Field Service Spares Replacement Procedure – 4 Channel Rotary Joint Kit

Approval:

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Revision History

Rev.	ECO	Description of Change	Date
X1	8873	Initial release	08-12-2011
A	9059	Clerical revisions	10-30-2011

1. Brief Summary:

Troubleshooting document for diagnosing a fault with and replacing the 4 channel rotary joint on the XX97B, XX00B and 5004UA series antennas.

2. Checklist:

- Skew Azimuth
- Switch Channels

3. Theory of Operation:

On the XX97B & XX00B series antennas the four channel coaxial rotary joint passes either the quad KU or Dual C-band receive lines from the LNB to the multi-switch and DAC. A switch assembly is used so the system can change between two of the KU & C-band lines from the feed.

Pedestal communications are also multiplexed onto one of the receive lines by the above and below decks MUX's (modems) meaning a maximum of 4 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 one of the channels of the rotary joint will cause the system to lose signal on that band and potentially 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. Diagnose Channel:

If one or more of the channels of the rotary joint are down the programming information will be lost. An indication of this will be that the antenna may operate but the decoder won't receive signal on some channels (the channels which are broadcast on the failed band). If this happens to be the band on which the antenna is tracking on then the AGC will drop out causing the antenna to repeatedly search.

Using the Tone & Voltage settings of the DAC, switch between the bands and if one of them is down it will be highlighted by a low AGC (typically 700 counts). If the connection is intermittent, the below "skew azimuth" procedure may need to be repeated on each channel for diagnostic purposes.

5. 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.

6. Switch Channels:

If the system is flagging communication error while driving in azimuth as per the above procedure, reconfigure the rotary joint by connecting the failed band to a different channel.

Repeat the above procedure and verify if the communication error no longer returns. If no error is received the original band of the rotary joint is defective and the unit needs to be replaced.

7. Replacing the 4 Channel Rotary Joint on the XX97B & XX00B:

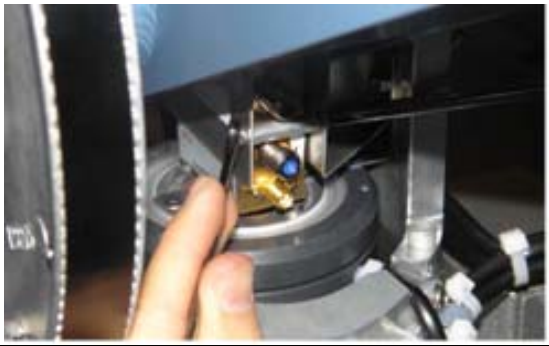
7.1. Tools.

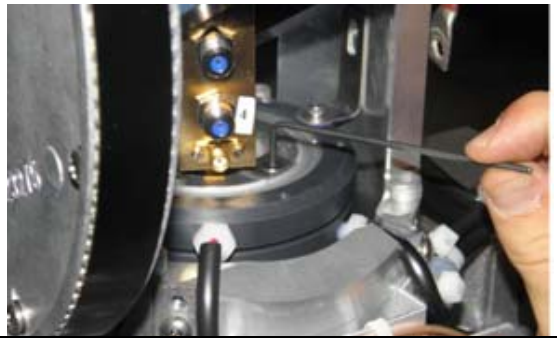
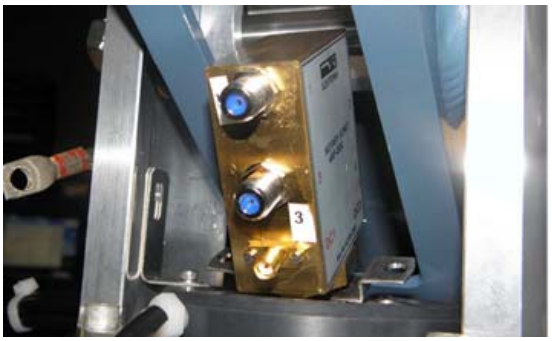
- 7/16" Wrench/Spanner
- Snips/Cutters
- 7/16" Socket
- 1/4" Wrench
- #1 Phillips Screwdriver
- 11/32" Wrench/Spanner
- 5/64" Allen Wrench/Key
- Cable Ties/Tie Wraps
- Loctite 242 and 2760

7.2. Procedure.

Procedure for replacing the four channel rotary joint on the XX97B series antennas, Sea Tel kit part number: 135545 (4 channel rotary joint part number: 127968-1).

***CAUTION:** Power down the pedestal before following this procedure. 1. The rotary joint cables have to be disconnected to be able to pull out the rotary joint assembly from the canister. Remove the 4 F-connectors from the connector bracket using a 7/16" wrench. 2. Cut all the cable ties securing the coax cables.	
3. In order to gain more access to the rotary joint remove the cross level bump stops. Remove the stops on both side of the cross level beam using a 7/16" socket.	

4. Disconnect the 4 F-connectors on both sides of the rotary joint using a 7/16" wrench. Make a note of the connectors with respect to canister assembly and mark as necessary for later reference.	
5. Remove the spacers attached to the bracket on both sides, put a 1/4" open ended wrench over the nut and remove the screws from the other side using a #1 Phillips screwdriver.	
6. In order to pull out the drag link bracket first put an 11/32" open ended wrench over the nut and remove the screw from the other side of the yoke using a #1 Phillips screwdriver.	
7. Pull out the drag link bracket; it is ok to bend the bracket a little if necessary. Be careful not to damage the power ring cables.	

8. Remove the 2 screws which secure the rotary joint bracket to the power ring using a 5/64" Allen wrench.	
9. The rotary joint is not symmetrical. Make sure you are facing the Ch.1 and Ch.3 side of the Rotary Joint and the bracket underneath is almost perpendicular. Tilt the Rotary Joint towards you and pull it out. Continue to pull out the coax cables. 10. Install the replacement rotary joint in the same way it was removed in the previous step applying Loctite 242 to the hardware. Be careful not to damage the coax cables whilst feeding the through the center of the power ring.	
11. Install the grounding lug with an internal tooth (star) lock washer underneath it (between the lug and canister) and apply Loctite 242 to the thread. 12. Make sure the grounding lug is installed oriented 45 degrees from vertical (facing towards the left).	
13. Make sure the cables coming out of the rotary joint are rotated towards the side of the canister and won't interfere with the stops. 14. Also ensure the connectors are located on the same side as the original configuration, secure the coax cables with cable ties. 15. Install the cross level end stops with Loctite 2760 on the threads.