



## THIS BULLETIN IS FAA APPROVED FOR ENGINEERING DESIGN

SERVICE BULLETIN M20-306B

Date: November 4, 2008

**SUBJECT:** GARMIN G1000/S-TEC with GDL-69A XM/Weather, Resolution of Aging Weather Data Issue. All GARMIN G1000/S-TEC equipped aircraft with -13 or prior software must update the GIA boot block version before completing procedures contained in this Service Bulletin.

**MODELS/ SN AFFECTED:** All GARMIN G1000/S-TEC equipped aircraft.  
**M20M** - 27-0318, 27-0326 thru 27-0352 = "S-TEC Pre-Rewire" (Option Select)  
27-0353 thru 27-TBA = "S-TEC" (Option Select)  
**M20R** - 29-0334 thru 29-0416, 29-0421 = "S-TEC Pre-Rewire" (Option Select)  
29-0417 thru 29-0420, 29-0422 thru 29-TBA = "S-TEC" (Option Select)  
**M20TN** - 31-0001 thru 31-0031 = "S-TEC" (Option Select)

**TIME OF COMPLIANCE:** At Owners Discretion

**INTRODUCTION:** All GARMIN G1000/S-TEC equipped aircraft with 0401-13 or prior software must update the "GIA boot block" version before completing procedures contained in this Service Bulletin.

The GDL-69A XM weather display in G1000/S-TEC installations has issues in the older GDL and GDU software (related to properly displaying data as it ages). Aircraft will require new software load to be completed by a Mooney Authorized Service Center or a GARMIN Authorized Service Center who can access and load the new software revision required to comply with this Service Bulletin.

When the Customer's Aircraft receives the new software version 0401-30 (from Garmin) they will get all the weather fixes. The customer need not purchase new database cards. Please note that the system ID may change as part of the software upgrade process. Contact Garmin customer support for replacement database or unlock cards if they become inoperative as a result of a system ID change. The new software revision will allow the Aircraft to be eligible for the "Optional Systems" to be installed (TAWS, SVS, Charts, Safetaxi, etc.), database cards, unlock cards and/or subscriptions are purchased separately), contact your Mooney Authorized Service Center for details.

Pilot's A/C Checklist (if used) will need to be renamed as a result of the new 0401-30 software upgrade. The new software upgrade will only recognize the checklist file name as to each identified Mooney model (M20M, M20R\_Ovation2GX, M20TN, M20R\_Ovation3). This checklist gives the pilot basic information as contained in the "Normal Procedures" section of the AFM/POH.

**INSTRUCTIONS:** Read entire procedures before beginning work.

This Service Bulletin is written in two Step procedures. **STEP 1** will explain how to update the GIA boot block version before installing the 0401-30 software. **STEP 2** will explain how to install 0401-30 software. Refer to the Garmin G1000 System Maintenance Manual P/N 190-00907-00 Revision B or later revision.

Identify all optional equipment before installing the software upload. Refer to the Aircraft Flight Manual Section IX - Optional Equipment Supplements (WX500, Fuel Capacity, Transducers, etc.). If the identity is unknown of the transducers installed in the Aircraft, remove top cowl and locate the transducers mounted in the engine compartment on the LH upper engine mount (see Figure SB-306-1).

## **STEP 1 - GARMIN BOOT BLOCK FILE UPDATE (with -13 or prior software):**

### **1.1 - Extract GARMIN "GIA 63 Boot Block" File:**

#### **NOTE:**

The Service Center performing the work must extract the new GIA 63 Boot Block version (4.01) from the "GARMIN Dealer Website" or Mooney "WebPortal" to a compatible SD Loader Card and compatible SD Card Reader (SD Plus memory card reader or compatible) for Software Installation load.

#### **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 try the upload procedure again.

1. Download of new GARMIN GIA 63 Boot Block software (Version 4.01) will be required. Refer to **S1.0 Software Download Instructions** attached in this procedure.

### **1.2 VERIFY SYSTEM ID NUMBER (Before and After software upload)**

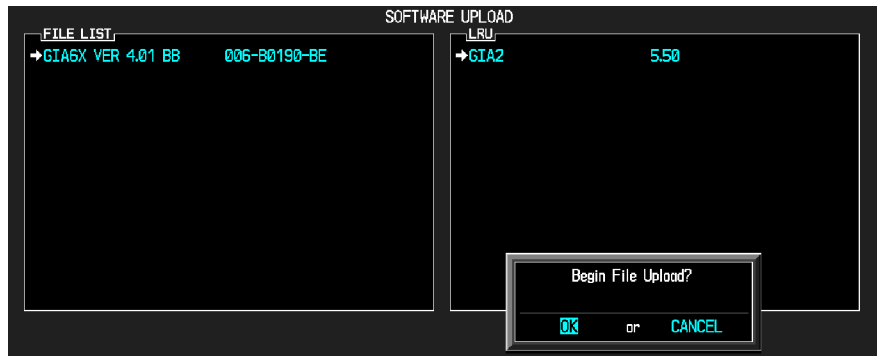
1. Before software upload, note the SYSTEM ID number located on the last page of the Auxiliary page group (see Figure SB-306-2). On software revisions 0401-23 and prior, the customer (or dealer) may need to contact Garmin customer support for replacement database or unlock cards if they become inoperative as a result of a system ID change.

