Hawker Beechcraft

RECOMMENDED

SERVICE BULLETIN

Beechcraft

TITLE: **NAVIGATION - GARMIN G1000 SYSTEM UPGRADES INCLUDING TERRAIN AWARENESS AND WARNING SYSTEM (TAWS-B) FUNCTION PER STC SA01725SE**

SYNOPSIS OF CHANGE

This Service Bulletin (SB) has been revised to correct a Software Loader Card issue on the P/N K00-00328-00 Garmin G1000 Terrain Awareness and Warning System (TAWS) Upgrade Kit. The P/N 010-00458-08 Garmin Software Loader Card has been replaced with the new P/N 010-00458-10 Garmin Software Loader Card to resolve this issue. The P/N K00-00328-00 Garmin G1000 TAWS Upgrade Kit has been changed to P/N K00-00328-01.

If TAWS was previously installed per the original issue of SB 34-3859, it is not necessary to complete the full procedure defined in this revision. No changes are required to the original P/N 010-00330-51 TAWS unlock card or to any of the documents provided for the initial TAWS upgrade. Airplanes previously in compliance with the original issue of SB 34-3859 (Airframe System Software version 0464.08) require the modifications described in Section 3, Accomplishment Instructions, Part II of this Service Bulletin to comply with Revision 1 of this Service Bulletin. These steps are required to resolve potential issues with the display of the high Oil Pressure alert, low Fuel Quantity alerts and loading of the GDC 74A Air Data Computer LRU configuration file. New Airframe System Software version 0464.10 must be loaded and TAWS must be re-enabled along with any other optional avionics equipment. It is not necessary to repeat loading of the Boot Block software or the Servo Torque Limit Validation procedure. A new P/N 010-00458-10 Software Loader Card is required and may be ordered through a Hawker Beechcraft Authorized Service Center or RAPID. Relevant technical changes are marked with change bars in the outside margins.

CAUTION

To ensure full G1000 system functionality, the P/N 010-00458-08 Software Loader Card supplied for the original issue of this Service Bulletin must not be used for any G1000 system maintenance and must be discarded per the instructions in Revision 1 of this Service Bulletin. The new P/N 010-00458-10 Software Loader Card must be used for all Airframe System Software maintenance procedures until superseded. Usage of the old P/N 010-00458-08 Software Loader Card can result in software load errors and display issues affecting high Oil Pressure and low Fuel Quantity alerts.Revised: September, 2008Planning Information

SERVICE BULLETIN

A. Effectivity

(1) Airplanes

Hawker Beechcraft Series A36 Bonanza, Serial E-3547;

Hawker Beechcraft Series G36 Bonanza, Serials E-3630 and E-3636 through E-3804.

If you are no longer in possession of the airplane, please forward this information to the present owner.

(2) Spares

None.

B. Reason

This Service Bulletin is being issued to introduce Garmin G1000 System Upgrades including Terrain Awareness and Warning System (TAWS-B) functionality to the G36 Bonanza. This revised Service Bulletin provides updated software and revised software loading procedures.

C. Description

This Service Bulletin announces availability of STC SA01725SE and provides modification instructions for updating eligible airplanes. The STC includes updated software for various sub-systems of the G1000 installation as well as the new TAWS-B function. No additional hardware is required. The TAWS-B configuration upgrade includes the following Line Replaceable Unit (LRU) software changes:

LRU Description	LRU Software Modification	LRU Software Changes
GDU 1040 display Unit, PFD	6.14	TAWS performance enhancements for GFC700
GIA 63 Avionics Integration Unit	4.72	Autopilot improvements
GRS 77 Attitude Heading Reference Unit	2.09	Limited AHRS use prior to calibration
GMA 1347 Audio Panel	2.12	Soft mute features
GDL 69A Data Link	3.10	Enhanced over-the-air format (removes 400 storm cell limit)
GSA 81 Autopilot Servo	2.09	New safety monitors

D. Compliance

Hawker Beechcraft Corporation recommends that this Service Bulletin be accomplished at the next scheduled inspection.

Compliance with this Service Bulletin accomplishes installation of FAA Supplemental Type Certificate STC SA01725SE in accordance with Garmin Master Data List 005-C0149-01 Revision 'K'.

E. Approval

The engineering data contained in this Service Bulletin is FAA approved.

This modification is classified FAA Minor per 14 CFR 21.93 and FAA Order 8110.52.

Prior to installation, owners / operators of airplanes registered in countries other than the United States shall consult with their local Aviation Regulatory Authority.

F. Manpower

The following information is for planning purposes only:

Part I

Estimated man-hours to perform installation instructions: 4.5 hours (additional man-hours may be required for servo removal and / or replacement per table below).

Suggested number of men: 1 man.

Additional time is allowed for Step (9) as follows in the table below. If servo mount(s) require either replacement or torque re-set, an accompanying Servo Torque Values Report and reporting of the serial number is required for each servo mount.

Column A - These are the allowable man-hours for the Modification Instructions in Step (9) servo Torque Limit where completing these steps does not necessitate the removal of a GSM 85 from the airplane. These hours may be combined with the hours in Column B if Step (9) was attempted unsuccessfully prior to determining the need to remove the GSM 85.

Column B - These are the allowable man-hours for the Modification Instructions in Step (9) Servo Torque Limit where this step necessitates removal of the GSM 85 for setting the slip clutch torque and / or replacement of the unit.

