

TITLE

GARMIN G1000 GPS/WAAS INSTALLATION

EFFECTIVITY

The airplanes that follow equipped with the Garmin G1000-Nav III system:

Model	Serial Numbers
172R	17281241 thru 17281356
172S	172S9810 thru 172S10431
182T	18281228, 18281318 thru 18281868, 18281870 thru 18281875
T182T	T18208232 thru T18208664, T18208666 thru T18208668
206H	20608216 thru 20608278, 20608280 thru 20608283
T206H	T20608450 thru T20608681, T20608683 thru T20608704

DESCRIPTION

This modification kit provides instructions and parts to install the global positioning system (GPS)/ wide area augmentation system (WAAS) option.

APPROVAL

FAA approval has been obtained on technical data in this publication that affects airplane type design.

REFERENCE

SB07-34-07

CHANGE IN WEIGHT AND BALANCE

Negligible

December 3, 2007

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To obtain satisfactory results, procedures specified in this publication must be accomplished in accordance with accepted methods and prevailing government regulations. Cessna Aircraft Company cannot be responsible for the quality of work performed in accomplishing the requirements of this publication.

MATERIAL INFORMATION

NOTE: The modification kit listed below is necessary for all 182 and 206 Model Airplanes and all 172 Model Airplanes that are equipped with the GDL-69A Data Link Unit and an Autopilot:

NEW P/N	QUANTITY	DESCRIPTION	OLD P/N	DISPOSITION
MK206-34-08-1	1	Kit, consisting of the following parts:		
B24809	1	Gasket, XM Antenna	None	None
CI2580-200	2	VHF/GPS Antenna	CI2480-200/ CI2480-400	Discard
CI420-10	1	XM Antenna	None	None
MS24693S53	8	Screw		
MS51957-47	4	Screw	None	None
PF1010-PT1012	1	Label	None	None
PC1010-PT1017	1	Label	None	None
S3284-1	2	Plug	None	None
011-01105-00	2	GIA-63W Integrated Avionics Unit	011-00781-00, 011-00781-01, or S3100-376	Return to Cessna
500-10846-01	1	XM Coax Cable Assembly	None	None
	1	Instructions		

NOTE: The modification kit listed below is necessary for all 172 Model Airplanes that are not equipped with the GDL-69A Data Link Unit and an Autopilot:

NEW P/N	QUANTITY	DESCRIPTION	OLD P/N	DISPOSITION
MK206-34-08-2	1	Kit, consisting of the following parts:		
CI2580-200	2	VHF/GPS Antenna	CI2480-200/ CI2480-400	Discard
MS24693S53	8	Screw		
PF1010-PT1012	1	Label	None	None
PC1010-PT1017	1	Label	None	None
S3284-1	2	Plug	None	None
011-01105-00	2	GIA-63W Integrated Avionics Unit	011-00781-00, 011-00781-01, or S3100-376	Return to Cessna
	1	Instructions		

NOTE: In addition to the MK206-34-08-1 kit or the MK206-34-08-2 kit, the part that follows will be necessary:

NEW P/N	QUANTITY	DESCRIPTION	OLD P/N	DISPOSITION
172RPHAUS-04 TR01, 172SPHAUS-04 TR01, 182TPHAUS-04 TR01, T182TPHAUS-03 TR01, 206HPHAUS-03 TR01, or T206HPHAUS-03 TR01	1 (As applicable)	POH Temporary Revision - WAAS Limitations for Airplanes Incorporating MK206-34-08	None	None

The following material, or equivalent, is necessary:

NAME	NUMBER	MANUFACTURER	USE
Sealant (Semkit, 3.5 ounces)	U060031	Cessna Aircraft Company Cessna Parts Distribution 5800 East Pawnee PO Box 1521 Wichita, KS 67218	To seal antenna to fuselage
Alodine 1132 Marker	U074093	Cessna Aircraft Company Cessna Parts Distribution 5800 East Pawnee PO Box 1521 Wichita, KS 67218	To apply to bare metal

ACCOMPLISHMENT INSTRUCTIONS

1. Prepare the airplane for maintenance.
 - A. Make sure that all switches are in the OFF/NORM position.
 - B. Disconnect electrical power from the airplane.
 - (1) Disconnect the airplane battery.
 - (2) Disconnect external electrical power.
 - C. Attach maintenance warning tags to the battery and external power receptacle that have "**DO NOT CONNECT ELECTRICAL POWER - MAINTENANCE IN PROGRESS**" written on them.
2. Get access to the GIA-63 Integrated Avionics Units as follows:
 - A. (Model 172 airplanes) Remove the equipment that follows:
 - (1) Remove the carpet from the aft baggage compartment. (Refer to the Model 172 Series 1996 and On Maintenance Manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
 - (2) Remove the aft curtain from the baggage compartment. (Refer to the Model 172 Series 1996 and On Maintenance Manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
 - (3) Remove access panels as necessary to get access to the GIA-63 Integrated Avionics Units. ((Refer to the Model 172 Series 1996 and On Maintenance Manual, Chapter 6, Access/Inspection Plates - Description and Operation.)
 - B. (Model 182 airplanes) Remove the equipment that follows:
 - (1) Remove the tailcone access panel 310AR. (Refer to the Model 182/T182 Series 1997 and On Maintenance Manual, Chapter 6, Access/Inspection Plates - Description and Operation.)

- (2) Remove the black aft curtain. (Refer to the Model 182/T182 Series 1997 and On Maintenance Manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
 - (3) Remove the baggage compartment curtain. (Refer to the Model 182/T182 Series 1997 and On Maintenance Manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
- C. (Model 206 airplanes) Remove the baggage compartment curtain. (Refer to the Model 206/T206 Series 1998 and On Maintenance Manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
3. (Refer to Figure 4.) Remove and discard the two CI511 Attenuators and the two short coaxials (PT1012-PT1025 and PT1017-PT1027) that are installed on the GPS 1 coaxial at the GIA-63 Integrated Avionics Unit and the GPS 2 coaxial at the GIA-63 Integrated Avionics Unit.
 4. Remove the two GIA-63 Integrated Avionics Units in the tailcone and return them to Cessna. (Refer to the applicable maintenance manual, Chapter 34, GIA-63 Integrated Avionics Installation - Maintenance Practices.)
 5. Install the two 011-01105-00 Garmin GIA-63W Integrated Avionics Units in the tailcone. (Refer to the applicable maintenance manual, Chapter 34, GIA-63 Integrated Avionics Installation - Maintenance Practices.)
 6. (Refer to Figure 4.) Remove the installed GPS 1 coaxial connector that connects to the 011-01105-00 Garmin GIA-63 Integrated Avionics Units.
 7. Remove the installed GPS 2 coaxial connector that connects to the 011-01105-00 Garmin GIA-63 Integrated Avionics Units.
 8. Remove the coaxial label PF1010-PT1024 and install coaxial label PF1010-PT1012.
 9. Remove the coaxial label PC1010-PT1026 and install coaxial label PC1010-PT1017.
 10. Install one S3284-1 Plug on the GPS 1 coaxial at the end that connects to the 011-01105-00 Garmin GIA-63W -Integrated Avionics Unit and one S3284-1 Plug on the GPS 2 coaxial at the end that connects to the 011-01105-00 Garmin GIA-63W Integrated Avionics Unit.
 11. Remove the headliner and the overhead console as necessary to get to the antenna connectors. (Refer to the applicable maintenance manual, Chapter 25, Interior Upholstery - Maintenance Practices.)
 12. (Refer to Figure 5.) Remove the CI2480-200 VHF/GPS Antenna #1 and the CI2480-400 (CI2480-200 for airplanes not equipped with the GDL-69A Data Link Unit) VHF/GPS/XM Antenna #2. Attach labels to the coaxials as necessary. Discard the antennas, gaskets (if installed), and attachment hardware. (Refer to the applicable maintenance manual, Chapter 23, Communications - Maintenance Practices.)
 13. Apply U060031 Sealant in one continuous bead all around the bottom surfaces of the two CI2580-200 VHF/GPS Antennas.
 14. (Refer to Figure 1, Detail A and View A-A (172), Figure 2, Detail A and View A-A (182), or Figure 3, Detail A and View A-A (206).) With the eight MS24693S53 Screws and the installed cable assembly connectors, install two CI2580-200 VHF/GPS Antennas in the positions where you removed the CI2480-200 VHF/GPS Antenna #1 and the CI2480-400 (CI2480-200 for airplanes not equipped with the GDL-69A Data Link Unit) VHF/GPS/XM Antenna #2. Do not apply sealant on top of the antenna mounting screws. (Refer to the applicable maintenance manual, Chapter 23, Communications - Maintenance Practices.)
 15. (Airplanes equipped with the GDL-69A Data Link Unit and Autopilot) (Refer to Figure 1, Detail B and View B-B (172), Figure 2, Detail B and View B-B (182), or Figure 3, Detail B and View B-B (206).) Install the CI420-10 XM Antenna as follows:
 - A. Find the factory-installed 0511816 Doubler for the CI420-10 XM Antenna.
 - B. Use the hole in the center of the 0511816 Doubler to match drill one 0.75-inch diameter hole through the airplane skin.
 - C. If there is not sufficient clearance for the CI420-10 XM Antenna, remove a maximum of 0.25 inch of the material aft of the drilled 0.75-inch diameter hole to get clearance.
 - D. From the airplane interior, use the four nutplate holes (for the MS51957-47 Screws) in the 0511816 Doubler to match drill the four holes to Number 40 (0.098-inch diameter) holes.

