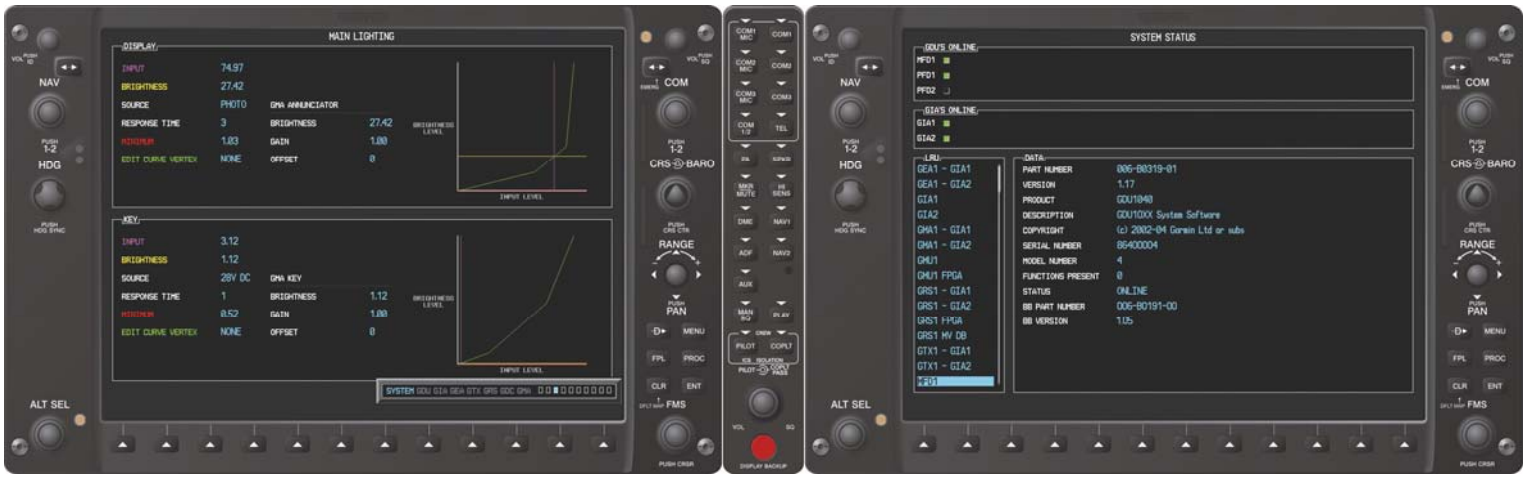
G1000 Post Installation Checkout

With GFC 700 or KAP140

Diamond DA 40 & DA 40 F

For WAAS & non-WAAS Installations



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RECORD OF REVISIONS

Revision	Revision Date	Description	ECO #
12	1/18/2008	Update System Software Version	50252
13	3/28/2008	Update for STC minor change to add 0321.18 SW.	52113
14	4/4/2008	Update software table layout.	52254
15	4/8/2008	Update for STC minor change to add 0321.19 SW	52316
16	1/19/09	Update for STC major change to add 0321.20 SW	58687
17	4/03/09	Update to correct procedural flow and screen shots	61113
18	5/12/09	Remove references of 0321.20 SW and replace with 0321.21 SW. Revise section 3.4.2 Steps 2, 4, 5 and 7 to correct ramp tester operation instructions.	62223
19	8/24/09	Remove references of 0321.21 SW and replace with 0321.22 SW.	64970

DOCUMENT PAGINATION

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CAUTION

The GDU 1040s use a lens 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

NOTE:

All G1000 screen shots used in this document are current at the time of initial 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.

NOTE:

All references to Diamond DA 40 aircraft made in this manual equally apply to Diamond DA 40 F aircraft, unless otherwise noted.

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1 INTRODUCTION

1.1 Scope

This document presents the post-installation procedures which are required to be performed after installing the G1000 Integrated Cockpit System and GFC 700 AFCS with GDU version 9.14 or later in Diamond Model DA 40 and DA 40 F aircraft.

This document and revision are effective for the following MDL Configurations:

MDL Configuration	Aircraft System	Upgrades Available	G1000 System Software Version
-1 Configuration	G1000 & GFC 700	Software Upgrade WAAS Upgrade Coupled VNAV (optional)	0369.13, 0321.17, 0321.18, 0321.19 or 0321.22
-2 Configuration		Software Upgrade Coupled VNAV (optional)	0369.13, 0321.17, 0321.19 or 0321.22
-3 Configuration	G1000 & No AP	Software Upgrade WAAS Upgrade	0369.13, 0321.17, 0321.18, 0321.19 or 0321.22
-4 Configuration		Software Upgrade	0369.13, 0321.17, 0321.19 or 0321.22
-5 Configuration	G1000 & Honeywell KAP 140	Software Upgrade WAAS Upgrade	0321.17, 0321.18, 0321.19 or 0321.22
-6 Configuration		Software Upgrade	0321.17, 0321.19 or 0321.22

See the G1000/GFC 700 in DA40/40F Master Drawing List, 005-00400-01 for additional details.

1.2 Organization

Follow the procedures in this document to configure and test a newly-installed Garmin G1000 Integrated Avionics System with GFC 700 Automatic Flight Control System in the Diamond Model DA 40 or DA 40 F. The person performing the configuration and testing should read through this entire document prior to beginning any procedures.

Section 2: Software and system configuration loading procedures. Manual configuration items are also addressed. At the end, all software versions and part numbers are verified against the General Arrangement drawings for the respective STC configurations (see STC Master Drawing List).

Section 3: Ground checks include exercising and testing basic G1000 functions, calibrating the AHRS, and conducting a final systems checkout.

Section 4: Detailed GFC 700-specific ground checks are given in this section.

Section 5: Flight testing procedures are given where mode function checks are conducted, and final Autopilot checks are made.

1.3 Reference Documents

The information that is provided in this document is applicable to the installation of the G1000 system in the Diamond DA 40. For additional information on the installation, refer to the documents below.

Table 1-1. Referenced Documentation

Part Number	Document
005-00400-01	STC Master Drawing List
005-00400-08	General Arrangement, G1000/KAP 140, WAAS, Diamond DA40/40F
005-00400-09	General Arrangement, G1000/KAP 140, no WAAS, Diamond DA40/40F
005-00400-10	General Arrangement, G1000/GFC700, WAAS, Diamond DA40/40F
005-00400-11	General Arrangement, G1000/GFC700, no WAAS, Diamond DA40/40F
005-00400-15	General Arrangement, G1000 Only, WAAS, Diamond DA40/40F
005-00400-16	General Arrangement, G1000 Only, no WAAS, Diamond DA40/40F
005-00400-55	Dual GIA Analog Audio Path Wiring Modification, G1000, Diamond DA40/40F
190-00324-07, 190-00324-08, 190-00324-09, or 190-00324-10	G1000/DA 40 Cockpit Reference Guide*
190-00492-10	G1000/GFC 700, DA40 Airplane Flight Manual Supplement
190-00492-11	G1000 with No Autopilot, DA40 Airplane Flight Manual Supplement
190-00492-12	G1000 with KAP 140, DA40 Airplane Flight Manual Supplement
DA4-9231-60-01	Diamond Wiring Diagram (Diamond Part Number)
6.02.01	Diamond DA 40 Airplane Maintenance Manual (Diamond Part Number)
190-00355-04	GDL 69/69A XM Satellite Radio Activation Instructions

*See AFMS for correct CRG P/N.

1.4 System Description

1.4.1 Equipment

The G1000 and GFC 700 are comprised of the following equipment:

Control & Display

- GDU 1040 PFD (GDU 1040 MFD for non-GFC700 Aircraft)
- GDU 1042 or GDU 1044 MFD (for GFC 700 Aircraft Only, GDU 1044 provides VNAV mode)
- GMA 1347 Audio Panel

Sensors:

- Two GIA 63 Integrated Avionics Units (non-WAAS installations)
  OR
  Two GIA 63W Integrated Avionics Units (WAAS installations)
- GDC 74A Air Data Computer (ADC)
- GRS 77 Attitude & Heading Reference System (AHRS)
- GMU 44 Magnetometer
- GEA 71 Engine/Airframe Unit
- GTX 33 Mode S Transponder

Autopilot Functionality (For GFC 700 Aircraft only)

- GSA 81 Servos (Pitch, Pitch Trim, & Roll)

The following equipment, systems and sensors interface to the G1000 avionics systems and are installed as part of the initial G1000 airworthiness approval in STC #SA01254WI (refer to Garmin drawing 005-00304-00 for installation details):

- Manifold Pressure Sensor (DA 40 ONLY)
- Tachometer sensor
- Oil pressure sensor
- Oil temperature sensor
- Fuel Pressure Sensor
- Four Cylinder Head Temperature (CHT) sensors
- Four Exhaust Gas Temperature (EGT) sensors
- Fuel Flow Sensor
- Alternator Current Sensor

The following equipment was previously existing according to various Diamond OAM provisions (see 005-00304-00):

- Open Door Detection Switches
- Starter Engage System
- VOR/LOC/Glideslope Antenna System
- VHF COMM Antennas
- Transponder (L-band) Antenna
- Marker Beacon Antenna
- GPS Antennas
- Pitot Heat System
- Fuel Quantity Sensors

1.5 G1000 / GFC 700 Block Diagrams

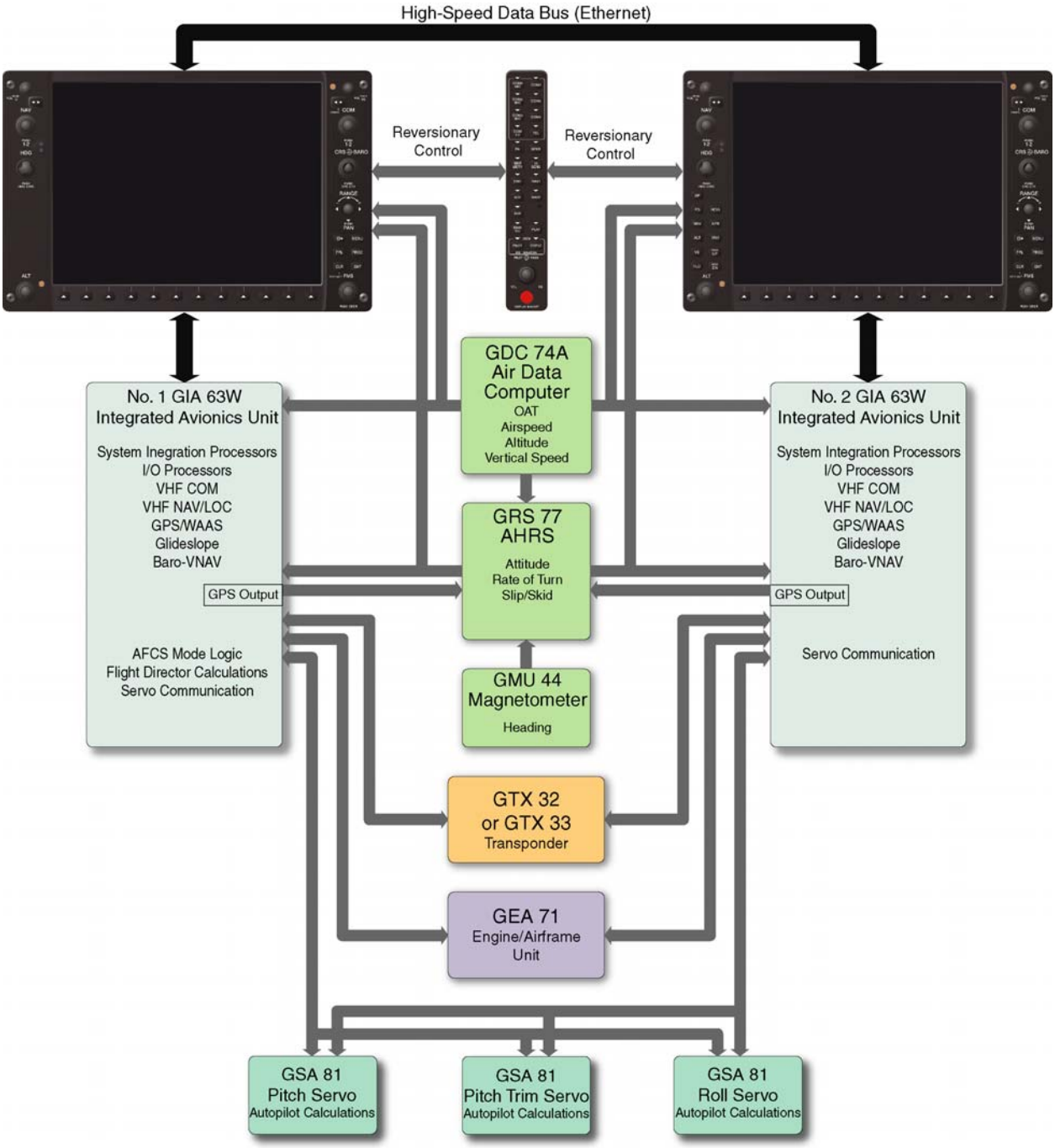


Figure 1-1. G1000/GFC 700 Block Diagram (WAAS)

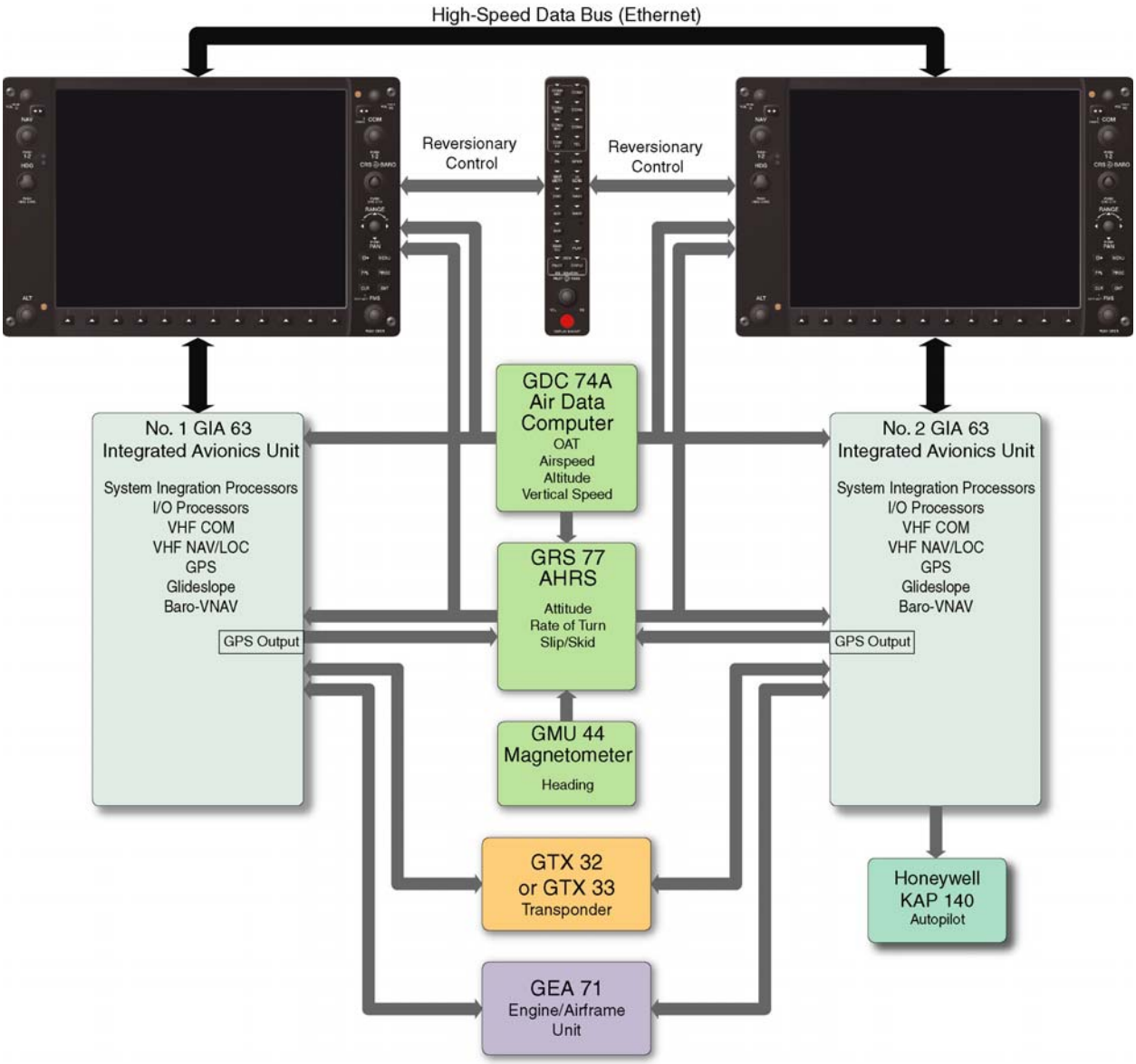


Figure 1-2. G1000/ KAP 140 Block Diagram (no WAAS)

1.6 G1000 Control Interface

Control and operation of G1000 and GFC 700 equipment occurs through the PFD, MFD or GMA 1347 audio panel. See the following documents for detailed information regarding control and operation.

- G1000/GFC 700 in Diamond DA40 STC Airplane Flight Manual Supplement, Garmin P/N 190-00492-10 (GFC 700), 190-00492-11 (No Autopilot), or 190-00492-12 (KAP 140 AFCS)
- G1000 in Diamond DA40 Cockpit Reference Guide, Garmin P/N 190-00324-07, -08, -09 or -10.

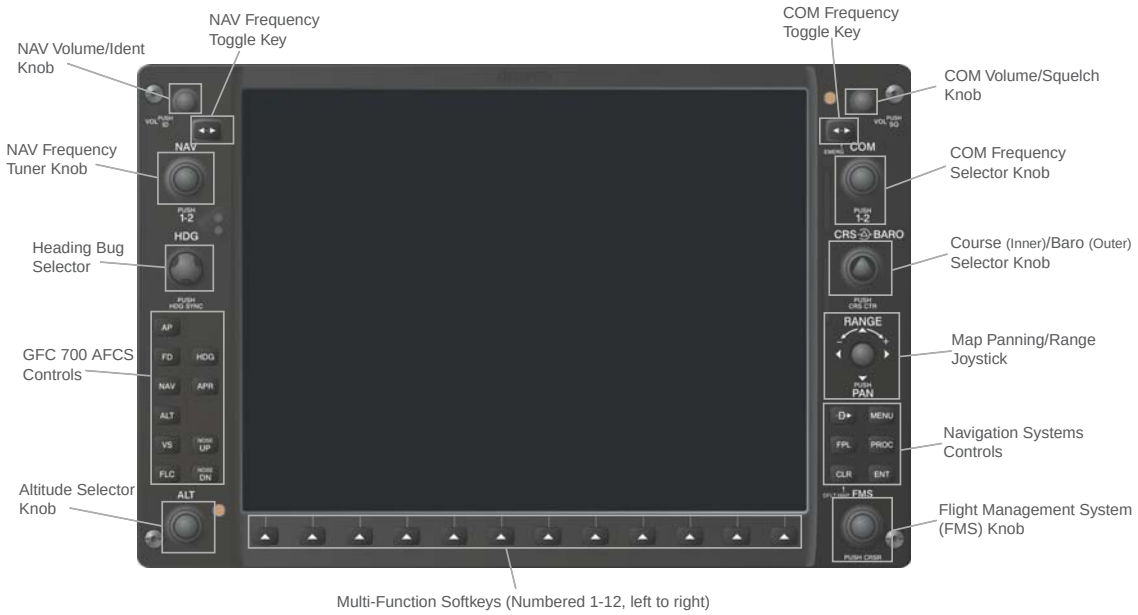


Figure 1-3. GDU 104X Control Interface (GDU 1042 shown)

1.6.1 AFCS Controls (GFC 700 only)

The dedicated AFCS controls located on the GDU 1042 and 1044 are discussed in detail in the G1000 CRG. The following figure is provided for reference:

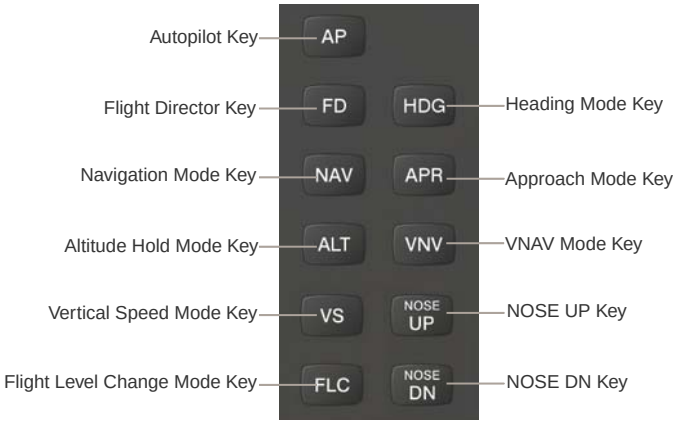


Figure 1-4. AFCS Controls (GDU 1044 shown)

1.6.2 FMS Cursor

The FMS knob is the primary control for the G1000 system. Operation is similar to the Garmin 400/500 Series units.

- 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.

1.6.3 Softkeys

Some configuration pages have commands or selections that are activated by the GDU 1040 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. Also, a softkey that is highlighted shows the current active selection.

