

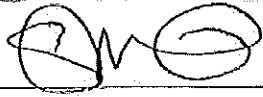


Field Service Spares Replacement Procedure – Dual Channel Rotary Joint

Approval:

Approving Authority	Signature	Date
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Revision History

Rev.	ECO	Description of Change	Date
A	8798	Initial release	08-12-2011
B	9041	Clerical revisions	10-19-2011

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Field Service Procedure – Replacement Dual Channel Rotary Joint Kit

1. Brief Summary:

Troubleshooting document for diagnosing a fault with and replacing the dual channel rotary joint on the 4003A, XX06, XX09, XX10 and dual channel XX97, XX97A, XX97B, XX00, XX00B and XX07 series antennas.

2. Checklist:

- Skew Azimuth
- Switch Channels

3. Theory of Operation:

The dual channel coaxial rotary joint passes both receive and transmit lines from the BUC and LNB to the DAC and Sat modem. Pedestal communications are also multiplexed onto the receive cable by the above and below decks MUX's (modems) meaning only 2 channels are needed. The rotary joint allows for unlimited rotation of the coax cables and in turn the azimuth axis of the pedestal.

A bad contact patch on the receive and pedestal communications channel of the rotary joint will cause the system to lose communications between the above decks and below decks. This will cause the DAC to flag a communication error (error 4) as well as a dishscan error (error 16) as the DAC will no longer receive the dishscan pulse from the PCU.

4. Skew Azimuth:

Turn tracking off and clear any errors which may be displayed on the DAC. The antenna will now remain stationary. Press the next button until the antenna window is displayed and hold the right arrow to skew the antenna up in azimuth. The antenna will now skew slowly up in azimuth. Watch to see if a communication error is flagged by the DAC as the antenna sweeps. If so move onto the "Switch Channels" procedure.

5. Switch Channels:

If the system is flagging communication errors while driving in azimuth as per the above procedure, disconnect the transmit line from the center channel of the rotary joint and connect the receive line in its place, on both the upper and lower connections of the rotary joint.

Repeat the above procedure and verify if the communication error no longer returns. If they do, the rotary joint is defective. (Under normal operation the center channel of the rotary joint should always be used for the transmit line).

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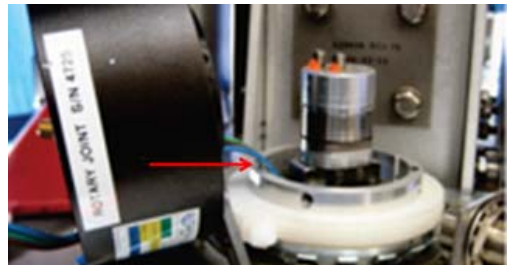
6. Replacing the Rotary Joint – XX09 and XX10 Series Antennas:

6.1. Tools.

- 5/16" (8mm) Wrench/Spanner
- 5/32" Allen Wrench/Key
- Cable Ties/Tie Wraps
- #1 Phillips Screwdriver

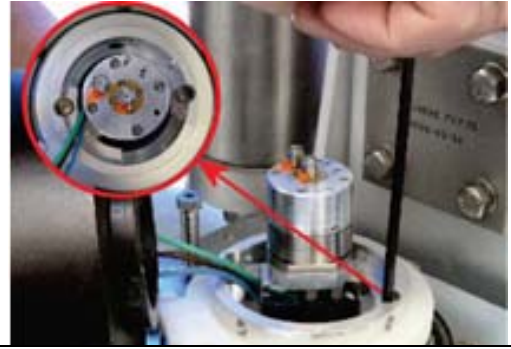
6.2. Procedure.

Procedure for replacing the dual channel rotary joint on the XX09 and XX10 series antennas, Sea Tel kit part number: 135371 (rotary joint part number: 116466).