### **1.3 - Install Boot Block Version 4.01:**

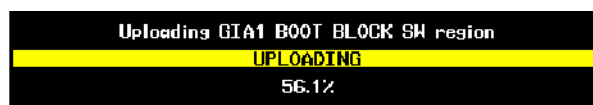
#### **NOTE:**

Do not remove power from the G1000 during software loading. Do not rely solely on the aircraft batteries to prevent loss of power during the software loading process. Connect a ground power unit to the aircraft, and be sure that BATT 1 is selected. All GDU's should be in the same mode (configuration or normal), unless instructed differently by the procedure. Remove power only when instructed by the procedure.

1. Connect a ground power unit to the external power receptacle, and turn on the ground power unit.
  - a.) System Power Up - Apply power to the G1000 by doing the following: (make sure BATT 1 selected on Aircraft. Turn on the **MASTER** switch. Turn on the **A/P POWER** switch.
  - b.) Note the System ID number as referenced in step 1.2 (see Figure SB M20-306-2)
  - c.) Pull the **MFD** and **PFD** circuit breakers.
  - d.) Pull **Terrain/Obstacle Database Cards** from lower slots in both PFD/MFD (if installed).
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. Insert "**Boot Block Loader SD Card**" and insert into top slot on the **PFD**.
5. While holding the **ENT** key on the **PFD**, restore power by closing the **PFD** circuit breaker.
6. When the words "**Initializing System**" appear in the upper left corner of the **PFD**, release the **ENT** key.
7. Use the **FMS** knob to access the Software Upload page.
8. Activate the cursor to highlight the **GIA6X Boot Block** file.
9. Select **GIA1** to load new Boot Block file.
10. Press the **LOAD** soft key.



10. Select **OK** and press the **ENT** key to acknowledge “Begin File Upload” prompt.
11. Monitor the upload status as it progresses for **GIA1**:



12. After the file finishes loading, press **ENT** to acknowledge the “File Upload Complete” prompt:
13. Repeat steps 7 thru 12 for **GIA2** Boot Block file loading.
14. Check the SUMMARY field to ensure the load is “**COMPLETE**”



15. Remove power from **PFD** by opening the **PFD** circuit breaker.
16. Remove “Boot Block Loader Card” from the **PFD**.

#### **NOTE:**

Ground power is required to be connected before the new Boot Block installation. If Boot Block load fails, retry load (do not cycle power).

- a.) After successful installation of new Boot Block loader application, continue installation of the 006-B0401-30 software configuration upload.

## **STEP 2 - GARMIN 006-B0401-30 SOFTWARE UPDATE (All versions prior to -30):**

### **2.1 - EXTRACT GARMIN (006-B0401-30) SOFTWARE FILE:**

#### **NOTE:**

The Service Center performing the work must extract the new software version (006-B0401-30) from the “GARMIN Dealer Website” or Mooney “WebPortal” to a compatible SD Loader Card and compatible SD Card Reader (SD Plus memory card reader or compatible) for Software Installation load.

#### **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 try the upload procedure again.

1. Download of new GARMIN configuration software (Version 006-B0401-30) will be required. Refer to **S1.0 Software Download Instructions** attached in this procedure.

### **2.2 VERIFY SYSTEM ID NUMBER (Before and After software upload)**

1. Before software upload, note the SYSTEM ID number located on the last page of the Auxiliary page group (see Figure SB-306-2). On software revisions 0401-23 and prior, the customer (or dealer) may need to contact Garmin customer support for replacement database or unlock cards if they become inoperative as a result of a system ID change.

## **2.3 G1000/S-TEC SOFTWARE AND CONFIGURATION UPLOAD - (006-B0401-30):**

### **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 try the upload procedure again.

### **NOTE:**

Do not remove power from the G1000 during software loading. Do not rely solely on the aircraft batteries to prevent loss of power during the software loading process. Connect a ground power unit to the aircraft, and be sure that BATT 1 is selected. All GDU's should be in the same mode (configuration or normal), unless instructed differently by the procedure. Remove power only when instructed by the procedure.

- Perform these preliminary steps before up-loading software:
- Remove supplemental data cards from the lower slot of the GDU's before loading any software. Supplemental data cards left inserted can become corrupt making them unusable. Replacing corrupt cards is not covered under warranty.

### **NOTE:**

Loading the wrong software into GIA units may cause an inoperable condition that is not covered by warranty. Choose the Non-WAAS software file before loading GIA software. Loading the incorrect software may necessitate returning the unit to Garmin for a non-warranty repair. The system may not provide a warning if the incorrect software is selected.

