

SERVICE INFORMATION NO. SI D4-041

NOTE: SI's are used **only**:

- 1) To distribute information from DAI to our customers.
- 2) To distribute applicable information / documents from our suppliers to our customers with additional information.

Typically there is no revision service for SI's. Each new information or change of that will be send along with a new SI.

I. TECHNICAL DETAILS

1.1 Airplanes affected:

All DA 40 D aircraft equipped with the G1000 integrated avionics system

1.2 Subject:

Garmin G1000 System Software Version Update
ATA-Code: 34-00

1.3 Reason:

Garmin has issued a new Service Bulletin regarding the G1000 which is installed in some DA 40 D aircraft.

1.4 Information:

For detailed technical information see Garmin Service Bulletin which is applicable without any further additions or restrictions.

II. OTHERS

The Mandatory Service Bulletin No.: 0540 of Garmin is attached to this SI.

In case of doubt contact Diamond Aircraft Industries.



****MANDATORY****

SOFTWARE SERVICE BULLETIN

NO.: 0540

TO: All Garmin Aviation Service Centers

DATE: 24 October 2005

SUBJECT: G1000 System Software Version Update for G1000-equipped Diamond DA42 and DA40D Aircraft

PURPOSE

This G1000 Software Service Bulletin announces the availability of G1000 System Software Version 0370.13, for Diamond DA42 and G1000-equipped DA40D aircraft.

DESCRIPTION

This software service bulletin provides information required to update G1000-equipped Diamond DA42 and DA40D aircraft with the new system software version.

APPROVAL

The engineering data contained in this software service bulletin are FAA approved. This bulletin does not provide installation authorization.

AFMS AND PILOT'S GUIDE CONSIDERATIONS

Flight Manual documentation as required per Diamond Aircraft

The following documents describe operation of the Garmin G1000 with system software version 0370.13:

Garmin Part Number	Document Title
K00-00138-02	G1000 Pilot's Guide for the Diamond DA42
190-00406-03	G1000 Cockpit Reference Guide for the Diamond DA42

PRODUCT AFFECTED

All Diamond DA42 and DA40D aircraft equipped with a Garmin G1000 system and with system software version prior to 0370.13.

COMPLIANCE

MANDATORY for all product affected

REFERENCES

Garmin G1000 Line Maintenance and Configuration Manual, P/N 190-00303-04, Revision B or later.

The referenced documents are available from www.garmin.com, within the Dealer section of the web site.

MANPOWER

This Software Service Bulletin requires a maximum of one (1.0) hour labor including testing and return-to-service.

WARRANTY INFORMATION

This modification is warranty reimbursable for the manpower listed above. When completing the Garmin warranty claim, be sure to include the aircraft serial number, the aircraft registration number, and clearly indicate that this software service bulletin has been complied with, to ensure proper reimbursement.

MODIFICATION INSTRUCTIONS

1. INTRODUCTION

1.1. Scope

These instructions present field upgrade procedures for G1000-equipped Diamond Model DA42 and DA40D aircraft, which must be followed in order to upgrade an existing approved configuration of the system software to a newer approved configuration.

It is assumed that the person performing the upgrade is familiar with the aircraft and has a working knowledge of typical avionics systems.

****NOTE****

Instructions contained in this document are written specifically for upgrades to existing G1000 installations. This document is not intended for the accomplishment of new or retrofit G1000 installations.

1.2. System and Equipment Identification

- ❑ Verify what optional interface equipment exists (if any) on the airframe for configuration per Section 3.2 of this bulletin.

- To identify what G1000 System Software version is installed, do the steps that follow:
1. In the aircraft, turn the aircraft MASTER switch on.
 2. Look at the MFD power-up screen (see following figure). In the upper right corner, the display shows 'Diamond DA4X System XXXX.XX' .



3. This 'System' number is the System Software Version. It correlates to the G1000 SW Loader Card used to load the software to the system. For example:

EXAMPLE:

System Software Version '**0370.13**' = Loader Card P/N 010-**00370-13**

If the System Software Version is already at 0370.13, this Software Service Bulletin may have already been performed, proceed to the Testing Procedure section of this bulletin.

1.3. Required Materials & Equipment:

****NOTE****

Make sure that all of the required materials and equipment are on hand before you begin the upgrade procedure.

- ❑ A ground power unit capable of supplying 28 VDC power to the aircraft systems and avionics
- ❑ Valid GPS Satellite signal sufficient to obtain a 3-dimensional GPS position (fix)
- ❑ G1000, DA42/DA40D Software Loader Card, P/N 010-00370-13

2. G1000 Software Upgrade Procedure

****NOTE****

All G1000 screen shots used in this document 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. Please refer to the table in the Additional Information section of this document to verify the software part number and version for each LRU.

2.1. System Power Up

Do the steps that follow to apply power to the G1000

1. Turn on the ground power unit, if used.
2. Turn on the battery switch.
3. Turn on the AVIONICS MASTER switch. At this moment, all G1000 equipment is receiving power. For convenience, the technician may opt remove power from the KAP 140, rate and backup-attitude gyros by pulling the circuit breakers labeled 'AP', 'HORIZON', and 'RATE GYRO'.

