LANDING AIDS - TROUBLESHOOTING

1. **General**

   A. This section gives the troubleshooting procedures for the Garmin G1000 integrated avionics landing aids systems. The systems include the Garmin Marker Beacon system and the Garmin Glideslope system.

   B. The Garmin GMA 1347/1360D Audio Panel circuitry contains the marker beacon receiver functionality. The Garmin GIA 63W/64W Integrated Avionics Units circuitry contains the glideslope receiver functionality.

   C. For marker beacon and glideslope systems other than Garmin, refer to the supplier publication part number and manufacturer data found in the Introduction - Supplier Publication List.

2. **Garmin Marker Beacon System Troubleshooting**

   A. Tools and Equipment

   (1) Digital Multimeter

   (2) IFR-4000 (or equivalent).

   B. Special Consumables

   • None.

   C. Reference Material

   • Chapter 23, Garmin GMA 1347/1360D Audio Panel - Removal/Installation

   • Landings Aids- Adjustment/Test

   • Marker Beacon Antenna - Removal/Installation

   • Marker Beacon Antenna Coupler - Removal/Installation

   • Garmin G1000 Integrated Avionics System - Troubleshooting

   • Garmin G1000 Integrated Avionics System - Adjustment/Test

   • Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation

   • Model 208 Wiring Diagram Manual.

   D. Preliminary Garmin Marker Beacon System Troubleshooting.

   (1) Do the Architecture Verification check and make sure all related systems are serviceable. Refer to G1000 Integrated Avionics System - Adjustment/Test, G1000 Architecture Verification Check.

   (a) Make sure that the correct software and configuration has been installed.

   (2) Make sure the GMA1 and GMA2 (optional) have check marks (green) next to their nomenclature on the list.

   (a) This indicates the LRU is serviceable.

   (3) Make sure that GIA1, GIA2, PFD1, PFD2 or the MFD on the System Status List the do not show a red X.

   (a) If the above LRU's show a red X troubleshoot the anomaly before further troubleshooting of the marker beacon system. Refer to, Chapter 34, Garmin G1000 Integrated Avionics System - Troubleshooting.

   (4) Check the primary flight display crew alert system (CAS) window for messages to aid in troubleshooting the anomaly.

   E. No marker beacon audio or indication on the PFD's (Airplanes with two GMA 1347/1360D Audio Systems installed).

   (1) Use an IFR-4000 or equivalent tester to transmit a marker beacon signal.
   NOTE: **If necessary, use the Aeroflex IFR 4000 NAV/COMM Test Set Operation Manual for instructions.**

   (2) Interchange coaxial connectors PF1027 and PF1028 at the marker beacon coupler.

   (3) If the marker beacon problems changes to the opposite marker beacon replace the marker beacon coupler.

   (4) If the marker beacon is still unserviceable do a continuity check of the coaxial cable between PF1028 and PI530.

   (a) Replace or repair the coaxial cable as necessary.

   (5) If still unserviceable upload the Garmin GMA software and configuration again. Refer to, Garmin G1000 Integrated Avionics System - Adjustment/Test.

   (6) If still unserviceable replace GMA 1 or GMA 2 as applicable. Refer to Chapter 23, Garmin GMA 1347/1360D Audio Panel - Removal/installation.

   F. Marker Beacon not operating correctly for GMA 1 or GMA 2.

   (1) Refer to the Model 208 Wiring Diagram Manual and do a check of the GMA 1347/1360D marker beacon wiring as follows:

      (a) Do a visual check of the electrical connectors and airplane electrical connectors for bent pins and pushed back pins.

          <u>1</u>   If necessary, repair the damage.

      (b) Make sure that electrical power and ground signals are present.

      (c) Make sure that data bus lines are correctly terminated and secure.

CAUTION: **Do not touch bus wiring to each other or to shield grounds. Damage to equipment or circuits can result.**

      (d) Use a multimeter to do a continuity check of the bus wires.

          <u>1</u>   Make sure that there is continuity only from each wires' related pin end to end and to no other wires, airplanes grounds, or shields.

      (e) Do a visual check of the wiring components and make sure that all applicable strapping is correct and any necessary G1000 system strapping is correct.