1. Connect a ground power unit to the external power receptacle, and turn on the ground power unit.
  - a.) System Power Up - Apply power to the G1000 by doing the following: (make sure BATT 1 selected on Aircraft. Turn on the **MASTER** switch. Turn on the **A/P POWER** switch.
  - b.) Note the System ID number as referenced in step 2.2 (see Figure SB M20-306-2)
  - c.) Pull the **MFD** and **PFD** circuit breakers.
  - d.) Pull **Terrain/Obstacle Database Cards** from lower slots in both PFD/MFD (if installed).
2. MFD & PFD Software Load:
  - a.) Insert the **0401-30 Loader Card** into the MFD top card slot.
  - b.) While holding the **ENT** key on the MFD, restore power by closing the MFD circuit breaker.
  - c.) When the words "**INITIALIZING SYSTEM**" appear in the upper left corner of the MFD, release the **ENT** key.
  - d.) Press the **ENT** key to acknowledge the "**UPDATE SYSTEM FILES**" prompt.

### **NOTE:**

**A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key**

- e.) The "**UPDATING SYSTEM FILES. PLEASE WAIT**" screen will be displayed.
- f.) New software is loaded to the **MFD**. When complete, the MFD starts in configuration mode.
- g.) When complete, power down the **MFD**.
- h.) Remove the **0401-30 Loader Card** from the **MFD**, and re-start in configuration mode.
- i.) Insert **0401-30 Loader Card** into the top card slot on the **PFD**. Repeat Step 2 for the PFD.
- j.) When **PFD** update 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.

## **2.4 BASE AIRFRAME CONFIGURATION OPTION:**

1. Select the **System Upload Page** on the PFD.
2. Highlight the appropriate airframe in the **AIRFRAME** field.
3. Press the **ENT** key.
4. Highlight the appropriate full configuration (**Non-WAAS**) in the **FILE** field.
5. Press the **ENT** key.
6. Press the **CHK ALL** softkey to select all loadable software and configuration files.
7. Press the **LOAD** softkey.
8. After “**Upload Complete**” prompt, press the **ENT** softkey to confirm.

## **2.5 OPTIONAL SYSTEM CONFIGURATION:**

### **NOTE:**

Ensure that the base airframe configuration option is selected and loaded first after a software upload, LRU replacement, or optional system installation. The optional system configuration (detailed below) will be overwritten by the base airframe configuration if the optional system configuration is completed first.

### **NOTE:**

If wrong S-TEC Autopilot is selected (Loaded), the system will display a data path error upon start-up in normal mode.

1. **PFD “Optional” Systems Software Load (Options) or (Autopilot):** (see Figure SB-306-3)
2. Highlight the appropriate option.
3. Press the **ENT** key.
4. Highlight the appropriate installation option in the **FILE** field.
5. Press the **ENT** key.
6. Press the **LOAD** softkey.
7. Repeat steps 2 through 6 to load each (applicable) optional items.
8. After “**Upload Complete**” prompt, press the **ENT** softkey to confirm.
9. Finalize upload by pressing the “**UPDT CFG**” softkey, this updates the configuration settings.
10. Power system down by turning the **MASTER** switch to off.
11. Pull **0401-30 Loader Card** out of the **PFD**.
12. Turn on the **MASTER** switch. Turn on the **A/P POWER** switch. At this moment, all G1000 equipment is receiving power.
13. After software upload, note the SYSTEM ID number located on the last page of the Auxiliary page group (see Figure SB-306-2). On software revisions 0401-23 and prior, the customer (or dealer) may need to contact Garmin customer support for replacement database or unlock cards (if applicable) if the system ID changes as a result of the software upgrade (and the database cards consequently become unusable).
14. Power system down by turning the **MASTER** switch to off.

## **2.6 SPLASH SCREEN CONFIGURATION UPLOAD:**

1. Insert the **0401-30 loader card** into the top card slot of the **MFD**.
2. Press and hold the **ENT** key on **MFD** while applying power.
3. When the words “**INITIALIZING SYSTEM**” appear in the upper left corner of the **MFD**, release the **ENT** key.
4. When the words “**Do you want to Update System Files**” appear **Select NO**.
5. When the words “**Update Splash Screen**” appear **Select YES**.

6. When complete, one file will be updated (see FIGURES SB-306-4).
7. Power down the **MFD** and repeat steps 1 thru 6 on the **PFD**.

**NOTE:**

**If splash screen is not loaded, the system will prompt a message that the splash screen file not found upon system power-up.**

8. Power system down by turning the **MASTER** switch to off.
9. Pull **0401-30 loader card** out of the **PFD** and store it in a safe place for future system maintenance.

