

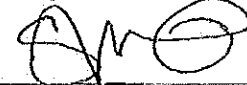


**Field Service Spares Replacement Procedure - Navman GPS Antenna
Kit, XX09 MK2, XX10 & ST24**

Approval:

Approving Authority	Signature	Date
Doc Control:	Ron Chaffee / Signature on file. 	10-26
Assistant Service Manager, Global	John VanderJagt / Signature on file. 	10-26
Author:	Stuart Broadfield / Signature on file. 	10.26.11

Revision History

Rev.	ECO	Description of Change	Date
A	8801	Initial release	07-06-2011
B	9041	Clerical revisions	10-18-2011

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Field Service Procedure – Replacement Navman GPS Antenna Kit, XX09 MK2, XX10 & ST24

1. Brief Summary:

Troubleshooting document for diagnosing a fault with and replacing Navman GPS antenna assembly.

2. Theory of Operation:

A GPS antenna is installed on the Sea Tel pedestal to provide the vessels coordinates to the DAC for targeting purposes. By using the vessels GPS position the system can calculate the azimuth and elevation look angles and also the pol angle for the desired satellite. On a VSAT system the GPS will also be fed into the SAT Modem to calculate the distance from the satellite for the TDMA link.

Should the GPS antenna fail and stop updating, tracking will keep the system on the satellite but the pol angle will not change as required. This will cause signal degradation and in turn, bad cross pol isolation. Should the antenna re-target, it will mispoint due to miss-calculation of the AZ, EL and POL positions. A known sign of a GPS antenna failure is when the position defaults to Japan (approximately 35N, 135E); the coordinates of where the GPS antenna is manufactured. If the satellite modem loses its GPS signal, it will eventually drop out of the network and only the RX LED will be illuminated (provided the antenna is on satellite). If the system loses its GPS, it is common to see a satellite out of range error (error 128) on the DAC. This is flagged when the target EL is calculated at below 0 or above 90 degrees elevation (out of range).

3. Latitude/Longitude Auto-Update Check:

This verifies that the integrated GPS antenna is automatically updating the positional information.

1. Press the NEXT key until the Ships menu is displayed.	LAT 38N LON 122W HDG 123.4 123.4
2. Press the ENTER key to isolate the Latitude entry menu.	LAT 38N
3. Press the LEFT arrow key to display a cursor under the numeric value.	LAT 38N
4. Press the UP arrow key to change the displayed value.	LAT 39N
5. Press the ENTER key to submit change.	LAT 39N
6. If automatic updating is working properly the Longitude value display will return to the current ships position within a few seconds.	LAT 38N

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4. Troubleshooting:

Four polar orbiting GPS satellites cover any one location at any given time. In order to triangulate the GPS position, the GPS antenna needs to receive a signal from three out of the four satellites. If partial blockage of the GPS antenna on the pedestal causes only two or less of the satellites to be received, the GPS position will stop updating. If blockage is causing a problem with the update then there is a possibility of running the vessels GPS into the DAC via the TMS. If this is carried out then the antennas GPS must be disconnected. Do this by disconnecting the RJ-45 connector at the PCU. Tie up any loose cable to prevent catching.


5. Replacing the Navman GPS Antenna:

5.1. Tools.

- Cutters/Snips
- Acetone
- Tie Wraps/Cable Ties

5.2. Procedure.

Procedure for replacing the Navman GPS antenna, Sea Tel kit part number: 134882 (Navman part number: 131381-1).

<p>*CAUTION: Power down the pedestal before following this procedure.</p> <ol style="list-style-type: none">1. Using cutters, cut the three cable ties along the edge of the dish and any ties that join the GPS cable to the other harnesses at the PCU.2. Unplug the GPS cable from the PCU.3. Remove the defective GPS by cutting the double sided sticky tape between the GPS antenna and the bracket.	
<ol style="list-style-type: none">4. Clean the upper surface of the bracket thoroughly with a lint free cloth and acetone solvent.5. Apply the sticky side of the double sided sticky tape to the bracket.6. Remove the foam tape from the bottom of the replacement GPS antenna and discard.7. Peel the paper off of the tape to expose the second sticky side and mount the replacement GPS antenna to the tape with the cable toward the cable tie buttons.8. Insert new 7" cable ties into the buttons and secure the GPS cable along the edge of the dish toward the PCU.9. Coil the excess GPS cable length and use a cable tie to bind the coil.10. Plug the GPS cable into the "GPS" port on the PCU.	