- E. From the airplane exterior, match drill the four Number 40 (0.098-inch diameter) holes to four 0.209-inch diameter holes.
 - F. Deburr the holes and apply Alodine to bare metal.
 - G. Make sure that the area on the skin where you will install the CI420-10 XM Antenna is clean. (Refer to the applicable wiring diagram manual, Chapter 20, Bonding and Grounding - Maintenance Practices.)
 - H. Put the B24809 Gasket and the CI420-10 XM Antenna in position on the fuselage.
 - I. With the four MS51957-47 Screws, attach the CI420-10 XM Antenna.
16. Make sure that there is a correct electrical bond between each of the three antennas and the airplane structure as follows:
- A. Remove one screw.
 - B. With an ohmmeter, measure the electrical resistance from the antenna base metal insert to the structure at the screw position. The maximum allowable resistance (in ohms) at each of the four measured positions is 0.0025. Measure the electrical resistance at all four holes of each antenna.
 - C. Install the screw and remove and install each of the remaining screws in turn as you measure the electrical resistance at each screw hole.
17. (Airplanes equipped with the GDL-69A Data Link Unit and an Autopilot) Torque the four MS51957-47 Screws that attach the CI420-10 XM Antenna to 25, +5 or -5 inch-pounds.
18. Remove all U060031 Sealant on the exterior of the airplane and on all exterior surfaces of the two CI2580-200 VHF/GPS Antennas. Make sure that there is no sealant on the airplane skin around the edge of the antennas.
19. (Airplanes equipped with the GDL-69A Data Link Unit and an Autopilot) (Refer to Figure 4, Sheet 2.) Install one 500-10846-01 GDL-69A FIS Cable Assembly as follows:
- A. Remove interior and exterior access panels as necessary to get access to do the routing of the 500-10846-01 GDL-69A FIS Cable Assembly.
 - B. Connect the red-band end of the 500-10846-01 GDL-69A FIS Cable Assembly to the CI420-10 XM Antenna.
 - C. Do the routing of the 500-10846-01 GDL-69A FIS Cable Assembly from the CI420-10 XM Antenna to the GDL-69A line replacement unit (LRU) rack mount. Use the same route as the old CI2480-400 VHF/GPS/XM Antenna #2 cable assembly used.

NOTE: The GDL-69A LRU is immediately forward of the multi-function display (MFD) on all 182 and 206 model airplanes and is in the tailcone adjacent to the GIA-63 Integrated Avionics Units on all 172 model airplanes.
 - D. Connect the 500-10846-01 GDL-69A FIS Cable Assembly to the GDL-69A Data Link Unit Data Link in the avionics rack in the tailcone.
20. Do the configuration of WAAS:
- A. Remove maintenance warning tags from battery and external power receptacle and connect the battery.
 - B. Connect external power to the airplane.
 - C. Make sure that all of the necessary circuit breakers are engaged for normal mode startup of the G1000 System.
 - D. Put both the BAT and AVIONICS MASTER switches in the ON position and allow the system to power up.

NOTE: Most items on the PFD and MFD will be shown as red X until the WAAS FULL CONFIGURATION software is loaded.

- E. On the MFD startup screen, make sure that the model and software version displayed in the upper right corner of the screen is the same as Table 1 or later.

Table 1.

SD Software Loader Card Part Number and Garmin System Software (G1000) Part Number	NAV III System Software Version
006-B0563-03	0563.03

- (1) If the software version is the same as Table 1 or later, go to Step 20F.
- (2) If the software version is not the same as Table 1, load the latest version of the software in accordance with Cessna Service Bulletin SB07-34-02 Revision 1 (or latest revision), and then go to Step 20F.
- F. (Refer to Table 1.) Remove the Cessna NAV III Field Support software CD, Part Number 006-B0563-03 (or latest revision), from the Pilot's Operating Handbook (POH) and put it into the CD drive of your computer.
- G. Right mouse click on the START button on the lower left corner of the computer screen and click on EXPLORE.
- H. Locate the CD drive with the CD in it on your computer and double click it to open the CD file.
- I. Double click on file labeled 006-B0563-03.
- J. When the window opens, click the SETUP button.
- K. Install a blank SD Card into the SD Card reader and click the NEXT button.
- L. The next window will ask for your SD Card reader location. Click the location of the SD Card Reader. Click the NEXT button.
- M. Click the NEXT button when the window opens.
NOTE: Any information on the SD Card will be erased.
- N. The software will begin to transfer from the CD to the SD Card.
- O. When the data has been transferred to the SD Card, click the FINISH button.
- P. Remove the SD Card from the SD Card Reader.
- Q. Remove the CD from the computer and install it in the Nav III/Garmin Software sleeve in the Pilot's Operating Handbook (POH).
- R. Disengage the PFD (ESS BUS and AVN BUS 1) and the MFD (AVN BUS 2) circuit breakers.
- S. **Remove the obstacle/terrain data SD Cards from the bottom slot of both PFD and MFD units.**
- T. Mark the SD Cards PFD or MFD and store them in a safe place for later installation.
NOTE: Failure to remove the obstacle/terrain data SD Cards before reconfiguration can result in obstacles that do not show on the display correctly.
- U. Put the SD Card with the 006-B0563-03 Cessna NAV III Installation Software into the upper slot of the MFD.
NOTE: Some airplanes have the electronic checklist SD Card installed in the upper slot of the MFD. You must remove the electronic checklist SD Card before you install the software.
- V. Push and hold the ENT key on the MFD and engage the MFD (AVN BUS 2) circuit breaker.
- W. Release the ENT key when the message INITIALIZING SYSTEM shows on the MFD.
- X. Push the NO soft key when either one or the other of the following messages show on the MFD:

DO YOU WANT TO UPDATE THE BOOT BLOCK FROM 2.02 TO 2.03?

NO WILL BE ASSUMED IN 30 SECONDS.

or

DO YOU WANT TO UPDATE SYSTEM FILES?

NO WILL BE ASSUMED IN 30 SECONDS.

- Y. Push the NO soft key when either one or the other of the messages that follow shows:

PRESS ANY KEY TO CONTINUE.

CONTINUING IN 10 SECONDS.

or

DO YOU WANT TO UPDATE SPLASH SCREEN?

NO WILL BE ASSUMED IN 30 SECONDS.

- Z. The software installation to the MFD is done when the screen shows the SYSTEM STATUS page.
- AA. Do not remove power from the MFD. Remove the SD Card from the MFD slot and put it into the PFD upper SD Card slot.
- AB. Push and hold the ENT key on the PFD and engage the PFD (ESS BUS and AVN BUS1) circuit breakers.
- AC. Do Steps 20V thru 20Y again for the PFD.
- AD. The PFD will start in the SYSTEM STATUS page when you complete the update. Do not remove the power from the PFD. Keep the SD Card in the upper slot of the PFD.
- AE. Turn the small FMS knob on the PFD to go to the system group SYSTEM UPLOAD page.
- AF. Push the small FMS knob on the PFD to start the cursor.
- AG. Turn the small FMS knob to highlight the applicable airplane model and push the ENT key.