**2.7 OPTIONAL UNLOCK CARDS (If Previously Installed):**

1. Re-Install any previously installed "Unlock Cards" (Jepp Charts, SVS, TAWS) if previously installed. The new software version will not recognize these until you (unlock) each feature.
2. Power system down by turning the **MASTER** switch to off.
3. Pull **Optional Unlock Loader Card** out of the **PFD** and store it in a safe place for future system maintenance.
4. Insert **Terrain/Obstacle Database Cards** into lower slots in both **PFD/MFD**.
5. Turn on the **MASTER** switch. Turn on the **A/P POWER** switch. At this moment, all G1000 equipment is receiving power.
6. Verify that all software systems (Options, Autopilot, Unlock Cards etc.) for your aircraft have been installed.

**2.8 POST INSTALLATION GROUND CHECK:**

1. Perform post-installation ground checks per Section 8 (only Steps 8.1 thru 8.5) of G1000 System Maintenance Manual P/N 190-00907-00 Revision B or Later Revision.

**2.9 POST MAINTENANCE CHECK FLIGHT:**

1. Return aircraft to service.
2. Perform a Post Maintenance Check Flight per Flight Manual Supplement to check proper operation (refer to the M20M, M20R, M20TN aircraft POH/AFM Supplement.
  - SUPP0014A - S-TEC System 55X, Two Axis Autopilot
3. Complete log book entry for procedure.

## **2.10 PILOT'S CHECKLIST: (SD CARD- if used)**

1. Plug your **SD card reader** into a laptop or PC.
2. Insert the A/C Pilot's Checklist "**SD Card**" (Mooney supplied) into the **SD card reader**.
3. The current checklist file on the SD card should have the filename as "**chklist.ace**"

### **NOTE:**

**Some Operating Systems will allow the user to view file names only and not file extensions. Make sure you rename the file based on the these settings.**

4. Highlight file and rename according to the Models listed below: (see FIGURES SB-306-3 & 4)
  - a.) M20M (or M20M.ace)
  - b.) M20R\_Ovation2GX (or M20R\_Ovation2GX.ace)
  - c.) M20R\_Ovation3 (or M20R\_Ovation3.ace)
  - d.) M20TN (or M20TN.ace)
5. Insert your Pilot's Checklist **SD Card** into top slot of **MFD** and power-up to verify the G1000 reads the renamed checklist.
6. Procedure complete.

WARRANTY: Mooney will warrant 3.0 hours of labor when complying with this Service Bulletin

REFERENCE DATA: 

1. Garmin G1000 Cockpit Reference Guide 190-00450-04 Revision A or Later FAA approved revision (Can be Downloaded from Garmin Dealer Resource or Mooney WebPortal).
2. Garmin G1000 System Maintenance Manual P/N 190-00907-00 Revision B or Later approved revision.
3. MAC AFM/POH Manual and Supplement (applicable A/C)

PARTS LIST: Mooney Airplane Company, Inc., Parts Kit:

<u>Item</u>	<u>P/N</u>	<u>Description</u>	<u>Qty</u>
Software	006-B0401-30	GARMIN Software Revision (Rev 30) (Download file) <a href="https://www8.garmin.com/dealerResource">https://www8.garmin.com/dealerResource</a> (Download file) <a href="http://manuals.mooney.com">http://manuals.mooney.com</a>	1

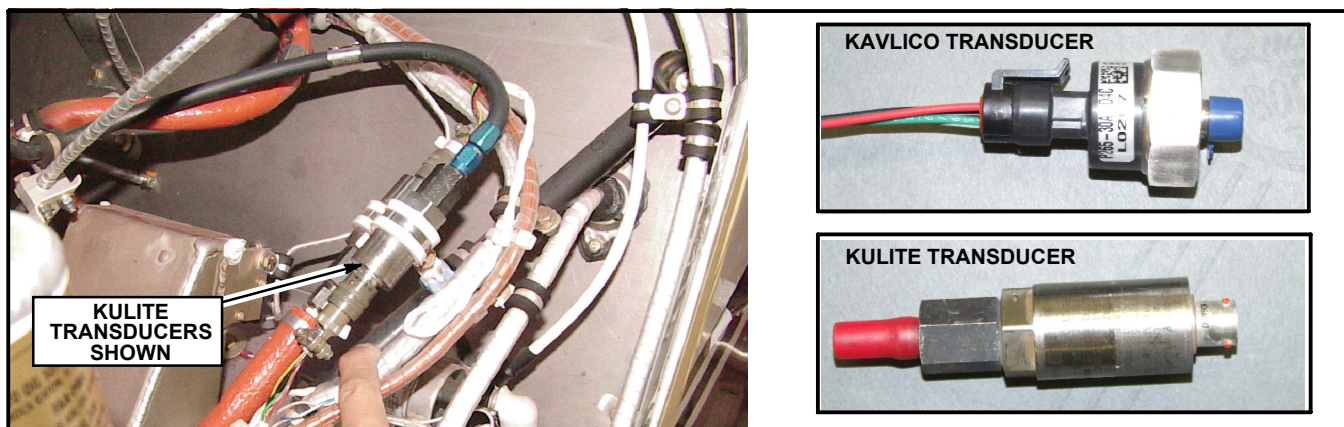
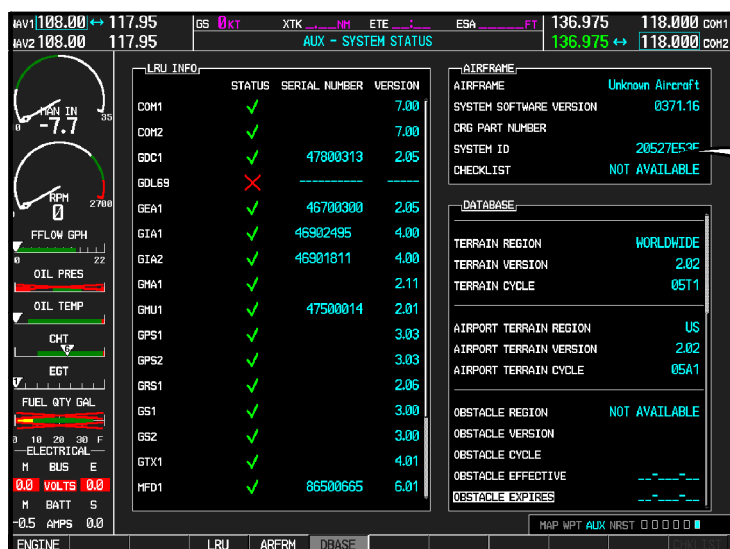