Man-hours Per Servo Procedure(s)		
Axis	**A**	**B**
Pitch/Roll/Pitch Trim	0.5	3.0
Yaw	0.5	2.5

NOTE

If Garmin Service Bulletin No. 0713, GSM 85 Inspection Procedure, has not already been accomplished, it should be accomplished with this Service Bulletin. **When working the service bulletins concurrently, and when both service bulletins require removal of the same GSM 85(s), Garmin will allow an additional 0.5 manpower hours per GSM 85 in lieu of column B and C hours from the manpower table in Service Bulletin No. 0713.**

Part II

Estimated man-hours to perform software installation: 3.0 hours.

Suggested number of men: 1 man.

The above is an estimate based on experienced, properly equipped personnel complying with this Service Bulletin. Occasionally, after work has started, conditions may be found which could result in additional man-hours.

G. Weight and Balance

None.

H. Electrical Load Data

Not changed.

I. Software Accomplishment Summary

Not applicable.

J. References

(1) Hawker Beechcraft

Bonanza (Model G36) Maintenance Manual Supplement, P/N 36-590001-11 Reissue B or subsequent revision, Section 22;

Bonanza Series Maintenance Manual, P/N 36-590001-9 Revision B1 or subsequent revision, Sections 20 and 24;

Hawker Beechcraft Model G36 Bonanza Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, P/N 36-590002-71A3 or subsequent revision.

(2) Garmin

The following referenced documents and software are available from www.garmin.com, within the Dealer Resource section of the website.

Document or Software	Garmin Part Number
G1000 Software Loading and Post Installation Checkout, TAWS Installation Beechcraft A36 / G36, Rev. B or later	190-00422-04

Document or Software	Garmin Part Number
G1000 System Maintenance Manual Bonanza A36 / G36 including TAWS, Rev. D or later	190-00422-06
G1000 Instructions for Continued Airworthiness Beechcraft A36 / G36 TAWS, Rev. B or later	190-00422-07
G1000 TAWS A36 / G36 AFM Supplement, Rev. D or later	190-00422-05
GSA 81 Servo Calibration Loader	006-B0464-ZB_01

The following referenced documents are part of the Garmin P/N K00-00328-01 update kit.

Document	Garmin Part Number
G1000 TAWS A36 / G36 Cockpit Reference Guide	190-00525-01
G1000 TAWS A36 / G36 Pilot's Guide	190-00595-00

K. Publications Affected

Hawker Beechcraft Model G36 Bonanza Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, P/N 36-590002-71A3 or subsequent revision.

L. Interchangeability of Parts

Not applicable.

M. Warranty Credit

All warranty work MUST be accomplished by an Authorized Garmin and Authorized Hawker Beechcraft Service Center rated to perform maintenance on the specific model of Beechcraft Airplane to ensure warranty claim reimbursement. This Service Bulletin is to address a Post Delivery Commitment between the customer and Hawker Beechcraft.

Please follow the instructions below for proper warranty claim submission.

Part I: (Only for those planes which HAVE NOT complied with the original release of this Service Bulletin)

Warranty credit for labor and parts to the extent noted under MANPOWER and MATERIAL will be allowed on those affected airplanes. Please read below for filing instructions:

For LABOR reimbursement from Garmin:

File a warranty claim directly to Garmin for labor credit. When completing the Garmin warranty claim, be sure to include the airplane serial number, the airplane registration number, and clearly indicate that this Service Bulletin has been complied with, to ensure proper reimbursement.

For PARTS / Kit reimbursement from HBC:

File a warranty claim directly to Hawker Beechcraft for parts credit. File a “W4” type warranty claim to Hawker Beechcraft Warranty Department for reimbursement of TAWS unlock card P/N 010-00330-51 and Kit K00-00328-01.

Part II: (Only for those planes which HAVE complied with the original release of this Service Bulletin)

Warranty credit for labor and parts to the extent noted under MANPOWER and MATERIAL will be allowed on those affected airplanes.

For LABOR and PART reimbursement:

File a warranty claim directly to Hawker Beechcraft for parts and labor credit. File a “W4” type warranty claim to Hawker Beechcraft Warranty Department for credit. When filing the warranty claim for accomplishing **Part II**, please include the labor and P/N 010-00458-10, Software Loader Card.

Warranty coverage offered in this Service Bulletin by Garmin and Hawker Beechcraft will expire 12 months from the last day of the month that Revision 1 of this Service Bulletin is issued. After that date, the owner / operator assumes the responsibility for compliance cost. Hawker Beechcraft Corporation reserves the right to void warranty coverage in the area affected by this Service Bulletin until the date this Service Bulletin is accomplished by a Garmin and Hawker Beechcraft Corporation Authorized Service Center.

After this Service Bulletin has been accomplished, a warranty claim must be submitted to HBC within 60 days of the Service Bulletin completion date.

1. Material Information

A. Materials - Price and Availability

Contact a Hawker Beechcraft Authorized Service Center for information.

B. Industry Support

Not applicable.

C. Airplanes

CAUTION

All Hawker Beechcraft approved kits, unless otherwise designated, are approved for installation on Hawker Beechcraft airplanes in original or Hawker Beechcraft approved modified configurations only. Hawker Beechcraft approved kits may not be compatible with airplanes modified by STC installations or modifications other than Hawker Beechcraft approved kits.