NOTE: If you select the incorrect model, a message will show with the current aircraft type and the aircraft model that you selected. You must then select NO, push the ENT key, and do Step 20AG again to correct the airplane model.

CAUTION: MAKE SURE THAT YOU INSTALL THE WAAS FULL CONFIGURATION SOFTWARE BUILD. IF YOU LOAD THE NON-WAAS SOFTWARE BUILD, YOU WILL DO DAMAGE TO THE 011-01105-00 GARMIN GIA-63W INTEGRATED AVIONICS UNITS AND YOU WILL HAVE TO REPLACE THE UNITS.

- AH. Turn the small FMS knob to expand the FILE pull down menu field and highlight the Cessna applicable model airplane 006-B0563-03 WAAS.
- AI. Push the ENT key.
- AJ. Push the LOAD soft key to install the software and configuration settings.

AK. Monitor the upload status. When the **Upload Complete** message is shown, push the ENT key to select OK.

NOTE: This may take several minutes.

AL. If a software or configuration upload shows a failure, the software upload process will stop, and you must do the software upload procedure again. Do Steps 20AJ thru 20AL again as necessary up to a total of five times until you successfully complete the configuration upload. If after five times the software configuration fails, correct the hardware failure and start the configuration upload again.

Table 2

Cessna NAV III Available Options:
KR 87 ADF
KN 63 DME
KTA 870 TAS
CO Guardian
Artex C406-N ELT
ChartView
Search and Rescue (SAR)
KAP-140 or GFC-700 Autopilot

AM. Complete the steps that follow to load the configuration settings for each item that is installed on your airplane from the list in Table 2:

NOTE: Installation of the WAAS software and airplane configuration will overwrite the configuration settings of the options in Table 2, and you must load them again.

- (1) Push the small FMS knob to stop the cursor.
- (2) Turn the small FMS knob to scroll to a different page and then back to the SYSTEM UPLOAD page.
- (3) Push the small FMS knob on the PFD to start the cursor.
- (4) Turn the small FMS knob to highlight the applicable airplane model and push the ENT key.
- (5) Turn the small FMS knob to expand the FILE pull down menu field and highlight one of the Cessna Nav III software uploads that is applicable for your airplane.
- (6) Push the ENT key.
- (7) Push the LOAD soft key to install the software.
- (8) Monitor the upload status. When the **Upload Complete** message is shown, push the ENT key to select OK.
- (9) If a software or configuration upload shows a failure, the software upload process will stop, and you must do the software upload procedure again. Do Steps 20AM(7) thru 20AM(9) again as necessary up to a total of five times until you successfully complete the configuration upload. If after five times the software configuration fails, correct the hardware failure and start the configuration upload again.
- (10) Do Steps 20AM(1) thru 20AM(10) again until all applicable software uploads are complete.

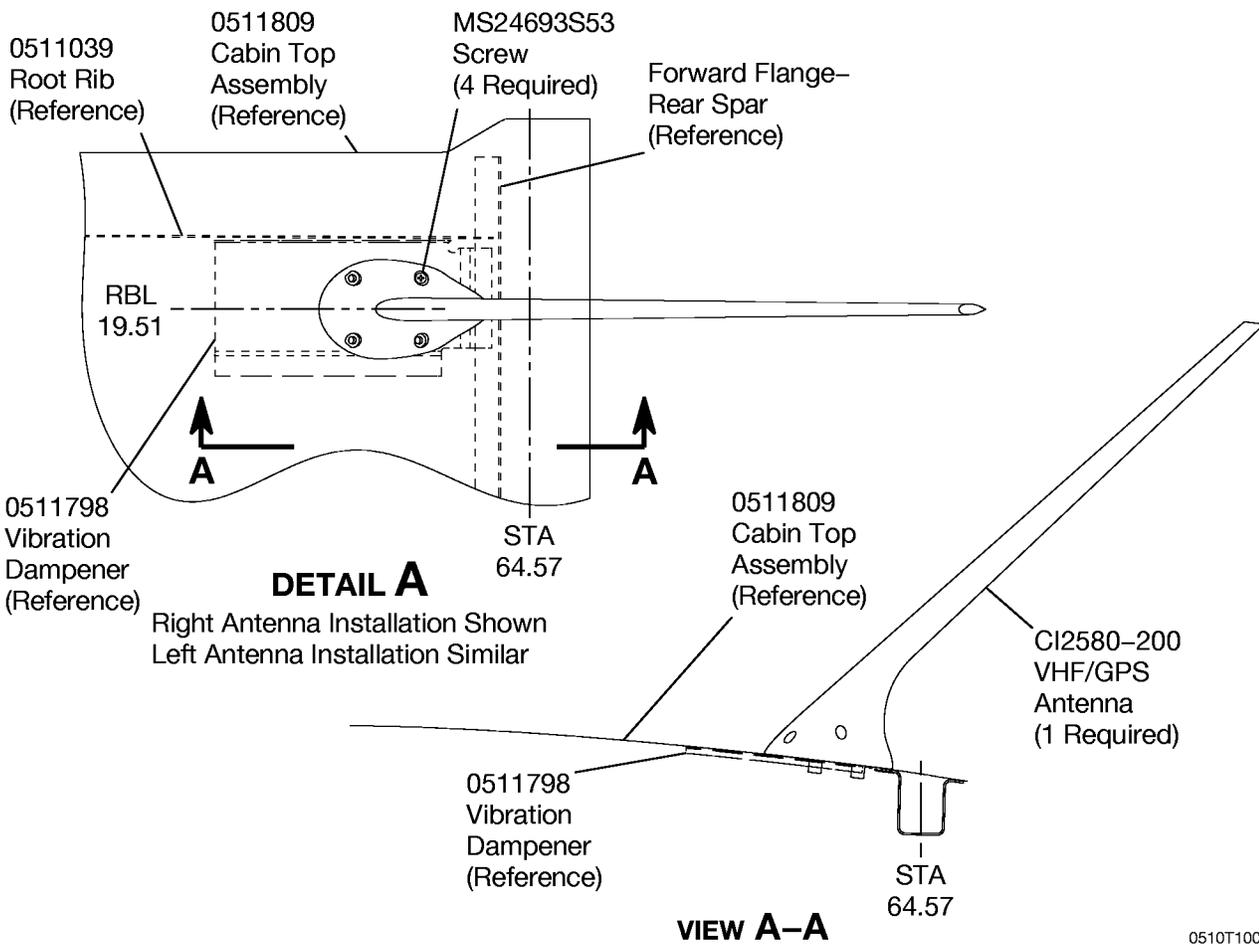
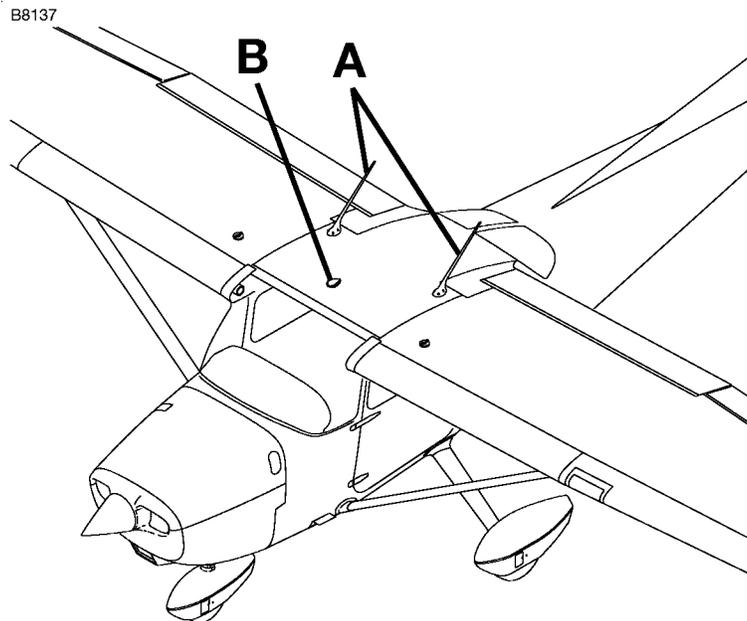
AN. Push the UPDT CFG soft key.