Figure SB M20-306-1 - TRANSDUCER IDENTIFICATION



Last Page of the Auxiliary page group

### BEFORE & AFTER SOFTWARE UPLOAD

Note the System ID number before and after software upload.

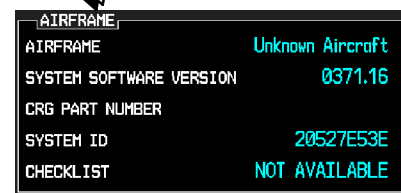


FIGURE SB-306-2 - LOCATING THE SYSTEM ID NUMBER

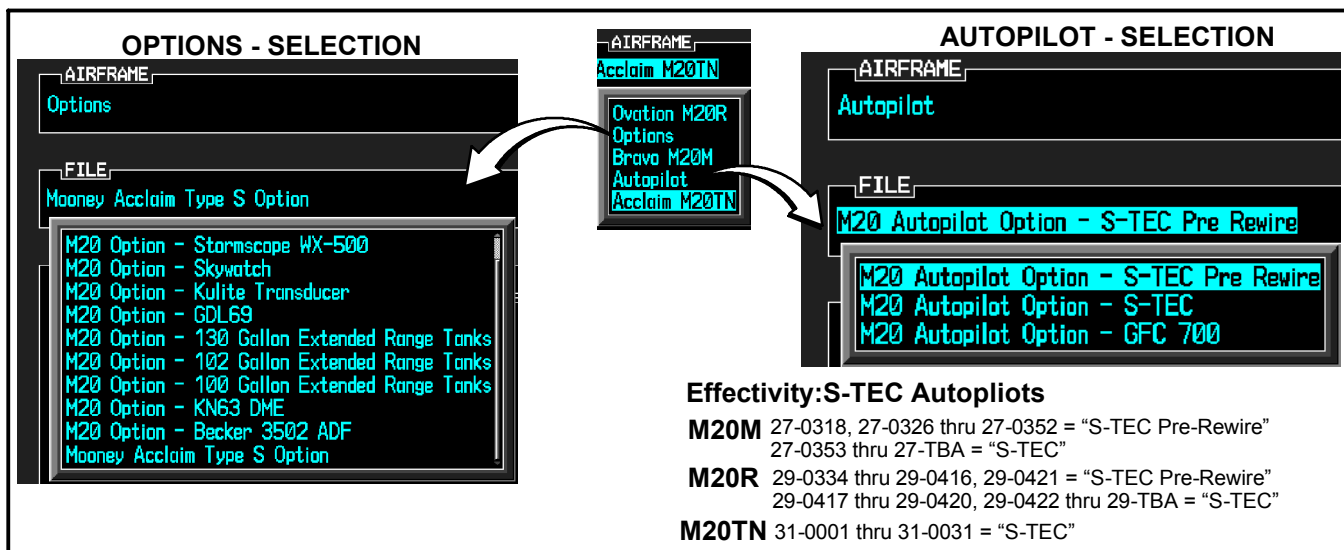
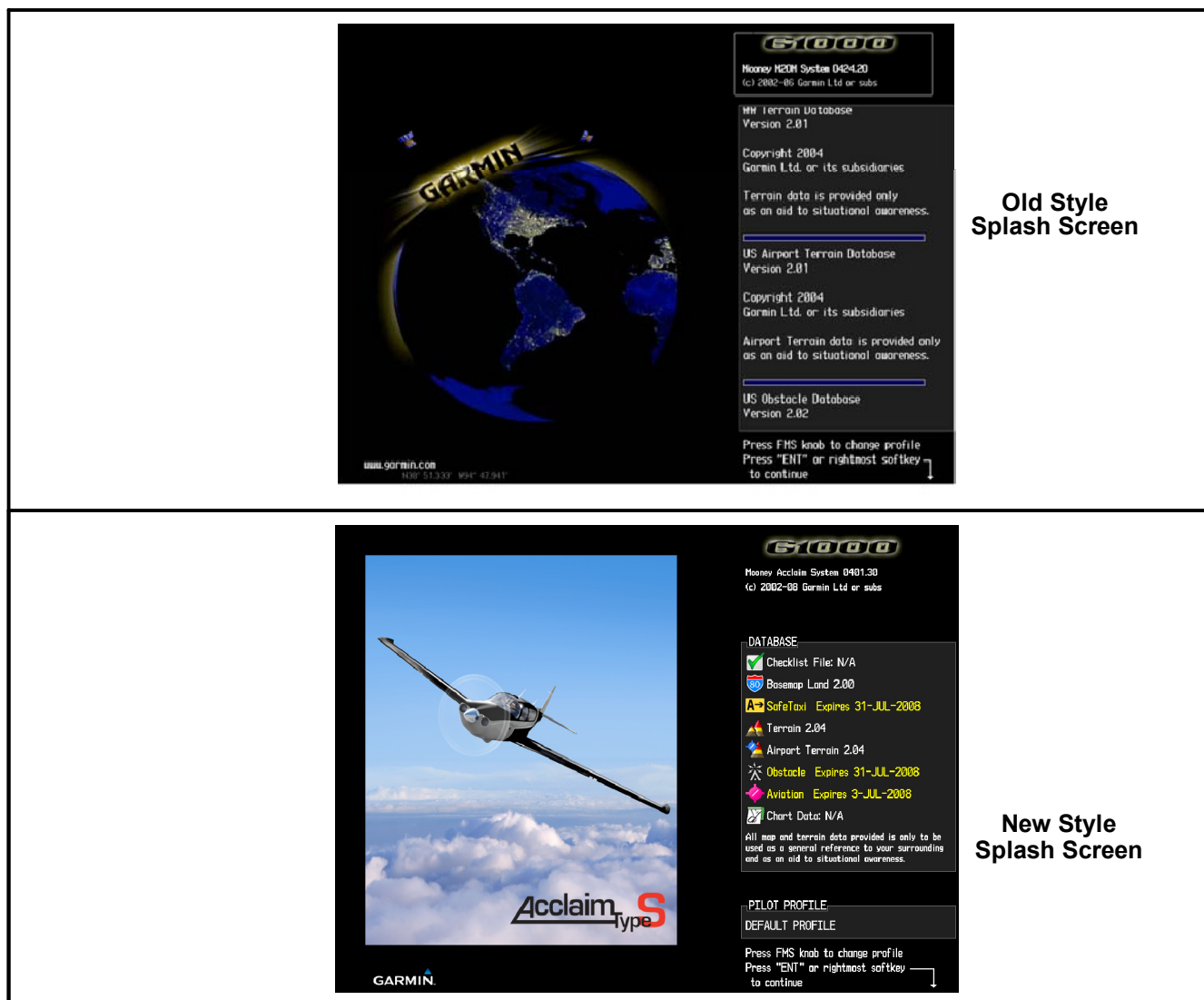
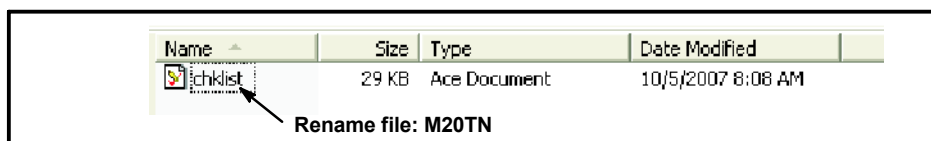


FIGURE SB-306-3 - VERIFY OPTIONS OR AUTOPILOT LIST

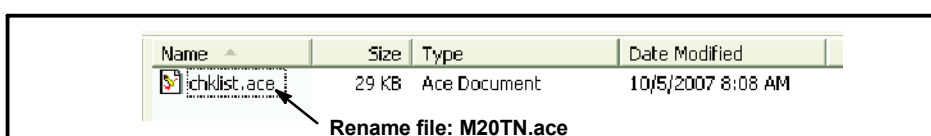




**FIGURE SB-306-4 - VERIFY THE SOFTWARE VERSION ON SPLASH SCREEN**



**Figure SB M20-306-5 - WINDOWS VIEW WITH FILENAME ONLY**



**Figure SB M20-306-6 - WINDOWS VIEW WITH FILENAME AND EXTENSION**

## **S1.0 Extracting the revised GARMIN Software (from Website):**

1. Log in to the Garmin Dealer Website or Mooney WebPortal (both must have user name and password)  
web address is: <https://www8.garmin.com/dealerResource> or <http://manuals.mooney.com/>
2. Read the Confidentiality Agreement page and select on the "I AGREE" button.
3. The screen will contain the Technical Resources options.
  - a.) Select on the Field Loadable Software link for download of the **0401-30** software. This link will open the manufacturer front page, select on Mooney Aircraft Link.
  - b.) Select on the **GIA Boot Block 4.01** Loader link for downloading the Boot Block software.