(1) The following parts required for this modification may be ordered through a Hawker Beechcraft Authorized Service Center or RAPID (Note: Refer to Paragraph 2.F. TOOLING - PRICE AND AVAILABILITY):

Required for **Part I:**

Part Number	Description	Quantity Per Airplane
010-00330-51	TAWS Unlock Card	1
K00-00328-01	Garmin TAWS Upgrade Kit	1

Required for **Part II:**

Part Number	Description	Quantity Per Airplane
010-00458-10	Software Loader Card	1

(2) Kit K00-00328-01 contains the following (for reference only):

New Part Number	Qty	Description	Old Part Number	Disposition of Old Part
010-00458-10	1	Software Loader Card	010-00458-04 or 010-00458-08	Remove label and use to move SW from website to G1000 as needed
190-00595-00	1	Pilot's Guide, 3 Ring Binder	K00-00206-00	N/A
*190-00525-01	1	Cockpit Reference Guide (CRG)	190-00525-00	N/A
*Note: CRG Revision A or subsequent is required. If using Revision A of the CRG, ensure that the copyright page has been corrected to indicate system software level of "0464.10".				

Hawker Beechcraft Corporation expressly reserves the right to supersede, cancel and/or declare obsolete, without prior notice, any parts or publications that may be referenced in this Service Bulletin.

D. Spares

Not applicable.

E. Reidentified Parts

None.

F. Tooling - Price and Availability

P/N 010-00533-00 GIA Boot Block Update Card. Contact Garmin for a no cost update card for all Bonanza TAWS updates.

NOTE

This card remains with the Garmin/HBC Authorized Service Center.

2. Accomplishment Instructions

The accomplishment instructions are presented in two (2) parts. Each part is only applicable to a specific configuration. This Service Bulletin shall be accomplished in accordance with the applicable part.

NOTE

Should any difficulty be encountered in accomplishing this Service Bulletin, contact Hawker Beechcraft Corporation at 1-800-429-5372 or 316-676-3140.

A. Airplane

WARNING

Observe all Warnings and Cautions contained in the aircraft manuals referenced in this Service Bulletin.

Whenever any part of this system is dismantled, adjusted, repaired or renewed, detailed investigation must be made on completion to make sure that distortion, tools, rags or any other loose articles or foreign matter that could impede the free movement and safe operation of the system are not present, and that the systems and installations in the work area are clean.

NOTE

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Part I - Airplanes Performing Initial TAWS Installation:

NOTE

Complete the following modification instructions in sequence, Step (1) through Step (17) in order. If errors are encountered during this procedure, refer to the G1000 System Maintenance Manual Bonanza A36 / G36 TAWS, Rev. D or later (P/N 190-00422-06) for assistance.

(1) VERIFY AIRFRAME SYSTEM SOFTWARE VERSION:

(a) Connect a 28-VDC external power unit to the airplane in accordance with Section 24 of the Bonanza Series Maintenance Manual.

(b) Start the system in normal mode by turning on the BAT 1, BAT 2 and AVIONICS switches.

(c) Look at the MFD power-up screen (refer to Figure 1) in the upper right corner, the number displayed is the AIRFRAME SYSTEM SOFTWARE VERSION, e.g. 'Raytheon A36 / G36 System 0458.04' or '0464.08'. If any other AIRFRAME SYSTEM SOFTWARE VERSION is displayed, this Service Bulletin is not applicable.

(d) If the MFD display shows A36 / G36 System 0458.04, remove power from the MFD and PFD and proceed to Step (2) LOAD BOOT BLOCK VERSION 4.01. **If the AIRFRAME SYSTEM SOFTWARE IS VERSION 0464.08 proceed to Part II of this Service Bulletin.**

(2) LOAD BOOT BLOCK VERSION 4.01:

NOTE

These instructions describe how to upgrade main boot block software for the GIA 63. Boot Block version 4.01 is required for GIA Main Software Version 4.00 or later when updating to Bonanza Airframe System Software Version 0464.10.

CAUTION

Failure to remove the terrain and obstacle cards prior to upgrading the software may result in corruption of the data on the cards.

(a) Remove power to the PFD and MFD by opening the PFD and MFD circuit breakers

(b) Remove the P/N 010-00330-41 terrain and obstacle database cards from the lower card slots of the MFD and PFD, and set aside for later reinstallation.

CAUTION

While performing this procedure, ensure the airplane is connected to and drawing power from a power cart. A loss of power during this procedure may result in damage to the GIA 63.

NOTE

Although an update to the GIA Boot Block software is not required for all installations, the effort required to determine the need for an update can take more time than simply updating the software (reference Garmin Manual 190-00303-05, Appendix A). It is recommended that Garmin/HBC Authorized Service Centers have Boot Block loader cards available and accomplish the GIA Main Software update on all airplanes as defined below. The boot block loader card is NOT part of the K00-00328-01 TAWS upgrade kit. Contact Garmin for a no cost loader card for all Bonanza TAWS updates. Order GPN 010-00533-00.

(c) Insert the SD card with GIA 63 Boot Block version 4.01 (P/N 010-00533-00) into the top slot of the PFD.

(d) While holding the ENT key on the MFD, supply power to the MFD.

(e) When the words **INITIALIZING SYSTEM** appear in the upper left corner of the MFD, release the ENT key.

(f) While holding the ENT on the PFD, supply power to the PFD.

(g) When the words **INITIALIZING SYSTEM** appear in the upper left corner of the PFD, release the ENT key.

(h) Use the small FMS knob to access to the Software Upload page on the PFD.

(i) Verify 'GIA 6X Boot Block 4.01' appears in the File List.

(j) Verify 'GIA 1' and 'GIA 2' appear in the LRU window.

(k) Press the small FMS knob to activate the cursor and highlight 'GIA 6X Boot Block 4.01'.

(l) Press the LOAD softkey.

(m) Press the ENT key at the "BEGIN FILE UPLOAD?" prompt.