AO. Select YES and push the ENT key when the UPDATE CONFIG MODULE? message shows.

AP. Push the ENT key to select OK after you see the UPDATE CONFIG COMPLETE message.

AQ. Remove the SD Card from the top slot of the PFD.

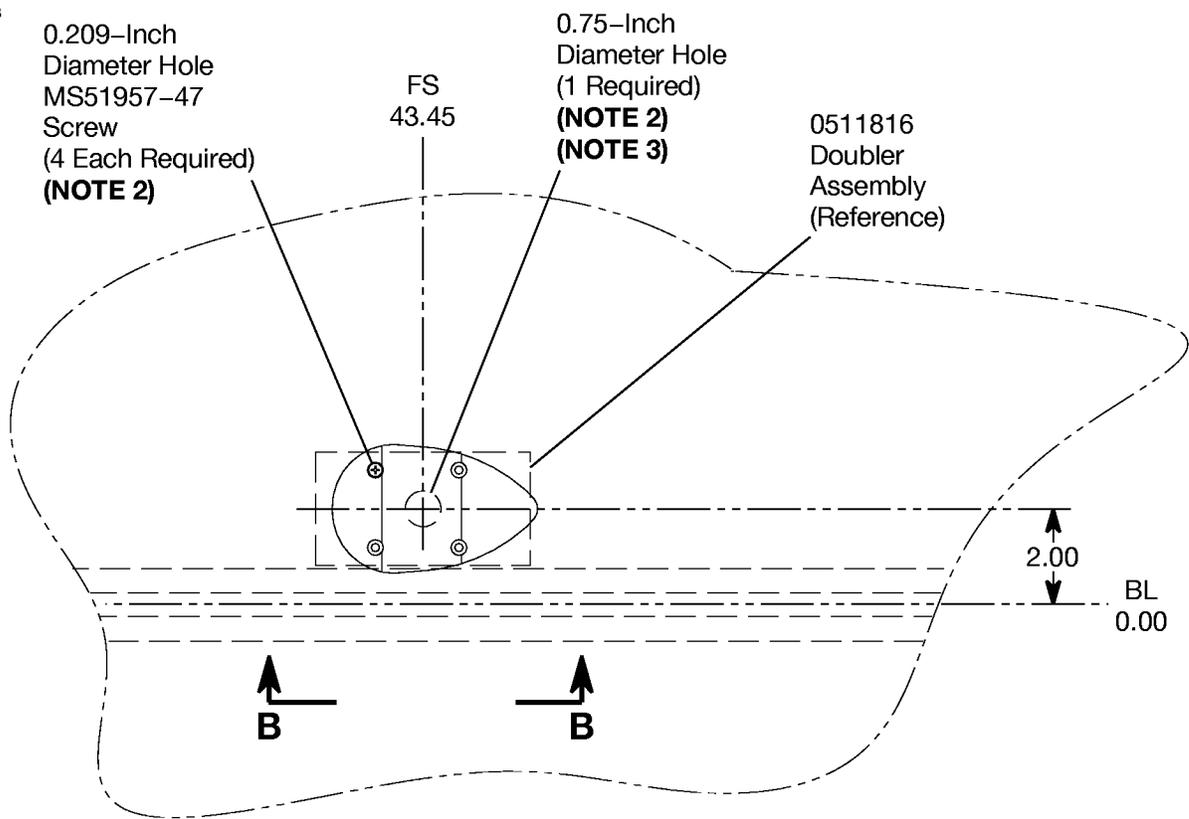
- AR. Do an operational test of the WAAS system:
- (1) With the large and the small FMS knobs, go to the System group SYSTEM STATUS page on the PFD.
 - (2) Make sure that the NAV1 and the NAV2 in the GIAS ONLINE field have green boxes.
 - (a) If the NAV1 and the NAV2 in the GIAS ONLINE field have green boxes, go to Step 20AS.
 - (b) If the NAV1 and the NAV2 in the GIAS ONLINE field do not have green boxes, do as follows:
 - 1 Do a check of the power.
 - 2 Do troubleshooting as necessary. (Refer to the Garmin Line Maintenance Manual, Part Number 190-00352-00.)
- AS. Put the AVIONICS and BAT MASTER switches in the OFF positions.
- AT. Install the obstacle/terrain data SD Cards in the bottom slots of the PFD and MFD units that were removed in Step 20S.
- AU. Install the electronic checklist SD Card in the upper slot of the MFD that was removed.
- AV. Wait for a minimum of two minutes and then turn the AVIONICS and BAT MASTER switches to the ON positions.
- AW. Allow the PFD and MFD to load into normal operations mode.
- AX. With the large and the small FMS knobs, go to the AUX- SYSTEM STATUS page.
- AY. Make sure that each item shows a green checkmark.
- AZ. If an item shows a red X, make sure the equipment is connected correctly and load the software again as necessary.
- BA. In the GPS STATUS box, make sure that the GPS SOLUTION shows 3D NAV or 3D DIFF NAV and the SBAS shows ACTIVE.
- BB. Disconnect external power from the airplane.
21. Make sure that you incorporate the POH Temporary Revision - WAAS Limitations from the list that follows into the Pilot's Operating Handbook (POH) and the FAA Approved Airplane Flight Manual:
- 172R: 172RPHAUS-04 TR01
 - 172S: 172SPHAUS-04 TR01
 - 182T: 182TPHAUS-04 TR01
 - T182T: T182TPHAUS-03 TR01
 - 206H: 206HPHAUS-03 TR01
 - T206H: T206HPHAUS-03 TR01.
22. Install the headliner, overhead console, interior equipment, and access panels that you removed for access. (Refer to the applicable maintenance manual, Chapter 6, Access/Inspection Plates - Description and Operation and Chapter 25, Interior Upholstery - Maintenance Practices.)
23. Make an entry in the airplane logbook stating that this Modification Kit has been installed.



0510T1007
A3960T220
AA3960T220

Figure 1. 172 Antenna Installation for WAAS (Sheet 1)

B8138

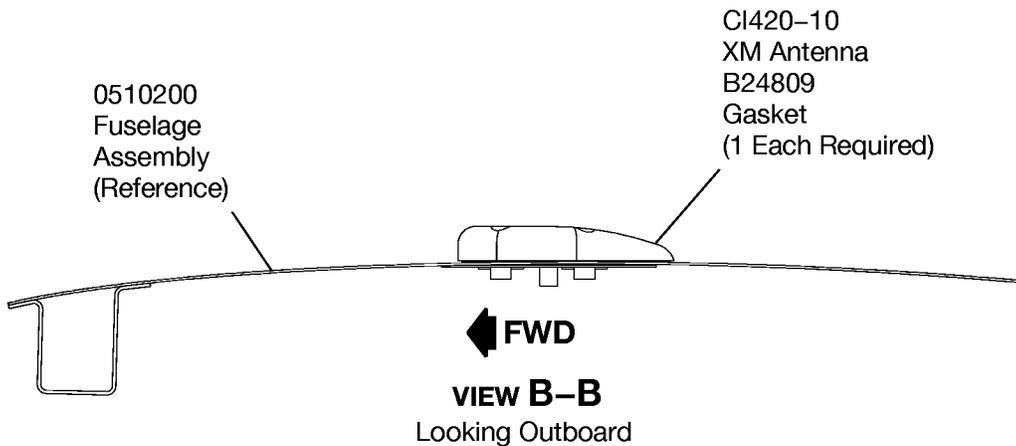


DETAIL B
Looking Down

NOTE 1: All dimensions are shown in inches.