### **NOTE:**

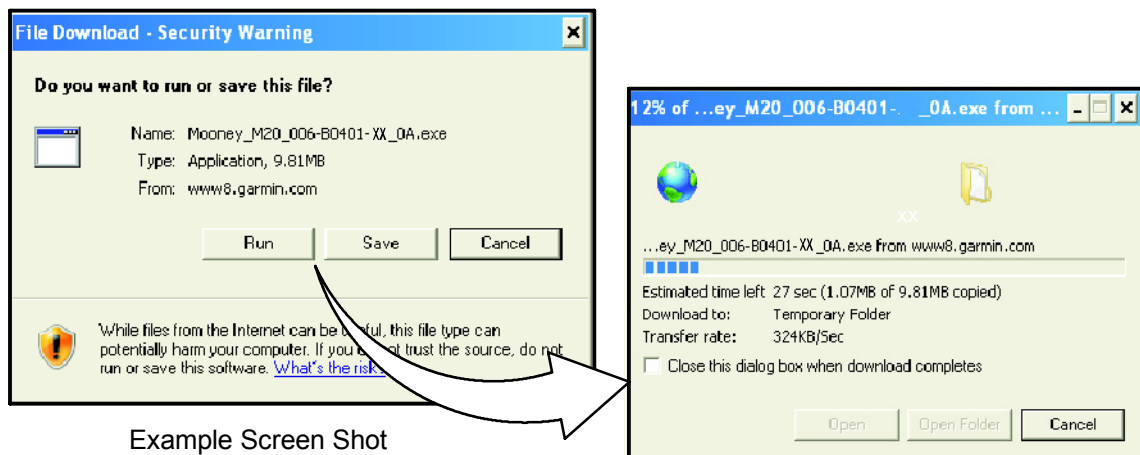
**The following screen shots are for example only, refer to your specific software file and version when downloading to your SD Card.**

The screenshot displays the Garmin Dealer Resource website. On the left is a 'Technical Resource' sidebar with links like 'Service Alert', 'Manuals', 'G600 Install Videos', and 'Field-Loadable Software Updates'. The main content area is titled 'Garmin Dealer Resource: Field-Loadable Software for Mooney'. It features a table of software updates:

G1000 System Software Version	Service Bulletin*	Software Card Part Number
0424.22	N/A	<a href="#">010-00424-22</a>
0424.21	N/A	<a href="#">010-00424-21</a>
0424.13	<a href="#">SSB0610RevA.pdf</a>	<a href="#">010-00424-13</a>
0401.26	N/A	<a href="#">006-B0401-26</a>
0401.23	N/A	<a href="#">006-B0401-23</a>

Below the table, it notes '\*Requires Adobe Reader 5.0+' and provides a link to 'Get Acrobat Reader'. The footer includes copyright information for 1996-2008 Garmin Ltd.

4. Insert your SD Loader Card into the Card Reader.
5. Select on the link **Software Revision (006-B0401-30\_0A) and/or (GIA Boot Block 4.01)**. A pop-up screen will prompt you to "Run" or "Save" the file. Select "Run" to acknowledge the following (example) prompt:

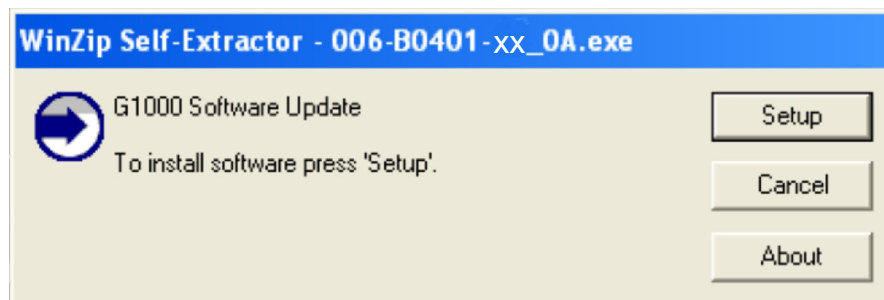


Example Screen Shot

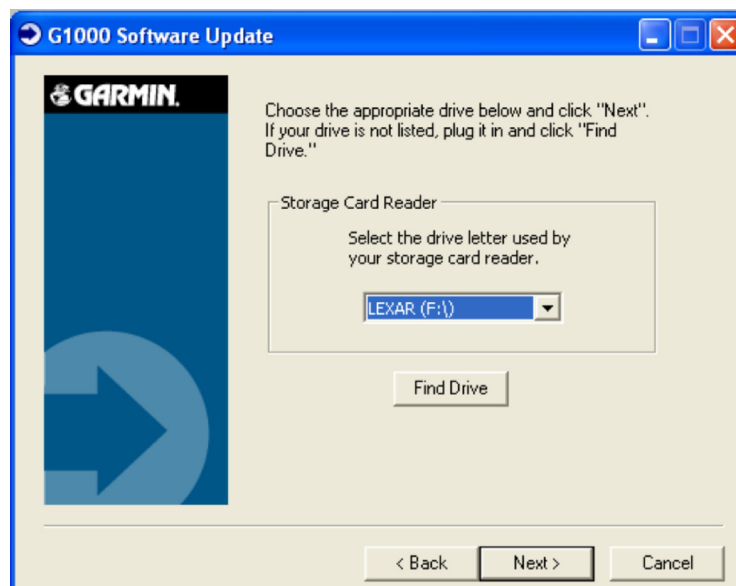
6. Some servers have Security Warnings (contact your System Administrator if an error occurs), Select “Run” to acknowledge the following (example) prompt:



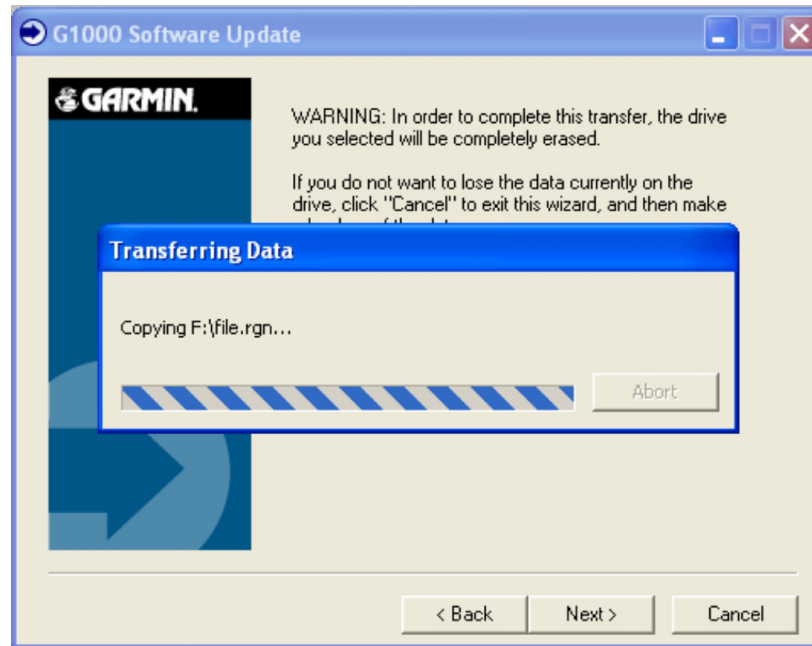
7. To extract the required files, select “SetUp” to acknowledge the following (example) prompt:



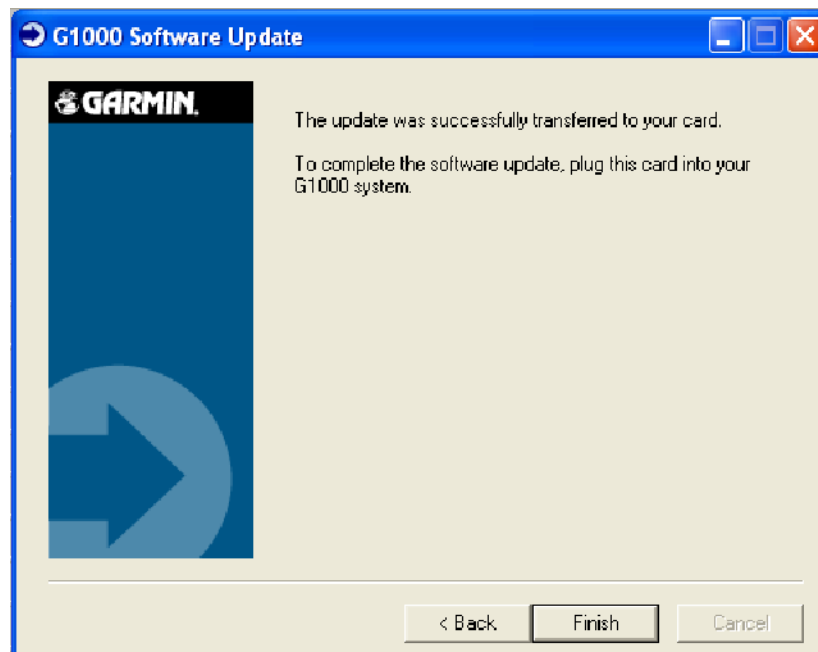
8. Verify the Drive letter where the SD Card reader is plugged in, select “Next” to acknowledge the following (example) prompt:



9. Files will now extract to SD Card, monitor the download process:



10. When the download is complete, select “**Finish**” to acknowledge the following prompt:



11. When complete the SD Loader Card can now be ready for Software Installation to the Aircraft G1000 PFD/MFD.