace this LRU and confirm the resolution of the annunciation.
PTCH	Pitch Axis Failure	• Check the **Aux – System Status** page to see if the servo is online (green check). • Check that the affected servo is receiving power. • Check the servo wiring and connector. • For pitch trim, check pitch trim switch operation to verify switch contacts are not stuck. • If failure condition still exists, remove and replace the affected servo.
PTRM	Pitch Trim Axis Failure	
YAW	Yaw Axis Failure	
ROLL	Roll Axis Failure	
CHECK ATTITUDE	AHRS Monitor Failure	• If the AHRS inputs have been determined to be "unreasonable" while the AP is engaged, in air, this message will be displayed until AHRS inputs are determined reasonable for 5 seconds.
↓ELE	Elevator Mistrim Down	• If elevator mistrim annunciations persist, check the pitch and pitch trim servos for proper operation. Verify that the servo is online at the **Aux – System Status** page. • Check the servo wiring and connectors. Ensure the servo is receiving power. • Check the aircraft control adjustments. • If mistrim condition still exists, remove and replace the affected servo.
↑ELE	Elevator Mistrim Up	

Annunciation	Condition	Resolution
AIL→	Aileron Mistrim Right	• Check for possible fuel imbalance. • Check aileron control adjustments. • If mistrim condition still exists remove and replace the roll servo.
←AIL	Aileron Mistrim Left	
RUD→	Rudder Mistrim Right	• Check rudder control adjustments. • If mistrim condition still exists remove and replace the yaw servo.
←RUD	Rudder Mistrim Left	
PFT	Pre-Flight Test Fails	• Allow the system to complete pre-flight tests. • The preflight test should finish within 2 minutes. If it does not pass, the red ‘PFT’ annunciation is shown. In case of PFT failure, see Section 5.8.3 for additional PFT diagnostics.
PFT		

Table 5-4, AFCS General Troubleshooting

Condition	Resolution
Poor AP Performance (Limited AP Authority)	• Check each servo gearbox slip clutch per Section 4.9. Verify the clutches are not excessively loose and are within torque limits. • Check aircraft controls for proper balancing and adjustment per the King Air 300 Series Maintenance Manual. • Check aircraft control cables for proper tension per the King Air 300 Series Maintenance Manual.
AP DISC Problems	• For intermittent nuisance disconnects with no AFCS of PFT alert, check A/P disconnect switch and wiring for intermittent faults. • If an AFCS or PFT alert is displayed at the time of the disconnect, troubleshoot per Section 5.8. • Check the GIA AFCS Fault Logs according to Section 5.8.2. If a **Mon Prmtr Invalid** message is received, check for valid true airspeed. A faulty GTP 59 OAT probe may cause TAS to become invalid, which will flag the **Mon Prmtr Invalid** message. • Contact Garmin Product Support for assistance
Loss of Manual Electric Trim	• Check pitch trim servo status. • Check MET switch discrete inputs to both GIAs by going to the GIA I/O Configuration page and selecting DISCRETE IN inputs.
AutoTrim Inoperative	• Check flap-in-motion discrete inputs to both GIAs for proper operation by going to the GIA I/O Configuration page and selected DISCRETE IN inputs. See Section 4.8. • If DATA indicator fails to illuminate or illuminates incorrectly, troubleshoot flap motor & discrete input wiring (refer to G1000 Wiring Diagram, listed in Table 1-1,).

5.8.1 GFC Status Page

The GFC Status page is presented in configuration mode and gives status information regarding the GFC 700.

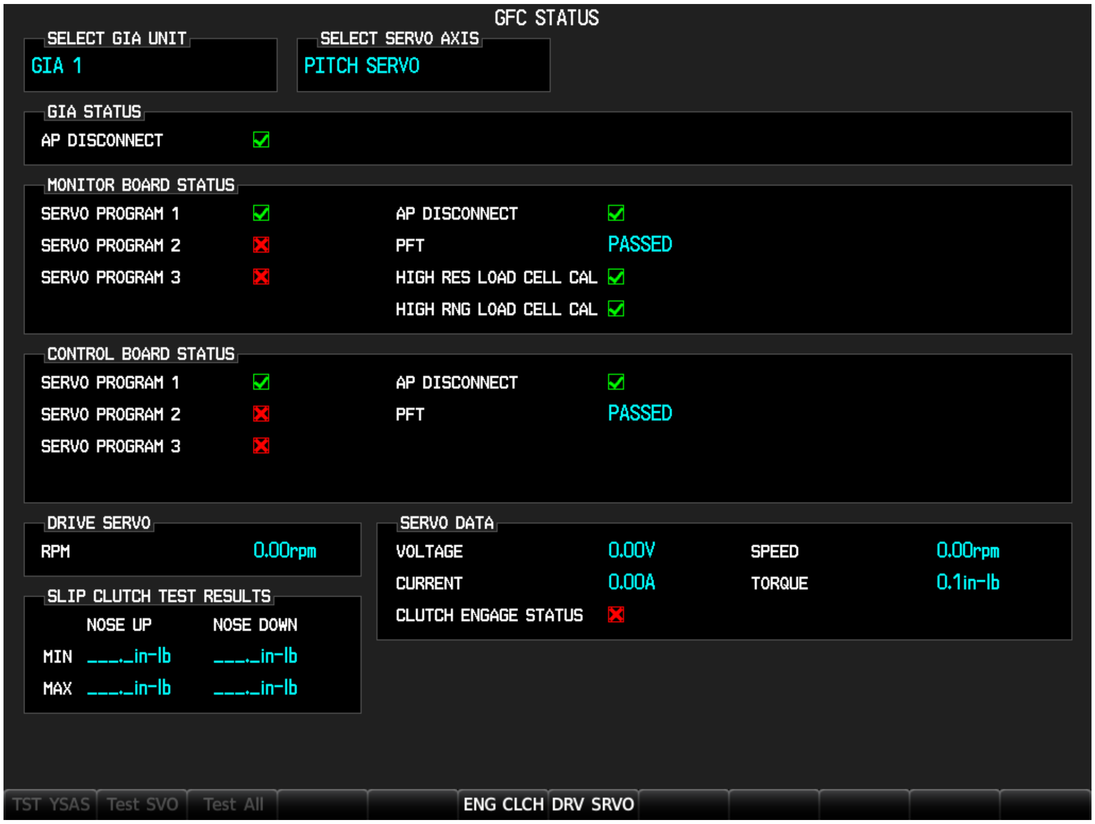


Figure 5-6, GFC Status Page

<u>**GIA STATUS**</u>

<u>AP DISCONNECT:</u> Shows the condition of the AP DISC +28 VDC input to the GIAs and servos, which is required for the Autopilot to operate. A green status indicator shows the AP DISC switch is closed and the GFC 700 is actively receiving 28. volts. A red X indicates the GIAs and servos are no longer receiving the +28 VDC AP DISC power (switch open or other fault).

<u>**MONITOR/CONTROL BOARD STATUS**</u>

Shows the condition of various monitor board components.

<u>SERVO PROGRAM (1-3):</u> Servo program discretes are used to determine the HW strapping for each GSA to define the servo type. This information can be cross-referenced against the system interconnects to verify proper servo grounding.

<u>AP DISCONNECT:</u> Same as GIA Status.

<u>PFT:</u> Indicates whether the pre-flight test has passed or failed.

<u>HIGH RES & HIGH RNG Load CELL CAL:</u> Shows the condition of the high resolution and high range load cells on the monitor board. If box is black, this indicates a corrupt or missing load cell calibration; return the servo to Garmin.

NOTE

For the Yaw GSA 9000 servo, the HIGH RNG LOAD CELL CAL box will have a Red-X. This is normal since this servo motor does not have this component.

DRIVE SERVO

Allows the technician to enter a desired RPM at which to manually drive the selected servo. Direction of rotation is controlled by the polarity of the RPM (+ or -). After the speed is entered, the technician may use the ENG CLCH and DRV SRVO softkeys to drive the servo.

NOTE

Be especially certain that the flight controls are clear and safe to operate before manually driving the servo.

SERVO DATA

Shows real-time reported data including servo voltage, speed, motor current, load cell torque, and clutch solenoid status. A green box indicates the servo clutch is engaged.

SLIP CLUTCH TEST RESULTS

This window is used during the automatic slip clutch torque measurement check.

5.8.2 GIA Fault Log Descriptions

The section was created to help determine why the GFC 700 has failed the Pre-Flight Test indicated by the red PFT annunciation, it defines the PFT sequence for the servos and the GFC 700 system and then provides troubleshooting information to help resolve failures.

There are 16 steps to the GFC 700 PFT. The PFT is performed by both GIA's at startup, and needs to pass on both GIA's before the autopilot can be engaged.

The PFT is only started if the AHRS has aligned, the GIA's and servos are configured and the certification gains are valid. If the PFT has not completed after one minute from when the initialization started, the PFT will fail. After the system PFT has passed, it will be performed again if a servo resets, if the autopilot servo breaker is reset or the cross side GIA restarts it.

Generally, the PFT failure fault is logged in the GIA Maintenance Log and not in the Servo Maintenance Logs unless the GIA log fault identifies a servo problem.

NOTE

Thoroughly understanding the operation of the G1000 system in Configuration mode is recommended before starting this procedure. The GFC Status page may be used to check the status of the servos and engage them to aid in troubleshooting

To access the GIA and GSA Maintenance Logs, perform the following steps –

1. Start the G1000 in Configuration mode.
2. Use the FMS knob on PFD1 to go to the Diagnostics Terminal page in the System group. This page allows the technician to view maintenance logs associated with the GFC 700.
3. Choose 'GIA 1' or 'GIA 2' in the LRU window.

4. In the SERVO window, choose ‘NONE’ to view the GIA Maintenance Log, or choose a servo to view their logs.
5. Using the FMS knob, choose ‘VIEW MAINTENANCE LOG’ in the COMMAND window.
6. Press the ENT key.
7. When the Maintenance Log data starts to display in the OUTPUT window, you may see "More...press any key to continue..." at the bottom of the OUTPUT window. This informs you there is more data to display and the system has paused allowing you to view the data before continuing. To see more of the data, reselect the "VIEW MAINTENANCE LOG" in the COMMAND window and press the ENT key. The "...press any key to continue..." function is not active at this time.
8. Scroll through the OUTPUT list by pressing the OUTPUT softkey.
9. The GIA Maintenance Log can record any of the following faults:

- **FCS Task not started: Bad gains**

  The FCS task has not started because the gains are not present or have been corrupted. Reload the gain files to correct.

- **FCS Task not started: Gain structure out of range**

  The FCS task has not started because the gains are not compatible with the GIA software. Reload the gain files to correct.

- **PFT FAIL: Timeout, <STEP>**

  Pre-flight test has failed because the specified step has not passed in the allotted time. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **PFT FAIL: Cross GIA Failed, State: <STEP>**

  Pre-flight test has failed on opposite GIA. **<STEP>** specifies the pre-flight test step on selected GIA that was in progress when the pre-flight test failed on the opposite GIA. See the GIA pre-flight steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **PFT FAIL: <STEP>**

  Pre-flight has failed because the step specified has failed. See the GIA pre-flight test steps for a description of the possible values for **<STEP>** on the failed GIA and corrective actions.

- **AHRS MON invalid: <STATE>**

  The AHRS monitor has detected that the AHRS data is invalid. The possible values for **<STATE>** are:

  a. **Mon Prmtr Invalid:** The ARINC 429 data used by one of the monitors has not been received.

  b. **Attitude Prmtr Invalid:** The ARINC 429 pitch or roll angle has not been received.

  c. **Exceeded Attitude Limits:** The pitch or roll angle has exceeded the engagement limits.

  d. **Cross Hdg Accel Fail:** Cross heading acceleration monitor failed.

e. **Vert Accel Fail:** Vertical acceleration monitor failed.

f. **Fltrd Cross Hdg Accel Fail:** Filtered cross heading acceleration monitor failed.

g. **Fltrd Vert Accel Fail:** Filtered vertical acceleration monitor failed.

h. **Roll Accel Fail:** Roll acceleration monitor has failed.

i. **Normal Accel Fail:** Normal acceleration has failed.

Troubleshoot the GRS 77, GRS 7800, or GSU 75B for the cause of the failure.

- **Stuck switch invalidated parameter: <AXIS>**

  A MET switch in the specified axis is stuck.

  Check the MET (trim) switches for proper operation.

- **PRMTR: <PARAMETER> MODE:<MODE> Parameter lost**

  The mode specified by **<MODE>** has been disengaged because the parameter specified by **<PARAMETER>** has become invalid. The following is a list of some of the possible values for **<PARAMETER>:**

  a. **AD TDM Comm Valid:** The specified mode has been disengaged because communication with the servos, via the Time Division Multiplexer protocol, has been lost.

  b. **AP Pitch MET not stuck:** The specified mode has been disengaged due to a stuck pitch MET switch.

  Check the MET (trim) switches for proper identification.

5.8.3 GIA Pre-Flight Test Steps

PFT step 0: System initialization, verify GFC powered

This step is checking to make sure the GFC is powered up. It checks to make sure the GIA AP disconnect input is connected to 28 volts, and makes sure the Servos are up and communicating.

If this step fails, make sure the GIA is connected to AP disconnect by using the GFC configuration page. Also make sure all configured Servos are communicating by checking for Servo product data in configuration mode.

PFT step 1: System initialization, verify GIA audio is valid.

This step is checking to make sure that the GIA audio region has been loaded and configured.

If this step fails, load GIA audio region and audio configuration.

PFT step 2: System initialization, verify required servos are configured

This step is checking to make sure the current Servo configuration matches the Servo configuration specified in the certification gain file.

If this step fails, then make sure the Servo configuration on the GFC configuration page matches the Servo configuration specified in the configuration gain (.cgn) file.

PFT step 3: System initialization, verify selected side

This step is checking to make sure the PFD1 is online and sending the selected AFCS side data over HSDB to GIA1.

If this step fails, then make sure the PFD is powered up and there is an Ethernet connection from the PFD to the GIA.

PFT step 4: System initialization, verify AHRS monitor

This step is checking to make sure the AHRS monitor is valid and not reporting an AHRS failure.
NOTE: AHRS monitor will be assumed valid if on the ground.

If this step fails, then make sure the AHRS and ADC or ADAHRS is powered up and sending valid attitude data to the G1000.

PFT step 5: System initialization, verify servo PFT is complete

This step is checking to make sure that all servos have completed their own PFT. This does not check whether the servo PFT passed or failed. It verifies that the servo PFT is no longer in progress.

PFT step 6: Verify cross GIA is initialized

This step is checking to make sure the other GIA is also on step 6 of its PFT.

If this step fails, try cycling power on GIA1, GIA2, and all servos. If PFT still fails at step 6 then you will need to go check the PFT status of the other GIA and see what step it is failing (it should be prior to step 6). NOTE: The PFT status is communicated between GIA1 and GIA2 using HSDB. As a result, both the PFD and MFD must be powered for this state to pass.

PFT step 7: Verify servo type

This step is checking to make sure the Servos are the correct type (torque and speed).

If this step fails, make sure the Servo configuration on the GFC configuration page matches the Servos installed in the aircraft.

PFT step 8: Verify servo first certification data

This step is checking to make sure the servos have the same certification gains loaded in them as the GIAs have.

If this step fails, reload the certification gains in GIA1, GIA2, and all servos.

PFT step 9: Verify servo second certification data

This step is checking to make sure the servos have the same certification gains loaded in them as the GIAs have.

If this step fails, reload the certification gains in GIA1, GIA2, and all servos.

PFT step 10: Updating servo RTC

This step is setting the system time in the servos to by the same time as the GIA system time.

This step should never fail.

PFT step 11: Verify servo PFT status

This step is checking to make sure the servos have all passed their own PFT.

If this step fails, please proceed to servo PFT explanation below.

PFT step 12: Verify AP disconnect enabled

This step is checking to make sure GIA1, GIA2, and all servos have are connected to a 28 volt AP disconnect.

If this step fails, make sure the AP disconnect input to GIA1, GIA2, and all servos is connected and registering 28 volts. Make sure the AP disconnect switch has been installed in the aircraft. Make sure no one is holding the AP disconnect switch down on the yoke.

PFT step 13: Verify servo validity

This step is checking to make sure all the Servos are up and communicating with valid data to the GIA in TDM mode.

If this step fails, then make sure all Servos are turned on and communicating by checking for green boxes on the GFC configuration page.

PFT step 14: Verify servo enable/disable discrete input

This step is checking the servo discrete inputs. It is not used on King Air.

PFT step 15: Verify cross GIA PFT is completed

This step is checking to make sure the other GIA is also on step 15 of its PFT.

If this step fails, try cycling power on GIA1, GIA2, and all servos. If PFT still fails at step 15 then you will need to go check the PFT status of the other GIA and see what step it is failing. NOTE: The PFT status is communicated between GIA1 and GIA2 using HSDB. As a result, both the PFD and MFD must be powered for this state to pass.

PFT step 16: PFT completed

The PFT has successfully completed.

PFT step 17: PFT failed

The PFT has failed.

5.8.3.1 Servo Faults and Troubleshooting

Whenever a servo fault occurs, a status message is logged to the corresponding servo control or monitor maintenance log. This information is also accompanied by a time and date stamp. An “RTC DATE” entry is made every time a servo is powered on, it is normally not useful for troubleshooting.

The following is a listing of possible faults that could be reported in a GSA fault log. Faults can occur in either the monitor board processor or the control board processor, both of which are contained in the GSA unit.

5.8.3.1.1 Monitor Processor

The monitor processor contains the logs that are found in these processors -

2 – Pitch Servo

4 – Roll Servo

6 - Yaw

8 – Pitch Trim Servo

There are two main groupings of faults that can occur in the monitor processor:

The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT the unit will not be able to transition to normal mode and the only way to clear this state would be to cycle unit power.

The second grouping of faults can occur during normal mode. These faults generally cause a removal of power to the GSA and report that a fault has occurred to the GIA.

The Notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. Any faults that are not listed here indicate an internal problem requiring replacement of the servo. If the items in the Notes column check out ok, replace the servo.

PFT Faults

MONITOR PFT STEP	NOTES
"INTERNAL COMM FAIL"	This can sometimes be a result of a failure on the other internal servo board, check faults on the other processor
"UNSW POWER INV"	Check unit power
"MON SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"CTL SOL PWR ON FAIL"	Check unit power and AP Disconnect power
"SOL PWR FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the Monitor board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

MONITOR FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

5.8.3.1.2 Control Processor

The control processor contains the logs that are found in these processors –

3 – Pitch Servo

5 – Roll Servo

7 - Yaw

9 – Pitch Trim Servo

There are two main groupings of faults that can occur in the control processor.

The first grouping of faults can occur during the GSA unit pre-flight test (PFT). If there is a fault during PFT the unit will not be able to transition to normal mode and the only way to clear this state would be to cycle unit power.

The second grouping of faults can occur during normal mode. These faults generally cause a disconnect of power to the GSA and report that a fault has occurred to the GIA.

The Notes column indicates any actions that can be taken to troubleshoot the problem in the aircraft by the technician. Any faults that are not listed here indicate an internal problem requiring replacement of the servo. If the items in the Notes column check out ok, replace the servo.

PFT Faults

CONTROL PFT STEP	NOTES
"INT COMM TEST FAIL"	This can sometimes be a result of a failure on the other board, check faults on other processor
"CTL MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"MON MOT PWR ON FAIL"	Check unit power and AP Disconnect power
"HALL 1 FAIL"	Check unit power and AP Disconnect power
"HALL 2 FAIL"	Check unit power and AP Disconnect power
"HALL 3 FAIL"	Check unit power and AP Disconnect power
"HALL 4 FAIL"	Check unit power and AP Disconnect power
"HALL 5 FAIL"	Check unit power and AP Disconnect power

CONTROL PFT STEP	NOTES
"HALL 6 FAIL"	Check unit power and AP Disconnect power
"CURR OFFST FAIL"	Check unit power and AP Disconnect power
"SVO TYPE FAIL"	Check unit power and AP Disconnect power
"CERT DATA UNINSTALLED"	Upload the certification gain file to the Control board
"STRAP CODE MISMATCH"	Check the connector strap inputs to the unit

Normal Mode Faults

CONTROL FAULT	NOTES
"GIA DIS FAULT"	Check the AP Disconnect power into the unit
"HOST DATA DIF"	Check the AHRS wiring to the system
"HOST DATA INV"	Check the AHRS wiring to the system
"SVO PWR INV"	Check unit power and AP Disconnect power
“STRP CODE CHNG”	Check the connector strap inputs to the unit
“MET STUCK SWTCH”	Check the MET switch inputs into the system
“MET STATUS DIF”	Check the MET switch inputs into the system

5.8.3.2 Downloading GIA and GSA Maintenance Logs

If additional assistance is needed troubleshooting autopilot faults, the Maintenance logs can be downloaded to an SD card as a text file (.txt) and emailed to Garmin Aviation Product Support. Please call Garmin Aviation Product Support before you send a Maintenance Log to notify them you are sending it to prevent a delay in response. You may download multiple GIA and GSA Maintenance Logs to the same file, however in your email to Garmin you must furnish the order in which they were downloaded (i.e. GIA1, then GIA2, then SRVO PTCH MON, then SRVO PTCH CTL, etc.).

1. Insert a FAT 32 formatted SD card into the top slot of the PFD before turning on the displays.
2. Power up PFD1, PFD2 and MFD in the configuration mode.
3. On the PFD1 in the System page group, use the small FMS knob to scroll to the Diagnostics Terminal page.
4. Press the LG2CRD softkey at the bottom of the PFD1.
5. Enable the cursor by pressing the FMS knob, select “GIA1” in the LRU drop down menu and then press the ENT key to select it.
6. Skip the SERVO box and move the cursor to the COMMAND box and select “View Maintenance Log” in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the “more…press any key to continue” text at the bottom of the screen, you may need to reselect “View Maintenance Log” for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, “End of Fault Log”.

7. Move the cursor back to the LRU box, select “GIA2” in the LRU drop down menu and then press the ENT key to select it.
8. Skip the SERVO box and move the cursor to the COMMAND box and select “View Maintenance Log” in the drop down menu then press the ENT key. The error log data will be displayed in the OUTPUT box. If you see the “more…press any key to continue” text at the bottom of the screen, you may need to reselect “View Maintenance Log” for GIA data to allow it to continue scrolling down the screen (pressing any key will not continue, disregard the text instruction you to do so). Continue to scroll through all the OUTPUT data until you see the text, “End of Fault Log”.
9. If you need to download Servo fault logs (usually done at the request of Garmin Product Support), perform the following steps. Otherwise, skip to step 10.
    a) In the LRU box, you may select either “GIA1” or “GIA2”.
    b) In the SERVO box, choose a servo using the FMS knobs. Each servo contains two logs, one in the Monitor (MON) processor and one in the Control (CTL) processor. You must download both for each servo separately.
    c) In the COMMAND box, select “View Maintenance Log” and press the ENT key.
    d) The log will appear in the OUTPUT box. It will scroll to the end automatically. When it is complete, repeat steps a-c for the other servos in the aircraft. Be sure to note the order the servos were downloaded in including the Monitor or Control logs to email to Garmin Product Support. Without knowing the order in which the logs were downloaded, Garmin will be unable to process them and will ask for another full download.
10. Press the LG2CRD softkey to turn off the recording function.
11. Wait 1 minute for the system to save the data from the download to the SD card.
12. While you are waiting for the data to be saved to the SD card, record the order of the LRU’s and/or Servos were downloaded so that you can provide that information to Cessna or Garmin to help decipher the order of the error data.
13. Power down the G1000 System and remove the SD card.
14. Insert the SD card in the card reader of a laptop or desktop computer and open the “diag_buf_log.txt” file from the SD card using the WordPad program. Verify that all of the fault logs were downloaded by checking for the “End of Fault Log” message at the end of the GIA data, and that the last servo log entry has the current date.
15. Insert the fault log as an attachment to an email and include the LRU order how the data was downloaded and send to Garmin Aviation Product Support at avionics@Garmin.com.

5.9 Backup Communications Path Checks

5.9.1 Overview

The G1000 system architecture is designed with redundant communication ports for several LRUs so that critical information can continue to be displayed in the event of an equipment or wiring failure. Of most importance is flight attitude, heading, and air data information. The GRS 77/7800 and GDC 7400 each have four separate ARINC 429 data lines which are all capable of sending data to the displays. The GEA 71, GTX 33(D) or GTX 3000, and GMA 1347D each have two redundant serial communication paths for the same purpose. See Figure 2-30 for a basic G1000 block diagram depicting this architecture. Several other diagrams are shown later in this section for illustrative purposes. When troubleshooting, refer to the G1000 Wiring Diagram listed in Table 1-1.

NOTE

Refer to Section 9.10 for procedures on checking the status of each configured G1000 / GFC 700 backup data path.

5.9.2 Data Path Failures

Failure Message	Cause	Solutions
FAILED PATH – A data path has failed.	A communications data path status is not being received by the G1000.	• Determine which data path has failed: See Section 5.1.1. • Check wiring continuity for the failed path. • Swap or replace the affected LRU.

5.10 GDU 105X Troubleshooting

5.10.1 GDU 105X Symptoms

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>Display is blank</td><td rowspan="2">
• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin.
• Cycle power.
✓ If GDU recovers, observe display for yellow text containing error information at the top of the screen. If message indicates software need to be re-loaded, then re-load software. Otherwise, replace the GDU.
• Use a bright light to verify LCD is active.
✓ Adjust avionics dimmer control full clockwise.
✓ Manually turn up backlight on the PFD and load configuration files to the GDU.
• Ensure slide lock is fully engaged with the locking tabs on the back of the unit.
✓ If slide lock is not fully engaged, remove connector and verify the locking tabs on the GDU are perpendicular to the connector. If necessary, straighten them before reseating connector.
</td></tr>
<tr><td>Display resets</td></tr>
</table>

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>Display flickers</td><td>• Ensure GDU is receiving power. If a circuit breaker is tripped, determine source of short before resetting breaker.
• Ensure circuit breakers have not failed and power wire connections are secure.
• Swap PFD1 and PFD2.
✓ If problem follows unit, replace the display. Please note the position it failed in (PFD1/2).
✓ If problem does not follow unit, troubleshoot aircraft wiring for fault.</td></tr>
<tr><td>SD card is stuck in GDU</td><td>• DO NOT insert a screwdriver of any length into the card slot.
• DO NOT pry against the overlay.
• DO NOT force the SD Card out.
• Use a small screwdriver in the groove on the side of the exposed end of the card to help pull out the card.
• Push the card in further to release the card locking mechanism.
• Check SD Card for having more than one label. Two or more labels on the card will cause sticking.
✓ Remove all but one label.
• Ensure the SD card is from SanDisk. Use of other SD Cards is not recommended.
• If card was inserted with the label facing to the right, do not attempt to remove. Return the unit to an authorized repair facility for service.</td></tr>
<tr><td>A button/knob/joystick does not appear to function</td><td>• Go to the GDU TEST page in configuration mode and verify button, knob, or joystick operates correctly by observing a change in color from red to green in the button/knob/joystick icon when the button/knob/joystick is pressed. If a button is stuck, the button icon will be green without pressing the button as soon as you turn to the GDU TEST page.
✓ If problem is verified, replace GDU.</td></tr>
<tr><td>Terrain/Obstacle/SafeTaxi does not display</td><td>• Allow the system to verify the data in internal memory for approximately five minutes after power-up.
• If a database does not activate, reload the problem database.</td></tr>
<tr><td>Display will not track dimmer bus</td><td rowspan="2">• Reload GDU configuration files.
• If display is a PFD, swap PFD1 and PFD2 to see if problem remains with display.
✓ Replace display if condition remains with the same unit.
✓ If condition remains in original position after swapping displays, check GDU dimmer input to verify voltage is present.
• If display is the MFD, check dimmer input to verify voltage is present.
✓ Replace MFD if dimmer voltage is present.</td></tr>
<tr><td>Keyboard will not track dimmer bus</td></tr>
</table>

5.11 GDU 105X Alerts

5.11.1 Software/Configuration Alerts

<table>
<tr><th>Failure Message</th><th>Cause</th><th>Solution</th></tr>
<tr><td>SW MISMATCH – GDU software version mismatch. Xtalk is off.</td><td>The system has found the PFDs and/or MFD software versions do not match.</td><td rowspan="4">Load correct software version. See Section 3.8.2 for GDU 1050A Software Loading procedure.</td></tr>
<tr><td>MANIFEST – PFD 1 software mismatch. Communication Halted.</td><td rowspan="2">The system has detected an incorrect software version loaded in the specified PFD.</td></tr>
<tr><td>MANIFEST – PFD 2 software mismatch. Communication Halted.</td></tr>
<tr><td>MANIFEST – MFD1 software mismatch. Communication Halted.</td><td>The system has detected an incorrect software version loaded in MFD.</td></tr>
<tr><td>CNFG MODULE – PFD 1 configuration module is inoperative.</td><td>The PFD master configuration module has failed.</td><td>• Check master configuration module connector and wiring for damage inside the GDU connector backshell.
✓ Replace master configuration module wiring and pins.
✓ If problem persists, replace master configuration module.
NOTE
New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.</td></tr>
</table>

<table>
<tr><th>Failure Message</th><th>Cause</th><th>Solution</th></tr>
<tr><td>MFD1 CONFIG – MFD1 configuration error. Config service req’d.</td><td rowspan="3">A configuration mismatch has occurred between the display and the Master Configuration Module.</td><td rowspan="3">Reload the display configuration files from SD Loader Card.
Reload system configuration files by pressing the UPDT CFG softkey on the Configuration Upload Page in the PFD1 System Page Group to load configuration files into the configuration module.
✓ If message persists, check PFD1 config module wiring for faults and replace if necessary.
✓ If issue continues, replace PFD1 master configuration module.
✓ If problem persists, replace the display.
NOTE
New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.</td></tr>
<tr><td>PFD 1 CONFIG – PFD 1 configuration error. Config service req’d.</td></tr>
<tr><td>PFD 2 CONFIG – PFD 2 configuration error. Config service req’d.</td></tr>
</table>

5.11.2 Database Alerts

Failure Message	Cause	Solution
MFD1 DB ERR – MFD1 aviation database error exists.	The MFD or specified PFD has encountered an error in the Jeppesen aviation database.	• Reload aviation database into the display. • Contact Garmin Aviation Product Support for assistance if needed.
PFD 1 DB ERR – PFD 1 aviation database error exists.		
PFD 2 DB ERR – PFD 2 aviation database error exists.		
MFD1 DB ERR – MFD1 terrain database error exists.	The MFD has encountered an error in the terrain database.	• Reload the database. • Contact Garmin Aviation Product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 terrain database error exists.	The specified PFD has encountered an error in the terrain database.	
PFD 2 DB ERR – PFD 2 terrain database error exists.		
MFD1 DB ERR – MFD1 obstacle database error exists.	The MFD has encountered an error in the obstacle database.	• Reload the database. • Contact Garmin Aviation Product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 obstacle database error exists.	The specified PFD has encountered an error in the obstacle database.	
PFD 2 DB ERR – PFD 2 obstacle database error exists.		
MFD1 DB ERR – MFD1 airport terrain database error exists.	The MFD has encountered an error in the airport terrain database.	• Reload the database. • Contact Garmin Aviation Product Support for further assistance if needed.
PFD 1 DB ERR – PFD 1 airport terrain database error exists.	The specified PFD has encountered an error in the airport terrain database.	
PFD 2 DB ERR – PFD 2 airport terrain database error exists.		

5.11.3 Cooling Alerts

Failure Message	Cause	Solution
MFD1 COOLING – has poor cooling. Reducing power usage.	MFD1 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the MFD. • If problem continues contact Garmin Aviation Product Support for assistance.
PFD 1 COOLING – has poor cooling. Reducing power usage.	PFD 1 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the PFD1. • If problem continues contact Garmin Aviation Product Support for assistance.
PFD 2 COOLING – has poor cooling. Reducing power usage.	PFD 2 has exceeded its operating temperature range.	• Check cooling fan and wiring for proper operation (if applicable). ✓ Replace cooling fan if unable to determine if operating correctly. ✓ If problem persists, replace the PFD2. • If problem continues contact Garmin Aviation Product Support for assistance.

5.11.4 Key Alerts

Failure Message	Cause	Solution
MFD1 “key” KEYSTK – key is stuck.	The SYSTEM has determined a key is stuck on MFD1.	• Go to the GDU TEST page in configuration mode and verify key is stuck (if key is stuck the corresponding indicator will be green). • Exercise suspected stuck key and reset GDU TEST page to see if indicator remains green without pressing the key. ✓ If problem persists replace the display.
PFD 1 “key” KEYSTK – key is stuck.	The system has determined a key is stuck on the PFD 1.	
PFD 2 “key” KEYSTK – key is stuck.	The system has determined a key is stuck on the PFD 2.	

5.11.5 Miscellaneous Alerts

Failure Message	Cause	Solution
XTALK ERROR – A flight display cross talk error has occurred.	A communication error has occurred between the MFD and/or PFDs.	• Ensure a database error has not occurred (identified in the ALERTS window on the PFD). ✓ If a database error has occurred, correct error before proceeding. • Check display Ethernet interconnect wiring. • Replace PFD1 with a known good unit, to verify location of problem: ✓ If problem persists, reinstall original PFD1 and replace PFD2. ✓ If problem persists, reinstall PFD2 and replace MFD.
DATA LOST – Pilot stored data lost. Recheck settings.	Pilot stored data has been lost.	• If the CLR key was held during a power cycle, disregard message. • Cycle power to PFD1: ✓ Ensure CLR key is not stuck on the GDU TEST page. ✓ If problem persists, replace PFD1.

Failure Message	Cause	Solution
MFD1 SERVICE – needs service. Return unit for repair.	The G1000 has determined MFD1 needs service.	• Ensure the MFD connector is fully seated and locked. • Return unit to an Authorized Repair Facility for service.
PFD 1 SERVICE – needs service. Return unit for repair.	The G1000 has determined the specified PFD needs service.	• Ensure the PFD connector is fully seated and locked. • Return unit to an Authorized Repair Facility for service.
PFD 2 SERVICE – needs service. Return unit for repair.		
PFD 1 VOLTAGE – PFD 1 has low voltage. Reducing power usage.	The specified PFD supply voltage is low.	• Check input voltage to PFD. • If input voltage is ok, replace PFD.
PFD 2 VOLTAGE – PFD 2 has low voltage. Reducing power usage.		
MFD1 VOLTAGE – MFD1 has low voltage. Reducing power usage.	The MFD supply voltage is low.	• Check input voltage to MFD. • If input voltage is ok, replace MFD.

5.11.6 GMA Symptoms

Symptom/Failure Message	Recommended Action
Noise in Audio	Most often the cause of the noise is external to the GMA. Try the following to locate the source of the noise before replacing the GMA: • Try a different pair of headsets. Noise cancelling headsets may pick up and/or generate more noise than standard headsets from their own circuitry. • Check for noise with the engine turned off. ✓ If the noise is present only when the engine is running, check the generator and/or ignition system as possible sources of noise (see applicable airframe specific maintenance manual). • Check for noise as all electrical equipment is turned on and off (strobes, other radios, etc.). ✓ If the noise is identified from one electrical system or component refer to the applicable airframe specific maintenance manual. • Ensure the NAV/COM squelch is not open. • Ensure the ADF and DME audio is not active. • Ensure the marker beacon audio is not active. • Ensure the ICS squelch is not open. ✓ Master squelch level can be adjusted on the GMA CONFIGURATION page for higher noise environments. • Replace unit only after all possible external sources of noise are eliminated.
Buttons Do Not Work.	• Some buttons are disabled in the GMA CONFIGURATION page by default. This is to remove potential sources of audio noise for inputs that are not used. If in doubt as to which buttons should be disabled, reload GMA config files and other config files for optional equipment installed in the aircraft (i.e. ADF, HF, etc.) from the loader card.
COM Bleedover	• Verify on the GMA CONFIGURATION page that “Disable Split COM” has a green box. Due to the closeness of the COM antennas and high power of the COM transceivers, Split COM operation is not approved. If the box is black (indicating COM ½ button is active), highlight “Disable Split COM” with the cursor and press the ENT key to turn the box green which will deactivate Split COM mode.
Speaker Cuts Out	• Reduce volume level of the item that caused the speaker to cut out when turned up. A speaker protection circuit disables the speaker output if the volume is too high. If the volume is not sufficient, replace aircraft cabin speaker, reference the Airframe Maintenance Manual.
Mic Audio Heard in Speaker	• Reduce ICS Volume.
GMA XTALK – GMA crosstalk error has occurred.	• Ensure both GMA units are receiving power. • Ensure both units are properly configured by verifying there are no GMA alert messages. • Check interconnect wiring between the GMA’s for faults. • Replace GMA1. • If problem persists, reinstall GMA1 and replace GMA2.

5.11.7 GMA Alerts

Failure Message	Cause	Solution
GMA1 SERVICE – GMA1 needs service. Return unit for repair. GMA2 SERVICE – GMA2 needs service. Return unit for repair.	The system has determined that the specified GMA 1347D needs service.	• Replace GMA unit. • Return unit to an Authorized Repair Facility for service.
GMA1 FAIL – GMA1 in inoperative. GMA2 FAIL – GMA2 in inoperative.	The system has detected a failure in the specified GMA 1347D.	• Ensure GMA1 is receiving power. • Ensure both GIAs are receiving power. • Ensure all GDUs are receiving power. • Ensure the GMA/GIA RS-232 data lines are working properly. • Ensure the GIA/GDU Ethernet data lines are working properly. • Replace GMA1.
MANIFEST – GMA1 software mismatch. Communication Halted. MANIFEST – GMA2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in the specified GMA 1347D.	Load the correct unit software. See Section 3.8 for the Software Loading procedure.

GMA1 CONFIG – GMA1 configuration error. Config service req'd.
GMA2 CONFIG – GMA2 configuration error. Config service req'd.
	The system has detected a GMA 1347D configuration mismatch for the specified unit.	• Load GMA configuration files, see Section 3.8.
		  • Replace GMA.
		  • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary.
		NOTE
		New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.

5.12 GIA 63 Troubleshooting

5.12.1 COM

Symptom	Recommended Action
Weak COM transmit power	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check COM antenna and cabling for faults.
Weak COM receiver	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check COM antenna and cabling for faults.
No COM sidetone	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem persists, replace GMA1 with a known good unit. ✓ If problem persists, reinstall original GMA1 and replace GMA2.

5.12.2 NAV

Symptom	Recommended Action
Weak NAV receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.12.3 G/S

Symptom	Recommended Action
Weak G/S receiver	• Set up a NAV/COM Ramp Test Set to radiate a test signal. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace GIA. ✓ If problem does not follow unit, check NAV antenna, coupler, and cabling for faults.

5.12.4 GPS

Symptom	Recommended Action
Will Not Acquire Satellites	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Using the MFD **Aux – GPS Status** page, verify the signal strength bars are not erratic. If so, this indicates outside interference is affecting the GPS receivers. Find and remove the source of interference (i.e. cell phones, FBO datalink antennas, etc.). • Check date and time on Date/Time Setup Page. ✓ If date and time are incorrect, enter the correct date and time. • Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows unit, replace the GIA. ✓ If problem does not follow unit, check GPS antenna and cabling.

5.13 GIA Alert Messages

5.13.1 COM Alerts

Failure Message	Cause	Solutions
COM1 SERVICE – COM1 needs service. Return unit for repair.	The system has determined COM1 needs service.	• Replace GIA1. • Return unit to an Authorized Repair Facility for service.
COM2 SERVICE – COM2 needs service. Return unit for repair.	The system has determined COM2 needs service.	• Replace GIA2. • Return unit to an Authorized Repair Facility for service.
COM1 PTT – COM1 push-to-talk key is stuck.	The COM1 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Check GIA1/GMA 1347D #1 interconnect. • Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped; see Section 7.3): ✓ If problem follows the unit, replace GIA1. ✓ If problem persists, replace GMA 1347D #1.
COM2 PTT – COM2 push-to-talk key is stuck.	The COM2 external push-to-talk (PTT) switch is stuck in the enabled (or “pressed”) state.	• Press the push-to-talk switch(s) again to cycle its operation. • Check push-to-talk switch(s) and wiring. • Check GIA2/GMA 1347D #2 interconnect. • Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 7.3): ✓ If problem follows the unit, replace GIA2. ✓ If problem persists, replace GMA 1347D #2.

Failure Message	Cause	Solutions
COM1 RMT XFR – COM1 remote transfer key is stuck.	The COM1 external remote transfer switch is stuck in the enabled (or "pressed") state.	Press the COM1 external remote transfer switch again to cycle its operation. Check COM1 external remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 7.3) ✓ If problem follows the unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
COM2 RMT XFR – COM2 remote transfer key is stuck.	The COM2 external remote transfer switch is stuck in the enabled (or "pressed") state.	Press the COM2 external remote transfer switch again to cycle its operation. Check COM2 external remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 7.3): ✓ If problem follows the unit, replace GIA2. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
COM1 TEMP – COM1 over temp. Reducing transmitter power. COM2 TEMP – COM2 over temp. Reducing transmitter power.	The specified COM transceiver is reporting a high temperature condition and is reducing transmit power to prevent damage.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA. • If problem persists, contact Garmin Aviation Product Support for assistance.

5.13.2 NAV Alerts

Failure Message	Cause	Solution
NAV1 SERVICE – NAV1 needs service. Return unit for repair.	The system has detected a failure in NAV1 receiver.	• Replace GIA1. • Return unit to an Authorized Repair Facility for service.
NAV2 SERVICE – NAV2 needs service. Return unit for repair.	The system has detected a failure in NAV2 receiver.	• Replace GIA2. • Return unit to an Authorized Repair Facility for service.
NAV1 RMT XFR – NAV1 remote transfer key is stuck.	The NAV1 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the NAV1 external remote transfer switch again to cycle its operation. Check NAV1 remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 7.3): ✓ If problem follows unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.
NAV2 RMT XFR – NAV2 remote transfer key is stuck.	The NAV2 external remote transfer switch is stuck in the enabled (or “pressed”) state.	Press the NAV2 external remote transfer switch again to cycle its operation. Check NAV2 remote transfer switch and wiring. Switch GIA1 and GIA2, to identify whether the unit or connectors/wiring is at fault (Both GIAs must be configured when swapped, see Section 7.3): ✓ If problem follows unit, replace GIA1. ✓ If problem persists, continue to troubleshoot remote transfer switch & wiring.

5.13.3 Glideslope Alerts

Failure Message	Cause	Solution
G/S1 SERVICE – G/S1 needs service. Return unit for repair.	The system has detected a failure in G/S1 receiver.	• Replace GIA1. • Return unit to an Authorized Repair Facility for service.
G/S2 SERVICE – G/S2 needs service. Return unit for repair.	The system has detected a failure in G/S2 receiver.	• Replace GIA2. • Return unit to an Authorized Repair Facility for service.
G/S1 FAIL – G/S1 is inoperative.	The system has detected a failure in G/S1 receiver.	• Switch GIA1 and GIA2 to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow unit, check G/S1 antenna and cabling.
G/S2 FAIL – G/S2 is inoperative.	The system has detected a failure in G/S2 receiver.	• Switch GIA1 and GIA2 to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow unit, check G/S2 antenna and cabling.

5.13.4 GPS Alerts

NOTE

Before troubleshooting, ensure that no cell phones or devices using cell phone technology are turned on, even in a monitoring state, in the cabin.

Failure Message	Cause	Solution
MANIFEST – GPS1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GIA1.	Load the correct GPS software. See Section 7.3 for the Software Loading procedure.
MANIFEST – GPS2 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GIA2.	
GPS1 SERVICE – GPS1 needs service. Return unit for repair.	The system has detected a failure in GPS1 receiver.	• Replace GIA unit. • Return unit to an Authorized Repair Facility for service.
GPS2 SERVICE – GPS2 needs service. Return unit for repair.	The system has detected a failure in GPS2 receiver.	
GPS1 FAIL – GPS1 is inoperative.	The system has detected a failure in GPS1 receiver.	• Switch GIA1 and GIA2, to verify location of problem: ✓ If problem follows the unit, replace GIA. ✓ If problem does not follow the unit, check GPS antenna and cabling.
GPS2 FAIL – GPS2 is inoperative.	The system has detected a failure in GPS2 receiver.	

<table>
<tr><th>Failure Message</th><th>Cause</th><th>Solution</th></tr>
<tr><td>LOI – GPS integrity lost. Crosscheck with other NAVS.</td><td>If the primary receiver is a WAAS sensor, the alert indicates that GPS position data has timed out.</td><td rowspan="4">• Verify the area the aircraft was traveling through did not have loss of GPS coverage. FAA NOTAMs may be issued for periods of outages, or the US Coast Guard website http://navcen.uscg.gov/pdf/gps/gpsnotices/GPS_Interference.pdf will have notices posted.
• Using the MFD Aux – GPS Status page, verify the signal strength bars are not erratic. If so, this indicates outside interference is affecting the GPS receivers. Find and remove the source of interference (i.e. cell phones, FBO datalink antennas, etc.).
• If GPS receivers cannot acquire a position lock, troubleshoot per the “Will not acquire satellites” section.</td></tr>
<tr><td>GPS NAV LOST – Loss of GPS navigation. Insufficient satellites.</td><td>There is no GPS position fix available or the system is in dead reckoning mode.</td></tr>
<tr><td>GPS NAV LOST – Loss of GPS navigation. Position error.</td><td>The G1000 has detected an internal position warning has occurred.</td></tr>
<tr><td>GPS NAV LOST – Loss of GPS navigation. GPS fail.</td><td>The G1000 has detected a GPS engine failure.</td></tr>
</table>

5.13.5 GIA Cooling Alerts

Failure Message	Cause	Solution
GIA1 COOLING – GIA1 temperature too low.	GIA1 operating temperature is too low.	Allow unit to warm up.
GIA2 COOLING – GIA2 temperature too low.	GIA2 operating temperature is too low.	Allow unit to warm up.
GIA1 COOLING – GIA1 over temperature.	GIA1 has exceeded its operating temperature range.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA1. • If problem persists, contact Garmin Aviation Product Support for assistance.
GIA2 COOLING – GIA2 over temperature.	GIA2 has exceeded its operating temperature range.	• Check fan, wiring and air tubing for proper operation (if applicable). • Replace cooling fan if unable to determine if operating correctly. • Replace GIA2. • If problem persists, contact Garmin Aviation Product Support for assistance.

5.13.6 GIA Configuration Alerts

Failure Message	Cause	Solution
MANIFEST – GIA1 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA1.	Load the correct software. See Section 7.3 for the Software Loading procedure.
MANIFEST – GIA2 software mismatch. Communication Halted.	The system has detected an incorrect software version loaded in GIA2.	
GIA1 CONFIG – GIA1 audio config error. Config service req'd.	The GIA's audio configuration files are incorrect or missing.	Reload audio configuration files.
GIA2 CONFIG – GIA2 audio config error. Config service req'd.		
GIA1 CONFIG – GIA1 configuration error. Config service req'd.	The system has detected a GIA configuration mismatch. If GIAs are not properly configured after being swapped/replaced, this message appears.	• Load the configuration files for that GIA. See Section 7.3 3.8for GIA 63 Configuration Loading procedure. • If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** • New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
GIA2 CONFIG – GIA2 configuration error. Config service req'd.		
GIA1 SERVICE – GIA1 needs service. Return unit for repair.	The G1000 has detected a failure in the specified GIA.	• Replace GIA unit. • Return unit to an Authorized Repair Facility for service.
GIA2 SERVICE – GIA2 needs service. Return unit for repair.		