2.2. MFD & PFD Software Load

1. Disengage the MFD and PFD circuit breakers.
2. Insert the correct G1000 Loader Card into the MFD top card slot (located on the MFD).
3. While holding the ENT key on the MFD, engage the MFD circuit breaker.
4. When the words **INITIALIZING SYSTEM** appear in the upper left corner of the MFD, release the ENT key.
5. Press the ENT key to acknowledge the following prompt (NOTE: A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key):

**DO YOU WANT TO UPDATE SYSTEM FILES?
PRESS CLR FOR NO AND ENT FOR YES
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED**

6. The following screen is displayed.

```
DO YOU WANT TO UPDATE SYSTEM FILES?  
PRESS CLR FOR NO AND ENT FOR YES  
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED  
UPDATING SYSTEM FILES. DO NOT TURN OFF POWER !!!  
THIS MAY TAKE UP TO 10 MINUTES
```

7. New software is loaded to the MFD. When complete, the MFD starts in configuration mode.
8. Remove the G1000 Loader Card from the MFD and insert it into the top card slot on the PFD.
9. While holding the ENT key on the PFD, engage the PFD circuit breaker.
10. When the words **INITIALIZING SYSTEM** appear in the upper left corner of the PFD, release the ENT key.
11. Press the ENT key to acknowledge the following prompt (NOTE: A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key):

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

12. The following screen is displayed.

```
DO YOU WANT TO UPDATE SYSTEM FILES?  
PRESS CLR FOR NO AND ENT FOR YES  
YOU HAVE 30 SECONDS BEFORE NO IS RETURNED  
UPDATING SYSTEM FILES. DO NOT TURN OFF POWER !!!  
THIS MAY TAKE UP TO 10 MINUTES
```

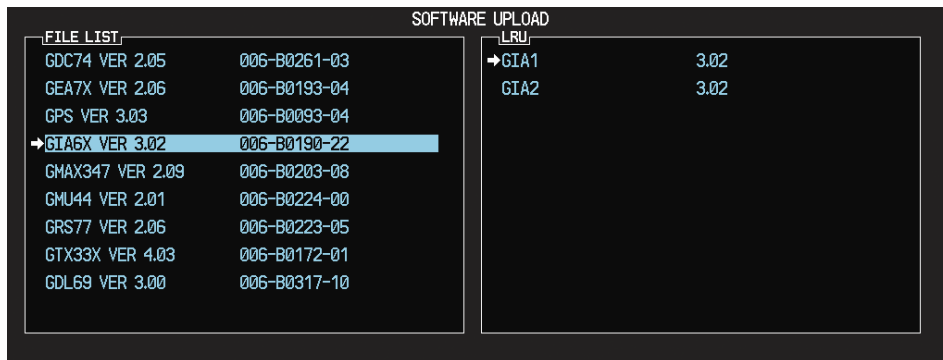
13. New software is loaded to the PFD. When complete, the PFD starts in configuration mode.
14. When PFD update is complete, it starts in the configuration mode. Do not remove power.

****NOTE****

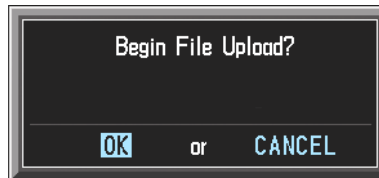
For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.

2.3. GIA Software Load

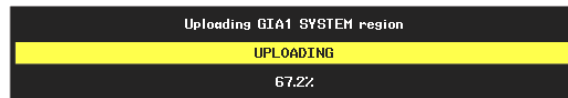
1. Go to the Software Upload page using the small FMS knob.
2. Activate the cursor and select the GIA software file. Verify that GIA1 and GIA2 appear in the LRU field as shown:



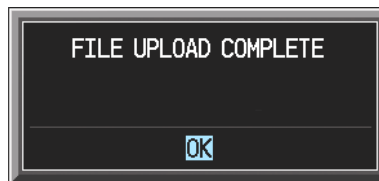
3. Press the LOAD softkey.
4. Select OK and press ENT to acknowledge the following prompt:



5. The software for GIA1 begins to load. GIA2 software loads immediately after GIA1 software finishes loading. Monitor the upload status as it progresses:



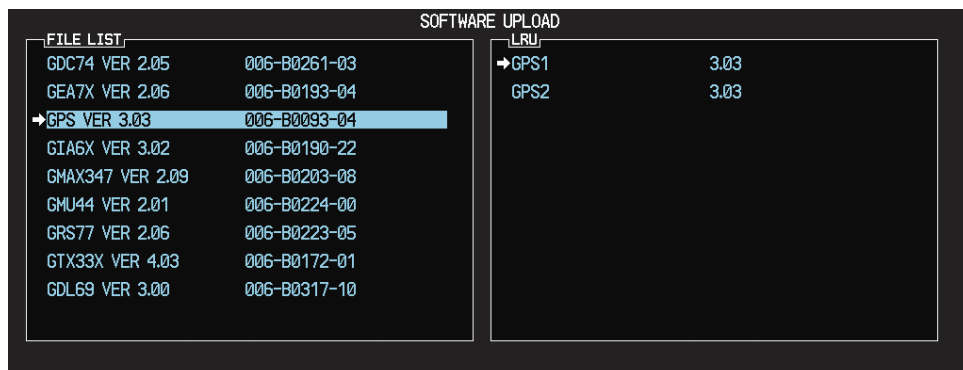
6. After the files finish loading, press ENT to acknowledge the following prompt:



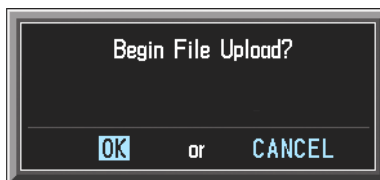
7. View the SUMMARY field and verify that both GIA1 and GIA2 software loading is complete.