CAUTION

Do NOT cancel a software upload that is in progress. *Let the system either successfully load or fail. Removing power in the middle of a software upload can cause damage that requires an LRU to be returned to Garmin.*

(n) After the files finish loading, press ENT to acknowledge the 'FILE UPLOAD COMPLETE' prompt.

(o) On the MFD, press the small FMS knob to activate the cursor, then scroll down and highlight 'GIA 1'.

(p) Verify 'G1000 GIA 6X SYS' is being reported in the description field.

(q) Highlight 'GIA 2'.

(r) Verify 'G1000 GIA 6X SYS' is being reported in the description field.

(s) Power down the G1000.

(t) Remove the GIA 63 Boot Block version 4.01 loader card from the PFD.

(3) LOAD AIRFRAME SYSTEM SOFTWARE AND CONFIGURATION:

If G1000 is powered, power it down and remove the P/N 010-00330-41 terrain and obstacle database cards from the lower card slots of the MFD and PFD, and set aside for later reinstallation. Load Software and Configure LRUs per Sections 1 and 2 of the 'Software Loading and Post Installation Checkout TAWS Installation' P/N 190-00422-04 document, up to (and including) Step 2.2.13.

CAUTION

If the system software does not upload correctly (incomplete or cancelled status message), try to install the system software or upload the configuration for that step again. ***Do NOT cancel a software upload that is in progress.*** *Let the system either successfully load or fail. Removing power in the middle of a software upload can cause damage that requires an LRU to be returned to Garmin.*

NOTE

Screen illustrations included in these documents are for reference only. Make sure to refer to the approved file names, part numbers, versions, and the configuration settings in the tables if there are any differences between illustration and what shows on the PFD or MFD.

NOTE

At any time during the process, if an incorrect button is selected, only that section's steps need to be started again and not the entire process.

(4) AIRFRAME SYSTEM SOFTWARE LOAD CONFIRMATION:

(a) Go to the System Status page using the FMS knob. Activate the cursor and toggle to the LRU window. Refer to Figure 2.

(b) Highlight the following items in the LRU window, and verify that the software part number and version matches the Required LRUs and Software in Table 1.

LRU	SW OK	LRU	SW OK	LRU	SW OK
GDC1 – GIA1	_____	GFC1 CERT Y M	_____	GSA P C – GIA1	_____
GDC1 FPGA	_____	GFC2 CERT GIA	_____	GSA P M – GIA1	_____
GDL69	_____	GIA1	_____	GSA PT C – GIA1	_____
GEA1 – GIA1	_____	GIA2	_____	GSA PT M – GIA1	_____
GFC1 CERT GIA	_____	GMA1 – GIA1	_____	GSA R C – GIA1	_____
GFC1 CERT P C	_____	GMU1	_____	GSA R M – GIA1	_____
GFC1 CERT P M	_____	GMU1 FPGA	_____	GSA Y C – GIA1	_____
GFC1 CERT PT C	_____	GPS1	_____	GSA Y M – GIA1	_____
GFC1 CERT PT M	_____	GPS2	_____	GTX1 – GIA1	_____
GFC1 CERT R C	_____	GRS1 – GIA1	_____	PFD1	_____
GFC1 CERT R M	_____	GRS1 FPGA	_____	MFD1	_____
GFC1 CERT Y C	_____				

(c) Deactivate the cursor.

(d) Remove the loader card from the PFD top slot and set aside.

CAUTION

If any software versions and / or part numbers do not match those specified by the Required LRUs and Software in Table 1 of this document, or if the software is not successfully loaded, DO NOT continue with post-installation procedures. Troubleshoot and resolve the issue (refer to the Garmin G1000 System Maintenance Manual P/N 190-00422-06) before continuing.

(5) PRE-FLIGHT TEST:

(a) Remove power to the PFD and MFD by opening the PFD and MFD circuit breakers. Wait 15 seconds, then apply power to the PFD by closing the PFD circuit breaker, to start the display in the normal mode. Apply power to the MFD in the same manner.

(b) Verify that “System ID has been assigned” message briefly appears on the PFD.

(c) Press the ENT key to acknowledge the Power-up page on the MFD. (NOTE: The right-most softkey may also be used to acknowledge the Power-up page.)

NOTE

In the normal operating mode, data fields that are invalid have large red Xs through them (refer to Figure 3). A valid field does not display a red X. Allow the displays to initialize for approximately one minute. The GDC 74A, GMU 44 and the GRS 77 LRUs require a longer initialization period than do the other LRUs. During normal operation, this causes the respective fields of these LRUs to be invalid during the first few minutes of PFD power-up.

(d) Verify that all COM and NAV fields are valid in the top corners of the PFD and MFD.

(e) Verify that altitude, airspeed, vertical speed and OAT fields are valid on the PFD.

(f) Verify that there are no BACKUP PATH alerts on the PFD. If an LRU is not communicating over its primary path, the BACKUP PATH alert will identify which LRU is having the problem. Correct the problem before proceeding, refer to the Garmin G1000 System Maintenance Manual (P/N 190-00422-06) as needed.

(g) Verify that Engine Instrument and Fuel Quantity fields are valid on the MFD.

(h) Push the red display backup button on the GMA 1347. Verify both displays enter reversionary mode: both should have valid altitude, airspeed, vertical speed, and engine instruments.

(i) Deactivate reversionary mode by pushing the GMA 1347 display backup button again.

(j) Perform the GFC Autopilot pre-flight test (Step 4.1 of the G1000 Software Loading and Post Installation Checkout, P/N 190-00422-04 document) to verify that no servo load cell calibration failures have occurred.