5.14 GEA Troubleshooting

5.14.1 GEA Alerts

<table>
<tr><th>Failure Message</th><th>Cause</th><th>Solution</th></tr>
<tr><td>MANIFEST – GEA1 software mismatch. Communication halted.</td><td rowspan="2">The system has detected an incorrect software version loaded in the specified GEA 71.</td><td rowspan="2">Load the correct software version. See Section 7.4 for GEA 71 Software Load Procedure.</td></tr>
<tr><td>MANIFEST – GEA2 software mismatch. Communication halted.</td></tr>
<tr><td>GEA1 CONFIG – GEA1 configuration error. Config service req’d.</td><td rowspan="2">The system has detected a configuration mismatch in the specified GEA 71.</td><td rowspan="2">Load GEA configuration files. See Section 7.4 for GEA 71 Configuration Procedure.
If problem persists, replace master configuration module, check config module harness for faults and replace if necessary.
NOTE
New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.</td></tr>
<tr><td>GEA1 CONFIG – GEA2 configuration error. Config service req’d.</td></tr>
</table>

5.15 GTX Troubleshooting

5.15.1 GTX Alerts

Failure Message	Cause	Solutions
MANIFEST – GTX1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GTX unit.	Reload software.
MANIFEST – GTX2 software mismatch. Communication halted.		
XPDR1 CONFIG – XPDR1 configuration error. Config service req’d.	The system has detected a configuration mismatch for the specified GTX unit.	• Perform a SET>ACTV configuration reset on the GTX Config page and verify the aircraft registration is present. • If error is still present, reload config files from a loader card. ✓ If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
XPDR2 CONFIG – XPDR2 configuration error. Config service req’d.		
XPDR1 SRVC – XPDR1 needs service. Return unit for repair.	The G1000 has detected a failure in the specified GTX	• Replace GTX unit. • Return unit to an Authorized Repair Facility for service.
XPDR2 SRVC – XPDR2 needs service. Return unit for repair.		
XPDR1 FAIL – XPDR 1 is inoperative.	The specified GTX is not responding.	• Check wiring between GIA’s and GTX. • Replace GTX unit. • Return unit to an Authorized Repair Facility for service.
XPDR2 FAIL – XPDR 2 is inoperative.		
XPDR 1 ADS-B NO POS – Transponder ADS-B is not transmitting - OR - XPDR 1 ADS-B NO TX – Transponder ADS-B out failed	The specified GTX transponder is not able to transmit ADS-B data.	• Wait for GPS receivers to obtain a position lock. • Check wiring between GIA’s and GPS antenna. • Check wiring between GIA’s and GTX.
XPDR 2 ADS-B NO POS – Transponder ADS-B is not transmitting - OR - XPDR 2 ADS-B NO TX – Transponder ADS-B out failed.		

5.16 GDL 69A or GDL69A SXM Troubleshooting

5.16.1 GDL 69A or GDL69A SXM Symptoms

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>No SiriusXM audio is heard</td><td rowspan="2">• Ensure the following items are not preventing the audio panel from distributing SiriusXM audio (reference applicable G1000 Pilot's Guide):
✓ Verify the SiriusXM volume is not muted on the Aux – XM Radio page on the MFD.
✓ Verify the COM squelch is not open.
✓ Verify the ICS squelch is not open.
✓ Verify the marker beacon tones are not being received.
✓ Verify the headphone (if equipped) volume is turned up.
• Go to the Aux – System Status page on the MFD and ensure unit is online.
✓ If a red X is present, verify the unit is receiving power at the rack connector.
• Ensure there are no GDL alerts in the alert window. If there is an Alert for software or configuration error or mismatch, reload the file noted in the Alert.
• Restart the PFD's and MFD in configuration mode and go to the GDL page.
✓ Verify unit is active.
✓ Verify the Signal number is "2" or "3". If it is "0" or "1" check the GDL 69A/69A SXM antenna and cabling for faults.
✓ Reseat the 69A/69A SXM to verify the coax connector is fully seated.
✓ If unit is not active, contact SiriusXM Customer service to have a refresh signal sent to your unit. You will need to provide them the Audio Radio ID (and Data Radio ID number for SiriusXM weather) numbers. Also verify with SiriusXM that the correct Weather package (Aviator Lite or Aviator) is on the account, and that no traffic service has been activated against that Radio ID. The unit must be on for approximately one hour after the request for the refresh has been sent to receive the signal.
    ✓ Alternatively, go to SiriusXM's website and enter the radio ID's to have a refresh signal sent.
✓ If there is still problems receiving weather products after performing the above step, call SiriusXM and have the account deactivated, and a new account activated to clear out any corrupt account information.
✓ Verify there is a good ground connection through the aircraft between the MFD and the GDL69/69A unit. Reference the Aircraft Maintenance Manual for instructions on how to check bonding and ground points.
✓ If problem persists, replace the GDL 69A/69A SXM. Return unit to an Authorized Repair Facility for service.</td></tr>
<tr><td>No SiriusXM weather information is displayed</td></tr>
</table>

5.16.2 GDL 69A Alerts

Failure Message	Cause	Solutions
GDL 69 FAIL – GDL 69 has failed.	The G1000 has detected a failure in the GDL 69A/69A SXM.	• Replace GDL 69A/69A SXM. • Check GDL 69A/69A SXM antenna and cabling. • Check the GDL 69A/69A SXM and MFD interconnect.
GDL69 CONFIG – GDL 69 configuration error. Config service req'd.	The G1000 has detected a GDL 69A/69A SXM configuration mismatch.	• Reload configuration file. See Section 3.8 for the Configuration Procedure. • If problem persists, replace master configuration module, check config module harness for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
MANIFEST – GDL software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GDL 69A/69A SXM.	Load correct software version.

5.17 GSU 75B, GRS 77, or GRS 7800 and GMU 44 Troubleshooting

5.17.1 AHRS Symptoms

Symptom	Recommended Action
AHRS/ADAHRS does not complete initialization	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Ensure GPS has acquired at least four satellites, has a 3D navigation solution, and a DOP of less than 5.0. This is particularly important if this issue appears during ground operation only. • Calibrate the GSU75B, GRS 77, or GRS 7800. • Check GSU75B, GRS 77, or GRS 7800 configuration module wiring for damage. • Check GSU75B, GRS 77, or GRS 7800 connector for bent pins. ✓ If no damage can be found, replace GSU75B, GRS 77, or GRS 7800 configuration module. ✓ If problem persists, replace the GSU75B, GRS 77, or GRS 7800.
Attitude appears unstable	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. (Wi-Fi and Bluetooth may be operational) <u>GRS 77</u> • Ensure the four mounting screws are tight. Finger tight is not sufficient, a screwdriver must be used to verify. <u>GRS 7800</u> • Ensure the hold down clamps are tight. <u>GSU 75B</u> • Ensure the two mounting jack screws are tight. • Ensure mounting rack and airframe shelf are secure and all hardware and brackets are present (CAUTION - do not loosen the mounting rack hardware to the airframe shelf or the aircraft will need to be re-leveled and the PITCH/ROLL OFFSET procedure performed). • Ensure the GSU 75B, GRS 77, or GRS 7800 connector is securely fastened and proper strain relief is provided. • Remove the GSU 75B, GRS 77, or GRS 7800 connector and verify there are no bent pins. • Replace the GSU 75B, GRS 77, or GRS 7800. • Contact Garmin for further troubleshooting if required.

5.17.2 GRS/GSU Alerts

Failure Message	Cause	Solutions
MANIFEST – GRS1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GRS unit.	Load correct software version.
MANIFEST – GRS2 software mismatch. Communication halted.		
AHRS1 SERVICE – AHRS1 magnetic-field model needs update.	The AHRS magnetic field model should be updated for the specified unit. Appears on ground only.	Load updated AHRS magnetic field file. See Section 4.6.
AHRS2 SERVICE – AHRS2 magnetic-field model needs update.		
GEO LIMITS – AHRS1 too far north/south, no magnetic compass.	No magnetic compass information available due to being too far north or south.	Operate the aircraft only within the limits as specified in the G1000 King Air 200 AFMS, listed in Table 1-2
GEO LIMITS – AHRS2 too far north/south, no magnetic compass.		
AHRS1 TAS – AHRS1 not receiving airspeed.	The specified GSU 75B, GRS 77, or GRS 7800 is not receiving airspeed from the air data card, or GDC 7400.	• Check GRS/GDC interconnect for faults. (Internal fault between the ADC and AHRS cards in the GSU 75B) • Replace the GSU 75B or GDC 7400 • If problem persists, replace the GSU 75B, GRS 77, or GRS 7800.
AHRS2 TAS – AHRS2 not receiving airspeed.		
AHRS1 GPS – AHRS1 not receiving backup GPS information.	The GSU 75B, GRS 77, or GRS 7800 #1 is not receiving backup GPS information from either GIA 63.	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD **Aux – GPS Status** page. If one or both GPS receivers cannot acquire a position lock, see GPS troubleshooting section • Troubleshoot GIA1/2 –GRS1 wiring for faults (ref. Failed Path troubleshooting section). • Replace the GRS or GSU #1.
AHRS1 GPS – AHRS1 operating exclusively in no-GPS mode.	The GSU 75B, GRS 77, or GRS 7800 #1 is operating in the absence of GPS.	
AHRS1 GPS – AHRS1 not receiving any GPS information.	The GSU 75B, GRS 77, or GRS 7800 #1 is not receiving GPS data from the GPS receivers.	
AHRS1 GPS – AHRS1 using backup GPS source.	The GSU 75B, GRS 77, or GRS 7800 #1 is using the backup GPS data path.	
AHRS2 GPS – AHRS2 not receiving backup GPS information.	The GSU 75B, GRS 77, or GRS 7800 #2 is not receiving backup GPS information from either GIA 63.	• Ensure that a cell phone or a device using cell phone technology is not turned on (even in a monitoring state) in the cabin. • Check GPS status for GIA 1 and 2 on MFD - **Aux – GPS Status** page. If one or both GPS receivers cannot acquire a position lock, see GPS troubleshooting section • Troubleshoot GIA1/2 – GSU/GRS2 wiring for faults (ref. Failed Path troubleshooting section). • Replace the GRS or GSU #2.
AHRS2 GPS – AHRS2 operating exclusively in no-GPS mode.	The GSU 75B, GRS 77, or GRS 7800 #2 is operating in the absence of GPS.	
AHRS2 GPS – AHRS2 not receiving any GPS information.	The GSU 75B, GRS 77, or GRS 7800 #2 is not receiving GPS data from the GPS receivers.	
AHRS2 GPS – AHRS2 using backup GPS source.	The GSU 75B, GRS 77, or GRS 7800 #2 is using the backup GPS data path.	
AHRS MAG DB – AHRS magnetic model database version mismatch.	The G1000 has detected a magnetic model database version mismatch.	Load AHRS magnetic model field in both GSU/GRS units.

Failure Message	Cause	Solutions
MAG VAR WARN – Large magnetic variance. Verify all course angles.	Magnetic variance value from GMU 44 is not accurate.	• If flying near large radio towers or other sources of possible electromagnetic interference, the condition should correct itself as the aircraft leaves the area. • If problem persists, run magnetic interference check in Section 5.17.4 to check for magnetic interference in the aircraft.
PIT (amber pitch flag)	Pitch Miscompare: Difference in the pitch sensors is greater than 5 degrees.	Perform Calibration Procedure A1: GSU 75B, GRS 77, or GRS 7800 Pitch/Roll Offset Calibration (reference Section 7.10.1).
ROL (amber roll flag)	Roll Miscompare: Difference in the roll sensors is greater than 6 degrees.	Perform Calibration Procedure A1: GSU 75B, GRS 77, or GRS 7800 Pitch/Roll Offset Calibration (reference Section 7.10.1).

5.17.3 GMU Alerts

Failure Message	Cause	Solutions
MANIFEST – GMU1 software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the specified GMU 44.	Load the correct software version.
MANIFEST – GMU2 software mismatch. Communication halted.		
HDG FAULT – AHRS1 magnetometer fault has occurred	A fault has occurred in the specified magnetometer; heading will be flagged invalid.	• Check GMU 44/GSU 75B, GRS 77, or GRS 7800 interconnect for faults. ✓ Replace GMU 44. ✓ If problem persists, replace GSU 75B, GRS 77 or GRS 7800.
HDG FAULT – AHRS2 magnetometer fault has occurred.		
HDG (amber heading flag)	Heading Miscompare: Difference in the heading sensors is greater than 6 degrees.	Perform Calibration Procedure E: Magnetometer Interference Test (reference Section 5.17.4) and Procedure B: GSU 75B, GRS 77, or GRS 7800 and GMU 44 Magnetometer Calibration (reference Section 7.10.3).

5.17.4 Calibration Procedure E: Magnetometer Interference Test

A magnetometer interference test is available for troubleshooting and/or verifying a magnetically 'clean' installation of the GMU 44. This test exercises various devices on the aircraft that could potentially affect the magnetic field as measured by the GMU 44.

NOTE

This test is used to validate that no electronic device or magnetized components produce a magnetic field sufficient to interfere with the operation of the GMU 44 magnetometer. It is highly recommended that this test be performed after installation or maintenance of electrical components on the aircraft and/or for troubleshooting the GMU 44.

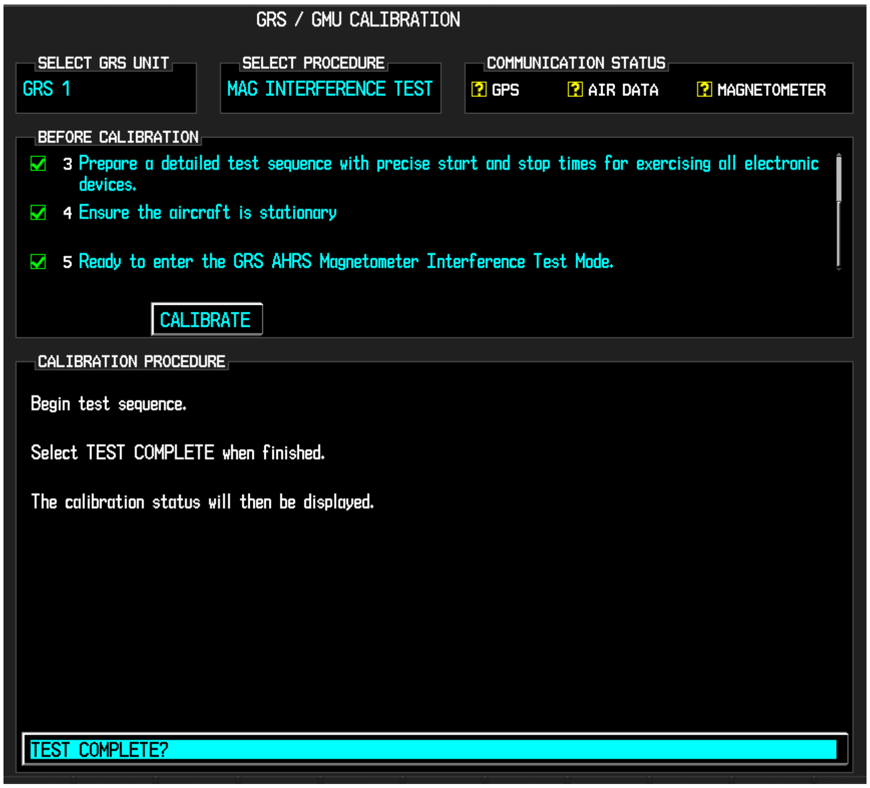


Figure 5-7, Magnetometer Interference Test

1. Initiate the AHRS magnetometer interference test procedure by performing the following steps:
2. On PFD1, enter Configuration Mode and go to GRS/GMU Calibration page as shown in Figure 5-7.
3. This page is protected and requires a keystroke password to perform this test. Press the following softkeys in sequence: (as counted from left to right on lower bezel of MFD)
   - softkey 9
   - softkey 10
   - softkey 11
   - softkey 12
4. Select MAG INTERFERENCE TEST and press the PFD1 ENT key.
5. Follow the checklist items displayed on the PFD1, and press the ENT key as each one is completed or confirmed.

NOTE

The 3rd item on the checklist instructs the operator to "prepare a detailed test sequence with precise start and stop times for exercising all electronic devices". The list of relevant electronic devices are given in Table 5-5. Begin test with flaps retracted, flight controls in a neutral position, all lights selected OFF.

Elapsed Time since Start of Test (min:secs)	Action
0:00	Test begins
0:05	Tail Flood lights on
0:10	Tail Flood lights off
0:20	Navigation lights on
0:30	Navigation lights off
0:40	Landing lights on
0:50	Landing lights off
1:00	Taxi lights on
1:20	Taxi lights off
1:40	Strobes on
1:50	Strobes off
2:00	Recognition lights on
2:10	Recognition lights off
2:20	Beacon on
2:30	Beacon off
2:40	Rudder full left
2:50	Rudder full right
3:00	Rudder Trim full left
3:10	Rudder Trim full right
3:20	Elevator full nose UP
3:30	Elevator full nose DN
3:40	Elevator trim full nose UP (manual electric)
3:50	Elevator trim full nose DN (manual electric)
4:00	End of test

Table 5-5, Magnetometer Interference Test Sequence

6. When the CALIBRATE field is blinking, press the ENT key to begin the procedure, and have a stopwatch ready to begin recording the elapsed time.

NOTE

It is important that the "time equals zero" moment corresponds with the moment the PFD first displays the blinking TEST COMPLETE? Message.

7. The operator should carry out the actions called for in the prepared test sequence.

NOTE

It is important that all actions are carried out in the order and at the precise elapsed time as specified in the prepared test sequence.

8. When the operator has completed the actions specified in the test sequence, press the ENTER button to indicate that the process is complete. When this is done, the TEST COMPLETE field stops blinking.
9. PFD1 informs the operator if the installation has passed or failed the magnetometer interference test. If the test passes, no further action is required for this test.

   If the test fails, the installation should be considered unreliable until the source of magnetic interference is identified and remedied. When the magnetometer interference test fails, record the three magnetometer maximum deviation values and their corresponding timestamps. Reference the appropriate installation manual for the GSU 75B (190-01639-00), GRS 77 (190-00303-10), and GRS 7800 (190-01091-00) for acceptable magnetic interference limits. Compare the corresponding timestamps with the prepared test sequence to identify which action produced the problem. Contact Garmin for assistance in resolving the problem.

NOTE

Three common reasons for a failed magnetometer interference test are: 1) rudder bellcrank or other structure has become magnetized, 2) new equipment is installed in close proximity to the GMU 44 magnetometer, and 3) an existing or new electronic device has become grounded through the aircraft structure instead of via the proper ground wire in a twisted shielded pair.

10. Press the ENT key on the PFD to conclude this procedure.

5.18 GSU 75B/GDC 7400 Troubleshooting

5.18.1 Air Data Symptoms

Symptom	Recommended Action
Altitude shown on PFD is different than standby altimeter	• Perform a pitot/static leak and accuracy check. • Determine which instrument is outside limits and replace. Note: The GSU 75B and GDC 7400 software/configuration for the 300 Series contains error correction at 19,000 feet and above. The standby altimeter does not contain any correction.

5.18.2 GSU75/GDC 7400 Alerts

Failure Message	Cause	Solutions
MANIFEST – GDC1 software mismatch Communication halted.	The system has detected an incorrect software version loaded in the specified GDC/GSU.	Load correct software version.
MANIFEST – GDC2 software mismatch Communication halted.		

5.19 GWX 68 or GWX 70 Troubleshooting

5.19.1 GWX 68 or GWX 70 Alerts and Problems

WARNING:

Before energizing the equipment, be sure microwave radiation safety precautions including both fuel and personnel safety considerations have been observed. These include clearing all personnel to an area beyond the maximum permissible exposure level (MPEL) boundary. The MPEL for the GWX 68 is 11 feet and GWX 70 is 10 feet.

Failure Message	Cause	Solutions
GWX CONFIG – GWX configuration error. Configuration service required.	The G1000 has detected a GWX 68 or GWX 70 configuration mismatch.	• Load GWX configuration files, • Replace GWX. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
GWX FAIL – GWX is inoperative.	The G1000 has detected a failure in the GWX 68 or GWX 70.	• Check Ethernet connection between the GWX and GDL69A for faults. • Replace the GWX 68 or GWX 70
GWX SERVICE – Needs service. Return unit for repair.	The G1000 has detected a failure in GWX 68 or GWX 70.	• Replace the GWX 68 or GWX 70. • Return unit to an Authorized Repair Facility for service.
MANIFEST – GWX software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GWX 68 or GWX 70.	Load correct software version.

5.20 GMC 710 Troubleshooting

5.20.1 GMC 710 Alerts and Problems

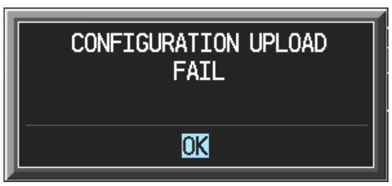
Failure Message	Cause	Solutions
GMC CNFG – GMC Config error. Config service req'd.	The G1000 has detected a GMC 710 configuration mismatch.	• Load GMC configuration files. • Replace GMC. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
GMC FAIL – GMC is inoperative.	The G1000 has detected a failure in the GMC 710.	• Check wiring for faults (ref Failed Path troubleshooting Sections 5.1.1 and 5.9). • Replace the GMC 710. • Return unit to an Authorized Repair Facility for service.
MANIFEST – GMC software mismatch. Communication halted.	The system has detected an incorrect software version loaded in the GMC 710.	Load the correct software version.

5.21 GCU 477 Troubleshooting

5.21.1 GCU 477 Alerts and Problems

Failure Message	Cause	Solutions
GCU CNFG – GCU Config error. Config service req'd.	The G1000 has detected a GCU 477 configuration mismatch.	• Load GCU configuration files. • Replace GCU. • If problem persists, replace master configuration module, check config module wiring for faults and replace if necessary. **NOTE** New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old Terrain and other databases will no longer work as they will remain locked to the old System ID number.
GCU FAIL – GCU is inoperative.	The G1000 has detected a failure in the GCU 477.	• Check wiring for faults (ref Failed Path troubleshooting section). • Replace the GCU 477. • Return unit to an Authorized Repair Facility for service
MANIFEST – GCU software mismatch. Communication halted.	The system has detected an incorrect software version loaded in GCU 477.	Load the correct software version.

5.22 Software/Configuration Troubleshooting

Problem	Solutions
MFD or PFD displays do not power up:	• Ensure that the criteria listed in Section 5.22.1 are fulfilled for the applicable situation. • Ensure power is present at display backshell connector. • Troubleshoot per the "Blank Display" GDU section.
Software file load fails: 	• Ensure that criteria listed in Section 5.22.1 are fulfilled for the applicable situation. • Ensure that LRU is reporting data on **Aux – System Status** page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry software file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with software version and Card Loader. Refer to Section 3.2.3. • Replace LRU.
Configuration file load fails: 	• Ensure that the criteria listed in Section 5.22.1 are fulfilled for the applicable situation. • Ensure that LRU is reporting data on the **Aux – System Status** page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry configuration file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with Card Loader. Refer to Section 3.2.3. • Replace LRU.
GIA1 and/or GIA2 to 'LRU' data path not working	• Ensure that the criteria listed in Section 5.22.1 are fulfilled for the applicable situation. • Ensure GIA1 and GIA2 are configured correctly. • Check wiring, connectors & pins as needed.
Software File Mismatch Alert appears in lower right corner of PFD when started in normal mode: 	• Ensure that proper software file part number and version were loaded to LRU. Refer to Section 5.22.1. • Check and ensure that correct Card Loader was used during load process. Refer to the General Arrangement Drawing. • Reload software to LRU.
After being in configuration mode, the PFD displays a red AFCS annunciation and cycling of the transponder field between valid and invalid states.	With the G1000 system powered on, open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers for approximately 30 seconds, then close the circuit breakers.

5.22.1 System Communication Hierarchy

The following criteria must be satisfied to be able to perform the desired operation:

Desired Operation	Criteria for Success
Load Software to MFD or PFD Displays	• SW Loader Card must be inserted in top slot for each display to be loaded. • CLR & ENT keys must be held during power up of display. • Power on only one display at a time during software loading.
Load AIRFRAME, SYSTEM, MFD1, PFD 1, PFD 2 and MANIFEST configuration files to MFD and PFDs	• SW Loader Card must be inserted in top slot of PFD 1. • PFD 1 and MFD must be powered on. • PFD 1 and MFD must have correct software.
Load Software/Configuration files to GIA 63Ws	• SW Loader Card must be inserted in top slot of PFD 1. • G1000 system must be powered on. • PFD and MFD must have correct software. • PFD 1 and MFD must be successfully configured with AIRFRAME, SYSTEM, MANIFEST, MFD1, PFD 1 and PFD 2 configuration files.
Load Software/Configuration files to: - GMA 1347D - GSU 75B - GDC 7400 - GEA 71 - GRS 77 or GRS 7800 (software only) - GMU 44 (software only) - GTX 33, or GTX 3000 - GTX 335R and/or GTX 345R	• SW Loader Card must be inserted into PFD 1 top slot. • G1000 must be powered on. • PFD 1 and MFD must have correct software and configuration settings. • GIA 63Ws must have correct software. • GIA 63Ws must be successfully configured with GIA1 and GIA2 configuration files. • Data path from GIA1 to each LRU must be operational.

5.23 Backshell/Backplate Connectors

The following figures depict the backplate connectors as viewed with the LRU removed.

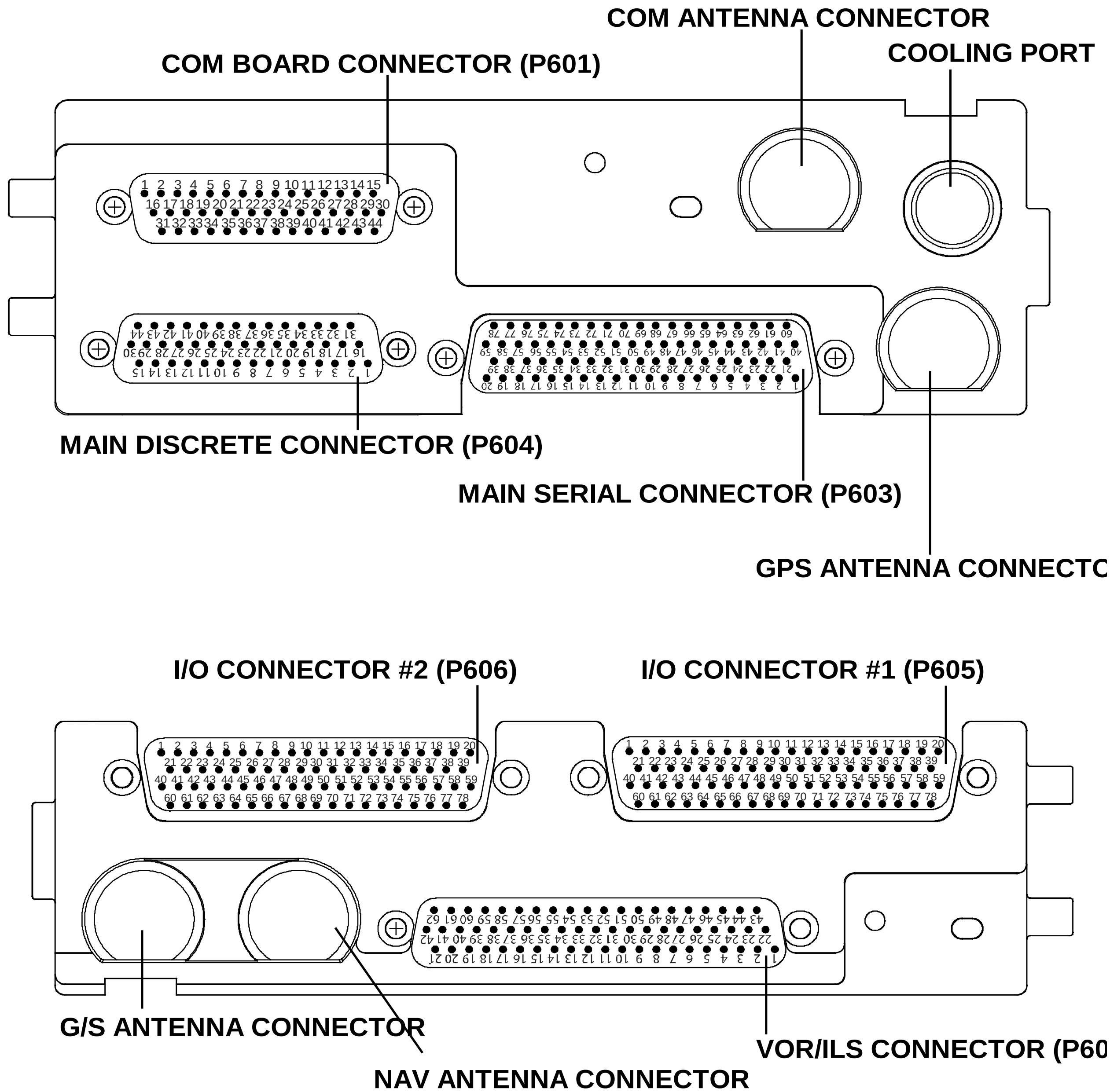


Figure 5-8, GIA 63W Backplate Connectors

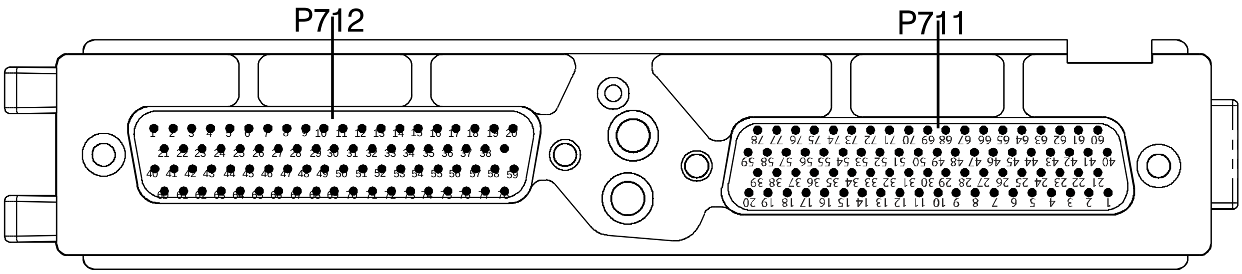


Figure 5-9, GEA 71 Backplate Connectors

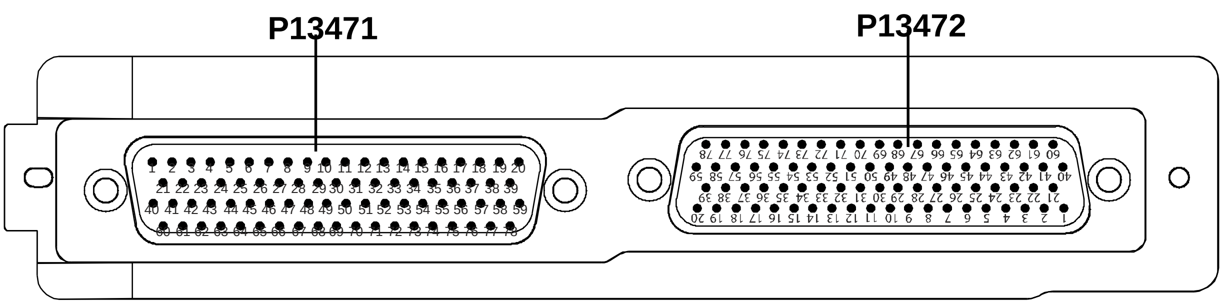


Figure 5-10, GMA 1347D Backplate Connectors

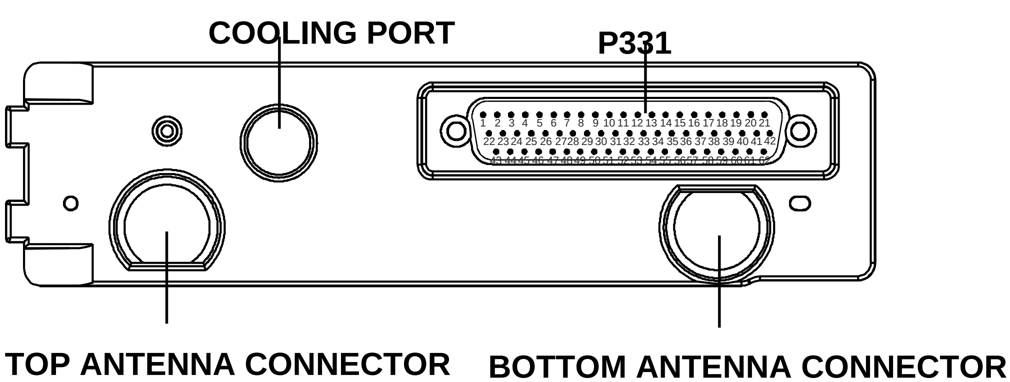
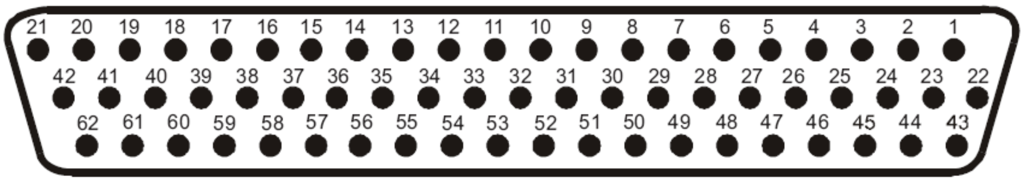


Figure 5-11, GTX 33/33D Backplate Connectors



(P3301)

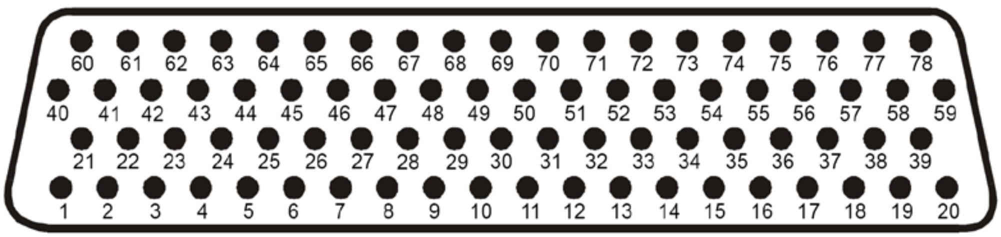


Figure 5-12, GTX 3000 Connectors (P3301 and P3302)

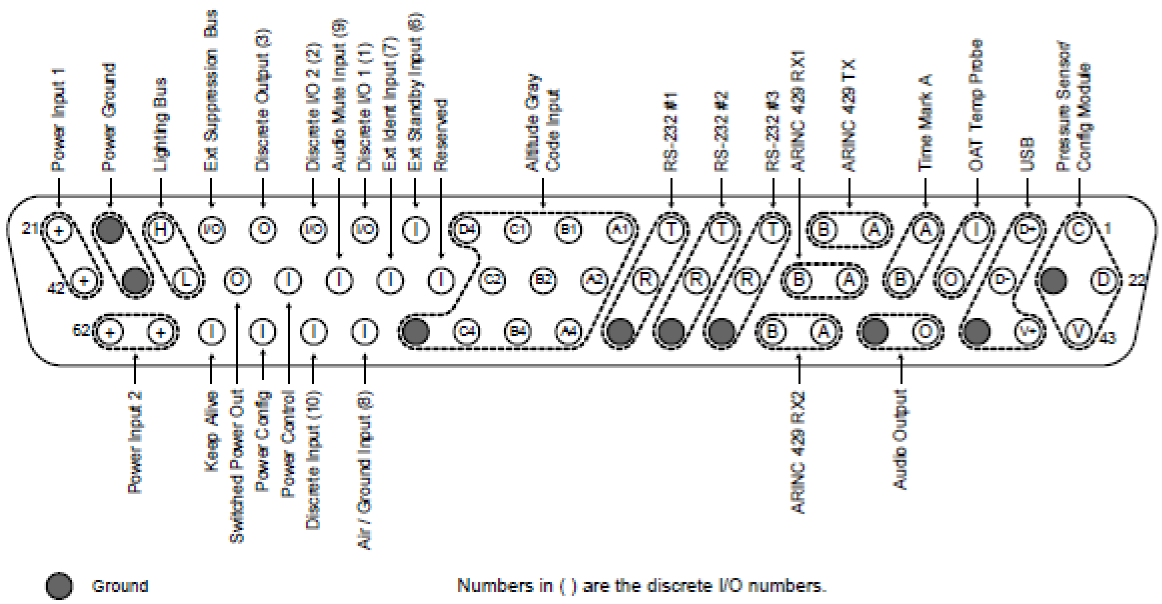


Figure 5-13, GTX 335R/345R Looking at Front of Connector (P3251)

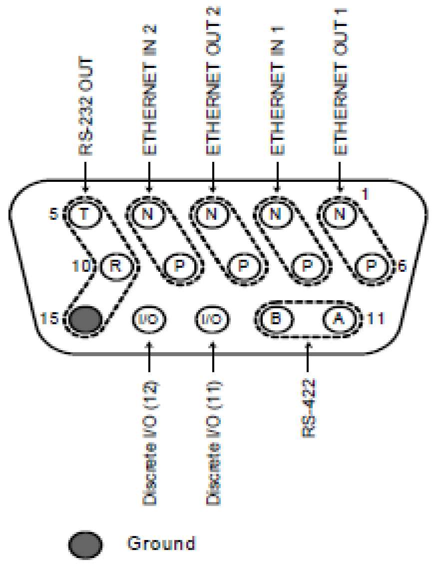


Figure 5-14, GTX 345R (Only) Looking at Front of Connector (P3252)

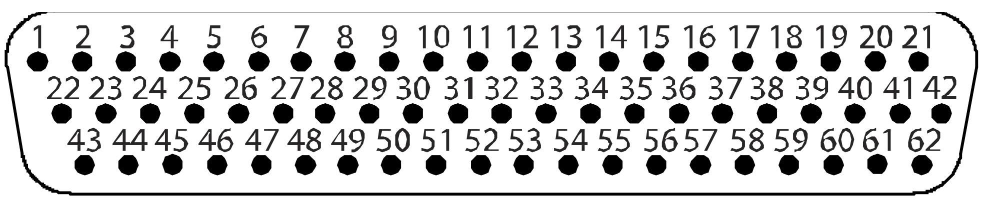


Figure 5-15, GDU 1050A/1550 Backshell Connector (P10401 or P15001)

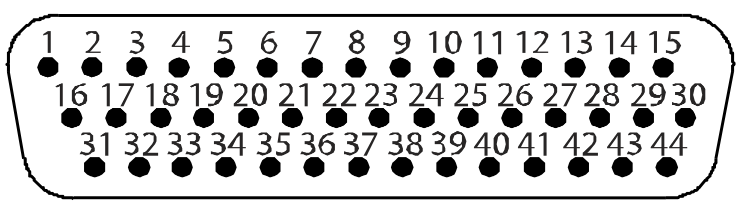


Figure 5-16, GRS 77 Backshell Connector (P771)

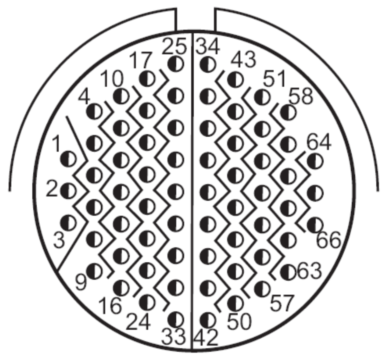


Figure 5-17, GRS 7800 Backshell Connector (P78001)

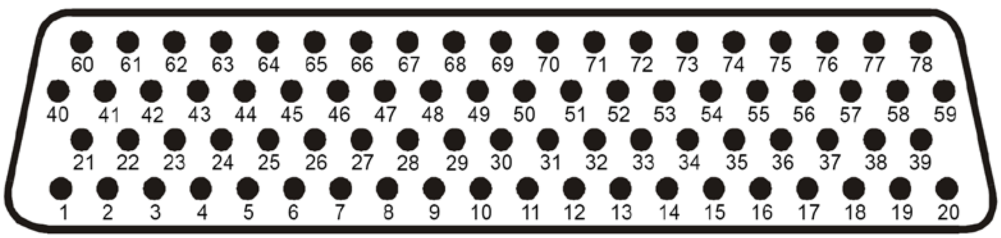


Figure 5-18, GSU 75B Connector View from Front (P751)

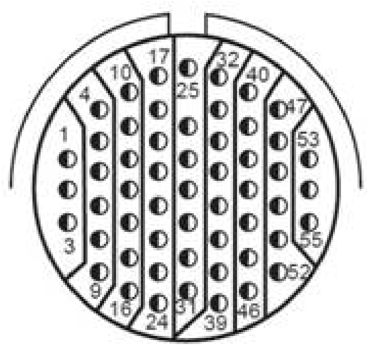


Figure 5-19, GDC 7400 Mating Connector (P74001)

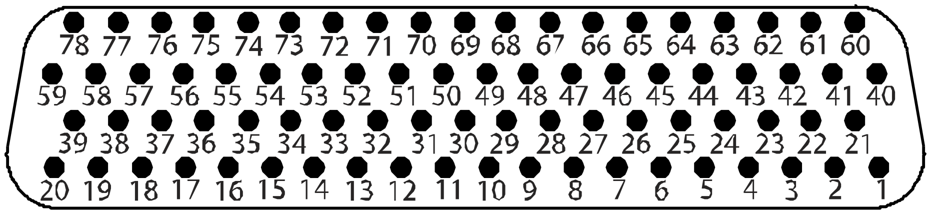


Figure 5-20, GDL 69A/GDL 69A SXM Backplate Connector (P69A1)

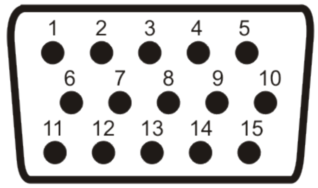


Figure 5-21, GCU 477 Backshell Connector (P4751)

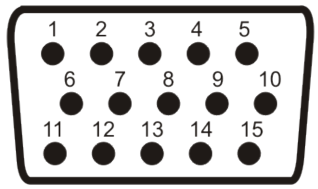


Figure 5-22, GMC 710 Backshell Connector (P7101)

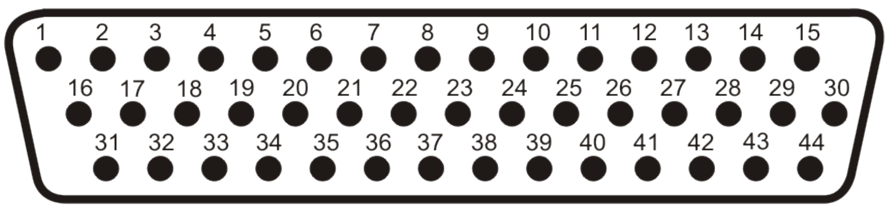


Figure 5-23, GWX 68 Backshell Connector (P681)

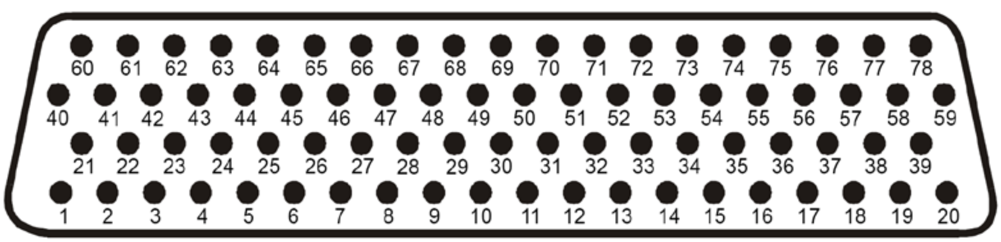


Figure 5-24, GWX 70 Backshell Connector (P751)

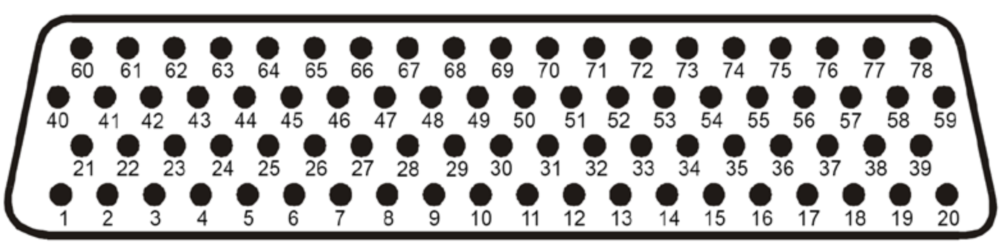


Figure 5-25, GTS 820/850 Mating Connectors (P8001 and P8002)
(Rear View)

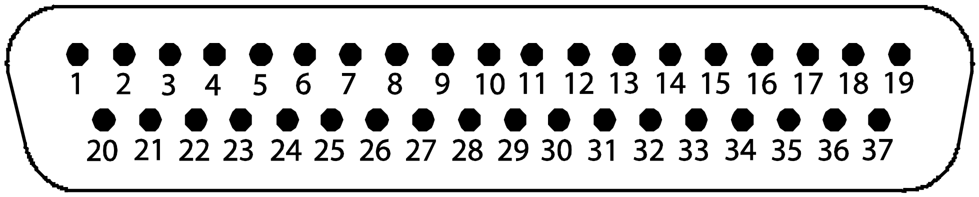


Figure 5-26, GTS 820/850 Mating Connector (P8003) (Rear View)

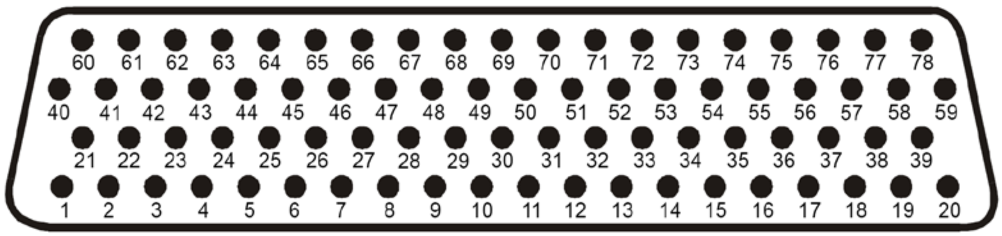


Figure 5-27, GTS Processor Connector (P8001)

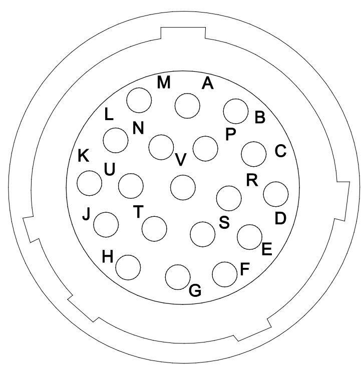


Figure 5-28, GPA 65 Mating Connector (P651) (Rear View)

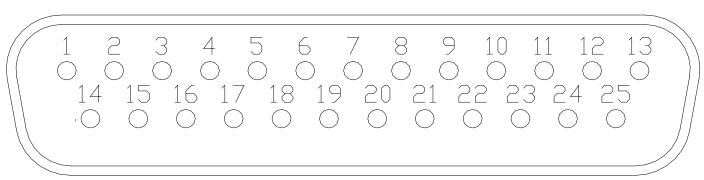


Figure 5-29, Signal Conditioner (1PVIB1 and 2PVIB1)
(Rear View)

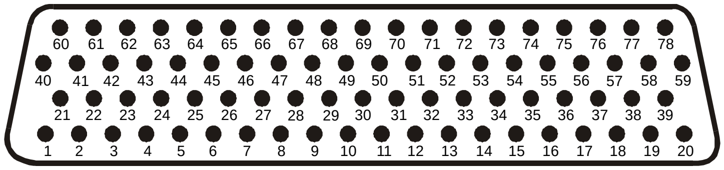


Figure 5-30, GDL 59 Mating Connector (1P591)
(Rear View)

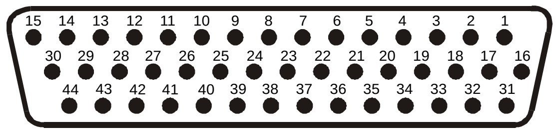


Figure 5-31, GSR 56 Mating Connector (1P561)
(Rear View)

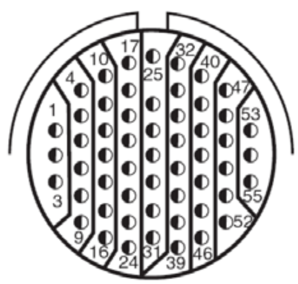


Figure 5-32, GRA 5500 Connector (P55001)

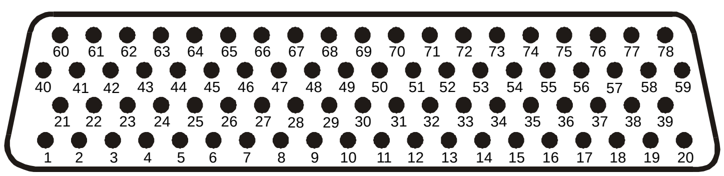


Figure 5-33, GSD 41 Backplate Connector (P411)
(Rear View)

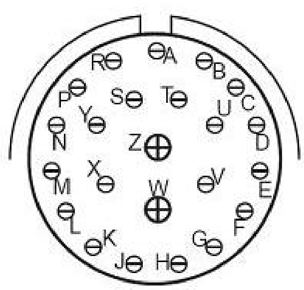


Figure 5-34, GSA 9000 Mating Connector (P90001)
(Rear View)

5.24 Mechanical Standby Attitude Indicator Troubleshooting

Symptom	Recommended Action

Warning flag pops into view, indicating that the gyro motor is not receiving sufficient power to operate	• Perform the Standby Instrument Electrical Power Checks in Section 9.9.
	• Remove the unit per Section 6.28.3 and inspect the electrical connector.
	• Check to ensure appropriate electrical power is being supplied to the instrument.
	  ◦ If input electrical power is not adequate, troubleshoot the wiring harness.
	  ◦ If input power is appropriate, the unit must be removed and serviced by a qualified service facility. Contact the manufacturer to find a qualified service facility

Unit fails to perform to specifications	The unit must be removed and serviced by a qualified service facility. See Section 6.28.3 for removal instructions. Contact the manufacturer to find a qualified service facility.