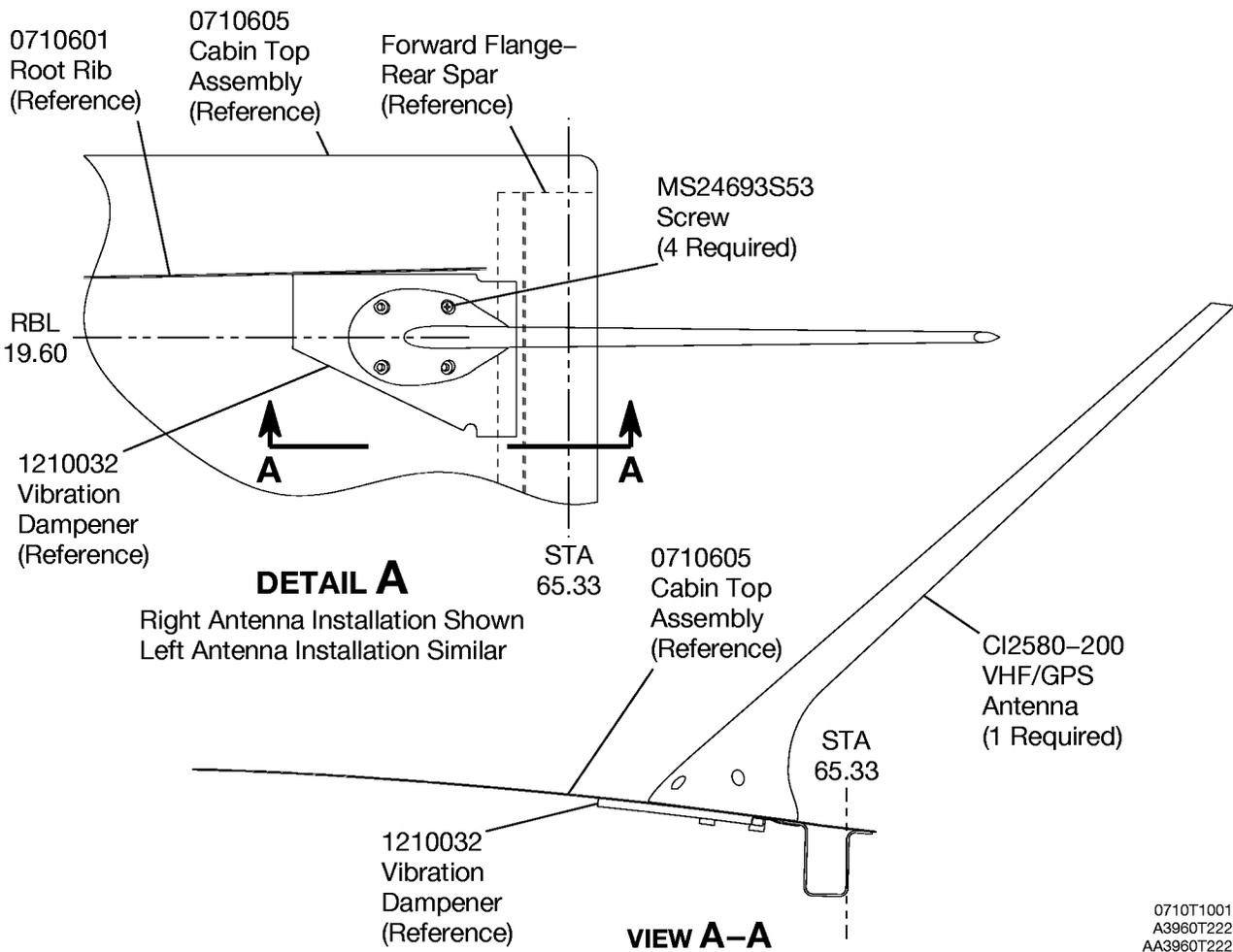
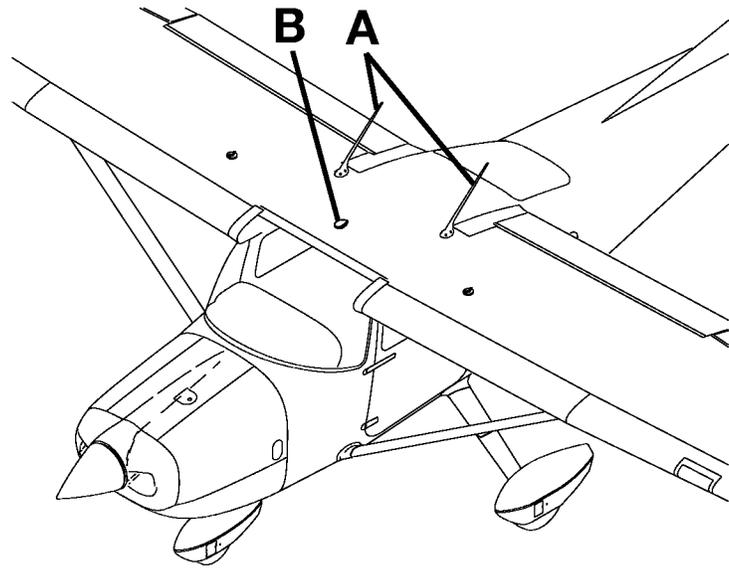
NOTE 2: Drill hole(s) through skin to align with hole(s) in 0511816 Doubler.

NOTE 3: If there is not sufficient clearance for the CI420-10 XM Antenna, remove a maximum of 0.25 inch of the material aft of the drilled 0.75-inch diameter hole to get clearance.



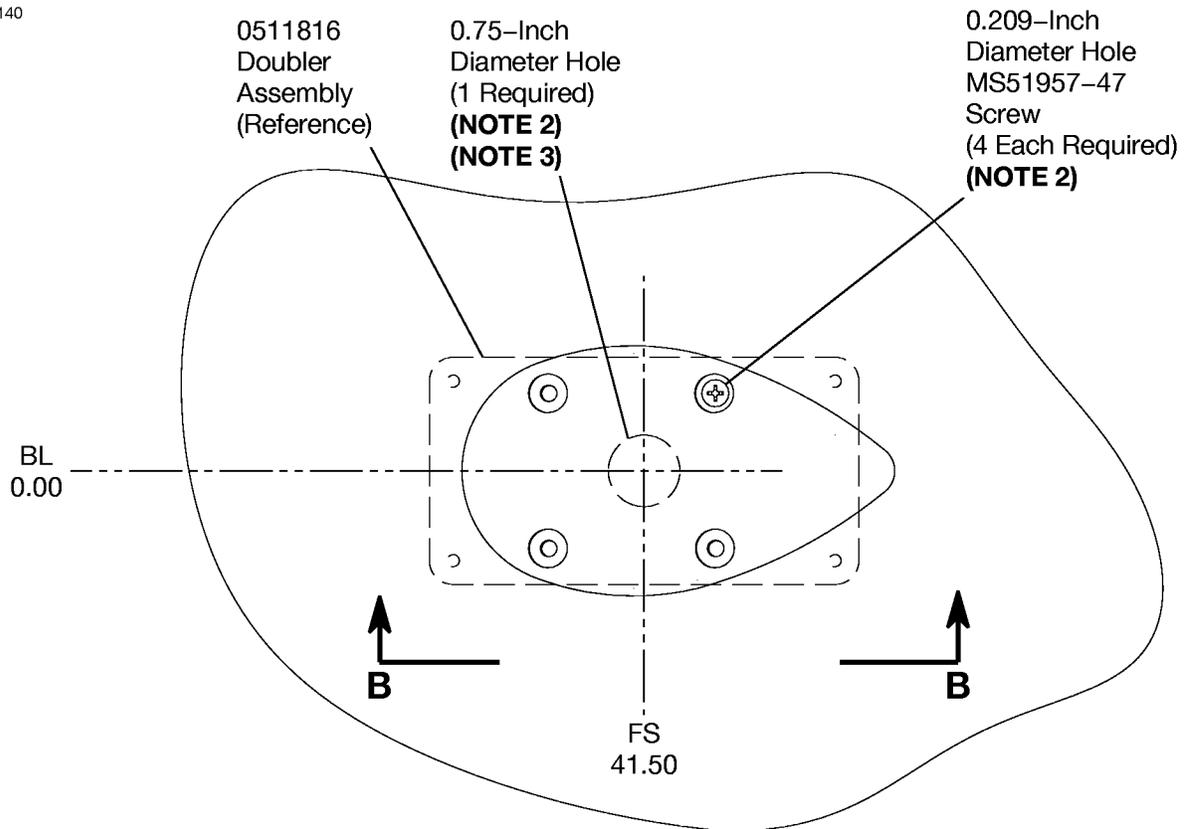
B3960T233
BB3960T233

Figure 1. 172 Antenna Installation for WAAS (Sheet 2)



0710T1001
A3960T222
AA3960T222

Figure 2. 182 Antenna Installation for WAAS (Sheet 1)



NOTE 1: All dimensions are shown in inches.