NOTE

If the 'PFT' annunciation turns red during these steps, the test has failed. If the cause of the failure is determined to be a servo load cell calibration failure, follow the steps in section 6 GSA 81 LOAD CELL CALIBRATION to reestablish load cell calibration. If no servo load cell calibration failures have occurred, proceed to step (7). Other causes of a red 'PFT' annunciation can be ignored (at this point in the procedure) as they may be corrected by continuing with this procedure.

(6) GSA 81 LOAD CELL CALIBRATION (if needed):

NOTE

When upgrading GSA 81 software from Version 2.05 to a later software version, a failed AFCS Pre-Flight Test may occur due to a loss of load cell calibration. Once a failed Pre-Flight Test is identified (in Step (5) PRE-FLIGHT TEST), follow the procedure below to load the servo calibration data. Do not perform the Load Cell Calibration unless a load cell failure has been identified during the PRE-FLIGHT TEST (Step (5)).

(a) Enter the Dealers Resource section of www.garmin.com.

(b) Click on the Bonanza GSA 81 Servo Calibration Loader file (006-B0464-ZB) and follow the prompts to copy the file onto a blank SD card.

CAUTION

The previous version (P/N 010-00458-04) loader card may be used for the blank SD card. Be sure to remove or mark out the part numbers on the old label. Never insert an SD card with multiple labels into the PFD as the card may become stuck in the slot.

(c) Start the system in normal mode by turning on the BAT 1, BAT 2 and Avionics switches.

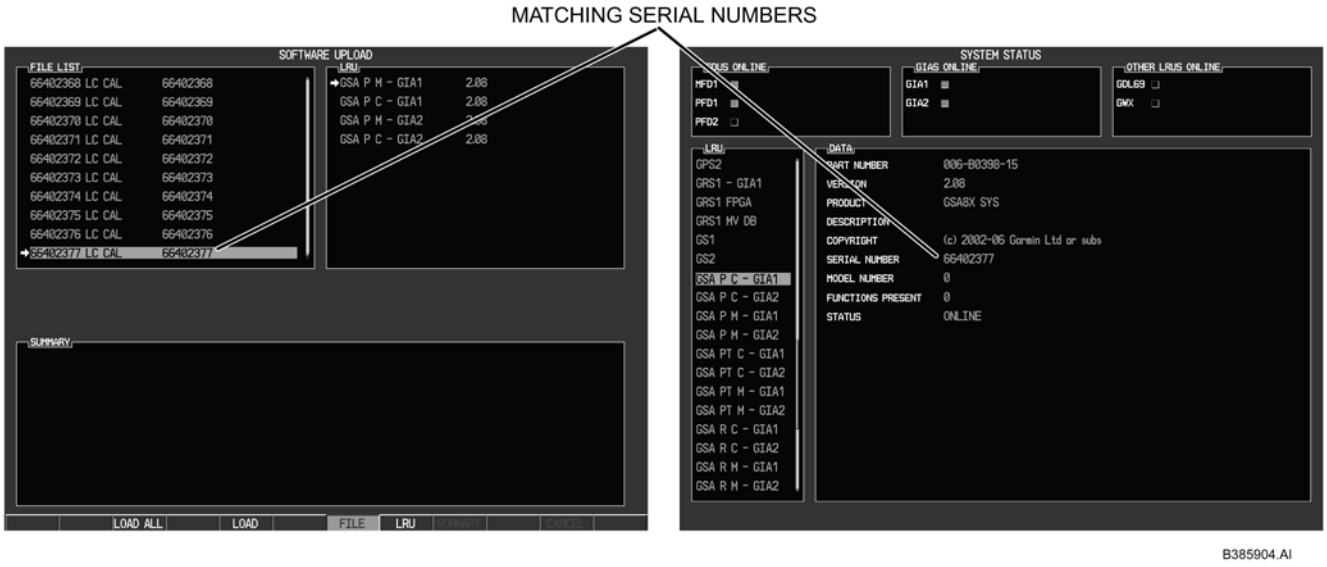
(d) Remove power from the PFD and MFD.

(e) Insert Load Cell Calibration SD card in top slot of the PFD.

(f) Apply power to the PFD. The PFD will automatically power on in the Configuration mode.

(g) While holding the ENT (on the MFD) key, apply power to the MFD to enter Configuration mode. (You may release the ENT key when "INITIALIZING SYSTEM" appears on the MFD display.)

(h) Using the small FMS knob, turn to the SOFTWARE UPLOAD page on the PFD. See the following figure for example screenshots.



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(i) On the MFD, press the small FMS knob to activate the cursor then scroll down and highlight the Pitch Servo in the LRU field (e.g. GSA P C - GIA1).

(j) On the PFD, use the small FMS knob to highlight the matching serial number in the FILE LIST.

(k) Press the LOAD softkey.

(l) Select ‘OK’ at the “Begin File Upload?” prompt and press the ENT key.

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(m) When the file finishes uploading, a “FILE UPLOAD COMPLETE” prompt appears. Press the ENT key to confirm.

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(n) Repeat Steps (6)(i) through (6)(m) for the remaining Roll (R), Yaw (Y), and Pitch Trim (PT) Servos (as applicable). Note the progress of the uploads in the Summary Field on the PFD.