Figure 1-5. GDU Softkeys

1.6.4 GMA 1347 Control

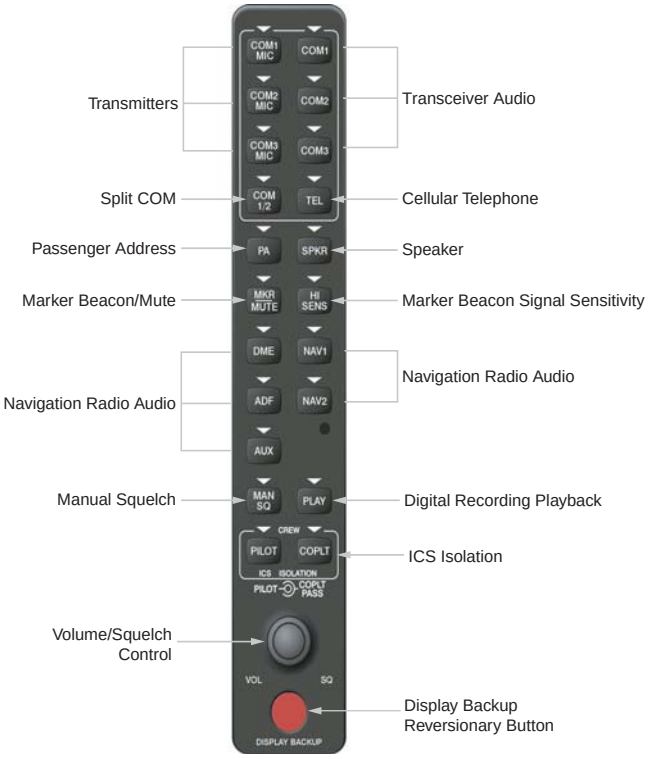


Figure 1-6. GMA 1347 Control Interface

1.6.5 Starting Configuration Mode

To complete this aircraft checkout, a basic understanding of the G1000 configuration mode is required. The configuration mode allows a technician to access certain areas of the system in order to carry out various configurations, calibrations, and checks.

1. To start a GDU 104X in configuration mode, hold down the ENT key while applying power.
2. Continue to hold the ENT key until the white letters INITIALIZING SYSTEM appear in the upper left corner of the display.

The following list shows the order and organization of various page groups and pages shown in the G1000 configuration mode. Performing the checkout in this document requires that several of these pages be accessed. Some pages listed are read-only and require security codes. These are provided in this document where necessary.

Note : Where two page indications are present the first is that displayed on the page header as viewed on the PFD/MFD. The second indicator is that as displayed on the page navigation field at the bottom of the PFD/MFD. Where only one indication is listed both the page header and navigation field are the same.

Table 1-2. G1000 Configuration Mode Page Groups

System Page Group

1. System Status
2. Date/Time Setup
– Time Configuration
3. Main Lighting
– Lighting Configuration
4. Audio Alert Configuration
– System Audio
5. System Upload
6. Diagnostics Terminal
7. OEM Diagnostics
8. System Configuration
9. System Data Paths
– System Data Path Configuration
10. System Setup
10. Manifest Configuration
11. Maintenance Log

GDU Page Group

1. RS-232 / ARINC 429 Config
– Serial Configuration
2. GDU Status
– GDU Status Page
3. GDU Test
– Key Test
4. Diagnostics
5. Serial/Ethernet I/O
- Ethernet Test
6. Alert Configuration
7. Airframe Configuration
8. TAWS – B Setup
TAWS Configuration

GIA Page Group

1. RS-232 / ARINC 429 Config
- Serial Configuration
2. RS-485 Configuration
-GIA RS-485 Configuration
3. GIA I/O Configuration
4. COM Setup
-GIA Configuration
5. GIA Status
- GIA Status Page
6. CAN Configuration
-GIA CAN Configuration

GEA Page Group

1. Engine Data
- Engine Configuration
2. GEA Status
- GEA Status Page
3. GEA Configuration

GTX Page Group

1. RS-232 / ARINC 429 Config
- Serial Configuration
2. Transponder Configuration

GRS Page Group

1. AHRS / Air Data Input
- Inputs Configuration
2. GRS / GMU Calibration

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

CAL Page Group

1. Fuel Tank Calibration
2. Flaps and Trim Calibration
3. HSCM Calibration

*Only if GFC 700 configured.

This section intentionally left blank.

2 POST INSTALLATION PROCEDURES

This section covers the procedures that must be performed after accomplishing the mechanical and electrical installations. It is assumed that the person performing the post-installation checks is familiar with the aircraft, has a working knowledge of typical avionics systems, and has experience using the test equipment defined in this section. All installation work must be completed in accordance with the Master Drawing List, Garmin drawing 005-00400-01, before beginning any of the procedures in this document.

NOTE:

This entire procedure must be successfully accomplished in order for the G1000/GFC 700 system to be airworthy in the DA 40.

2.1 Required Test Equipment

The following test equipment is required to conduct and complete all post installation checkout procedures in this section: (All test equipment should have current calibration records)

- A VHF NAV/COM, ILS, & DME ramp tester or equivalent.
- A transponder ramp tester or equivalent.
- A pitot/static ramp tester.
- A ground power unit capable of supplying 28 Vdc power to the aircraft systems and avionics.
- Outdoor line-of-site to GPS satellite signals or GPS indoor repeater.
- Headset/Microphone.
- Digital Level
- Calibrated Weighing Scale able to display to the nearest hundredth (for use during fuel probe calibration)
- Thermometer
- IBM-compatible PC computer.

2.2 G1000 Hardware/Software Compatibility Check

Before installing hardware, the technician must first ensure that hardware part numbers are compatible with the G1000/DA40 System Software Version that is to be used.

G1000 System Software

The G1000 System Software Version controls the approved combination of software and configuration files for the G1000 in a specific aircraft.

An electronic G1000 System Software image specifically created for Diamond DA40 aircraft is required to install software and configuration settings to a new G1000 system. The software image is an electronically compressed group of G1000 software and configuration files which are defined on STC General Arrangement drawings, listed in Table 1-1. The image is used to extract the system files to an SD memory card, which in turn is used to load files to the G1000. Software image part numbers are normally defined with the prefix “006-”. Alternatively, the installer may purchase a pre-made loader card directly from Garmin, normally defined by the part number prefix “010-”.

G1000 LRU Hardware Definition

The General Arrangement (GA) drawings listed in Table 1-1 define approved combinations of LRU hardware part numbers, as applicable to each STC Configuration. Using the correct GA drawing, the technician must verify that all hardware part numbers are compatible with the G1000 System Software Version to be used. The GA Drawing allows the technician to correlate each LRU hardware part number to a compatible System Software Version.

IMPORTANT!

After verifying G1000 hardware/system software compatibility, record the System Software Version and all LRU hardware part and serial numbers in the appropriate aircraft records before proceeding.

NOTE

Garmin recommends the use of SanDisk or Toshiba SD cards to load G1000 software and configuration files. If software loading problems occur when using another brand of card, replace the card with a SanDisk or Toshiba card and reattempt the software load. For software loading, a minimum of 64 MB is recommended.

NOTE

Throughout the next section of this document screen shots and examples are used to illustrate the software and configuration loading process. Although every effort has been made to ensure accuracy of such examples, changes may occur. Always refer to the correct GA drawing for the correct software file names, versions and part numbers.

2.3 G1000 Software/Configuration Procedure

The G1000 is not airworthy unless software and configuration procedures are accomplished successfully as described in these procedures. The following diagram depicts an overview of the software/configuration sequence for the G1000 system. It is extremely important that each LRU software load be completed successfully.

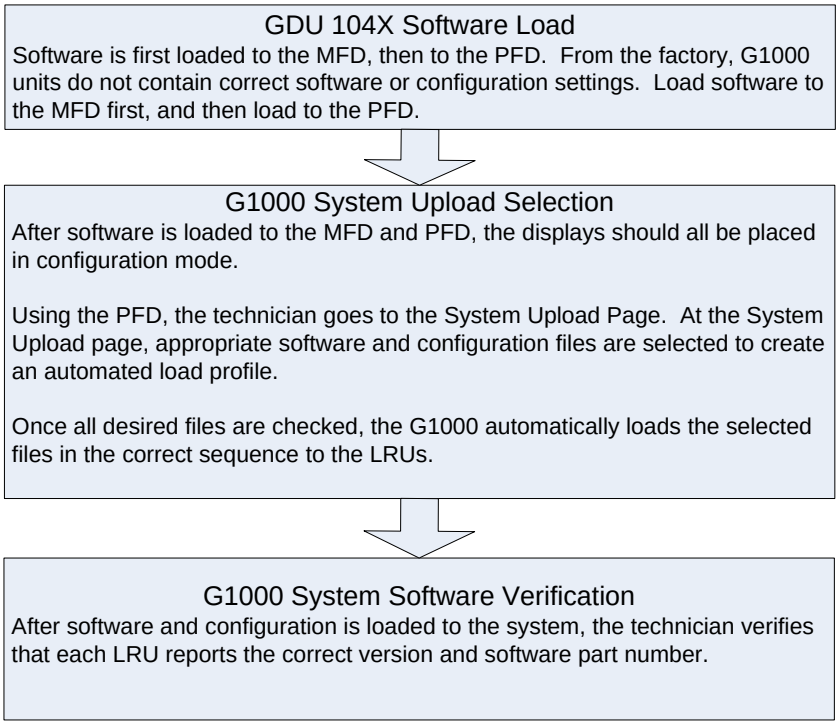


Figure 2-1. Software/Configuration Overview

2.3.1 System Power Up

Apply power to the G1000 by doing the following

1. Ensure there are no database cards inserted in the MFD and PFD lower card slots. If there are, remove them until instructed to install them.
2. Turn on the ground power unit, if used.
3. Turn on the BAT side master switch.
4. Turn on the AVIONICS MASTER switch. At this moment, all G1000 equipment should be receiving power.

2.3.2 Cooling Fan Check

1. Listen for display cooling fans and verify they are running. If necessary, remove each display temporarily and visually ensure they are running.
2. In the remote avionics bay, verify that the avionics cooling fans are running.

2.3.3 MFD & PFD Boot Block Software Check

1. Pull the MFD and PFD circuit breakers.
2. While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker.
3. When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key.
4. Repeat Steps 2 and 3 for the PFD.
5. At this point, both GDUs should be operating in configuration mode, displaying the System Status page.
6. Activate the cursor on both displays and scroll through the list of LRUs. Highlight 'PFD1' on the PFD, and 'MFD1' on the MFD.
7. Check the currently reported GDU boot block software version, indicated by 'BB Version' on each display.

IMPORTANT!

If the GDU boot block software is less than 2.03, the boot block must be updated prior to loading GDU 8.20 software. Continue to the next section, Updating GDU Boot Block.

If the reported version is already 2.03, boot block is correct and does not require updating.

2.3.4 Updating GDU Boot Block

1. Obtain the GDU boot block update software. Refer to the appropriate General Arrangement drawing (see Table 1-1) for the boot block software P/N.

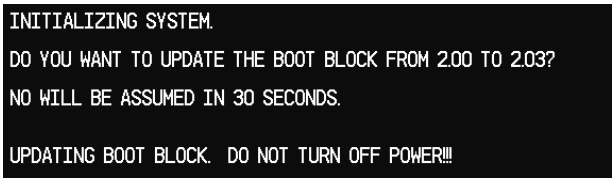
NOTE

The GDU boot block update may be obtained by downloading the electronic file from Garmin (see GA dwg for 006- P/N, accessible via the dealer web site). This electronic download may be used to build an SD card to update the GDU boot block. In addition, the installer may obtain an pre-manufactured update card from Garmin, via the listed 010- card part number in the General Arrangement drawings.

2. Pull the MFD and PFD circuit breakers.
3. Insert the boot block update card into the MFD.

4. While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker.
5. When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key.
6. The system automatically compares the existing GDU 104X boot block with the version on the boot block update card. If a difference exists, the GDU prompts to load new boot block:

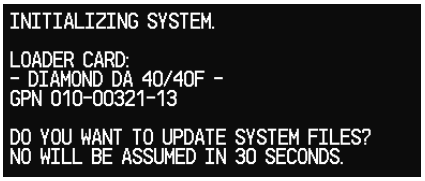
7. MAKE CERTAIN that power will remain applied to the system with no possibility of accidental shutdown. Press the ENT key and new boot block will be loaded:



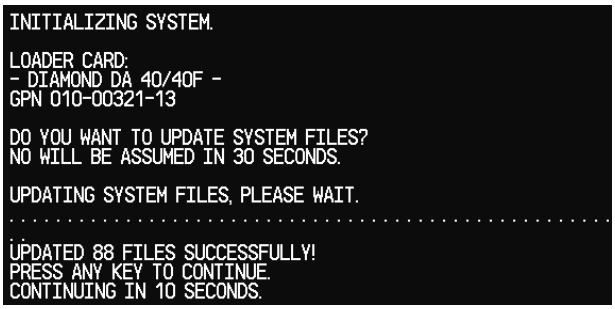
8. Remove the GDU Boot Block update card from the MFD and install in the PFD.
9. Repeat Steps 4 through 7 for the PFD.
10. When finished updating both displays, remove the boot block update card, and pull the MFD and PFD circuit breakers to remove power from the displays.

2.3.5 Loading GDU Software

1. After verifying and/or updating GDU boot block, insert the correct G1000 software loader card which is applicable for the desired STC configuration into the MFD top card slot (see appropriate GA drawing in Table 1-1).
2. While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker.
3. When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key.
4. Press the ENT key to acknowledge the following prompt to load new software (NOTE: A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key):



5. The following screen is displayed:



6. New software is loaded to the MFD. When complete, the MFD starts in configuration mode.
7. Remove the G1000 loader card from the MFD and insert it into the top card slot on the PFD. Repeat Steps 2 through 6 for the PFD.
8. When the PFD load is complete, it starts in the configuration mode. Do not remove power.

IMPORTANT!

For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.

2.3.6 G1000 System Software Upload

1. On the PFD, go to the System Upload page using the small FMS knob.
2. Activate the cursor and rotate the small FMS knob to active the drop-down menu. Highlight the airframe type in the AIRFRAME field. Select the appropriate aircraft type (DA 40 or DA 40F) and press the ENT key.

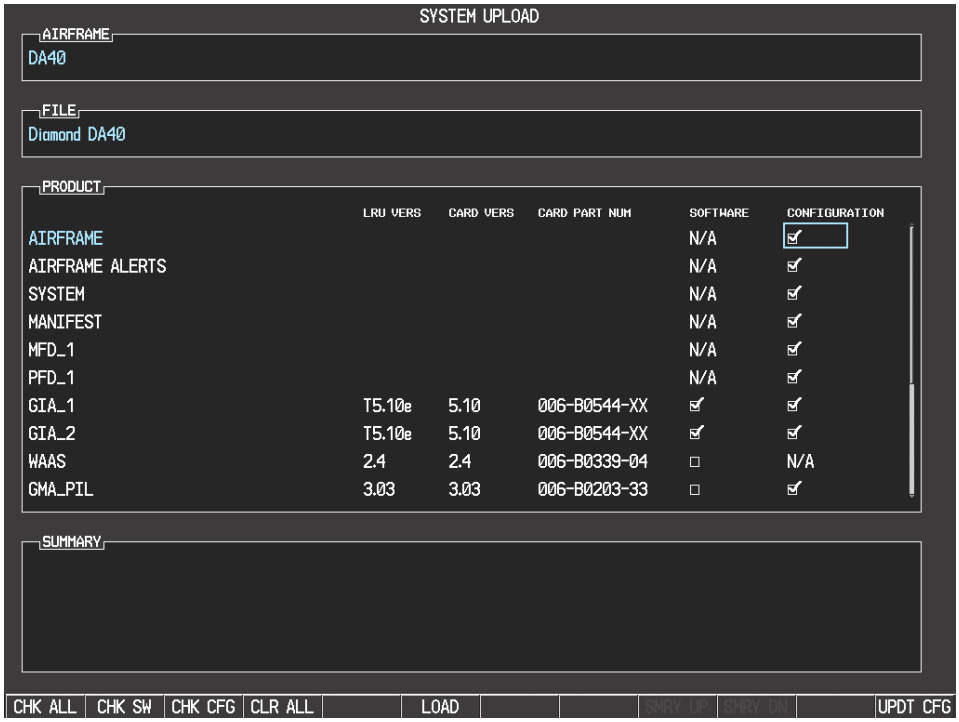
IMPORTANT!

Ensure that the correct airframe type is selected before proceeding; otherwise, incorrect configuration information will be loaded.

3. Once an airframe type is selected the cursor moves to the FILE window. Rotate the small FMS knob to active the drop-down menu. Move the cursor to highlight the appropriate aircraft (DA 40 or DA 40F) and press the ENT key.

IMPORTANT!

It is at this step where the choice is given to load WAAS or non-WAAS G1000 software. Be sure to select the correct option.



4. The PRODUCT window will populate and display software and configuration file information for each G1000 LRU. The LRU VERS column shows the currently loaded software version in the LRU, whereas the CARD VERS column shows the LRU software version stored on the G1000 software loader card. Each check designates a file to be loaded to the G1000.

   By default, if an inequality between the LRU and CARD columns exists, the SOFTWARE and CONFIGURATION boxes will be pre-selected (checked).

   The following softkeys provide an easy way to select files:

   CHK ALL: Selects all files, both configuration and software

   CHK SW: Selects all SW files only.

   CHK CFG: Selects all configuration files only.

   CLR ALL: Clears all selections.

IMPORTANT

If this is the first time loading software and configuration to a new installation, it is advised to leave all check boxes selected.

5. After verifying that the desired software and configuration files are checked, press the LOAD softkey. The G1000 system automatically begins loading software and default configuration files to the selected LRUs in the proper order.

IMPORTANT

If non-WAAS GIA 63s are installed, the software boot block version must be checked *while software is being loaded to EACH GIA 63.* Wait until the software loading process begins to load the GIA 63 software. On the MFD, go to the System Status page and activate the cursor. Highlight GIA1. Observe the DESCRIPTION field and when it changes to read 'G1000 GIA 6X BBL', verify that the reported VERSION is 4.01 or higher. Repeat this for GIA2. If either GIA 63 has software boot block less than version 4.01, current boot block software must be loaded per Section 2.3.7 *after* the current GIA software load process completes. There is no need to interrupt the GIA system software from loading.

6. When the system finishes loading, it prompts the technician accordingly. Press the ENT key to acknowledge that the upload is finished:

7. Verify that each column indicates  in green when the loading process has finished and inspect the SUMMARY window as well to ensure that the load is successful.

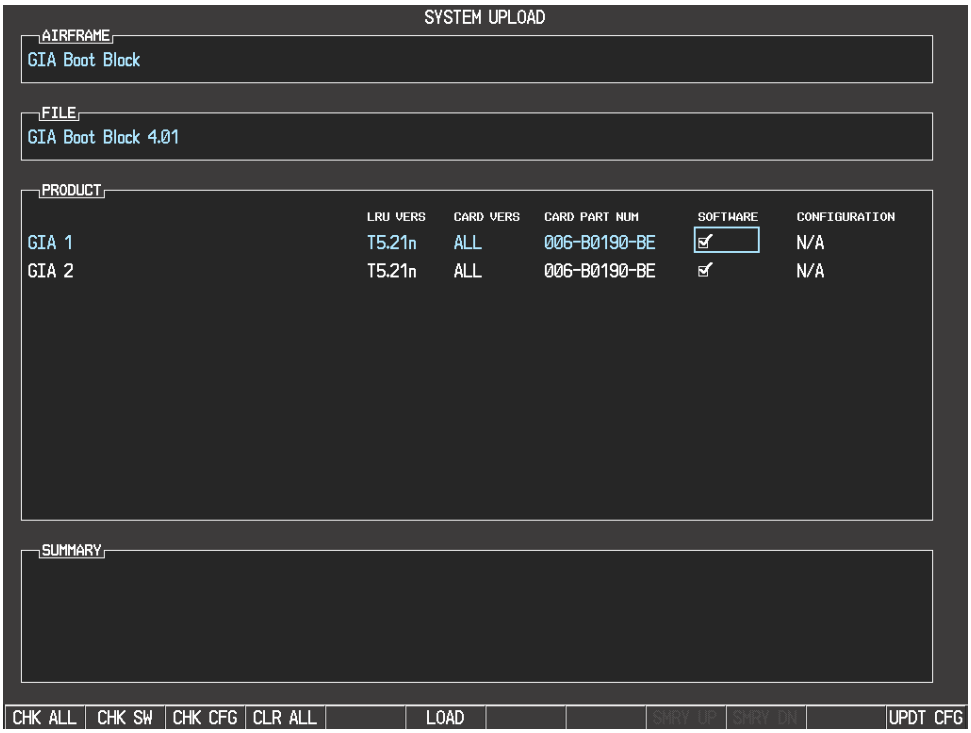
2.3.7 GIA 63 Boot Block Update

For GIA 63s, boot block version 4.01 or higher is required. Some GIAs with older dates of manufacture may not have this version. If it was determined in the previous software loading procedure that the GIA 63s did not have boot block version 4.01 or higher, follow this procedure to update the GIA 63's software boot block. Note that this does not apply to GIA 63Ws.

IMPORTANT!