5.25 Mechanical Standby Airspeed Indicator Troubleshooting

Symptom	Recommended Action

Airspeed Indicator lighting is inoperative or malfunctioning	• Perform the Standby Instrument Electrical Power Checks in Section 9.9.
	• Remove standby airspeed indicator per Section 6.28.1 and inspect the electrical connector.
	• Check that electrical power is being appropriately supplied to the instrument.
	  ◦ If the input electrical power is not adequate, troubleshoot the wiring harness.
	  ◦ If the input electrical power is appropriate, replace the standby airspeed indicator or contact the manufacturer for further troubleshooting.

Airspeed displayed is incorrect	• Using a pitot-static ramp tester, check airspeed displayed on standby altimeter against airspeed display from ADC2.
	  ◦ If the airspeeds are the same, inspect the pitot/static ports and associated equipment for faults.
	  ◦ If the airspeeds are different, replace the standby altimeter or contact the manufacturer for further troubleshooting. See Section 6.28.1 for removal instructions.

5.26 Mechanical Standby Altimeter Troubleshooting

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>Altimeter lighting is inoperative or malfunctioning</td><td rowspan="2">Perform the Standby Instrument Electrical Power Checks in Section 9.9.
Remove standby altimeter per Section 6.28.2 and inspect the electrical connector.
Check that electrical power is being appropriately supplied to the instrument.
If the input electrical power is not adequate, troubleshoot the wiring harness.
If the input electrical power is appropriate, replace the standby altimeter or contact the manufacturer for further troubleshooting.</td></tr>
<tr><td>Altimeter Vibrator is inoperative or malfunctioning or fail flag is displayed</td></tr>
<tr><td>Altitude displayed is incorrect</td><td>Using a pitot-static ramp tester, check altitude displayed on standby altimeter (Note that PFD2 has error correction above 19,000 ft. and will not be the same as the non-corrected standby altimeter.)
Inspect the pitot/static ports and associated equipment for faults.
Replace the standby altimeter or contact the manufacturer for further troubleshooting. See Section 6.28.2 for removal instructions.</td></tr>
</table>

5.27 MD 302 Standby Indicator Troubleshooting

<table>
<tr><th>Symptom</th><th>Recommended Action</th></tr>
<tr><td>Standby indicator is inoperative</td><td>Perform the Standby Instrument Electrical Power Checks in Section 9.9.
Remove standby indicator per Section 6.27.1 and inspect the electrical connector.
Check that electrical power is being appropriately supplied to the instrument.
If the input electrical power is not adequate, troubleshoot the wiring harness.
If the input electrical power is appropriate, replace the standby altimeter or contact the manufacturer for further troubleshooting.</td></tr>
<tr><td>Displayed altitude or airspeed appears incorrect</td><td>Using a pitot-static ramp tester, check altitude displayed on standby altimeter for accuracy.
Perform airspeed and altitude calibration per Section 3.19.2
Inspect the pitot/static ports and associated equipment for faults.
Replace the standby altimeter or contact the manufacturer for further troubleshooting. See Section 6.27.1 for removal instructions.</td></tr>
<tr><td>Red X's on display.</td><td rowspan="2">Troubleshoot per Mid-Continent Instruments and Avionics MD 302 Installation Manual number 9017782 available at www.flysam.com/specifications/ or call US 316-630-0101.</td></tr>
<tr><td>Warning or Error Messages</td></tr>
</table>

5.28 GDL 59 Troubleshooting

Symptom	Recommended Action
No communication with GDL 59	• Check power wiring and pin out of GDL 59 unit. • Ensure GDL 59 configuration option has been loaded.
No or low-quality Wi-Fi signal	• Verify that a Wi-Fi network is configured and available. • Ensure the Wi-Fi antenna is within range of a Wi-Fi network. • Remove any obstacles between the aircraft Wi-Fi antenna and the Wi-Fi network hub that may be blocking the signal. • Check the Wi-Fi antenna cable and connectors. • Verify antenna ground plane is adequate.
Connects to Wi-Fi but cannot send report data	Activate Garmin Connext (reference Section 8.15). Note that a replacement GDL 59 unit must be registered again, even if the MFD already shows **REGISTERED**.

5.29 GSR 56 Troubleshooting

Symptom	Recommended Action
No communication with GSR 56	• Check power wiring and pin out of GSR 56 unit. • Ensure GSR 56 configuration option has been loaded.
No or low-quality Iridium signal	• Ensure the Iridium antenna has an unobstructed view of satellite constellation. • Check the Iridium antenna cable and connectors. • Verify antenna ground plane is adequate.
No audio output	• Check wiring from GSR 56 to GDL 59 or from GSR 56 to GIA #1 (stand-alone), as applicable to the installation. • Verify subscription with Garmin Connext (reference Section 8.15).
Unable to make a phone call	• Verify signal quality is adequate • Verify communication between GSR 56 and the display/control device • Verify subscription with Garmin Connext (reference Section 8.15).

5.30 GTS 820/850 Troubleshooting

Problem	Cause	Solution
Unit does not power up – Data failed message	Improper wiring; circuit breaker open	Ensure power is properly wired to the GTS 820/850 and the TRFC circuit breaker is closed.
	Improper configuration	Verify that the GTS 820/850 is configured correctly for the desired display.
Traffic Display erroneously indicates TA at own ship position	Suppression bus I/O fault	Check the mutual suppression line to ensure it is connected to the correct pins at the GTS 820/850 as well as the installed transponder. Ensure there are no fractures in the wire, and that the suppression line is functioning properly.

Problem	Cause	Solution
No Audio alerts	Improper wiring; Volume not set correctly	Ensure the audio is properly wired from the GTS 820/850 (if using analog audio output) and volume is not set too low.
Calibration Fault	Factory calibration invalid	If the unit fails to go into operate mode then return unit to an authorized Repair Facility for service.
Configuration Fault	Both internal and external configuration checks failed	Verify the configuration. Verify wiring to the configuration module and replace if necessary.
FPGA Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
ROM Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
Execution Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
Electrical Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
Whisper Shout Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
Transmit Power Fault	Internal voltages are out of tolerance	Check power connections to the GPA 65 to verify that they are not connected to ground or each other. Ensure that power and ground connections to the GPA 65 are connected in their proper place. Verify input voltage and if it continues return unit to an authorized Repair Facility for service.
1030 MHz Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
1090 MHz Fault	Internal Fault	Return unit to an authorized Repair Facility for service.
PA/LNA Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return unit to an authorized Repair Facility for service.
Receiver Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return unit to an authorized Repair Facility for service.
Transmitter Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return unit to an authorized Repair Facility for service.

Problem	Cause	Solution
Baro Altitude Fault	Baro Altimeter is not powered on or improper wiring.	Verify that the baro altimeter has power and is properly wired.
	Improper configuration settings	Verify the configuration correct.
Temperature Fault	Fan is not operating, Poor ventilation at the mounting location	Verify the fan is running and the unit is getting adequate ventilation.
TCAS Equipage Fault	Broken wire, improper configuration	Verify configuration settings on the transponder and the GTS. Ensure proper wiring between the transponder and the GTS.
Radio Altitude Fault	Radar Altimeter is not powered on or improper wiring.	Verify that the radar altimeter has power and is properly wired.
	Improper configuration settings	Verify the configuration is correct.
Red 'X' on a data port on the configuration page	Improper wiring; wrong port or speed selected	Ensure the port is properly wired to the GTS 820/850 and the correct settings are selected on the configuration page.

5.31 GTS Traffic Processor Troubleshooting

Symptom	Recommended Action
Unit does not power up – Data failed message	• Ensure power is properly wired to the GTS Traffic Processor and the TRFC circuit breaker is closed • Verify that the GTS Traffic Processor is configured correctly for the desired display
Traffic Display erroneously indicates TA at own ship position	Check the mutual suppression line to ensure it is connected to the correct pins at the GTS Processor as well as the installed transponder. Ensure there are no fractures in the wire, and that the suppression line is functioning properly.
Calibration Data Fault	Return unit to an authorized Repair Facility for service
Configuration Data Fault	• Attempt configuration per the configuration • Download the assert log and send to Garmin for diagnosis
FPGA Fault	If upload of FPGA image was recently attempted, retry the upload. Otherwise return unit to an authorized Repair Facility for service.
ROM Fault	If upload of audio image or IGRF magnetic field image was recently attempted, retry the upload. Otherwise return unit to an authorized Repair Facility for service.
Execution Fault	• Cycle power and retry self-test. • Download the assert log and send to Garmin for diagnosis. • Return unit to an authorized Repair Facility for service if fault persists.
Electrical Fault	• Check aircraft power supply • Download the assert log and send to Garmin for diagnosis. • Return unit to an authorized Repair Facility for service if fault persists.
Whisper Shout Fault	• Check cable loss configuration, antenna installation and all cable connections and retry self-test. • Return unit to an authorized Repair Facility for service if fault persists.

Symptom	Recommended Action
Transmit Power Fault	• Check aircraft power supply • Return unit to an authorized Repair Facility for service if fault persists
1030 MHz Fault	• Cycle power and retry self-test • Return unit to an authorized Repair Facility for service if fault persists
1090 MHz Fault	• Cycle power and retry self-test • Return unit to an authorized Repair Facility for service if fault persists
Receiver Cal Fault	• Check antenna installation and all cable connections and retry self-test. Ensure that self-test occurs in area free of buildings and large objects that can reflect signals. • Download the assert log and use Assert Log Diagnosis Tool or send to Garmin for diagnosis. • Return unit to an authorized Repair Facility for service if fault persists
Transmitter Cal Fault	• Check antenna installation and all cable connections and retry self-test. Ensure that self-test occurs in area free of buildings and large objects that can reflect signals. • Download the assert log and use Assert Log Diagnosis Tool or send to Garmin for diagnosis. • Return unit to an authorized Repair Facility for service if fault persists
Baro Altitude Fault	Check wiring to source of barometric altitude and ensure that source is operating.
Temperature Fault	Download the assert log and send to Garmin for diagnosis
TCAS Equipage Fault	Check wiring to TCAS Equipage data source and ensure that source is operating
Radio Altitude Fault	Check wiring to source of radio altitude and ensure that source is operating
Display Fault	• Check the HSDB connection between the GTS Processor and the display • Verify that the display is operational. • For non-HSDB installations, ensure that the Traffic Display Status Valid inputs (TAS/TCAS I) and RA Display Status Valid inputs (TCAS II) are wired properly to the Display Status Valid output of the display device.

6. Equipment Removal & Installation

This section describes how to remove and replace equipment in the King Air 300 Series associated with this STC. After removal and replacement, LRUs must be configured and tested as described in Section 7.

CAUTION:

When removing and/or replacing any G1000 component, always ensure that aircraft power is off. Unplug any auxiliary power supplies. Before performing maintenance, it is required that the technician verify the LRU software part number and version number matches the software configuration listed in the General Arrangement drawing, listed in Table 1-1.

NOTE

After installation or maintenance of electrical components near the GMU 44 magnetometers (either tail or horizontal stabilizer locations), perform the Calibration Procedure E: Magnetometer Interference Test (reference Section 5) and Procedure B: GRS 77, GRS 7800, or GSU 75B and GMU 44 magnetic calibration (reference Section 7).

To check an LRU software part number and/or version, follow the procedure defined in Section 3.2.3.

If a faulty LRU is not reporting its software version and part number, check aircraft maintenance logs for last software version loaded and verify against the General Arrangement drawing. The Software Manifest page may also be used to check part numbers and versions.

The General Arrangement drawing allows alternate part number units to be installed with certain hardware/software combination restrictions. Refer to the applicable “Garmin Equipment/Software List” contained in the General Arrangement drawing for details.

6.1 GDU 1050A/1550

Removal:

1. Using a 3/32” hex tool, rotate all four (GDU 1050A) or six (GDU 1550) ¼-turn fasteners counter-clockwise until they reach their stops.
2. Carefully remove the display from the panel.
3. While supporting the display, disconnect the connector.

Reinstallation:

1. Visually inspect the connector and pins for signs of damage. Repair any damage.
2. While supporting the display, connect the connector to the rear of the unit. Verify the connector is fully locked by rocking the connector up and down to verify the connector stays attached to the unit.
3. Carefully insert the display into the panel cutout, ensuring that all 4 ¼-turn fasteners align with the corresponding holes.
4. Seat the display in the panel cutout. Do not use excessive force while inserting the display.
5. Once seated, rotate all four (GDU 1050A) or six (GDU 1550) ¼-turn fasteners clockwise to lock the display to the panel.
6. Configure and test the MFD and/or PFD according to Section 7.1.

6.2 GMA 1347D Audio Panel

Removal:

1. Using a 3/32” hex tool, turn the hex nut counter-clockwise until the GMA 1347D is unlocked from its location.
2. Carefully remove the GMA 1347D from its rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Using a 3/32” hex tool, turn the hex nut counter-clockwise until the lock tab stops.
3. Gently insert the GMA 1347D into the rack until the locking tab engages the rack.
4. Tighten the hex nut until resistance is felt and the unit stops sliding into the rack. Do not over-tighten the nut.
5. Configure and test the GMA 1347D according to Section 7.2.

6.3 GIA 63W Integrated Avionics Units

Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Unlock the GIA 63W handle by loosening the Phillips screw on the handle.
3. Pull the handle upward to unlock the GIA 63W. Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Lift the handle and gently insert the GIA 63W into its rack. The handle should engage the dogleg track.
3. Press down on the GIA 63W handle to lock the unit into the rack.
4. Lock the handle to the GIA 63W body using the Philips screw. Torque the handle screw to 10-14 in-lbs.
5. Configure and test the GIA 63W(s) according to Section 7.3.

6.4 GEA 71 Engine/Airframe Unit

Removal:

1. Gain access by removing the appropriate GDU 1050A display unit (see Section 6.1.). GEA 1 is located behind PFD1 and GEA 2 is located behind PFD2.
2. Unlock the GEA 71 handle by unscrewing the Phillips screw.
3. Firmly grasp the GEA 71 handle and pull it up vertically. This unlocks the unit from the rack.
4. Gently remove the GEA 71 from its rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Lift the handle and gently insert the GEA 71 into the rack. The handle should engage the dogleg track.
3. Press down on the handle to lock the unit into place.
4. Lock the handle to the GEA 71 body using the Philips screw. Torque the handle screw to 10-14 in-lbs.
5. Reinstall the GDU 1050A display unit.
6. Configure and test the GEA 71 according to Section 7.4.

6.5 GTX 33( ) or GTX 3000 Transponder

GTX 33 () Removal:

1) Gain access to the unit based on location -
   a) If the unit is installed under the cabin floor, remove the cabin center floor panel at the main entry door. Remove the remote equipment shelf or detach the two rack mount angles from the shelf. Retain all mounting hardware.
   b) If the unit is installed in the tail, open the tailcone access door on the bottom of the tailcone.
2) Unlock the GTX 33( ) handle by loosening the Phillips screw on the handle.
3) Pull the handle upward to unlock the GTX 33( ). Gently remove the unit from the rack.

GTX 33 () Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Lift the handle and gently insert the GTX 33( ) into its rack. The handle should engage the dogleg track.
3. Press down on the GTX 33( ) handle to lock the unit into the rack.
4. Lock the handle to the GTX 33( ) body using the Philips screw. Torque the handle screw to 10-14 in-lbs.
5. If the unit is installed under the cabin floor, reinstall the remote equipment shelf or two rack mount angles using the retained hardware and the cabin center floor panel.
6. If the unit is installed in the tail, close the tailcone access door.
7. Configure and test the GTX 33( ) according to Section 7.5.

GTX 3000 Removal:

1. Gain access to the avionics shelf in the tail area.
2. Pull back on the lockdown mechanism and simultaneously turn counterclockwise until free.
3. Disengage the lockdown mechanism collar from the GTX 3000 hook and gently slide the GTX 3000 from the mounting rack.

GTX 3000 Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Place the GTX 3000 on the mounting rack.
3. Slide the GTX 3000 back until the foot is fully engaged with the mounting rack.
4. Lift the lockdown mechanism collar in place on the GTX 3000 hook and hand turn lockdown mechanism knobs clockwise until the GTX 3000 is secure.
5. Configure and test the GTX 3000 according to Section 7.5.

6.6 GTX 335R/GTRX 345R Transponder

GTX 335R/GTX 335R Removal:

1. Gain access to the avionics shelf in the tail area.
2. Insert a 3/32” hex drive tool into the access hole in the front of the unit.
3. Turn hex drive tool counterclockwise until the hex drive tool stops.
4. Pull the unit from the rack using the spring-loaded tab on the front of the unit.

GTX 335R/GTX 335R Reinstallation:

1. Visually inspect the connectors in the back of the rack to ensure there are no bent or damaged pins. Repair any damage if found.
2. Insert a 3/32” hex drive tool into the access hole in the front of the unit.
3. Turn hex drive tool counterclockwise until the hex drive tool stops.
4. Slide the unit in the rack until it stops. The unit will appear to stick out of the rack approximately 3/8”.
5. Insert a 3/32” hex drive tool into the access hole in the front of the unit.
6. Push on the left side of the unit and turn hex drive tool clockwise until it stops. Do not apply more than 8 in-lbs of torque on the hex tool to seat the unit.
7. Configure and test the GTX 3000 according to Section 7.5.

6.7 GDC 7400 Air Data Computer

Removal:

1. Gain access by removing the appropriate GDU 1050A display unit (see Section 6.1.) GDC 1 is located behind PFD1 and GDC 2 is located behind PFD2.
2. Disconnect the pitot/static plumbing from the rear of the unit. Disconnect the single connector.
3. Loosen each thumbscrew on the hold-down clamp and remove the clamp.
4. Carefully remove the unit from its mount.

Reinstallation:

1. Inspect the connector and pins for damage. Inspect the pitot/static plumbing for damage. Repair any damage.
2. Place the unit in the mounting tray. Position the locking clamp and fasten using the thumbscrews.
3. Connect the backshell assembly and pitot/static plumbing to the unit.
4. Reinstall the GDU 1050A display unit.
5. Configure and test the GDC 7400 according to Section 7.7.

6.8 GTP 59 OAT Probe

Removal:

1. Using a deep-socket to hold the probe in place on the outside of the aircraft, loosen the GTP 59 mounting nut and remove the GTP 59.

Reinstallation:

1. Installation is the reverse of removal.
2. No configuration is required for the GTP 59. Test according to Section 7.7.5.

6.9 GRS 77 or GRS 7800 AHRS or GSU 75B ADAHRS

GRS 77 Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Disconnect the AHRS connector.
3. Loosen the four Phillips thumbscrews with a screwdriver until they are free from the rack.
4. Gently lift the GRS 77 from the mounting rack. Do NOT loosen the remote rack hardware fastening it to the avionics shelf or the GRS 77 must be re-calibrated per Section 7.10.

GRS 77 Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Place the GRS 77 on the mounting plate, ensuring the orientation is correct.
3. Use a #2 Phillips screwdriver to torque the GRS 77 mounting screws to the rack to 22-25 in-lbs.
4. Connect the connector to the GRS 77.
5. Calibrate and test the GRS 77 according to Section 7.10.

GRS 7800 Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Disconnect the AHRS connector.
3. Pull back on the lockdown mechanisms and turn counterclockwise until free.
4. Disengage the lockdown mechanism collars from the GRS 7800 hooks and gently slide the GRS 7800 from the mounting rack. Do NOT loosen the remote rack hardware fastening it to the avionics shelf or the GRS 7800 must be re-calibrated per Section 7.10.

GRS 7800 Reinstallation:

1. Visually inspect the connector to ensure there are no bent or damaged pins. Repair any damage.
2. Place the GRS 7800 on the mounting rack, ensuring the orientation is correct.
3. Slide the GRS 7800 back until the feet are fully engaged with the mounting rack.
4. Lift the lockdown mechanism collars in place on the GRS 7800 hooks and hand turn lockdown mechanism knobs clockwise until the GRS 7800 is secure.

5. Connect the connector to the GRS 7800.
6. Calibrate and test the GRS 7800 according to Section 7.10

GSU 75B Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Disconnect the ADAHRS connector.
3. Disconnect the pitot and static lines.
4. Turn each retention screw counterclockwise until they disconnect from the remote rack.
5. Gently slide the unit from the remote rack. Do NOT loosen the remote rack hardware fastening it to the avionics shelf or the GSU 75B must be re-calibrated per Section 7.10)

GSU 75B Installation:

1. Visually inspect the connector to ensure there are no bent or damaged pins. Also inspect the pitot and static fittings for damage. Repair any damage.
2. Place the GSU 75B unit on the remote rack and slide the unit back until the feet are fully engaged with the remote rack.
3. Push down and turn each retention screw clockwise. Torque each retention screw to 15-20 in-lbs.
4. Connect the pitot and static lines.
5. Connect the ADAHRS connector to the unit.
6. Calibrate and test the GSU 75B per Section 7.10.

6.10 GMU 44 Magnetometer

NOTES

The GMU 44 magnetometers may be located in the tailcone or in the horizontal stabilizer.

Always use a non-magnetic Phillips screwdriver when removing or installing all screws near the magnetometers.

Reference the “Magnetometer Install” and “Wire Harness Installation, Tail” drawings listed in Table 1-1 for more details.

For Tailcone Location:

Removal:

1. Disconnect electrical wiring harnesses and remove the tailcone.
2. Remove three screws connecting the unit to the aircraft mounting bracket.
3. Remove the cable tie attaching the magnetometer pigtail harness to the shelf.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Fasten the GMU to the aircraft mounting bracket.

3. Attach the magnetometer pigtail harness to the shelf with a cable tie
4. Reinstall tailcone and connect the electrical wiring harnesses.
5. Calibrate and test the GMU 44 according to Section 7.10.

For Horizontal Stabilizer Location (left or right side):

Removal:

1. Remove inspection access panel (second from inboard) from lower side of the horizontal stabilizer to gain access to the GMU electrical wiring harness.
2. Disconnect GMU pigtail harness from the electrical wiring harness.
3. Remove the screws and flux valve access cover from the upper side of horizontal stabilizer.
4. Mark the orientation of the GMU adapter plate assembly to the flux valve mounting dish.
5. Remove three screws/washers connecting the GMU adapter plate assembly to the flux valve mounting dish.
6. Remove three screws connecting the GMU to the GMU adapter plate assembly.
7. If the unit is to be replaced, remove cable ties attaching the phenolic wire guard to the unit and retain the wire guard and grommet from the pigtail harness.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Reinstall the three screws attaching the GMU to the GMU adapter plate assembly.
3. If a new GMU is installed, use two MS3367-7-1 cable ties through the retained phenolic wire guard to secure the guard and connector harness to the GMU.
4. Ensure the MS35489-4 grommet is installed on the unit pigtail harness and secured in the slot in the aft side of the GMU adapter plate assembly.
5. Use the orientation marks on the GMU adapter plate assembly to align the adapter plate assembly to the flux mounting dish and reinstall the three screws/washers attaching the adapter plate.
6. Ensure there is a gap of at least 0.2 inch between the unit pigtail harness and the flux valve access cover.
7. Reinstall the screws and flux valve access cover on the upper side of horizontal stabilizer.
8. Connect the GMU pigtail harness to the electrical wiring harness.
9. Reinstall the inspection access panel (second from inboard) on the lower side of the horizontal stabilizer.
10. Calibrate and test the GMU 44 according to Section 7.10.

6.11 GDL 69A or GDL 69A SXM

Removal:

1. Gain access by removing the right side GDU 1050A display unit (see Section 6.1.)
2. Unlock the GDL 69A/69A SXM handle by loosening the Phillips screw on the handle.
3. Pull the handle upward to unlock the GDL 69A. Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Lift the handle and gently insert the GDL 69A/69A SXM into its rack. The handle should engage the dogleg track.
3. Press down on the GDL 69A/69A SXM handle to lock the unit into the rack.
4. Lock the handle to the GDL 69A/69A SXM body using the Philips screw. Torque the handle screw to 10-14 in-lbs.
5. Configure and test the GDL 69A/69A SXM according to Section 7.11.

6.12 GSA 80 and GSA 9000 Servo Motors

Removal:

1. Gain access to the desired servo(s).
2. Disconnect the servo harness connector.
3. Use a socket or open-wrench to loosen and remove the servo attachment bolts.
4. Carefully remove the servo and place a protective cover on the output gear.
5. Place a protective cover over the GSM 86 or GSM 9100 servo gearbox.

Reinstallation:

1. For GSA 80 Servo motors only –
    a. Inspect the servo output gear for abnormal wear.
    b. Using a lint-free cloth, remove excess grease build-up from the servo output gear.

    IMPORTANT!

    It is not necessary to remove all of the grease from the output gear, only the excess grease. DO NOT USE SOLVENTS TO CLEAN THE OUTPUT GEAR!

    c. Using a brush or other applicator, apply a thin coat of Aeroshell 33MS (Lithium-complex based) grease to the servo output gear

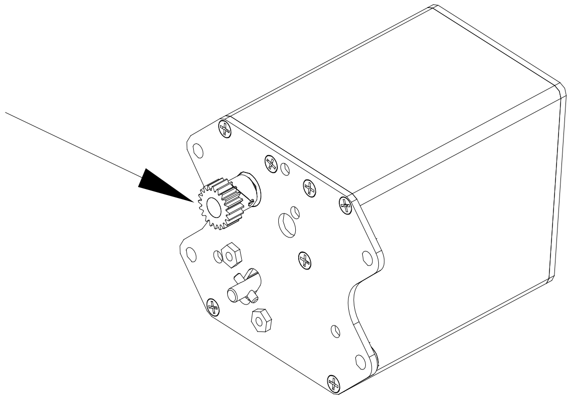


Figure 6-1, GSA 80 Servo Gear

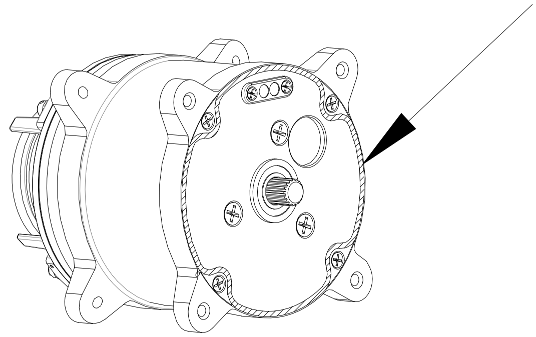


Figure 6-2, GSM 9100 O-ring

2. For GSA 9000 Yaw servo motor only, install a new O-ring P/N AS568-043 on the GSM 9100 servo gearbox (see Figure 6-2).
3. Carefully place the servo into the servo gearbox, ensuring proper orientation and alignment.
4. Fasten the servo to the servo gearbox using the existing hardware. Follow the installation instructions provided in the respective servo installation drawing(s) listed in Table 1-1.
5. Inspect the harness connectors and check that no pins are bent or otherwise damaged. Connect the harness and secure it appropriately.
6. If no further maintenance is required, continue to Section 7.12.

6.13 GSM 86 and GSM 9100 Servo Gearbox

Removal:

1. Remove the desired servo motor(s) per Section 6.12.
2. For the Roll, Pitch and Yaw Servos: remove the servo bridle cables from the control cable clamps. For the Pitch-Trim Servo: disconnect the servo cable at the forward turnbuckle and aft terminal.
3. Use a socket or open-wrench to loosen and remove the servo attachment bolts.
4. Carefully remove the servo gearbox(es).
5. Remove the cable retention pins and ring (or cover) and then remove the servo cable from the capstan.

Reinstallation:

1. Ensure cable retention pins are oriented correctly. Follow the installation instructions provided in the respective servo installation drawing(s) listed in Table 1-1.
2. If no other maintenance is to be performed, reinstall the servo(s) per Section 6.12.

6.14 GCU 477

Removal:

1. Use a 3/32" hex drive tool to turn each of the four locking sockets ¼ turn counterclockwise until they reach their stops.
2. Disconnect backshell assembly from unit.

Reinstallation:

1. Inspect connector(s) for damaged pins.
2. Connect backshell assembly to unit.
3. Hold unit flush with the pedestal, ensuring locking stud alignment marks are in the vertical position.
4. Use a 3/32" hex drive tool to turn each of the four locking sockets ¼ turn clockwise. This may require applying a small amount of forward pressure to engage the ¼ turn sockets.
5. Configure and test the GCU 477 according to Section 7.13.

6.15 GMC 710

Removal:

1. Use a 3/32" hex drive tool to turn each of the four locking sockets ¼ turn counterclockwise until they reach their stops.
2. Disconnect backshell assembly from unit.

Reinstallation:

1. Inspect connector(s) for damaged pins.
2. Connect backshell assembly to unit.
3. Hold unit flush with the mounting bracket, ensuring locking stud alignment marks are in the vertical position.

4. Use a 3/32” hex drive tool to turn each of the four locking sockets ¼ turn clockwise. This may require applying a small amount of forward pressure to engage the ¼ turn sockets.
5. Configure and test the GMC 710 according to Section 7.14.

6.16 GWX 68 or GWX 70

Removal:

1. Gain access by removing nose radome.
2. Disconnect backshell assembly from unit.
3. Use a 3/16” hex drive tool to remove each of the four mounting screws.

Reinstallation:

1. Inspect connector for damaged pins.
2. Hold unit flush with the radar mount.
3. Use a 3/16” hex drive tool to tighten each of the four mounting screws.
4. Connect backshell assembly to unit.
5. Configure and test the GWX 68 or GWX 70 according to Section 7.15.

6.17 Configuration Modules

6.17.1 Configuration Module Removal & Replacement

Configuration modules (Reference Figure 6-3 and Table 6-1, Item 1 shown below) are located in the following LRU harness connector backshells: GDU 1050A PFD1, GRS 77 AHRS, and the GEA 71 Engine/Airframe Unit. Additionally, the GRS 7800, GSU 75B, and MD 302 have different style configuration modules that are located in their connector backshells. Refer to Section 6.17.2 for the GRS 7800 configuration module removal and replacement instructions. Refer to Section 6.17.3 for the GSU 75B configuration module removal and replacement instructions. Refer to Section 6.27.2 for the MD 302 configuration module removal and replacement instructions. Refer to the Master Drawing List, listed in Table 1-1, for specific installation drawings.

NOTE

Garmin Configuration Modules are not ESD sensitive. Configuration modules do not require special ESD protection for handling during installation or maintenance.

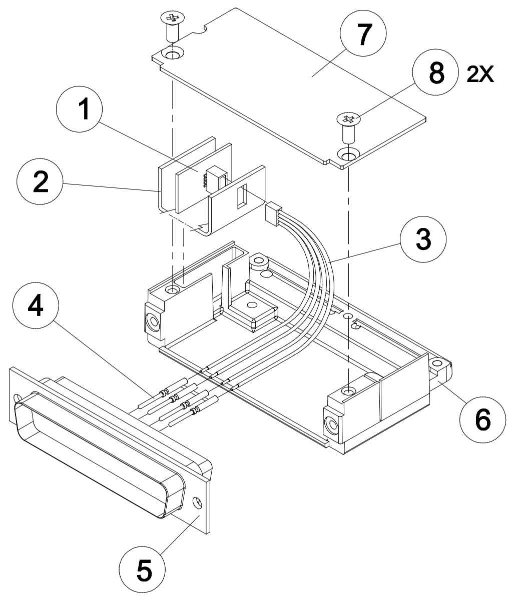


Figure 6-3, Configuration Module Installation

Table 6-1, Configuration Module Kit – 011-00979-00

Item	Description	Qty Needed	Garmin Part Number
1	Configuration Module PCB Board Assembly w/EEPROM & Temp Sensor	1	012-00605-00 or -02
2	Spacer, Config Module	1	213-00043-00
3	Cable, 4-Conductor Harness	1	325-00122-00
4	Pins, #22 AWG (HD)	5	336-00021-00

Removal:

1. Disconnect connector from LRU.
2. Remove 2 screws (8) from cover (7) and remove cover.
3. Unplug connector from configuration module (1).
4. Remove configuration module.

Installation:

1. Inspect connector for damaged pins (4).
2. Place configuration module (1) in position.
3. Insert connector into configuration module (1).
4. Assembly of the connector is the reverse of disassembly.
5. Checkout per Section 6.17.4.

6.17.2 GRS 7800 Configuration Module Removal & Replacement

The GRS 7800 configuration module is located on the LRU harness connector strain relief. Refer to the Master Drawing List, listed in Table 1-1, for specific installation drawings.

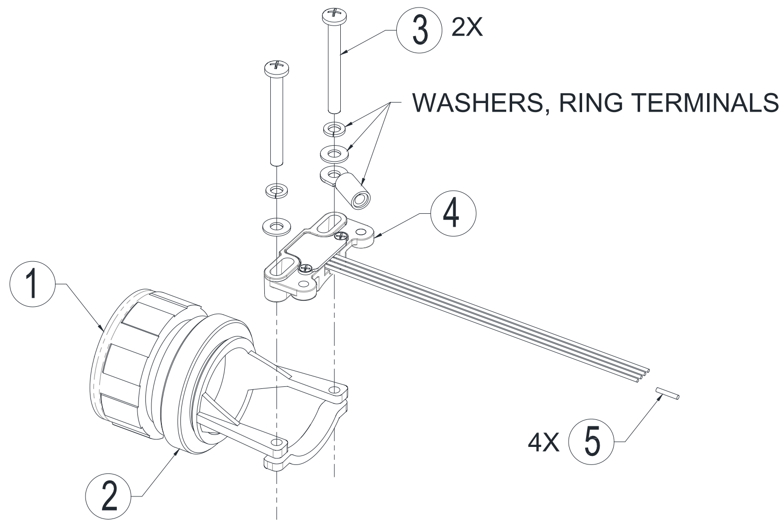


Figure 6-4, GRS 7800 Configuration Module Installation

Table 6-2, GRS 7800 Configuration Module Parts

Item	Description	Qty Needed	Part Number	Vendor
4	Configuration Module, Circular Connector	1	011-02582-00	Garmin
5	Socket, Contact	4	M39029/56-348	Best Source

Removal:

1. Disconnect connector (1) from LRU.
2. Remove 2 screws (3), washers, ring terminals and configuration module (4) from strain relief (2).
3. Disconnect the strain relief (2) from the connector (1).
4. Remove the 4 configuration module contact pins from the connector (1).
5. Remove the configuration module (4).

Installation:

1. Inspect connector (1) for damaged pins.
2. Install 4 contact pins (5) on the new configuration module (4) wires.
3. Install the 4 configuration module contact pins (5) into the connector (1).
4. Assembly of the connector and strain relief is the reverse of the disassembly.
5. Checkout per Section 6.17.4.

6.17.3 GSU 75B Configuration Module Removal & Replacement

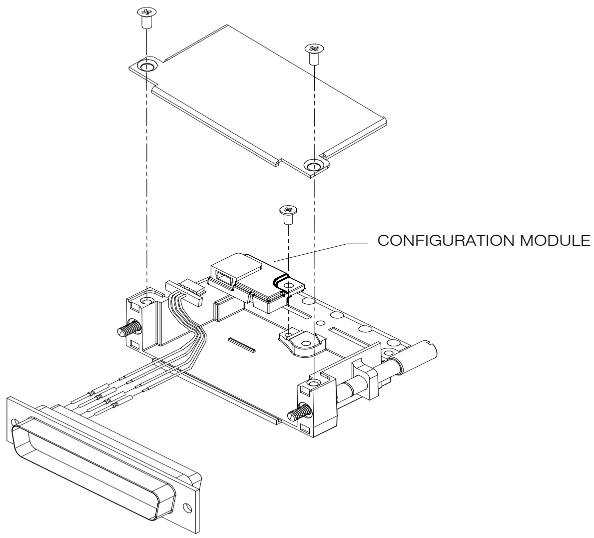


Figure 6-5, GSU 75B Configuration Module Installation

Table 6-3, GSU 75B Configuration Module Kit – 011-00979-20

Item	Description	Qty Needed	Garmin Part Number
1	Sub-Assy, Potted, Config Mdl, w/EEPROM,Jackscrew	1	011-02179-00
2	Cable, 4-Conductor Harness	1	325-00122-00
3	Pins, #22 AWG (HD)	4	336-00021-00
4	Pan Head Screw	1	211-60232-07

Removal:

1. Disconnect connector from LRU.
2. Remove two screws from cover.
3. Remove one screw from configuration module attaching it to the backshell.
4. Lift up configuration module and unplug the connector.

Installation:

1. Inspect connector for damaged pins.
2. Plug in the configuration module.
3. Set configuration module in backshell and attach using one screw.
4. Reinstall the cover using two screws.
5. Reattach connector to LRU.
6. Checkout per Section 6.17.4.

6.17.4 Configuration Module Checkout

If a GRS 77 or GRS 7800 AHRS Configuration Module is replaced:

GRS 77 or GRS 7800 and GMU 44 calibration procedures must be performed. Proceed to Section 7.10.3.

If a GSU 75 Configuration Module is replaced:

Configuration settings must be reloaded to the GSU 75B per Section 7.6, then proceed to Section 7.7.3.

Additionally, GSU 75B and GMU 44 calibration procedures must be performed. Proceed to Section 7.10.

If a GEA 71 Configuration Module is replaced:

Proceed to Section 7.4.3.

If only the Master Configuration Module is replaced:

NOTE

New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old databases and feature enable cards will no longer work as they will remain locked to the old System ID number.

1. Start the G1000 system in configuration mode.
2. Go to the Configuration Upload Page on PFD 1.
3. Press the UPDT CFG softkey and press ENT.

If both PFD 1 and Master Configuration Module are replaced:

NOTE

New Terrain/Obstacle cards, Jeppesen Aviation Database and other optional features (i.e. TAWS unlock card) will need to be replaced if the master configuration module is changed. The G1000 System ID number will change to a new number when installing a new master config module. The old databases and feature enable cards will no longer work as they will remain locked to the old System ID number.

1. The entire G1000 system must be re-configured. Insert the correct G1000 software loader card into PFD 1.
2. Start the G1000 in configuration mode. Go to the System Upload Page on PFD 1.
3. See Section 3.8 for instructions on how to use the System Upload page. Check all configuration files and reload them.
4. After reloading configuration files, examine the G1000 installation for any installed configuration options. Options are listed in Section 3.8. Load optional files as necessary.

5. Continue to Section 9 and conduct the return to service checkout.

6.18 GEA 71 Backshell Thermocouple Removal & Replacement

The GEA 71 has a K-Type thermocouple (Item 1 shown below) installed in its backshell, in addition to the configuration module. The thermocouple is used in conjunction with the configuration module temperature sensor to compensate for temperature probe errors resulting from the dissimilar metals at the pin contacts.

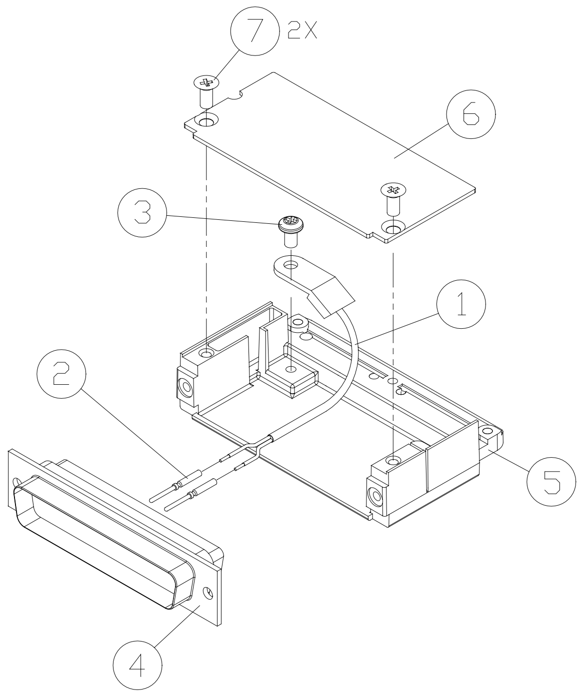


Figure 6-6, GEA Backshell Thermocouple

Table 6-4, Thermocouple Kit (011-00981-00)

Item #	Description	Qty Needed	Garmin Part Number
1	3" Thermocouple, K type	1	925-L0000-00
2	Pins #22 AWG	2	336-00021-00
3	Screw	1	211-60234-08

Removal:

1. Remove GEA 71 per Section 6.4.
2. Remove GEA connector backplate.
3. Remove connector assembly J711 from the backplate.
4. Remove screws, item 7, and cover, item 6, from the backshell, item 5.
5. Unscrew thermocouple from boss on backshell. Extract the thermocouple pins from the connector.

Replacement:

1. Crimp pins, item 2, onto each of the thermocouple wires, item 1. Ensure that pre-stripped wire length is 1/8" prior to crimping.

2. Insert newly crimped pins and wires into the appropriate connector housing location, item 4, as specified by King Air 300 Series Wiring Diagram, listed in Table 1-1.
3. Place thermocouple body, item 1, onto the backshell boss, item 5. Place the thermocouple as shown in Figure 6-6 so that the wires exit towards the bottom of the backshell.
4. Fasten thermocouple tightly to backshell using the provided screw, item 3.
5. Fasten cover, item 6, to backshell using screws, item 7.
6. Continue to Section 7.4.3 and verify that the ITT indications are valid on the MFD.

6.19 GPS/WAAS Antennas

Removal:

1. Gain access to the antenna coaxial cable connector by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-1.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-1.
4. Reinstall cabin interior ceiling panel.
5. Proceed to Section 7.3.3 GPS Signal Acquisition for testing.

6.20 Diversity Transponder Antenna

Removal:

1. Gain access to the antenna coaxial cable connector and mounting hardware by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-1.
2. Disconnect the antenna coaxial cable.
3. Remove the two nuts and washers securing the antenna.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained hardware.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-1.
4. Reinstall cabin interior ceiling panel.
5. Proceed to Section 7.5.4 for testing of the GTX33D or GTX 3000.

6.21 Iridium Antenna

Removal:

1. Gain access to the antenna coaxial cable connector by removing the aft cabin ceiling panel. Refer to the Antenna Install drawing listed in Table 1-1.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-1.
4. Reinstall the aft cabin ceiling panel.
5. Proceed to Section 8.17 for testing of the GSR 56.

6.22 Wi-Fi Antenna

Removal:

1. Gain access to the antenna coaxial cable connector by opening the tail access door behind the aft pressure bulkhead. Refer to the Antenna Install drawing listed in Table 1-1.
2. Disconnect the antenna coaxial cable.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the antenna coaxial cable.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-1.
4. Secure the tail access door.
5. Proceed to Section 8.16 for testing of the GDL 59.

6.23 Signal Conditioners

Removal:

1. For Signal Conditioner No. 1, remove PFD1 from the instrument panel per Section 6.1. For Signal Conditioner No. 2, remove PFD2 from the instrument panel per Section 6.1.
2. Remove 3 top screws from Signal Conditioner rack.
3. Slide mounting tray out from rack and disconnect the unit connector. If needed, remove MFD as per Section 6.1 to access the Signal Conditioner connector.
4. Remove the four mounting bolts and remove the Signal Conditioner unit.
5. If planning to reinstall the same unit, it is not necessary to disconnect the ground strap from the unit ground stud. If replacing with a new unit, disconnect the ground strap from the removed unit and retain the ground strap and associated hardware for reinstallation on the new unit.

Reinstallation:

1. Reinstallation of the Signal Conditioners is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Proceed to Section 7.4.3 for testing.

6.24 Instrument Panel Annunciators (Prop Synch and Standby Battery)

Removal:

1. Remove MFD from the instrument panel as per Section 6.1.
2. Using a M22885/108T8234 extraction tool, disconnect connector from the back of the switch.
3. Pull the pushbutton cap fully out of the switch body and allow the cap to rotate 90° where it is held by the retaining element.
4. While holding the retaining sleeve (back side of the instrument panel), loosen the two screws inside the switch body until the switch is free to come out.
5. Remove the mounting sleeve and switch from the instrument panel.

Reinstallation:

1. Reinstallation of the Prop Synch and Standby Battery switches is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Press and hold the cockpit annunciator “Press To Test” switch located to the left of the annunciator panel, and verify the following:
    - For the Standby Battery Annunciator/Switch: STBY Battery Switch legends illuminates and reflects “STANDBY BATTERY” in white, “ARM” in green, and “ON” in amber.
    - For the Prop Synch Annunciator/Switch: Prop Synch Switch legends illuminates and reflects “PROP SYNC” in white, and “ON” in green.
3. Release cockpit annunciator “Press To Test” switch.
4. If further maintenance is not required, proceed to Section 9.

6.25 Emergency Frequency Switch/Annunciator

Removal:

1. Remove the switch plate from the pedestal using a screw driver to loosen the quarter turn fasteners.
2. Using a M22885/108T8234 extraction tool, disconnect connector from the back of the switch.
3. Pull the pushbutton cap fully out of the switch body and allow the cap to rotate 90° where it is held by the retaining element.
4. While holding the retaining sleeve (back side of the switch plate), loosen the two screws inside the switch body until the switch is free to come out.
5. Remove the mounting sleeve and switch from the switch plate.