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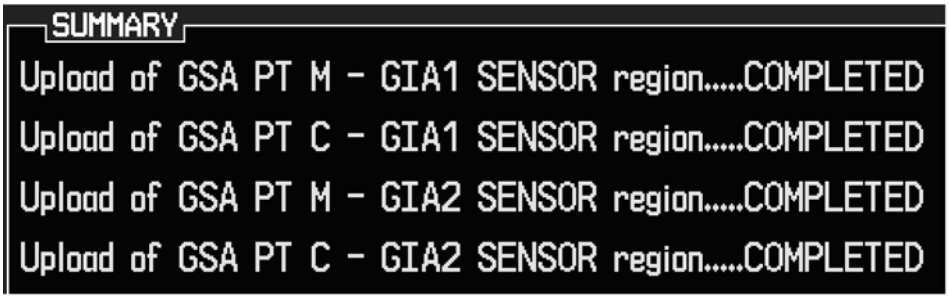

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(o) When completed, remove power to the PFD and MFD, then remove the Load Cell Calibration SD card.

(p) Repeat the preceding Pre-Flight Test in Step (5) to verify the servo calibration data is now valid.

(7) ENABLE TAWS AND OTHER OPTIONAL SYSTEMS (If Installed):

(a) Enable TAWS and other optional systems per Section 2.3 of the G1000 Software Loading and Post-Installation Checkout, P/N 190-00422-04 document.

(b) Reinstall P/N 010-00330-41 terrain and obstacle database cards in the lower card slots of the PFD and the MFD.

NOTE

Both P/N 010-00330-41 database cards are required equipment for TAWS operation.

(8) SYSTEM TESTING AND CHECKOUT:

Validate Software Load, Configuration and Activated Systems per Section 3 of the P/N 190-00422-04 document.

(9) SERVO TORQUE LIMIT VALIDATION:

This G1000 system update includes updated torque values for the autopilot servo mount slip clutches. These new settings must be used any time the servo mounts are removed for bench testing and adjustment. Appendix D of the Garmin G1000 System Maintenance Manual P/N 190-00422-06 Rev. D or later defines these new requirements per Delta Note 3 of drawing P/N 005-00230-76. The table of updated servo mount torque values is reproduced below.

SERVO MOUNT TORQUE	
SERVO LOCATION	**TORQUE (in-lb)**
PITCH	30 ± 5
PITCH TRIM	40 ± 6
ROLL	62 ± 8
YAW	62 ± 8

Validation that all servo slip clutches are adjusted below the upper torque limit is required to accomplish this Service Bulletin. Refer to Table 6-1 in Section 6.9.4 of Garmin G1000 System Maintenance Manual 190-00422-06 Rev. D or later (reproduced below). A new procedure has been developed to validate servo torque limits using a cable tensiometer to measure bridle cable tension under servo load. Removal of the servo mount is not required when using this validation method.

Table 6-1. Measured Tension (From Garmin Manual P/N 190-00422-06)

Axis	Measured Tension (lbs)	Allowed Tension (lbs)
Pitch		33
Roll		65
Yaw		65
Pitch Trim		43

Following guidance in Section 6.9.4 of the Garmin G1000 System Maintenance Manual Bonanza A36 / G36, P/N 190-00422-06, Rev. D or later, verify that the loaded cable tensions for each servo do not exceed the maximum allowed tension values in Table 6-1.

(10) GFC 700 AUTOPILOT GROUND CHECKS:

Verify the proper operation of the GFC 700 per Section 4 of the G1000 Software Loading and Post Installation Checkout, P/N 190-00422-04 document.

(11) Power down the airplane and disconnect the 28-VDC external power unit from the airplane.

(12) Ensure all work areas are clean and clear of tools and miscellaneous items of equipment.

(13) Remove and discard the existing Secure Digital (SD) Software Loader Card located in the storage pouch provided at the back of the airplane Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH / AFM), P/N 36-590002-71A3 or subsequent revision. Place the TAWS Unlock Card (if not accomplished previously) and the SD Software Loader Card P/N 010-00458-10 in the storage pouch provided at the back of the airplane POH / AFM.

(14) Provide flight crew a copy of the Garmin G1000 TAWS A36 / G36 Cockpit Reference Guide, P/N 190-00525-01.

(15) Provide the owner / operator a copy of the Garmin G1000 System Maintenance Manual Bonanza A36 / G36 including TAWS, Rev. D or later, P/N 190-00422-06.

(16) Provide the owner / operator a copy of the Garmin G1000 Instructions for Continued Airworthiness Beechcraft A36 / G36 TAWS, Rev. B or later, P/N 190-00422-07.

NOTE

A copy of the STC certificate SA01725SE and this Service Bulletin must be maintained as part of the permanent records for the modified airplane.

The following table lists the documents necessary to operate and maintain the airplane.

DESCRIPTION	GARMIN PART NUMBER	REVISION
*G1000 TAWS A36 AFM Supplement	190-00422-05	Revision D or later
G1000 TAWS A36 Cockpit Reference Guide	190-00525-01	Revision A or later
G1000 Instructions for Continued Airworthiness, Raytheon A36	190-00422-07	Revision B or later
G1000 TAWS A36 System Maintenance Manual Supplement	190-00422-06	Revision D or later
Service Bulletin SB 34-3859	Not Applicable	Revision 1 or later
***** Note: This installation is not complete until the noted AFM Supplement has been incorporated in the POH / AFM.		

(17) Return airplane to service.

Part II - Airplanes with System Software Version 0464.08 Previously Installed

(1) LOAD AIRFRAME SYSTEM SOFTWARE AND CONFIGURATION:

If G1000 is powered, power it down and remove the P/N 010-00330-41 terrain and obstacle database cards from the lower card slots of the MFD and PFD, and set aside for later reinstallation. Load Software and Configure LRUs per Sections 1 and 2 of the 'Software Loading and Post Installation Checkout TAWS Installation' P/N 190-00422-04 document, up to (and including) Step 2.2.13.