NOTE 2: Drill hole(s) through skin to align with hole(s) in 0511816 Doubler.

NOTE 3: If there is not sufficient clearance for the CI420-10 XM Antenna, remove a maximum of 0.25 inch of the material aft of the drilled 0.75-inch diameter hole to get clearance.

DETAIL B
Looking Down

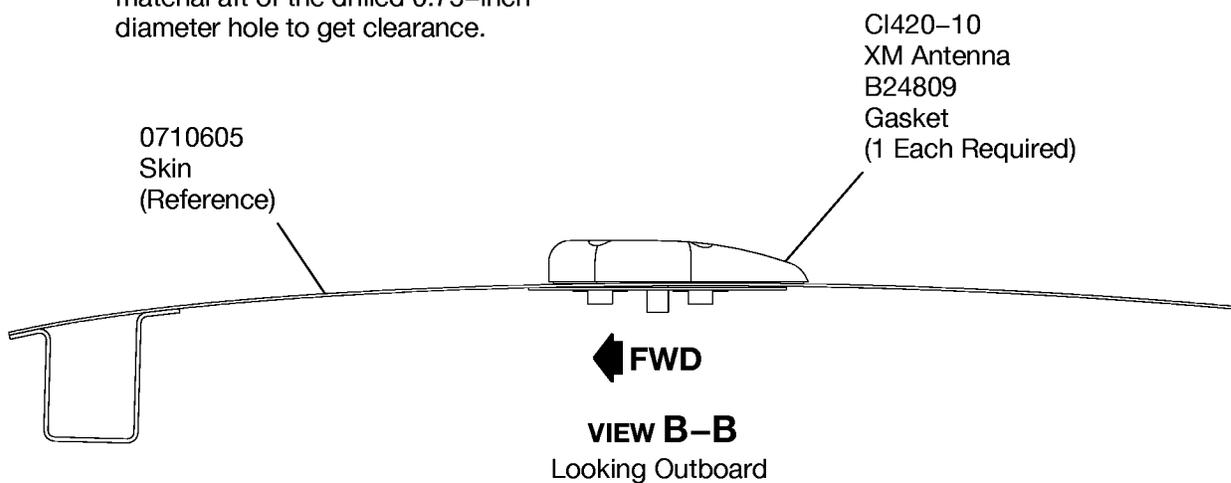


Figure 2. 182 Antenna Installation for WAAS (Sheet 2)

B8141

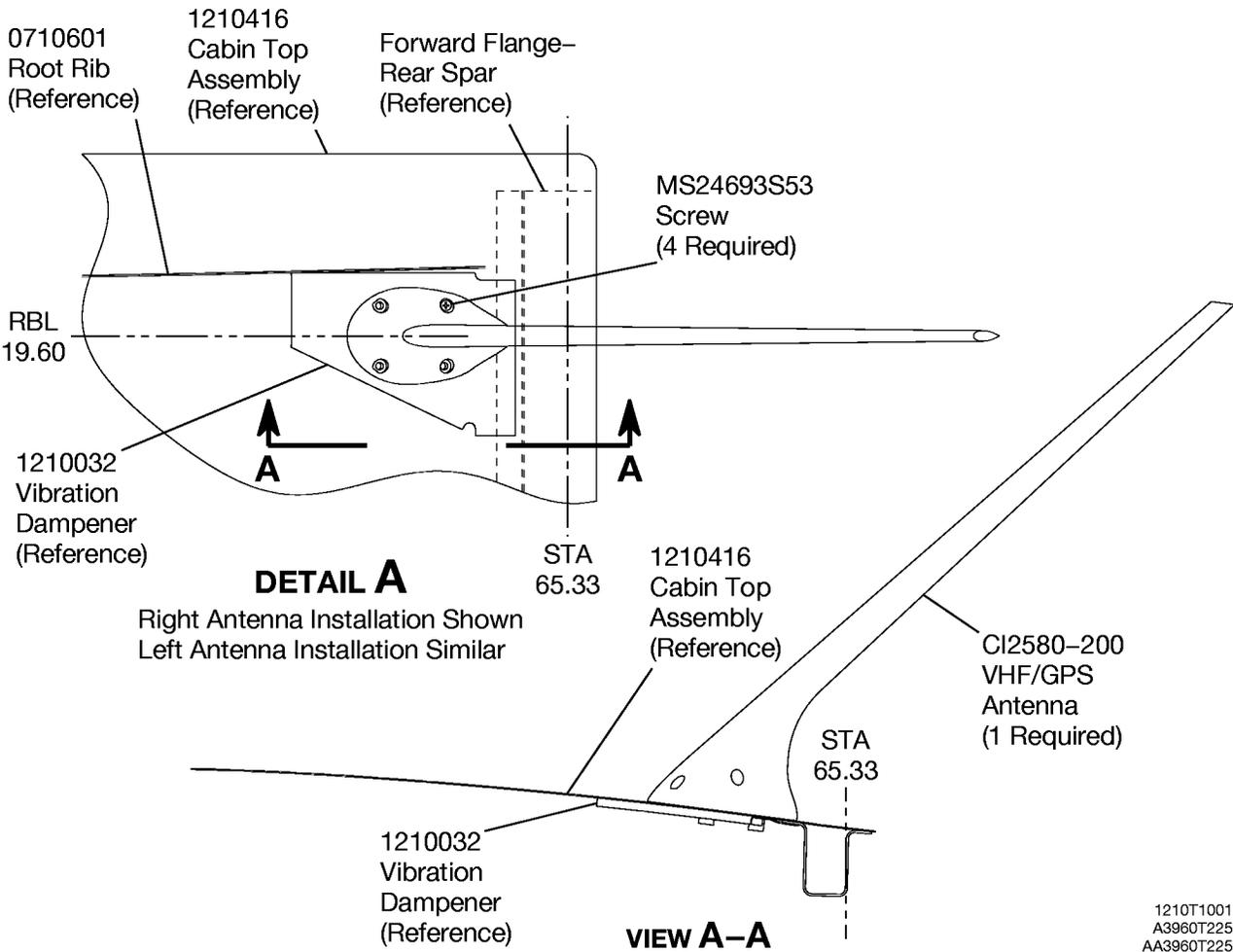
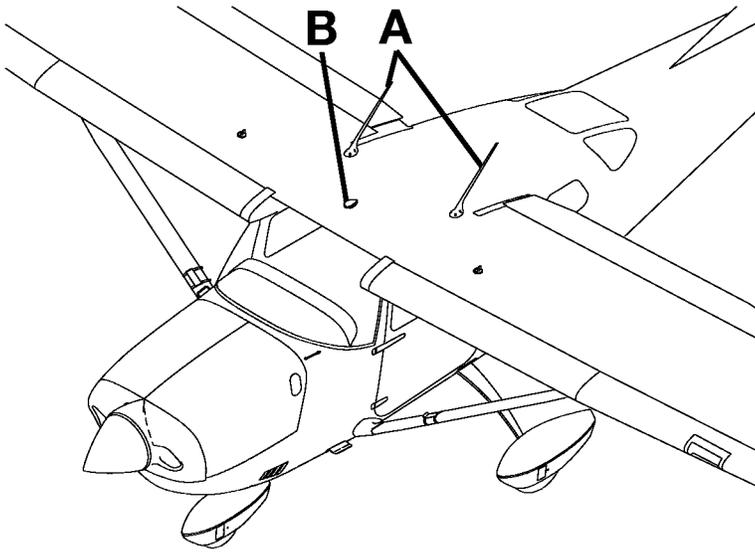
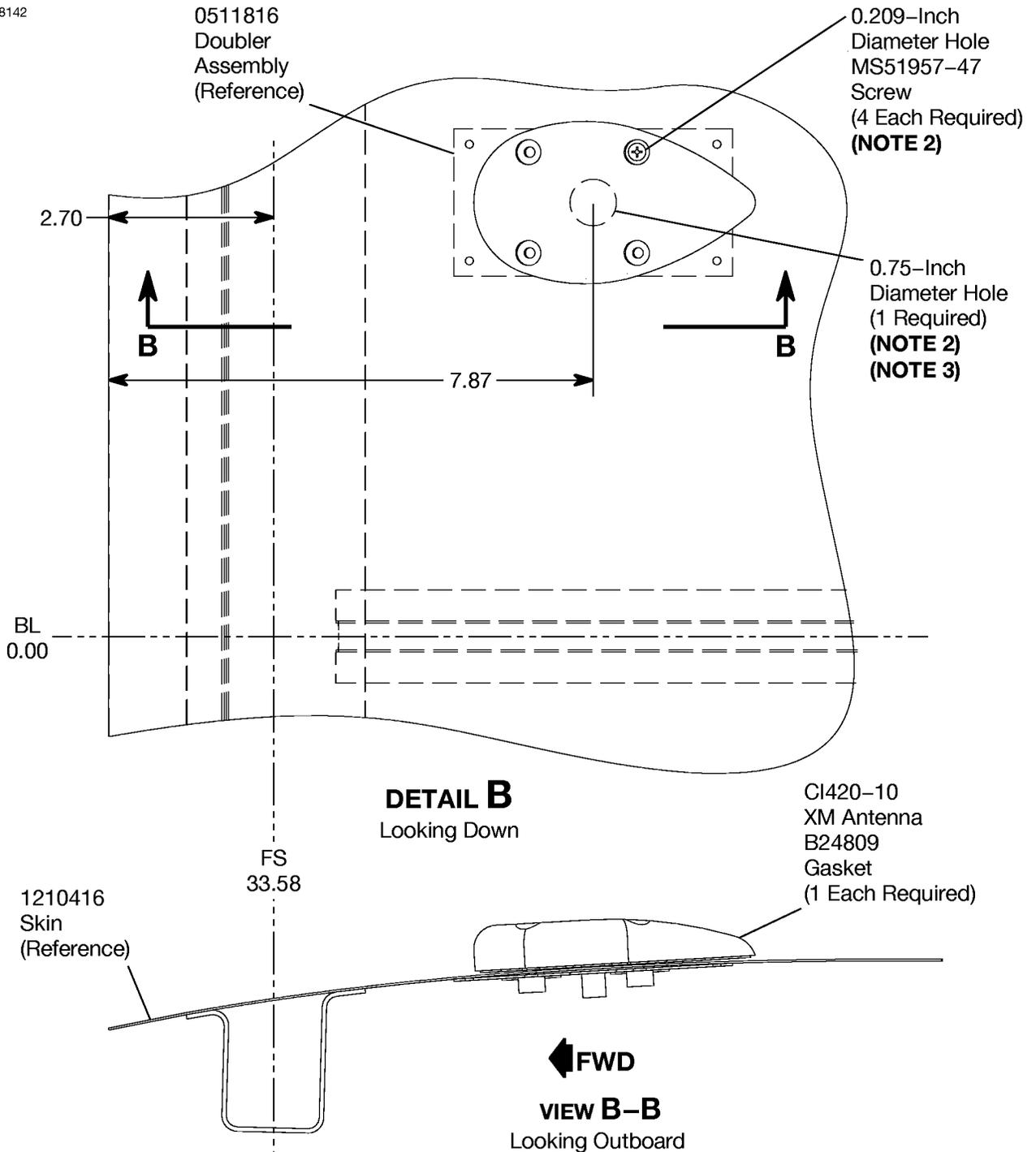


