
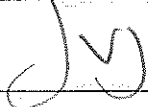
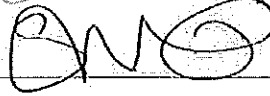


Field Service Spares Replacement Procedure – Feed Rate Sensor Kit, USAT

Approval:

Approving Authority	Signature	Date
Doc Control:	Ron Chaffee / Signature on file. 	3-26-12
Assistant Service Manager, Global	John VanderJagt / Signature on file. 	3-27-12
Author:	Stuart Broadfield / Signature on file. 	03-23-12

Revision History

Rev.	ECO	Description of Change	Date
A	9145	Initial release	03-09-2012

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Field Service Procedure – Replacement Feed Rate Sensor Kit, USAT

1. Brief Summary:

Troubleshooting document for diagnosing a fault with and replacing the rate sensor on the feed of the USAT series antennas.

2. Checklist:

- Verify Sensor Feedback
- Verify Motor Drive

3. Theory of Operation:

A rate sensor is installed on the feed assembly of the USAT series antennas to provide feedback for stabilization of the pol angle while the elevation and azimuth axis's drive to maintain stabilization. As the vessel rolls and pitches the azimuth and elevation axis's will be driven to maintain stabilization, this will also require pol drive to maintain the reception position of the linear satellite signal.

As well as feedback from the sensors on the motion platform PCB and PCU motherboard the feed rate sensor will detect the rotational forces exerted on the feed and in response drive will be issued to the pol motor to keep the feed stable. Should the rate sensor fail corrupt feedback will be fed into the PCU and in turn the pol motor will be driven in incorrect amount in relation to the vessels motion causing misalignment of the feed and bad cross pol isolation.

4. Verify the Feedback from the Feed Rate Sensor:

Exert forces on the system by physically rocking the system from side to side to exert motion onto the feed assembly. Drive from the pol motor should be consistent with the motion exerted on the system. If the feedback from the pol motor isn't correct (I.e. the axis is moving a different amount than the amount of motion exerted on the system) then it's possible the sensor has failed. Replace the rate sensor on the feed and repeat this test.

5. Verify Motor Drive:

Should replacing the feed rate sensor not maintain proper pol alignment under dynamic conditions then another possible failure could be the pol motor not driving correctly.

6. Further Information:

Exert forces on the system by physically rolling the antenna from side to side, drive from the pol motor should be consistent with the motion exerted on the system. If the feedback from the pol motor isn't correct (I.e. the axis is moving a different amount than the amount of motion exerted on the system) then it's possible the sensor has failed. Replace the rate sensor on the feed and repeat this test.

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7. Replacing the Feed Rate Sensor PCB:

7.1. Tools.





- 5/16" Wrench/Spanner
- 7/16" Wrench/Spanner
- 1/4" Wrench/Spanner
- #1 Phillips Screwdriver
- Loctite 242 and 2760

7.2. Procedure.

Procedure for replacing the feed rate sensor PCB, Sea Tel kit part number: 135921 (rate sensor PCB part number: 128115).

<p>*Caution: Power down the pedestal before following this procedure.</p> <p>Using a 5/16" wrench remove the nuts and washer securing the casing around the feed rate sensor PCB. Save the hardware for future use.</p>	
<p>With the casing removed disconnect the IDC connector from the feed rate sensor PCB.</p>	
<p>Remove the bracket from the feed using a 7/16" wrench. Save the hardware for future use.</p>	

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<p>Using a 1/4" wrench remove the two standoffs securing the defective rate sensor PCB to the bracket. Save the hardware for future use.</p>	
<p>Apply Loctite 242 to the threads and install the replacement rate sensor PCB using a #1 Phillips screwdriver and 1/4" wrench.</p>	
<p>Install the sensor and bracket assembly to the feed using a 7/16" wrench, applying Loctite 2760 to the thread of the bolt.</p> <p>*Note: As the rate sensor detects rotational forces exerted on the feed and rotates with it there is no physical alignment to be taken into account when installing it.</p>	
<p>Connect the IDC connector to the rate sensor PCB. Ensure the harness isn't pulled taut, if so adjust the pivot position or the PCB mounting bracket.</p>	
<p>Apply Loctite 242 to the threads and install the PCB cover, locating the rubber grommet in the groove to protect the harness and secure the ground wire to the outer mount.</p> <p>*Note: Be careful not to over tighten the nuts due to the risk of damaging the small threads.</p>	