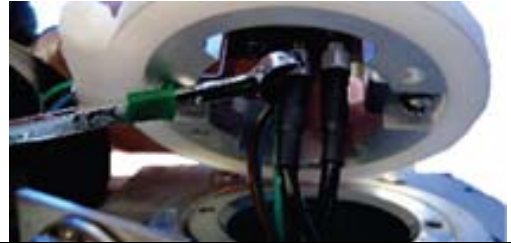
<p>*CAUTION: Power down the pedestal before following this procedure.</p> <p>1. Using a 5/16" wrench, remove the TX and RX coaxes from the top side of the rotary joint.</p>	
<p>2. Using a 5/32" Allen head wrench, remove the four M4 screws that secure the Power Ring Assembly to the Adapter Plate. Retain hardware for future use.</p>	
<p>3. With two hands, carefully lift power ring up and off of the adapter plate.</p>	
<p>4. Lay the power ring assembly on its side as shown to the right. Be careful not to pull or damage the AC power wires routing into the base assembly.</p>	

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5. Using a 5/32" Allen wrench, remove the hardware that secures the home sensor mounting cuff to the azimuth bearing. Retain hardware for future use.



6. Carefully lift up the sub assembly to expose the coax connections on the underside of the rotary joint and using a 5/16" wrench remove the transmit cable from the center channel of the rotary joint.



7. Using a tie wrap/cable tie clearly mark the transmit (center) coax.

8. Disconnect the Rx IF coax cable from rotary joint.




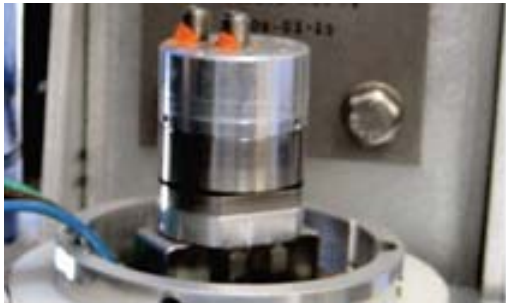
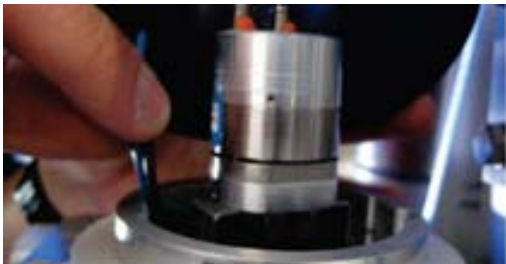
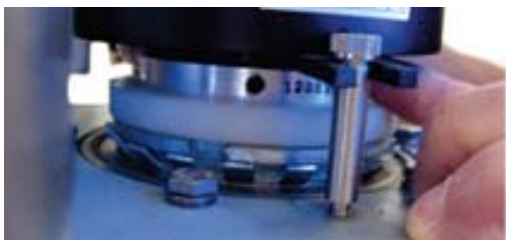
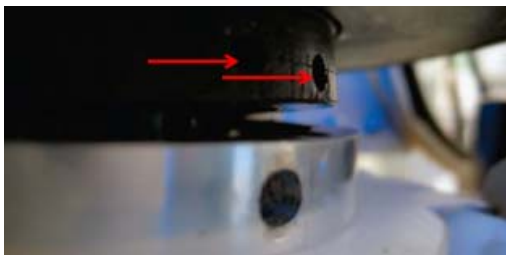
9. Using a #1 Phillips head screwdriver, remove the screws that secure the rotary joint to its mounting bracket. Retain the hardware for future use.



10. Install replacement rotary joint and secure with the hardware removed in the previous step, apply Loctite 242 to the threads.