Figure 3. 206 Antenna Installation for WAAS (Sheet 1)



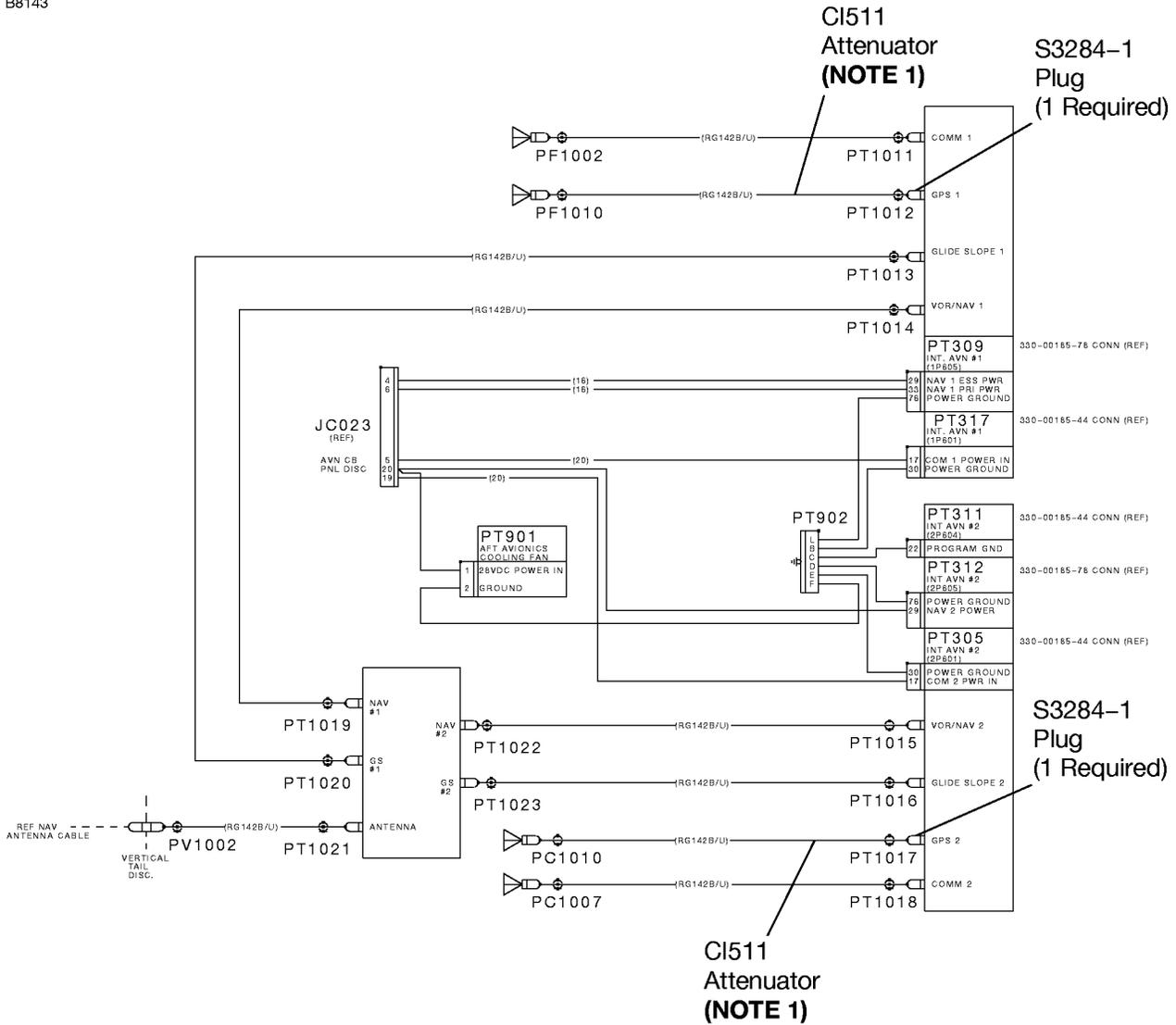
NOTE 1: All dimensions are shown in inches.

NOTE 2: Drill hole(s) through skin to align with hole(s) in 0511816 Doubler.

NOTE 3: If there is not sufficient clearance for the CI420-10 XM Antenna, remove a maximum of 0.25 inch of the material aft of the drilled 0.75-inch diameter hole to get clearance.