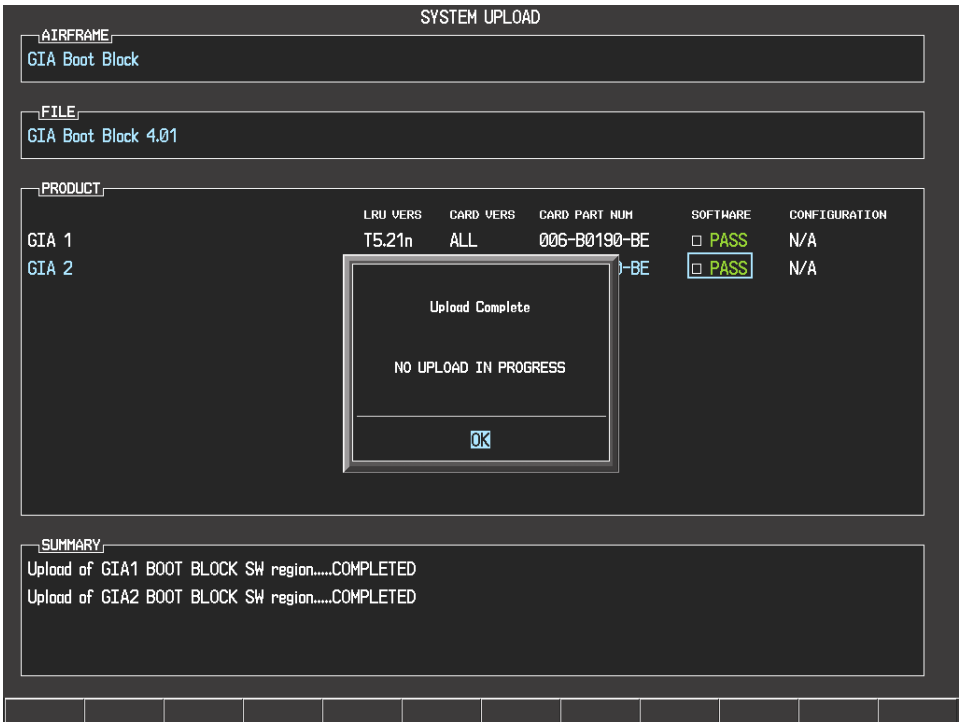
It is critical that electrical power be kept on during the boot block update procedure. Take steps to ensure that a 28 VDC ground power supply is properly connected and is not disturbed during the update.

1. Obtain the required GIA 63 Boot Block loader card from Garmin. The card part number is listed on the appropriate General Arrangement drawing. Alternatively, the GIA boot block update may be obtained by downloading the electronic file from Garmin, accessible via the dealer web site (see GA dwg for approved 006- P/N). This electronic download may be used to build an SD card to update the GIA boot block.
2. Insert the card into the top slot of the PFD and apply system power to the G1000.
3. On the PFD, go to the System Upload page using the FMS knob.
4. Activate the cursor and in the AIRFRAME field select GIA Boot Block. Press the ENT key.
5. The cursor drops down to the FILE field. Rotate the small FMS knob and select GIA Boot Block 4.01 and press the ENT key.



6. Verify that the SOFTWARE boxes are check for both GIA 1 and GIA 2.
7. MAKE CERTAIN that power will remain applied to the system with no possibility of accidental shutdown. Press the LOAD softkey.
8. The GIA boot block software is loaded. Be sure to not remove electrical power from the G1000 during this update.

9. When the boot block software finishes loading, acknowledge the following prompt by pressing the ENT key:



10. The boot block update procedure is complete. On the MFD System Status Page, highlight GIA1 and GIA2 and verify both units are reporting 'OK' status and that the GIAS ONLINE field shows two green boxes.
11. Remove the GIA Boot Block loader card from the PFD and re-insert the correct G1000 software loader card.
12. Restart the PFD and MFD in configuration mode by cycling the PFD and MFD circuit breakers. Hold the ENT key on both displays while they power up until the words INITIALIZING SYSTEM appear in white. The PFD may show a prompt to load system software files. Press the NO softkey or press CLR.
13. Continue with the software loading and configuration procedure and load any remaining files according to the procedures in Section 2.3.6.

2.3.8 Fuel Tank Initial Calibration

After all software and preliminary configuration defaults have been loaded, it is necessary to load pre-established calibration values for the fuel tanks, only for aircraft which have not yet had fuel tanks calibrated according to Section 2.6.

IMPORTANT!

Beware that once this file is loaded, any previous fuel tank calibration data will be overwritten with default values. If the subject aircraft's fuel tanks has been previously calibrated, and it is not desired to re-run the calibration procedures in Section 2.6, DO NOT PERFORM THIS PROCEDURE.

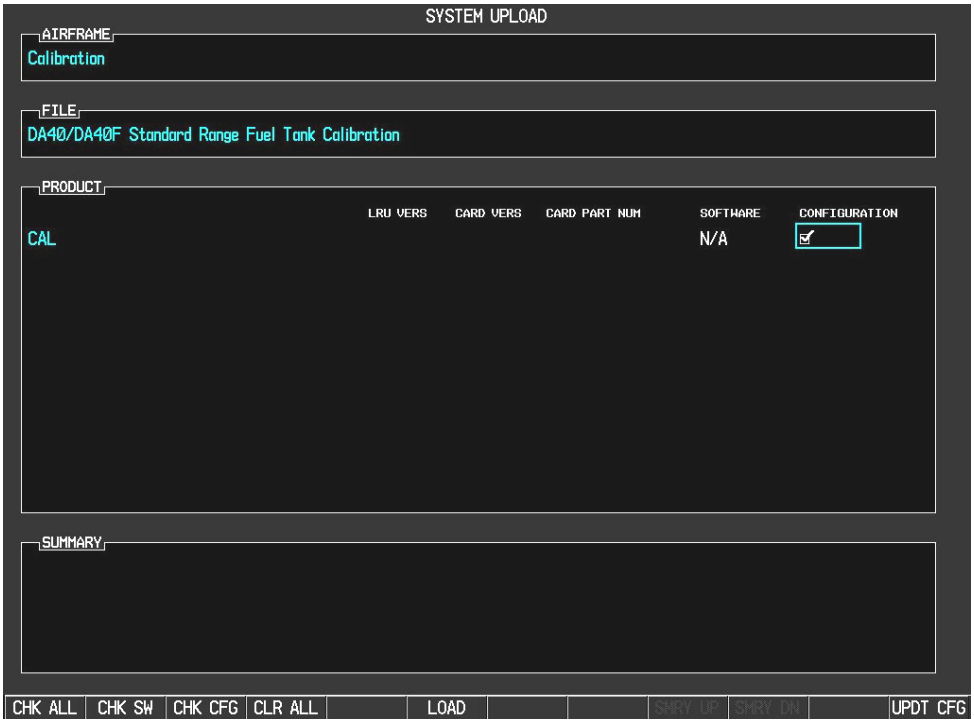
For new aircraft which have never had fuel tanks calibrated before, THIS PROCEDURE IS REQUIRED to be performed prior to Section 2.6.

1. On the PFD, at the System Upload page, activate the cursor and use the small FMS knob to highlight the CALIBRATION option in the AIRFRAME field.
2. Press the ENT key.
3. Once the CALIBRATION file is selected the cursor moves to the FILE window. Rotate the small FMS knob to active the drop-down menu. Move the cursor to highlight the appropriate fuel tank calibration (standard or extended range) and press ENT.

IMPORTANT!

It is at this step where the choice is given to load standard range or extended range fuel tank default calibration parameters. Be sure to select the correct option.

4. The CAL file is shown in the PRODUCT window. Verify it is 'checked' then press the LOAD softkey.



5. Verify the file loads successfully and press the ENT key to acknowledge the confirmation prompt.

2.3.9 Optional Systems Activation

This section describes the steps that must be completed in order to configure the G1000 for optional systems. Only those systems that are installed must be configured.

IMPORTANT!

If the configuration for an optional system is inadvertently loaded for a system that is NOT installed, the *DEFAULT* DA 40/DA 40F configuration files must be reloaded per 2.3.6. For example, if the extended range fuel tanks option is loaded, and the aircraft is equipped with standard fuel tanks, default configuration files must be reloaded. Following the default configuration files reload, all optional systems must be reconfigured.

2.3.9.1 DA 40 F Option – Add Fuel Pressure Sensor

IMPORTANT!

There is no Garmin-supported installation approval for a fuel pressure sensor installation in DA40F aircraft. This fuel pressure display option is provisional in nature. Before activating this option, the technician must verify that a proper follow-on sensor installation approval has been obtained, and that the fuel pressure sensor is installed according to the approved design.

If the DA40F aircraft being checked out is equipped with a fuel pressure sensor, follow this procedure to configure the G1000. If the DA 40 F is not equipped with this option, this procedure may be skipped.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 F Option – Add Fuel Pressure Sensor**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.2 DA 40 F Option – SINGLE CHT / EGT

If the DA 40 F aircraft being checked out is equipped with a single CHT and/or EGT engine sensor, follow this procedure to configure the G1000. If the DA 40 F is not equipped in this manner, this procedure must be skipped.

For Single CHT sensors:

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 F Option – Single CHT**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

For Single EGT sensors:

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 F Option – Single EGT**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.3 DA 40 F Option – Multiple Cylinders

If the DA 40 F aircraft being checked out is equipped with a full suite of engine temperature sensors (4 EGT, 4 CHT sensors), follow this procedure to configure the G1000. If the DA 40 F is not equipped in this manner, this procedure must be skipped.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 F Option – Multiple Cylinders**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.4 DA 40 Option – Extended Range Tanks

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, use the FMS knob to select '**DA 40 Option – Extended Range Tanks**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.5 DA 40 Option - Display Fuel Pressure

NOTE

As of STC Configuration 3 (System Software Version 0369.09) a Fuel Pressure display gauge is available as an option for DA 40 aircraft. The fuel pressure sensor installation and G1000 system configuration were existing on DA40 aircraft.

IMPORTANT!

As of STC Configuration 3, there is no installation approval for a fuel pressure sensor installation in DA 40 F aircraft. This fuel pressure display option is provisional in nature. The technician must ensure that a follow-on installation approval has been obtained and that the fuel pressure sensor is installed according to the approved design.

If it is desired to display a fuel pressure sensor for the DA 40, follow the steps in this procedure. If no fuel pressure display is desired, this procedure **MUST** be skipped.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 Option – Display Fuel Pressure**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.6 DA 40 Option – ADF

If the DA 40 aircraft being updated is equipped with the Becker model RA3502 ADF, follow this procedure to configure the G1000. If the DA 40 is not equipped with this option, this procedure **MUST** be skipped.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 Option – ADF**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check box.

2.3.9.7 DA 40 Option – DME

If the DA 40 aircraft being updated is equipped with the Honeywell model KN63 DME, follow this procedure to configure the G1000. If the DA 40 is not equipped with this option, this procedure **MUST** be skipped.

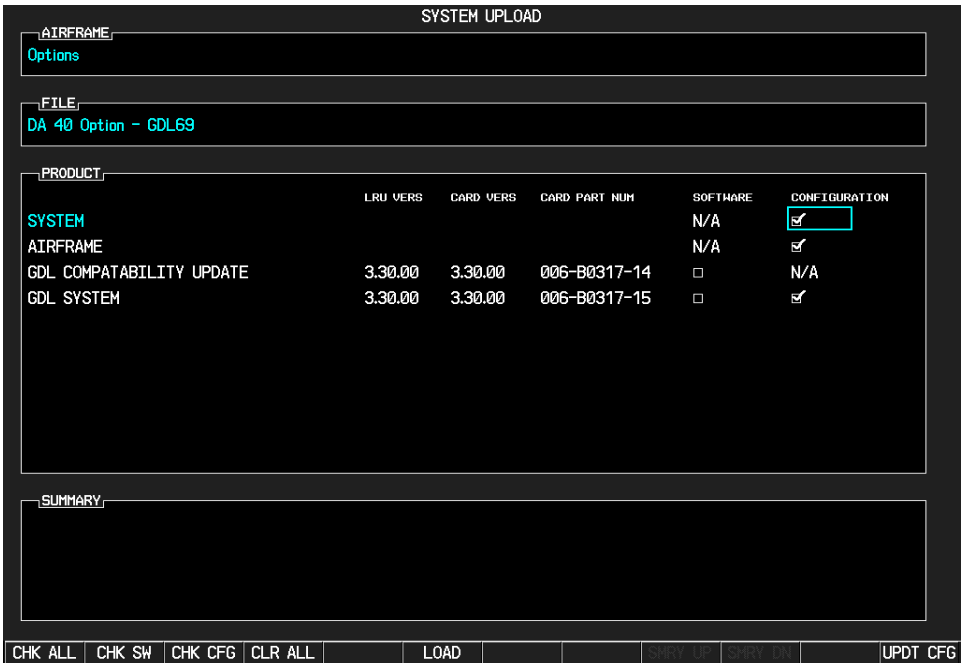
1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 Option – DME**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check boxes.

2.3.9.8 DA 40 Option – GDL69

If the DA 40 aircraft being updated is equipped with the Garmin GDL 69/69A, follow this procedure to configure the G1000. If the DA 40 is not equipped with this option, this procedure **MUST** be skipped.

System Software Image Containing a GDU Software Version Prior to v10.00

For any GDU software revision prior to v10.00 the first software upload would contain GDL 69(A) software version 3.20, while the second upload would contain version 3.30. The image below demonstrates the System Upload page AIRFRAME 'Options' menu for the GDL 69 option.



To minimize confusion and simplify the installation process, the first application image (software version 3.20) is labeled as "GDL COMPATIBILITY UPDATE" and artificially labeled as version 3.30 in the CARD VERS field. This will ensure that the "GDL COMPATIBILITY UPDATE" image is always automatically selected for upload unless the installed software (LRU VERS field) is already at version 3.30 (at which point the "GDL COMPATIBILITY UPDATE" image is not needed). Artificially labeling the GDL software version 3.20 as version 3.30 in the CARD VERS field is done entirely to support the GDU automatic upload detection, and the GDL software reports the correct version (3.20) in all cases (both for system status and manifest checking).

The following table demonstrates the GDU software automatic detection behavior that compares the currently loaded software (LRU VERS field) to the software that is to be loaded (CARD VERS field). It should be noted that as a result of artificially labeling version 3.20 as version 3.30, the "GDL COMPATIBILITY UPDATE" option (version 3.20) will be automatically selected for upload again prior to loading version 3.30 if the GDL 69(A) already has version 3.20 installed. The additional version 3.20 upload will add approximately 2 minutes to the overall software upload.

Table 2-1. GDL 69 SOFTWARE AUTOMATIC DETECTION BEHAVIOR

Currently Loaded GDL 69(A) Software	Desired GDL 69(A) Software	GDL Compatibility Update 'Software' Checked?	GDL 'Software' Checked?
v3.10 (or earlier)	v3.30	Yes	Yes
v3.20	v3.30	Yes	Yes
v3.30	v3.30	No	No

Note that the GDL 'configuration' check mark is not controlled by the automatic detection behavior and is therefore always checked.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 Option – GDL69**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check boxes.

2.3.9.9 DA 40 Option – EASA Airspeed Tape – EASA Registered Aircraft

IMPORTANT!

This option is required for EASA registered aircraft. This configuration option is available with G1000 System Software Version 0369.11 (Loader Card P/N 010-00369-11) or later version.

This configuration will remove the yellow Low Speed Awareness (LSA) band from the airspeed indicator. Aircraft Registered in EASA countries are required to **not** have the yellow LSA band. The following procedure **MUST** be completed for EASA registered aircraft.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA 40 Option – EASA Airspeed Tape**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check boxes.

2.3.9.10 DA 40 Option – No KAP 140

IMPORTANT!

If either the -3 or -4 STC Configuration is installed (aircraft has no Autopilot), the following configuration procedure MUST be performed.

1. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
2. Select 'Options' from the AIRFRAME window and press ENT.
3. From the FILE window, select '**DA40 Option – No KAP 140**' and press ENT.
4. Press the LOAD softkey.
5. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
6. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check boxes.

2.3.9.11 DA 40 Option – GFC 700

IMPORTANT!

If the -3, -4, -5, or -6 STC Configuration is installed, the following configuration procedure MUST NOT be performed. Do this procedure only if the aircraft has the GFC 700 AFCS option installed.

7. At the System Upload page, activate cursor and rotate the FMS knob once to activate the AIRFRAME menu.
8. Select 'Options' from the AIRFRAME window and press ENT.
9. From the FILE window, select '**DA40 Option - GFC 700**' and press ENT.
10. Press the LOAD softkey.
11. Monitor the status of the upload. When the upload is finished, press ENT to acknowledge.
12. View the SUMMARY field and ensure that all items are 'complete': Verify that PASS appears in green at the check boxes.

2.3.9.12 DA40 Option - TAWS Activation

Perform this procedure only if the aircraft is to be equipped with the Garmin TAWS option.

1. Remove power from the PFD and MFD by opening the PFD and MFD circuit breakers.
2. A special TAWS Unlock card is required to enable TAWS. Refer to the appropriate General Arrangement drawing for the correct part number. Insert this card in the upper slot of the PFD.
3. While holding the ENT key on the PFD and MFD, restore power to the displays.
4. When the words INITIALIZING SYSTEM appear in the upper left corner of both displays, release the ENT keys.
5. On the PFD, go to the System Upload page using the FMS knob.
6. Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
7. Highlight the FILE field. Use the small FMS knob to select the 'Enable TAWS' option and press the ENT key. Once the option is selected, the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
8. Press the LOAD softkey.
9. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.
10. View the SUMMARY field and ensure that the item is 'COMPLETE'.
11. De-activate the cursor.
12. Power down the system and remove the TAWS Enable card from the PFD.

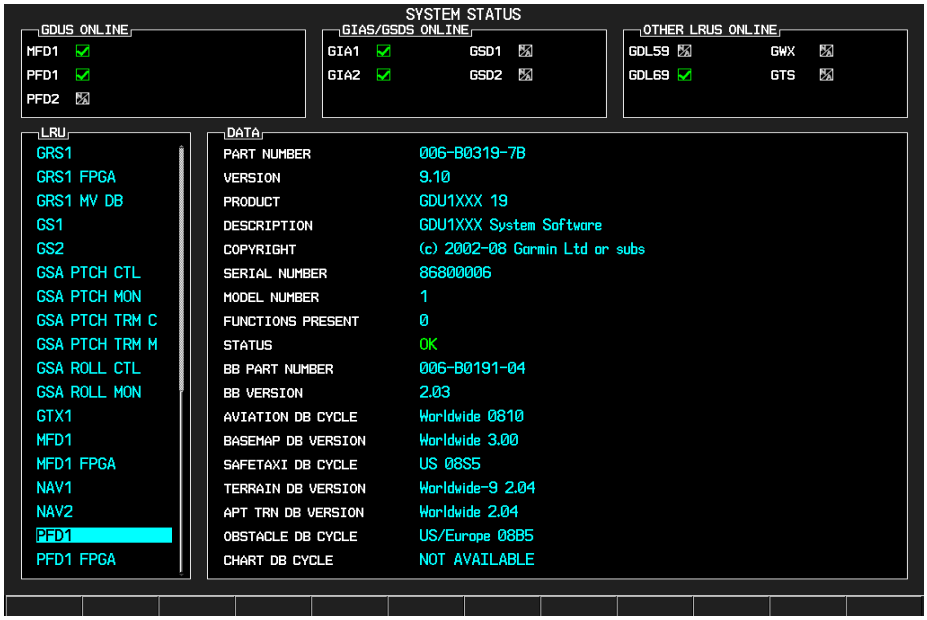
2.3.9.13 DA 40 Option – ChartView

NOTE

ChartView databases are subscription-based and are to be procured by the aircraft owner directly from Jeppesen. This procedure is only required if the ChartView option is purchased by the customer.

1. Remove power from the PFD and MFD by opening the PFD and MFD circuit breakers.
2. A special ChartView Unlock card is required to activate this feature. Refer to the appropriate General Arrangement drawing for the correct part number. Insert this card in the upper slot of the PFD.
3. While holding the ENT key on the PFD and MFD, restore power to both displays by closing the PFD and MFD circuit breakers.
4. When the words INITIALIZING SYSTEM appear in the upper left corner of the displays, release the ENT key.
5. On the PFD, go to the System Upload page using the FMS knob.
6. Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
7. Highlight the FILE field. Use the small FMS knob to select the “Enable ChartView” option and press the ENT key. Once the option is selected the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
8. Press the LOAD softkey.
9. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.
10. View the SUMMARY field and ensure that the item is ‘COMPLETE’.
11. De-activate the cursor.
12. Power down the system and remove the ChartView Enable card from the PFD.

2.4 Software Load Confirmation



1. Go to the System Status page using the FMS knob. Activate the cursor and toggle to the LRU window.
2. Highlight each of the following item in the LRU window, and verify that the software part number and version matches the information in the appropriate General Arrangement drawing:

LRU	SW VER OK	LRU	SW VER OK
PFD1	_____	GMA1	_____
PFD1 FPGA	_____	GMU1	_____
MFD1	_____	GMU1 FPGA	_____
MFD1 FPGA	_____	GDL69	_____
GIA1	_____	GFC CERT R M*	_____
GIA2	_____	GFC CERT R C*	_____
GPS1	_____	GFC CERT PT M*	_____
GPS2	_____	GFC CERT PT C*	_____
GRS1	_____	GFC CERT P M*	_____
GRS1 FPGA	_____	GFC CERT P C*	_____
GIA1 AUDIO	_____	GSA PTCH CTL*	_____
GIA2 AUDIO	_____	GSA PTCH MON*	_____
GFC CERT GIA1*	_____	GSA PTCH TRM C*	_____
GFC CERT GIA2*	_____	GSA PTCH TRM M*	_____
GTX1	_____	GSA ROLL CTL*	_____
GEA1	_____	GSA ROLL MON*	_____
GDC1	_____		
GDC1 FPGA	_____		

*GFC 700-equipped aircraft.