Reinstallation:

1. Reinstallation of the Emergency Frequency switch/annunciator is the reverse of the removal. Reference the Pedestal Re-Configuration drawing, listed in Table 1-1, for more details.
2. Press and hold the cockpit annunciator "Press To Test" switch located to the left of the annunciator panel, and verify the following:
    - Legends illuminate and reflect "EMERG FREQ" in white and "121.5" in white.
3. Release cockpit annunciator "Press To Test" switch.
4. If further maintenance is not required, proceed to Section 9.

6.26 L-3 Avionics (BF Goodrich) PS-835(C or D Model) Emergency Battery

Removal:

1. Gain access to the forward avionics compartment in the nose of the aircraft.
2. Unscrew the knurled hold-down nut to allow it to move free of the unit.
3. Remove the unit from the rack.

Reinstallation:

1. Install the emergency battery in accordance with the Electrical Equipment Install, Nose Bay drawing (refer to Master Drawing List, listed in Table 1-1, for specific drawing number). Refer to the King Air 300 Series Maintenance Manual, listed in Table 1-1, for access requirements as needed.
2. If further maintenance is not required, proceed to Section 9.

6.27 MD 302 Standby Attitude Module (SAM)

The MD 302 SAM installed by this STC has two components, an electronic indicator, and a configuration module. The indicator is installed on the instrument panel, between the pilot's PFD and the MFD. The configuration module in installed inside the 15-pin D-subminiature connector that mates to the back of electronic indicator. It is required for proper operation of the unit.

6.27.1 MD 302 Electronic Standby Indicator

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect pitot-static plumbing from the back of the standby airspeed indicator. Take necessary precautions to prevent foreign object debris from entering the pitot-static lines during maintenance.
3. Disconnect the electrical connector from the indicator.
4. Use a nut driver to remove the four hex head attachment screws from the front of the indicator.
5. Remove the indicator.

Reinstallation:

1. Reinstall the electronic standby indicator referencing the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Connect the pitot-static plumbing and electrical connector.
3. Reinstall the MFD.
4. If the Configuration Module was not changed, Configuration Setup is automatic at first power on and no additional action is required.
5. If a new unit is installed with a new configuration module, Configuration Setup per Section 3.19 is required.
6. Test MFD per Section 9.1.

6.27.2 Configuration Module

Removal:

CAUTION: The Configuration Module PC Board Assembly contains sensitive electronics that can be damaged by electrostatic discharge (ESD). Appropriate precautions should be applied prior to handling this component.

1. Remove Electronic Standby Indicator per Section 6.27.1.
2. Use a Phillips screwdriver to remove the two countersunk screws from the cover on the connector backshell.
3. Remove the backshell cover. The Configuration Module PC Board Assembly is located directly beneath the cover.
4. Using an appropriate extraction tool remove the pins of the Configuration Module PC Board Assembly from the D-Sub connector (D-Sub pins 15, 14, 10, and 5).
5. Remove the Configuration Module PC Board Assembly.

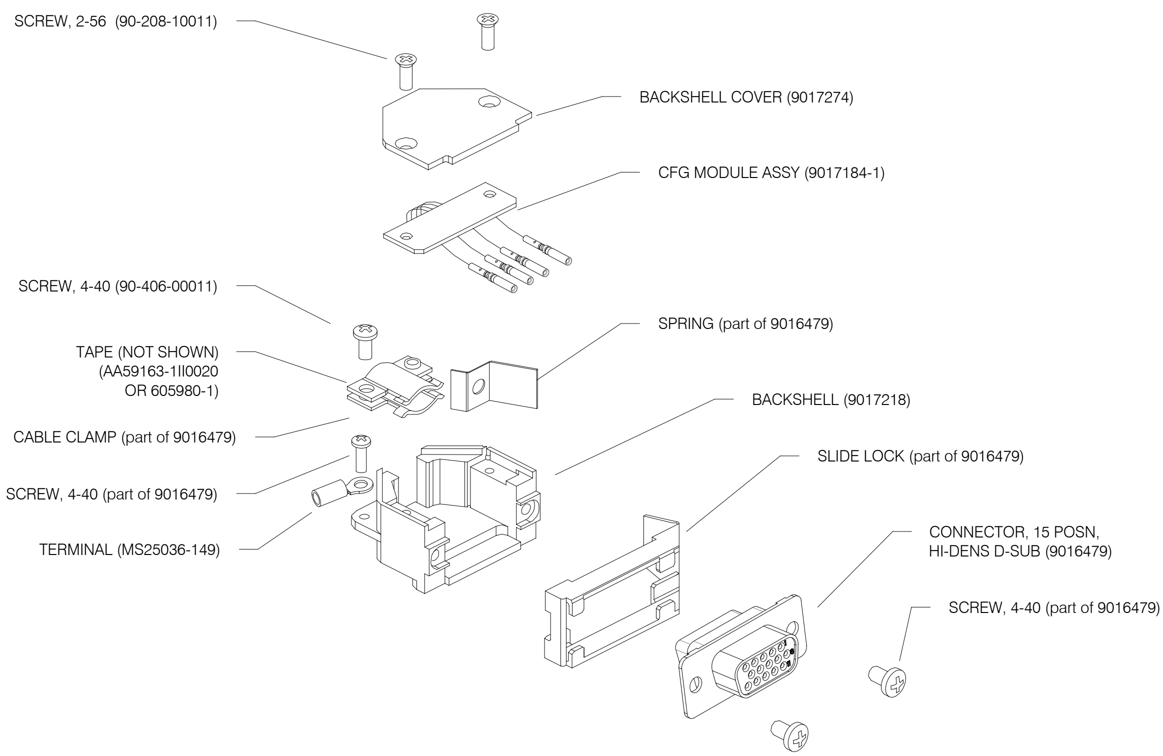


Figure 6-7, MD 302 Backshell and Config Module

Reinstallation:

CAUTION: The Configuration Module PC Board Assembly contains sensitive electronics that can be damaged by electrostatic discharge (ESD). Appropriate precautions should be applied prior to handling this component.

1. The wires coming from the Configuration Module PC Board Assembly are marked as follows on the circuit board: TP1, TP2, TP3, and TP4.
2. With the D-Sub oriented up (pin locations 1-5 on top), orient the Configuration Module PC Board Assembly with the electronic parts facing UP.

3. Using an appropriate insertion tool, install each pin into the rear of the D-Sub connector as follows:
   - Board TP1 = config return = D-Sub pin 15
   - Board TP2 = config data = D-Sub pin 14
   - Board TP3 = config clock = D-Sub pin 10
   - Board TP4 = config power = D-Sub pin 5
4. Bend the wires of the Configuration Module PC Board Assembly 180 degrees so that the PC Board has its electrical components facing down as shown. Be careful not to place excess strain on the solder connections between the wires and the PC Board.
5. Capture the Configuration Module PC Board Assembly into the Backshell by placing the Backshell Cover on top of the Backshell. Ensure the holes of the cover align with the holes of the PC board and the backshell.
6. Using a Phillips screwdriver, re-install the two counter sunk screws and secure the cover.
7. Configure MD 302 unit per Section 3.19.
8. Test MFD per Section 9.1.

6.28 Mechanical Standby Indicators

6.28.1 Standby Airspeed Indicator

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect pitot-static plumbing from the back of the standby airspeed indicator. Take necessary precautions to prevent foreign object debris from entering the pitot-static lines during maintenance.
3. Disconnect the electrical connector from the standby airspeed indicator.
4. Use a Phillips screwdriver to remove the attachment screws from the front of the standby airspeed indicator.
5. Remove the standby airspeed indicator.

Reinstallation:

1. Reinstallation of the standby airspeed indicator is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Test MFD per Section 9.1.

6.28.2 Standby Altimeter

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect pitot-static plumbing from the back of the standby altimeter. Take necessary precautions to prevent foreign object debris from entering the pitot-static lines during maintenance.
3. Disconnect the electrical connector from the standby altimeter.
4. Use a Phillips screwdriver to remove the attachment screws from the front of the standby altimeter.
5. Remove the standby altimeter.

Reinstallation:

1. Reinstallation of the standby altimeter is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Test MFD per Section 9.1.

6.28.3 Standby Attitude Indicator

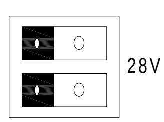
Ensure the standby attitude indicator gyro is not spinning—this may take 10 minutes or longer after the unit has been turned off. This unit is very delicate; handle like eggs. Refer to the 4300 Series Attitude Indicator Installation Manual, listed in Table 1-1, for more handling instructions.

Removal:

1. Remove MFD per Section 6.1.
2. Disconnect the electrical connector of the standby attitude indicator.
3. Use a 0.060” 6-Spline wrench to remove the knob from the front of the standby attitude indicator.
4. Use a Phillips screwdriver to remove the three attachment screws from the front of the standby attitude indicator.
5. Remove the standby attitude indicator.

Reinstallation:

1. Ensure the lighting control voltage switches on rear of unit are set for 28V.



2. Reinstallation of the standby attitude indicator is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
3. Test MFD per Section 9.1.

6.29 GIA Cooling Fans

Removal:

1. Gain access into the nose avionics equipment bay.
2. Disconnect the cooling fan hoses from the cooling fan. Take necessary precautions to prevent any foreign debris from entering the fan hoses during maintenance.
3. Disconnect the electrical connector of the cooling fan.
4. Use a Phillips screwdriver to remove the attachment screws and fan inlet duct (if installed) from the cooling fan.
5. Remove the cooling fan.

Reinstallation:

1. Reinstallation of the avionics cooling fan is the reverse of the removal. Reference the Electrical Equipment Install, Nose Bay drawing, listed in Table 1-1, for more details.
2. Test per Section 9.4.

6.30 GDU Cooling Fans

Removal:

1. Remove the display associated with the cooling fan, per Section 6.1.
2. Disconnect the electrical connector of the cooling fan.
3. Use a Phillips screwdriver to remove the attachment screws from the cooling fan.
4. Remove the cooling fan.

Reinstallation:

1. Reinstallation of the Sandia GDU cooling fan is the reverse of the removal. Reference the Main Instrument Panel Installation drawing, listed in Table 1-1, for more details.
2. Test per Section 9.4.

6.31 GTS 820/850 and GTS Processor Traffic Units

CAUTION:

After any maintenance or modification is made to the GTS 820/850/processor TAS/TCAS cables such as replacing a connector or entire cable, be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc.

Removal:

1. Gain access to the left forward avionics compartment in the nose of the aircraft.
2. Disconnect the eight coax QMA or TNC connectors.
3. Disconnect the three electrical connectors.
4. Unlock the unit from the rack by loosening the ratcheting latch mechanism.
5. Remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.
3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. Reconnect the eight coax QMA or TNC connectors and the three electrical connectors.
5. Close access to the left forward avionics compartment.
6. Configure and test the GTS unit per Section 7.17.

6.32 GPA 65 PA/LNA Unit

Removal:

1. Remove cabin interior to access FS 158 at WL 119 on the left side of the fuselage. Reference the Antenna Install drawing listed in Table 1-1 for more details.
2. Disconnect the eight coax "quick-lock" connectors.
3. Disconnect the electrical connector.
4. Remove the four mounting screws that hold the unit to the installation brackets.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Reattach the unit to the mounting brackets reusing existing hardware.
3. Connect the eight coax connectors. Note the color coded bands which match the mating connectors on the unit.
4. Reconnect the electrical connector pigtail.
5. Ensure that all connectors (coax and electrical) are locked in place.
6. Reinstall cabin interior.
7. No configuration is required for the GPA 65. Test the GTS 820/850 per Section 8.14.

6.33 GA 58 Traffic Antennas

Removal:

1. Gain access to the antenna coaxial cable connectors by removing the cabin interior ceiling panel. Refer to the Antenna Install drawing listed in Table 1-1.
2. Disconnect the four coaxial cable connectors.
3. Remove the antenna mounting screws.
4. Remove antenna.

Reinstallation:

1. Install antenna using retained mounting screws.
2. Connect the four coaxial cable connectors. Note the color coded bands which match the mating connectors.
3. Fillet seal around antenna. Refer to the Antenna Install drawing listed in Table 1-1.
4. Reinstall cabin interior ceiling panel.
5. Test the GTS 820/850 or GTS Processor per Section 8.14.

6.34 GDL 59 Wi-Fi Datalink

Removal:

1. Gain access to the unit based on location -
   a. If the unit is installed under the cabin floor, remove the cabin center floor panel at the main entry door. Remove the remote equipment shelf or detach the two rack mount angles from the shelf. Retain all mounting hardware.
   b. If the unit is installed in the tail, open the tailcone access door on the bottom of the tailcone.
2. Unlock the GDL 59 handle by loosening the Phillips screw on the handle.
3. Pull the handle upward to unlock the GDL59. Gently remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Lift the handle and gently insert the GDL 59 into its rack. The handle should engage the dogleg track.
3. Press down on the GDL 59 handle to lock the unit into the rack.
4. Lock the handle to the GDL 59 body using the Philips screw. Torque the handle screw to 10-14 in-lbs.
5. If the unit is installed under the cabin floor, reinstall the remote equipment shelf or two rack mount angles using the retained hardware and the cabin center floor panel.
6. If the unit is installed in the tail, close the tailcone access door.
7. Configure, activate, and test the GDL 59 per Section 7.18.

6.35 GSR 56 Satellite Receiver

Removal:

1. Gain access to the unit based on location -
   a. If the unit is installed under the cabin floor, remove the cabin center floor panel at the main entry door. Remove the remote equipment shelf or detach the two rack mount angles from the shelf. Retain all mounting hardware.
   b. If the unit is installed in the tail, open the tailcone access door on the bottom of the tailcone.
2. Unlock the unit from the rack by pulling out on the ratcheting latch mechanism and turning counter-clockwise until the latch mechanism clears the tab on the unit.
3. Slide the unit out of the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.

CAUTION:

Do not use excessive force when inserting the GDL 56 into the rack. This may cause damage to occur to the connectors, unit, and/or unit rack. If heavy resistance is felt during installation, stop! Remove the GDL 56 and identify the source of resistance.

3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. If the unit is installed under the cabin floor, reinstall the remote equipment shelf or two rack mount angles using the retained hardware and the cabin center floor panel.
5. If the unit is installed in the tail, close the tailcone access door.
6. Register with Garmin Connext per Section 8.15.
7. No software or configuration loading is required for the GSR 56. Test the GSR 56 according to Section 8.17.

6.36 GRA 5500 Radar Altimeter

Removal:

1. Gain access to the avionics shelf in the tail area.
2. Disconnect the electrical connector.
3. Disconnect the two coaxial cable connectors, making note of which cable is Transmit (Tx) and which cable is Receive (Rx).
4. Pull back on the lockdown mechanism and simultaneously turn counterclockwise until free.
5. Disengage the lockdown mechanism collar from the GRA 5500 hook and slide the GRA 5500 forward to remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Place the unit on the mounting rack ensuring the GRA 5500 rear feet are aligned in the mounting rack slots.
3. Slide the GRA 5500 back until the feet are fully engaged with the mounting rack.
4. Lift the lockdown mechanism collar in place on the GRA 5500 hook and hand turn the lockdown mechanism knob clockwise until the GRA 5500 is secure and cannot reasonably be ratcheted any tighter by hand.
5. Connect the electrical connector.
6. Connect the two coaxial cable connectors.
7. For integrated installations (using a RS-422 connection to GIA2), configure and test the GRA 5500 according to Section 7.16. For non-integrated installations (using Arinc 429 connections), configure and test per Section 3.17.

6.37 GSD 41 Data Concentrator

Removal:

1. Gain access to the avionics shelf in the tail area.
2. Unlock the unit from the rack by loosening the ratcheting latch mechanism.
3. Remove the unit from the rack.

Reinstallation:

1. Visually inspect the connectors to ensure there are no bent or damaged pins. Repair any damage.
2. Insert the unit into the installation rack.

CAUTION:

Do not use excessive force when inserting the GSD 41 into the rack. This may cause damage to occur to the connectors, unit, and/or unit rack. If heavy resistance is felt during installation, stop! Remove the GSD 41 and identify the source of resistance.

3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. Configure the GSD 41 according to Section 7.20.

7. Garmin G1000 LRU Replacement/Configuration & Testing

This section provides procedures to be followed after a piece of G1000 equipment is replaced. At the beginning of each LRU section, instructions are given to guide the technician for various removal/replacement scenarios. These instructions define necessary procedures to be followed for situations where original equipment was reinstalled as well as for situations where new equipment (new serial number) is installed.

NOTE

Garmin recommends the use of SanDisk brand SD cards to load G1000 software and configuration files. If another brand of card is used, and software loading problems occur, replace the card with a SanDisk brand card and reattempt the software load.

CAUTION

Connect a ground power unit to the aircraft for software loading. DO NOT RELY ON THE AIRCRAFT BATTERY TO LOAD SOFTWARE. DO NOT USE A BATTERY CHARGER AS AN EXTERNAL POWER SOURCE DUE TO ELECTRICAL NOISE IT MAY INJECT IN THE G1000 SYSTEM. DO NOT ALLOW POWER TO BE REMOVED FROM THE SYSTEM WHEN LOADING SOFTWARE! Remove power only when told to do so by the following procedure. Power loss during a software upgrade may cause a LRU to become corrupted and unresponsive requiring replacement. Remove power only when told to do so in the procedure.

All displays should be in the same mode (configuration or normal), unless instructed differently.

If an incorrect configuration file is loaded at any time in this section, STOP and start the configuration load over using Section 3.8.

7.1 GDU 1050A/1550 PFD & MFD

Original Display Reinstalled

If the removed display(s) are re-installed in their original positions, no software or configuration 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. Continue to the PFD/MFD Test procedure, Section 7.1.7.

Original PFD Displays Installed in Opposite Locations for Troubleshooting

If the PFD 1 and PFD 2 are installed in opposite positions, no software or configuration loading is required. Continue to the PFD/MFD Test procedure, Section 7.1.7.

New Repair or Exchange Display(s) Installed

If a new, repaired or exchanged GDU is installed, the correct software and configuration files must be loaded to the unit.

7.1.1 LRU Replacement Procedure PFD1

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the MFD, scroll to the LRU replacement page.
6. Activate the curser and select PFD1 in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 3.8.
16. If there are no red-Xs or system alerts, continue to Section 7.1.7.

7.1.2 Legacy Replacement Procedure PFD1 (Alternate Method)

A full system configuration re-load is required when a new, repaired, or exchanged display is installed using this method. This includes all options and feature enablements.

To complete this procedure, continue to Section 3.8.

7.1.3 LRU Replacement Procedure PFD2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Remove SD cards from top and bottom slots of PFD2, MFD, and PFD1 if present.
3. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
4. Turn on Avionics electrical busses.
5. Power on PFD2, MFD, and PFD1 in configuration mode.
6. Using the MFD, scroll to the LRU replacement page.
7. Activate the curser and select PFD2 in the LRU dropdown box.
8. Press the **CHK All** softkey.
9. Press the **Load** softkey**.**
10. Press **ENT** to acknowledge the process was complete.

11. Deactivate the curser.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 3.8.
17. If there are no red-Xs or system alerts, continue to Section 7.1.7.

7.1.4 Legacy Replacement Procedure PFD2 (Alternate Method)

A full system configuration re-load is required when a new, repaired, or exchanged display is installed using this method. This includes all options and feature enablements.

1. To complete this procedure, perform Section 3.8.

7.1.5 LRU Replacement Procedure MFD

NOTE

Anytime the MFD is replaced, all databases will have to be reloaded.

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Remove SD cards from top and bottom slots of PFD2, MFD, and PFD1 if present.
3. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
4. Turn on Avionics electrical busses.
5. Power on PFD2, MFD, and PFD1 in configuration mode.
6. Using the PFD1, scroll to the LRU replacement page.
7. Activate the curser and select MFD in the LRU dropdown box.
8. Press the **CHK All** softkey.
9. Press the **Load** softkey**.**
10. Press **ENT** to acknowledge the process was complete.
11. Deactivate the curser.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 3.8.
17. Install databases Section 3.14 to re-load databases.

18. After databases are re-loaded, continue to Section 7.1.7.

7.1.6 Legacy Replacement Procedure MFD (Alternate Method)

A full system configuration re-load is required when a new, repaired, or exchanged display is installed using this method. This includes all options and feature enablements. To complete this procedure, perform Section 3.8.

7.1.7 PFD/MFD Test

1. Allow displays to initialize for ~1 minute.
2. Check that all COM/NAV display fields are valid in the top corners of both PFDs.
3. Check that attitude, heading, altitude, airspeed, vertical speed and OAT fields are valid within 2 minutes of power up on both PFDs.
4. Press the Sensor softkey on each PFD and switch between ADC1 and ADC2. Verify that data from both GDC air data computers is valid on both displays.
5. Press the Sensor softkey on each PFD and switch between AHRS1 and AHRS2. Verify that data from both GSU 75 or GRS 77/7800 is valid on both displays.
6. Check that the engine instrument fields are valid on the MFD.

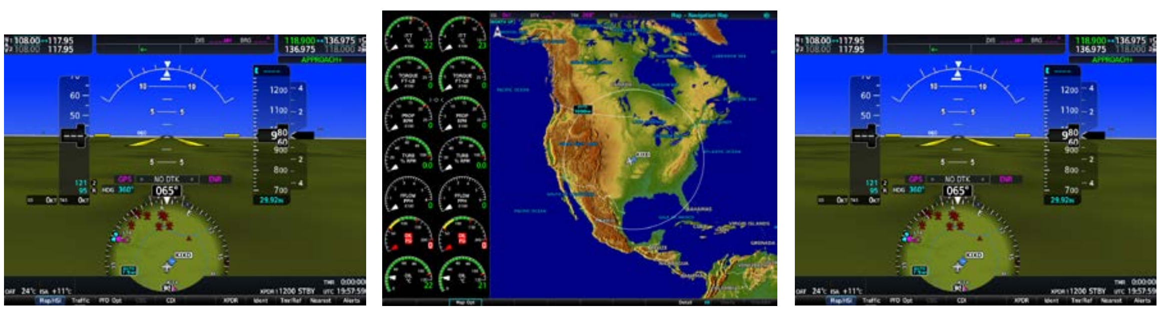


Figure 7-1, G1000 Normal Mode Check

7. Push the red DISPLAY BACKUP button on the pilot-side GMA 1347D. Verify that the pilot-side PFD and MFD displays enter reversion mode. MFD should have valid altitude, airspeed, vertical speed, COM1, COM2, NAV1, NAV2 and engine instruments.
8. De-activate pilot-side reversion mode by pushing the DISPLAY BACKUP button. Verify PFD 1 and MFD return to normal display modes.
9. Repeat Step 1 using GMA2. Ensure that PFD 2 and MFD enter reversion mode and MFD displays valid altitude, airspeed, vertical speed, COM1, COM2, NAV1, NAV2 and engine instruments.
10. De-activate co-pilot's side reversion mode by pushing the DISPLAY BACKUP button. Verify PFD 2 and MFD return to normal display modes.
11. Select the **Map – TAWS Map** page on the MFD.
12. Verify that the title at the top of the page reads "Map – TAWS-B" or "Map-TAWS-A". If TAWS has not been enabled, the title will read "**Map – Terrain Proximity**" or "**Map – Terrain**".
13. Press the MENU button and select "Test TAWS" from the pop-up menu.
14. After the TAWS test has completed, verify that "TAWS System Test Okay" is heard over the cockpit speaker.

15. If no other service is to be performed, perform final return-to-service test as specified in Section 9.

7.2 GMA 1347D Audio Panel

Original GMA 1347D Reinstalled

No software/configuration loading or testing is required if the removed GMA 1347D is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the final return-to-service checks in Section 9.

Original GMA 1347D Installed in Opposite Locations for Troubleshooting

If the original GMA #1 and GMA #2 are installed in opposite locations, configuration loading is required. See Section 7.2.1.

New, Repaired or Exchange GMA 1347D Installed

If a new, repaired or exchanged GMA 1347D is installed, the correct software and configuration files must be loaded to the unit. See Section 7.2.1.

7.2.1 LRU Replacement Procedure GMA 1 or GMA 2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GMA1 or GMA2, whichever was replaced in the LRU dropdown box
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.2.2.
16. If there are no red-Xs or system alerts, continue to Section 7.2.3.

7.2.2 Legacy Replacement Procedure GMA 1 or GMA 2 (Alternate Method)

To load the GMA complete the following subsections in order as they apply to the aircraft.

7.2.2.1 01) Baseline (For GMA 1 or GMA 2 replacement)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the small FMS knob to highlight "**01) Baseline"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air 200-300-Series Baseline Load** Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GMA1 or GMA2 whichever was replaced.
9. Highlight the software box and press the **ENT** key.
10. Highlight the Configuration box and press the **ENT** key.
11. Press "**Load**" softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
13. Green "PASS" in the Configuration and Software columns for each item loaded.
14. "Upload Complete…………"COMPLETE" in the summary box.
15. Acknowledge the prompt by pushing the **ENT** key.

7.2.2.2 07) Connext - SXM (For GMA 1 or GMA 2 replacement and aircraft equipped with a GDL 59 and/or GSR 56 only)

1. Scroll the curser to the Group window and select "**07) Connext - SXM**
2. Press the **ENT** key.
3. In the ITEM window highlight the installed GDL 59 and/or GSR 56 configuration and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GMA1 or GMA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **"Load"** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.2.2.3 11) Non Garmin Options (For GMA 1 or GMA 2 replacement and aircraft equipped with a ADF only)

1. Scroll the curser to the Group window and select **11) Non-Garmin options.**
2. Press the **ENT** key.
3. In the ITEM window highlight King Air – ADF Option and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GMA 1 or GMA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.2.2.4 11) Non Garmin Options (For GMA 1 or GMA 2 replacement and aircraft equipped with a DME only)

1. Scroll the curser to the ITEM window highlight King Air – DME Option and press the **ENT** key on PFD1.
2. Press the **CLR ALL** softkey.
3. Scroll the curser to GMA 1 or GMA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
4. Press **“Load”** softkey.
5. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
6. Acknowledge the prompt by pushing the **ENT** key.

7.2.2.5 Configuration Manager Update

1. With the system still in configuration mode, scroll to the Configuration Manager page on PFD 1.
2. Press the **CNFM CFG** softkey.
3. Select ok when prompted to “Confirm configuration as expected configuration”
4. Power cycle the system. Verify there are no red-Xs or system alerts.
5. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
6. If there are no red-Xs or system alerts, continue to Section 7.2.3.

7.2.3 GMA 1347D Test

Except for marker beacon operation, an in-aircraft checkout may be performed in the aircraft with known good microphone, headset, and speaker.

7.2.3.1 Intercom System (ICS) Check

1. Ensure that the MAN SQ key is off (no light).
2. Adjust GMA1 and GMA2 ICS volume to a comfortable level.
3. Plug in a headset at each COCKPIT ICS position. One at a time, plug a headset into each left and right CABIN ICS jack location (if installed) (one headset on right, one headset on left).
4. Verify the following:
   - Two-way communication between each CABIN ICS jack position.
   - CABIN ICS position cannot hear the pilot and copilot.
   - CABIN ICS positions cannot be heard by the pilot or copilot.
5. On GMA1 select COM1 MIC and AUDIO.
6. Ensure INTR COM is deselected on GMA1 or GMA2. Verify an active (green) COM1 frequency is displayed on both PFDs.
7. On GMA1 or 2 select PA and verify the PA select annunciator is illuminated on GMA1 and GMA2. Verify COM1 active frequency is displayed white.
8. Initiate passenger address using pilot’s headset boom mic by keying the pilot’s PTT. Verify the following:
   - Clear PA audio can be heard over cabin speaker and CABIN ICS headsets
   - PA selected annunciator on GMA1 flashes ~ once per second during PA address.
9. Repeat Step 8 using pilot hand mic.
10. Initiate passenger address using copilot’s headset boom mic by keying the copilot’s PTT. Verify the following:
    - Clear PA audio can be heard over cabin speaker and CABIN ICS headsets
    - PA selected annunciator on GMA1 flashes ~ once per second during PA address.
11. Repeat Step 10 using copilot hand mic.

7.2.3.2 Transceiver Operational Check

Perform a ramp test radio check by exercising the installed transceivers, microphone, microphone key and audio over the headphones and speaker. Verify that communications are clear and PTT operation is correct for each pilot position.

1. On the pilot’s audio panel, select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2, ADF and DME) and check for audio over the pilot’s headset.

2. Press the SPKR key on pilot's audio panel and verify that the selected audio is heard over the pilot's speaker.
3. On the copilot's audio panel, select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2, ADF and DME) and check for audio over the copilot's headset.
4. Press the SPKR key on copilot's audio panel and verify that the selected audio is heard over the copilot's speaker.

7.2.3.3 Failsafe Operation Check – GMA 1347D #1

1. Turn the GMA 1347D #1 off by pulling the AUDIO NO 1 circuit breaker. This directs all COM 1 phone audio, MIC audio and MIC key to the pilot's position.
2. Check the failsafe operation by exercising the COM 1 boom mic, hand mic, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD volume control. Verify proper operation of COM 1 using the failsafe operation.
3. Close the AUDIO NO 1 circuit breaker to continue testing.

7.2.3.4 Failsafe Operation Check – GMA 1347D #2

1. Turn the GMA 1347D #2 off by pulling the AUDIO NO 2 circuit breaker. This directs all COM 2 phone audio, MIC audio and MIC key to the co-pilot's position.
2. Check the failsafe operation by exercising the COM 2 boom mic, hand mic, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD volume control. Verify proper operation of COM 2 using the failsafe operation.
3. Close the AUDIO NO 2 circuit breaker to continue testing.

7.2.3.5 Marker Beacon Test

1. Using a ramp tester, simulate the outer marker, middle marker, and inner marker signals by following the test equipment manufacturer's instructions. Verify that each marker audio signal is present over the pilot and co-pilot headphones and speaker.
2. Verify that the outer, middle, and inner annunciations appear on PFD 1 and PFD 2 when the corresponding signal is applied. Marker beacon annunciations (O, M, and I) appear at the upper left corner of the altitude indicator on the PFD. Operate the MKR MUTE key on the #1 and #2 GMA 1347D and ensure that the audio signal is muted.
3. If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.2.4 Landing Gear Aural Alert Check

This check should be conducted in conjunction with the Phase 2 and Phase 4 Landing Gear Retraction, Warning Horn check, in the existing King Air Maintenance Program.

NOTE

This procedure is applicable only to aircraft equipped with a tone generator as part of the aircraft audio system. Refer to the appropriate aircraft wiring diagrams to determine if a tone generator is installed.

This check can be accomplished in conjunction with the Weight on Wheels and Low Speed Awareness Band Test in Section 8.11.

1. Conduct the Landing Gear Retraction, Warning Horn check as stated in the King Air 300 Series Maintenance Manual, listed in Table 1-1.
2. Verify that the aural tone is played through the G1000 audio system and through both cockpit speakers.

7.2.5 SiriusXM Audio Suppression Check

This procedure is applicable only to aircraft that have Sirius XM radio subscriptions.

WARNING

The following steps require movement of the landing gear. Ensure aircraft is safe for the operation of the landing gear before proceeding.

1. Jack aircraft to allow operation of landing gear (reference King Air 300 Series Maintenance Manual Chapter 7-00-00).
2. Ensure both left and right throttles are at IDLE position.
3. While monitoring pilot and copilot Sirius XM audio, retract landing gear to the full up and locked position and verify the following:
    - landing gear warning horn is active
    - XM audio is muted in the pilot and co-pilot stations
4. Increase both left and right throttles forward of IDLE position (towards takeoff position) and verify the following:
    - landing gear warning horn is not active
    - XM audio can be heard (For aircraft not equipped with a tone generator, deselect mute softkey or adjust Sirius XM volume to restore Sirius XM audio)

5. Extend landing gear to the full down and locked position and return both throttles to idle position.
6. Remove aircraft from jacks.
7. Ensure STALL WARN circuit breaker is closed.
8. While monitoring pilot and copilot Sirius XM audio, press the STALL WARN TEST switch and verify the following:
    - Stall warning tone is active
    - XM audio is muted in the pilot and co-pilot stations
9. Release the STALL WARN TEST switch and verify the following:
    - Stall warning tone is not active.
    - XM audio can be heard (For aircraft not equipped with a tone generator, deselect mute softkey or adjust Sirius XM volume to restore Sirius XM audio.)

7.3 GIA 63W Integrated Avionics Unit

Original GIA 63W(s) Reinstalled

No software or configuration loading is required if the removed GIA is re-installed in its original position (GIA1 and GIA2 in their original racks). This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 9.

Original GIA 63Ws Swapped for Troubleshooting

No software loading is required if the originally installed GIA units are re-installed in opposite positions (GIA1 and GIA2 in opposite unit racks). However, configuration loading is required. See Section 7.3.1.

New, Repaired or Exchange GIA 63W(s) Installed

If a new, repaired or exchange GIA 63W is installed, the correct software and configuration files must be loaded to the unit. See Section 7.3.1.

7.3.1 LRU Replacement Procedure GIA1 or GIA2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GIA1 or GIA2, whichever was replaced in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Select Com1 or 2 in the LRU dropdown box.
11. Press the **CHK All** softkey.
12. Press the **Load** softkey**.**
13. Press **ENT** to acknowledge the process was complete.
14. Select GPS1 or 2 in the LRU dropdown box.
15. Press the **CHK All** softkey.
16. Press the **Load** softkey**.**
17. Press **ENT** to acknowledge the process was complete.
18. Select Nav1 or 2 in the LRU dropdown box.
19. Press the **CHK All** softkey.
20. Press the **Load** softkey**.**
21. Press **ENT** to acknowledge the process was complete.
22. Deactivate the curser.
23. Scroll to the Configuration Manager page.

24. Press the **CNFM CFG** softkey.
25. Select ok when prompted to “Confirm configuration as expected configuration”
26. Power cycle the system. Verify there are no red-Xs or system alerts.
27. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.3.2.
28. If there are no red-Xs or system alerts, continue to Section 7.3.3.

7.3.2 Legacy Replacement Procedure GIA1 or GIA2 (Alternate Method)

To load the GIA complete the following subsections in order as they apply to the aircraft.

7.3.2.1 01) Baseline (For GIA 1 or GIA 2 replacement)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate the cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**01) Baseline”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air 200-300 Series Baseline Load** Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GIA 1 or GIA 2 whichever was replaced.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Scroll to GIA 1 or GIA 2 Region Config, whichever was replaced.
12. Highlight the Configuration box and press the **ENT** key to check the box.
13. Scroll to NAV 1 or NAV 2, whichever was replaced.
14. Highlight the Software box and press the **ENT** key to check the box.
15. Scroll to COM 1 or COM 2, whichever was replaced.
16. Highlight the Software box and press **ENT** key to check the box.
17. Highlight the Configuration box and press the **ENT** key to check the box.
18. Scroll to GPS/WAAS 1 or GPS/WAAS 2, whichever was replaced.
19. Highlight the Software box and press the **ENT** key to check the box.
20. Scroll to GIA 1 or GIA 2 AUDIO, whichever was replaced.
21. Highlight the Software box and press the **ENT key** to check the box.
22. Scroll to AUDIO CONFIG.
23. Highlight the Configuration box and press the **ENT** key to check the box.

24. Press “**Load**” softkey.
25. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
26. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.2 03) 300 Series Engine-Prop (For GIA 1 or GIA 2 replacement)

1. Scroll the curser to the Group window and select “**03) 300 Series Engine-Prop”.**
2. Press the **ENT** key.
3. In the ITEM window highlight the aircraft’s engine and prop combination and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA1 or GIA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.3 04) AHRS – Air Data (For GIA 1 or GIA 2 replacement)

NOTE

The aircraft will be equipped with dual GSU 75 ADAHRS or a combination of GRS and GDC. If the aircraft is equipped with the combination GRS and GDC, the installer will need to load the GRS file then load the GDC file using the following procedure. If the aircraft is equipped with GSU 75s, the GSU 75 is the only file that needs to be loaded.

1. Scroll the curser to the Group window and select “**04) AHRS – Air Data.**
2. Press the **ENT** key.
3. In the ITEM window highlight the installed GDC selection or GSU 75B and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA1 or GIA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:

- Green “PASS” in the Configuration and Software columns for each item loaded.
- “Upload Complete…………”COMPLETE” in the summary box.

8. Acknowledge the prompt by pushing the **ENT** key
9. Repeat steps 1-8 if there are GRS 77s or GRS 7800s installed. Select the installed GRS unit in Step 3.

7.3.2.4 05) Autopilot (For GIA 1 or GIA 2 replacement)

1. Scroll the curser to the Group window and select “**05) Autopilot.**
2. Press the **ENT** key.
3. In the ITEM window highlight the installed autopilot configuration and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA CERT software box, and press the **ENT** key to check the box.
6. If **King Air 300/B300 Series GFC700 – ESP Installation (No AOA)** was selected in the ITEM window, scroll the curser to select GIA 1 or GIA 2 configuration box, whichever was replaced. Press the **ENT** to check the box.
7. Press **“Load”** softkey.
8. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
9. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.5 06) Garmin Transponders (For GIA 1 or GIA 2 replacement)

1. Scroll the curser to the Group window and select **06) Garmin Transponders.**
2. Press the **ENT** key.
3. In the ITEM window highlight the installed transponder configuration and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA1 or GIA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.6 07) Connext – SXM (For GIA 1 replacement and aircraft equipped with a standalone GSR 56 only)

1. Scroll the curser to the Group window and select **07) Connext – SXM.**
2. Press the **ENT** key.
3. In the ITEM window highlight the installed standalone GSR 56 configuration and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA1 configuration box and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.7 08) Radar (For GIA 2 replacement and aircraft equipped with a Garmin GRA 5500 radar altimeter only)

1. Scroll the curser to the Group window and select **08) Radar.**
2. Press the **ENT** key.
3. In the ITEM window highlight King Air - GRA 5500 Radar Altimeter and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA 2 configuration box, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.8 11) Non Garmin Options (For GIA 2 replacement and aircraft equipped with a ADF only)

1. Scroll the curser to the Group window and select **11) Non-Garmin options.**
2. Press the **ENT** key.
3. In the ITEM window highlight King Air – ADF Option and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GIA 2 configuration box, and press the **ENT** key to check the box.
6. Press **“Load”** softkey.

7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.9 11) Non Garmin Options (For GIA 1 replacement and aircraft equipped with a DME only)

1. Scroll the curser to the ITEM window highlight King Air – DME Option and press the **ENT** key on PFD1.
2. Press the **CLR ALL** softkey.
3. Scroll the curser to GIA 1 configuration box, and press the **ENT** key to check the box.
4. Press **“Load”** softkey.
5. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
6. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.10 11) Non Garmin Options (For GIA 2 replacement and aircraft equipped with a non-Garmin radar altimeter only)

1. Scroll the curser to the ITEM window highlight King Air – RAD ALT Option (429 Interface) and press the **ENT** key on PFD1.
2. Press the **CHK ALL** softkey.
3. Press **“Load”** softkey.
4. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
5. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.11 11) Non Garmin Options (For GIA 1 or GIA 2 replacement and aircraft equipped with a non-Garmin TCAS II system only)

1. Scroll the curser to the ITEM window highlight King Air – Non-Garmin TCAS II System Option and press the **ENT** key on PFD1.
2. Press the **CLR ALL** softkey.
3. Scroll the curser to GIA 1 or GIA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
4. Press **“Load”** softkey.

5. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………"COMPLETE" in the summary box.
6. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.12 Non Garmin Options (For GIA 2 replacement and aircraft equipped with a non-Garmin traffic system only)

1. Scroll the curser to the ITEM window highlight King Air – Traffic System Option (429 Interface) and press the **ENT** key on PFD1.
2. Press the **CHK ALL** softkey.
3. Press **"Load"** softkey.
4. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………"COMPLETE" in the summary box.
5. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.13 Non Garmin Options (For GIA 2 replacement and aircraft equipped with a lightning detection system only)

1. Scroll the curser to the ITEM window highlight King Air – Lightning System Option and press the **ENT** key on PFD1.
2. Press the **CHK ALL** softkey.
3. Press **"Load"** softkey.
4. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green "PASS" in the Configuration and Software columns for each item loaded.
   - "Upload Complete…………"COMPLETE" in the summary box.
5. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.14 Enhanced AFCS Feature Enablement (For GIA 1 or GIA 2 replacement and aircraft equipped with Enhanced AFCS only)

1. Open PFD1 PRI and SEC circuit breakers.
2. Insert Enhanced AFCS feature enablement card (010-00330-55).
3. While holding in the #12 softkey or **ENT** key on PFD1, close PFD 1 PRI and SEC circuit breakers.
4. Select the "**SYSTEM UPLOAD**" page.
5. Activate the cursor and select Enhanced AFCS in the group window and press **ENT** key on PFD1.

6. In the ITEM window highlight **Enhanced AFCS** Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Scroll the curser to GIA1 or GIA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
9. Press **"Load"** softkey.
10. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
11. Acknowledge the prompt by pushing the **ENT** key.

7.3.2.15 Configuration Manager Update

1. With the system still in configuration mode, scroll to the Configuration Manager page on PFD 1.
2. Press the **CNFM CFG** softkey.
3. Select ok when prompted to "Confirm configuration as expected configuration".
4. Power cycle the system. Verify there are no red-Xs or system alerts.
5. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
6. If there are no red-Xs or system alerts, continue to Section 7.3.3.

7.3.3 GIA 63W Test

7.3.3.1 GPS Signal Acquisition

Figure 7-2, Aux – GPS Status Page (MFD)

The GIA 63W units should normally acquire a GPS navigation solution within 5 to 10 minutes of startup, provided the aircraft is outside (or indoors with a GPS repeater). Select the **Aux – GPS Status** page on the MFD. Two softkeys on the bottom of the display allow the user to toggle between GPS 1 and GPS 2. Verify that both receivers show 3D DIFF NAV on the MFD.

NOTE

It may be necessary to temporarily disable or move away from GPS repeaters while testing, as repeaters may adversely affect GPS receiver performance.

7.3.3.2 VHF COM Interference Test

This test must be conducted outside. Use of a GPS repeater inside a hangar may result in a failed test. This procedure assumes that the system is currently set to 25 kHz COM channel spacing. Once the signal acquisition test has been completed successfully, perform the following steps:

1. On the MFD, monitor GPS signal strength bars on the **Aux – GPS Status** page.
2. On the PFD, ensure that the CDI is set to GPS. If it is not, press the 'CDI' softkey until GPS ENR is displayed.
3. Verify that the GPS "INTEG" flag is out of view.
4. Select 121.150 MHz on the No. 1 COM transceiver.
5. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.
6. During the transmit period, verify that the GPS "INTEG" flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.
7. Repeat steps 5 and 6 and re-transmit while monitoring GPS 2 signal levels on the MFD.
8. Repeat steps 4 through 7 for each of the following frequencies:
    - 121.175 MHz
    - 121.200 MHz
    - 131.250 MHz
    - 131.275 MHz
    - 131.300 MHz
9. Repeat steps 4 through 8 for the No. 2 COM transceiver (GIA2).
10. On the MFD, select the **Aux – System Setup** page.
11. Under the COM CONFIG field, change the COM channel spacing from 25 kHz to 8.33 kHz.
12. Go back to the **Aux – GPS Status** page.
13. Select 121.185 MHz on the No. 1 COM transceiver.
14. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.
15. During the transmit period, verify that the GPS "INTEG" flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.
16. Repeat steps 14 and 15 and re-transmit while monitoring GPS 2 signal levels on the MFD.
17. Repeat steps 14 through 16 for each of the following frequencies:

- 121.190 MHz
- 130.285 MHz
- 131.290 MHz

18. Repeat steps 14 through 17 for the No. 2 COM transceiver (GIA2).
19. On the MFD, select the **Aux – System Setup** page and change the COM channel spacing back to 25 kHz.

7.3.3.3 VOR/LOC/GS Test

Check the VOR, ILS, and Glideslope functions with ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions. Adjust the RF signal to a level adequate to perform the test. Select the appropriate HSI source by using the CDI softkey.

NOTE

The PFD HSI does not show a course deviation bar unless a valid VHF NAV frequency is tuned.

7.3.3.4 GFC 700 VOR/LOC/GS Test

1. Ensure FD is coupled to PFD1 as indicated by a left pointing arrow next to the AFCS mode controller XFR button.
2. Simulate a VOR signal on a radial equivalent to the aircraft heading. Tune the NAV 1 and NAV 2 receivers to the simulation frequency.
3. Set the HSI on PFD1 to VOR1 by pressing the CDI softkey until VOR1 is selected. Set the HSI on PFD2 to VOR2 by pressing the CDI softkey until VOR2 is selected. Rotate CRS1 and CRS2 knobs to set VOR1 and VOR2 course pointers to aircraft heading. (CDI Synchronization must be set to OFF on the **Aux – System Setup 1** page on the MFD.)
4. Verify full scale deflection of VOR1 and VOR2 CDI by varying CRS1 and CRS2 selected course at least 10° left and right. Reset course pointers to aircraft heading.
5. Engage the autopilot and press the NAV key on the AFCS mode controller. Using the CRS1 knob alter course by 10° to the right. Verify the flight director and aircraft controls respond by flying to the VOR course. Repeat to the left.
6. Couple FD to PFD2 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled right as indicated by a right pointing arrow on the AFCS mode controller next to the XFR button. Repeat step 5 using CRS2 knob while coupled to PFD2.
7. Set CRS1 and CRS2 course pointers to aircraft heading.
8. Simulate a Localizer/Glideslope signal. Tune this signal on NAV 1 and NAV 2 receiver. Set the PFD1 HSI to LOC1 and PFD2 HSI to LOC2 by pressing CDI softkey until LOC1 and LOC2 is selected. Use the test equipment to center the deviation bars (localizer and glideslope) on PFD1 and PFD2.
9. Press the APR key on the AFCS mode controller. Verify that the LOC and PIT annunciations are green and ALTS and GS are white on PFD1 and PFD2. Apply

right/left and up/down localizer/glideslope signals using the test equipment. Verify that the Flight Director and flight controls respond appropriately.

10. Couple FD to PFD1 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled to PFD1 as indicated by a left pointing arrow on the AFCS mode controller next to the XFR button.
11. Repeat step 9 while coupled to PFD1.
12. If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.4 GEA 71 Engine/Airframe Unit

Original GEA 71 Reinstalled

No software or configuration loading is required if the removed GEA 71 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 9.

Original GEA 71 Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GEA units are installed in opposite locations (GEA #1 and GEA #2 in opposite unit racks). Continue to the GEA 71 Test Section 7.4.3.

New, Repaired or Exchange GEA 71 Installed

If a new, repaired or exchange GEA 71 is installed, the correct software and configuration files must be loaded to the unit. See Section 7.4.1.

7.4.1 LRU Replacement Procedure GEA1 or GEA2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GEA1 or GEA2, whichever was replaced in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.4.2
16. If there are no red-Xs or system alerts, continue to Section 7.4.3.

7.4.2 Legacy Replacement Procedure GEA1 or GEA2 (Alternate Method)

To load the GEA complete the following subsections in order as they apply to the aircraft.

7.4.2.1 01) Baseline (For GEA 1 or GEA 2 replacement)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate the cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight "**01) Baseline"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air 200-300-Series Baseline Load** Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GEA 1 or GEA 2 whichever was replaced.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press "**Load**" softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
13. Acknowledge the prompt by pushing the **ENT** key.