CAUTION

If the system software does not upload correctly (incomplete or cancelled status message), try to install the system software or upload the configuration for that step again. ***Do NOT cancel a software upload that is in progress.*** *Let the system either successfully load or fail. Removing power in the middle of a software upload can cause damage that requires an LRU to be returned to Garmin.*

NOTE

Screen illustrations included in these documents are for reference only. Make sure to refer to the approved file names, part numbers, versions, and the configuration settings in the tables if there are any differences between illustration and what shows on the PFD or MFD.

NOTE

At any time during the process, if an incorrect button is selected, only that section's steps need to be started again and not the entire process.

(2) AIRFRAME SYSTEM SOFTWARE LOAD CONFIRMATION:

(a) Go to the System Status page using the FMS knob. Activate the cursor and toggle to the LRU window. Refer to Figure 2.

(b) Highlight the following items in the LRU window, and verify that the software part number and version matches the Required LRUs and Software in Table 1.

LRU	SW OK	LRU	SW OK	LRU	SW OK
GDC1 – GIA1	_____	GFC1 CERT Y M	_____	GSA P C – GIA1	_____
GDC1 FPGA	_____	GFC2 CERT GIA	_____	GSA P M – GIA1	_____
GDL69	_____	GIA1	_____	GSA PT C – GIA1	_____
GEA1 – GIA1	_____	GIA2	_____	GSA PT M – GIA1	_____
GFC1 CERT GIA	_____	GMA1 – GIA1	_____	GSA R C – GIA1	_____
GFC1 CERT P C	_____	GMU1	_____	GSA R M – GIA1	_____
GFC1 CERT P M	_____	GMU1 FPGA	_____	GSA Y C – GIA1	_____
GFC1 CERT PT C	_____	GPS1	_____	GSA Y M – GIA1	_____
GFC1 CERT PT M	_____	GPS2	_____	GTX1 – GIA1	_____
GFC1 CERT R C	_____	GRS1 – GIA1	_____	PFD1	_____
GFC1 CERT R M	_____	GRS1 FPGA	_____	MFD1	_____
GFC1 CERT Y C	_____				

(c) Deactivate the cursor.

(d) Remove the loader card from the PFD top slot and set aside.

CAUTION

If any software versions and/or part numbers do not match those specified by the Additional Information in Table 1 of this document, or if the software is not successfully loaded, DO NOT continue with post-installation procedures. Troubleshoot and resolve the issue (refer to the Garmin G1000 System Maintenance Manual P/N 190-00422-06) before continuing.

(3) ENABLE TAWS AND OTHER OPTIONAL SYSTEMS (If Installed):

(a) Enable TAWS and other optional systems per Section 2.3 of the G1000 Software Loading and Post Installation Checkout, P/N 190-00422-04 document.

(b) Reinstall P/N 010-00330-41 terrain and obstacle database cards in the lower card slots of the PFD and the MFD.

NOTE

Both P/N 010-00330-41 database cards are required equipment for TAWS operation.

(4) SYSTEM TESTING AND CHECKOUT:

Validate Software Load, Configuration and Activated Systems per Section 3 of the P/N 190-00422-04 document.

(5) GFC 700 AUTOPILOT GROUND CHECKS:

Verify the proper operation of the GFC 700 per Section 4 of the G1000 Software Loading and Post-Installation Checkout, P/N 190-00422-04 document.

(6) Power down the airplane and disconnect the 28 VDC external power unit from the airplane.

(7) Ensure all work areas are clean and clear of tools and miscellaneous items of equipment.

(8) Remove and discard the existing Secure Digital (SD) Software Loader Card located in the storage pouch provided at the back of the airplane POH / AFM. Place the TAWS Unlock Card (if not accomplished previously) and the SD Software Loader Card P/N 010-00458-10 in the storage pouch provided at the back of the airplane POH / AFM.

NOTE

A copy of this STC certificate SA01725SE and this Service Bulletin must be maintained as part of the permanent records for the modified airplane.

The following table lists the documents necessary to operate and maintain the airplane.

DESCRIPTION	GARMIN PART NUMBER	REVISION
*G1000 TAWS A36 AFM Supplement	190-00422-05	Revision D or later
G1000 TAWS A36 Cockpit Reference Guide	190-00525-01	Revision A or later
G1000 Instructions for Continued Airworthiness, Raytheon A36	190-00422-07	Revision B or later
G1000 TAWS A36 System Maintenance Manual Supplement	190-00422-06	Revision D or later
Service Bulletin SB 34-3859	Not Applicable	Revision 1 or later
***** Note: This installation is not complete until the noted AFM Supplement has been incorporated in the POH/ AFM.		

(9) Return airplane to service.

B. Spares

Not applicable.

C. Record of Compliance

Upon completion of this Service Bulletin:

Part I - Airplanes Performing Initial TAWS Installation make a maintenance record entry as follows:

The installation of TAWS functionality and autopilot revisions was performed in accordance with STC SA01725SE. Airplane Flight Manual Supplement P/N 190-00422-05 Rev. (*), Garmin G1000 Integrated Avionics with TAWS in a Hawker Beechcraft Model A36 / G36 Bonanza, has been inserted in the FAA Approved Airplane Flight Manual. Autopilot servo torques were validated in accordance with Section 6.9.4 of the Garmin G1000 System Maintenance Manual P/N 190-00422-06 Rev. (*).