3. De-activate the cursor.

IMPORTANT!

If any software version and/or part number does not match those specified by the General Arrangement Drawing, or if the software is not successfully loaded, DO NOT continue with post-installation procedures. Troubleshoot and resolve the issue before continuing.

2.5 TAWS Aural Alerts Verification

If the G1000 is equipped with the TAWS option, perform the following check:

1. Go to the Audio Alert Configuration page on the PFD.
2. Press the SPKR button on the GMA 1347 audio panel to activate the cockpit speaker. Verify the SPKR button is illuminated.
3. At the Audio Alert Configuration page, use the FMS knob to activate the cursor and scroll through the MSG FIELD audio alert menu. When the desired alert is selected, press the ENT key on the display. To play the alert, highlight the PLAY? option and press the ENT key. Perform this action for each of the following audio messages, verifying that each can be heard, both in the pilot/co-pilot headset and the cockpit speaker:
    - Five Hundred
    - Caution Obstacle (2x)
    - Caution Terrain (2x)
    - Don't Sink
    - Obstacle Ahead (2x)
    - Obstacle Ahead, Pull-Up (2x)
    - Obstacle (x2), Pull-Up (2x)
    - Pull-Up
    - Sink Rate
    - Terrain Ahead, Pull-Up (2x)
    - Terrain Ahead (2x)
    - Too Low, Terrain
    - TAWS Not Available
    - TAWS System Failure
    - TAWS System Test OK
    - Terrain (2x); Pull-UP (2x)
    - TAWS Available

2.6 Fuel Quantity Transducer Calibration

IMPORTANT!

If the subject aircraft's fuel tanks has been previously calibrated, and the calibration files were NOT reloaded in Section 2.3.8, DO NOT PERFORM THIS PROCEDURE. If the calibration files were reloaded in Section 2.3.8, this procedure must be completed.

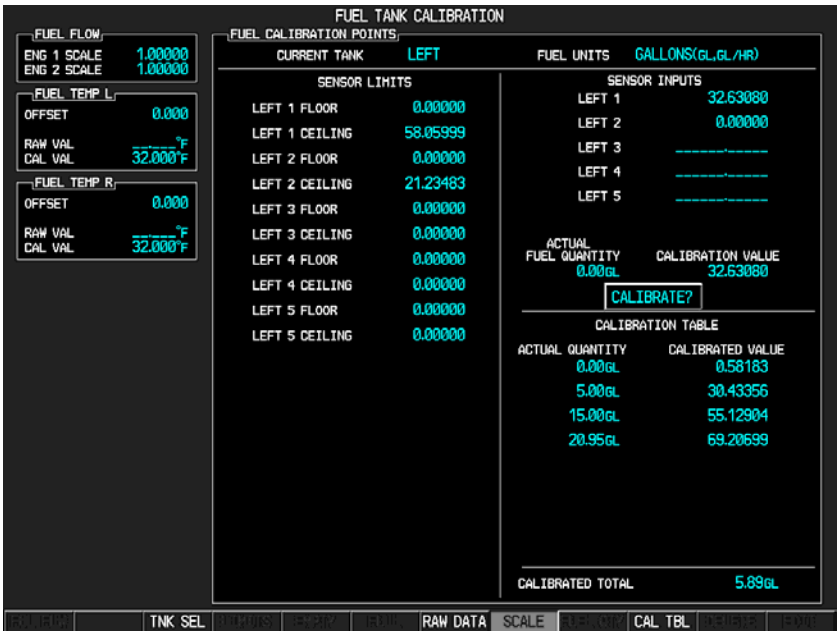
2.6.1 Calibration Setup

1. Level the aircraft, following instructions in the DA40 Airplane Maintenance Manual.
2. Drain all fuel from each fuel tank, and set the fuel selector switch to the 'OFF' position.

NOTE

To achieve the required fuel quantity precision, it is recommended that the fuel quantities be weighed with a calibrated scale. Fuel density of 6.00 lbs/gallon is acceptable for purposes of this procedure.

3. Fill each fuel tank with 0.5 gallons (3 ±0.05 pounds) fuel (unusable fuel, refer to DA 40 AFM). Use proper precautions when handling fuel. Ensure that the aircraft is grounded correctly and that there is adequate ventilation.
4. Start the G1000 system in Configuration mode. Reboot the MFD in normal mode for this procedure by pulling, then resetting, the MFD circuit breaker. On the MFD, press the ENGINE softkey to display the full page engine instrumentation.
5. Go to the CAL Page Group on the PFD. The FUEL TANK CALIBRATION page should be displayed as shown:



6. This page is protected and requires a keystroke password to perform the calibration. Press the following softkeys in sequence:
    a) softkey 12 (Far Right softkey)
    b) softkey 11
    c) softkey 10
    d) softkey 9

7. Press the TNK SEL softkey to activate the cursor in the CURRENT TANK field. Rotate the FMS knob as necessary throughout this procedure to select the RIGHT or LEFT tanks.

2.6.2 Empty Calibration

1. Verify that unusable fuel has been added to both tanks. Allow both fuel probes to stabilize for at least 2 minutes.
2. Select the LEFT tank on the PFD.
3. Press the EMPTY softkey. The cursor will automatically activate and select the CALIBRATE? option. The calibrated value setting will default to 00.00.
4. Press the ENT key. A prompt appears requesting overwrite acknowledgement. Select YES and press the ENT key. The G1000 system will 'zero' the actual fuel quantity value to be displayed.
5. Select the RIGHT tank.
6. Press the EMPTY softkey. The cursor will automatically activate and select the CALIBRATE? option. The calibrated value setting will default to 00.00.
7. Press the ENT key. A prompt appears requesting overwrite acknowledgement. Select YES and press the ENT key. The G1000 system will 'zero' the actual fuel quantity value to be displayed.
8. Observe the CALIBRATED TOTAL indication for the RIGHT tank. Verify that it remains at 0.00.
9. Select the LEFT tank. Observe the CALIBRATED TOTAL indication for the LEFT tank. Verify that it remains at 0.00.
10. On the MFD, verify the fuel quantity indicators correctly point to '0'.

2.6.3 5 Gallon Calibration

1. Fill each fuel tank with 5 ± 0.1 gallons (30.0 ±0.05pounds) usable fuel.
2. Allow the fuel probes to stabilize at least 2 minutes before continuing.
3. Record the CALIBRATED TOTAL indication for the RIGHT tank. This is the pre-calibrated value.

   Right Tank Pre-Calibrated Value: _____

4. Select the LEFT tank. Record the CALIBRATED TOTAL indication for the LEFT tank. This is the pre-calibrated value.

   Left Tank Pre-Calibrated Value: _____

5. With the LEFT tank selected, highlight the ACTUAL FUEL QUANTITY field and enter 5.00 gallons.
6. Press the ENT key. The cursor automatically selects the CALIBRATE? option.
7. Press the ENT key again to calibrate the 5 gallon point.
8. Verify a 5.00 gallon point appears in the CALIBRATION TABLE.
9. Verify that the CALIBRATED TOTAL value indicates 5.00.
10. Select the RIGHT tank. Highlight the ACTUAL FUEL QUANTITY field and enter 5.00 gallons.
11. Press the ENT key. The cursor automatically selects the CALIBRATE? option.
12. Press the ENT key again to calibrate the 5 gallon point.
13. Verify a 5.00 gallon point appears in the CALIBRATION TABLE.

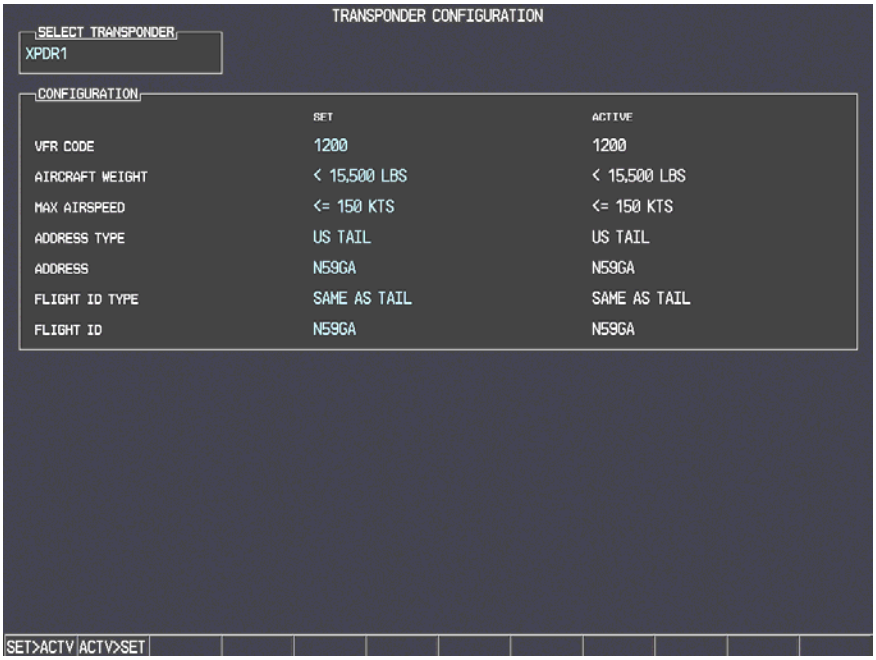
14. Verify that the CALIBRATED TOTAL value indicates 5.00.
15. On the MFD, verify both fuel quantity indicators correctly point to '5'.
16. Verify that an empty, 5 gallon, and full point are all displayed in the CALIBRATION TABLE. The full point is preset by configuration. There is no need to calibrate the full point.
17. Fill both fuel tanks to a level beyond 5 gallons. Verify that the fuel gauge indicators on the MFD slowly increase and display the approximately correct amount of fuel added.
18. Continue to the fuel flow coefficient entry procedure.

2.6.4 Manual Fuel Flow Coefficient Entry

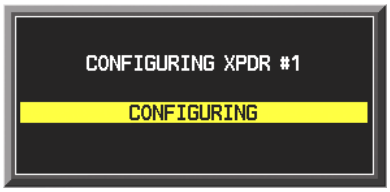
At the Fuel Tank Calibration Page, observe the ENG 1 SCALE value in the FUEL FLOW window, shown on the upper left of the display. Verify the ENG 1 SCALE value is set to 1.00000. If it is not set to 1.00000, perform the following procedure:

1. If not already entered, input the softkey password described in Step 6 of Section 2.6.1, at the Fuel Tank Calibration page.
2. Press the FUL FLW softkey.
3. Use the FMS knob to enter the value 1.00000 and press the ENT key.
4. Verify the 1.00000 value is retained. Deactivate the cursor and continue to the aircraft registration number entry procedure.

2.7 Aircraft Registration Number Entry



1. Select the GTX page group, then select the TRANSPONDER CONFIGURATION page on the PFD.
2. Ensure that the 'ADDRESS TYPE' is 'US TAIL' under the 'SET' and 'ACTIVE' columns.
3. Activate the cursor and highlight the 'ADDRESS' field. Use the small/large FMS knobs to enter the aircraft registration number.
4. Once the correct registration number is entered, press the ENT key. The transponder is configured:



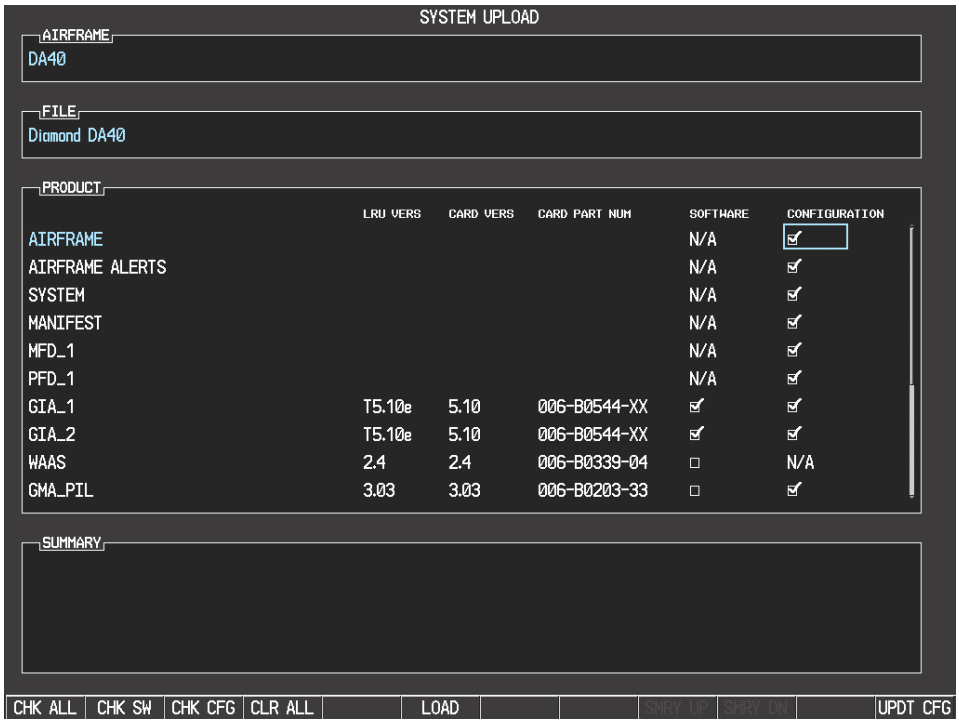
5. The transponder then alerts the technician of complete configuration:

6. Press the ENT key on the PFD.
7. At this point, the technician may enter a Flight ID Type and Flight ID number, if desired. The system defaults to 'SAME AS TAIL'.
8. After transponder configuration is complete, deactivate the cursor. Continue the Configuration Module Update procedure.

2.8 Configuration Module Update

After completing all configuration and software loading procedures, restart the G1000 in configuration mode and update the configuration module by doing the following procedure:

1. With the G1000 powered on in configuration mode, go to the SYSTEM – SYSTEM UPLOAD page on the PFD, as shown:

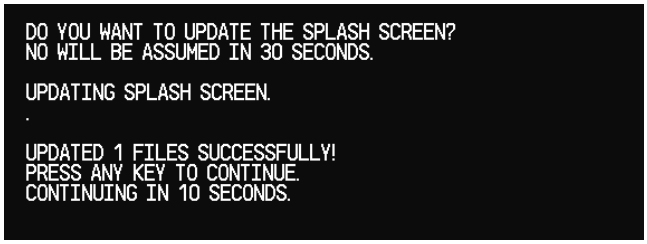


2. Press the UPDT CFG softkey, located in the lower right corner of the System Upload page.
3. A prompt will appear: "Update Config Module?"
4. Select YES and press the ENT key on the PFD.

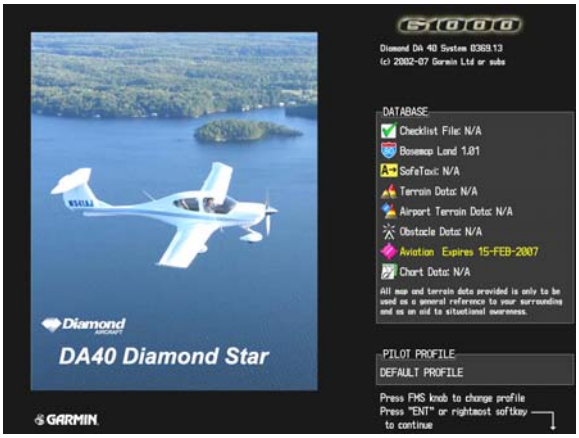
5. The system will update the configuration module located in the PFD connector and prompt the technician when successfully complete. Press the ENT key to acknowledge the prompt.
6. Continue to the MFD Splash Screen loading procedure.

2.9 MFD Splash Screen Loading (System SW 0321.17 or later only)

1. Insert the G1000 software loader card into the MFD top card slot.
2. Cycle power to the MFD by momentarily opening, then closing the MFD circuit breaker.
3. The MFD will prompt to update system files. Press the CLR key, or the NO softkey.
4. The MFD will then provide a prompt to update the splash screen as shown:



5. Press the YES softkey, or press ENT, to update the splash screen image. Verify the image is successfully copied to the display. It should appear in place of the standard power-up screen as shown below:



6. Once the MFD is online, remove the G1000 software loader card and insert into the PFD.
7. Cycle power to the PFD by momentarily opening, then closing the PFD circuit breaker.
8. The PFD will prompt to update system files. Press the CLR key, or the NO softkey.
9. The PFD will then provide a prompt to update the splash screen. Press the YES softkey, or press ENT, to update the splash screen image. Verify the image is successfully copied to the display. The PFD should then boot normally and begin system initialization.

2.10 Terrain/Obstacle Database Cards

1. Remove power from the PFD and MFD using the respectively labeled breakers.

NOTE:

If the G1000 is to be equipped with the Jeppesen ChartView display option, the appropriate ChartView database is required to be loaded onto the Terrain/Obstacle cards before they are installed in the displays. ChartView database subscription services must be procured directly from Jeppesen and are usually sourced by the aircraft owner. Further, the ChartView feature must be 'unlocked' before the G1000 can use the databases (see 2.3.9.13).

There is no unlock card required for Garmin FliteCharts. A single cycle of Garmin FliteCharts is loaded on the database cards when they are manufactured at Garmin. Additional FliteChart database updates are obtained directly from Garmin's web site and are updated on a periodic basis. The G1000 automatically detects the FliteChart databases and activates the display feature.

2. Insert two Terrain/Obstacle/SafeTaxi database cards into the lower slots of the MFD and PFD, respectively. Refer to the appropriate General Arrangement drawing for correct database card part numbers.

NOTE:

Upon initial database card installation, the database contents must be verified by the GDU. On next power-up, the GDU may prompt the user accordingly. Certain features related to the TERRAIN databases may not be immediately available until verification is complete.

3. Continue to the Aviation Database Loading procedure.

2.11 Aviation Database Loading

1. Insert a database card containing the Jeppesen aviation database (card & database supplied by Jeppesen) into the top slot of the MFD.
2. Apply power to the MFD. The following prompt is displayed in the upper left corner of the MFD:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
```

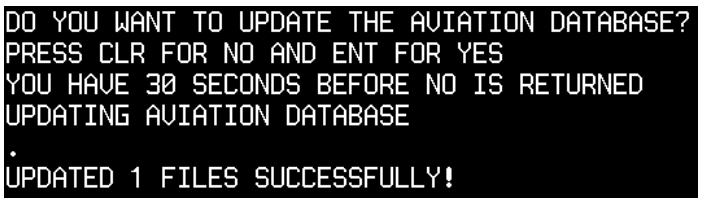
3. Press the ENT key to confirm the database update. The following prompt is displayed:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
UPDATING AVIATION DATABASE
.
UPDATED 1 FILES SUCCESSFULLY!
```

4. After the update completes, the MFD starts in normal mode.
5. Remove the aviation database update card from the MFD and insert it into the PFD top card slot.
6. Apply power to the PFD. The following prompt is displayed in the upper left corner of the PFD:

```
DO YOU WANT TO UPDATE THE AVIATION DATABASE?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED
```

7. Press the ENT key to confirm the database update. The following prompt is displayed:



8. Look at the MFD power-up screen. In the upper right corner, the display shows 'Diamond DA40 System 0XXX.XX' or 'Diamond DA40 F System 0XXX.XX' where XXX.XX is the system software version shown on the applicable General Arrangement drawing. This 'System' number is the G1000 System Software Version. It correlates to the 006-B0321-XX G1000 / DA40 Software Image* part number used to extract the software and configuration files for this STC. For example:

EXAMPLE:

System Software Version **'0321.17'** = Software Image P/N 006-B**0321-17***

*From 0321.17 onward, the G1000 Software Image is the controlling part number for STC Software and Configuration. Previously approved software definitions were controlled by the 010-00369-XX Loader Card part number, and will have system software versions 0369.XX, as defined by previous installation data.

9. Verify that the System Software Version is correct.
10. Verify that all database information shown in the lower right window is correct and current, including ChartView or FliteChart databases, if equipped.
11. Press the ENT key to acknowledge the agreement on the MFD (NOTE: The rightmost softkey may also be used to acknowledge the agreement).
12. Remove the aviation database update card from the PFD.
13. Continue to Section 3 for system testing and checkout.