7.4.2.2 03) 300 Series Engine-Prop (For GEA 1 or GEA 2 replacement)

1. Scroll the curser to the Group window and select "**03) 300 Series Engine-Prop".**
2. Press the **ENT** key.
3. In the ITEM window highlight the aircraft's engine and prop combination and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GEA1 or GEA 2 configuration box, whichever was replaced, and press the **ENT** key to check the box.
6. Press **"Load"** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.4.2.3 11) Non Garmin Options (For GEA 2 replacement and aircraft equipped with a FDR)

1. Scroll the curser to the Group window and select "**11) Non Garmin Options".**
2. Press the **ENT** key.
3. In the ITEM window highlight the aircraft's engine and prop combination and press the **ENT** key on PFD1.
4. Press the **CLR ALL** softkey.
5. Scroll the curser to GEA 2 configuration box, and press the **ENT** key to check the box.
6. Press **"Load"** softkey.
7. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
8. Acknowledge the prompt by pushing the **ENT** key.

7.4.2.4 Configuration Manager Update

1. With the system still in configuration mode, scroll to the Configuration Manager page on PFD 1.
2. Press the **CNFM CFG** softkey.
3. Select ok when prompted to "Confirm configuration as expected configuration"
4. Power cycle the system. Verify there are no red-Xs or system alerts.
5. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
6. If there are no red-Xs or system alerts, test the GEA per Section 7.4.3.

7.4.3 GEA 71 Test

On the MFD (normal mode), check the indication for each of the sensor or monitor inputs with the aircraft engines off.

In general, verify all engine and system instruments show valid static normal values and markings, with no red Xs or erratic indications. Reference Figure 7-3 for normal engine instrument markings (figure may not reflect actual aircraft installation). If individual engine readings do not appear normal or have a red-X over them, go to Section 7.4.4 for individual instrument tests.

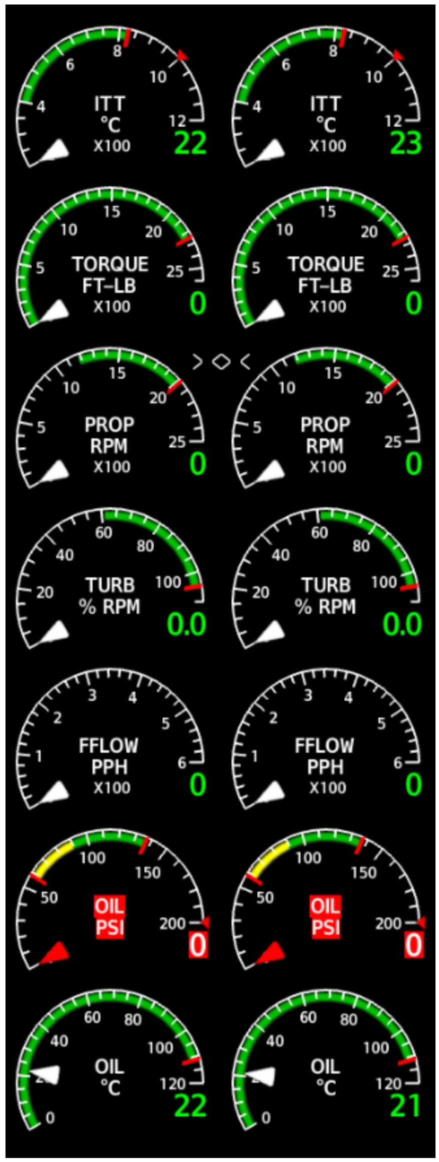


Figure 7-3, Normal Engine Instrument Markings (MFD)

If no other service is to be performed and individual GEA input testing is not required, continue to the return-to-service checks in Section 9.

7.4.4 GEA Engine Indication Checks

Perform engine indicating systems checks for the left and right engine indications in the following Sections. To prepare the aircraft for the tests, perform the following:

1. Turn off the G1000 system and remove external power from the aircraft.
2. Open engine cowlings on the left and/or right engines to access firewall connectors and the ITT thermocouple junction block as needed.

7.4.4.1 ITT Functional Check

Required test equipment:

Test Equipment	Make/Requirement
Calibrated DC Power Source or ITT Tester	0-100 mVDC or 200C-1200C

If the left engine gauge needs tested, perform the following:

1. Disconnect all thermocouple wires except for the Alumel-Green #10 and Chromel-White #8 leads from the left hand engine thermocouple junction block mounted to the gas generator case.
2. Connect the DC Power Source or ITT Tester across the Alumel-Green #10 (-) and Chromel-White #8 (+) leads of the thermocouple junction block. Make sure the polarity of the Alumel and Chromel leads are strictly observed when making connections.
3. Apply external power to aircraft and start the G1000 system in normal mode.
4. If the test input shows an incorrect ITT gauge reading outside the Indication tolerance in Table 7-1, perform the following:
   a. Troubleshoot the left engine ITT system per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77, Airframe ITT Wire Harness Continuity Check. Note for this test, the GEA 1 unit replaces the previously installed analog ITT indicator. Remove GEA 1 unit from its rack to conduct the continuity test from the terminal block to the GEA 1 unit ITT input pins.
   b. If the ITT Wire Harness Continuity Check passes, replace GEA 1.
5. If the test input shows a correct ITT reading within the Indication tolerance in Table 7-1, troubleshoot the left engine ITT system per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77, using the following checks:
   a. ITT Thermocouple Loop Resistance Check
   b. ITT Thermocouple Insulation Resistance Check
6. After correcting the condition causing the incorrect ITT reading, turn off the G1000 system and remove external power from aircraft.
7. Reconnect all thermocouple wires to the junction blocks and torque nuts per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77.
8. If no other EIS gauge tests are needed, reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect all thermocouple wires except for the Alumel-Green #10 and Chromel-White #8 leads from the right hand engine thermocouple junction block mounted to the gas generator case.
2. Connect the DC Power Source or ITT Tester across the Alumel-Green #10 (-) and Chromel-White #8 (+) leads of the thermocouple junction block. Make sure the polarity of the Alumel and Chromel leads are strictly observed when making connections.
3. Apply external power to aircraft and start the G1000 system in normal mode.
4. If the test input shows an incorrect ITT gauge reading outside the Indication tolerance in Table 7-1, perform the following:
    a. Troubleshoot the right engine ITT system per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77, Airframe ITT Wire Harness Continuity Check. Note for this test, the GEA 2 unit replaces the previously installed analog ITT indicator. Remove GEA 2 unit from its rack to conduct the continuity test from the terminal block to the GEA 2 unit ITT input pins.
    b. If the ITT Wire Harness Continuity Check passes, replace GEA 2.
5. If the test input shows a correct ITT reading within the Indication tolerance in Table 7-1, troubleshoot the right engine ITT system per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77, using the following checks:
    a. ITT Thermocouple Loop Resistance Check
    b. ITT Thermocouple Insulation Resistance Check
6. After correcting the condition causing the incorrect ITT reading, turn off the G1000 system and remove external power from aircraft.
7. Reconnect all thermocouple wires to the junction blocks and torque nuts per Beechcraft King Air 300 Series Maintenance Manual, Chapter 77.
8. If no other EIS gauge tests are needed, reinstall the engine cowling(s).

NOTE

If the ITT Tester is not temperature compensated or if using the DC Signal method, use the chart shown in Figure 7-4 to convert the ambient temperature to millivolts and subtract from the DC Signal value in Table 7-1.

Test Point (°C)	DC Signal (mV, subtract temp offset)	Indication (°C)
200	8.137	200 ± 17
400	16.395	400 ± 17
600	24.902	600 ± 12
800	33.277	800 ± 7
1000	41.269	1000 ± 12
1200	48.828	1200 ± 17

Table 7-1, ITT Indication Test Points

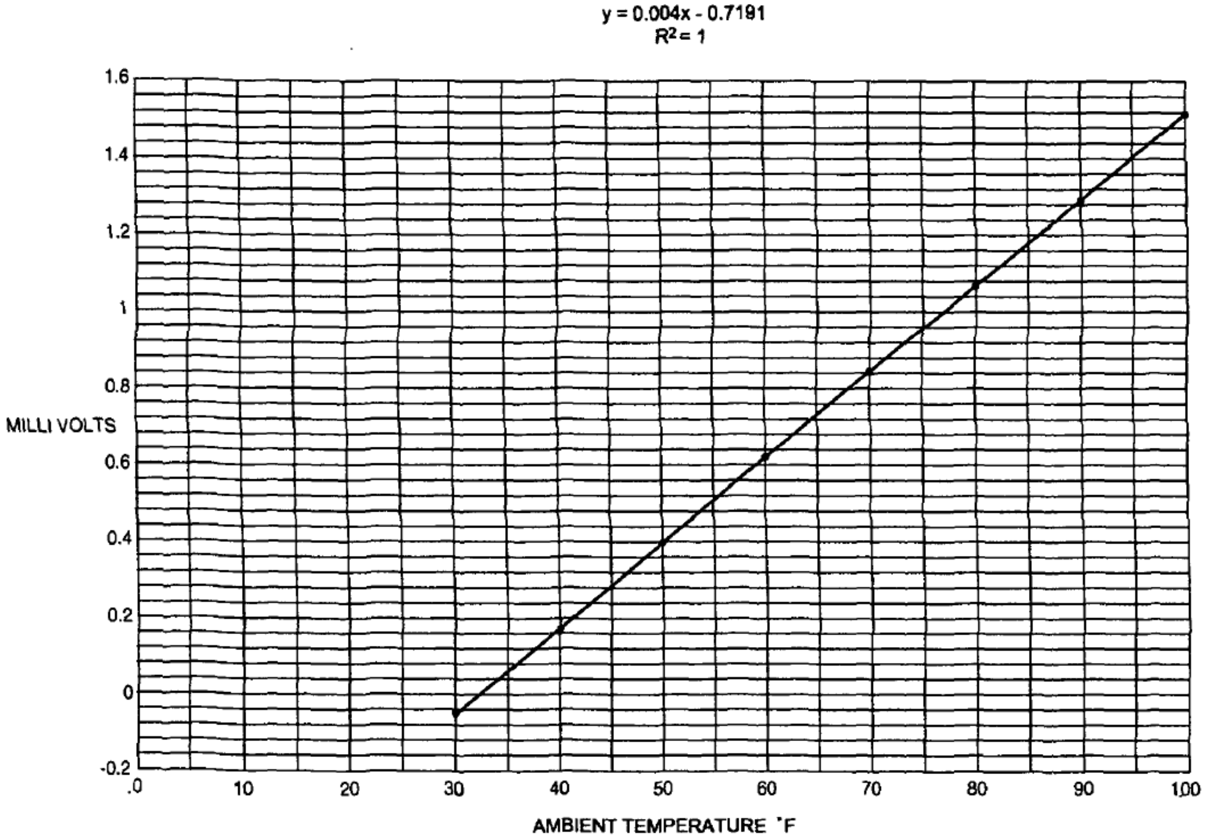


Figure 7-4, Ambient Temperature Conversion Chart

7.4.4.2 Torque Functional Check

Required test equipment:

Test Equipment	Make/Requirement
Calibrated DC Power Source	0-10 VDC

If the left engine gauge needs to be tested, perform the following:

1. Disconnect the J102 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a DC voltage into GEA 1 by connecting the DC power source to the left engine firewall connector-pins J102-C (HI) and J102-R (LO).
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-2, troubleshoot the torque sensor per the Beechcraft King Air 300 Series Maintenance Manual.
5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-2 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 1.

6. If no other EIS gauge tests are needed, reconnect and safety the J102 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect the J103 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a DC voltage into GEA 2 by connecting the DC power source to the left engine firewall connector-pins J103-C (HI) and J103-R (LO).
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-2, troubleshoot the torque sensor per the Beechcraft King Air 300 Series Maintenance Manual.
5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-2 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 2.
6. If no other EIS gauge tests are needed, reconnect and safety the J103 connector and reinstall the engine cowling(s).

Test Point (VDC)	Torque Indication (%)
0.000 ± 0.020	0 ± 2
1.035 ± 0.020	45 ± 2
1.725 ± 0.020	75 ± 2
2.300 ± 0.020	100 ± 2

Table 7-2, Torque Indication Test Points

7.4.4.3 Turbine Tach N1 Functional Check

Required test equipment:

Test Equipment	Make/Requirement
Signal Generator	0-10Vdc / 0 – 1k Hz

If the left engine gauge needs to be tested, perform the following:

1. Disconnect the J104 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a 3Vrms sine wave signal into the No. 1 TACH-GEN Adapter by connecting the Signal Generator to the left engine firewall connector-pins J104-J and J104-K.
4. Allow five seconds for the input signal to stabilize after changes before verifying the indications.
5. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-3, troubleshoot the tach sensor per the Beechcraft King Air 300 Series Maintenance Manual.

6. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-3 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 1.
7. If no other EIS gauge tests are needed, reconnect and safety the J104 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect the J105 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a 3Vrms sine wave signal into the No. 2 TACH-GEN Adapter by connecting the Signal Generator to the left engine firewall connector-pins J105-J and J105-K.
4. Allow five seconds for the input signal to stabilize after changes before verifying the indications.
5. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-3, troubleshoot the tach sensor per the Beechcraft King Air 300 Series Maintenance Manual.
6. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-3 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 2.
7. If no other EIS gauge tests are needed, reconnect and safety the J105 connector and reinstall the engine cowling(s).

Test Point (Hz)	Indication (%)
0	0.0 ± 0.3
70 ± 1	100.0 ± 0.3

Table 7-3, N1 Indication Test Points

7.4.4.4 Prop Tach N2 Functional Check

Required test equipment:

Test Equipment	Make/Requirement
Signal Generator	0-10Vdc / 0 – 1k Hz

If the left engine gauge needs to be tested, perform the following:

1. Ensure that Prop Sync switch indicator located on the instrument panel is not depressed.
2. Disconnect the J102 firewall connector.
3. Apply external power to aircraft and start the G1000 system in normal mode.
4. Inject a 2.5Vrms sine wave signal into the No. 1 TACH-GEN Adapter by connecting the Signal Generator to the left engine firewall connector-pins J102-W (HI) and J102-X (LO).
5. Allow five seconds for the input signal to stabilize after changes before verifying the indications.
6. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-4, troubleshoot the tach sensor per the Beechcraft King Air 300 Series Maintenance Manual.
7. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-4 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 1.
8. If no other EIS gauge tests are needed, reconnect and safety the J102 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Ensure that Prop Sync switch indicator located on the instrument panel is not depressed.
2. Disconnect the J103 firewall connector.
3. Apply external power to aircraft and start the G1000 system in normal mode.
4. Inject a 2.5Vrms sine wave signal into the No. 2 TACH-GEN Adapter by connecting the Signal Generator to the left engine firewall connector-pins J103-W (HI) and J103-X (LO).
5. Allow five seconds for the input signal to stabilize after changes before verifying the indications.
6. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-4, troubleshoot the tach sensor per the Beechcraft King Air 300 Series Maintenance Manual.
7. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-4 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 2.

8. If no other EIS gauge tests are needed, reconnect and safety the J103 connector and reinstall the engine cowling(s).

Test Point (Hz)	Indication (RPM)
0.00	0 ± 30
66 ± 1	1600 ± 30

Table 7-4, N2 Indication Test Points

7.4.4.5 Fuel Flow Indication Functional Check

Required test equipment.

Name	Requirement
Decade Box or equivalent device	0-1k ohms
Signal Generator	0-10Vdc / 0 – 1k Hz

If the left engine gauge needs to be tested, perform the following:

1. Disconnect the J104 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a 1000 ± 10Ω resistance into the Signal Conditioner by connecting the Decade box to left engine firewall connector-pins J104-E and J104-F.
4. Inject a 25mV P-P sine wave signal into the Signal Conditioner by connecting the Signal Generator to the left engine firewall connector-pins J104-Y (HI) and J104-Z (LO).
5. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-5, troubleshoot the fuel flow sensor per the Beechcraft King Air 300 Series Maintenance Manual.
6. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-5 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 1.
7. If no other EIS gauge tests are needed, reconnect and safety the J104 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect the J105 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a 1000 ± 10Ω resistance into the Signal Conditioner by connecting the Decade box to left engine firewall connector-pins J105-E and J105-F.
4. Inject a 25mV P-P sine wave signal into the Signal Conditioner by connecting the Signal Generator to the left engine firewall connector-pins J105-Y (HI) and J105-Z (LO).

5. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-5, troubleshoot the fuel flow sensor per the Beechcraft King Air 300 Series Maintenance Manual.
6. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-5 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace the Signal Conditioner.
    c. Replace GEA 2.
7. If no other EIS gauge tests are needed, reconnect and safety the J105 connector and reinstall the engine cowling(s).

Test Point (Hz)	Indication (PPH)
0	0 ± 2
140	100 ± 10
561	400 ± 10
841	600 ± 10
1122	800 ± 10

Table 7-5, Fuel Flow Indication Test Points

7.4.4.6 Oil Pressure Indication Functional Check

Required test equipment:

Name	Requirement
Calibrated DC Power Source	0-10 VDC

If the left engine gauge needs to be tested, perform the following:

1. Disconnect the J104 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a DC voltage into the GEA 1 by connecting the DC power source to the left engine firewall connector-pins J104-A (LO) and J104-B (HI).
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-6, troubleshoot the oil pressure sensor per the Beechcraft King Air 300 Series Maintenance Manual.
5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-6 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 1.
6. Turn off the G1000 system and remove external power from the aircraft.
7. If no other EIS gauge tests are needed, reconnect and safety the J104 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect the J105 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a DC voltage into the GEA 1 by connecting the DC power source to the left engine firewall connector-pins J105-A (LO) and J105-B (HI).
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-6, troubleshoot the oil pressure sensor per the Beechcraft King Air 300 Series Maintenance Manual.
5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-6 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 2.
6. Turn off the G1000 system and remove external power from the aircraft.
7. If no other EIS gauge tests are needed, reconnect and safety the J105 connector and reinstall the engine cowling(s).

Test Point (VDC)	Indication (PSI)
0.00 ± 0.10	0 ± 4
1.75 ± 0.10	70 ± 4
2.50 ± 0.10	100 ± 4
3.75 ± 0.10	150 ± 4
5.00 ± 0.10	200 ± 4

Table 7-6, Oil Pressure Test Points

7.4.4.7 Oil Temperature Indication Functional Check

Required test equipment:

Name	Requirement
Decade box or equivalent device	0-1k ohms

If the left engine gauge needs to be tested, perform the following:

1. Disconnect the J104 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a resistance into GEA 1 by connecting the Decade box to the left engine firewall connector-pins J104-W and J104-X.
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-7, troubleshoot the oil temperature sensor per the Beechcraft King Air 300 Series Maintenance Manual.

5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-7 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 1.
6. Turn off the G1000 system and remove external power from the aircraft.
7. If no other EIS gauge tests are needed, reconnect and safety the J104 connector and reinstall the engine cowling(s).

If the right engine gauge needs to be tested, perform the following:

1. Disconnect the J105 firewall connector.
2. Apply external power to aircraft and start the G1000 system in normal mode.
3. Inject a resistance into GEA 2 by connecting the Decade box to the left engine firewall connector-pins J105-W and J105-X.
4. If the test input shows a correct gauge reading within the Indication tolerance in Table 7-7, troubleshoot the oil temperature sensor per the Beechcraft King Air 300 Series Maintenance Manual.
5. If the test input shows an incorrect gauge reading outside the Indication tolerance in Table 7-7 perform the following:
    a. Check gauge circuit wiring for faults.
    b. Replace GEA 2.
6. Turn off the G1000 system and remove external power from the aircraft.
7. If no other EIS gauge tests are needed, reconnect and safety the J105 connector and reinstall the engine cowling(s).

Test Point (Ohms)	Indication (C)
75	-46 ± 3
90	0 ± 3
108	50 ± 3

Table 7-7, Oil Temperature Test Points

7.5 GTX 335R, GTX 345R, GTX 33( ), or GTX 3000 Transponder

Original GTX is Reinstalled

No software or configuration loading is required if the removed GTX 335R, GTX 345R, GTX 33, or GTX 3000 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to GTX 335R, GTX 345R, GTX 33, or GTX 3000 Test Section 7.5.4.

Original GTX Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GTX #1 and GTX #2 are installed in opposite locations. Continue to Transponder Configuration Section 7.5.3.

New, Repaired or Exchange GTX is Installed

If a new, repaired or exchange GTX 335R, GTX 345R, GTX 33( ), or GTX 3000 is installed, the correct software and configuration files must be loaded to the unit. See Section 7.5.1.

7.5.1 LRU Replacement Procedure GTX1 or GTX2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GTX1 or GTX2, whichever was replaced in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.5.2.
16. If there are no red-Xs or system alerts, continue to Section 7.5.3.

7.5.2 Legacy Replacement Procedure GTX1 or GTX2 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.

4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**06) Garmin Transponders”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed transponder combination. Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GTX 1 or GTX 2 whichever was replaced.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press “**Load**” softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
13. Acknowledge the prompt by pushing the **ENT** key.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
20. If there are no red-Xs or system alerts, continue to Section 7.5.3.

7.5.3 Transponder Configuration

1. If not applied, apply power to the G1000 system and put all displays into config mode.
2. On PFD1, select the AIRCRAFT CONFIGURATION page.
3. For GTX 33 unit replacement only, press the Set GTX # softkey for the unit replaced and acknowledge the PFD1 prompt by pressing the ENT key. For GTX 3000 units only, press the SET GTX softkey and acknowledge the PFD1 prompt by pressing the ENT key. GTX 335R and 345R units automatically save the registration number, no action is needed for these units.
4. After completing transponder configuration, deactivate the cursor.

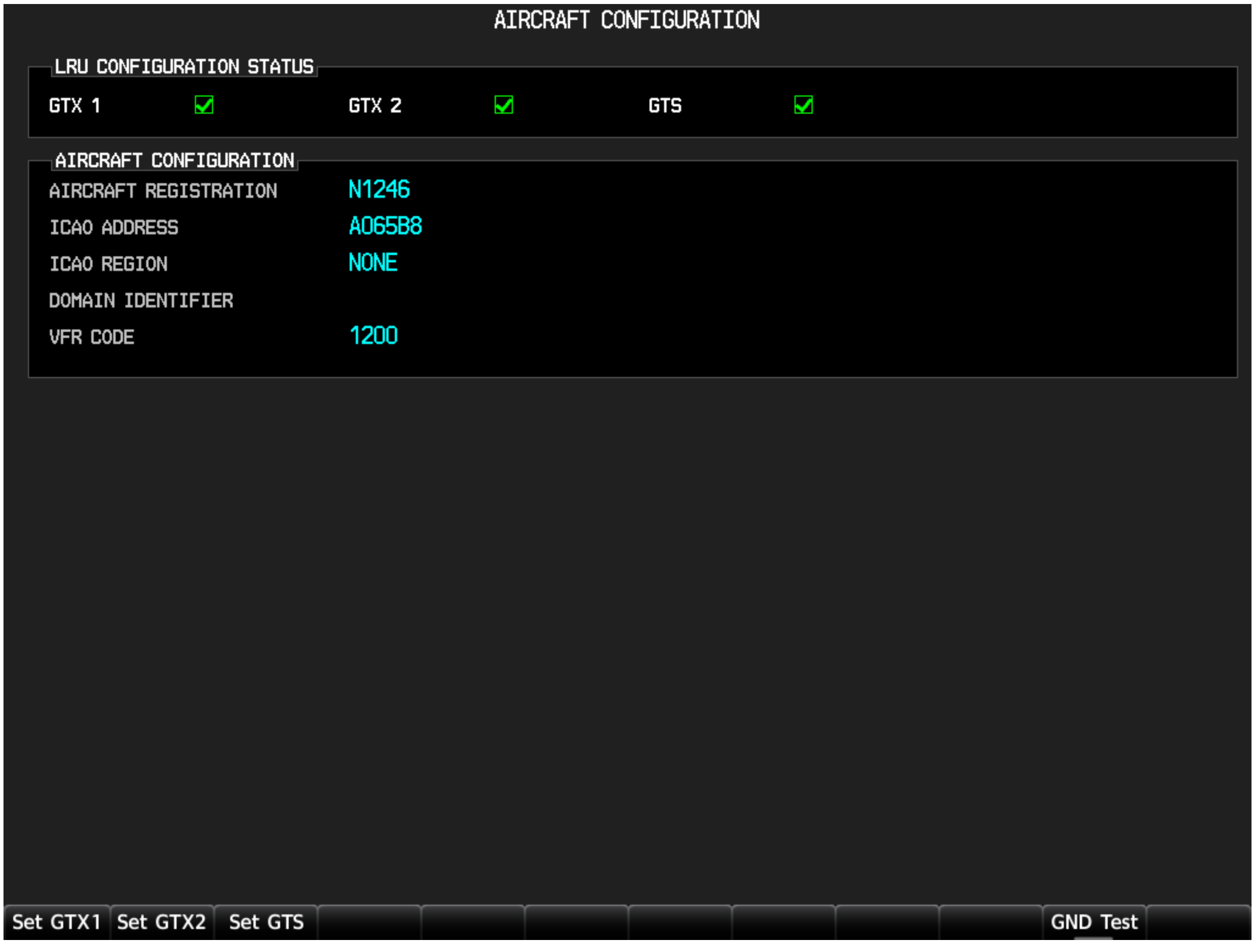


Figure 7-5, Aircraft Registration

7.5.4 GTX 335R, GTX 345R, GTX 33( ), or GTX 3000 Test

Operation of the GTX 335R, GTX 345R, GTX 33() or GTX 3000 Mode-S transponder is accomplished using PFD 1, PFD 2 or the MFD. Refer to G1000 King Air 300 Series Cockpit Reference Guide, listed in Table 1-1, for basic operation.

The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (14 CFR) §§ 91.411 and 91.413, **every 24 calendar months**, or any time the transponder is removed. This test requires the use of a Mode S ramp generator. Specific instructions for operating the ramp tester are contained in the applicable operator's manual. Refer to 14 CFR Part 43 Appendices E and F for testing criteria.

Note that for GTX 33D or GTX 3000 units, the aircraft must be put on jacks to simulate an in-air condition in order to test the Mode S diversity transmission channel isolation.

If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.6 GSU 75B ADAHRS

Original GSU unit is Reinstalled

No software or configuration loading is required if the removed GSU 75B is re-installed in the same location. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Perform a pitot - static system leak check and continue to Section 9.

Original GSU unit Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GSU #1 and GSU #2 are installed in opposite locations. Perform a pitot - static system leak check and continue to Section 9.

New, Repaired or Exchange GSU unit is Installed

If a new, repaired or exchange GSU unit is installed, the correct software and configuration files must be loaded to the unit.

New GSU 75B Configuration Module is Installed

The correct configuration files must be loaded if the GSU75B configuration module has been replaced.

7.6.1 LRU Replacement Procedure GSU1 or GSU2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GRS1 or GRS2 in the LRU dropdown box, whichever was replaced.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Select GDC 1 or GDC 2 in the LRU dropdown box, whichever was replaced.
11. Press the **CHK All** softkey.
12. Press the **Load** softkey**.**
13. Press **ENT** to acknowledge the process was complete.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.6.2.

20. If there are no red-Xs or system alerts, continue to Section 7.7.3 for the air data portion of the GSU and Section 7.10.5 for the AHRS portion of the GSU.

7.6.2 Legacy Replacement Procedure GSU1 or GSU2 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight "**04) AHRS – Air Data"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air- GSU 75B ADAHRS and GMU 44 Magnetometer**. Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GSU 1 or GSU 2 whichever was replaced.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press "**Load**" softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete…………"COMPLETE" in the summary box.
13. Acknowledge the prompt by pushing the **ENT** key.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to "Confirm configuration as expected configuration"
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
21. If there are no red-Xs or system alerts, continue to Section 7.7.3 for the air data portion of the GSU and Section 7.10.5 for the AHRS portion of the GSU.

7.7 GDC 7400 Air Data

Original GDC unit is Reinstalled

No software or configuration loading is required if the removed GDC 7400 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Perform a pitot - static system leak check and continue to Section 9 if no other service is performed.

Original GDC unit Installed in Opposite Locations for Troubleshooting

No software loading is required if the original GDC #1 and GDC #2 are installed in opposite locations. Perform Section 7.7.3 if no other service is performed.

New, Repaired or Exchange GDC unit is Installed

If a new, repaired or exchange GDC unit is installed, the correct software and configuration files must be loaded to the unit.

7.7.1 LRU Replacement Procedure GDC 1 or GDC 2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GDC1 or GDC 2, whichever was replaced in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.7.2.
16. If there are no red-Xs or system alerts, continue to Section 7.7.3.

7.7.2 Legacy Replacement Procedure GDC 1 or GDC 2 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**04) AHRS – Air Data”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GDC. Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Use the large FMS knob to scroll to GDC 1 or GDC 2 whichever was replaced.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press “**Load**” softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
13. Acknowledge the prompt by pushing the **ENT** key.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
20. If there are no red-Xs or system alerts, continue to Section 7.7.3.

7.7.3 Air Data Test (GSU 75B or GDC 7400)

The G1000 system must be maintained in accordance with the G1000 System Maintenance Manual listed in Table 1-2 and appropriate regulations. When the GDC unit is tested in accordance with 14 CFR Part 43, Appendix E, note the following exceptions:

- For paragraph (b)(1)(i) Scale Error, use Table 7-8 of this section instead of Appendix E, Table I
- Do not perform paragraph (b)(1)(iv) Friction
- Do not perform paragraph (b)(1)(vi) Barometric Scale Error

The following Air Data Test is to be performed in addition to or in conjunction with any other regulated tests. This test must be performed on both pilot and copilot systems with a calibrated

Air Data Test Set (ADTS) with a combined accuracy/repeatability specification of less than ±20 feet for the test altitude range.

1. Perform pitot static system leak check of each system as described in the King Air 300 Series Maintenance Manual, 34-00-00, with the following changes:
    a. For the pitot leak check, set the air data test unit to an indicated airspeed of 200 knots with the static system vented to ambient pressure conditions (ground). Pitot leak rate is not to exceed 1 knot in 1 minute.
    b. For the static leak check, set the air data test set to 30,000 feet and an indicated airspeed of 120 knots. Static leak rate is not to exceed 300 feet in 1 minute.
2. Connect the pitot/static tester to the aircraft left and right pitot and static ports. Note that the standby altimeter and airspeed indicator are connected to the copilot side pitot and static lines.
3. Verify that the PFD1 altimeter baro setting is set to 29.92 in Hg (1013.25 mb).
4. Start PFD1 in configuration mode and navigate to the GRS page. The values for altitude and airspeed are shown on the AHRS/AIR DATA INPUT table as B ALT and IAS for both AIR DATA 1 and AIR DATA 2.
5. Simulate the altitudes and airspeeds for each condition shown in Table 7-8. Wait for ADTS to report that target values have been achieved.
6. On Table 7-8, record the altitude (B ALT) displayed on PFD1 for AIR DATA 1 and AIR DATA 2 for each condition.
7. On Table 7-8, record the airspeed (IAS) displayed on PFD1 for AIR DATA 1 and AIR DATA 2 for each condition.
8. Verify that the indicated altitudes and airspeeds are within allowable tolerances.
9. File the results with the aircraft maintenance records.

If either the pilot or copilot air data system does not meet the tolerances specified, have maintenance checks performed on the air data system or the pitot/static system.

Table 7-8, Air Data System Test

Test Point	Altitude (FT)			Airspeed (KIAS)	
ALT / AS	Nominal Altitude	AIR DATA 1	AIR DATA 2	AIR DATA 1	AIR DATA 2
		Tolerance	Tolerance	Tolerance	Tolerance
		Actual	Actual	Actual	Actual
0 / 0	0	+/-20	+/-20	+/-2	+/-2
0 / 99	0	+/-20	+/-20	+/-2	+/-2
0 / 132	0	+/-20	+/-20	+/-2	+/-2
0 / 198	0	+/-20	+/-20	+/-2	+/-2
1000 / 50	1000	+/-20	+/-20	+/-2	+/-2
2000 / 50	2000	+/-25	+/-25	+/-2	+/-2
4000 / 80	4000	+/-25	+/-25	+/-2	+/-2
8000 / 80	8000	+/-30	+/-30	+/-2	+/-2
8000 / 260	8000	+/-30	+/-30	+/-2	+/-2
10000 / 120	10000	+/-30	+/-30	+/-2	+/-2
11000 / 120	11000	+/-35	+/-35	+/-2	+/-2
13000 / 150	13000	+/-40	+/-40	+/-2	+/-2
14000 / 150	14000	+/-40	+/-40	+/-2	+/-2
16000 / 180	16000	+/-45	+/-45	+/-2	+/-2
18000 / 210	18000	+/-45	+/-45	+/-2	+/-2
19000 / 138	18983	+/-47	+/-47	+/-2	+/-2
19000 / 162	18971	+/-47	+/-47	+/-2	+/-2
19000 / 185	18958	+/-47	+/-47	+/-2	+/-2
19000 / 209	18947	+/-47	+/-47	+/-2	+/-2
19000 / 221	18947	+/-47	+/-47	+/-2	+/-2
19000 / 233	18947	+/-47	+/-47	+/-2	+/-2

Air Data System Test (Continued)

Test Point	Altitude (FT)			Airspeed (KTS)	
	Nominal Altitude	AIR DATA 1	AIR DATA 2	AIR DATA 1	AIR DATA 2
ALT / AS		Tolerance	Tolerance	Tolerance	Tolerance
		Actual	Actual	Actual	Actual
29000 / 111	28999	+/-72	+/-72	+/-2	+/-2
29000 / 130	28982	+/-72	+/-72	+/-2	+/-2
29000 / 150	28967	+/-72	+/-72	+/-2	+/-2
29000 / 169	28953	+/-72	+/-72	+/-2	+/-2
29000 / 178	28946	+/-72	+/-72	+/-2	+/-2
29000 / 188	28937	+/-72	+/-72	+/-2	+/-2
29000 / 196	28928	+/-72	+/-72	+/-2	+/-2
35000 / 97	35016	+/-87	+/-87	+/-2	+/-2
35000 / 114	34996	+/-87	+/-87	+/-2	+/-2
35000 / 130	34978	+/-87	+/-87	+/-2	+/-2
35000 / 147	34961	+/-87	+/-87	+/-2	+/-2
35000 / 156	34953	+/-87	+/-87	+/-2	+/-2
35000 / 164	34946	+/-87	+/-87	+/-2	+/-2
35000 / 171	34939	+/-87	+/-87	+/-2	+/-2

Aircraft S/N: ______________________	Date: ___________________	Operator: ___________________
ADTS Make: ________________________ Model: ________________________ S/N: ________________________ Cal. Date: ______________________	**ADAHRS1/ADC1** Model: __________ P/N: ____________________ S/N: ____________________ Cal. Date: _______________	**ADAHRS2/ADC2** Model: __________ P/N: _____________________ S/N: _____________________ Cal. Date: _________________

Leak Check Static System at 30,000 ft, 120 kts (pass if <300 ft in 1 min)

Pilot: _____________ **Feet/Min**

Copilot: ___________ **Feet/Min**

Leak Check Pitot System at 200 kts (pass if <1 KIAS in 1 min)

Pilot: _____________ **KIAS/Min**

Copilot: ___________ **KIAS/Min**

7.7.4 Static Port Vertical Speed (Rate of Climb) Test

1. Command ADTS to change the altitude at the rates shown in the table below.
2. Wait for ADTS to report that target rates have been achieved.
3. Verify that the Rate of Climb reported by the Vertical Speed field on PFD1 and PFD2 are within the tolerances specified in Table 7-9.

Table 7-9, Vertical Speed Table

Vertical Speed, feet/minute	Allowed tolerance, ±feet/minute
2000	100
1000	50
500	45
200	45
0	N/A (No VS Display)
-200	45
-500	45
-1000	50
-2000	100

7.7.5 OAT Probe Check

1. Ensure on-side sensors for PFD1 and PFD2.
2. Ensure the outside air temperature (OAT) probes and a calibrated thermometer stabilize at ambient temperature.
3. Verify that the OAT measurement shown on PFD1 and PFD2, in degrees Celsius, indicate within 2 °C of the ambient temperature as measured by the calibrated thermometer.

If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.8 GRS 77 or 7800 AHRS and GMU 44 Magnetometer

Original GRS is Reinstalled

If the original GRS 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.

If the GRS rack was not removed or loosened, continue to the GRS/GMU Test Section 7.10.5.

If the GRS rack was removed or loosened, continue to the GRS/GMU Calibration Procedures Section 7.10.

Original GRS is installed in Opposite Location for Troubleshooting

If the original GRS #1 and GRS #2 are installed in opposite locations (GRS #1 and GRS #2 in opposite unit racks), no software loading is required.

If the GRS rack(s) was not removed or loosened, continue to the GRS/GMU Test Section 7.10.5.

If the GRS rack(s) was removed or loosened, continue to the GRS/GMU Calibration Procedures Section 7.10.

New, Repaired or Exchange GRS is Installed

If a new, repaired or exchange GRS is installed, then software must be loaded.

New GRS Configuration Module is Installed

If the GRS configuration module is replaced, no software loading is required. Continue to the GRS/GMU Calibration Procedures Section 7.10.

7.8.1 LRU Replacement Procedure GRS1 or GRS2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GRS1 or GRS2, whichever was replaced in the LRU dropdown box.
7. Verify all boxes are checked. If they are not checked, press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.

15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.8.2.
16. If there are no red-Xs or system alerts and the GRS rack(s) were not removed or loosened, continue to the GRS/GMU Test Section 7.10.5.
17. If there are no red-Xs or system alerts and the GRS rack(s) was removed or loosened, continue to the GRS/GMU Calibration Procedures Section 7.10.

7.8.2 Legacy Replacement Procedure GRS1 or GRS2 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
6. Select the “SYSTEM UPLOAD” page using the small FMS knob on PFD1.
7. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “04) AHRS – Air Data” and press ENT key on PFD1.
8. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GRS. Press ENT key on PFD1.
9. Press the **CLR ALL** softkey.
10. Press “**Load**” softkey.
11. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
12. Acknowledge the prompt by pushing the ENT key.
13. Deactivate the curser.
14. Scroll to the Configuration Manager page.
15. Press the CNFM CFG softkey.
16. Select ok when prompted to “Confirm configuration as expected configuration”
17. Power cycle the system. Verify there are no red-Xs or system alerts.
18. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts and the GRS rack(s) were not removed or loosened, continue to the GRS/GMU Test Section 7.10.5.
18. If there are no red-Xs or system alerts and the GRS rack(s) was removed or loosened, continue to the GRS/GMU Calibration Procedures Section 7.10.

7.9 GMU 44 Magnetometer

Original GMU 44 is Reinstalled

If the original GMU 44 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. Continue to the GRS/GMU Test Section 7.10.5.

Original GMU 44 is Installed in Opposite Location for Troubleshooting

If the original GMU #1 and GMU #2 are installed in opposite locations (GMU #1 and GMU #2 in opposite unit racks), no software loading is required. However, performing the Magnetometer Calibration Procedure is required. Continue to the GRS/GMU Magnetic Calibration Section 7.10.3.

New, Repaired or Exchange GMU 44 is Installed

If a new, repaired or exchange GMU 44 is installed, then software must be loaded.

7.9.1 LRU Replacement Procedure GMU1 or GMU2

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GMU1 or GMU2, whichever was replaced in the LRU dropdown box.
7. Verify all boxes are checked. If they are not checked, press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.9.2.
16. If there are no red-Xs or system alerts, continue to Section 7.10.

7.9.2 Legacy Replacement Procedure GMU1 or GMU2 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.

4. Select the “SYSTEM UPLOAD” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “04) AHRS – Air Data” and press ENT key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GRS. Press ENT key on PFD1.
7. Press the CLR ALL softkey.
8. Scroll to GMU1 or 2.
9. Highlight the Software box.
10. Press the **ENT** key.
11. Press “**Load**” softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………”COMPLETE” in the summary box.
13. Acknowledge the prompt by pushing the ENT key.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the CNFM CFG softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
20. If there are no red-Xs or system alerts, continue to Section 7.10.

7.10 GSU/GRS/GMU Calibration Procedures

GSU/GRS/GMU Recalibration Criteria

The following calibration procedures are provided for the GRS and GMU 44:

- Pitch/Roll Offset: (Procedure A1, PROVIDED IN SECTION 7.10.1)
- Magnetometer Calibration: (Procedure B, PROVIDED IN SECTION 7.10.3)
- Engine Run-Up Vibration Test: (Procedure D, PROVIDED IN SECTION 7.10.4)
- Magnetometer Interference Test: (Procedure E, PROVIDED IN SECTION 5.17.4)

Follow the steps given for each procedure on-screen at the GRS/GMU CALIBRATION page. Note that the CALIBRATE command cannot be selected and activated until the installer acknowledges all required steps have been carried out by pressing the ENT key on each step.

Table 7-10, Required GRS/GMU Calibrations

Condition	Calibrations Required		
	Procedure A1: GSU 75B, GRS 77, or GRS 7800 Pitch/Roll Offset	Procedure B: GSU/GRS/GMU Magnetic Calibration	Procedure D: Engine Run-up Vibration Test
Either GMU 44 was removed and reinstalled. (no change in serial number)	None Required. Continue to GSU/GRS/GMU Test Section.		
GMU 44 was replaced with new unit. (New serial number)		X	
GRS AHRS or GSU ADAHRS was removed and/or replaced. The mounting tray was NOT removed and the mounting tray bolts were NOT loosened.	None Required. Continue to GSU/GRS/GMU Test Section.		
GRS AHRS or GSU ADAHRS was removed and/or replaced. The mounting tray WAS removed and/or mounting tray bolts WERE loosened.	X	X	X
GRS AHRS or GSU ADAHRS Configuration Module was replaced.	X	X	X

7.10.1 Procedure A1: GSU 75B, GRS 77, or GRS 7800 Pitch/Roll Offset Calibration

This procedure must be performed for both GSU/GRS units installed in the aircraft. This first procedure must be carried out with the engine off.

1. Level the aircraft to within ±0.25° of zero pitch and zero roll using a digital level. (Follow instructions in King Air 300 Series Maintenance Manual, listed in Table 1-1, for leveling)
2. Start PFD 1 in Configuration mode.
3. Go to the GRS Page Group and select the GRS/GMU Calibration page at the PFD. This page is protected and the following softkey password must be entered at the PFD to continue:
    - 9
    - 10
    - 11
    - 12 (Far Right softkey)

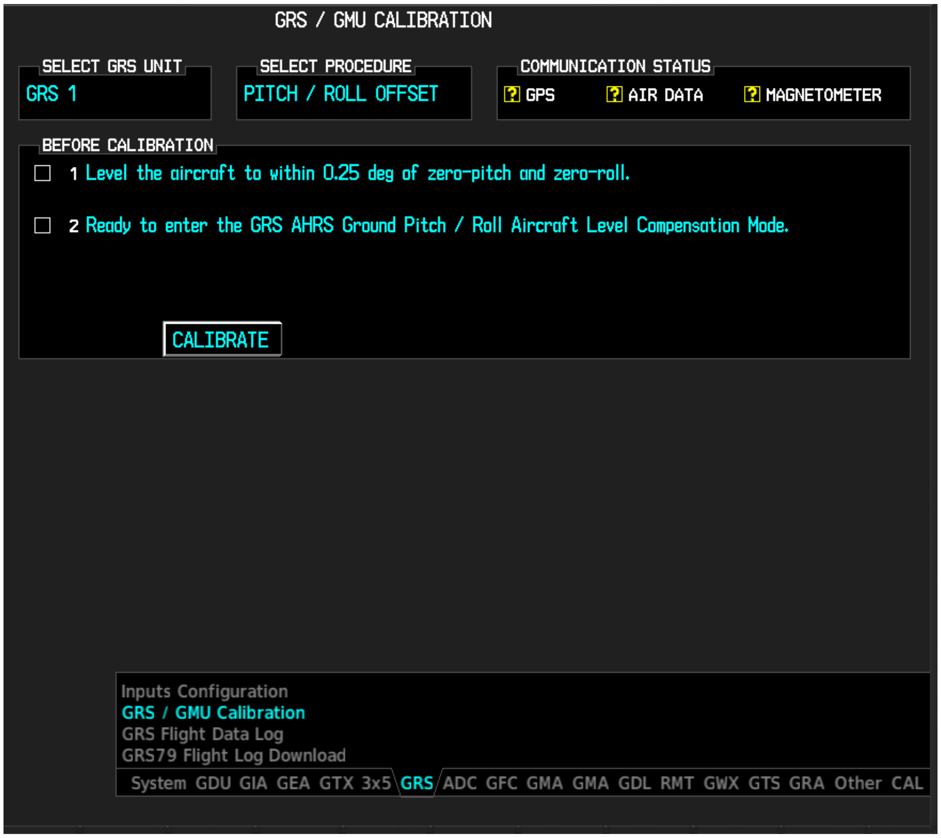


Figure 7-6, GRS/GMU Calibration, Pitch/Roll Offset

NOTE

On the calibration pages, “GRS” includes GRS and GSU units.

4. Ensure that the GRS 1 is selected in the SELECT GRS UNIT window on the PFD.
5. Activate the cursor and highlight the SELECT PROCEDURE window and select PITCH / ROLL OFFSET.
6. Press the ENT key.
7. Use the cursor to highlight Step 1 in the BEFORE CALIBRATION window.
8. Follow the checklist items displayed on the PFD and press the ENT key as each step is completed or confirmed.
9. When the CALIBRATE field is blinking, press the ENT button to begin the procedure.
10. After several seconds, a new checklist appears in the lower half of the PFD. Press the ENT key as each step is confirmed. When the CONFIRM AIRCRAFT IS LEVEL field is blinking, press the ENT key to continue.
11. The result of the pitch/roll offset compensation is displayed on the PFD. If successful, the AHRS records the required pitch and roll offsets, informs the operator of a successful conclusion and returns to normal operation.
12. Press the ENT key on the PFD to conclude this procedure for GRS 1.
13. Repeat steps 4 through 12 for GRS 2.

7.10.2 Compass Rose Evaluation of Magnetic Disturbances for Magnetometer Calibration Procedure (Optional)

NOTE

The Magnetometer Calibration Procedure that follows in Section 7.10.3 (Calibration Procedure B) must be carried out at a site that is determined to be free of magnetic disturbances. If it is unsure whether the site is ‘clean’, the technician should verify that the site is ‘clean’ by following the guidance provided in Section 7.10.2. The technician may skip Section 7.10.2 if the site condition is acceptable.

Typically, a compass rose is an acceptable location to perform the magnetometer calibration procedure. However, because not all compass roses are well maintained, even an existing compass rose should be regularly evaluated using the method described here to determine if it is free of magnetic disturbances. If evaluation of an existing compass rose indicates that magnetic disturbances are present, then an alternative location must be found to perform the Magnetometer Calibration Procedure.

A G1000-equipped airplane that has completed the pitch/roll offset compensation procedure (Procedure A-1, Section 7.10.1) can be used to evaluate a candidate site for magnetic disturbances and determine whether it is a suitable location to perform the magnetometer calibration procedure. The magnetometer calibration procedure itself contains the logic to simultaneously survey the location for magnetic cleanliness while it is computing the magnetometer calibration parameters.

In order to evaluate a candidate site, the Magnetometer Calibration Procedure must be performed twice: once turning clockwise around the site, and once turning counter-clockwise. Both times, the procedure should be conducted as described in Section 7.10.3 of this document, with the exception of the direction of turns around the site.

NOTE

Although Section 7.10.3 indicates that the Magnetometer Calibration Procedure should be performed by making a series of clockwise turns around the site, the procedure can also be performed by making counter-clockwise turns for the purpose of evaluating the site for magnetic disturbances.

If the PFD displays the “CALIBRATION SUCCESSFUL / SITE IS CLEAN” message upon completion of the Magnetometer Calibration Procedure in each clockwise and counter-clockwise direction, then the candidate site is sufficiently free of magnetic disturbances and is acceptable for performing the Magnetometer Calibration Procedure. It is important to obtain successful result in both the clockwise and counter-clockwise directions to ensure that the magnetometer sweeps over a large enough area at the candidate site.