B3960T236
BB3960T236

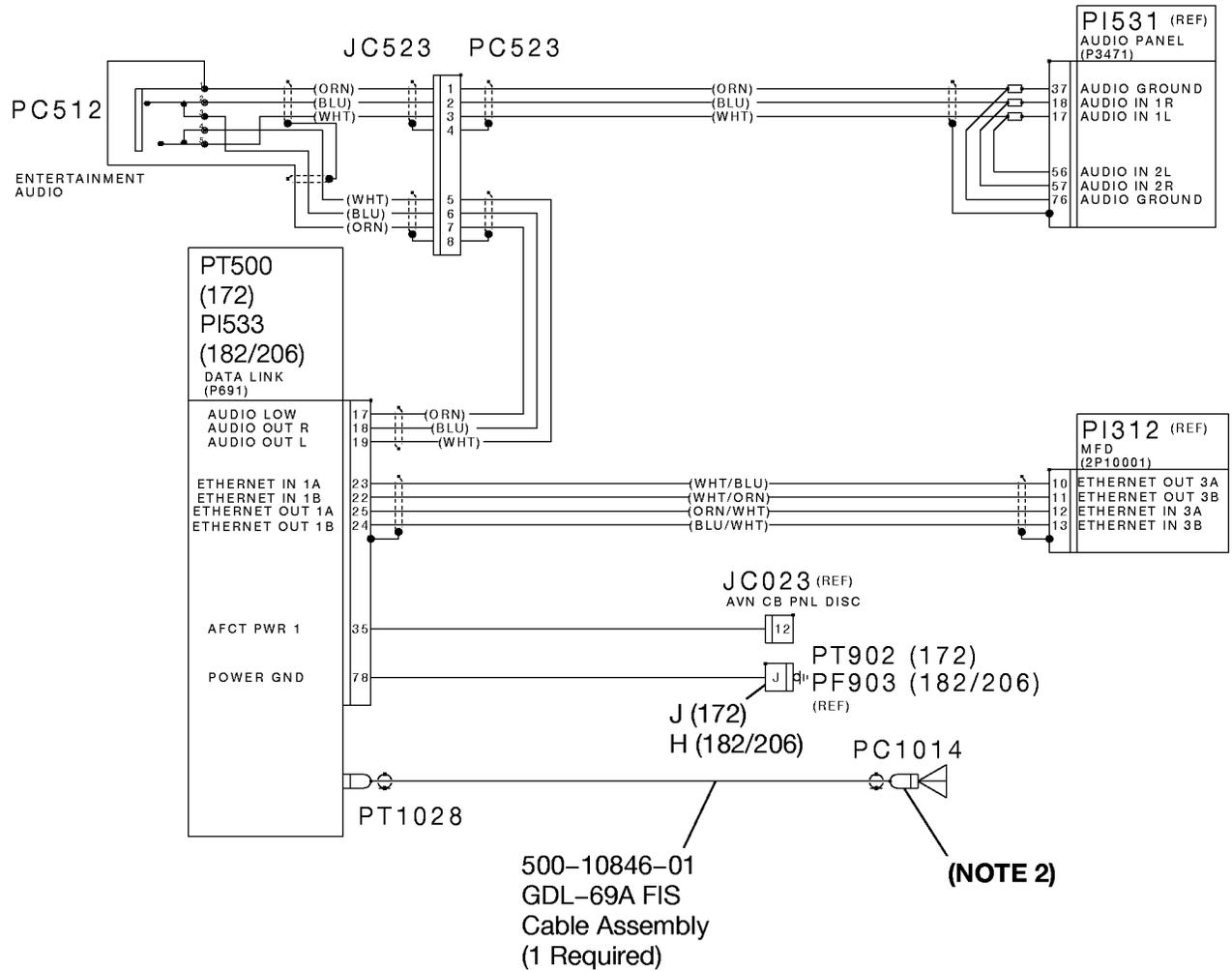
Figure 3. 206 Antenna Installation for WAAS (Sheet 2)



NOTE 1: Remove and discard the two CI511 Attenuators and the two attached coaxials (PT1012–PT1025 and PF1017–PT1027). They are installed no more than 6 inches from the GIA–63 dual–integrated avionics units.

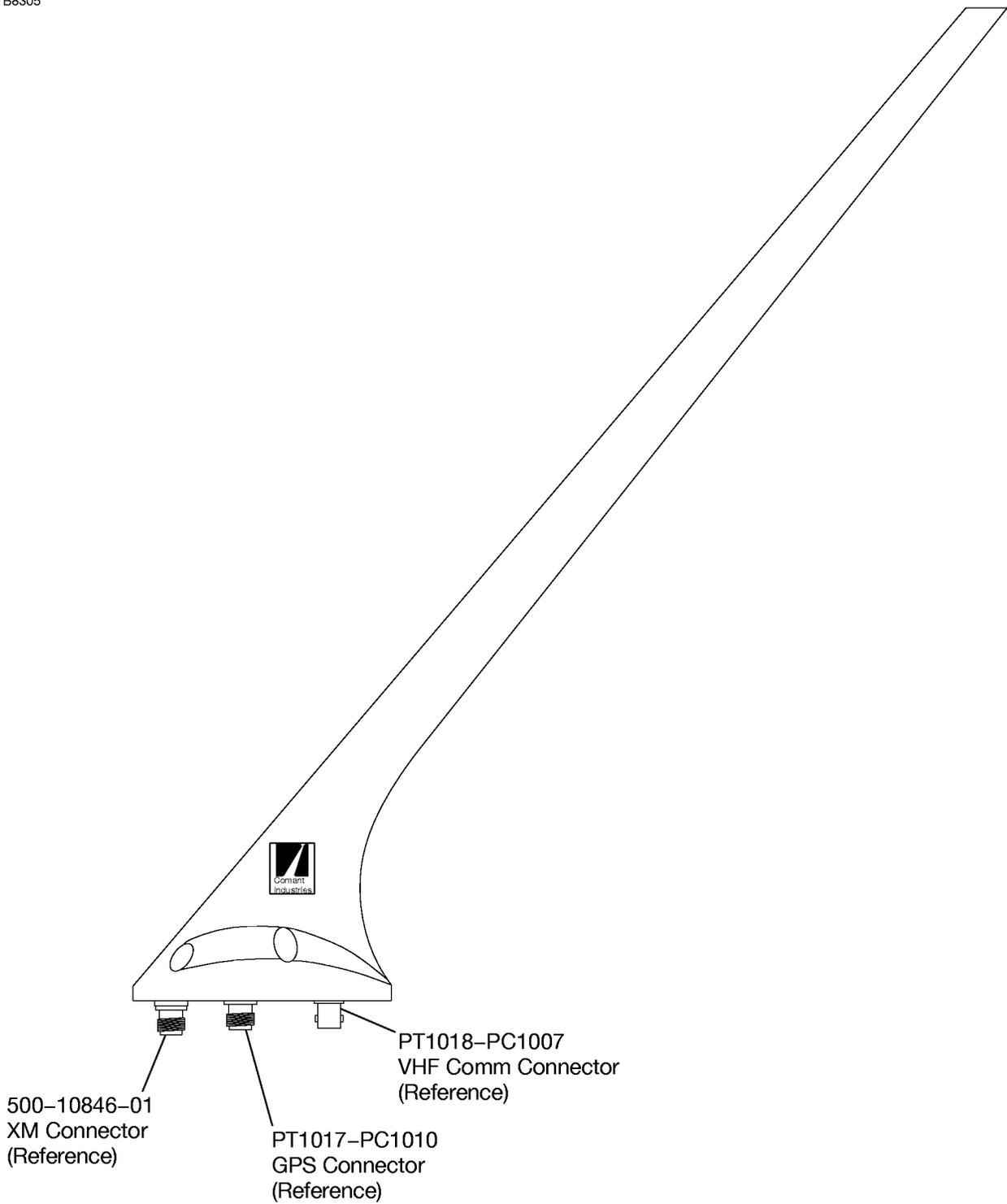
3921T165

Figure 4. Cable Assembly (Sheet 1)



NOTE 2: There is a red band on the cable end that attaches to the antenna.

Figure 4. Cable Assembly (Sheet 2)



1218T1093

Figure 5. Identification of Connectors for CI2480-400 VHF/GPS/XM Antenna (Sheet 1)