3 SYSTEM TESTING & CHECKOUT

3.1 Initial Display Testing

1. The G1000 system is tested while operating in the normal mode unless otherwise specified.

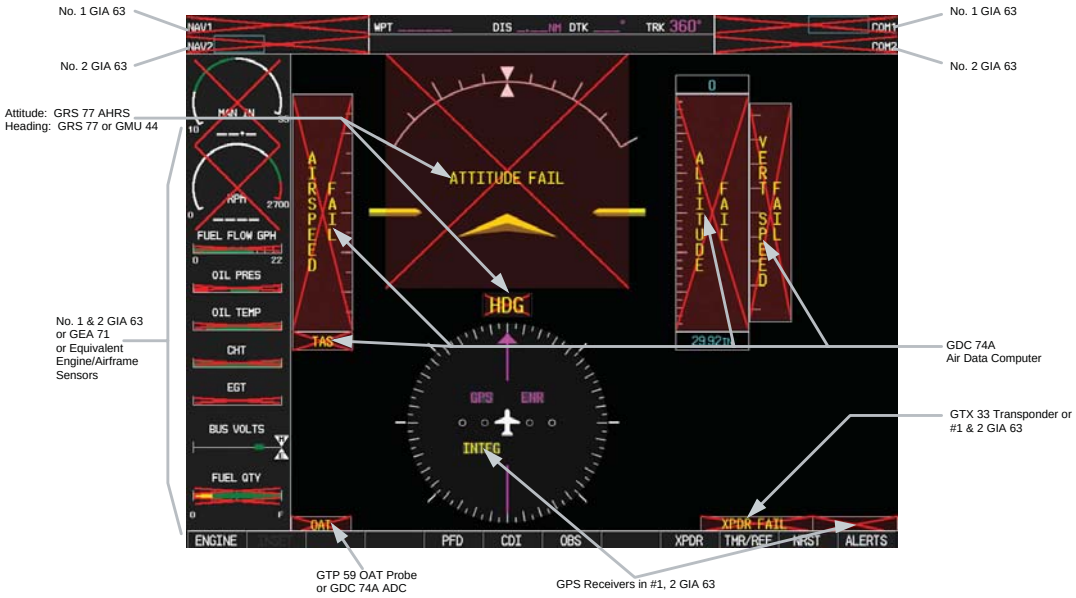


Figure 3-1. PFD Power-up System Annunciations

In the normal operating mode, data fields that are invalid have large red X's through them (Figure 3-1). A valid field does not display a red X. Allow the displays to initialize for approximately one minute. The GDC 74A requires a longer initialization period than do the other LRUs. 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.

NOTE

Outputs from the GRS 77 AHRS and GMU 44 are not valid until the units have been calibrated as described later in this chapter.

2. Check that all COM/NAV fields are valid in the top corners of the PFD and MFD.
3. Check that altitude, airspeed, vertical speed, TAS, and OAT fields are valid on the PFD.
4. Check that engine instrument fields are valid on the MFD.
5. Push the red DISPLAY BACKUP button on the GMA 1347. Verify both displays enter reversion mode: both should have valid altitude, airspeed, vertical speed, and engine instruments.
6. De-activate reversion mode by pushing the DISPLAY BACKUP button again.
7. Close the DA 40 aft door and main canopy. Observe the PFD and ensure the 'DOOR OPEN' warning has disappeared. Open the canopy and aft door.
8. Cycle the PITOT switch. Observe that the PITOT OFF annunciation on the PFD disappears when the switch is ON. Do not leave pitot heat on for more than 20 seconds.
9. Verify that no MANIFEST or CONFIGURATION 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 (refer to Section 2).

3.1.1 Fuel Pressure Sensor Check

Procedure A

Perform this procedure only if the DA 40 & DA 40 F aircraft is displaying the fuel pressure gauge:

1. On the MFD, view the Engine Indicating System on the left.
2. Ensure that there is fuel in the fuel tanks and that the fuel selector is on either right or left tanks. Move the FUEL PUMP switch on the DA 40 instrument panel to the ON position.
3. Observe that the fuel pressure quantity in the FUEL PRESS gauge begins to rapidly increase. This confirms that the fuel pressure sensor is operating properly.
4. Immediately switch the fuel pump OFF. Do not run the fuel pump for more than 20 seconds.

Procedure B

Perform this procedure only if the DA 40 & DA 40 F aircraft is configured with **no display** of the fuel pressure gauge:

1. On the MFD, view the Engine Indicating System on the left.
2. Ensure that there is fuel in the fuel tanks and that the fuel selector is on either right or left tanks. Move the FUEL PUMP switch on the DA 40 instrument panel to the ON position.
3. Observe that after a few seconds the "FUEL PRESS LO" warning annunciation is removed. This confirms that the fuel pressure sensor is operating properly.
4. Immediately switch the fuel pump OFF. Do not run the fuel pump for more than 20 seconds.

3.1.2 GPS Signal Acquisition

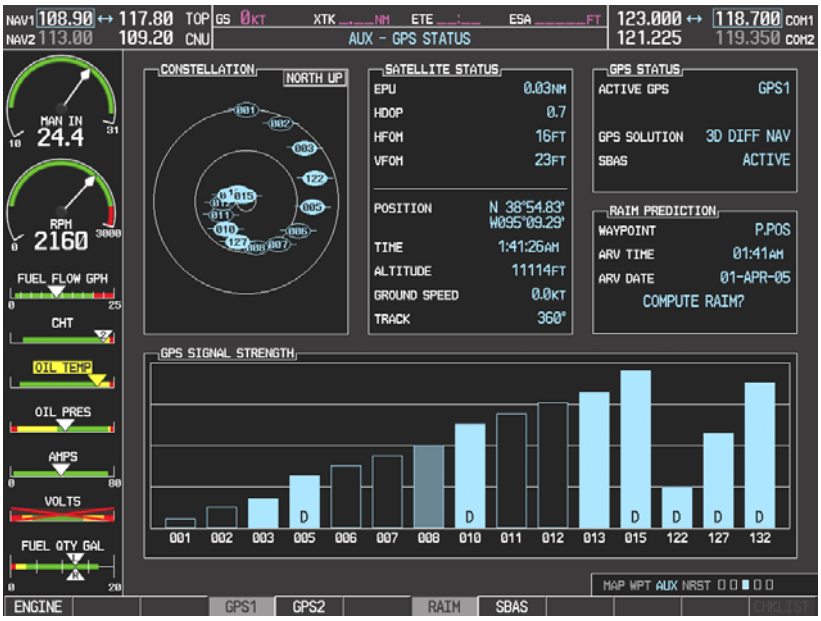


Figure 3-2. AUX – GPS STATUS Page (MFD)

The GIA 63(W) 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 GPS STATUS page on the MFD (3rd page in AUX group). Two softkeys on the bottom of the display allow the user to toggle between GPS 1 and GPS 2.

For non-WAAS G1000 installations:

Verify that both receivers show 3D NAV on the MFD. Verify that the active GPS sensor is GPS1.

For G1000 installations using WAAS:

Verify that both receivers show 3D DIFF NAV on the MFD. Verify that the active GPS sensor is GPS1.

Press the SBAS softkey. Verify that WAAS is checked. When the GIA 63W begins to receive the WAAS correction signals, each of the satellite strength bars should have a 'D' inside of it, indicating that differential corrections are available for that specific satellite.

3.2 GMA 1347 Testing

Except for marker beacon operation, an in-aircraft checkout may be performed in the aircraft on the ramp with known good microphone, headset, and speaker.

3.2.1 Intercom System (ICS) Check

1. Plug in headsets at each ICS position.
2. Ensure that the MAN SQ key is off (no light).
3. Adjust volume for each position and verify that the ICS is working properly.
4. Check Pilot and Copilot ICS positions for isolation and proper operation of volume and squelch controls.
5. Press the PA key. Verify that microphone audio is heard over the speaker when the Push-To-Talk (PTT) key is pressed.

3.2.2 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. Select the audio source corresponding to each installed avionics unit (i.e. NAV1, NAV2, COM1, COM2) and check for audio over the headsets.
2. Press the SPKR key and verify that the selected audio is heard over the speaker.

3.2.3 Failsafe Operation Check

1. Turn the GMA 1347 off by pulling the AUDIO 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 microphone, microphone key and audio over the headphones. All volume control for the COM audio should be through the PFD/MFD volume control. Verify proper operation of COM 1 using the failsafe operation.
3. Close the AUDIO circuit breaker to continue testing.

3.2.4 Marker Beacon Test

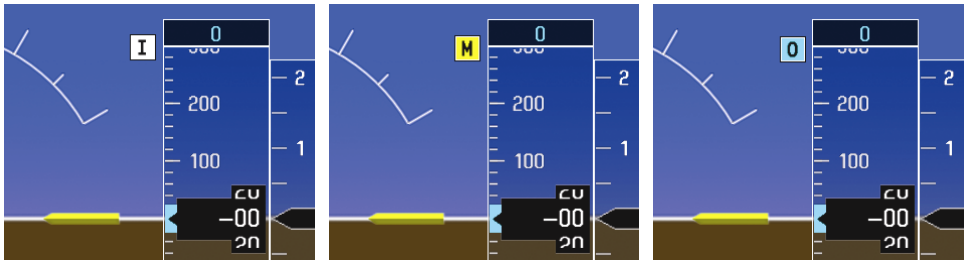


Figure 3-3. Marker Beacon Symbology

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 headphones and speaker.

Verify that the outer, middle, and inner annunciations appear on the PFD when the corresponding signal is applied. Marker beacon annunciations appear at the upper left corner of the altitude indicator on the PFD (Figure 3-3). Operate the MKR MUTE key on the GMA 1347 and ensure that the audio signal is muted.

3.3 KAP 140 Alignment

The KAP 140 autopilot system is an optional installation for the DA40. If a KAP 140 is not installed, this section can be skipped. The KAP 140 (KC 140 computer) autopilot system must be aligned for offsets of the VOR, ILS and GPS inputs. The inputs must be nulled for optimum system performance. The adjustments are stored in the KCM 100 configuration module. For more information on the KAP 140, refer to the Honeywell KAP 140 Installation Manual, Honeywell part number 006-00991-XXXX (the –XXXX defines the revision level of the manual, the most current revision should be used).

3.3.1 KAP 140 VOR/ILS/GPS Offsets

1. Locate the 155-02794-0000 (Honeywell part number) computer cable assembly supplied with the aircraft. Connect the cable to the jack located under the pilot side instrument panel and to an IBM compatible PC.

2. Apply power to the aircraft systems and turn on the AVIONICS master switch. Turn the PC on. Allow Microsoft Windows to start up (refer to the Honeywell KAP 140 Installation manual for information on Windows compatibility).

3. After Windows has started, establish communications with the KC 140 flight computer using a terminal emulator (such as Hyper Terminal). The settings for the terminal emulator must be set to 9600 baud rate, no parity, 8 data bits and one stop bit.

4. When communications is established with the KC 140 flight computer, the main menu should be displayed. Press the N key on the PC keyboard to enter the installation menu. Select the installation offset page by pressing 2 on the PC keyboard and then press the 'Enter' key.

5. Set the heading bug indicator and course pointer line to current aircraft heading on the PFD. On the PC, select the 'Course Datum offset' and press 'Enter'. Repeat for the 'Heading datum offset'.

6. Using VOR/ILS ramp generator, create a valid VOR signal and adjust the deviation signal until the deviation bar on the PFD is centered. Select VOR deviation on the installation offset page and press

enter. The KC 140 corrects for the offset in the VOR deviation signal. Perform the same test for LOC and G/S deviation signals (selecting the respective deviation offset on the offset page).

7. Perform the same deviation offset procedure for the GPS. Create a centered GPS deviation by pushing the Direct-To key and selecting a destination waypoint on the MFD. On the PFD, set the CDI to 'GPS' by pushing the CDI softkey. On the PC, select GPS Deviation and press 'Enter'.

8. Press the 'D' key on the PC keyboard when the Diagnostics Menu screen is displayed. This causes the Discrete Inputs Status screen to be displayed. On this screen, the encoded altitude value is shown in the upper right of the computer screen.

9. Adjust the BARO setting on the PFD to 29.92" Hg using the BARO knob. Compare the altitude value shown on the PFD to that shown on the PC computer. Altitudes should agree within ±100 ft.

10. Encoded altitude should be tested as described in F.A.R. 91.411.

3.3.2 KAP 140 Alert Volume Setting

1. Return to the main menu on the PC.
2. Press the N key on the PC Keyboard to enter the installation menu.
3. Set the audio volume to '2'

3.4 GIA 63 & 63W Testing

The following section applies to both GIA 63 units. Any differences in testing will be noted.

3.4.1 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 from Section 3.1.2 has been completed successfully, perform the following steps:

1. On the MFD, monitor GPS signal strength bars on the 3rd AUX 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 "LOI" flag is out of view.
4. Select 121.150 MHz on the COM1 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 COM2 transceiver (GIA2).
10. On the MFD, select the 4th AUX page.

11. Under the COM CONFIG field, change the COM channel spacing from 25 kHz to 8.33 kHz.
12. Go back to the 3rd AUX page.
13. Select 121.185 MHz on the COM1 and COM2 transceivers.
14. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.
15. During the transmit period, verify that the GPS "DR" or "LOI" flags do not come into view on the PFD HSI 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 COM2 transceiver (GIA2).
19. On the MFD, select the 4th AUX page and change the COM channel spacing back to 25 kHz.

3.4.2 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 signals levels adequate to perform the test.

VOR Test

1. On the ramp tester, simulate a VOR signal on radial 360°. Tune both NAV1 and NAV2 receivers to the ramp test frequency.
2. Set the HSI on the PFD to VOR1 by pressing the CDI softkey until VOR1 is selected. Set the VOR1 CDI course to 360° using the CRS knob on the PFD. Verify the VOR1 CDI is centered on the PFD HSI.
3. On the ramp tester, apply a 10° deviation signal in both right and left directions and verify full scale deflection of the VOR1 CDI in the corresponding directions.
4. On the ramp tester, vary the signal deviation 0° to 10°from the simulated 360° radial set in step 1 above in both right and left directions. Verify proper response from the VOR1 CDI.
5. Set the HSI on the PFD to VOR2 by pressing the CDI softkey until VOR2 is selected. Set the VOR2 CDI course to 360° using the CRS knob on the PFD. Verify the VOR2 CDI is centered on the PFD HSI.
6. On the ramp tester, apply a 10° deviation signal in both right and left directions and verify full scale deflection of the VOR2 CDI in the corresponding directions.
7. On the ramp tester, vary the signal deviations 0° to 10°from the simulated 360° radial set in step 1 above in both right and left directions. Verify proper response from the VOR2 CDI.

Localizer/Glideslope Test

1. On the ramp tester, simulate a Localizer signal. Tune both NAV1 and NAV2 receivers to the ramp test frequency.
2. Set the HSI on the PFD to LOC1 by pressing the CDI softkey until LOC1 is selected.
3. On the ramp tester, set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the LOC1 CDI.

4. With LOC1 CDI selected, exercise the Glideslope deviation indicator with up and down deviation indications and verify the Glideslope deviation indicator responds correctly to the ramp test signal deviations.
5. Set the HSI on the PFD to LOC2 by pressing the CDI softkey until LOC2 is selected.
6. On the ramp tester, set the signal deviations to one dot, then two dots deflection in both right and left directions. Verify proper response from the LOC2 CDI.
7. With LOC2 CDI selected, exercise the Glideslope deviation indicator with up and down deviation indications and verify the Glideslope deviation indicator responds correctly to the ramp test signal deviations.

3.4.3 GFC 700 VOR/LOC/GS Test

NOTE

Perform this test only if the aircraft is equipped with a GFC 700.

1. Simulate a VOR signal on a radial which corresponds with the aircraft's current heading. Tune the NAV1 and NAV2 receivers to the correct ramp test frequency.
2. Set the HSI on the PFD to VOR1 by pressing the CDI soft key until VOR1 is selected. Adjust the HSI course as necessary using the CRS knob so that the CDI is centered (should correspond to current aircraft heading).
3. Engage the Autopilot in altitude hold mode and press the NAV key on the MFD.
4. Apply a right signal deviation on the ramp tester. Verify the VOR1 CDI indicates a right deviation and that the Flight Director and aircraft controls follow the CDI to the right.
5. Apply a left signal deviation and verify the Flight Director and aircraft controls follow the CDI to the left.
6. Press the CDI softkey to select the VOR2 receiver. Verify that the green 'NAV' autopilot annunciation flashes yellow, then returns to default 'PIT' mode in green.
7. With the VOR2 source selected on the HSI, re-engage NAV mode and repeat Steps 4 through 5.
8. Simulate a Localizer/Glideslope signal on the ramp tester. Tune this frequency on NAV1 and NAV2 receivers. Set the HSI to LOC1.
9. Adjust the ramp tester signals to center the course and glideslope deviation indicators on the PFD.
10. Press the APR key on the MFD. Verify that the LOC and GS annunciations are green on the PFD.
11. Apply right/left and up/down localizer/glideslope signals using the ramp tester. Verify that the Flight Director and flight controls respond appropriately.
12. Repeat Steps 9 through 11 for the NAV2 receiver (LOC2 CDI).

3.5 ADF Function Check

This check verifies that the ADF-to-G1000 interface operates correctly. This check is only required for DA40 aircraft with the remote-mount Becker RA3502 ADF installed.

1. On the PFD, check to see if the ADF window(s) is displayed. If not, press the PFD softkey. Using either the BRG1 or BRG2 softkeys, toggle the softkey until the ADF bearing is shown. Press the BACK softkey.
2. Verify that the ADF window is not invalid (no red 'X').
3. Press the ADF/DME softkey and check to ensure the ADF tuning window displays correctly.
4. Using the large FMS knob, highlight the ADF frequency field. Turn the small FMS knob to select the desired frequency. For this test select a known valid local ADF station and press the ENT softkey. Press the ENT again to activate the frequency field. Verify that the ADF bearing pointer moves towards a bearing and stabilizes.
5. Close the ADF/DME TUNING screen by pressing the ADF/DME softkey.
6. Verify that the audio from the station tuned can be heard on the pilots and copilots headset.
7. Verify that the audio from the station tuned can be heard over the cabin speaker.
8. On the PFD, press the ADF/DME softkey. Verify that the ADF/DME TUNING screen is displayed.
9. Change the ADF mode by using the large FMS knob to highlight the ADF mode field. Verify that ANT, BFO, and ADF can be displayed in the field by turning the small FMS knob. Verify that pressing the ENT softkey activates the desired field.
10. Change the ADF volume by using the large FMS knob to highlight the VOL level field "xx%". Verify over the speaker and headsets that the volume increases and decreases as indicated when the small FMS is used.

3.6 DME Function Check

This check verifies that the DME-to-G1000 interface operates correctly. This check is only required for DA40 aircraft with the Honeywell remote mounted KN63 DME installed.

1. On the PFD, check to see if the DME window is displayed. If not, press the PFD softkey, then press the DME softkey to display the DME window next to the HSI.
2. On the PFD, press the ADF/DME softkey. Verify that the ADF/DME TUNING screen is displayed.
3. With the ADF/DME TUNING screen activated, use the large FMS knob to highlight the DME field. Verify that the NAV1, NAV2 and HOLD modes can be selected by turning the small FMS knob.
4. Verify that NAV1 and NAV2 frequencies are set to 108.00 and 117.00.
5. Select the DME NAV1 mode by pressing the ENT softkey. Verify that the DME window display is set to the NAV1 frequency of 108.00.
6. 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. Select the DME HOLD mode by pressing the ENT softkey. Verify that the last selected NAV frequency of 117.00 remains the same when the NAV2 frequency is changed.
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 the DME MODE to NAV1. Ensure that NAV 2 is set to a frequency other than the test set frequency.
9. Verify that the DME distance on the PFD matches the test set.
10. Press the DME and SPKR buttons on the audio panel to select the DME audio and turn on the speaker. Verify that the DME audio can be heard over the speaker.
11. On the PFD, set the DME mode to NAV2 and verify that the DME distance is dashed out.
12. Tune NAV 2 to the test set frequency.
13. Verify that the DME distance on the PFD matches the test set.

3.7 GDL 69/69A Checkout

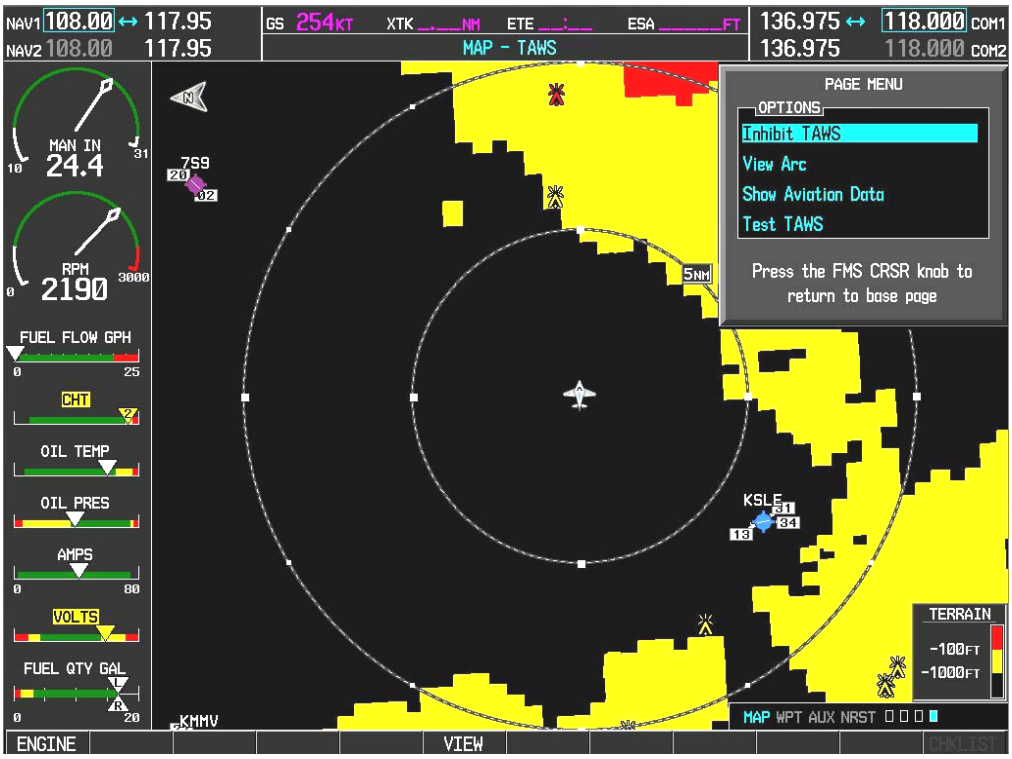
NOTE

This section verifies correct installation in the aircraft. It does not activate the GDL 69/69A XM data link radio. If the XM Radio is activated, the channel list will contain more channels than the three that are shown for a radio that has not been activated. Complete instructions for activating the XM data link can be found in document 190-00355-04.