2.4. GPS Software Load

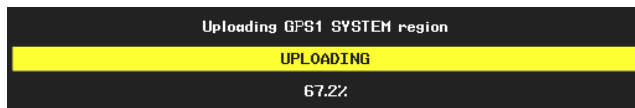
1. Activate the cursor and Select the GPS software file. Make sure that GPS1 and GPS2 appear in the LRU field as shown:



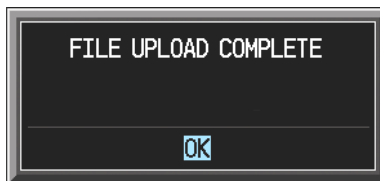
2. Press the LOAD softkey.
3. Select OK and press ENT to acknowledge the following prompt:



4. The software for GPS1 begins to load. GPS2 software loads immediately after GPS1 software finishes loading. Monitor the upload status as it progresses:



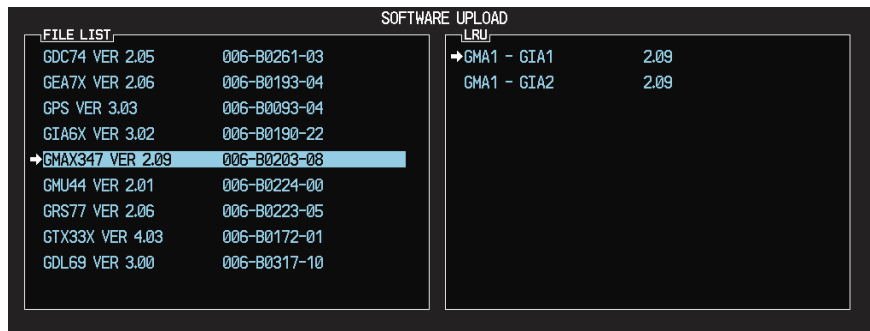
5. After the files finish loading, press ENT to acknowledge the following prompt:



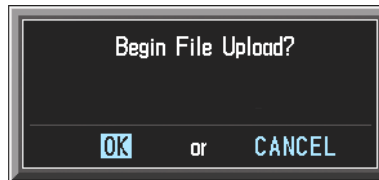
6. View the SUMMARY field and verify that both GPS1 and GPS2 software loading is complete.

2.5. GMA 1347 Audio Panel Software

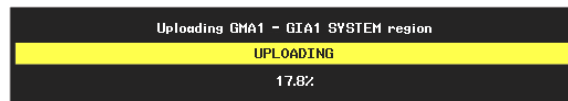
1. Activate the cursor and highlight the GMA software file. Make sure that both paths to the GMA through GIA1 and GIA 2 appear in the LRU field as shown:



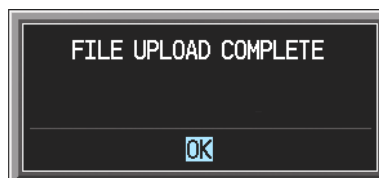
2. Press the LRU softkey. Select the GMA1 - GIA1 data path to load software. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GMA 1347 Audio Panel begins to load. Monitor the upload status as it progresses:



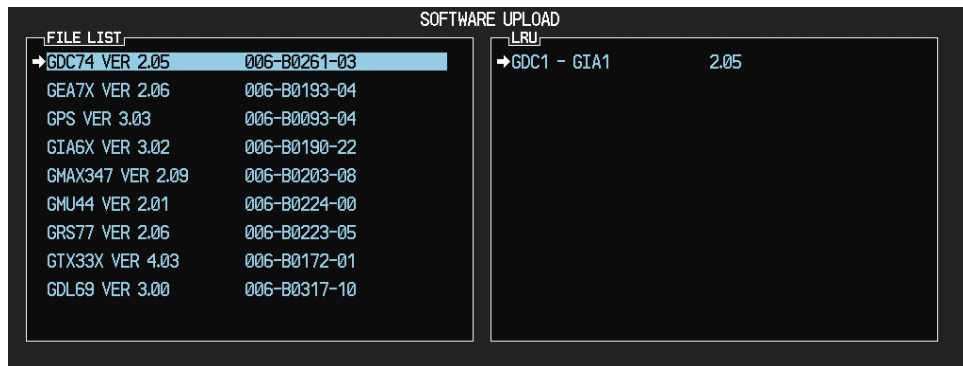
5. After the files finish loading, press ENT to acknowledge the following prompt:



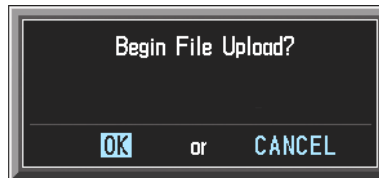
6. Check the SUMMARY field to Make sure the load is 'COMPLETE'.