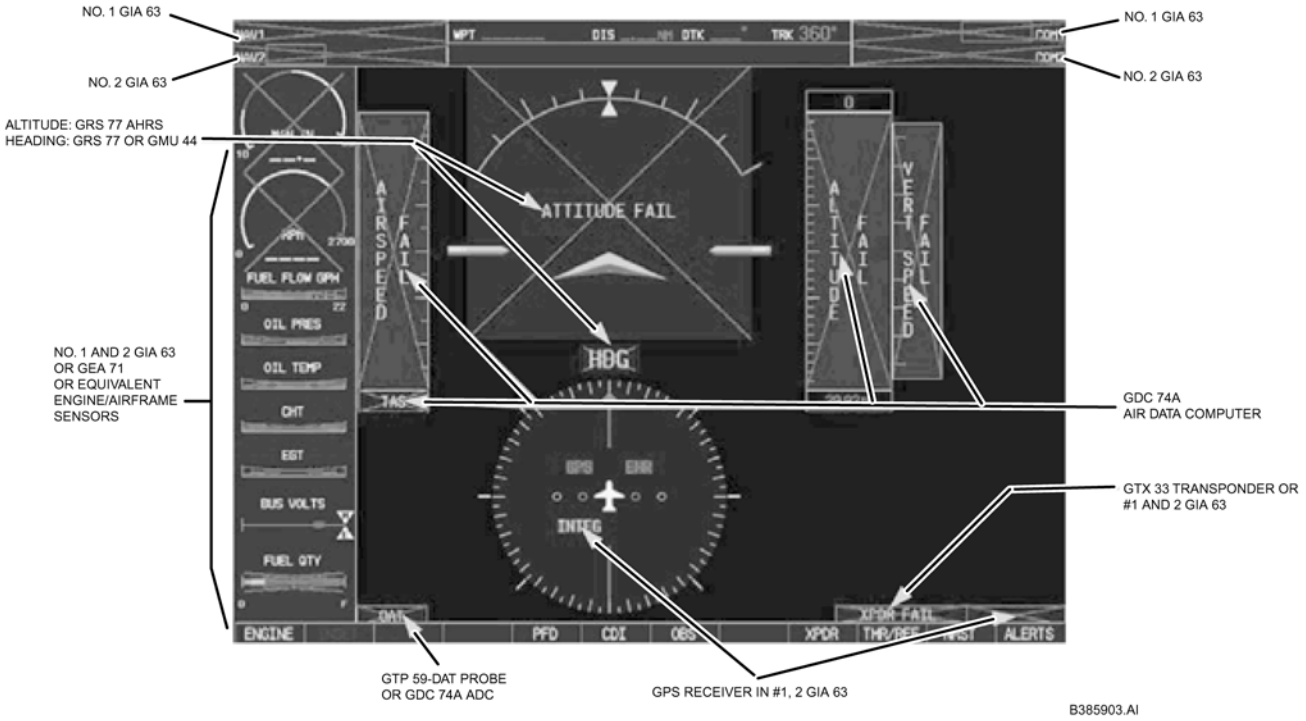
* Note: Record the revision provided.

Part II - Airplanes with System Software Version 0464.08 Previously Installed make a maintenance record entry as follows:

The Airframe System Software update for TAWS STC SA01725SE was performed in accordance with HBC Service Bulletin 34-3859, Revision 1.

MFD Power-Up Screen
Figure 1

System Status Page
Figure 2



Invalid Data Fields (Large Red Xs)
Figure 3

Current Software Loader Card part number:

- P/N 010-00458-10 contains software image 006-B0464-10 [1]

DESCRIPTION	LRU PART NUMBER	CODE LOADER PART NUMBER	SOFTWARE PART NUMBER	SOFTWARE VERSION
GTX 33 MODE S TRANSPONDER	011-00779-10	010-00458-10	006-B0172-XX	4.02
GEA 71 ENGINE AIRFRAME UNIT	011-00831-00		006-B0193-04	2.06
GDC 74A AIR DATA COMPUTER	011-00882-00		006- B0261-03 006-C0055-00	2.05 1.05
GMU 44 MAGNETOMETER	011-00870-00		006-B0224-00 006-C0048-00	2.01 2.00
GDU 1040 DISPLAY UNIT, PFD	011-00972-03		006-B0319-46	6.14
GDU 1043 DISPLAY UNIT, MFD	011-01079-00		006-B0319-46	6.14
GIA 63 AVIONICS INTEGRATION UNIT NO. 1	011-00781-01		006-B0190-39 006-D0425-02 006-B0093-XX 006-D0372-02 [2]	4.72 2.02 3.01 2.02
GIA 63 AVIONICS INTEGRATION UNIT NO. 2	011-00781-01		006-B0190-39 006-D0425-02 006-B0093-XX 006-D0372-02 [2]	4.72 2.02 3.01 2.02
GRS 77 ATTITUDE HEADING REFERENCE UNIT	011-00868-10		006-B0223-07 006-C0049-00	2.09 2.00
GMA 1347 AUDIO PANEL	011-00809-00		006-B0203-11	2.12
GDL 69A DATA LINK	011-00987-00		006-B0317-13	3.10
GSA 81 AUTOPILOT SERVO (QTY 4)	011-00878-00		006-B0398-16 006-D0372-02 [2]	2.09 2.02
A36 CONFIGURATION FILE [1]	N/A		006-D0333-10	2.10

[1] The configuration file part number and version number cannot be verified using the G1000 configuration mode. The last six digits of the software image part number are displayed in the upper right corner of the MFD adjacent to “Raytheon A36/G36 System”. This is displayed on initial power up, and this software image contains the software part numbers and versions shown in the above table.

[2] FCS gains are loaded into each servo and each GIA 63.

Required LRUs and Software
Table 1