1. Select the AUX – XM RADIO page on the MFD, shown below. The graphic shown below is for the AUX – XM RADIO page only.

2. Using the channel control located in the cabin, verify that you can increment and decrement the channels (the white arrow to the left of the channel list indicates the currently selected channel). Select channel 1 when complete.
3. Using the volume control located in the cabin, verify that you can increase and decrease the XM radio volume (the volume bar at the bottom of the screen will show changes to the volume level). Set the volume to the mid position when done.
4. Plug a set of headphones into one of the passenger stations and verify that you can hear the XM radio playing in both channels. The volume level may be adjusted to a comfortable level at this point.
5. Plug a set of headphones into the pilot's station and verify that you can hear the XM radio playing in both channels. The volume level may be adjusted to a comfortable level at this point.
6. Repeat for copilot's headphones.

3.8 TAWS Functional Check (if activated)



1. Verify that the SPKR key is selected on the GMA 1347 Audio Panel (annunciator light is lit).
2. Select the TAWS page (4th page in the MAP group) on the MFD.
3. Verify that the title at the top of the page reads “MAP – TAWS - B”. If TAWS has not been enabled, the title will read “MAP – TERRAIN PROXIMITY” or “MAP – TERRAIN”.
4. Press the MENU button and select “Test TAWS” from the pop-up menu.
5. After the TAWS test has completed, verify that “TAWS System Test OK” is heard over the cockpit speaker.
6. Press the MENU button again and select “Inhibit TAWS” from the pop-up menu and press ENT. Verify “TAWS INHIBIT “ is displayed on the PFD.
7. Press the MENU button again and select “Enable TAWS” from the pop-up menu and press ENT. Verify the “TAWS INHIBIT” annunciation on the PFD has extinguished.
8. With a GPS position acquired (refer to Section 3.1.6), shield or disconnect the GPS antennas to remove the GPS signal. Verify “NO GPS POSITION” shows on the MFD and the “TAWS N/A” annunciation shows on both the MFD and PFD.
9. Reconnect or remove the shield from the GPS antennas, verify the MFD indication and PFD annunciation are removed.

3.9 GTX 33 Testing

Operation of the GTX 33 Mode-S transponder is accomplished using the G1000 PFD. Refer to the G1000/DA40 Cockpit Reference Guide for basic operation. Perform a basic operational check on the transponder.

The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (CFR) §§ 91.411 and 91.413. 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 Title 14 CFR Part 43 Appendix F for testing criteria.

3.10 GDC 74A TESTING

IMPORTANT!

Allow unit to warm up for 15 minutes before performing the following tests.

Verification of the altimeter and airspeed must be performed using a pitot/static ramp tester. The static port and altimeter must be verified in accordance with Title 14 of the Code of Federal Regulations (CFR) § 91.411 and Part 43 Appendix E.

NOTE

The following tests are above and beyond the requirements set forth in Appendix E.

3.10.1 Airspeed Test

1. Command air data test set (ADTS) to simulate air speeds shown in the table below.
2. Wait for ADTS to report that target values have been achieved.
3. Verify that computed air speeds shown on the PFD are within the tolerances specified in the table below:

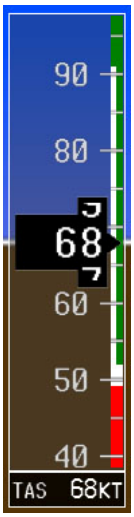
Calibrated air speed, knots	Allowed tolerance, ±knots
50	5.0
80	3.5
100	2.0
120	2.0
150	2.0

For EASA Registered Aircraft Only—EASA Airspeed Tape configuration (Section 2.4.1.10) must have been completed prior to completing this procedure.

4. Command air data test set (ADTS) to simulate 68 KIAS on the Airspeed Indicator.
5. Verify that the color bands on the airspeed tape match those specified in the table below:

Color Bands on Airspeed Indicator	Indicated airspeed range
Red	Up to 49 KIAS
White	49 – 52 KIAS
White/Green	52 – 91 KIAS

6. There should be no Yellow band between the Red and the White/Green bands (Reference image below).



3.10.2 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 the PFD is within the tolerances specified in the table below:

Vertical Speed, feet/minute	Allowed tolerance, ±feet/minute
2000	100
1000	50
500	45
200	45
0	45
-200	45
-500	45
-1000	50
-2000	100

3.10.3 OAT Probe Check

Check the outside air temperature (OAT) measurement shown on the PFD to ensure it reads ambient temperature, within +/- 2.0 degrees (reference a second thermometer for ambient temperature comparison).

3.11 GRS 77/GMU 44 Initial Alignment

The GRS 77 AHRS unit and the GMU 44 magnetometer unit require calibration before first flight. There are three procedures to be carried out (Sections 3.11.1, 3.13.2, 3.13.3). The aircraft engine must be started after the first procedure is complete. When ready to perform the procedures, shut the PFD and MFD off by pulling the PFD and MFD circuit breakers. Restart both displays in configuration mode.

3.11.1 Procedure A: GRS 77 Pitch/Roll Offset Calibration

This procedure must be carried out with the engine off. Go to the GRS page group on the PFD. Select the GRS/GMU Calibration page on the PFD.

To perform the following procedures press the following softkeys:

a) 9

b) 10

c) 11

d) 12 (Far Right softkey)

1. Level the aircraft to within ±0.25° of zero pitch and zero roll using Diamond maintenance procedures in the DA 40 Airplane Maintenance Manual.
2. Initiate the AHRS Ground Pitch/Roll Aircraft Level compensation mode by performing the following steps:
   a) Ensure that the No. 1 GRS 77 is selected.
   b) Select PITCH/ROLL OFFSET, then press the ENT key.
   c) 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.

d) After several seconds, a new checklist appears in the lower half of the PFD. Press the ENT key as each item is confirmed. When the CONFIRM AIRCRAFT IS LEVEL field is blinking, press the ENT key to continue.

3. 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.
4. Press the ENT key on the PFD to conclude this procedure.
5. Restart both displays in normal mode and proceed to Section 3.12.

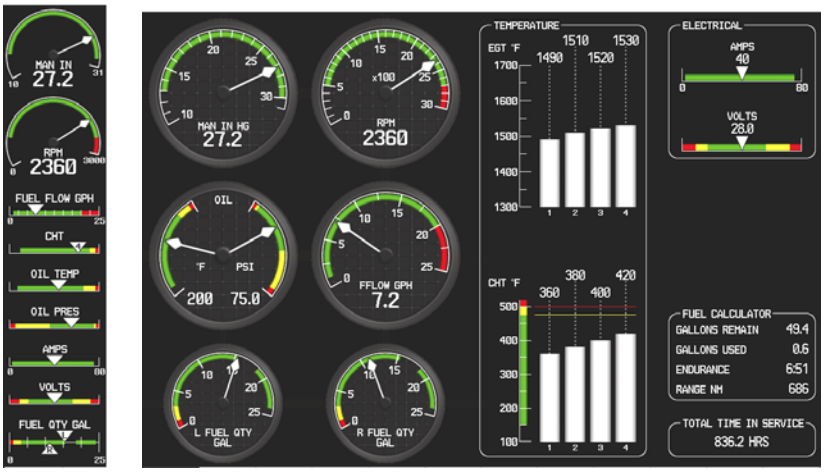
3.12 Engine Start

To carry out the two remaining GRS/GMU procedures, the aircraft engine must be started. In order to start the engine, all engine/airframe instrumentation must be checked.

On the MFD, check the indication for each of the sensor or monitor inputs with the aircraft engine off.

Full Page Engine Instrument Check:

1. Observe the EIS strip on the MFD and check each display gauge value and verify the information presented agrees with the conditions of Table 3-1..
2. Press the ENGINE softkey and observe the full-page EIS display. Check each display gauge value against Table 3-1.



3. Press the RED reversionary mode button on the GMA 1347 audio panel. Verify that engine gauges are display on the MFD and PFD.
4. Press the ENGINE softkey, and then press the LEAN softkey and verify that the display gauges change to show EGT and CHT bar indications as shown below. Verify the information presented agrees with the conditions of Table 3-1.
5. Press the SYSTEM softkey and verify that the display changes to show the digital display of the normal EIS page (oil temp, oil pressure, etc) as shown below. Verify the information presented agrees with the conditions of Table 3-1.

ENGINE LEAN SYSTEM

6. Deactivate reversionary mode.

Table 3-1: Engine/Airframe Instrument Checks

Engine/Airframe Indicator	Desired Reading
Manifold Air Pressure (DA 40 Only)	Atmosphere Pressure
Tachometer	0
Fuel Flow	0
CHT	Ambient
EGT	Ambient
Oil Temperature	Ambient
Oil Pressure	Approximately 0
Amps	Approximately 0
Volts	Battery or GPU Voltage, Approximately 28 Vdc
Fuel Tanks	FULL w/ full tanks, (including extended range tanks, if equipped)
Total Time in Service	Total Airborne Time

After verification of all engine instruments, the aircraft engine can now be started as needed to carry out the remaining GRS/GMU calibrations listed in Section 3.13.

Follow the procedures in G1000 in a Diamond DA 40 AFMS, Garmin part number 190-00492-10, 190-00492-11, or 190-00492-12 as appropriate, and start the engine.

Monitor engine instruments during startup for proper operation.

3.13 Final GRS 77/GMU 44 Calibration Procedures

The Magnetometer Calibration Procedure (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 3.13.1. The technician may skip Section 3.13.1 if the site condition is acceptable.

3.13.1 Site Evaluation of Magnetic Disturbances for Magnetometer Calibration Procedure (Optional)

NOTE

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 DA 40 airplane 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.

The G1000-equipped DA 40 used to evaluate the site must have already completed the pitch/roll offset compensation procedure (Procedure A). However, prior completion of the Magnetometer Calibration Procedure (Procedure B) is not required.

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 3.13.2 of this document, with the exception of the direction of turns around the site.

NOTE

Although Section 3.13.2 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, upon completion of the Magnetometer Calibration Procedure in each clockwise and counter-clockwise direction, the PFD displays the "CALIBRATION SUCCESSFUL / SITE IS CLEAN" message, 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, upon completion of the Magnetometer Calibration Procedure in either of the two directions, the PFD displays either the "MAG FIELD AT SITE NOT UNIFORM", or "MAG FIELD AT SITE DIFFERS FROM IGRF MODEL" message, then the site contains magnetic disturbances that are too large.

3.13.2 Procedure B: GRS 77/GMU 44 Magnetic Calibration

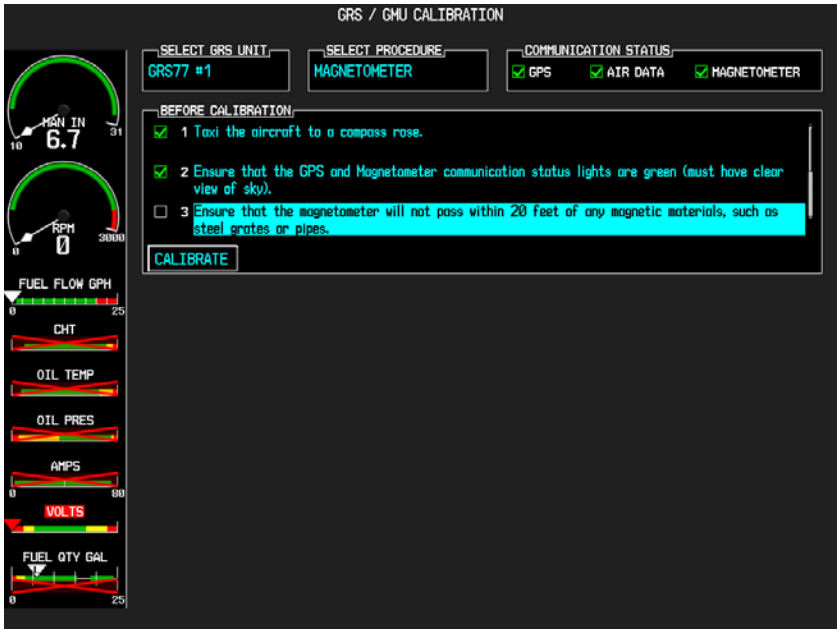
Calibration Procedure B must be carried out on a compass rose in order to guarantee measurements free of environmental magnetic disturbances. Attempting to carry out this maneuver on a typical ramp area may not yield a successful calibration. The accuracy of the AHRS cannot be guaranteed if this calibration is not performed on a magnetically clean compass rose. If the compass rose condition is not known, it is recommended that the technician follow the guidance in Section 3.13.2.

1. Follow instructions in Section 3.12 and check the GEA 71. Start the aircraft engine following the procedures referenced in the G1000/DA40 AFMS.
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 CANNOT BE GUARANTEED IF THIS CALIBRATION IS NOT PERFORMED ON A MAGNETICALLY CLEAN COMPASS ROSE OR EQUIVALENT.

4. Restart the PFD and MFD 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:
   a) 9
   b) 10
   c) 11
   d) 12 (Far Right softkey)

   Note that engine instruments may be monitored at this page.

7. Activate the cursor and highlight the SELECT PROCEDURE window and select MAGNETOMETER.
8. Press the ENT button.
9. Use the cursor to highlight 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 77 AHRS then enters its normal operational mode. Press the ENT button on the PFD to conclude this procedure.
15. Repeat the turn-and-stop process until the PFD advises that a successful calibration is complete. The GRS 77 AHRS then enters its normal operational mode. Press the ENT button on the PFD to conclude this procedure.
16. Proceed to Section 3.13.3 for the engine run-up procedure.

3.13.3 Procedure C: Engine Run-Up

Calibration Procedure C must be performed in order to guarantee that the AHRS mounting is sufficiently rigid and insensitive to vibration.

1. 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.
2. The PFD display instructs the operator to gradually increase power from idle to full throttle and back to idle over a period of 1-2 minutes.
3. 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.
4. 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 GRS77 and/or GMU44 caused by neighboring equipment and/or supports.
b) Mounting screws and other hardware for GRS77 and/or GMU44 not firmly attached.
c) GRS77 connector not firmly attached to unit.
d) Cabling leading to GRS77 or GMU44 not firmly secured to supporting structure.
e) An engine / propeller that is significantly out of balance.

5. Press the ENT key on the PFD to conclude this procedure and proceed to Section 3.13.4.

3.13.4 AHRS Checkout

The aircraft can now be taxied back and the engine can be shut down for final testing. Restart both displays in normal mode to conduct final system checks. When the PFD powers up in normal mode, the AHRS attitude and heading information displayed should become valid within 1 minute of power-up, as shown in Figure 3-4 (provided both GPS receivers have a valid position; if GPS is unavailable, AHRS initialization may take as long as 2 minutes).

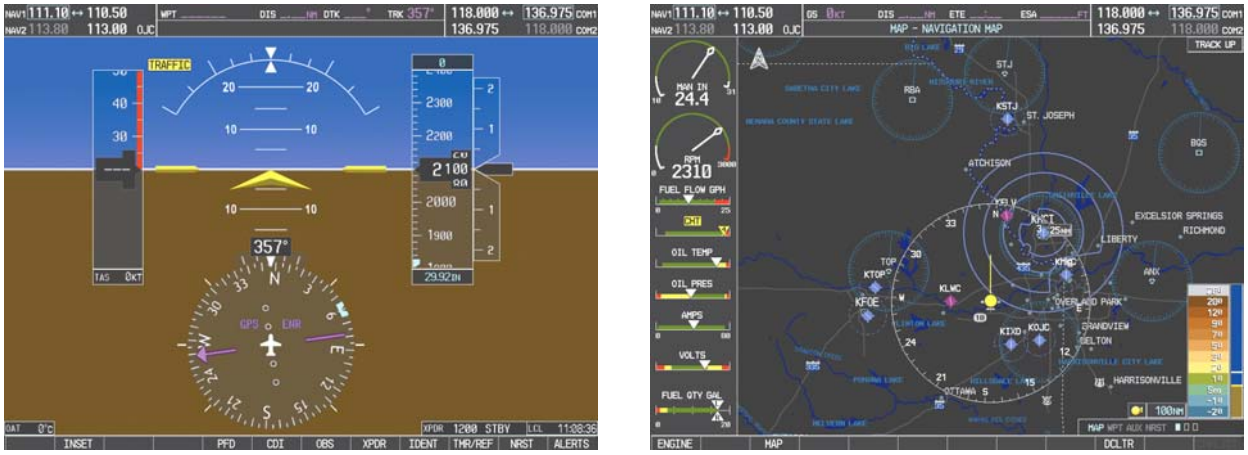


Figure 3-4. AHRS Information Valid

Test the AHRS reversionary paths by pressing the red reversionary mode button on the audio panel. Ensure that both displays have valid AHRS information, as shown in Figure 3-5.

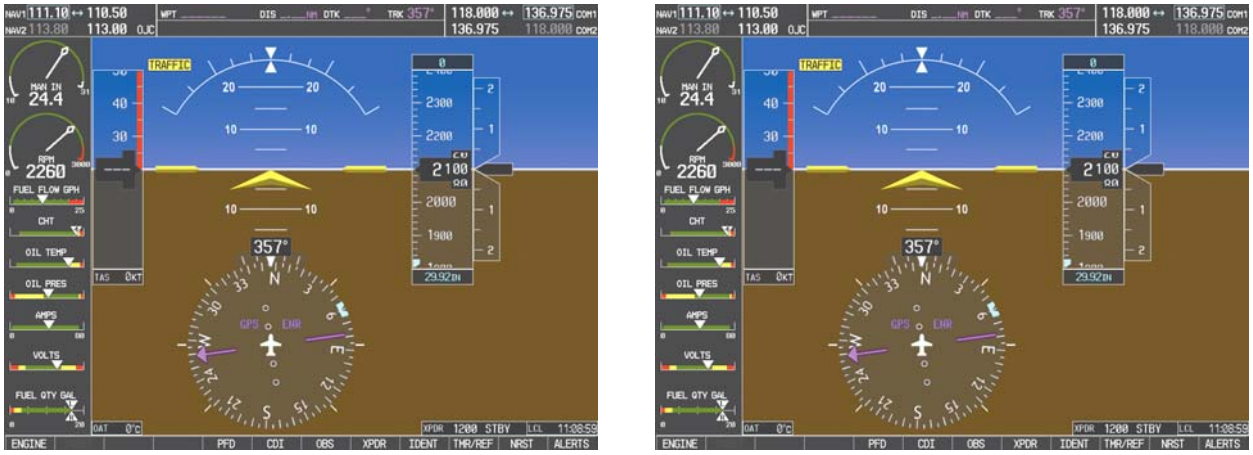


Figure 3-5. Reversionary Mode AHRS Information

3.13.5 Magnetometer Interference Test (Optional)

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 (examples include navigation lights, control servos, landing gear motors, etc). The test should be performed at the technician's discretion, either after an installation or during field maintenance and/or troubleshooting. It is generally not necessary to start the aircraft engine to run this test (in certain instances where it is suspected that the alternator or magnetos are causing magnetic interference, it may be appropriate to start the engine and turn the alternator on and then off during a portion of the test).

Figure 3-6. Magnetometer Interference Test

NOTE

This test is optional and is used to validate that no electronic device interferes with the operation of the GMU 44 magnetometer. Calibration Procedures A through C are not required prior to this procedure.

1. Initiate the AHRS magnetometer interference test procedure by performing the following steps:

2. Enter Configuration Mode and go to GRS/GMU Calibration page as shown in Figure 3-6.

3. This page is protected and requires a keystroke password to perform this test. Press the following softkeys in sequence:

   i) softkey 9

   ii) softkey 10

   iii) softkey 11

   iv) softkey 12

4. Select MAG INTERFERENCE TEST and press the ENT key.

5. Follow the checklist items displayed on the PFD, 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". Only the electronic devices that are likely to affect the operation of the GMU 44 magnetometer need be included in the test sequence. The list of relevant electronic devices will vary from aircraft to aircraft. An example of an appropriate test sequence is given Table 3-2.