      (f) Do a visual check of the wiring bundles for damage.

          <u>1</u>   If necessary, repair or replace the wiring bundles. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

      (g) Use a multimeter to do a check of the applicable system wiring for continuity, ground faults, or other unserviceable conditions.

          <u>1</u>   If necessary, repair or replace the wiring bundles. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

  (2) Make sure that the coaxial connectors at the marker beacon antenna and coupler are connected correctly.

  (3) Check for cable damage and bent or broken coaxial connector pins.

      (a) If necessary, repair or replace the coaxial connectors or cables. Refer to the Model 208 Wiring Diagram Manual, Chapter 20, Wiring - Maintenance Practices.

  (4) If wiring is repaired or replaced, do an operational check of the marker beacon system again. Refer to Chapter 34, Landings Aids- Adjustment/Test

  (5) If the GMA 1347/1360D marker beacon system wiring is serviceable replace the components that follow:

      (a) Replace the marker beacon antenna coupler. Refer to Marker Beacon Antenna Coupler - Removal/Installation.

      (b) Replace the marker beacon antenna. Refer to Marker Beacon Antenna - Removal/Installation.

  (6) If LRU's are replaced do an operational check of the marker beacon system again. Refer to Chapter 34, Landings Aids- Adjustment/Test

  G. Put the Airplane Back to its Initial Condition.

  (1) Disconnect the external electrical power from the airplane.

3. Glideslope Troubleshooting

  A. Preliminary Garmin Marker Beacon System Troubleshooting

  (1) Refer to Chapter 34, Garmin G1000 Integrated Avionics System - Adjustment/Test and do the steps that follow:

      (a) Make sure that the correct software and configuration has been installed.

      (b) Do the System Status page check and make sure all LRU's/systems are serviceable.

  (2) Make sure the GMA1 and GMA2 (optional) have check marks (green) next to their nomenclature on the list.

      (a) This indicates the LRU is serviceable.

  (3) Make sure that GIA1, GIA2, PFD1, PFD2 or the MFD on the System Status List the do not show a red X .

      (a) If The above LRU's show a red X troubleshoot the anomaly before further troubleshooting of the marker beacon system. Refer to Chapter 34, Garmin G1000 Integrated Avionics System - Troubleshooting.

  (4) Check the primary flight display crew alert system (CAS) window for messages to aid in troubleshooting the anomaly.

  (5) Push the rightmost softkey on the PFD and make sure that no CAS Alert messages show in the Alerts window.

      (a) For Glideslope CAS Alert messages refer to Table 101.

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Table 101. Glideslope CAS Alert Messages

Glideslope CAS Alert Messages	Cause	Corrective Action
G/S1 SERVICE ◆ G/S1 needs service. Return unit for repair.	The G1000 has detected a failure in NAV 1 receiver.	1. Replace GIA 1. Refer to Chapter 34, Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
G/S2 SERVICE ◆ G/S2 needs service. Return unit for repair.	The G1000 has detected a failure in NAV 2 receiver.	1. Replace GIA 2. Refer to Chapter 34, Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
G/S1 FAIL ◆ G/S1 is inoperative.	The G1000 has detected a failure in G/S 1 receiver.	1. Make sure that the G/S 1 antenna wiring is serviceable. Refer to Model 208 Wiring Diagram Manual. 2. Replace the antenna coupler. Chapter 34,.VHF Navigation Antenna Coupler - Removal/Installation. 3. Replace GIA 1. Refer to Chapter 34, Garmin GIA 63W/64W Integrated Avionics Unit - Removal/Installation.
G/S2 FAIL ◆ G/S2 is inoperative.	The G1000 has detected a failure in G/S 2 receiver.	1. Make sure that the G/S 2 antenna wiring is serviceable. Refer to Model 208 Wiring Diagram Manual. 2. Replace the antenna coupler. Refer to Chapter 34, VHF Navigation Antenna Coupler - Removal/Installation. 3. Replace GIA 2. Refer to Chapter 34, Garmin G1000 GIA 63W/64W Integrated Avionics Unit - Removal/Installation.