If the PFD displays either the “MAG FIELD AT SITE NOT UNIFORM” or “MAG FIELD AT SITE DIFFERS FROM IGRF MODEL” message upon completion of the Magnetometer Calibration Procedure in either of the two directions, then the site contains magnetic disturbances that are too large.

7.10.3 Procedure B: GSU 75, GRS 77, or GRS 7800 and GMU 44 Magnetic Calibration

NOTES

Procedure A-1 (Section 7.10.1) must first be successfully accomplished before performing Procedure B, only for situations where the GSU/GRS was replaced with a new unit.

On the calibration pages, “GRS” refers to whatever GRS or GSU unit is installed.

1. Start the aircraft engine following the procedures referenced in the appropriate King Air AFM or AFMS as shown in the General Arrangement drawing, listed in Table 1-1.
2. After aircraft engine startup, taxi the aircraft to a properly calibrated compass rose.
3. At the compass rose, align the aircraft to a heading of magnetic north (±5°).

CAUTION

Calibration Procedure B must be carried out on a compass rose in order to guarantee measurements free of environmental magnetic disturbances. Attempting to carry out this maneuver on a typical ramp area may not yield a successful calibration. The accuracy of the AHRS/ADAHRS cannot be guaranteed if this calibration is not performed on a magnetically clean compass rose or equivalent. If the compass rose condition is not known, it is recommended that the technician follow the guidance in Section 7.10.2.

NOTE

This procedure provides instructions for calibrating both GRS AHRS or both GSU ADAHRS separately. It is acceptable to calibrate both GRS AHRS or both GSU ADAHRS simultaneously by putting both PFD 1 and PFD 2 in configuration mode and following the procedure below, using PFD 1 to calibrate GSU/GRS 1 and PFD 2 to calibrate GSU/GRS 2.

4. Restart PFD 1 in configuration mode.
5. Go to the GRS Page Group on the PFD.
6. Select the GRS/GMU Calibration page and enter the following softkey password:
   - 9
   - 10
   - 11
   - 12 (far right softkey)
7. Use the FMS small knob to highlight GRS/GSU for calibration and press the ENT key.
8. Using the FMS small knob, select MAGNETOMETER. Press the ENT button.
9. Use the cursor to highlight the first step in the BEFORE CALIBRATION window.
10. Follow the checklist items displayed on the PFD and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.

11. The PFD display advises the operator when to turn the aircraft, when to stop, and when to turn again.
12. Upon instruction to turn, taxi the aircraft in a right turn. After approximately 25° to 30° of turn from the last heading, the PFD display advises the operator to stop the aircraft.

NOTE

Due to the difficulties in executing smooth, accurate turns the PFD may incorrectly interpret a station and instruct to "HOLD POSITION" prior to full completion of a 30° turn. If this scenario is encountered, it is best for the operator to ignore the "HOLD POSITION" command and instead use outside references to complete the approximate 30° turn. Instead of using the PFD instruction to turn as a real-time indication of when to turn, simply judge the 30° (±5°) turn increments of the aircraft by using the compass rose radials. Dwelling at these 30° increments for the time recommended by the PFD should result in successful calibration.

13. The PFD guides the operator to dwell at multiple headings around a complete circle.

NOTE

Due to high winds or excessive airframe vibration, the operator may encounter a condition where the PFD restarts the 18-second countdown without full completion of the previous countdown. If this is encountered more than once for a given station, the operator should begin turning to the next station (approximately 30°). A minimum of 2 successful stations per quadrant is required, where a successful station is a full 18-second countdown followed by instruction to move. Ensure that at least 2 stations per quadrant are completed. Thus, it may sometimes be required to dwell at a station after a countdown restart. A maximum of 30 stations is allowed for the entire calibration procedure. If too many countdown restarts are encountered, the calibration will fail with the message, "TOO MANY STATIONS."

14. Repeat the turn-and-stop process until the PFD advises that a successful calibration is complete. The GRS AHRS/GSU ADAHRS then enters its normal operational mode. Press the ENT button on the PFD to conclude this procedure.
15. Repeat steps 7 through 14 for GSU/GRS 2.

7.10.4 Procedure D: Engine Run-Up Vibration Procedure

NOTES

On the calibration pages, "GRS" refers to whatever GRS or GSU unit is installed.

Calibration Procedure D is performed in order to guarantee that the ADAHRS/AHRS mounting is sufficiently rigid and insensitive to vibration. This procedure must be performed for both GSU/GRS units installed in the aircraft. Calibration Procedures A1 and B (Sections 7.10.1 and 7.10.3 respectively) are not required prior to this procedure.

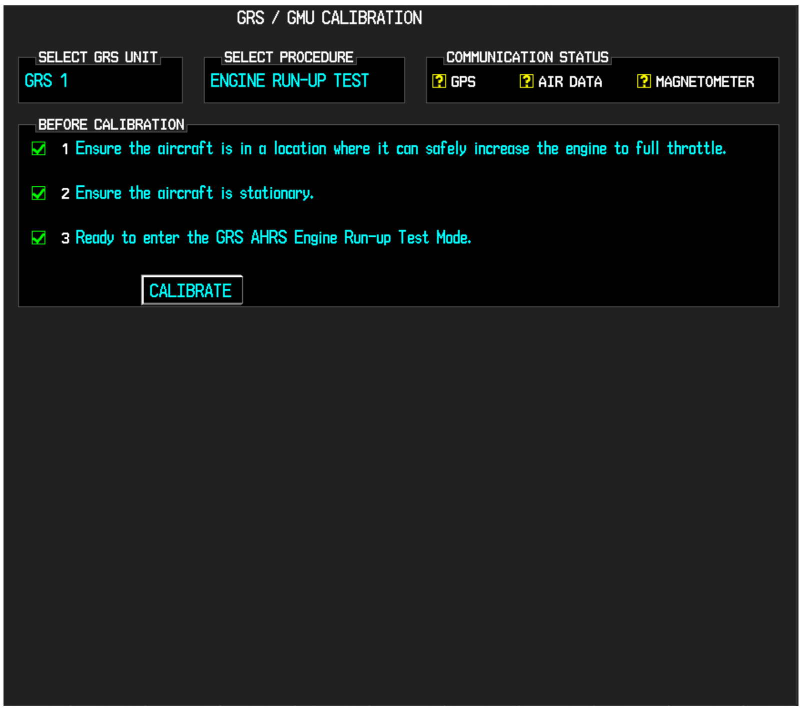


Figure 7-7, GRS/GMU Calibration, Engine Run-Up

1. Restart PFD 1 in configuration mode.
2. Use the FMS small knob to highlight GRS 1 for calibration and press the ENT key. The SELECT PROCEDURE field is not blinking.
3. Initiate the AHRS engine run-up vibration test procedure by performing the following steps:
   a) Select the ENGINE RUN-UP TEST procedure and press the ENT key.
   b) Follow the checklist items displayed on the PFD, and press the ENT key as each one is completed or confirmed. When the CALIBRATE field is blinking, press the ENT key to begin the procedure.
4. The PFD display instructs the operator to gradually increase power from idle to full throttle and back to idle over a period of 2-4 minutes.
5. When the operator has completed the engine run-up and the engine is back to an idle setting, press the ENT key to indicate that the process is complete. When this is done, the TEST COMPLETE field stops blinking.

6. The PFD informs the operator if the installation has passed or failed the vibration test. If the test fails, the specific measurements causing the failure are identified and associated numeric values are displayed on the PFD.

NOTE

Should a failure occur, the technician may perform the Engine Run-up test up to 3 times successively before corrective action must be taken. If the test does not pass after three attempts, then the installation should not be considered reliable until the source of the vibration problem is identified and remedied. In the event of repeated failure of the engine run-up test, record the values that are reported to be out of range for future reference.

The following are potential causes for failure of the engine run-up test:

a) Vibration motion of GSU/GRS and/or GMU44 caused by neighboring equipment and/or supports.

b) Mounting screws and other hardware for GSU/GRS and/or GMU44 not firmly attached.

c) GSU/GRS connector not firmly attached to unit.

d) Cabling leading to GSU/GRS or GMU44 not firmly secured to supporting structure.

e) An engine / propeller that is significantly out of balance.

7. Press the ENT key on the PFD to conclude this procedure

8. Repeats steps 2 through 7 for GSU/GRS 2 then the aircraft can be taxied back and the engine can be shut down for final testing. Continue to Section 7.10.5.

7.10.5 GSU/GRS/GMU Test

Start the displays in normal mode. The ADAHRS/AHRS attitude and heading information displayed should become valid within 1 minute of power-up as shown in Figure 7-8 if at least one GPS receiver has a valid position. If GPS is unavailable, the ADAHRS/AHRS initialization may take up to 2 minutes.

Figure 7-8, Normal Mode AHRS Check

If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.11 GDL 69A or GDL 69A SXM Data Link

Original GDL 69A/69A SXM is Reinstalled

No software or configuration loading is required if the removed GDL 69A is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GDL 69A/69A SXM Test Section 7.11.3.

New, Repaired or Exchange GDL 69A/69A SXM is Installed

If a new, repaired or exchange GDL 69A/69A SXM is installed, the correct software and configuration files must be loaded to the unit, then the SiriusXM Satellite Radio subscription must be reactivated. See the SiriusXM Activation Instructions listed in Table 1-2.

7.11.1 LRU Replacement Procedure

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GDL69 in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.11.2.
16. If there are no red-Xs or system alerts, continue to Section 7.11.3.

7.11.2 Legacy Replacement Procedure GDL69 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**Connext – SXM”** and press **ENT** key on PFD1.

6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GDL69. Press **ENT** key on PFD1.
7. Press the **CLR ALL** softkey.
8. Press the **Load** softkey.
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.

NOTE

If the software load fails, cycle power to the GDL 69A only and confirm that the software part number and version are updated in the DATA window on the MFD. Then, press ENT button on the PFD to check the GDL 69A SXM SOFTWARE and CONFIGURATION check boxes and press LOAD softkey again to resume the software update.

10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts, continue to Section 7.11.3.

7.11.3 GDL 69A Test

If a SiriusXM Satellite Radio subscription has already been activated for the GDL 69A/69A SXM, then power up the G1000 and go to the **Aux – Information** page and verify that the GDL 69A/69A SXM is working properly. Refer to the Cockpit Reference Guide, listed in Table 1-2, for details on Sirius XM Radio weather and music operation.

If the GDL 69A/69A SXM is replaced (new unit), the owner must re-activate the subscription, using the new GDL 69A/69A SXM’s Radio ID number(s). Refer to the GDL 69A/69A SXM Satellite Radio Activation Instructions, listed in Table 1-2, for details on the activation process.

As a final operations check, make sure there are no MANIFEST errors shown on the PFD for the GDL 69A/69A SXM.

If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.12 GSA 80 Servos

Original Servo(s) Reinstalled

No software loading is required if the removed servo(s) is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the return-to-service checks in Section 9.

New, Repaired or Exchange Servo(s) Installed

If a new, repaired or exchange servo is installed, the correct software files and certification gains must be loaded to the unit.

7.12.1 LRU Replacement Procedure GSA80 Servos

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select the installed GSA CTRL in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Select the installed GSA MON in the LRU dropdown box.
11. Press the **CHK All** softkey.
12. Press the **Load** softkey**.**
13. Press **ENT** to acknowledge the process was complete.
14. Deactivate the curser.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.12.2.
20. If there are no red-Xs or system alerts, continue to return to service checks in Section 9.

7.12.2 Legacy Replacement Procedure GSA80 Servos (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**05) Autopilot”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob highlight the installed autopilot configuration. Press **ENT** key on PFD1.
7. Press the **CLR ALL** key.
8. Scroll to highlight the installed servo.
9. Highlight the software box and press the **ENT** key to check the box.
10. Scroll to highlight the installed servo cert line.
11. Highlight the software box and press the **ENT** key to check the box.
12. Press the **Load** softkey.
13. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
14. Press **ENT** key on PFD1 to acknowledge upload complete.
15. Deactivate cursor.
16. Scroll to the Configuration Manager page.
17. Press the **CNFM CFG** softkey.
18. Select ok when prompted to “Confirm configuration as expected configuration”
19. Power cycle the system. Verify there are no red-Xs or system alerts.
20. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
21. If there are no red-Xs or system alerts, continue to return to service checks in Section 9.

7.13 GCU 477 FMS Controller

Original GCU 477 Reinstalled

No software or configuration loading is required if the removed GCU 477 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GCU 477 Test Section 7.13.3.

New, Repaired or Exchange GCU 477 Installed

If a new, repaired or exchange GCU 477 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.6 and then continue to the GCU 477 Test Section 7.13.3.

7.13.1 LRU Replacement Procedure GCU 477

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select the installed servo CTL in the LRU dropdown box.
7. Press the **Load** softkey**.**
8. Press **ENT** to acknowledge the process was complete.
9. Select the installed servo MON in the LRU dropdown box.
10. Press the **Load** softkey**.**
11. Press **ENT** to acknowledge the process was complete.
12. Deactivate the curser.
13. Scroll to the Configuration Manager page.
14. Press the **CNFM CFG** softkey.
15. Select ok when prompted to “Confirm configuration as expected configuration”
16. Power cycle the system. Verify there are no red-Xs or system alerts.
17. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.13.2.
18. If there are no red-Xs or system alerts, continue to Section 7.13.3.

7.13.2 Legacy Replacement Procedure GCU 477 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.

5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**01) Baseline”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air 200-300 Series Baseline Load**. Press **ENT** key on PFD1.
7. Press the **CLR ALL** key.
8. Scroll to highlight GMC.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press the **Load** softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
13. Press **ENT** key on PFD1 to acknowledge upload complete.
14. Deactivate cursor.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
20. If there are no red-Xs or system alerts, continue to Section 7.13.3.

7.13.3 GCU 477 Test

Perform the following key and knob presses and knob rotations on the GCU 477, and verify the actions on the MFD.

1. Rotate the large FMS knob and verify that the page groups change.
2. Rotate the small FMS knob and verify that the pages change within the page groups.
3. Use the large FMS knob to display the Map page group and the small FMS knob to display the **Map - Navigation Map** page.
4. Rotate the RANGE knob to the right and verify the map display zooms out.
5. Rotate the RANGE knob to the left and verify the map display zooms in.
6. Press the RANGE knob to get the pointer on the map display.
7. Move the RANGE knob to the left and verify the pointer moves to the left.
8. Move the pointer up, right and down and verify that the pointer moves accordingly.
9. Press the RANGE knob to stop displaying the pointer.
10. Press the left and right arrowheads of the SOFTKEY SELECT keys. Verify softkeys highlighting on the MFD changes.
11. Press the SEL key to select one of the softkeys.

12. Press the D→ key to display the FPL – Direct To page.
13. Use the keypad to type KIXD and verify KIXD is displayed on the MFD.
14. Press the SPC key to add a space and then the BACK key to delete the space.
15. Press the CLR key to clear the field.
16. Type K34 and then press the ENTER key twice. Verify that the flight path to K34 is displayed on the map.
17. Press the FPL key to open the **FPL – Active Flight Plan** page. Press the FPL key again to close it.
18. Press the PROC key to open the Procedures page. Press the PROC key again to close it.
19. Press the MENU key to open the Menu page. Press the MENU key again to close it.
20. Press the COM key until 1 is lit. Verify the tuning box is present around the COM 1 frequency on PFD1.
21. Using GCU477 keypad, enter in a frequency of 123.450. Verify COM1 frequency changes as entered.
22. Press the COM key until 2 is lit. Verify the tuning box is present around the COM 2 frequency on PFD1.
23. Using GCU477 keypad, enter in a frequency of 123.450. Verify COM2 frequency changes as entered.
24. Press the NAV key until 1 is lit. Verify the tuning box is present around the NAV 1 frequency on PFD1.
25. Using GCU477 keypad, enter in a frequency of 108.00. Verify NAV1 frequency changes as entered.
26. Press the NAV key until 2 is lit. Verify the tuning box is present around the NAV 2 frequency on PFD1.
27. Using GCU477 keypad, enter in a frequency of 108.00. Verify NAV1 frequency changes as entered.
28. Press the XPDR key. Verify a flashing box appears in the XPDR 1 code window.
29. Using GCU477 keypad, enter in a code of 1234. Verify XPDR1 shows a code of 1234 in the window.
30. If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.14 GMC 710 AFCS Controller

<u>Original GMC 710 Reinstalled</u>

No software or configuration loading is required if the removed GMC 710 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GMC 710 Test Section 7.14.3.

<u>New, Repaired or Exchange GMC 710 Installed</u>

If a new, repaired or exchange GMC 710 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.6 and then continue to the GMC 710 Test Section 7.14.3.

7.14.1 LRU Replacement Procedure GMC 710

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GMC1 in the LRU dropdown box.
7. Press the **Load** softkey**.**
8. Press **ENT** to acknowledge the process was complete.
9. Deactivate the curser.
10. Scroll to the Configuration Manager page.
11. Press the **CNFM CFG** softkey.
12. Select ok when prompted to "Confirm configuration as expected configuration"
13. Power cycle the system. Verify there are no red-Xs or system alerts.
14. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.14.2
15. If there are no red-Xs or system alerts, continue to Section 7.14.3.

7.14.2 Legacy Replacement Procedure GMC 710 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight "**01) Baseline"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air 200-300 Series Baseline Load**. Press **ENT** key on PFD1.

7. Press the **CLR ALL** key.
8. Scroll to highlight GMC.
9. Highlight the software box and press the **ENT** key to check the box.
10. Highlight the Configuration box and press the **ENT** key to check the box.
11. Press the **Load** softkey.
12. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
13. Press **ENT** key on PFD1 to acknowledge upload complete.
14. Deactivate cursor.
15. Scroll to the Configuration Manager page.
16. Press the **CNFM CFG** softkey.
17. Select ok when prompted to “Confirm configuration as expected configuration”
18. Power cycle the system. Verify there are no red-Xs or system alerts.
19. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5
20. If there are no red-Xs or system alerts, continue to Section 7.14.3.

7.14.3 GMC 710 Functional check

Perform a basic operational check on the GMC 710. The following knob, wheel and key presses and rotations are to be performed on the GMC 710.

1. Ensure the G1000 is operating in normal mode and the autopilot is operational.
2. Press the FD key a few times; verify the Flight Director display on PFD1 toggles on and off. Leave the flight director displayed.
3. Press the XFR key and verify the white-illuminated arrowhead points in the opposite direction. Verify the green arrow displayed at the top of PFD 1 also points in the same direction.
4. Rotate the ALT SEL knob and verify the altitude bug, displayed on PFD 1 altitude tape, moves.
5. Rotate the UP/DN wheel and verify the flight director moves in the vertical direction.
6. Press the HDG key and verify the white illumination appears next to the key. Rotate the HDG knob and verify the heading bug, displayed on PFD 1 compass card, moves and the flight director follows.
7. Press the HDG knob and verify the heading bug centers.
8. Press the YD key and verify the white illumination appears next to the key.
9. Press the VS key and verify the white illumination appears next to the key.
10. Press the FLC key and verify the white illumination appears next to the key.
11. If no other service is to be performed, continue to the return-to-service checks in Section 9.

7.15 GWX 68 or GWX 70 Weather Radar

Original GWX 68 or GWX 70 Reinstalled

No software or configuration loading is required if the removed GWX 68 or GWX 70 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GWX 68 or GWX 70 Test Section 7.15.3.

New, Repaired or Exchange GWX 68 or GWX 70 Installed

If a new, repaired or exchange GWX 68 or GWX 70 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.6 and then continue to the GWX 68 or GWX 70 Test Section 7.15.3.

7.15.1 LRU Replacement Procedure GWX

LRU Replacement feature is not available for the GWX. Continue to Section 7.15.2.

7.15.2 Legacy Replacement Procedure GWX (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**08) Radar”** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed radar. Press **ENT** key on PFD1.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts, continue to Section 7.15.3.

7.15.3 GWX 68 or GWX 70 Functional Check

Operation of the GWX 68 or GWX 70 Weather Radar is accomplished using the MFD/GCU 477. Refer to G1000 King Air 300 Series Cockpit Reference Guide, listed in Table 1-2, for basic operation.

NOTE

Before energizing the equipment, be sure microwave radiation safety precautions including both fuel and personnel safety considerations have been observed. These include clearing all personnel to an area beyond the maximum permissible exposure level (MPEL) boundary. The MPEL for the GWX 68 is 11 feet and the GWX 70 is 10 feet.

1. On the GCU, turn the large FMS knob to select the Map Page Group then turn the small FMS knob to select the **Map – Weather Radar** page.
2. Select the Mode softkey.
3. Select the Standby softkey to initiate the one-minute warm-up period. Verify the radar enters the standby mode after the warm-up is complete.
4. Select the Mode softkey.
5. Select the Weather softkey. After reading the CAUTION statement, turn the large FMS knob to select YES. Press the GCU ENT key.
6. Select the STAB softkey to activate or deactivate antenna stabilization. Verify the current stabilization condition is shown in the upper right of the weather radar display.
7. Select the Back softkey.
8. Select the Vertical softkey.
9. Select the Tilt softkey to activate the cursor in the Tilt field.
10. On the GCU, turn the small FMS knob to select the desired antenna tilt angle. Press the GCU ENT key. Press the GCU FMS knob to remove the cursor.
11. Select the Gain softkey to activate the cursor in the Gain field.
12. On the GCU, turn the small FMS knob to adjust the gain for the desirable level. Verify the gain setting is visible in the gain field as a movable horizontal bar in a flashing box and the line pointer is a reference depicting the calibrated position. Press the FMS knob to remove the cursor.
13. On the GCU, select the Gain softkey again to recalibrate the gain. Verify ‘Calibrated’ is displayed in the Gain field.
14. Select the Mode softkey.
15. Select the Off softkey.

7.16 GRA 5500 Radar Altimeter

Original GRA 5500 Reinstalled

No software or configuration loading is required if the removed GRA 5500 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GRA 5500 Test Section 7.16.3.

New, Repaired or Exchange GRA 5500 Installed

If a new, repaired or exchange GRA 5500 is installed, the correct software and configuration files must be loaded to the unit. Section 7.16.1 is for integrated GRA 5500 units. For non-integrated GRA 5500 units using ARINC 429 connections to GIA 63W instead of RS-422, go to Section 3.17 to load software and configure the unit.

7.16.1 LRU Replacement Procedure, Integrated GRA 5500

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GRA in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.16.2.
16. If there are no red-Xs or system alerts, continue to Section 7.16.3.

7.16.2 Legacy Replacement Procedure, Integrated GRA 5500 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**05) Radar”** and press **ENT** key on PFD1.

6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight **King Air GRA 5500 Radar Altimeter**. Press **ENT** key on PFD1.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
   - Green “PASS” in the Configuration and Software columns for each item loaded.
   - “Upload Complete…………COMPLETE” in the summary box.
10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts, continue to Section 7.16.3.

7.16.3 GRA 5500 Functional Check

This check verifies that the G1000/radar altimeter interface operates correctly.

1. Navigate to the AUX – SYSTEM STATUS page on the MFD.
2. Press the RA TEST softkey and verify that the “RA TEST” annunciation is displayed on both PFDs.
3. Verify 40 feet is displayed in the RA display window on both PFDs.
4. Press the RA TEST softkey again. Verify the RA readout window decreases to 0 feet on PFD1 and PFD2.
5. Open the RADIO ALTM circuit breaker. Verify on PFD 1 and PFD 2 that an RA FAIL message is displayed.
6. Close the RADIO ALTM circuit breaker.

7.17 Garmin Traffic Systems (GTS 8XX/GTS 8XXX)

Original GTS Reinstalled

No software or configuration loading is required if the removed GTS is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GTS Test Section 7.17.3.

New, Repaired or Exchange GTS Installed

If a new, repaired or exchange GTS is installed, the correct software and configuration files must be loaded to the unit. See Section 7.17.1 and then continue to the GTS Test Section 7.17.3.

7.17.1 LRU Replacement Procedure GTS

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GTS in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.17.2.
16. If there are no red-Xs or system alerts, continue to Section 7.17.3.

7.17.2 Legacy Replacement Procedure GTS (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**09) Garmin Traffic Systems”** and press **ENT** key on PFD1.

6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GTS configuration. Press **ENT** key on PFD1.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete………….COMPLETE” in the summary box.
10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts, continue to Section 7.17.3.

7.17.3 Antenna Test

The following test assures the traffic antennas and coaxial cables are properly connected.

1. On the **MAP-TRAFFIC MAP** page of the MFD, perform the following:
    a. Press the **OPERATE** softkey (for TAS/TCAS I) or press **TA ONLY** softkey (for TCAS II). A self-test of the antenna circuit is initialized. If the MFD displays FAILURE at the upper left corner of the traffic display area, it will be necessary to recheck the coaxial connections. If MFD displays OPERATING (for TAS/TCAS I) or TA ONLY (for TCAS II) without indicating a fault, proceed to the next step of antenna verification.
    b. If an “ADS-B” softkey is displayed, press the softkey to turn it off.
2. Ensure that the transmitter or receiver (RX/TX) that you are testing is significantly closer to the ramp tester than another operating RX/TX, or erroneous and inaccurate results may occur. All four quadrants (0, 90, 180 and 270 degrees) relative to the aircraft will be similarly tested to verify bearing of simulated intruder supplied via the ramp tester are correctly displayed on the MAP-TRAFFIC MAP page of the MFD.
3. Set up a stationary intruder by selecting the following on the ramp tester:
    - Intruder type: ATCRBS
    - Intruder Start Distance: 2 nm
    - Intruder Start Altitude: 500 feet above field elevation
    - Vertical Speed: 0 fpm
    - Velocity: 0 kts (on some ramp testers, a velocity greater than 0 kts is required and a stationary intruder is created by not starting the scenario.)
4. Position ramp tester at 0 degrees (i.e. off the nose of the aircraft).

5. Initiate the intruder scenario and verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 0-degree azimuth at 2 NM (read as +05 above a filled diamond indicating proximate traffic).
6. On the ramp tester, toggle intruder traffic to standby or off.
7. Reposition ramp tester and reengage the same intruder scenario for 90, 180 and 270 degrees relative to the aircraft.
8. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the same bearing as the ramp tester.
9. If the bearing is not as anticipated or multiple targets are displayed during tests (not including possible local targets), verify the following:
    - Coax cable connectors are properly secured at the bulkhead adapter fittings, GA 58 antennas, and GTS unit.
    - Connections are made to the proper channels and color-coded heat shrink is the same color on both ends of coax cables.
    - Connectors are correctly installed on coax cables.

7.17.4 System Test

The following test provides a scenario that will converge and intercept the GTS to assure proper operational and surveillance functions.

NOTE

> Prior to simulating the ‘in-air’ condition, please contact your local Air Traffic Control (Center and Approach) and inform them of your intention to perform aircraft testing that may transmit ADS-B Out signals of an aircraft in the ‘in-air’ condition. Closed hangar doors may not provide adequate isolation from ATC.

1. Disconnect the radar altimeter receive coaxial cable or cover the receive antenna so the radar altimeter reads over 2000 feet.
2. For GTS 8000 TCAS II test only, perform the following:
    a. Change BARO setting to 29.92 in-Hg on PFD1 and PFD2.
    b. Set the main landing gear WOW actuators in the air position.
3. On the MAP-TRAFFIC MAP page of the MFD, perform the following:
    a. Press the **OPERATE** softkey (for TAS/TCAS I) or **TA/RA** softkey (for TCAS II).
    b. If an “ADS-B” softkey is displayed, press the softkey to turn it off.
4. Position ramp tester at 90 degrees (i.e. off the right wing).
5. Select the following on the ramp tester:
    - Intruder type: ATCRBS.
    - Intruder Start Distance: 10 nm
    - Intruder Start Altitude: 300 ft above PFD1 displayed altitude
    - Vertical Speed: 0 fpm
    - Velocity: 360 kts

6. Initiate the intruder scenario and observe the following:

- The simulated intruder should be acquired at approximately 6-10 NM at 90 degree bearing. Observe intruder closes on own aircraft at a rate of 0.1 NM/sec. Verify that only a single simulated target is displayed in the expected quadrant (exclude possible local traffic).
- The simulated intruder should transition from Other Traffic (displayed as an open diamond with +03 displayed above), to proximate traffic (displayed as a filled white diamond with +03 displayed above), to a Traffic Advisory (TA) alarm (yellow filled circle with +03 displayed above.)
- For GTS 8000 TCAS II installations, the following applies:
  The simulated intruder should transition from a Traffic Advisory (displayed as a solid yellow circle with +03 displayed above), to a Resolution Advisory (RA) alarm (red filled square with +03 displayed above). Additionally, a Resolution Advisory is displayed on the vertical speed tape of PFD1 and PFD2 and an audible Resolution Advisory is heard over cockpit speakers and headphones.

NOTE

The aural TA annunciations are muted if the gear is extended and the Radar Altimeter indicates below 400 feet.

For GTS 8000 TCAS II, to generate a DESCEND resolution advisory, the WOW actuators must be set to the in-air position and the Radar Altimeter must read greater than 2,000 feet.

At the end of these tests, put the aircraft back ‘on-ground’ and restore radar altimeter operation.

7.18 GDL 59

Original GDL 59 Reinstalled

No software or configuration loading is required if the removed GDL 59 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GDL 59 Test Section 7.18.4.

New, Repaired or Exchange GDL 59 Installed

If a new, repaired or exchange GDL 59 is installed, the correct software and configuration files must be loaded to the unit. See Section 7.18.1 and then continue to the GDL 59 Test Section 7.18.4.

7.18.1 LRU Replacement Procedure GDL 59

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GDL 59 in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to “Confirm configuration as expected configuration”
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.18.2.
16. If there are no red-Xs or system alerts, continue to Section 7.18.3.

7.18.2 Legacy Replacement Procedure GDL 59 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when “Do you want to update system files” is displayed on the screen of PFD1.
4. Select the “**SYSTEM UPLOAD**” page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight “**07) Connext - SXM”** and press **ENT** key on PFD1.

6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight the installed GDL 59 configuration. Press **ENT** key on PFD1.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system. Verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
17. If there are no red-Xs or system alerts, continue to Section 7.18.3.

7.18.3 Activation of Garmin Connext

In order to activate the optional GDL 59 and optional GSR 56 for Garmin Connext, contact Garmin Product Support at one of the following numbers (M-F, 7:00 a.m. to 7:00 p.m. Central Standard Time, - Central USA):

- 1.866.739.5687 (toll free in USA)
- +1.913.440.1135 (worldwide)

Have the following information ready prior to calling:

- If activating services for a GDL 59 installation
    - Aircraft tail number, serial number, manufacturer, and model
    - GDL 59 serial number
    - G1000 system ID number

Garmin Product Support will provide additional information for activation of data services.

To obtain the G1000 system ID number and unit serial numbers, accomplish the following:

1. Turn the large FMS knob on the MFD to select the AUX page group.
2. Turn the small FMS knob to select the SYSTEM STATUS page. Record the SYSTEM ID number shown in the AIRFRAME field. This number is unique for each G1000 system.
3. Press the LRU softkey to activate the cursor in the LRU INFO field. Use the large FMS knob to scroll the cursor to GDL 59. Record the GDL 59 serial number shown in the LRU INFO field.

7.18.4 GDL 59 Wi-Fi Data Link Functional Check

This check verifies GDL 59 Wi-Fi Data Link interface is configured and is functional. This check requires an operating and available wireless network to be within range of the aircraft.

NOTE

This check only verifies the data output from the G1000 equipment. Any equipment/wiring added that is not part of the installation data will need separate testing and verification not covered as part of this document.

1. Start the G1000 System in Normal Mode.
2. Using the large FMS knob, select the AUX page group on the MFD. Using the small FMS knob, select the AUX-REPORT STATUS page.
3. Press the **WI-FI** softkey on the MFD to select the AUX – WI-FI SETUP page.
4. Press the **AVAIL** softkey on the MFD to display the available WI-FI networks.
5. Press the FMS knob on the GCU to activate the cursor and rotate the small FMS knob to highlight the desired network in the AVAILABLE NETWORKS field.
6. Press the **CONNECT** softkey on the MFD to connect to the network. (Skip to step 12 if the selected network is a non-secure network.)
7. If the selected network is a secure network, enter the pass code in the ENTER PASSPHRASE field in the WPA SECURITY SETTINGS pop-up window.
8. Press the **ENT** key on the GCU to accept the pass code, then press the **ENT** key on the GCU again.
9. When the SAVE SETTINGS pop-up window is displayed, press the **ENT** key on the GCU keypad to select SAVE CONNECTION.
10. Enter the appropriate airport identifier in the SELECT AN AIRPORT TO ASSOCIATE WITH THE CONNECTION field, then press the **ENT** key on the GCU to accept the identifier.
11. With the CONNECT button highlighted, press the **ENT** key on the GCU to connect to the network.
12. Press the **ENT** key on the GCU if the verification window “Are you sure you want to connect?” is displayed.
13. Verify that the CONNECTION STATUS field on the AUX – WI-FI SETUP page on the MFD indicates CONNECTED.

7.19 GSR 56

Original GSR 56 Reinstalled

No software or configuration loading is required if the removed GSR 56 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GSR 56 Test Section 7.14.3.

New, Repaired or Exchange GSR 56 Installed

If a new, repaired or exchange GSR 56 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.6 and then continue to the GSR 56 Test Section 7.14.3.

7.19.1 LRU Replacement Procedure GSR 56

LRU Replacement feature is not available for the GSR56, continue to Section 7.19.2.

7.19.2 Legacy Replacement Procedure GSR 56 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the small FMS knob to highlight "**07) Connext - SXM"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to highlight the installed GSR 56 configuration. Press **ENT** key on PFD1.
7. Verify the installed GSR 56 configuration is displayed in the "Item" window.
8. Press the **CHK ALL** key.
9. Press the **Load** softkey.
10. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green "PASS" in the Configuration and Software columns for each item loaded.
    - "Upload Complete………….COMPLETE" in the summary box.
11. Press **ENT** key on PFD1 to acknowledge upload complete.
12. Deactivate cursor.
13. Scroll to the Configuration Manager page.
14. Press the **CNFM CFG** softkey.
15. Select ok when prompted to "Confirm configuration as expected configuration"
16. Power cycle the system. Verify there are no red-Xs or system alerts.
17. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.
18. If there are no red-Xs or system alerts, continue to Section 7.19.3.

7.19.3 Activation of Garmin Connext

In order to activate the optional GSR 56 for Garmin Connext, contact Garmin Product Support at one of the following numbers (M-F, 7:00 a.m. to 7:00 p.m. Central Standard Time, - Central USA):

- 1.866.739.5687 (toll free in USA)
- +1.913.440.1135 (worldwide)

- Have the following information ready prior to calling:
  - Aircraft tail number, serial number, manufacturer, and model
  - GSR 56 serial number
  - G1000 system ID number
  - Name of aircraft owner and contact information
  - Credit card information

Garmin Product Support will provide additional information for activation of data services.

To obtain the G1000 system ID number and unit serial numbers, accomplish the following:

1. Turn the large FMS knob on the MFD to select the AUX page group.
2. Turn the small FMS knob to select the SYSTEM STATUS page. Record the SYSTEM ID number shown in the AIRFRAME field. This number is unique for each G1000 system.
3. Press the LRU softkey to activate the cursor in the LRU INFO field. Use the large FMS knob to scroll the cursor to GSR1 (if GSR 56 is installed). Record the GSR 56 serial number shown in the LRU INFO field.

7.19.4 GSR 56 Functional Check

1. Power up the aircraft.
2. Using the large FMS knob, select the AUX page group on the MFD. Using the small FMS knob, select the AUX-TELEPHONE page.
3. Ensure the system is showing Iridium signal strength (best if aircraft is outside).
4. Press **TEL** button on the pilot's GMA.
5. Press the **DIAL** softkey on the MFD.
6. Enter the test phone number in the ENTER PHONE NUMBER field using the GCU keypad.
7. Press the **ENT** key on the GCU keypad to accept the phone number.
8. Press the **ENT** key on the GCU keypad to initiate the dialing sequence.
9. When call is complete, press the **HANGUP** softkey on the AUX – TELEPHONE page on the MFD to end the call.

7.20 GSD 41

Original GSD 41 Reinstalled

No software or configuration loading is required if the removed GSD 41 is re-installed. 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 GDS 41 Installed

If a new, repaired or exchange GSD 41 is installed, the correct software and configuration files must be loaded to the unit. See Section 7.20.1.

7.20.1 LRU Replacement Procedure GSD 41

1. Open the MFD, PFD 1 (PRI), PFD 1 (SEC), and PFD 2 circuit breakers.
2. Apply power to the G1000 system by connecting external power to the aircraft to energize the aircraft and avionics electrical busses.
3. Turn on Avionics electrical busses.
4. Power on PFD2, MFD, and PFD1 in configuration mode.
5. Using the PFD1, scroll to the LRU replacement page.
6. Activate the curser and select GSD 1 in the LRU dropdown box.
7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Press **ENT** to acknowledge the process was complete.
10. Deactivate the curser.
11. Scroll to the Configuration Manager page.
12. Press the **CNFM CFG** softkey.
13. Select ok when prompted to "Confirm configuration as expected configuration"
14. Power cycle the system. Verify there are no red-Xs or system alerts.
15. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5 or re-load the system using the legacy method in Section 7.20.2.

7.20.2 Legacy Replacement Procedure GSD 41 (Alternate Method)

1. Insert the software loader card in the top slot of PFD1.
2. Power on PFD2, MFD, and PFD1 in configuration mode.
3. Select **NO** when "Do you want to update system files" is displayed on the screen of PFD1.
4. Select the "**SYSTEM UPLOAD**" page using the small FMS knob on PFD1.
5. Activate cursor and rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight "**11) Non Garmin Options"** and press **ENT** key on PFD1.
6. Rotate the small FMS knob to display the drop down menu. Rotate the large FMS knob to highlight "**King Air – FDR Option"**. Press **ENT** key on PFD1.

7. Press the **CHK All** softkey.
8. Press the **Load** softkey**.**
9. Monitor load progress. Verify software load completes without errors as indicated by the following:
    - Green “PASS” in the Configuration and Software columns for each item loaded.
    - “Upload Complete…………COMPLETE” in the summary box.
10. Press **ENT** key on PFD1 to acknowledge upload complete.
11. Deactivate cursor.
12. Scroll to the Configuration Manager page.
13. Press the **CNFM CFG** softkey.
14. Select ok when prompted to “Confirm configuration as expected configuration”
15. Power cycle the system verify there are no red-Xs or system alerts.
16. If red-Xs or system alerts are present, troubleshoot as necessary using Section 5.

8. Subsystem Functional Checks

8.1 Non-Garmin Traffic System Functional Check

1. Select the **Map – Traffic Map** page on the MFD.
2. Verify that the TAS STBY, TAS OPER, Test, and ALT Mode softkeys are available on the bottom of the MFD. Verify that an operating mode; STANDBY, OPERATE, or TEST (not TAS FAIL) is displayed in the upper left corner of the traffic map. Verify that NO DATA is not displayed in yellow in the center of the display over the aircraft symbol.

NOTE

If the **ALT Mode** softkey is not displayed, the G1000 has not been properly configured for the traffic system. Reference Section 3.8.12, to enable the traffic system.

3. Press the TAS OPER softkey and verify that TAS: OPERATING is displayed in the upper left corner of the traffic map.
4. Press the TAS STBY softkey and verify that TAS: STANDBY is displayed in the upper left corner of the traffic map.
5. Press the Test softkey and verify that TAS: TEST is displayed in the upper left corner of the traffic map and a traffic test pattern is displayed. Upon completion of the test, verify that "TAS SYSTEM TEST OK" is heard over the cockpit speaker.

NOTE

This annunciated traffic system test message may be different from the traffic system installed on subject aircraft.

6. Open the TRFC circuit breaker on the avionics circuit breaker panel. On the MFD, verify that NO DATA is displayed in yellow after several seconds.
7. Close the TRFC circuit breaker on the avionics circuit breaker panel and verify that NO DATA is removed after several seconds.

If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.2 Stormscope Functional Check

Reference Section 3.18.1, for Stormscope configuration. This procedure assumes familiarity with the set-up and operation of the WX-PA portable analyzer kit if required.

1. Apply power to the WX-500 and verify that no failed test messages appear. If fault messages do appear, refer to the WX-500 Installation Manual for troubleshooting.
2. Following successful power up, verify the following modes:
    - All available ranges can be displayed.
    - Access to the cell mode and strike mode.
    - Strike counter is displayed in all weather modes and ranges.
3. Key COM1 and COM2 several times on different frequencies representing the lower, mid and upper portion of the VHF COM frequency band. Verify keying of COM1 or COM2 does not cause strike data to appear on the MFD.
4. Operate DME, XPDR 1, XPDR 2 and weather radar. Verify these systems do not cause strike data to appear on the MFD.
5. Connect the WX-PA cable to the WX-PA antenna.
6. Position the WX-PA antenna on the WX-500 antenna. Ensure the connection is tight. If necessary, use tape to secure the WX-PA antenna. Ensure the “FORWARD” arrows are aligned and the WX-PA antenna suction cups are positioned forward of center along the longitudinal axis.
7. Secure the WX-PA cable to the aircraft with the attached suction cup and route the cable to the cockpit.
8. Connect the remaining cable end to the WX-PA.
9. Power up the WX-PA and verify the WX-500 is in the weather mapping mode.
10. Set the WX-500 to STRIKE mode; 100 NM range (or next highest available range).
11. Select the Continuous Out mode displayed on the WX-PA menu and press MENU/ENTER.
12. Select the bottom mount antenna configuration on the WX-PA keyboard (“A” key).
13. Select a cardinal bearing and a range of 120 NM.
14. Use the F1 and F2 keys to adjust range and F3 and F4 keys to adjust heading.

NOTE

The WX-500 will plot data at one-half the range selected on the WX-PA.

15. Press MENU/ENTER to start the test.
16. Observe the MFD to ensure the proper positioning of the strikes, based on range and azimuth settings on the WX-PA. Change the cardinal bearings and verify correct test strikes. Verify the strikes are within 10 degrees of the selected azimuth and plot at 60NM (1/2 120 NM).
17. Verify after 20 seconds of operation the strike counter reads 580 +/-40.
18. After testing for all ranges and bearings indicated, press 2ND then MENU/ENTER to return to the main menu.
19. Select Circular Pattern mode on the WX-PA mode menu and press MENU/ENTER.
20. Select bottom mount antenna configuration on the WX-PA keyboard (“A” key).

NOTE

The MFD should be set at 100 NM (or next highest available range) on the 360-degree weather screen and in strike mode.

21. Use the F1 and F2 keys to select 120 NM range and press MENU/ENTER to start the test. Verify the WX-500 plots discharge points at approximately 60 NM.
22. Observe the MFD to ensure the proper positioning of the test strikes. Verify the strikes are within 10 degrees of the 30-degree azimuth increment and within 12 NM of 60 NM,
23. When complete, set WX-PA for 55 NM, set the MFD for 50 NM (or the next highest available range) and repeat test.
24. On the MFD, verify the sensor plots points just outside of 25 NM and the strikes are within 10 degrees of the 30-degree azimuth and within 5 NM of 27.5 NM.
25. Repeat above setting the MFD for 25 NM (or the next highest available range) and the WX-PA for 15 NM.
26. On the MFD, verify the positioning of test strikes are within 10 degrees of azimuth and within 2 NM of 7.5 NM.
27. Restart the G1000 in configuration mode by opening the PFD and MFD circuit breakers. While holding the ENT keys on the PFDs and MFD, restore power by closing the PFDs and MFD circuit breakers.
28. Select the OTHER page group on the MFD. The **Map - Stormscope Map** page is shown by default.

If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.3 TAWS Functional Check

8.3.1 Functional Check for TAWS-B

1. With the G1000 in Normal Mode, use the GCU FMS knob to select the Map group and TAWS page on the MFD.
2. Verify that the title at the top of the page reads "**Map – TAWS-B Map**".

NOTE

If TAWS has not been enabled, the title will read "**Map – Terrain Proximity**" or "**Map – Terrain**". Refer to Section 3.9.6 for TAWS B Configuration for enabling this feature.

3. Press the GCU MENU button and select "Test TAWS System" from the pop-up menu. Verify TAWS test annunciation is displayed on the MFD and both PFDs.
4. After the TAWS test has completed, verify that "TAWS System Test Okay" is heard over the cockpit speaker (if selected) and the headsets.
5. Press the GCU MENU button again and select "Inhibit TAWS" from the pop-up menu and press ENT on the GCU. Verify "TAWS INH" is displayed on PFD 1 and PFD 2.
6. Press the GCU MENU button again and select "Enable TAWS" from the pop-up menu and press ENT on the GCU. Verify the "TAWS INH" annunciation on the PFDs has extinguished.
7. With a GPS position acquired, shield or disconnect the GPS antennas to remove the GPS signal. Verify "LOI" shows on the MFD and the "TAWS N/A" and "LOI" annunciations show on the PFDs.
8. Reconnect or remove the shield from the GPS antennas, and verify the MFD "LOI" indication and PFD "TAWS N/A" and "LOI" annunciations are removed once the GPS satellites are acquired.
9. Pull PFD1 PRI and PFD1 SEC circuit breakers. Re-power PFD1 in configuration mode, and use the PFD1 FMS knob to select the System Audio - Audio Alert Configuration page.
10. Ensure cockpit speaker is selected ON. Use the PFD1 FMS knob to highlight each of the following messages then select PLAY. Verify each of the following audio messages are played:
    - Too Low Terrain
    - Sink Rate
    - Pull Up
    - Don't Sink
    - Five Hundred
    - Caution, Terrain (2X)
    - Terrain (2X), Pull Up (2X)
    - Caution, Obstacle (2X)
    - Obstacle (2X), Pull Up (2X)
    - Terrain Ahead (2X)
    - Terrain Ahead, Pull Up (2X)

- Obstacle Ahead (2X)
- Obstacle Ahead, Pull Up (2X)

11. Pull the PFD1 PRI and PFD1 SEC circuit breakers, and re-power PFD1 in normal operating mode.
12. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.3.2 Functional Check for TAWS-A

1. With the G1000 in Normal Mode, use the GCU FMS knob to select the Map group and TAWS page on the MFD.
2. Verify that the title at the top of the page reads "**Map – TAWS-A Map**".

NOTE

If TAWS has not been enabled, the title will read "**Map – Terrain Proximity**" or "**Map – Terrain**". Refer to Section 3.9.7 for enabling TAWS-A.

3. Press the GCU MENU button and select "Test TAWS System" from the pop-up menu. Verify TAWS test annunciation is displayed on the MFD and both PFDs.
4. After the TAWS test has completed, verify that "TAWS System Test Okay" is heard over the cockpit speaker (if selected) and the headsets.
5. Press the GCU MENU button again and select "Inhibit TAWS" from the pop-up menu and press ENT on the GCU. Verify "TAWS INH" is displayed on PFD 1 and PFD 2.
6. Press the GCU MENU button again and select "Enable TAWS" from the pop-up menu and press ENT on the GCU. Verify the "TAWS INH" annunciation on the PFDs has extinguished.
7. Press the GCU MENU button again and select "Inhibit GPWS" from the pop-up menu and press ENT on the GCU. Verify "GPWS INH" is displayed on PFD 1 and PFD 2.
8. Press the GCU MENU button again and select "Enable GPWS" from the pop-up menu and press ENT on the GCU. Verify the "GPWS INH" annunciation on the PFDs has extinguished.
9. Press the GCU MENU button again and select "Flap Override" from the pop-up menu and press ENT on the GCU. Verify "FLAP OVR" is displayed on PFD 1 and PFD 2.
10. Press the GCU MENU button again and select "Disable Flap Override" from the pop-up menu and press ENT on the GCU. Verify the "FLAP OVR" annunciation on the PFDs has extinguished.
11. With a GPS position acquired, shield or disconnect the GPS antennas to remove the GPS signal. Verify "LOI" shows on the MFD and the "TAWS N/A" and "LOI" annunciations show on the PFDs.
12. Reconnect or remove the shield from the GPS antennas and verify the MFD "LOI" indication and PFD "TAWS N/A" and "LOI" annunciations are removed once the GPS satellites are acquired.
13. Pull the RADIO ALTM circuit breaker. Verify "GPWS FAIL" is displayed on PFD1 and PFD2.
14. Reset the RADIO ALTM circuit breaker. Verify "GPWS FAIL" annunciations are removed.