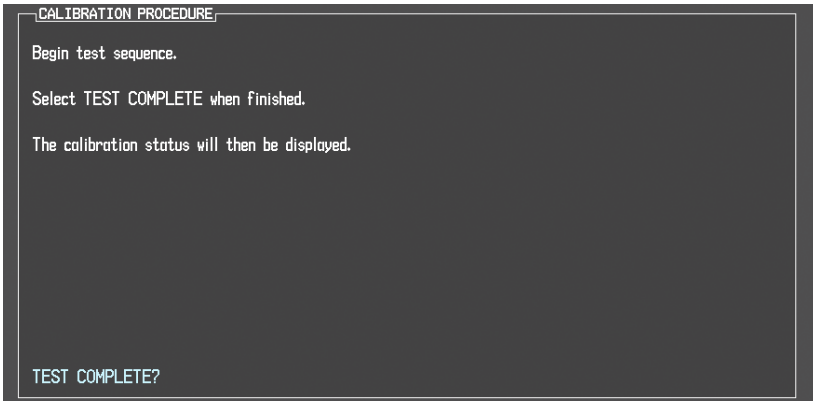
Table 3-2. Magnetometer Interference Test Sequence (Example)

Elapsed Time Since Start of Test (min:secs)	Action
0:00	Test begins
0:10	Aileron full right
0:20	Aileron full left
0:30	Aileron level
0:40	Flaps down
0:50	Flaps up
1:00	Landing gear up
1:20	Landing gear down
1:40	Speed brake up
1:50	Speed brake down
2:00	Navigation lights on
2:10	Navigation lights off
2:20	Landing lights on
2:30	Landing lights off
2:40	Taxi lights on
2:50	Taxi lights off
3:00	Landing + Taxi lights on
3:10	Landing + Taxi lights off
3:20	Strobes on
3:30	Strobes off
3:40	Recognition lights on
3:50	Recognition lights off
4:00	Turn on all wing-tip lights simultaneously (typically will include navigation lights, recognition lights and strobe)
4:10	Turn off all wing-tip lights simultaneously
4:20	Beacon on
4:30	Beacon off
4:40	Pitot heat on
4:50	Pitot heat off
5:00	End of test

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. The PFD 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. Any maximum deviation value greater than 2.5 milliGauss indicates a problem that must be resolved. 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

Two common reasons for a failed magnetometer interference test are: 1) new equipment is installed in close proximity to the GMU 44 magnetometer, and 2) 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.

3.14 Final System Checkout

The final checkout tests various secondary communications paths to ensure that the desired backup paths are in place. Perform the following steps and verify the results of each test.

Before starting, 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.

3.14.1 GPS Failure Test

Single GPS Failure Conditions: 1. Place a shroud over the GPS antenna for GIA1 to prevent signal reception. Verify loss of signal on MFD AUX page 3. 2. Check for desired results. 3. Remove shroud from the GIA1 GPS antenna. 4. Place a shroud over the GPS antenna for GIA2 to prevent signal reception. Verify loss of signal on MFD AUX page 3. 5. Check for desired results. 6. Remove shroud from the GIA2 GPS antenna.	GPS Failure – For each of the specified 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 remains valid on PFD. ✓ Press the ALERTS softkey and verify that the "AHRS1 GPS – AHRS using backup GPS source" alert is given. (GPS1 failure only)
Dual GPS Failure Conditions: 1. Cover both GPS antennas. Verify loss of signal on MFD AUX page 3. 2. Check for desired results. 3. Remove shrouds from GPS antennas. 4. Allow both receivers to re-acquire satellite signals before continuing.	Dual GPS Failure – For a dual GPS failure, the following shall occur: ✓ GPS CDI is removed ✓ HSI flags LOI on PFD, all GPS data is removed from the GPS Fields. ✓ Attitude and Heading remain valid from AHRS. ✓ Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer. ✓ GPS NAV LOST alert given (press ALERTS softkey) ✓ TAWS N/A annunciation given. When a 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. Verify that the system returns to normal navigation mode (GPS CDI restored, LOI annunciation removed, & GPS data magenta).

3.14.2 GIA Failure Test

Single GIA Failure Conditions: 1. Remove power from GIA1 by pulling GPS/NAV1 and COM1 breakers. 2. Check for desired results. 3. Restore power to GIA1. Allow GPS1 to re-acquire satellites. 4. Remove power from GIA2 by pulling GPS/NAV2 and COM2 breakers. 5. Check for desired results. 6. Restore power to GIA2. Allow GPS2 to re-acquire satellites.	GIA1 Failure – For a GIA1 failure, only the following shall flag invalid: ✓ COM1/NAV1 field (PFD & MFD). ✓ NAV1 CDI loses deviation bar (PFD only). ✓ Red AFCS status annunciation given.* ✓ "AHRS1 using backup GPS" alert given. GIA2 Power Failure – For a GIA2 failure, only the following shall flag invalid: ✓ COM2/NAV 2 field (PFD & MFD). ✓ NAV2 CDI loses deviation bar (PFD only). ✓ Red AFCS status annunciation given.* ✓ "AHRS not receiving backup GPS information" alert is given. ✓ ADF/DME windows flag invalid.*
Dual GIA Failure Conditions: 1. Remove power from both GIA units. 2. Check for desired results. 3. Restore power to both GIA units.	Dual GIA Failure – For a dual GIA failure, the following shall occur: ✓ COM1/NAV1 & COM2/NAV2 fields flag invalid. ✓ GPS CDI flags LOI on PFD, all GPS data is removed for the GPS fields. ✓ Verify that "NO GPS POSITION" appears in amber superimposed over the ownship icon on the MFD map and PFD inset map. ✓ "GPS NAV LOST" alert is given. ✓ NAV1 & NAV2 CDI loses deviation bar. ✓ XPDR field flags invalid on PFD. ✓ "XPDR 1 Fail" alert is given. ✓ Engine Instrument field flags invalid on MFD. ✓ All AHRS & ADC fields remain valid. ✓ "AHRS1 not receiving any GPS information" alert given. ✓ "GMA1 Fail" alert given. ✓ "Traffic Fail" alert given.* ✓ Red AFCS status annunciation given.* ✓ TAWS FAIL annunciation given.* ✓ ADF/DME windows flag invalid.*

*If equipped.

3.14.3 Display Failure Test

For this test, engage the autopilot by pressing the AP key on the MFD, if equipped.

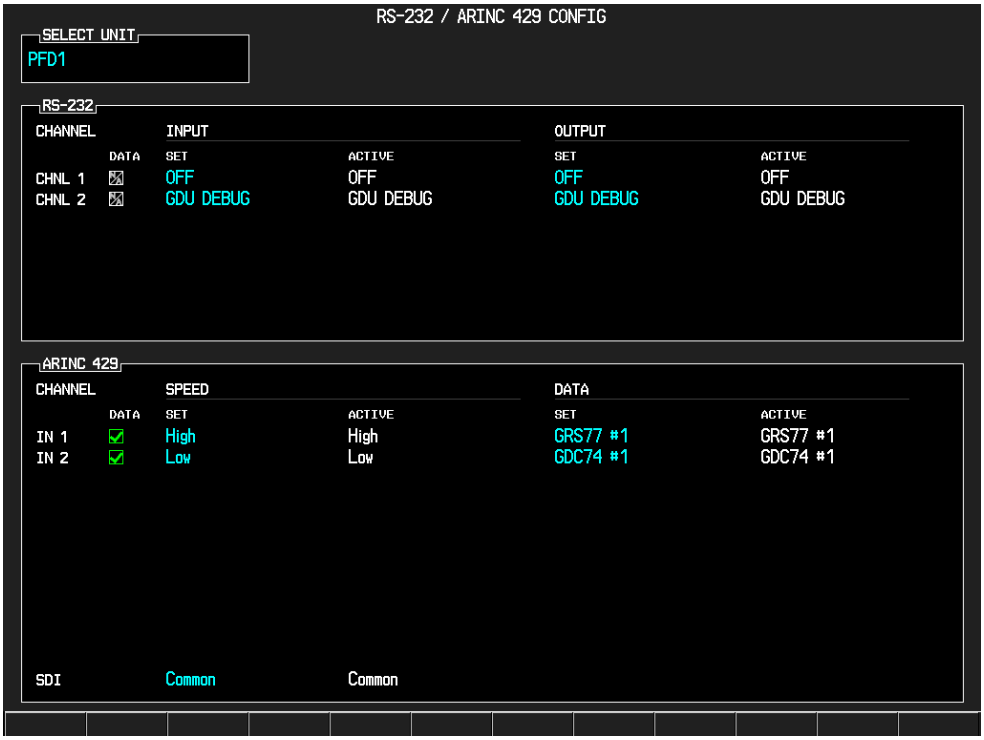
MFD Display Failure Conditions: 1. Remove power from MFD. 2. Check for desired results. 3. Restore power to MFD.	The following shall occur when power is removed from the MFD: ✓ PFD switches to reversion mode. ✓ AFCS does not disconnect.* ✓ Attitude and Heading remain valid from AHRS. ✓ Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer. ✓ Valid Engine Instrumentation appears on PFD. ✓ XPDR field remains valid on PFD. ✓ COM2/NAV2 fields flag invalid. ✓ NAV2 CDI deviation bar is removed. ✓ ADF/DME windows flag invalid.* ✓ "GDL 69 Fail" alert is given.* ✓ XTALK ERROR alert is given.
PFD Display Failure Conditions: 1. Remove power from PFD. 2. Check for desired results. 3. Replace power to PFD.	The following shall occur when power is removed from the PFD: ✓ MFD switches to reversion mode. ✓ AFCS disconnects.* ✓ Attitude and Heading remain valid from AHRS. ✓ Airspeed, Altitude, Vertical Speed, and OAT remain valid from Air Data Computer. ✓ MFD retains engine instrumentation. ✓ Valid XPDR field appears on MFD. ✓ COM1/NAV 1 fields flag invalid. ✓ NAV1 CDI deviation bar is removed. ✓ XTALK ERROR alert is given.

*If Equipped.

3.14.4 G1000 Backup Path Tests

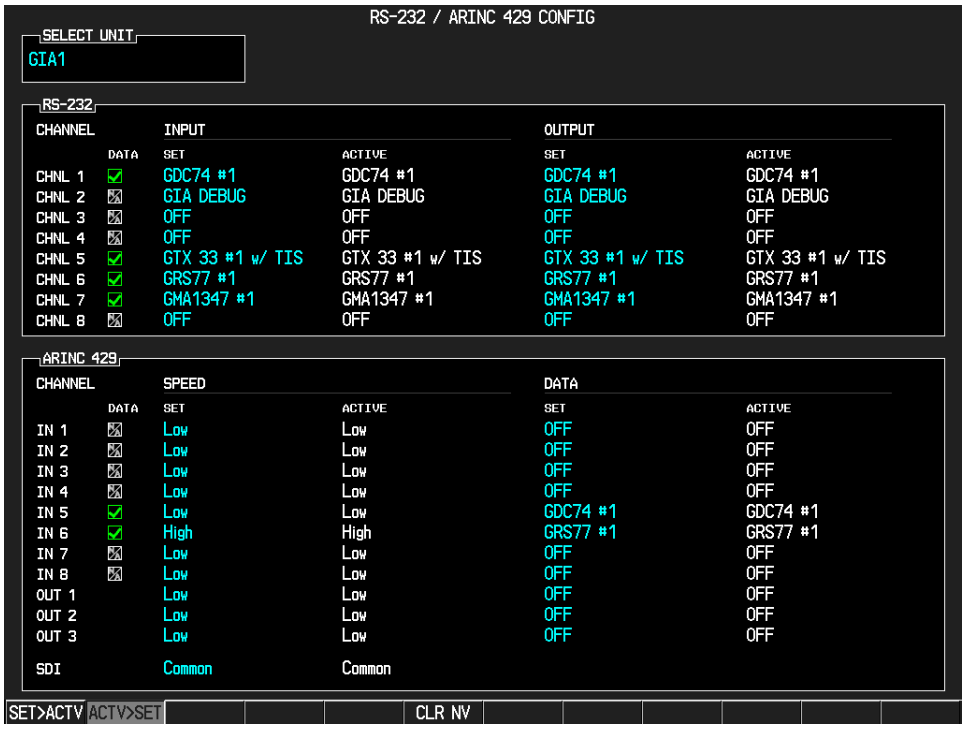
Before performing these tests, remove power from both displays by pulling the PFD and MFD circuit breakers. Reboot the PFD and MFD while holding the ENT key on each display until the words INITIALIZING SYSTEM appear.

1. In configuration mode, go to the GDU Page Group on the PFD.
2. On the GDU Page Group select the RS-232 / Arinc 429 Config page.
3. On the PFD, activate the cursor and select PFD1 in the SELECT UNIT field and press ENT.
4. Observe the GRS 77 and GDC 74 DATA indicators in the ARINC 429 window.
5. Verify all DATA indicators for configured channels have a GREEN CHECK inside the box which indicates the channels are receiving data as shown:

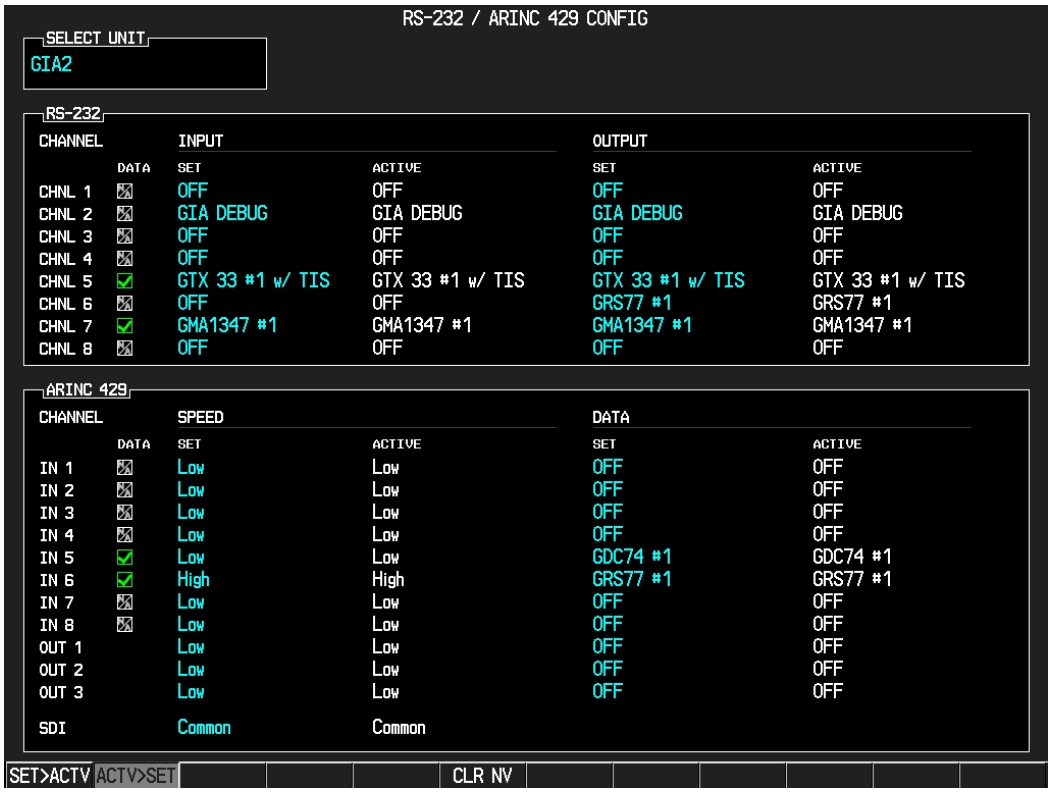


6. On the PFD, activate the cursor and select MFD1 in the SELECT UNIT field and press the ENT key.
7. Repeat Steps 3 and 4.

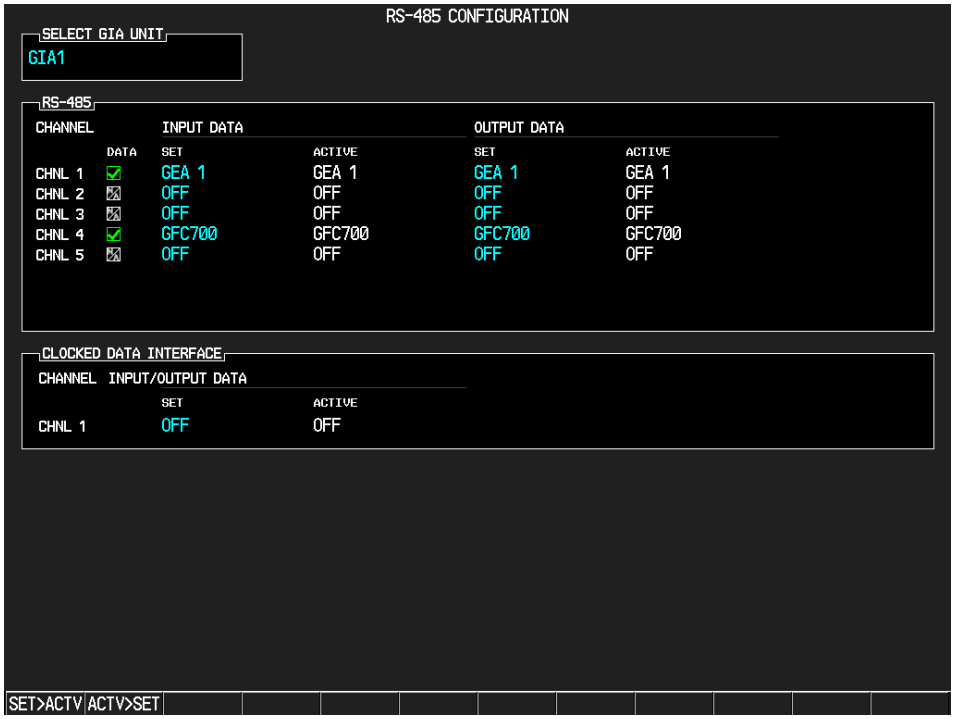
8. On the PFD, go to the GIA Page Group. Go to the RS-232 / ARINC 429 CONFIG page.
9. Verify that GIA1 is selected in the SELECT UNIT field.
10. Observe the data indicators for all configured RS-232 and ARINC 429 channels (except GIA DEBUG), including the GRS 77 and GDC 74 ARINC 429 channels.
11. Verify all DATA indicators for configured channels have a GREEN CHECK inside the box which indicates the channels are receiving data as shown:



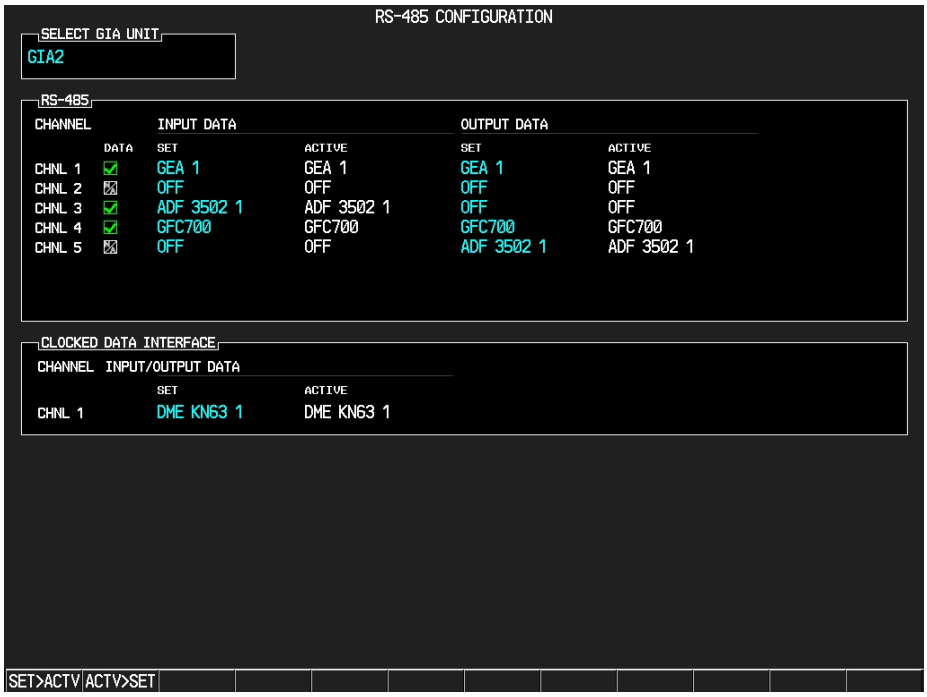
12. Activate the cursor and select GIA2 in the SELECT UNIT field, then press the ENT key.
13. Verify that GIA2 is selected in the SELECT UNIT field.
14. Observe the data indicators for all configured RS-232 and ARINC 429 channels (except GIA DEBUG), including the GRS 77 and GDC 74 ARINC 429 channels.
15. Verify all DATA indicators for configured channels have a GREEN CHECK inside the box which indicates the channels are receiving data as shown:



16. On the PFD, go to the RS-485 CONFIGURATION page in the GIA Page Group.
17. Verify that GIA1 is selected in the SELECT UNIT field.
18. Observe the data indicators for all configured RS-485 channels.
19. Verify all DATA indicators for configured channels have a GREEN CHECK inside the box which indicates the channels are receiving data as shown:



20. Activate the cursor and select GIA2 in the SELECT UNIT field, then press the ENT key.
21. Verify that GIA2 is selected in the SELECT UNIT field.
22. Observe the data indicators for all configured RS-485 channels.
23. Verify all DATA indicators for configured channels have a GREEN CHECK inside the box which indicates the channels are receiving data as shown:



24. Backup path testing is complete.

Basic ground checks of the G1000 are complete. If the aircraft being checked out is equipped with a GFC 700 autopilot, continue to Section 4 for GFC 700-related ground checks.

If the aircraft is not equipped with a GFC 700 autopilot (-3, -4, -5, or -6 STC Configuration), continue to Section 5.9 for the TAWS flight check, if equipped.