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<p>11. Reconnect the coax cables, TX IF cable to center channel and RX IF cable to the outer channel, remove the cable ties installed for reference on the TX cables.</p>	
<p>12. Install and secure the sub-assembly to the azimuth bearing using the hardware removed earlier.</p>	
<p>13. Carefully snug the AC power wires back into the top half of the base assembly.</p>	
<p>14. Orient the power ring so that its drag link aligns with the shoulder bolt installed onto the mounting bracket.</p>	
<p>15. Align the power ring so that its mounting holes are in line with the through holes in the mounting cuff.</p> <p>*Note: There are two mounting holes "set" in the powering assembly. You may align to either set.</p>	

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16. Using the hardware removed earlier, secure the Power Ring Assembly to the mounting cuff.
***Note:** Do not over tighten the retaining screws, as you may cause damage to the threads of the mounting holes in the power ring itself. If you experience problems with one or more of the holes (alignment or damaged threads), slightly rotate the assembly to align with the secondary mounting hole set.



17. Reconnect and secure the TX IF coax to the center channel and the RX IF coax to the Outer Channel of the Rotary Joint.
18. By hand manually rotate the antenna in azimuth both clockwise and counter-clockwise $>360^\circ$ while checking for any physical obstructions or restrictions (i.e. cables, hardware, bearings, etc.)
19. Refer to section 4 of this document & verify the function of the replacement rotary joint.



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7. Replacing the Rotary Joint – XX97 and XX00 Series Antennas:

7.1. Tools.

- Long #1 Phillips Screwdriver
- 5/16" (8mm) Wrench/Spanner
- Loctite 242

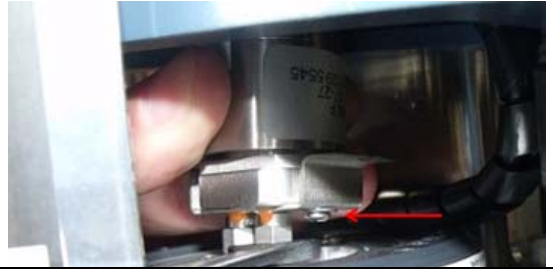
7.2. Procedure.

Procedure for replacing the dual channel rotary joint on the XX97, XX97A, XX97B, XX00, XX00B and XX07 series antennas, Sea Tel kit part number: 135371 (rotary joint part number: 116466).

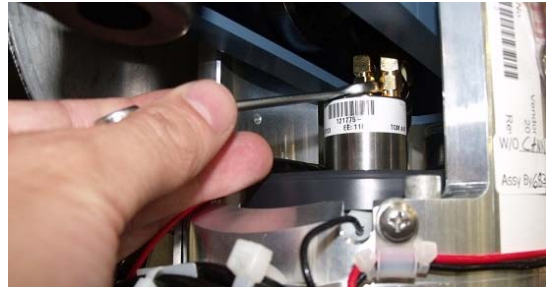
<p>*CAUTION: Power down the pedestal before following this procedure.</p> <p>1. Disconnect the SMA cables from the top of the rotary joint using a 5/16" wrench</p> <p>*Note: You may want to mark the center cables with cable ties to identify them.</p>	
<p>2. Rotate the pedestal in azimuth until the upper holes in the cross level beam are aligned with the mounting screws for the rotary joint bracket.</p> <p>3. Use a long #1 Phillips screwdriver to reach through the cross level beam to access the screws.</p>	
<p>4. Remove the two screws securing the rotary joint bracket to the power ring. Take care not to drop the screws.</p>	
<p>5. Lift the rotary joint and disconnect the SMA cables from the base using a 5/16" wrench. You may want to mark the center cable with a cable tie.</p> <p>6. Remove the rotary joint assembly.</p>	

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7. Undo the screw securing the bracket to the defective rotary joint using a #1 Phillips screwdriver.
8. Install the bracket to the replacement rotary joint assembly, applying Loctite 242 to the hardware.



9. Reconnect the upper and lower SMA cables, making sure the ones marked with a cable ties are connected to the center channel.
10. Remove the cable ties used for reference, once the SMA cables have been connected.



11. Reinstall the two screws securing the rotary joint bracket to the power ring.
12. By hand manually rotate the antenna in azimuth both clockwise and counter-clockwise >360° while checking for any physical obstructions or restrictions (i.e. cables, hardware, bearings, etc.)
13. Refer to section 4 of this document & verify the function of the replacement rotary joint.