15. Pull PFD1 PRI and PFD1 SEC circuit breakers. Re-power PFD1 in configuration mode, and use the PFD1 FMS knob to select the System Audio - Audio Alert Configuration page.
16. Ensure cockpit speaker is selected ON. Use the PFD1 FMS knob to highlight each of the following messages then select PLAY. Verify each of the following audio messages are played:
    - Too Low, Terrain
    - Too Low, Flaps
    - Too Low, Gear
    - Sink Rate
    - Pull Up
    - Don't Sink
    - Caution, Terrain (2X)
    - Terrain (2X), Pull Up (2X)
    - Terrain (2X)
    - Caution, Obstacle (2X)
    - Obstacle (2X), Pull Up (2X)
    - Terrain Ahead (2X)
    - Terrain Ahead, Pull Up (2X)
    - Obstacle Ahead (2X)
    - Obstacle Ahead, Pull Up (2X)
    - Five Hundred
    - Four Hundred
    - Three Hundred
    - Two Hundred
    - One Hundred
    - Glide Slope
    - Glide Path
17. Pull the PFD1 PRI and PFD1 SEC circuit breakers, and re-power PFD1 in normal operating mode.

NOTE

The following steps require the movement of the flaps and landing gear.

This portion of the check can be accomplished in conjunction with the Landing Gear Aural Alert and Sirius XM Audio Suppression Test in Section 7.2.4.

18. Place the airplane on jacks (Ref. King Air 300 Series Maintenance Manual Chapter 7-00-00) with the wheels clear of the ground.
19. Ensure all equipment and personnel are clear of the flaps and landing gear. Place the flaps and landing gear in the full down positions.
20. Using an air data test set connected to the pilot side pitot/static system, set an airspeed of at least 190 kts as displayed on PFD1.
21. After the Alerts softkey flashes, press the Alerts softkey.
22. Verify the “TAWS FLAP FAULT – Flaps detected in the LDG position” and “TAWS GEAR FAULT – Landing Gear detected in the DOWN position” messages are present.
23. Press the Alerts softkey to close the alerts window.
24. Place the flaps and landing gear in the full up positions.
25. Press the Alerts softkey again to open the alerts window.
26. Verify the “TAWS FLAP FAULT – Flaps detected in the LDG position” and “TAWS GEAR FAULT – Landing Gear detected in the DOWN position” messages not present.
27. Return air data test set to GROUND.
28. Place the landing gear in the down position and remove the aircraft from the jacks.
29. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.4 FliteCharts Functional Check

FliteCharts is enabled by default and only turned off if the ChartView Only option file has been loaded. Reference Section 3.8.11 (FliteCharts) or Section 3.9.2 (Dual Charts) for configuring FliteCharts.

NOTE

This test is required only if FliteCharts or Dual Charts is enabled.

1. If Dual Charts are installed, ensure FliteCharts are set as the preferred charts.
2. With the G1000 in Normal Mode, use the GCU FMS knob to select **Aux – System Status** page, then select MFD1 DB softkey.
3. Use the small FMS knob to scroll to CHART.
4. Verify "FliteCharts" is displayed in blue text adjacent to "CHART".
5. Verify the FliteCharts database cycle number is displayed in blue text and the FliteCharts database is current.
6. Deactivate the cursor and use the GCU large FMS knob to select the **Map - Navigation Map** page then press the Charts softkey.
7. Verify the airport chart is displayed and the following softkeys are displayed (some softkeys may be grayed out):
    - CHRT OPT
    - Show Map
    - INFO 1
    - DP
    - STAR
    - APR
    - WX
    - NOTAM
    - Go Back
8. Press the CHRT OPT softkey and verify the following softkeys are displayed (some softkeys may be grayed out):
    - All
    - Header
    - Plan
    - Profile
    - Minimums
    - Fit WDTH
    - Full SCN
    - Back
9. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.5 ChartView Functional Check

ChartView must be enabled using a ChartView or Dual Charts Enable Card. Reference Section 3.9.1 (ChartView only) or 3.9.2 (Dual Charts) for enabling procedures.

NOTE

The required ChartView databases are subscription-based and are to be procured by the aircraft owner directly from Jeppesen.

1. If Dual Charts are installed, ensure ChartView are set as the preferred charts.
2. With the G1000 in Normal Mode, use the GCU FMS knob to select '**Aux – System Status**' page, then select MFD1 DB softkey.
3. Use the small FMS knob to scroll to CHART.
4. Verify "ChartView" is displayed in blue text adjacent to CHART.
5. Verify the ChartView database cycle number is displayed in blue text and the ChartView database is current.
6. Deactivate the cursor and use the large GCU FMS knob to select the Navigation Map Page then press the Charts softkey.
7. Verify the airport chart is displayed and the following softkeys are displayed (some softkeys may be grayed out):
    - CHRT OPT
    - Show Map
    - INFO-1
    - DP
    - STAR
    - APR
    - WX
    - NOTAM
    - Go Back
8. Press CHRT OPT softkey and verify the following softkeys are displayed (some softkeys may be grayed out):
    - All
    - Header
    - Plan
    - Profile
    - Minimums
    - Fit WDTH
    - Full SCN
    - Back
9. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.6 SafeTaxi Functional Check

The maximum map ranges for enhanced detail are configurable by the flight crew. When zoomed in close enough to show the airport detail, the map reveals runways with numbers, taxiways with identifying letters/numbers, and airport landmarks including ramps, buildings, control towers, and other prominent features. Resolution is greater at lower map ranges. When the aircraft location is within the screen boundary, including within SafeTaxi ranges, an airplane symbol is shown on any of the navigation map views for enhanced position awareness.

Any map page that displays the navigation view can also show the SafeTaxi airport layout, within the maximum configured range. The following is a list of pages where the SafeTaxi feature can be seen:

- Navigation Map Page
- Inset map
- Weather Datalink Page
- Airport Information Page
- Intersection Information Page
- NDB Information Page
- VOR Information Page
- User Waypoint Information Page
- Trip Planning Page
- Nearest Pages

1. Use the FMS knob on the GCU to select the **Aux – System Status** page and select MFD1 DB softkey. Use the small FMS knob to scroll to CHART category and verify "FliteCharts" is displayed in blue text adjacent to "CHART".
2. Verify the FliteCharts database 'Region', 'Cycle' number, 'Effective', 'Expires', and 'Disables' dates of the subscription appear in cyan text.
3. Use the FMS knob on the GCU to select **Map - Navigation Map** page.
4. On the GCU, press MENU. With Map Setup highlighted, press ENT on the GCU. Rotate the small GCU FMS knob to select the Aviation group and press the ENT key on GCU.
5. Turn the GCU large FMS Knob to scroll through the Aviation Group options to 'SafeTaxi'.
6. Turn the GCU small FMS Knob to display the range of distances.
7. Turn the GCU FMS Knob to select 5000ft as the distance for maximum SafeTaxi display range, and then press the GCU ENT key to complete the selection.
8. Using the GCU range knob, select a range of 5000ft or less. Verify SafeTaxi display represents the current aircraft location and the airport layout.
9. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.7 DME Functional Check

This check verifies that the DME-to-G1000 interface operates correctly.

NOTE

Support for a single Collins DME-42 system is provided as an option in the G1000. If the DME option is selected, the DME channel one audio level must be adjusted by the procedure contained within Collins DME-42 Transceiver Repair Manual 523-0772458, Maintenance Section 523-0772460-006118, to adjust DME channel one audio level. Recommended nominal DME audio output level is 4.46 Vpp + 0.10 Vpp. Procedure must be accomplished by an approved repair station.

1. If DME is not displayed, press the PFD softkeys on PFD1 and PFD2, then press the DME softkey. Verify the DME window is displayed next to the PFD1 and PFD2 HSI.
2. On PFD1 and PFD2, press the Back softkey then select DME softkeys. Verify the DME TUNING screen is displayed.
3. On PFD1 and PFD2, use the large FMS knob to select the NAV1, NAV2 and HOLD modes in the DME field. Verify that the NAV1, NAV2 and HOLD modes can be selected by turning the small FMS knob.
4. Set NAV1 and NAV2 frequencies to 108.00 and 117.00 respectively.
5. On PFD1 and PFD2, select the DME NAV1 mode. Verify that the DME window display is set to the NAV1 frequency of 108.00.
6. On PFD1 and PFD2, select the DME NAV2 mode by pressing the ENT softkey. Verify that the DME window display is set to the NAV2 frequency of 117.00.
7. On PFD1 and PFD2, select the DME HOLD mode by using the FMS knob. Verify that the last selected NAV frequency of 117.00 remains the same when the NAV2 frequency is changed. Deselect DME HOLD.
8. On the NAV Test Set, set up a DME test and note the NAV frequency. Tune NAV 1 to the test set frequency and set PFD1 and PFD2 DME MODE to NAV1. Set NAV 2 to a frequency other than the test set frequency.
9. Verify that the DME distance on PFD1 and PFD2 match the test set.
10. Select, or verify selected, DME and SPKR buttons on GMA1 and GMA2 audio panels to select the DME audio and select speaker to ON. Verify that the DME audio can be heard over the cockpit speakers.
11. On PFD1 and PFD2, set the DME mode to NAV2 and verify that the DME distance is dashed out.
12. Tune NAV 2 to the test set frequency. Set NAV 1 to a frequency other than the test set frequency.
13. Verify that the DME distance on PFD1 and PFD2 match the test set.
14. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.8 ADF Functional Check

This check verifies that the ADF / G1000 interface operates correctly.

1. Press the PFD softkey on PFD1 and PFD2. Toggle the BRG1 and BRG2 softkey until the ADF bearing is shown on PFD1 and PFD2.
2. Verify that the ADF window is not invalid (no red 'X').
3. Using the ADF control head select a known valid local ADF. Verify that the ADF bearing pointer moves towards a bearing and stabilizes.
4. Select ADF and SPKR on GMA1 and GMA2. Using the ADF control head, select, ANT mode. Verify that the audio from the station tuned can be heard on the pilot and copilot headset and cockpit speaker.
5. Increment the ADF volume control from full low to full high. Verify the volume increases and decreases appropriately over pilot and copilot headset and cockpit speaker.
6. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.9 GRA 5500 Radar Altimeter Functional Check

This check verifies that the G1000/radar altimeter interface is operates correctly.

1. Navigate to the **Aux – System Status** page on the MFD.
2. Press the RA Test softkey and verify that the "RA TEST" annunciation is displayed on both PFDs.
3. Verify 40 feet is displayed in the RA display window on both PFDs.
4. Press the RA Test softkey again. Verify the RA readout window decreases to 0 feet on PFD1 and PFD2.
5. Pull the RADIO ALTM circuit breaker. Verify on PFD 1 and PFD 2 that an RA FAIL message is displayed.
6. Reset the RADIO ALTM circuit breaker.
7. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.10 Non-Garmin Radar Altimeter Check (Optional)

This check verifies that the G1000 / radar altimeter interface is operates correctly.

NOTE

This check only verifies the data output from the G1000 equipment. Any equipment/wiring added that is not part of the installation data will need separate testing and verification not covered as part of this document.

1. Navigate to the **Aux – System Status** page on the MFD.
2. Press the **RA Test** softkey and verify that "**RA TEST**" annunciation is displayed on both PFDs.
3. Verify **50** feet is displayed in the RA display window on both PFDs.

4. Press the **RA Test** softkey again. Verify the RA readout window displays **2500** feet and decreases to **0** feet on PFD1 and PFD 2.
5. Pull the RADIO ALTM circuit breaker. Verify on PFD 1 and PFD 2 that an **RA FAIL** message is displayed.
6. Reset the RADIO ALTM circuit breaker.
7. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.11 Weight on Wheels and Low Speed Awareness Band Check

This procedure will verify that the GDU air ground status uses valid Weight on Wheels (WOW) inputs.

1. Ensure aircraft is positioned with weight on wheels.
2. Apply external power to the aircraft. Set BATT and AVIONICS MASTER switches to ON and wait for all aircraft and avionics systems to complete their initialization and begin operating normally.
3. Verify there are no WOW INVALID or WOW FAULT messages. Refer to Section 5.2 to troubleshoot messages.
4. Verify the Low Speed Awareness band (red band) is NOT displayed on the PFD1 and PFD2 airspeed tapes (see Figure 8-1.)

NOTE

This portion of the check can be accomplished in conjunction with the Landing Gear Aural Alert and Sirius XM Audio Suppression Test in Section 7.2.4.

5. Place the airplane on jacks (Ref. King Air 300 Series Maintenance Manual Chapter 7-00-00) with the wheels clear of the ground.
6. Verify there are no WOW INVALID or WOW FAULT messages. Refer to Section 5.4 to troubleshoot messages.
7. Verify the Low Speed Awareness band (red band) appears at the low end of the Air Speed Tape on the PFD1 and PFD2 (see Figure 8-1.)
8. Remove airplane from jacks.
9. If no other service is to be performed, continue to the return-to-service checks in Section 9.

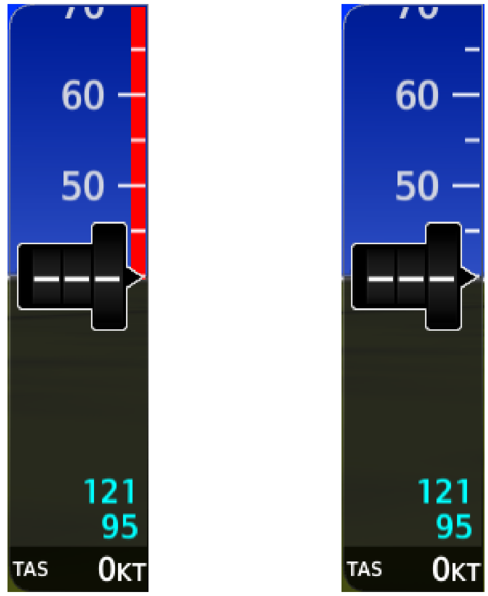


Figure 8-1, Low Speed Awareness Band Symbolization

8.12 RVSM Checks

The following are required initial and continued airworthiness checks to verify proper configuration for operation in RVSM airspace. RVSM operations are prohibited until the all of the RVSM checks are completed successfully. Any changes to the aircraft external configuration, such as the installation of additional antennas, probes, fairings or radomes along the sides of the airplane, that may impact the air data system or aircraft performance may also invalidate the RVSM certification for this aircraft.

8.12.1 RVSM Required Avionics Check

With the PFD in configuration mode, select the **Aux – System Status** page using the small FMS knob. Press the small FMS knob to activate the cursor. Highlight each of the following items in the LRU window and verify that the required software part number and version matches the information in the General Arrangement drawing listed in Table 1-1. Verify hardware part number by visual inspection of the units. Record the results in Table 8-1 (next page).

Table 8-1, RVSM Required Avionics

ITEM	HARDWARE DESCRIPTION	HARDWARE PART NUMBER	OK	SOFTWARE DESCRIPTION	SOFTWARE PART NUMBER	VER	OK	SYSTEM STATUS REPORT
1	**GIA 63W IAU #1**			MAIN SUB-SYSTEM				GIA1
				AUDIO				GIA1 AUDIO
				GPS/WAAS ENGINE				GPS1
				CERTIFICATION GAINS				GFC CERT GIA 1
2	**GIA 63W IAU #2**			MAIN SUB-SYSTEM				GIA2
				AUDIO				GIA2 AUDIO
				GPS/WAAS ENGINE				GPS2
				CERTIFICATION GAINS				GFC CERT GIA 2
3	**GDU 1050A PFD#1**			SYSTEM				PFD1
				FPGA				PFD1 FPGA
4	**GDU 1050A PFD#2**			SYSTEM				PFD2
				FPGA				PFD2 FPGA
5	**GDU 1550 MFD**			SYSTEM				MFD1
				FPGA				MFD FPGA
6	**GSU 75B GDC 7400 ADC #1**			SYSTEM				GDC1
				FPGA				GDC1 FPGA
7	**GSU 75B GDC 7400 ADC #2**			SYSTEM				GDC2
				FPGA				GDC2 FPGA
8*	**GTX 33(D) GTX 3000 GTX 335R GTX 345R XPDR #1**			GTX 33/3000/335/345 SYSTEM				GTX1
9*	**GTX 33(D) GTX 3000 GTX 335R XPDR #2**			GTX 33/3000/335 SYSTEM				GTX2

* Any other transponder that meets or exceeds the requirements of TSO-C74c (Mode C) or TSO-C112 (Class 2a; Mode S) may be installed.

8.12.2 RVSM Critical Region Visual Inspection

The RVSM critical region is a 24 x 24 inch area around the static ports on both sides of the airplane. The corners of the RVSM critical region are to be marked on the aircraft with placards or paint of a contrasting color (see Figure 8-2.) The RVSM critical region must meet the following visual inspection criteria:

1. The fuselage skin must be free from damage. All skin repairs within the RVSM critical region must be flush (no external doublers). If any damage is found, the area must be repaired. Locations of existing protruding head rivets in frames and skin laps are acceptable.
2. The paint (including stripes) must be uniform and smooth. Remove any paint blisters or flaking and sand smooth. Any decals or placards must be flush with no peeling edges.
3. The static ports must be free from any corrosion, elongation of holes, deformation or obstructions. If any damage is found, replace the static port.
4. The oxygen servicing door on the right hand side must close approximately flush with the fuselage skin and be free from damage or deformation. For the model 300 only, the ELT access hole cover on the right hand side must be in place.

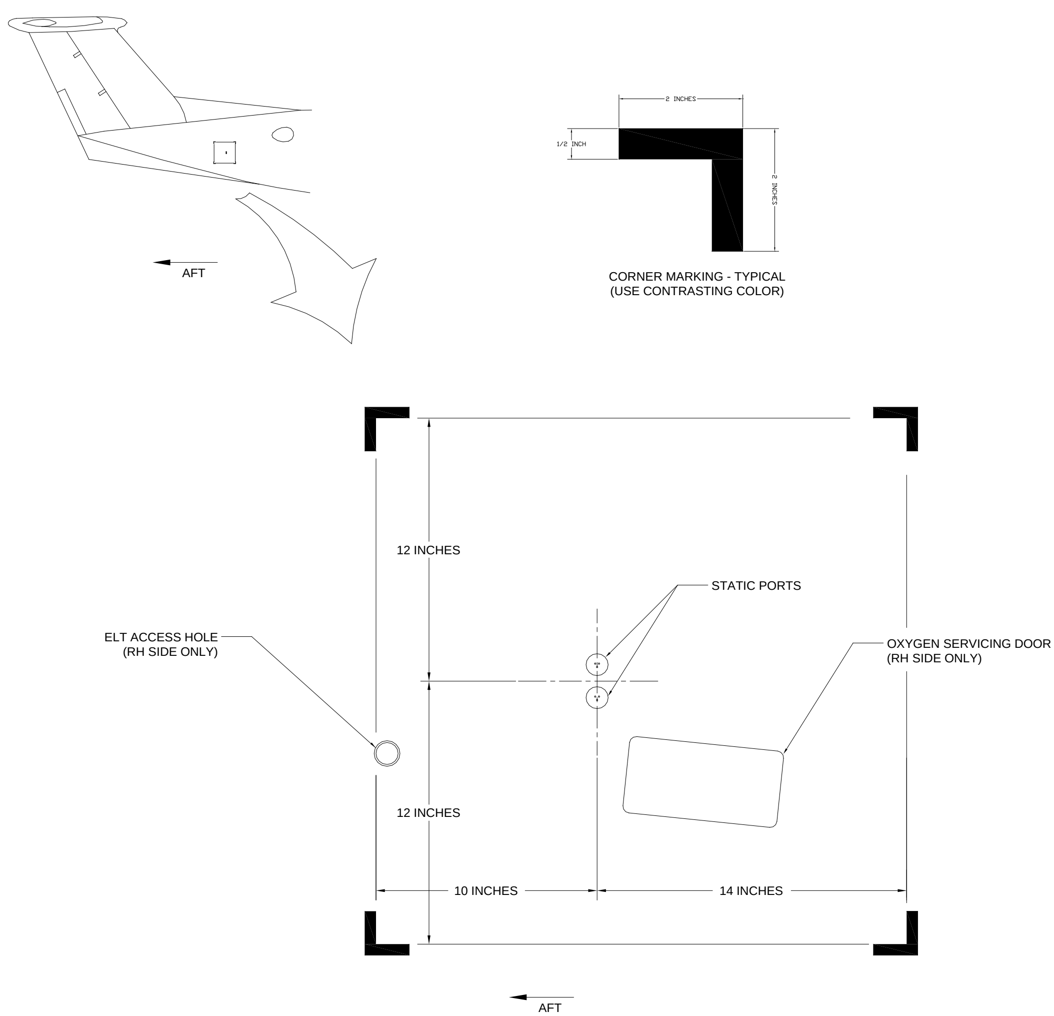
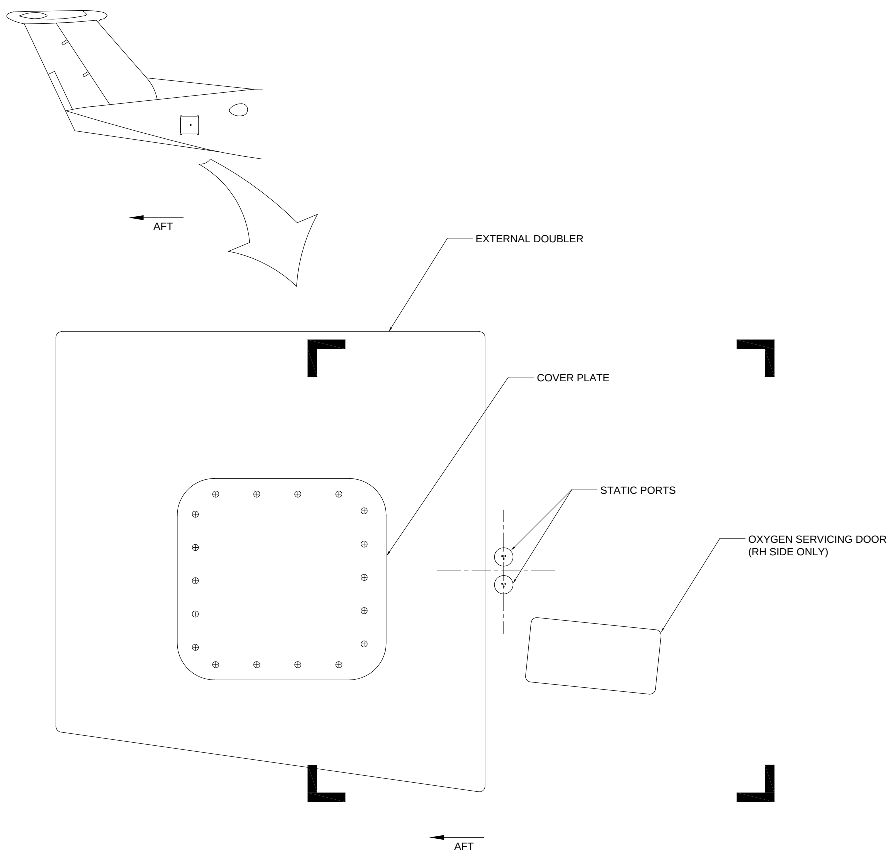


Figure 8-2, RVSM Critical Region

Note that Model B300/B300C aircraft with installation of the Sierra Nevada Corporation (SNC) Aircraft Survivability System (ASE) include a large external doubler and cover plate which are within the RVSM critical region as shown in



. These items are installed by SNC drawing number 01211012, B300 Aft ASE Provisions Installation. For these aircraft, the RVSM critical region must meet the following additional visual inspection criteria:

The fillet seal around the perimeter of the external doubler must be smooth and uniform.

The protruding head screws must be installed tightly against the cover plate.

The cover plate must fit smoothly against the external doubler.

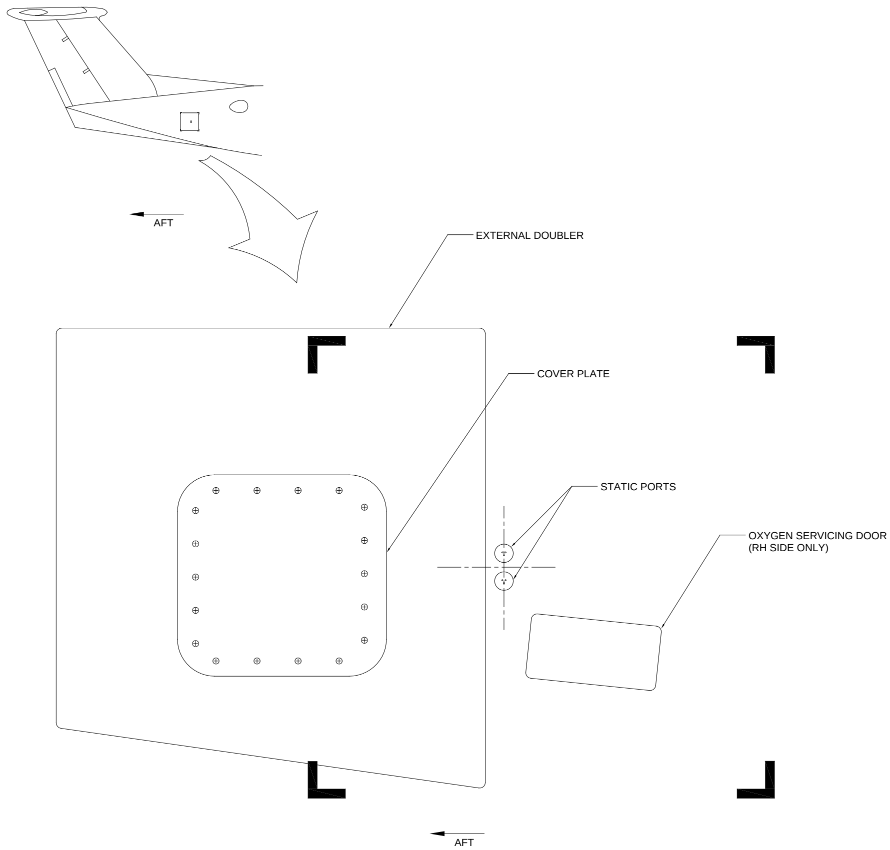


Figure 8-3, RVSM Critical Region (modified)

8.12.3 RVSM Static Port Height Inspection

The Gauging Assembly p/n SPF-4 (A1M-BCH-GE) is available from Beechcraft. Any alternate tool authorized in the King Air 300 Series Maintenance Manual for RVSM static port measurements may be substituted for this tool. Initialize the tool as follows:

1. Make sure the dial indicator reads negative when the plunger is pressed and positive when the plunger is free.
2. Place the gauging assembly on a flat surface (gauge block or equivalent.)
3. Ensure the smaller needle is at approximately (.1).
4. Rotate the dial indicator to set the large needle at (0) as shown in Figure 8-4.

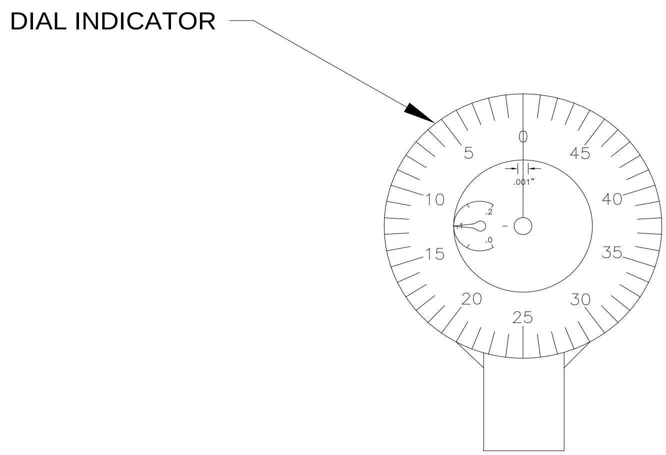


Figure 8-4, Dial Indicator

The static port measurements are obtained at four locations on each static port as shown in Figure 8-6. These measurements are used to find an AVERAGE and ANGLE for each of the four static ports. The AVERAGE is calculated by adding the four measurements and dividing the total by 4. The ANGLE is calculated by subtracting the minimum measurement from the maximum measurement. The calculated AVERAGE and ANGLE for each static port must fall within the ranges shown in Figure 8-7.

Perform the static port measurement as follows:

1. Wipe the surface of static ports clean with isopropyl alcohol.
2. Place the gauging assembly onto the static port surface as shown in Figure 8-5.

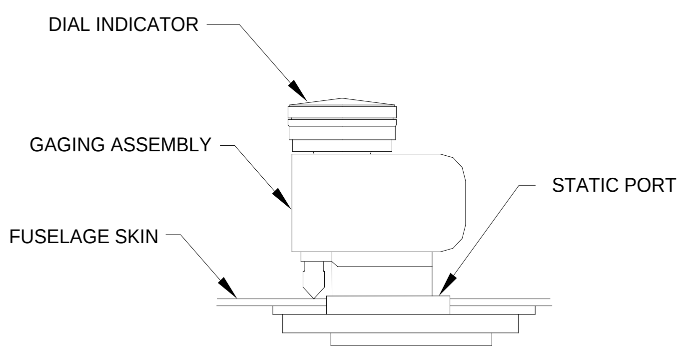


Figure 8-5, Static Port Measurement

NOTE

The dial indicator shows 0.100 inch when completely flush. Therefore, subtract the readings from 0.100 inch to determine the actual static port height. This should be completed before making any calculations.

3. For each static port, measure the static port height at the A, B, C and D locations as shown in Figure 8-6. Record the measurements in the measurement log, Figure 8-7.

4. Calculate the AVERAGE for each static port using the measurements by adding the four measurements and dividing the total by 4. Record the AVERAGE in the measurement log, Figure 8-7.
5. Ensure the AVERAGE for each static port is within tolerance (+0.045 to +0.085 inch.) If it is not, remove and reinstall the static ports as necessary to meet the tolerance.
6. Calculate the ANGLE for each static port by subtracting the smallest of the A, B, C or D measurements from the largest of the A, B, C or D measurements. Record the ANGLE in the measurement log, Figure 8-7.
7. Ensure the ANGLE for each static port is within tolerance (0.000 to +0.026 inch.) If it is not, remove and reinstall the static ports as necessary to meet the tolerance.

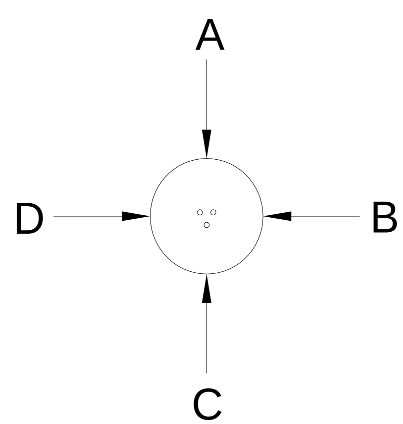


Figure 8-6, Static Port Measurement locations

	A	B	C	D	AVERAGE (A+B+C+D)/4	ANGLE Largest - Smallest
UPPER LEFT						
LOWER LEFT						
UPPER RIGHT						
LOWER RIGHT						
Aircraft s/n:						
Date:						

Figure 8-7, Static Port Measurement Log

8.12.4 RVSM Air Data System Check

Perform the Air Data Test per Section 7.7.3.

If either the pilot or copilot air data system does not meet the tolerances specified, have maintenance checks performed on the air data system or the pitot/static system.

IMPORTANT!

RVSM operations are prohibited until the air data system meets all test conditions.

8.12.5 RVSM In-Flight Altitude Hold Check

RVSM operation requires that the autopilot system accurately maintain the acquired altitude during non-turbulent, non-gust cruise conditions. The autopilot must be maintained in accordance with the G1000 System Maintenance Manual listed in Table 1-2. The autopilot must be shown to meet the performance specification of the following in-flight altitude hold test.

1. Verify the following conditions (normal RVSM cruise flight):
   - Altitude FL290 to FL350
   - Altimeter setting 29.92 in Hg (1013 HPA)
   - Autopilot altitude hold engaged
   - Non-turbulent, non-gust conditions
2. Record the data from the primary cockpit displays as specified by Table 8-2 every 5 minutes for a minimum flight segment of 30 minutes in length. The maximum altitude deviation shown on the display throughout the test should not exceed ±65 feet.

If the aircraft fails to hold altitude to this tolerance, repeat the test ensuring that the airspeed remains constant and the air remains stable during the entire test. If the test still fails, have maintenance checks performed on the GFC 700 system, then repeat the test. RVSM operations are prohibited until the autopilot is capable of maintaining altitude within ±65 feet of the selected cruise altitude.

Aircraft s/n:			Date:	
Enroute To:			Pilot:	
Time (hr:min)	Pilot		Copilot	
	Altitude (ft)	Airspeed (kt)	Altitude (ft)	Airspeed (kt)
0:00				
0:05				
0:10				
0:15				
0:20				
0:25				
0:30				
0:35				
0:40				
0:45				
0:50				
0:55				
1:00				

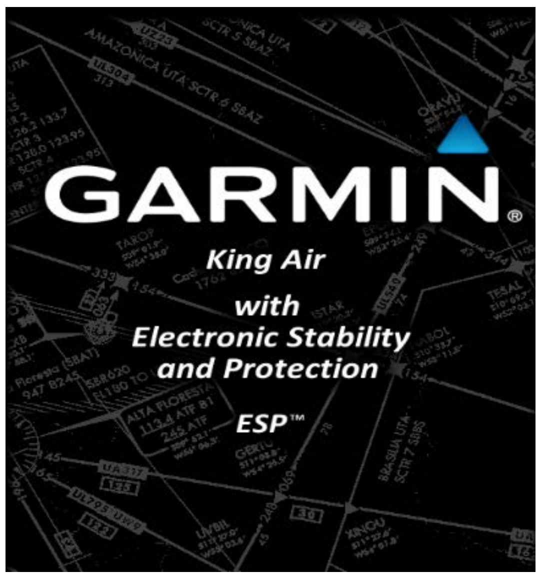
Table 8-2, In-Flight Altitude Hold Performance Test

8.13 ESP Functional Check

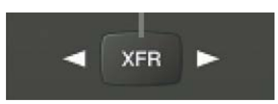
NOTE

This procedure is required only for aircraft with the optional Electronic Stability and Protection (ESP) feature.

1. Apply power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to ON. Ensure G1000 system and components are powered and operating normally.
2. Verify the DISPLAY BACKUP button on the audio panel is pushed in so that the GDUs <u>will not</u> operate in reversionary mode.
3. Verify no AHRS, ADC, Autopilot, PFD, AFCS Mode Controller, GCU alert messages or monitor flags (amber HDG, etc.) are present on PFD1 or PFD2.
4. On initial power up verify that the MFD splash screen includes a graphic similar to the following:



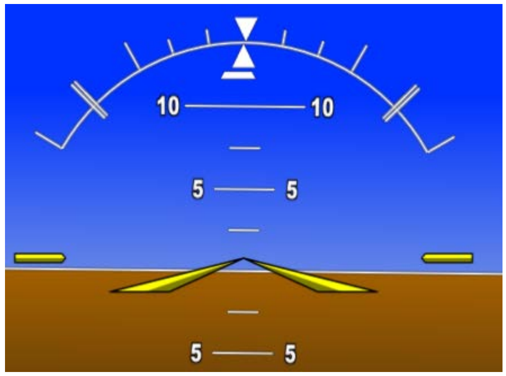
5. On the GMC 710 couple the Flight Director to the left side by pressing the XFR button. The arrow that is illuminated indicates which side is coupled. No flight director modes should be active at this time.



6. On the GCU, rotate the inner FMS knob to activate the **Aux – System Setup** page on the MFD.
7. On the MFD **Aux – System Setup** page press the **Setup 2** softkey.
8. Verify that on the MFD SETUP 2 page there is a window for Stability & Protection and the status is “ENABLED”.

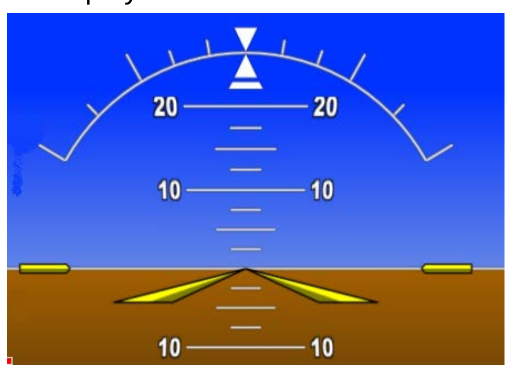
9. Verify on PFD 1 and PFD 2 that there are no “ESP FAIL”, “ESP OFF”, or “ESP DEGRADE” alert messages.

10. Cover both GPS1 and GPS2 antennas.
11. Verify on PFD 1 and PFD 2 the ESP Roll Indices are displayed at 45° on the roll indicator on the Attitude Display.



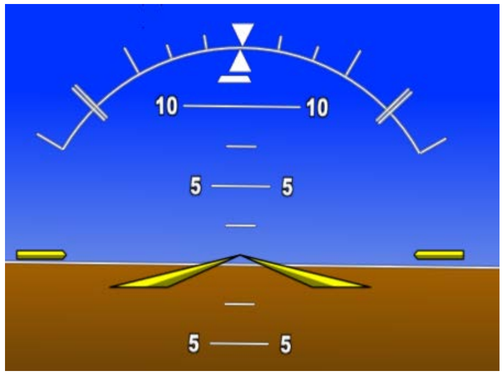
12. On the GCU, press the inner FMS knob to activate the cursor then rotate the outer FMS knob to select the Stability & Protection window on the MFD.
13. Rotate the inner FMS knob to change the status to “DISABLED”.
14. Verify that on the MFD **Aux – System Setup 2** page Stability & Protection window that the status is “DISABLED”.

15. Verify on PFD 1 and PFD 2 the ESP Roll Indices are not displayed at 45° on the roll indicator on the Attitude Display.

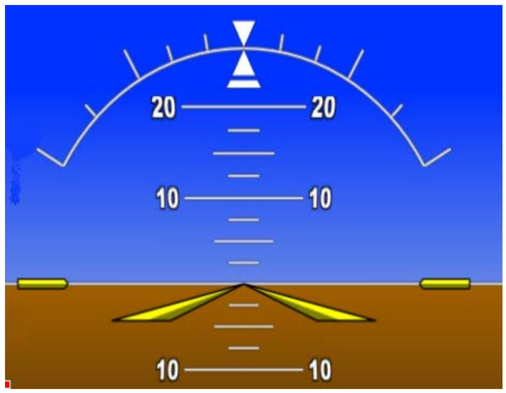


16. Verify on PFD 1 and PFD 2 that there is an “ESP OFF” alert message.

17. Remove the cover from both GPS1 and GPS2 antennas.
18. Remove power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR, EXT PWR, and BATT switches to OFF.
19. Wait ~ 1 minute before re-applying aircraft power.
20. Apply power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR and BATT switches to ON.
21. During power up and GPS satellite acquisition, verify on PFD1 and PFD2 the ESP Roll Indices are displayed at 45° on the roll indicator on the Attitude Display.

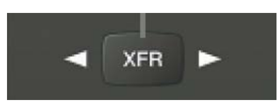


22. Once AFCS PFT is complete and GPS has acquired satellites, verify on PFD1 and PFD2 the ESP Roll Indices are not displayed at 45° on the roll indicator on the Attitude Display.



23. On the GCU, rotate the inner FMS knob to activate the **Aux – System Setup** page.
24. On the MFD **Aux – System Setup** page press the Setup 2 softkey.
25. Verify that on the **Aux – System Setup 2** page there is a window for Stability & Protection and the status is "ENABLED".

26. Verify on PFD 1 and PFD 2 that there are no "ESP FAIL" or "ESP OFF" alert messages.
27. On the GMC 710, couple the Flight Director to the right side by pressing the XFR button. The arrow that is illuminated indicates which side is coupled. No flight director modes should be active at this time.



NOTE

On power up the coupled side will default to the left side. Each time power is reapplied couple back to the right side and continue test steps.

28. Repeat step 1 thru 27 while coupled to right side.
29. Remove power to the aircraft and avionics systems by placing the aircraft AVIONICS MASTER PWR, EXT PWR, and BATT switches to OFF.
30. Wait ~ 1 minute before re-applying power for further testing as required.

8.14 GTS Traffic System Functional Check

This section is applicable to the GTS 820/825 (TAS), GTS 850/855 (TCAS I), and GTS 8000 (TCAS II) traffic systems. Perform the following tests to verify GTS 820/850 or GTS Processor operational and surveillance functions. Use a ramp tester such as a TIC TR220 or equivalent to perform the tests.

These tests are performed at field elevation. Note that local traffic targets may appear during the test and are not an indication of improper system operation.

For these tests, the radar altimeter must read over 2000 feet to play the aural alerts. To make the radar altimeter read over 2000 feet, disconnect the receive coaxial cable or cover the receive antenna from the radar altimeter.

To perform these tests for the GTS 8000 TCAS II traffic system, the aircraft must be in a simulated 'in-air' condition. To put the aircraft 'in-air', place the aircraft on jacks or actuate the weight on wheels switches on both L/H and R/H main landing gear.

NOTE

Prior to simulating the 'in-air' condition, please contact your local Air Traffic Control (Center and Approach) and inform them of your intention to perform aircraft testing that may transmit ADS-B Out signals of an aircraft in the 'in-air' condition. Closed hangar doors may not provide adequate isolation from ATC.

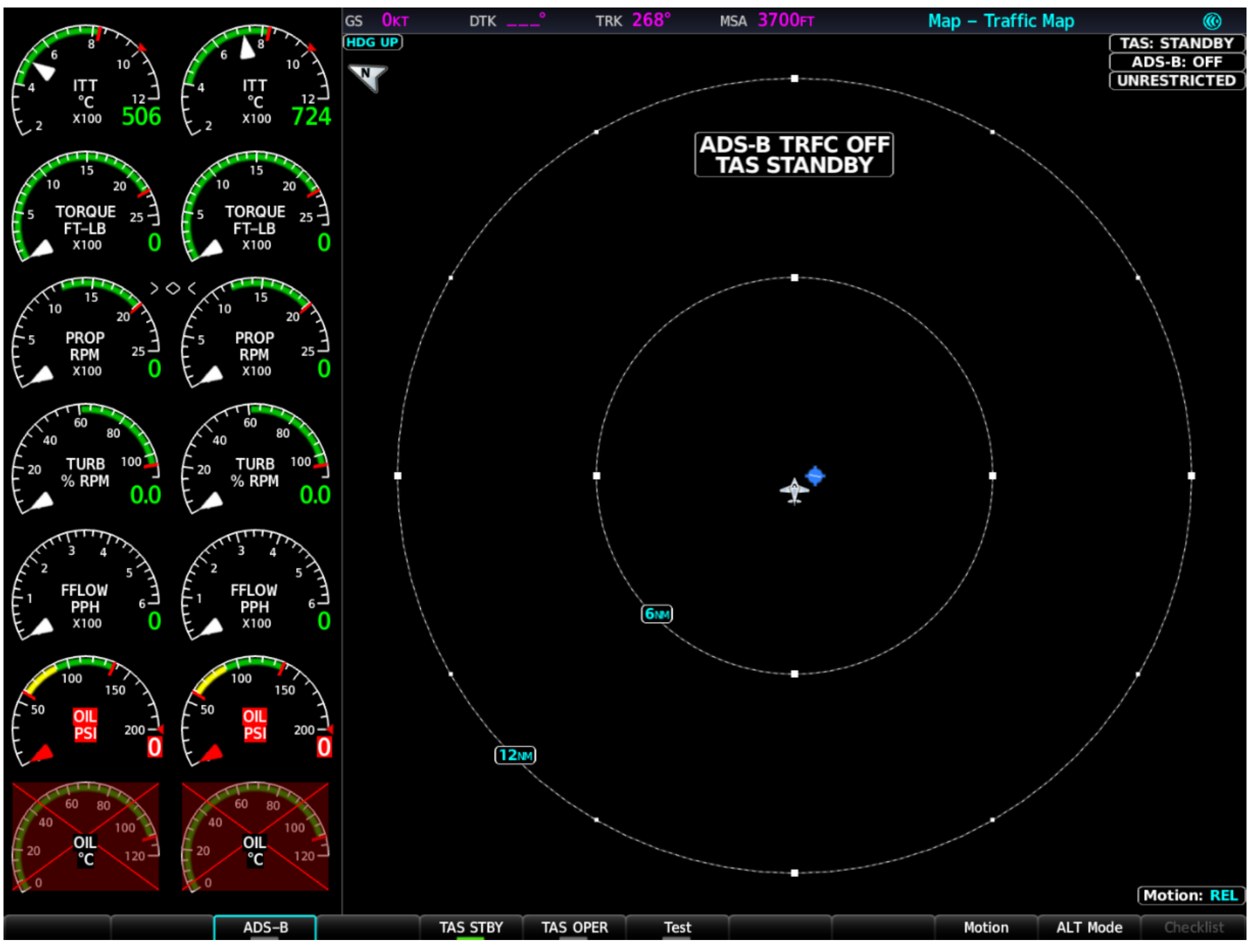


Figure 8-8, Traffic Map

8.14.1 Antenna Test

The following test assures the antennas and coaxial cables are properly connected.

1. On the **Map – Traffic Map** page of the MFD, perform the following:
   a. Press the **TAS OPER** softkey (for TAS/TCAS I) or press **TA Only** softkey (for TCAS II). A self-test of the antenna circuit is initialized. If the MFD displays FAILURE at the upper left corner of the traffic display area, it will be necessary to recheck the coaxial connections. If MFD displays OPERATE (for TAS/TCAS I) or TA ONLY (for TCAS II) without indicating a fault, proceed to the next step of antenna verification.
   b. If an “ADS-B” softkey is displayed, press the softkey to turn it off.
2. Ensure that the transmitter or receiver (TX/RX) that you are testing is significantly closer to the ramp tester than another operating RX/TX, or erroneous and inaccurate results may occur. All four quadrants (0, 90, 180 and 270 degrees) relative to the aircraft will be similarly tested to verify bearing of simulated intruder supplied via the ramp tester are correctly displayed on the **Map – Traffic Map** page of the MFD.
3. Set up a stationary intruder by selecting the following on the ramp tester:
   - Intruder type: ATCRBS
   - Intruder Start Distance: 2 nm
   - Intruder Start Altitude: 500 feet above field elevation
   - Vertical Speed: 0 fpm
   - Velocity: 0 kts (on some ramp testers, a velocity greater than 0 kts is required and a stationary intruder is created by not starting the scenario.)
4. Position ramp tester at 0 degrees (i.e. off the nose of the aircraft).
5. Initiate the intruder scenario and verify a target is annunciated on the **Map – Traffic Map** page of the MFD at the correct bearing of approximately 0 degree at 2 NM (read as +05 above a filled diamond indicating proximate traffic).
6. On the ramp tester, toggle intruder traffic to standby or off.
7. Reposition ramp tester and reengage the same intruder scenario for 90, 180 and 270 degrees relative to the aircraft.
8. Verify a target is annunciated on the **Map – Traffic Map** page of the MFD at the same bearing as the ramp tester.
9. If the bearing is not as anticipated or multiple targets (not including possible local traffic) are displayed during tests, verify the following:
   - Coax cable connectors are properly secured at the bulkhead adapter fittings, GA58 antennas, GTS unit and GPA 65 unit (if installed).
   - Connections are made to the proper channels and color-coded heat shrink is the same color on both ends of coax cables.
   - Connectors are correctly installed on coax cables.
10. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.14.2 Ramp Test

The following test provides a scenario that will converge and intercept the GTS unit to assure proper operational and surveillance functions.