Otherwise the post-installation checkout is complete. Complete the information below. A copy of this procedure should be left with the aircraft records.

Testing Completed By:_____

(Print Name)

Signature:_____

Date:_____

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4 GFC 700 GROUND CHECKS

The following procedure will verify the proper operation of the GFC 700 AFCS. This procedure applies only to the -1 and -2 STC aircraft configurations. Non-autopilot DA40s or those equipped with KAP 140s do not need to perform this procedure.

The technician performing these checks must be thoroughly familiar with the G1000 and GFC 700 by studying the following:

- G1000/DA40 Cockpit Reference Guide, Garmin P/N 190-00324-07, -08, -09, or -10
- G1000/GFC700 in DA40 Airplane Flight Manual Supplement, Garmin P/N 190-00492-10

4.1 Pre-Flight Test

1. Power down the G1000 system using the Avionics Master, then the BAT-side aircraft master switch. If a ground power unit is being used, it too must be powered off. Wait 30 seconds then restore power to the system by applying ground power, then turning the BAT and Avionics Master switches on. The GFC 700 will begin an automatic pre-flight test after AHRS and ADC parameters become valid.
2. Verify that a white 'PFT' annunciation is displayed on the PFD, as shown in Figure 4-1.

Figure 4-1. Pre-Flight Test

NOTE:

A red AFCS (AFCS) annunciation may be displayed momentarily before PFT starts. This indicates that the Autopilot and Manual Electric Trim are not available (due to system failure, power loss, or because PFT has not been performed)

3. Upon successful completion of the test, an aural alert will sound and the annunciation will clear. For even-interval system power-up, the aural alert is generated by GIA 63 #1, whereas odd-interval system power-ups are generated GIA 63 #2.
4. Repeat Step 1 to test the PFT aural alert for the opposite GIA 63.
5. Continue to Section 4.2. (If the 'PFT' annunciation turns red, the test has failed).
6. If the aural alert is not heard, but pre-flight testing passed, engage the Autopilot by pressing the AP key and disengage the Autopilot by pressing the AP key again. Visual and aural disconnect alerting should occur. If no alert is heard, the audio interface between the GIA and audio panel should be checked.

4.2 AFCS Switch Checks

To verify that the AFCS system buttons and switches are operating correctly, perform the following checks:

1. Actuate both halves of the manual electric pitch trim switch (MEPT). The trim clutch should engage and the trim wheel should drive in the requested direction. Check operation in both directions.
2. Press the AP DISC button and hold while actuating the MEPT switch. Trim should not run and the trim wheel should rotate freely when moved manually. Release the AP DISC button.
3. Engage the Autopilot by pressing the AP key on the MFD. Press and hold the left half of the MEPT switch. The Autopilot should disengage and the trim wheel should not move automatically, but should rotate freely when moved manually.
4. Engage the Autopilot again by pressing the AP key on the MFD. The pitch and roll clutches should engage, resisting movement of the control stick. Press and hold the CWS switch. The control stick should now move freely when moved manually.
5. Release the CWS switch and press the AP DISC switch. The Autopilot should disengage with a flashing amber 'AP' annunciation on the PFD, accompanied by an aural alert. Verify that the control stick is free in pitch and roll axes.
6. Engage the Autopilot again by pressing the 'AP' key on the MFD. Pull the AFCS circuit breaker. The Autopilot should disengage, with abnormal disconnect alerting, consisting of an intermittent disconnect tone and a flashing red/white 'AP' annunciation. No AFCS annunciations (e.g. AFCS, PFT, Mistrim) should remain on the PFD. Press the A/P DISC switch to cancel the abnormal alert. Reset the AFCS breaker and watch the pre-flight test sequence again.
7. Press the GA button, on the throttle lever. 'GA' should be annunciated on the PFD for both pitch and roll modes and the command bars should indicate a wings-level climb to 7 degrees.
8. Press the FD key on the MFD to deactivate the Go Around mode, and reset the Flight Director. Press the AP key to engage the Autopilot. Press the CWS button for a few seconds and release; verifying there is no residual force on the control stick for the pitch axis. Extend the flaps to approach position. The trim wheel should immediately run in the **DOWN** direction. Now retract the flaps. The trim should immediately run in the **UP** direction.
9. Disengage the Autopilot by pressing the AP DISC switch. Now engage VS mode by pressing the VS key on the MFD. Verify the PFD display 'VS' in green and indicates a pitch reference of '0 FPM'.
10. Press the ALT key on the MFD and verify that the 'ALT' annunciation is displayed in green on the PFD with an altitude reference equal to the aircraft altitude (within the nearest 20 feet).
11. Press the FD key and verify that the mode annunciations and command bars are removed from the display.

4.3 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 MFD.
2. Apply force to the control stick to determine if the Autopilot clutches can be overpowered in pitch and roll. If the Autopilot clutches cannot be overpowered, check the servo clutch torque settings.
3. Actuate the MEPT switch in the nose down position. This causes an Autopilot disconnect and the trim will run in the nose-down direction.
4. While the trim is running, grasp the aircraft pitch trim wheel and verify that the trim clutch can be overpowered in both directions.
5. Actuate the MEPT switch in the nose up position and verify the trim clutch can be overpowered in both directions.

NOTE

If the trim clutch cannot be overpowered, check the trim servo clutch torque setting.

6. Verify also that the trim wheel moves smoothly in both directions throughout the entire trim range during MEPT switch operation.

NOTE

If the trim wheel hesitates, this may indicate that the pitch trim clutch is slipping. First verify proper clutch setting and cable tension. If both clutch setting and cable tension are within tolerance, check the aircraft pitch trim system for excessive friction.

4.4 Manual Electric Trim Speed Check

1. Run the manual electric trim in one direction until it runs against the stop.
2. Using a stop watch or equivalent device, time the trim speed from one end of travel to the opposite stop. The elapsed time should measure 17 ± 3 seconds for each direction.

4.5 Autopilot Operation Checks

1. Engage the Autopilot by pressing the AP key on the MFD. Push the HDG knob in to synchronize the heading bug to the present aircraft heading on the HSI. Select Heading mode by pressing the HDG key on the MFD. The command bars should be level and the control stick should be stationary (very slow movement acceptable, due to the aircraft not being 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 stick follows the command bars.
3. Push the CWS button and pull the control stick to the middle of the pitch control range. Release the CWS button. The Autopilot clutches should re-engage and hold the stick stationary.
4. Holding the control stick lightly, press the NOSE UP key on the MFD twice, to increase the pitch reference. The command bars should move up 1 degree and the control stick should begin moving aft. In some aircraft, the down spring may require manual assistance to get aft control stick movement.

5. Hold the control stick and press the CWS button, re-synchronizing the pitch reference and re-centering the control stick. Release the CWS button and check that servo clutches re-engage before releasing the control stick.
6. Press the NOSE DN key on the MFD twice. The command bars should command down and the control stick should begin moving forward. Hold the controls and press CWS to re-center the command bars and stop control stick movement.
7. With the Autopilot still engaged and the CWS button pressed, move the control stick to its aft limit. Release the CWS button and apply continuous forward pressure, slowly moving the control stick. After 1 or 2 seconds, the trim wheel should begin moving in a trim up direction.
8. Grip the control stick and press the CWS button. Trim motion should stop. Move the control stick to the forward limit and release the CWS button. Now slowly pull back on the control stick. After a similar delay, the trim wheel should begin to trim down. Relieve pressure on the wheel and the trim motion should stop. Check that the trim wheel is free to turn. Hold the control stick and press the AP DISC switch to disconnect the Autopilot.

The G1000 / GFC 700 configuration and ground testing is completed. The system is now ready for in-flight checks. Continue to Section 5.

5 G1000 / GFC 700 FLIGHT TEST PROCEDURE

All performance tolerances specified in the following in-flight checks assume smooth air. The pilot must be familiar with the G1000 and GFC 700 by studying the following:

- DA40/DA40F G1000 Cockpit Reference Guide, Garmin P/N 190-00324-07, -08, -09 or -10
- G1000/GFC700 in DA40 Airplane Flight Manual Supplement, Garmin P/N 190-00492-10

For aircraft with the KAP 140 or not equipped with an Autopilot (-3/-4 & -5/-6 STC Configurations) which have TAWS enabled, continue to Section 5.9.

5.1 Initial Engagement

1. Climb to a safe altitude in VFR conditions and establish 130 KIAS in straight and level flight.
2. Press the FD key on the MFD to display the Flight Director in the default 'PIT' and 'ROL' modes, 'ALTS' will be in armed mode (white annunciation). Verify that the Flight Director command bars are synchronized with the aircraft attitude at the time of Flight Director engagement.
3. Press the AP key on the MFD to engage the Autopilot. The Autopilot will hold the commanded pitch attitude within ±2° and the roll attitude within ±2°.

5.2 Vertical Speed (VS) Mode

1. Using the ALT knob on either the PFD or MFD, select an altitude 2000-ft above the aircraft's current altitude.
2. With the Autopilot engaged in straight and level flight, press the VS key on the MFD to select Vertical Speed mode. A green 'VS', green reference vertical speed (aircraft's vertical speed when the VS button was pressed), and a white 'ALTS' will be annunciated in the pitch window. Select a convenient roll mode, if desired.
3. Select 500 feet per minute using the NOSE UP key on the MFD. Monitor proper power settings to maintain safe operating airspeed.
4. The Autopilot will smoothly fly to a climb attitude and hold desired vertical speed within ± 150 feet per minute. Select a new rate and note that the Autopilot flies to and tracks the newly selected vertical speed.
5. Using the ALT knob on either the PFD or MFD, select an altitude 2000-ft below the aircraft's current altitude.
6. Select 500 feet per minute using the NOSE DN key on the MFD. Monitor proper power settings to maintain safe operating airspeed.
7. The Autopilot will smoothly fly to a descent attitude and hold desired vertical speed within ± 150 feet per minute. Select a new rate and note that the Autopilot flies to and tracks the newly selected vertical speed.
8. Disconnect Autopilot and press the FD key to remove the Flight Director command bars.

5.3 Pitch Mode (PIT) & Altitude Alerting

1. With the Autopilot disconnected, establish straight and level flight. Once established, press the AP key on the MFD to engage the Autopilot in the default pitch (PIT), roll (ROL) modes, and altitude armed (ALTS) mode.
2. Engage Heading Select mode by pressing the HDG key on the MFD. Select an altitude at least 2,000 feet higher than present altitude using the ALT knob on either the PFD or MFD.
3. Using the NOSE UP key on the MFD, set an appropriate pitch attitude to climb and adjust the power setting to maintain a safe climb speed. The Autopilot should start a climb toward the Selected Altitude.
4. At 1000 feet below the Selected Altitude, the selected altitude field will flash and change from cyan text with a black background to black text with a cyan background. An aural tone will also sound. At 200 feet below the Selected Altitude, the Selected Altitude will again flash and change back to cyan text and a black background.
5. The Autopilot will transition to the ALTS mode upon reaching the altitude capture point (provided this point is more than 50 feet away from the selected altitude). At this point the green "PIT" and the white "ALTS" will extinguish and be replaced by a green flashing "ALT" mode annunciation. "ALT" will flash for 10 seconds to indicate the transition to the new mode and then will become steady state. The altitude reference will be displayed in green to the right of "ALT". (If the initial capture point is less than 50 feet from the selected altitude, the system will not indicate "ALTS").
6. The Autopilot should level off at the Selected Altitude.
7. Repeat this procedure for a selected altitude at least 2,000 feet below the present altitude. Maintain an appropriate descent rate and airspeed while observing the selected altitude flashing, color reversal, and aural tone 1,000 feet above the selected altitude. The Selected Altitude will again flash and reverse colors at 200 feet above the Selected Altitude. The system will capture the desired altitude and transfer to the altitude hold mode with minimal overshoot.
8. Disconnect the autopilot. Initiate a climb or descent away from the Selected Altitude. When the aircraft altitude deviates 200 ft. from the Selected Altitude, the Selected Altitude will change to amber text on a black background, flash for 5 seconds then remain steady, and a single aural tone will sound.

5.4 Flight Level Change (FLC) Mode & Altitude Capture

1. Establish straight and level flight with the Autopilot engaged in Altitude Hold (ALT) mode. Synchronize the HDG bug to current aircraft heading and engage HDG mode. Select an altitude at least 1,000 feet higher than present altitude using the ALT knob on either the PFD or MFD.
2. Engage FLC mode by pressing the FLC key on the MFD. Green 'FLC', green reference speed (aircraft's airspeed when the FLC button was pressed), and "ALTS" will be annunciated in white in the pitch window on the PFD.
3. Using the NOSE UP key on the MFD, select an appropriate climb airspeed. Also, set an appropriate power setting to give the desired rate of climb.
4. The Autopilot will transition to the ALTS mode upon reaching the altitude capture point (provided this point is more than 50 feet away from the selected altitude). At this point the green "FLC" and the white "ALTS" will extinguish and be replaced by a green flashing "ALT" mode annunciation. "ALT" will flash for 10 seconds to indicate the transition to the new mode and then will become steady state. The altitude reference will be displayed in green to the right of "ALT". (If the initial capture point is less than 50 feet from the selected altitude, the system will not indicate "ALTS").

5. Repeat this procedure for a selected altitude at least 1,000 feet below the present altitude.

While climbing or descending, the system will smoothly acquire the selected airspeed and maintain that airspeed within +/- 3 knots with no oscillation. The system will capture the desired altitude and transition to the 'ALT' mode prior to the selected altitude with minimal overshoot.

5.5 Altitude Hold (ALT) Mode & Heading Select (HDG) Mode

1. Establish straight and level flight with the Autopilot engaged in Altitude Hold (ALT) mode. Synchronize the HDG bug to current aircraft heading and engage HDG mode.
2. Set the HDG bug to a 90° increase in heading. The Autopilot will bank the airplane to a bank angle that gives a standard rate turn up to an angle of 22° ± 2°. The airplane will roll out on the selected heading with minimal overshoot.
3. Repeat the test using a 90° decrease in selected heading. During this test, altitude should remain within ± 50 ft of the altitude reference.
4. Allow the system to fly in altitude hold mode for 5 minutes. The aircraft's altitude should remain within ± 50 ft. with no regular or cyclical oscillations.

5.6 Overspeed Protection Mode

1. Establish the airplane in straight and level flight at a safe altitude. Engage the autopilot in a convenient roll mode and Vertical Speed mode.
2. Select a Vertical Speed reference and power setting to cause a descent that would exceed 165 KIAS. As the airspeed approaches 165 KIAS, the system is designed to enter overspeed protection mode and maintain 165 KIAS with minimal overshoot. Overspeed protection mode is annunciated by flashing "MAXSPD" in yellow and black. This annunciation is located above the airspeed tape.
3. Reduce power and decrease the vertical speed reference to a lower rate of descent to exit overspeed protection mode and return to Vertical Speed mode.

5.7 VNAV Mode

NOTE

This procedure does not apply to installations not equipped with the GDU 1044 MFD.

1. Establish the airplane in straight and level flight at a safe altitude. Engage the autopilot in a convenient roll mode and ALT hold mode.
2. Choose a lateral waypoint such as an intersection, airport, or navaid approximately 20 nm ahead of the airplane. Set a vertical constraint 3000 ft below the aircraft's current altitude.
3. When less than 5 minutes prior to top of descent, push the VNV button to arm VPTH. Set altitude preselect below the altitude constraint. "VPTH" will be annunciated in white on the PFD.
4. At 1 minute prior to top of descent, the aural message "Vertical Track" will be played.
5. At the top of descent point, the system will transition to "VPTH" mode. At this point the green "ALT" will extinguish and be replaced by a green "VPTH" which will flash for 10 seconds to indicate the transition to the new mode. "ALTS" will be annunciated in white. The aircraft will descend along the vertical path with no regular or cyclical oscillations.

6. Prior to reaching the altitude constraint, the system will transition to ALTS mode. At this point the green "VPTH" will extinguish and be replaced by a green "ALTS". At 50 feet prior to the vertical constraint, ALTS will be replaced by ALT. ALT will flash for approximately 10 seconds to indicate the transition to the new mode and the reference altitude will be displayed in green to the right of "ALT". (If the initial capture point is less than 50 feet from the VNAV altitude constraint, the system will not indicate "ALTV").

5.8 NAV Modes

Follow the procedures below to verify the proper operation of the navigation modes. Note that the Autopilot can track a VHF NAV or GPS. The navigation sensor currently displayed on the HSI dictates the NAV source that will be tracked by the Autopilot.

5.8.1 NAV (GPS) MODE

1. Engage the Autopilot in Heading Select and Altitude Hold modes.
2. Select 'GPS' as the NAV sensor displayed on the HSI. With the G1000 FMS, enter a Direct-To to a GPS waypoint.
3. Press the NAV key on the MFD. "GPS" annunciates in green on the PFD AFCS Status Bar. The Autopilot will turn as required to track the course to the selected waypoint with minimal offset and no oscillations.

5.8.2 NAV (VOR) Mode

1. Tune a VOR station at approximately a twenty-mile distance, and select the appropriate nav sensor to display on the HSI.
2. Center the course by pushing the CRS knob on either the PFD or MFD. Then increase or decrease the course selected by ten degrees.
3. Engage Heading Select and Altitude Hold modes and set up an intercept angle of 30° to 60° using the heading bug on the HSI.
4. Arm the NAV mode by pressing the NAV key on the MFD. "VOR" will appear in white to the left of the active "HDG" mode.
5. The system will fly in HDG mode until the proper intercept point is reached, where it will automatically switch from HDG, with VOR armed, to VOR coupled. At this point the green "HDG" mode indication will extinguish and a green "VOR" mode indication will appear and flash for 10 seconds to indicate the transition to the new mode.
6. When NAV mode is coupled, the system will bank the airplane up to the necessary bank angle to turn on to the radial with minimal overshoot. Allow the system to track the radial for five minutes. The system will command the airplane along the selected course with no large steering maneuvers or oscillations.

5.8.3 NAV (BC) and APR (ILS) Modes

1. Establish the airplane in the approach configuration. Tune the ILS frequency for the ILS approach to be flown and select the appropriate NAV mode on the HSI. While approaching the ILS outbound course in Heading Select and Altitude Hold modes, verify that the course pointer is set to the published inbound approach course. Set up an intercept angle of 45° to the outbound course.
2. Press the NAV key on the MFD prior to intercepting the localizer to arm the backcourse mode. The "BC" annunciation will illuminate in white on the PFD. The system will capture and track the localizer outbound. (Some overshoot may occur if the angle is too sharp, ground speed is excessive, or the capture is made extremely close to the runway. At the point of capture, the "BC" annunciation will change to green and will flash for 10 seconds to indicate the transition to the new mode. While on the localizer outbound, descend to the desired altitude by using either the Pitch Hold, Vertical Speed, or Flight Level Change modes.
3. Ensure Altitude Hold is engaged when the desired altitude is reached. Set the heading bug to the procedure-turn heading and press the HDG key on the MFD. The airplane will turn to the procedure-turn outbound heading. Use the Heading mode to complete the procedure-turn.
4. When the airplane is within 105° of the inbound course, press the APR key on the MFD. This will cause "LOC" to annunciate in white, to the left of "HDG", "GS" will annunciate in white to the right of the reference altitude.
5. With the Approach mode armed, set up a 45° intercept angle using the Heading mode. When the proper capture point is reached, the system will automatically transfer from HDG and LOC armed to LOC mode and turn on to the inbound localizer. "LOC" will change to green and flash for 10 seconds to indicate the transition to the new mode.
6. As the airplane flies into the glideslope, the system will automatically transfer from Altitude Hold to Glideslope mode, and the "GS" annunciation will change to green and flash for 10 seconds. The Autopilot will track the Localizer and Glideslope guidance with minimal offsets and with no oscillations.
7. Set the heading bug to the go around heading. When desired, engage the Go Around mode by pressing the GA button above the throttle. The Flight Director command bars will give a wings level pitch up command of 7°, and the Autopilot will disconnect. The PFD will annunciate "GA" in green as both the active pitch and roll modes, and 'ALTS' will be annunciated in white in the pitch window.

5.8.4 APR (VOR) Mode

1. Tune the VOR station and select the appropriate NAV mode on the HSI. Using the published VOR approach information, set the course selector on the HSI to the inbound course.
2. Use the Heading Select and Altitude Hold modes to set up 45° intercept of the selected VOR radial. Arm the Approach mode by pressing the APR key while the deviation is still full scale. This will cause "VAPP" to be annunciated in white to the left of "HDG".
3. When the proper intercept point is reached, the system will go from HDG and VAPP armed to VAPP mode. At this point "VAPP" will change to green and flash for 10 seconds to indicate the transition to the new mode.
4. Use the Pitch Hold, Vertical Speed, or Flight Level Change mode to maintain the desired descent path while on the approach. The Autopilot should capture and track the selected course with minimal overshoot, minimal offset and no oscillations.

5.9 TAWS 'FIVE HUNDRED' Call-out (if TAWS is activated)

1. Establish the airplane in straight and level flight at a safe altitude greater than 700 feet AGL (GPS altitude).
2. Commence an approach to landing when appropriate.
3. During approach, verify that the 'FIVE HUNDRED' voice call-out is issued at approximately 500 feet AGL (GPS altitude).

Post-installation procedures are now completed.

Complete the information below. A copy of this procedure should be left with the aircraft records.

Testing Completed By:_____

(Print Name)

Signature:_____

Date:_____