2.6. GDC 74A Air Data Computer Software

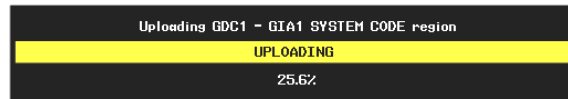
1. Highlight the GDC software file. Make sure that GDC to GIA data path appears in the LRU field as shown:



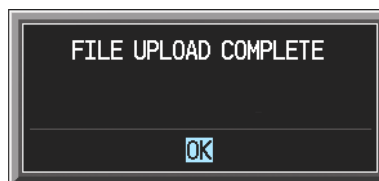
2. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GDC 74A Air Data Computer begins to load. There are two files that load to the GDC 74A: "System Code" and "FPGA". These load one after the other, automatically. Monitor the upload status as it progresses:



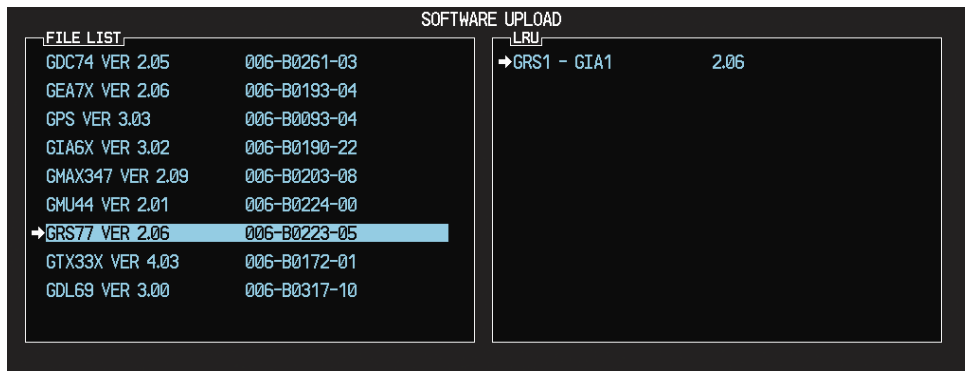
5. After the files finish loading, press ENT to acknowledge the following prompt:



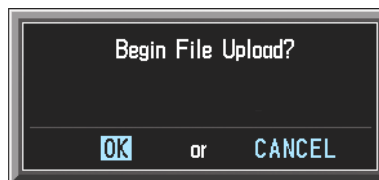
6. Check the SUMMARY field to make sure that both the System Code Region and the FPGA loads are 'COMPLETE'.

2.7. GRS 77 AHRS Software

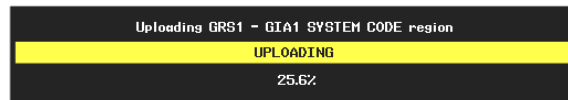
1. Highlight the GRS software file. Make sure that the GRS to GIA data path appears in the LRU field as shown:



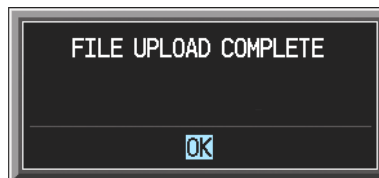
2. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GRS 77AHRS begins to load. There are two files that load to the GRS 77: "System Code" and "FPGA". These load one after the other, automatically. Monitor the upload status as it progresses:



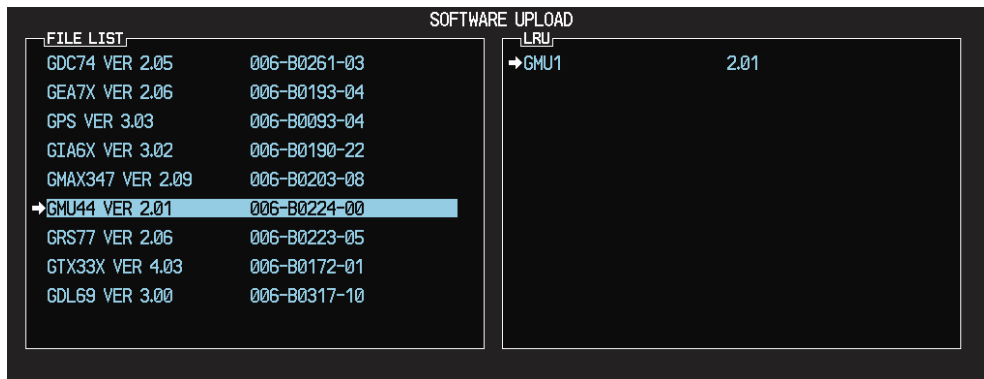
5. After the files finish loading, press the ENT key to acknowledge the following prompt:



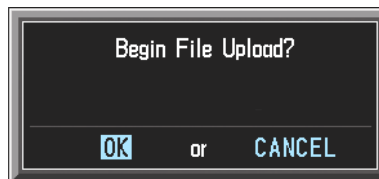
6. Check the SUMMARY field to make sure that both the System Code Region and the FPGA loads are 'COMPLETE'.

2.8. GMU 44 Magnetometer Software

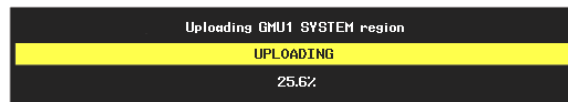
1. Highlight the GMU software file. Make sure that GMU1 appears in the LRU field as shown:



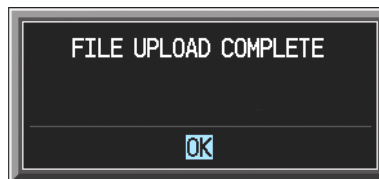
2. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GMU 44 begins to load. There are two files that load to the GMU 44: "System Code" and "FPGA". These load one after the other, automatically. Monitor the upload status as it progresses:



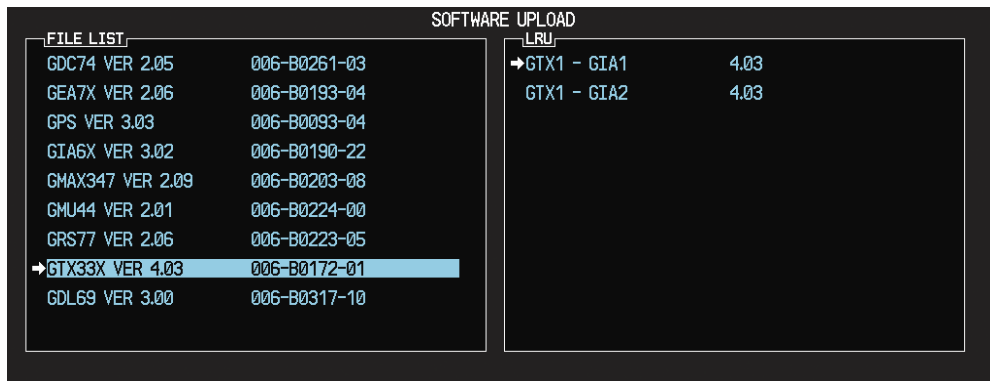
5. After the files finish loading, press the ENT key to acknowledge the following prompt:



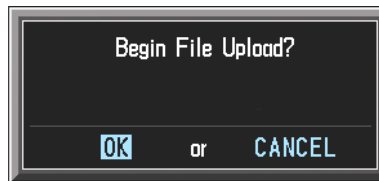
6. Check the SUMMARY field to make sure that both the System Code Region and the FPGA loads are 'COMPLETE'.

2.9. GTX 33 Transponder Software

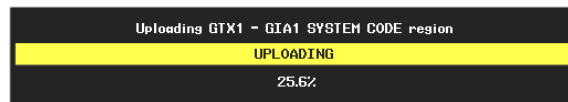
1. Highlight the GTX software file. Make sure that both paths to the GTX 33 through GIA1 and GIA 2 appear in the LRU field as shown:



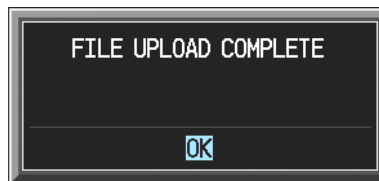
2. Press the LRU softkey. Select the GTX1 - GIA1 data path to load software. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GTX 33 transponder begins to load. Monitor the upload status as it progresses:



5. After the files finish loading, press ENT to acknowledge the following prompt:



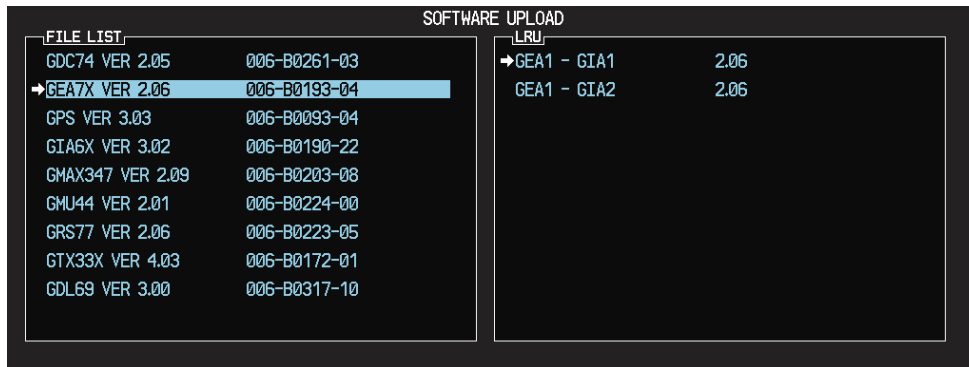
6. Check the SUMMARY field to make sure the load is 'COMPLETE'.

****NOTE****

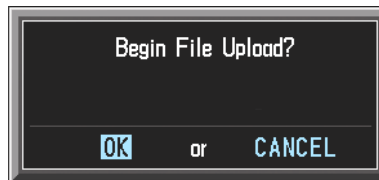
The GDL69 SW that appears in the file list shown in the following screenshot is not loaded per this procedure, it is to be disregarded.

2.10. GEA 71 Engine/Airframe Unit Software

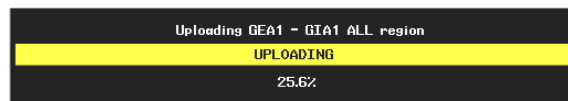
1. Highlight the GEA software file. Make sure that both paths to the GEA 71 through GIA1 and GIA 2 appear in the LRU field as shown:



2. Press the LRU softkey. Select the GEA - GIA1 data path to load software. Press the LOAD softkey.
3. Select OK and press the ENT key to acknowledge the following prompt:



4. The software for the GEA 71 Engine/Airframe Unit begins to load. Monitor the upload status as it progresses:



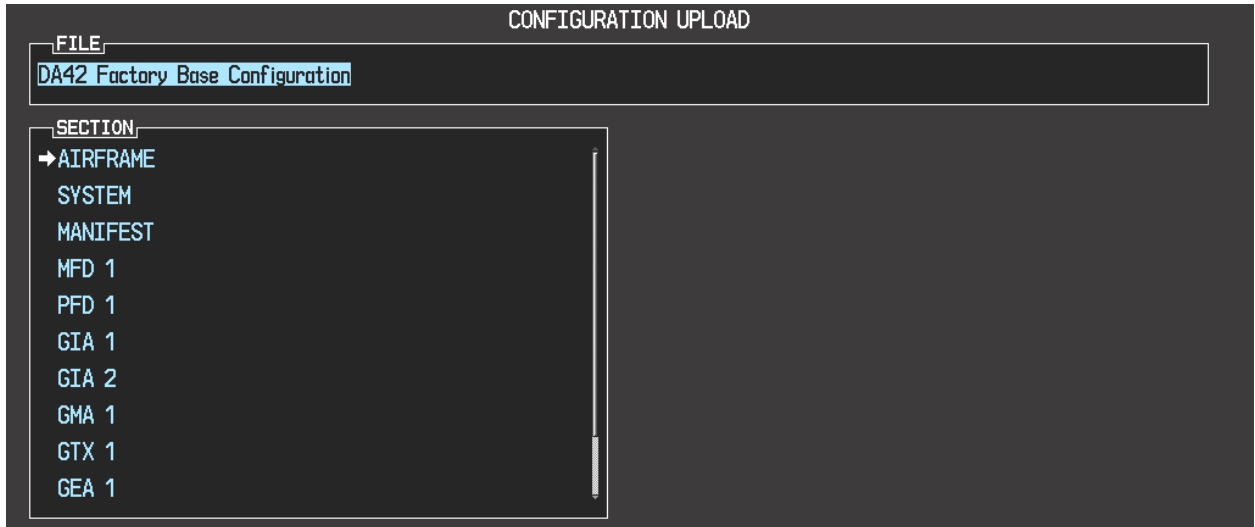
5. After the files finish loading, press ENT to acknowledge the following prompt:



6. Check the SUMMARY field to make sure the all software loads are 'COMPLETE'.
7. De-activate the cursor.

3. Configuration File Upgrade

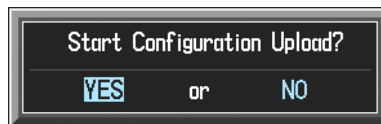
3.1. Initial G1000 Configuration



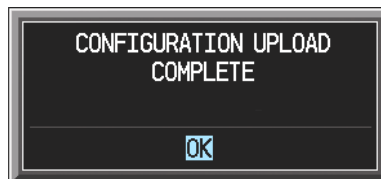
1. Go to the Configuration Upload page using the FMS knob.
2. Activate cursor and rotate the FMS knob once to activate the FILE menu.
3. For DA42 Aircraft:
 - a) Select '**DA42 Factory Base Configuration**' and press ENT.

For DA40D Aircraft:

- a) Select '**DA40 D Factory Base Configuration**' and press ENT.
4. Press the LOAD ALL softkey.
 5. Select YES and press the ENT key to acknowledge the following prompt:



6. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



7. View the SUMMARY field and make sure that all items are 'complete', then de-activate the cursor.

3.2. Final Configuration Items

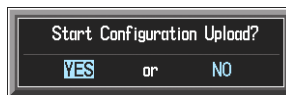
3.2.1. Optional Equipment Configuration

3.2.1.1. DA42 Option – Aux Fuel Tanks

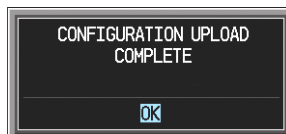
If the DA42 aircraft being check out is equipped with auxiliary fuel tanks, follow this procedure to configure the G1000. If the DA42 is not equipped with this option, this procedure may be skipped.



1. Go to the Configuration Upload page using the FMS knob.
2. Activate cursor and rotate the FMS knob once to activate the FILE menu.
3. Select '**DA42 Aux Fuel Tanks Option**' and press ENT.
4. Press the LOAD ALL softkey.
5. Select YES and press ENT to acknowledge the following prompt:



6. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



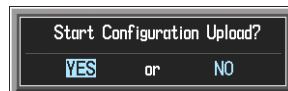
7. View the SUMMARY field and make sure that all items are 'complete':

3.2.1.2. DA42/DA40D Option – ADF

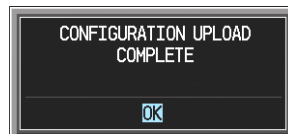
If the DA42 or DA40D aircraft being updated is equipped with the Becker model RA3502 ADF, follow this procedure to configure the G1000. If the aircraft is not equipped with this option, this procedure **MUST** be skipped.



1. Go to the Configuration Upload page using the FMS knob.
2. Activate cursor and rotate the small FMS knob once to activate the FILE menu.
3. Select '**DA42/DA40D ADF Option**' and press ENT.
4. Press the LOAD ALL softkey.
5. Select YES and press ENT to acknowledge the following prompt:



6. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



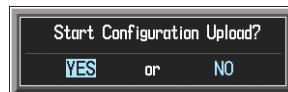
7. View the SUMMARY field and make sure that all items are 'complete'.

3.2.1.3. DA42 Option –Deicing

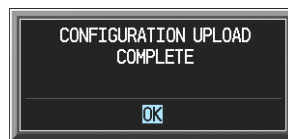
If the DA42 aircraft being updated is equipped with Deicing , follow this procedure to configure the G1000. If the DA42 is not equipped with this option, this procedure **MUST** be skipped.



8. Go to the Configuration Upload page using the FMS knob.
9. Activate cursor and rotate the small FMS knob once to activate the FILE menu.
10. Select '**DA42 Deicing Option**' and press ENT.
11. Press the LOAD ALL softkey.
12. Select YES and press ENT to acknowledge the following prompt:



13. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



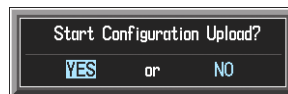
14. View the SUMMARY field and make sure that all items are 'complete'.