NOTE

Prior to simulating the 'in-air' condition, please contact your local Air Traffic Control (Center and Approach) and inform them of your intention to perform aircraft testing that may transmit ADS-B Out signals of an aircraft in the 'in-air' condition. Closed hangar doors may not provide adequate isolation from ATC.

1. Disconnect the radar altimeter receive coaxial cable or cover the receive antenna so the radar altimeter reads over 2000 feet.
2. For GTS 8000 TCAS II test only, perform the following:
    a. Change BARO setting to 29.92 in-Hg on PFD1 and PFD2.
    b. Set the main landing gear WOW actuators in the air position.
3. On the **Map – Traffic Map** page of the MFD, perform the following:
    a. Press the **TAS OPER** softkey (for TAS/TCAS I) or **TA/RA** softkey (for TCAS II).
    b. If an "ADS-B" softkey is displayed, press the softkey to turn it off.
4. Position ramp tester at 90 degrees (i.e. off the right wing).
5. Select the following on the ramp tester:
    - Intruder type: ATCRBS
    - Intruder Start Distance: 10 nm
    - Intruder Start Altitude: 300 ft above PFD1 displayed altitude
    - Vertical Speed: 0 fpm
    - Velocity: 360 kts
6. Initiate the intruder scenario and observe the following:
    - The simulated intruder should be acquired at approximately 6-10 NM at 90 degree bearing. Observe intruder closes on own aircraft at a rate of 0.1 NM/sec. Verify that only a single simulated target is displayed in the expected quadrant (exclude possible local traffic).
    - The simulated intruder should transition from Other Traffic (displayed as an open diamond with +03 displayed above), to proximate traffic (displayed as a filled white diamond with +03 displayed above), to a Traffic Advisory (TA) alarm (yellow filled circle with +03 displayed above.)
    - For GTS 8000 TCAS II installations, the following applies:

      The simulated intruder should transition from a Traffic Advisory (displayed as a solid yellow circle with +03 displayed above), to a Resolution Advisory (RA) alarm (red filled square with +03 displayed above). Additionally, a Resolution Advisory is displayed on the vertical speed tape of PFD1 and PFD2 and an audible Resolution Advisory is heard over cockpit speakers and headphones.

NOTE

The aural TA annunciations are muted if the gear is extended (and the Radar Altimeter indicates below 400 feet).

For GTS 8000 TCAS II, to generate a DESCEND resolution advisory, the WOW actuators must be set to the in-air position and the Radar Altimeter must read greater than 2,000 ft.

At the end of these tests, put the aircraft back ‘on-ground’ and restore radar altimeter operation. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.15 Activation of Garmin Connext

In order to activate the optional GDL 59 Wi-Fi datalink and optional GSR 56 satellite receiver for Garmin Connext, contact Garmin Product Support at one of the following numbers (M-F, 7:00 a.m. to 7:00 p.m. USA Central Standard Time):

- 1.866.739.5687 (toll free in USA)
- +1.913.440.1135 (worldwide)

Have the following information ready prior to calling:

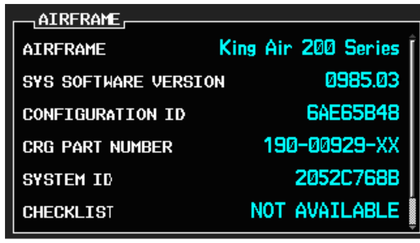
- If activating services for a GDL 59-only installation
  - Aircraft tail number, serial number, manufacturer, and model
  - G1000 system ID number

- If activating services for a GDL 59 and GSR 56 installation
  - Aircraft tail number, serial number, manufacturer, and model
  - GSR 56 unit serial number
  - G1000 system ID number
  - Name of aircraft owner and contact information
  - Credit card information

Garmin Connext will provide additional information for activation of data services.

To obtain the G1000 system ID number and GSR 56 unit serial number, accomplish the following:

1. Turn the large FMS knob on the MFD to select the Aux page group.
2. Turn the small FMS knob to select the **Aux – System Status** page. Record the SYSTEM ID number shown in the AIRFRAME field. This number is unique for each G1000 system.



SYSTEM ID Number Location

3. Use the large FMS knob to scroll the cursor to GSR1 (if GSR 56 is installed). Record the GSR 56 serial number shown in the LRU INFO field.

For previously activated systems, if the GSR 56 satellite receiver unit is replaced, the new unit serial number must be registered with Garmin Connext. Contact Garmin Product Support and follow the activation procedure as described previously in this section.

For previously activated systems, if the GDL 59 Wi-Fi datalink unit is replaced, the system must be registered again. This can be accomplished by entering the same passcode received during the initial activation process as described in the following steps:

1. Connect to an available network (reference Section 8.16 for details.)
2. Using the large FMS knob, select the Aux page group on the MFD. Using the small FMS knob, select the Map – Weather Data Link page.
3. Press the **MENU** key on the GCU to display the PAGE MENU window.
4. Select “Register With Connext”.
5. With the “**Connext Registration**” window open, enter the access code (provided by Garmin Product Support during the initial activation of the system) in the **Access Code** field, using the keypad on the GCU, and press the **ENT** key on the GCU.

NOTE

The replacement GDL 59 unit must be registered again, even if the MFD already shows **Registered** in the **Status** window.

6. With the **Register** field highlighted, press the **ENT** key on the GCU.
7. Verify that the **Status** field indicates **Registered** and that the data displayed in the **Current Registration** field matches the aircraft information.

8.16 GDL 59 Wi-Fi Data Link Functional Check

This check verifies GDL 59 Wi-Fi Data Link interface is configured and is functional. This check requires an operating and available wireless network to be within range of the aircraft.

NOTE

This check only verifies the data output from the G1000 equipment. Any equipment/wiring added that is not part of the installation data will need separate testing and verification not covered as part of this document.

1. Start the G1000 System in Normal Mode.
2. Using the large FMS knob, select the Aux page group on the MFD. Using the small FMS knob, select the **Aux-Maintenance Wi-Fi Setup** page.
3. Press the **AVAIL** softkey on the MFD to display the available Wi-Fi networks.
4. Press the FMS knob on the GCU to activate the cursor and rotate the small FMS knob to highlight the desired network in the **Available Networks** field.
5. Press the **Connect** softkey on the MFD to connect to the network. (Skip to step 11 if the selected network is a non-secure network.)
6. If the selected network is a secure network, enter the pass code in the **Enter Passphrase** field in the **WPA Security Settings** pop-up window.
7. Press the **ENT** key on the GCU to accept the pass code, then press the **ENT** key on the GCU again.
8. When the **Save Settings** pop-up window is displayed, press the **ENT** key on the GCU keypad to select **Save Connection**.
9. Enter the airport identifier in the **Airport** field, then press the **ENT** key on the GCU to accept the identifier.
10. With the **Connect** button highlighted, press the **ENT** key on the GCU to connect to the network.
11. Press the **ENT** key on the GCU if the verification window “Are you sure you want to connect?” is displayed.
12. Verify that the **Connection Status** field on the **Aux – Maintenance Wi-Fi Setup** page on the MFD indicates **Connected**.
13. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.17 GSR 56 Satellite Receiver Functional Check

1. Power up the PFD1 in configuration mode.
2. On the PFD1, select GDL page group using the large FMS knob.
3. Using the small FMS knob select the GSR56 Configuration page. Verify the page can be displayed and information is available.

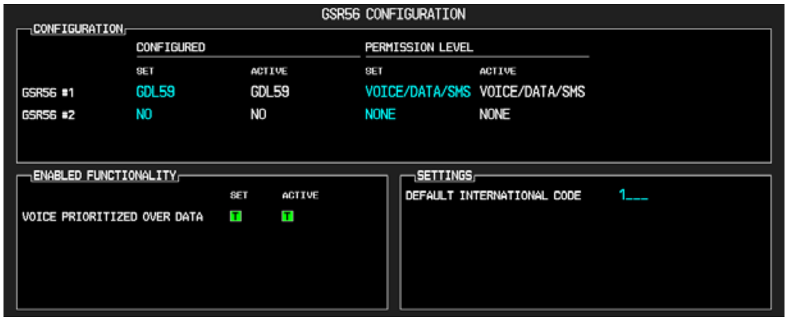


Figure 8-9, GSR56 Configuration Page

4. Restart the G1000 System in Normal Mode.
5. Using the large FMS knob, select the Aux page group on the MFD. Using the small FMS knob, select the **Aux-Telephone** page.
6. Ensure the system is showing Iridium signal strength (best if aircraft is outside).
7. Press **TEL** button on the pilot's GMA.
8. Press the **Dial** softkey on the MFD.
9. Enter the test phone number in the ENTER PHONE NUMBER field using the GCU keypad.
10. Press the **ENT** key on the GCU keypad to accept the phone number.
11. Press the **ENT** key on the GCU keypad to initiate the dialing sequence.
12. When call is complete, press the **Hangup** softkey on the **Aux-Telephone** page on the MFD to end the call.

Figure 8-10, Aux-Telephone page

13. If no other service is to be performed, continue to the return-to-service checks in Section 9.

8.18 Search and Rescue Functional Check

1. On the MFD, press the "**FPL**" key to display the Active Flight Plan Menu.
2. Press the "**MENU**" key to display the PAGE MENU Options.
3. Scroll through the choices with the **FMS** knob and select "**Search and Rescue**".
4. Press "**ENT**" key to complete the selection and view the SAR flight plan menus.
5. From the Search and Rescue Menu, turn the large and small **FMS** knobs to enter the starting waypoint.
6. Press **ENT** key to complete the selection and move to the next option, "**PATTERN**" type.
7. Use the **FMS** knob to move to the **PATTERN** type and select "**PARALLEL**".
8. With the **FMS** knob scroll through the options and change the fields as desired, or leave the default entries.
9. Press **ENT** key with the "**ACTIVATE SAR?**" field highlighted, to complete and activate the flight plan.
10. Verify the parallel track search pattern is on the **Map – Navigation Map** page.
11. If no other service is to be performed, continue to the return-to-service checks in Section 9.

9. G1000 System Return to Service Procedure

If a G1000 LRU was replaced, verify the correct LRU software part numbers and versions against the numbers listed on the General Arrangement drawing listed in Table 1-1.

Perform the following subsection tests to confirm the G1000 system is operating correctly.

9.1 Display Test

1. Apply aircraft power. On the MFD power-up screen in the upper right corner, find the 'King Air B300 Series System XXXX.XX' number. This number is the G1000 System Software Loader Image version number that was used to install the software to the system.

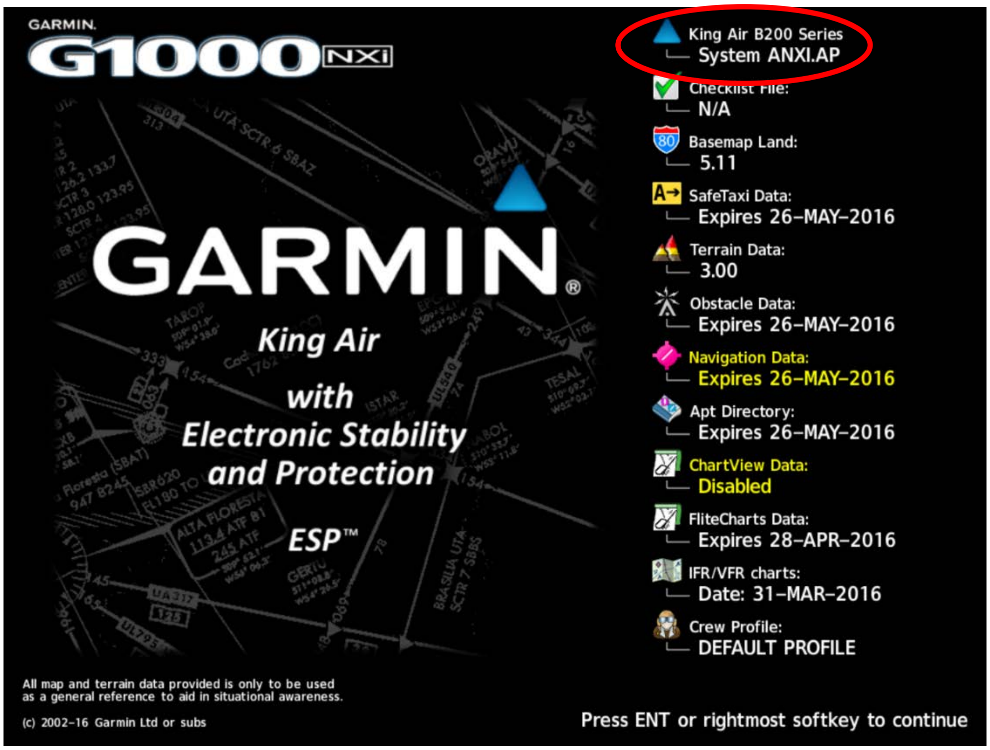


Figure 9-1, MFD Power Up Page

2. Verify that the System Software Version is the same as listed in Table 1 of the 005-00629-N2 General Arrangement Drawing.
3. Press the GCU **ENT** key to acknowledge the 'DEFAULT PROFILE' Crew Profile option on the MFD (NOTE: The rightmost softkey on the MFD may also be used).

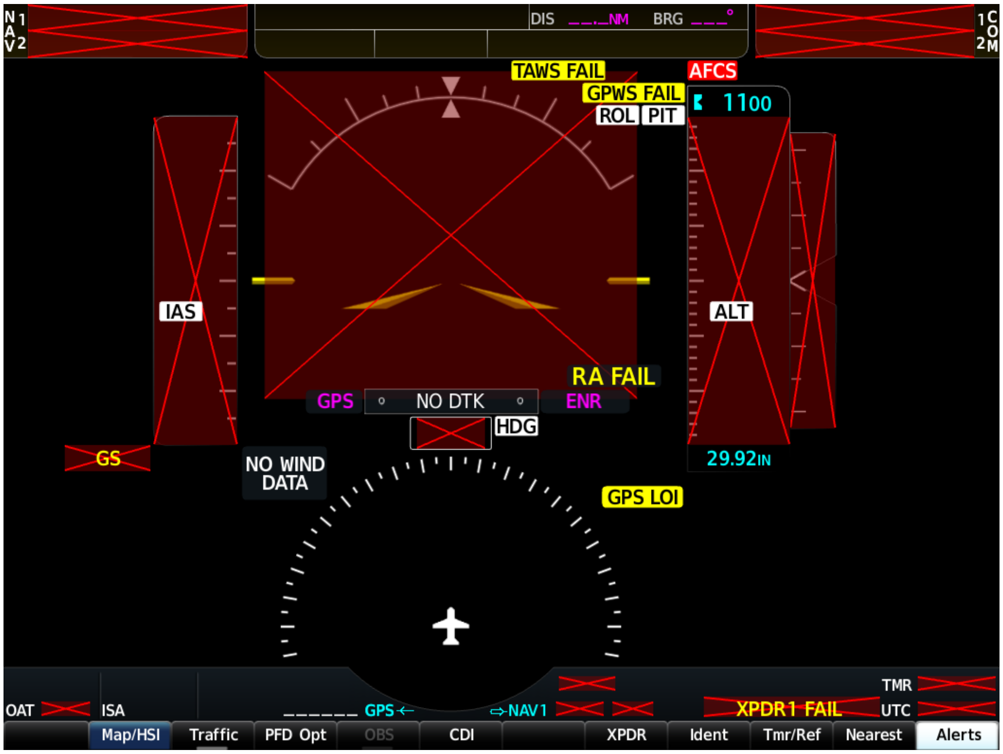


Figure 9-2, PFD Power-up System Annunciations

4. Allow the displays to initialize for approximately one minute. During normal operation, this causes the airspeed, altitude, vertical speed, and OAT fields to be invalid during the first ~40-60 seconds of PFD power-up. After two minutes, verify no Red-X's are present on both PFDs and the MFD. Examples of potential Red-Xs are shown in Figure 9-2. If any Red-X's are present, stop and troubleshoot per Section 5. Examples of PFDs with no Red-X failure indications are shown in Figure 9-3.

(Without SVS enabled)

(With SVS enabled)

Figure 9-3, PFD Normal Operation

NOTE

Outputs from the GRS 77/7800 or GSU 75B (AHRS portion) and GMU 44 are not valid until the units have been calibrated.

5. Check that all COM/NAV fields are valid in the top corners of PFD1 and PFD2.
6. Check that altitude, airspeed, vertical speed, GS, TAS, and OAT fields are valid on PFD1 and PFD2.
7. Press the PFD Opt softkey on each PFD.
8. Press the **SENSOR** softkey on each PFD and switch between ADC1 and ADC2. Verify that data from both GDC air data computers are valid on both displays.
9. Press the **SENSOR** softkey on each PFD and switch between AHRS1 and AHRS2. Verify that data from both GRSs are valid on both displays.
10. Check that engine instrument fields are valid on the MFD.
11. Verify that no MANIFEST alert messages appear in the lower right corner (press the flashing **ALERTS** softkey to view alert messages). If any MANIFEST errors appear, the correct software to the related LRU must be loaded before proceeding.

9.2 Display Failure Test

Step	Desired Result
MFD Failure Condition: 1. Open MFD CB. 2. Verify desired results. 3. Close MFD CB.	For an MFD failure condition, the following shall occur: • MFD goes blank. • All PFD1 and PFD2 primary flight information is retained. • The COM 1/2 and NAV 1/2 tuning fields remain valid and can be tuned by rotating the tuning knobs on PFD1 and PFD2. • XPDR 1/2 fields remain valid and XPDRs can adjusted via PFD softkeys.
PFD2 Display Failure Condition: 1. Open PFD 2 CB. 2. Verify desired results. 3. Close PFD 2 CB.	For a PFD2 failure condition, the following shall occur: • PFD2 goes blank. • PFD1 and MFD remain in normal display formats. The following illuminate on PFD1: o A white $\boxed{\text{HDG}}$ box adjacent to the heading window o A white $\boxed{\text{ROL}}$ box adjacent to the roll scale o A white $\boxed{\text{PIT}}$ box adjacent to the pitch ladder o A white $\boxed{\text{IAS}}$ box in the airspeed tape o A white $\boxed{\text{ALT}}$ box in the altitude tape • GMA2 Fail – GMA2 is inoperative. • XPDR2 Fail – XPDR2 is Inoperative.

Step	Desired Result
PFD1 Display Failure Condition: 1. Open PFD 1 PRI and PFD1 SEC circuit breakers. 2. Verify desired results. 3. Close PFD 1 PRI and PFD1 SEC circuit breakers.	For a PFD1 failure condition, the following shall occur: • PFD1 goes blank. • PFD2 and MFD remain in normal display formats. The following illuminate on PFD2: o A white HDG box adjacent to the heading window o A white ROL box adjacent to the roll scale. o A white PIT box adjacent to the pitch ladder o A white IAS box in the airspeed tape o A white ALT box in the altitude tape • GMA1 Fail – GMA1 is inoperative. • XPDR1 Fail – XPDR1 is Inoperative.

9.3 Reversion Mode Check

1. Push the red **DISPLAY BACKUP** button on the pilot-side GMA 1347D. Verify that the pilot-side PFD and MFD displays enter reversion mode (See Figure 9-4). MFD should have valid altitude, airspeed, vertical speed, COM 1, COM 2, NAV 1, NAV 2 and engine instruments.

Figure 9-4, GDU Reversionary Mode

2. De-activate pilot-side reversion mode by pushing the **DISPLAY BACKUP** button. Verify PFD1 and MFD return to normal display modes.

3. Repeat Step 1 using GMA 2. Ensure that PFD 2 and MFD enter reversion mode and MFD displays valid altitude, airspeed, vertical speed, COM 1, COM 2, NAV 1, NAV 2 and engine instruments.
4. De-activate co-pilot's side reversion mode by pushing the **DISPLAY BACKUP** button. Verify PFD 2 and MFD return to normal display modes.

9.4 Cooling Fan Fail Annunciation Check

Do the following to verify the cooling fans and annunciations are functioning properly

Step	**Desired Result**
Cooling Fan Failure Conditions: 1. Ensure the G1000 is in normal mode and verify that there are no fan related alert messages displayed in the PFD1 or PFD2 Alerts Window. 2. Pull the following cooling fan circuit breakers: a) PFD/GIA FANS LEFT b) PFD/GIA FANS RIGHT c) MFD FAN	For the cooling fan failure conditions, after a 30-second delay verify that the following alert messages are displayed: • AVN FAN 1 FAIL – Avionics cooling fan #1 is inoperative • AVN FAN 2 FAIL – Avionics cooling fan #2 is inoperative • PFD 1 FAN FAIL – PFD #1 cooling fan is inoperative • PFD 2 FAN FAIL – PFD #2 cooling fan is inoperative • MFD FAN FAIL – MFD cooling fan is inoperative
Fan Failure reset and acknowledgement: 1. Reset all cooling fan circuit breakers. 2. Acknowledge alerts by pressing the Alerts softkey on PFD1.	Verify the above alerts extinguish.

9.5 GPS Signal Acquisition

This test requires the aircraft to be outside to see the GPS satellites or indoors with a GPS repeater.

Figure 9-5, AUX-GPS Status Page

Select the AUX - GPS Status page on the MFD. After the G1000 system has been on for a minimum of two minutes, toggle between GPS 1 and GPS 2 using the two softkeys on the bottom of the display. Verify that both receivers show a 3D GPS Solution in the GPS Status field.

9.6 GPS Failure Test

Before starting this test, create a simple Direct-To flight plan to an airport or other waypoint that is greater than 31 NM from the present aircraft position. Verify that the phase of flight displayed on the GPS CDI is ENR.

Step	Desired Result
Single GPS Failure Condition: 1. Ensure GPS satellites are acquired. 2. Place a shroud over the GPS antenna for GIA 1 to prevent signal reception. Verify loss of signal on MFD **Aux – GPS Status** page. 3. Check for desired results. 4. Remove shroud from the GIA 1 GPS antenna and allow system to re-acquire satellites. 5. Place a shroud over the GPS antenna for GIA 2 to prevent signal reception. Verify loss of signal on MFD **Aux – GPS Status** page. 6. Check for desired results. 7. Remove shroud from the GIA 2 GPS antenna.	For each of the single GPS failure conditions, the following shall remain valid on the PFD throughout the procedure: • Attitude and Heading from AHRS. • Airspeed, Altitude, Vertical Speed, and OAT from Air Data Computer. • GPS Course Deviation Indicator For a GIA1 GPS Failure, an amber BOTH ON GPS2 is displayed on PFD 1 and PFD 2. For a GIA2 GPS Failure, an amber BOTH ON GPS1 is displayed on PFD 1 and PFD 2.

Step	Desired Result
Dual GPS Failure Condition: 1. Ensure GPS satellites are acquired. 2. Cover both GPS antennas. Verify loss of signal on **Aux – GPS Status** page. 3. Check for desired results. 4. Remove shrouds from GPS antennas. 5. Allow both receivers to re-acquire satellite signals before continuing.	For a dual GPS failure condition, the following shall occur: • GPS CDI flags LOI on both PFDs. • Attitude and Heading remain valid from both AHRS on both PFDs. • Airspeed, Altitude, Vertical Speed and OAT remain valid from both Air Data Computers on both PFDs. • LOI appears on MFD Map. • TAWS N/A aural alert & annunciation given. When GPS satellites are re-acquired, verify that the INTEG OK annunciation is given on the HSI in white for a brief period of time then disappears. After ~10 seconds of stable GPS position reacquisition, verify the TAWS AVAILABLE aural alert is given. Verify that the system returns to normal navigation mode (GPS CDI restored, LOI annunciation removed, & GPS data magenta).

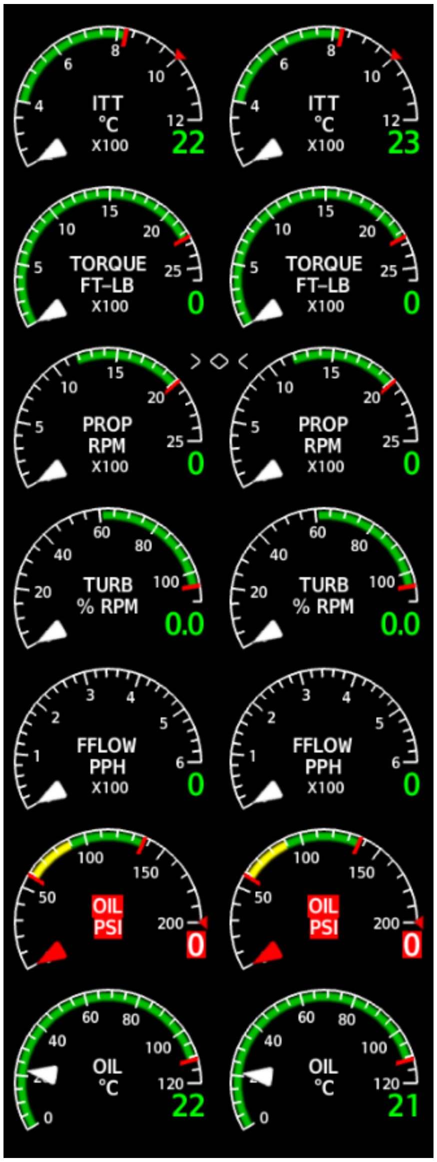
9.7 GIA Failure Test

Step	Desired Result
GIA 1 Failure Condition: 1. Ensure GPS satellites are acquired. 2. Open GIA1 primary and secondary CBs. 3. Verify desired results. 4. Close GIA1 primary and secondary CBs. Allow system to re-acquire satellites and return to normal display modes.	For a GIA 1 failure condition, the following shall occur: • NAV 1 and COM 1 tuning fields on PFD1 and PFD2 are invalid (red X). • L/R engine data remains valid • XPDR 1 is Inoperative. • GMA 1 Is Inoperative. • AHRS 1 is using backup GPS source. • AHRS 2 not receiving backup GPS Information. • An amber BOTH ON GPS2 is displayed on PFD 1 and PFD2. • AHRS and ADC data remain valid on PFD 1 and PFD 2.
GIA 2 Failure Condition: 1. Open GIA 2 CB. 2. Verify desired results. 3. Close GIA 2 CB. Allow system to re-acquire satellites and return to normal display modes.	For a GIA 2 failure condition, the following shall occur: • NAV 2 and COM 2 tuning fields on PFD 1 and PFD 2 are invalid (red X). • L/R engine data remains valid. • XPDR 2 is Inoperative. • GMA 2 Is Inoperative. • AHRS 2 is using backup GPS source. • AHRS 1 not receiving backup GPS Information. • An amber BOTH ON GPS1 is displayed on PFD 1 and PFD 2. • AHRS and ADC data remain valid on PFD 1 and PFD 2.
Dual GIA Failure Condition: 1. Open GIA 1 primary and secondary CBs and GIA 2 CB. 2. Check for desired results. 3. Restore power to both GIA units.	For a dual GIA failure, the following shall occur: • COM 1/NAV 1 & COM 2/NAV 2 fields flag invalid. • GPS CDI flags LOI on PFD • NAV 1 & NAV 2 CDI loses deviation bar. • XPDR field flags invalid on PFD. • Engine Instrument field flags invalid on MFD. • All AHRS & ADC fields remain valid. • Red AFCS status annunciation given. • TAWS FAIL annunciation given. • ADF/DME windows flag invalid.*

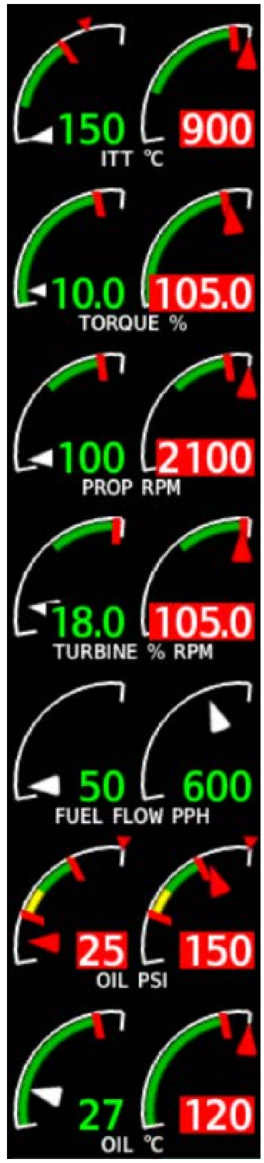
*If equipped.

9.8 GEA Functional Check

1. Verify the MFD engine instruments are displayed and indicate valid readings. Reference figure below for normal EIS Display.
2. On GMA1, select **DISPLAY BACKUP** button. Observe MFD in reversion mode and verify all engine instruments are displayed and indicate valid readings. Reference figure below for reversion mode EIS display.



Normal EIS Display



Reversionary EIS Display

9.9 Standby Instrument Electrical Power Checks

This section tests the standby electrical power for the standby MD 302 instrument or standby analog attitude indicator, standby altimeter, and the standby airspeed indicators. (The magnetic compass is tested in each Phase inspection during the cockpit lights check in the Beechcraft King Air 300 Series Maintenance Manual, listed in Table 1-1.)

Step	Desired Result
1. Remove or ensure external aircraft power is removed. Set main battery switch to OFF. 2. Ensure the STBY INSTR (or STBY ATT and STBY ALTM) circuit breaker(s) are closed. 3. Ensure the MASTER PANEL LIGHTS rocker switch in the overhead panel is in the ON position. 4. Ensure the STBY INSTR knob is turned to full bright.	Verify the STANDBY BATTERY annunciator/switch is not illuminated.
Select (depress) the STANDBY BATTERY switch.	Verify the following: • For airplanes with MD 302 standby instrument installed. o The MD 302 is activated, initializes, and displays an attitude indication of the top display and airspeed and altitude tapes on the bottom display. o The MD 302 brightness has limited adjustment by rotating the knob on the bezel. • For airplanes with analog standby instruments installed. o STBY Attitude indicator motor is energized as indicated by the indicator motor and the absence of OFF flag. o STBY altimeter vibrator is active as indicated by vibrator noise and absence of flag. o STBY attitude, STBY Altimeter, STBY Airspeed indicators are illuminated full bright. • Amber “ON” is annunciated full bright on the STANDBY BATTERY switch. • White STANDBY BATTERY legend on the standby battery switch is illuminated full bright.

Step	Desired Result
Activate aircraft power by selecting the "on" position of the BATTERY switch.	Verify the following: • "ON" annunciation should extinguish on the STANDBY BATTERY switch. • "ARM" should be fully illuminated (green) on the STANDBY BATTERY switch. • White STANDBY BATTERY legend on the standby battery switch remains illuminated. • For airplanes with MD 302 standby instrument installed. o The MD 302 remains activated and displays an attitude indication of the top display and airspeed and altitude tapes on the bottom display. o The MD 302 brightness may be fully adjusted by rotating the knob on the overhead panel. • For airplanes with analog standby instruments installed. o The STBY attitude, STBY altimeter and STBY airspeed instrument lighting reverts to the aircraft settings. o The STBY attitude OFF flag not present and STBY altimeter vibrator remains active.
Deselect the STANDBY BATTERY switch	Verify the following: • "ARM" annunciation extinguishes on the STANDBY BATTERY switch. • White STANDBY BATTERY legend on the standby battery switch remains illuminated. • For airplanes with MD 302 standby instrument installed. o The MD 302 remains activated and displays an attitude indication of the top display and airspeed and altitude tapes on the bottom display. o The MD 302 brightness may be adjusted by rotating the knob on the overhead panel. • For airplanes with analog standby instruments installed. o STBY attitude OFF flag not present and STBY altimeter vibrator remains active.
Remove aircraft power by selecting the battery switch to "OFF" position.	Verify the following: • White STANDBY BATTERY legend on the standby battery switch extinguishes. • The magnetic compass is no longer illuminated. • For airplanes with MD 302 standby instrument installed. o Both displays on the MD 302 are blank. • For airplanes with analog standby instruments installed. o The STBY Attitude OFF flag is in view is deactivated (the sound of the motor may be present as the gyro spools down). o The STBY altimeter vibrator is deactivated. o The STBY attitude, STBY altimeter, STBY airspeed are no longer illuminated.

9.10 G1000 Backup Path Test

With all three displays in normal mode and the entire avionics system turned on, verify on PFD1 there is not a system alert message stating “Failed Data Path". If this message is present, troubleshoot per Section 5.1.1 and resolve the issue before continuing.

9.11 GFC 700 Ground Checkout

The following procedures verify the proper operation of the GFC 700 AFCS, after maintenance has been performed. The technician performing these checks should be thoroughly familiar with the G1000 and GFC 700. Information on the installation and operation of the GFC 700 can be found by referring to Sections 6.12 and the G1000 King Air 300 Series Cockpit Reference Guide, listed in Table 1-2.

NOTE

In the sections that follow, an Autopilot disconnect should be accompanied by an aural alert (two-second tone) unless otherwise specified.

9.11.1 Pre-Flight Test

1. Turn off the AVIONICS MASTER PWR, EXT PWR, and BATT switches and ground power unit. After 30 seconds select the ground power unit, BATT, and EXT PWR switches to ON. Verify the GFC 700 begins an automatic pre-flight test after AHRS and ADC parameters become valid.
2. Verify that a white PFT annunciation is displayed on PFD1 and PFD2.

NOTE

A momentarily red AFCS annunciation displayed before PFT starts is acceptable.

3. Upon successful completion of the test, an aural alert will sound and the annunciation will clear. The aural alert is generated by either GIA 63W #1 or GIA 63W #2, alternately, with each system power-up. Thus, the PFT sequence must be run twice to verify both GIA units are providing the correct aural alert.

NOTE

If the ‘PFT’ annunciation turns red, the test has failed. Return to Section 5 for troubleshooting.

4. Repeat Steps 1 - 3 to test the PFT aural alert for the other GIA 63W.

9.11.2 AFCS Switch Checks

Verify that the AFCS system buttons and switches are operating correctly by performing the following:

1. Actuate both sections of the PITCH TRIM (NOSE UP/NOSE DN) switch to activate Manual Electric Pitch Trim (MEPT). Verify the trim clutch engages and the trim wheel drives in the requested direction. Check operation in both the up and down direction.
2. Press the AP/YD DISC TRIM INTRPT switch and hold while actuating the manual electric trim switch. Verify trim does not run and the trim wheel rotates freely when moved manually. Release the AP/YD DISC TRIM INTRPT button and PITCH TRIM switch.
3. Engage the autopilot by pressing the AP key on AFCS mode controller. Press and hold the left section of the manual electric trim switch. Verify the Autopilot disengages normally with an aural alert and the trim wheel rotates freely when moved manually.
4. Engage the autopilot again by pressing the AP key on the AFCS mode controller. Verify the pitch and roll clutches engage and resist movement of the control wheel. Press and hold the CWS switch and verify the control wheel moves freely when moved manually. Verify the green 'AP' at the top of PFD 1 and PFD 2 is replaced by a white 'CWS'.
5. Release the CWS switch and press the 'XFR' key on the AFCS mode controller. Verify the clutches are engaged and resist movement of the control wheel. Press and hold the CWS switch and verify the control wheel moves freely when moved manually. Verify the green 'AP' at the top of PFD 1 and PFD 2 is replaced by a white 'CWS'.
6. Release the CWS switch and press the AP/YD DISC TRIM INTRPT switch on the pilots control wheel. Verify the autopilot disengages with a flashing amber 'AP' annunciation on PFD 1 and PFD 2, accompanied by an aural alert. Verify that the control wheel is free in pitch and roll axes.
7. Engage the autopilot again by pressing the 'AP' key on the AFCS mode controller. Open AFCS SERVOS circuit breaker. Verify the autopilot disconnects and the abnormal disconnect is provided, consisting of a continuous aural alert and a flashing red/white 'AP' annunciation. Verify no AFCS annunciations (e.g. AFCS, PFT, Mistrim) remain on PFD 1 or PFD 2. Press the AP/YD DISC TRIM INTRPT switch to cancel the abnormal alert. Close the AFCS SERVOS circuit breaker to restore power to the system and wait for completion of the pre-flight test sequence.
8. Engage the autopilot again by pressing the 'AP' key on the AFCS mode controller. Ensure the autopilot is coupled to GIA 1 by verifying the arrowhead next to the 'XFR' key on the AFCS mode controller is pointing to the pilot's side. If the arrowhead points to the copilot's side, press the 'XFR' key. Open GIA 1 primary and secondary circuit breakers. Verify the autopilot disconnects with a continuous aural alert and a flashing red/white 'AP' annunciation. Press the AP/YD DISC TRIM INTRPT switch to cancel the alert and annunciation. Close the GIA1 primary and secondary circuit breakers and wait for completion of the pre-flight test sequence.
9. Press the 'XFR' key on the AFCS mode controller and engage the autopilot by pressing the 'AP' key on the AFCS Mode Controller. Press the AP/YD DISC TRIM INTRPT switch on the pilot side to disconnect the autopilot; verify the flashing amber 'AP' alert is displayed on PFD 1 and PFD 2.
10. Press the GO AROUND button on the left throttle. Verify 'TO' is annunciated on PFD 1 and PFD 2 for both PITCH and ROLL modes and the command bars should be at 10 degrees nose up and wings-level.

11. Press the Flight Director (FD) key on the AFCS mode controller to deactivate the GA mode. Press the AP key to engage the autopilot. Press the CWS button for a minimum of 5 seconds and release; verifying there is no residual force on the control stick for the pitch axis.
12. Disengage the autopilot by pressing the AP/YD DISC TRIM INTRPT switch on the co-pilot’s control wheel. Engage VS mode by pressing the VS key on the AFCS mode controller. Verify PFD 1 and PFD 2 display ‘VS’ in green and indicates a pitch reference of ‘0 FPM’.
13. Select an altitude using the ALT SEL knob on the AFCS mode controller. Press the FLC key on the AFCS mode controller and verify that ‘FLC’ is annunciated on PFD 1 and PFD 2 in green with a reference of 100 KTS.
14. Press the ALT key on the AFCS mode controller and verify that the ‘ALT’ annunciation is displayed in green on PFD 1 and PFD 2 with an altitude reference equal to the aircraft altitude (within the nearest 20 feet).
15. Press the FD key and verify that the mode annunciations and command bars are removed from the display.

9.11.3 Autopilot Clutch Overpower Check

NOTE

The GFC 700 uses electronic torque limiting as well as mechanical slip clutches to limit the maximum servo effort. When the system is on the ground, the electronic torque limiting is removed, allowing manual checks of the slip-clutch settings.

1. Engage the Autopilot by pressing the AP key on the AFCS mode controller.
2. Manually overpower the autopilot clutches in pitch, roll and yaw. If the Autopilot clutches cannot be overpowered, check the GSM 86 clutch cartridge. Refer to the servo installation drawing (listed in Table 1-1) as applicable.
3. Actuate and hold PITCH TRIM switch in either the NOSE UP or NOSE DOWN direction to disconnect the autopilot. While the trim is running, restrain the aircraft pitch trim wheel and verify that the trim clutch can be overpowered. If it cannot be overpowered, check the GSM 86 clutch cartridge. Refer to the pitch trim servo installation drawing listed in Table 1-1.
4. Engage the autopilot by pressing the AP key on the AFCS mode controller. Actuate and hold the manual electric trim switch in either the up or down direction to disconnect the autopilot. Verify that the trim wheel moves smoothly in both directions throughout the entire trim range during manual electric trim operation. If the trim wheel hesitates, this may indicate that the pitch trim clutch is slipping and proper clutch setting or clutch cartridge and cable tension should be verified. Refer to the King Air 300 Series Maintenance Manual and Pitch Trim Servo Install drawing, listed in Table 1-1, for clutch settings and cable tensions. If both clutch setting and cable tension are within tolerance, check the aircraft pitch trim system for excessive friction. Refer to the Beechcraft King Air 300 Series Maintenance Manual listed in Table 1-2.

9.11.4 Manual Electric Pitch Trim Speed Check

1. Run MANUAL ELECTRIC PITCH TRIM in one direction until it runs against the mechanical stop.
2. Run the trim in the opposite direction, and using a stop watch or equivalent device, time the trim speed to the opposite mechanical stop. Verify the elapsed time for full travel measures 13 ± 3 seconds.

9.11.5 Autopilot Operation Checks

1. Engage the Autopilot by pressing the AP key on the AFCS mode controller. Push the HDG knob to synchronize the heading bug to the current aircraft heading. Select HDG mode by pressing the HDG key on the AFCS mode controller. Verify the command bars are level and the control wheel is stationary. (There may be some roll motion in the yoke if the aircraft not perfectly level.)
2. Turn the HDG knob to the left and right and check that the command bars move in the correct direction and the control wheel follows the command bars.
3. Push and hold the CWS button and pull the control wheel to the center of the pitch control range. Release the CWS button. Verify the autopilot clutches re-engage and hold the wheel stationary.
4. Holding the control wheel lightly, rotate the NOSE UP/DN wheel on the AFCS mode controller two clicks UP to increase the pitch reference. Verify the command bars move up 1 degree and the control wheel begins moving aft. (In some aircraft, the down spring may require manual assistance to get aft control stick movement).
5. While holding the control wheel firmly, press and hold the CWS button to re-synchronize the pitch reference. Re-center the control wheel to wings level and mid-range elevator travel. Release the CWS button and check that servo clutches re-engage before releasing the control wheel.
6. Rotate the NOSE UP/DN wheel on the AFCS mode controller two clicks DOWN to decrease the pitch reference. Verify the command bars move down 1 degree and the control wheel begins moving forward. Hold the controls and press CWS to re-center the command bars and stop control wheel movement.
7. With the Autopilot still engaged and the CWS button pressed, move the control wheel to its aft limit. Release the CWS button and apply continuous forward pressure, slowly moving the control wheel. After a brief delay, verify the trim wheel begins moving in a trim up direction.
8. Grip the control wheel and press the CWS button. Verify trim motion stops. Move the control wheel to the forward limit and release the CWS button. Slowly move the control wheel aft. After a brief delay, verify the trim wheel begins to trim down. Relieve pressure on the wheel and verify the trim motion stops. Check that the trim wheel is free to turn. Hold the control wheel and press the AP/YD DISC TRIM INTRPT switch to disconnect the autopilot.

9.11.6 VOR/LOC/GS Test

Perform the following test using ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions.

NOTE

The PFD HSI does not show a course deviation bar unless a valid VHF NAV frequency is tuned.

1. Ensure FD is coupled to PFD 1 as indicated by a left pointing arrow next to the XFR button.
2. Simulate a VOR signal on a radial equivalent to the aircraft heading. Tune the NAV 1 and NAV 2 receivers to the simulation frequency.
3. Set the HSI on PFD 1 to VOR1 by pressing the CDI softkey until VOR1 is selected. Set the HSI on PFD 2 to VOR2 by pressing the CDI softkey until VOR2 is selected. Rotate CRS1 and CRS2 knobs to set VOR1 and VOR2 course pointers to aircraft heading. (CDI Synchronization must be set to OFF on the **Aux – System Setup 1** page on the MFD.)
4. Verify full scale deflection of VOR1 and VOR2 CDI by varying the selected course at least 10° left and right. Reset course pointers to aircraft heading.
5. Engage the autopilot and press the NAV key on the AFCS mode controller. Using the CRS1 knob alter course by 10° to the right. Verify the flight director and aircraft controls respond by flying to the VOR course. Repeat to the left.
6. Couple FD to PFD2 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled right as indicated by a right pointing arrow on the AFCS mode controller next to the XFR button. Repeat step 5 using CRS2 knob while coupled to PFD2.
7. Set CRS1 and CRS2 course pointers to aircraft heading.
8. Simulate a Localizer/Glideslope signal. Tune this signal on NAV 1 and NAV 2 receiver. Set the PFD 1 HSI to LOC1 and PFD 2 HSI to LOC2 by pressing CDI softkey until LOC1 and LOC2 is selected. Use the test equipment to center the deviation bars (localizer and glideslope) on PFD1 and PFD2.
9. Press the APR key on the AFCS mode controller. Verify that the LOC and GS annunciations are green on PFD 1 and PFD 2. Apply right/left and up/down localizer/glideslope signals using the test equipment. Verify that the Flight Director and flight controls respond appropriately.
10. Couple FD to PFD 1 by pressing the XFR button on the AFCS mode controller. Verify FD is coupled to PFD 1 as indicated by a left pointing arrow on the AFCS mode controller next to the XFR button.
11. Repeat step 9 while coupled to PFD 1.

9.12 Maintenance Records

The Configuration Checklist in Section 3.6 should be completed when a Service Bulletin software update has been performed and maintained with the aircraft permanent records.

Record the following information:

- Part number of the G1000 software loader card used to perform software loading or software updates.
- Record part and serial numbers of any LRU which was replaced.
- Record any database updates which were performed during maintenance.
- Any other applicable information related to the maintenance work performed on the aircraft.

APPENDIX A - Garmin Unit Part and Serial Number Cross Reference

This table allows shows the unit part number and serial number prefix combinations.

LRU	PART NUMBER	SERIAL NUMBER FIRST THREE DIGITS
GIA 63W	011-01105-20	1HQ
GDU 1050A (PFD 1 & PFD 2)	011-03470-10	494
GDU 1550 (MFD)	011-03472-00	496
GMA 1347D	011-01257-20	171
GEA 71	011-00831-00	467
GDC 7400 (OPTIONAL)	011-02337-00	1U60
	011-02337-01	1U61
GRS 77 (LEGACY)	011-00868-10	420
GRS 7800 (OPTIONAL)	011-02278-00	25M
	011-02278-01	4DK
GMU 44	011-00870-10	1CM
	011-00870-20	39Z
GSU 75B	011-03094-40	4E4
GTX 33 (LEGACY)	011-00779-30	891
GTX 33D (OPTIONAL)	011-00779-21	848
GTX 3000 (OPTIONAL)	011-01997-00	20S
GTX 335R (OPTIONAL)	011-03301-00	3EF
GTX 345R (OPTIONAL)	011-03303-00	3EH
GCU 477	011-01428-00	194
	011-01428-20	48Y
GMC 710	011-01020-10	220
GDL 59	011-01746-00	1EJ
GDL 69A (LEGACY)	011-00987-00	477
GDL 69 SXM	011-03177-10	3NV
GSD 41	011-01457-00	169
GWX 68	011-00883-20	472
GWX 70	011-01768-00	1DP
GSA 80 PITCH SERVO	011-00877-20	19Z
GSA 80 ROLL SERVO	011-00877-20	19Z
GSA 9000 YAW SERVO	011-02213-00	1R9
	011-02213-10	2JL
GSA 80 PITCH TRIM SERVO	011-00877-21	1A0
GTS PROCESSOR (OPTIONAL)	011-02571-00	28P
GTS 820 TAS (OPTIONAL)	011-01446-00	1EA
GTS 850 TCAS I (OPTIONAL)	011-01553-00	1EB
GRA 5500	011-02537-00	2F8
FLIGHT STREAM 510 (OPTIONAL)	011-03595-00	402