3.2.1.4. DA 42/DA40D Option - DME

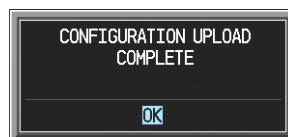
If the DA42 or DA40D aircraft being updated is equipped with the Honeywell model KN63 DME, follow this procedure to configure the G1000. If the aircraft is not equipped with this option, this procedure **MUST** be skipped.



1. Go to the Configuration Upload page using the FMS knob.
2. Activate cursor and rotate the small FMS knob once to activate the FILE menu.
3. Select '**DA42/DA40D DME Option**' and press ENT.
4. Press the LOAD ALL softkey.
5. Select YES and press ENT to acknowledge the following prompt:



6. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



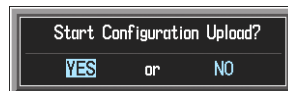
7. View the SUMMARY field and make sure that all items are 'complete'.

3.2.1.5. DA42/DA40D Option - Stormscope

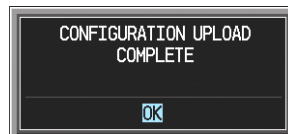
If the DA42 or DA40D aircraft being updated is equipped with a Stormscope, follow this procedure to configure the G1000. If the aircraft is not equipped with this option, this procedure **MUST** be skipped.



1. Go to the Configuration Upload page using the FMS knob.
2. Activate cursor and rotate the small FMS knob once to activate the FILE menu.
3. Select '**DA42/DA40D Stormscope Option**' and press ENT.
4. Press the LOAD ALL softkey.
5. Select YES and press ENT to acknowledge the following prompt:



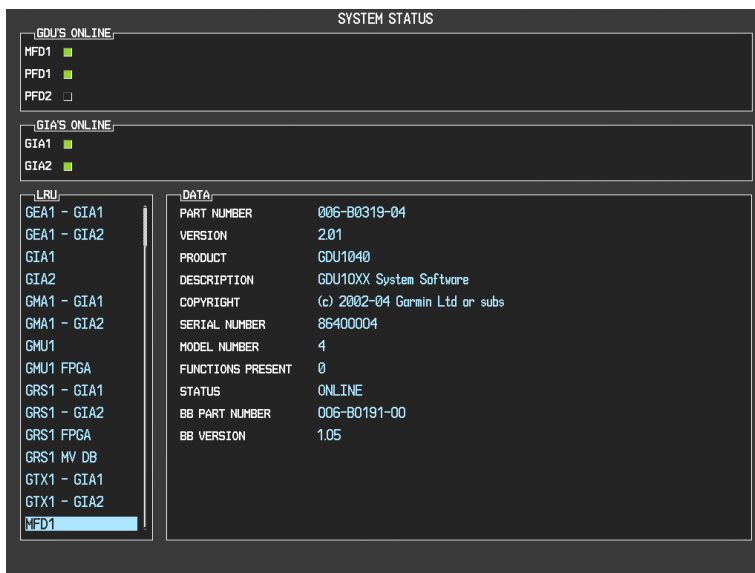
6. Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the following confirmation:



7. View the SUMMARY field and make sure that all items are 'complete'.

4. TESTING PROCEDURE

4.1. Software Load Confirmation



1. Go to the System Status page using the small FMS knob. Activate the cursor and toggle to the LRU window.
2. Highlight each of the following items in the LRU window, and verify that the software part number and version matches the table in the Additional Information section of this document.

LRU	SW VER & P/N OK	LRU	SW VER & P/N OK
PFD1	_____	GTX1 – GIA1	_____
MFD1	_____	GEA1 – GIA1	_____
GIA1	_____	GDC1 – GIA1	_____
GIA2	_____	GDC1 FPGA	_____
GPS1	_____	GMA1 – GIA1	_____
GPS2	_____	GMU1	_____
GRS1 – GIA1	_____	GMU1 FPGA	_____
GRS1 FPGA	_____	GDL 69	_____

3. De-activate the cursor.

****NOTE****

If any software version and/or part number does not match those specified by the table in the Additional Information section of this document t, or if the software is not successfully loaded, DO NOT continue with post-installation procedures. Troubleshoot and resolve the issue (refer to the G1000 Line Maintenance and Configuration Manual P/N 190-00303-04) before continuing.

4.2. Software Operational Test

Remove the G1000 Loader Card from the PFD and set it aside.

The G1000 system is tested while operating in the normal mode. Restart the PFD by cycling the PFD circuit breaker to start the display in the normal mode. Cycle power to the MFD in the same manner.

1. Look at the MFD power-up screen. In the upper right corner, the display shows 'Diamond DA4X System XXXX.XX':



2. This 'System' number is the System Software Version. It correlates to the G1000 SW Loader Card used to load the software to the system:

EXAMPLE:

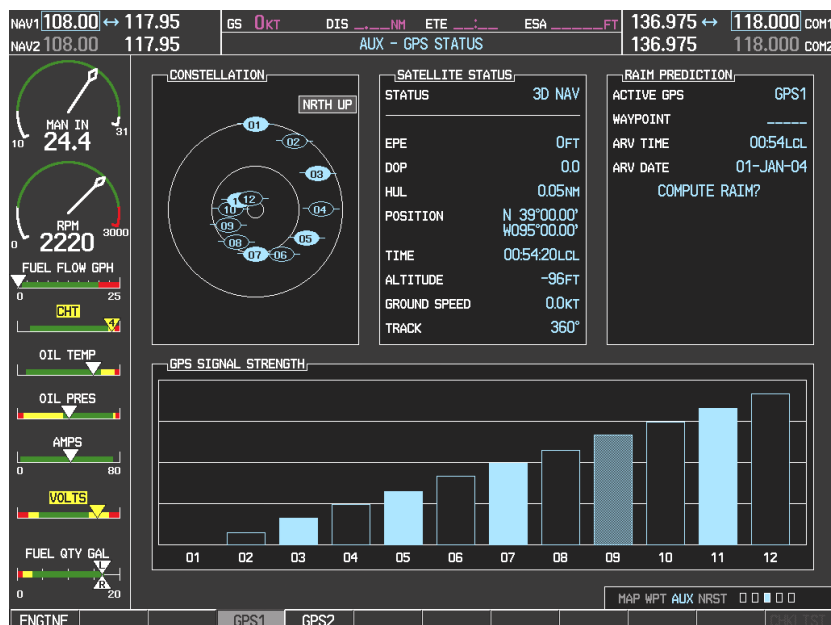
System Software Version '**0370.13**' = Loader Card P/N 010-00**370-13**

3. Verify that the System Software Version is correct.
4. Press the ENT key to acknowledge the agreement on the MFD (the rightmost softkey may also be used to acknowledge the agreement).

****NOTE****

In the normal operating mode, data fields that are invalid have large red X's through them. A valid field does not display a red X.

5. Allow the displays to initialize for approximately one minute. The GDC 74A and GRS 77/GMU 44 require a longer initialization period than do other LRUs. During normal operation, this causes the attitude, heading, airspeed, altitude, vertical speed, and OAT fields to be invalid during the first 40-60 seconds of PFD power-up.
6. Verify that no 'Manifest' errors appear when the ALERTS softkey is pressed.
7. Check that all COM/NAV fields are valid in the top corners of the PFD and MFD.
8. Check that attitude, heading, altitude, airspeed, vertical speed, TAS, and OAT fields are valid on the PFD.
9. Check that engine and airframe instruments are valid on the MFD.
10. Push the red DISPLAY BACKUP button on the GMA 1347. Verify both displays enter reversion mode: both should have valid attitude, altitude, airspeed, vertical speed, and engine instruments.
11. De-activate reversion mode by pushing the DISPLAY BACKUP button again.



12. The GIA 63 units should normally acquire a 3D GPS navigation solution within 5 to 10 minutes of startup, provided the aircraft is outside (or indoors with a GPS repeater).

Select the AUX – GPS STATUS Page on the MFD. Two softkeys on the bottom of the display allow the user to toggle between GPS 1 and GPS 2. Verify that both receivers show 3D Navigation on the MFD.

4.3. ADF Checkout

This check verifies that the ADF-to-G1000 interface operates correctly. This check is required for DA42 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.

4.4. DME Checkout

This check verifies that the DME-to-G1000 interface operates correctly. This check is required for DA42 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. Verify that the DME window is not invalid (no red 'X').
3. On the PFD, press the ADF/DME softkey. Verify that the ADF/DME TUNING screen is displayed correctly.

4.5. Final Checks

Before returning the aircraft to service:

- Make appropriate entry in the aircraft's maintenance records, noting that the instructions in this Software Service Bulletin have been performed
- Record the G1000, DA42/DA40D Loader Card part number in the maintenance records
- Make sure that required documentation is delivered to the aircraft owner/operator

MATERIAL INFORMATION

G1000, DA42/DA40D Software Loader Card

To accomplish this update, the technician must have the new G1000, DA42/DA40D Loader Card, Garmin P/N 010-00370-13. A Diamond supplied CD-ROM containing G1000 System Software version 0370.13 may also be used to load software files to an SD Card, as an equivalent means of obtaining the required Loader Card.

QTY	Part Number	Description
1	010-00370-13	G1000 Software Loader Card (Diamond DA42/DA40D) <i>*NOTE* This datacard carries a charge of \$50.00, which will be refunded upon return of the datacard to Garmin.</i>

ADDITIONAL INFORMATION

The following table lists the new G1000, DA42/DA40D Loader Card software configuration. Use this table to verify the G1000 LRU software versions and part numbers during the update process as required.

SYSTEM STATUS PAGE NAME	SOFTWARE PART NUMBER	SOFTWARE VERSION
GTX-GIA1	006-B0172-XX	4.03
GEA1-GIA1	006-B0193-04	2.06
GDC1-GIA1	006-B0261-03	2.05
GDC1 FPGA	006-C0055-00	1.05
GMU1	006-B0224-00	2.01
GMU1 FPGA	006-C0048-00	2.00
PFD1	006-B0319-32	5.02
MFD1	006-B0319-32	5.02

(continued)

SYSTEM STATUS PAGE NAME	SOFTWARE PART NUMBER	SOFTWARE VERSION
GIA1	006-B0190-22	3.02
GPS1	006-B0093-XX	3.03
GIA2	006-B0190-22	3.02
GPS2	006-B0093-XX	3.03
GRS1-GIA1	006-B0223-05	2.06
GRS1 FPGA	006-C0049-00	2.00
GMA1-GIA1	006-B0203-08	2.09
GDL69	006-B0317-10	3.00

****NOTE****

All G1000 system software versions correspond to their respective G1000 Loader Card part numbers (e.g. G1000 Software Loader Card part number 010-00370-13 contains G1000 system software version 0370.13). This number is shown on the G1000 on the start-up page of the MFD, in the upper right corner of the display.