MOTOROLA

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FSB NUMBER: **FSB10233B**
APC: **500, 518, 585**
DATE: **Sep-08**
EXPIRES: **30-Sep-10**
BULLETIN TYPE: **Warranty Service**

Up Issued to include 'W' Series Control Head, increase the affected date range and to update the resolution

FIELD SERVICE BULLETIN

SUBJECT: XTL5000/XTL2500 High Power (100 Watt) Mobile Units may reset during transmit if equipped with a Universal Crypto Module, UCM (Secure).

MODEL / SYSTEM AFFECTED:
M20QTS9PW1AN, M20KTS9PW1AN, M21QTM9PW1AN, M21KTM9PW1AN equipped with UCM (Universal Crypto Module - option G159) manufactured prior to July 2009, denoted by xxxCKMxxxx or earlier.
Part designator on the affected modules will be either; NNTN5032_or NNTN7427A/B

SYMPTOM:
The XTL mobile resets when transmitting (PTT) in secure.

CAUSE:
A high level of RF being present in the mobile enclosure when the radio is keyed while in secure mode may cause a desense condition with the UCM resulting in the UCM becoming non-responsive. This non-responsive state may cause the radio to initiate a reset as a way of trying to correct the situation.

NOTE: Radios may also reset for a number of other reasons. Vehicle engine starting, which causes the 12V DC supply to drop below 9.5V DC, excessive loss in the DC supply cabling, which causes the high current drain required by the transmitter to result in a large voltage drop or the antenna installation, if not per the installation manual, may result in radio resets. As a precaution, it is strongly recommended to confirm that that these factors are eliminated as the cause of the radio reset prior to exercising the resolution listed in this bulletin.

RESOLUTION:
Three options are available to correct this issue.

1. Modifying the existing UCM. Please refer to Attachments 2 and 3 for removal, rework and reinstallation procedures. **Labor allowances listed in this bulletin will be allowed for this option**.
2. Returning unit to Motorola Repair Center for rework as outlined in Attachment 1. **Labor allowance for this option will follow rates outline in the Labor Warranty Guidelines for retuning a unit to the Depot for repair**.
3. Replacement of the existing UCM. Please refer to Table 1 for replacement UCM module part numbers and Attachment 2 for the Replacement Procedure. **Labor allowance listed in this bulletin will be allowed for this option.**
    a. Part replaced **must** have a part designator of NNTN5032_ or NNTN7427A/ B and **must** have been shipped prior to July 2009.
    b. Please make sure to check the original UCM algorithm to ensure that the replacement obtained is the correct algorithm.
    Note: ***Any costs involved in correcting an incorrectly placed order will not be covered by this FSB.***

NOTE: All parts required for options 1 or 3 will be available at no charge from Motorola AAD (1-800-422-4210) when referencing this FSB.

SEVERITY RECOMMENDATION:
Medium - Perform at next scheduled maintenance

PARTS REQUIRED (HARDWARE/SOFTWARE):
Replacement UCM or 2113944C47 (150pF cap)

LABOR ALLOWANCE
Total quantity of customer units and charges allowed
1 to 4 units - $45.00 per unit
5 to 100 units $40.00 per unit
101 to 300 units $35.00 per unit
Over 300 units $30.00 per unit

Attachments:
Table 1 – List of Replacement UCMs
Attachment 1 - UCM Rework Procedure
Attachment 2 - Instructions to Return to Motorola
Attachment 3 - UCM Replacement Procedure
Attachment 4 – Disassembly and Reassembly Procedure

UCM - Hi Pwr XTL	Algorithm
RLN6419	ADP W/AES ENCRYPTION
RLN6418	ADP W/DES DES/XL
RLN6417	ADP W/AES DES DES/XL DES OFB
RLN6416	AES ENCRYPTION
RLN6415	AES W/DES DES-XL DES-OFB
RLN6414	ADP ENCRYPTION
RLN6413	DVI-XL ENCRYPTION
RLN6412	DES DES-XL DES-OFB W/DVP
RLN6411	DVP-XL ENCRYPTION
RLN6410	DES DES-XL DES-OFB

Table 1 – List of Replacement UCMs

Attachment 1 –UCM Rework Procedure

This is an optional procedure, if you have a NNTN5032_ or NNTN7427A/B UCM and wish to rework the UCM, rather than replacing it.

Equipment Needed:

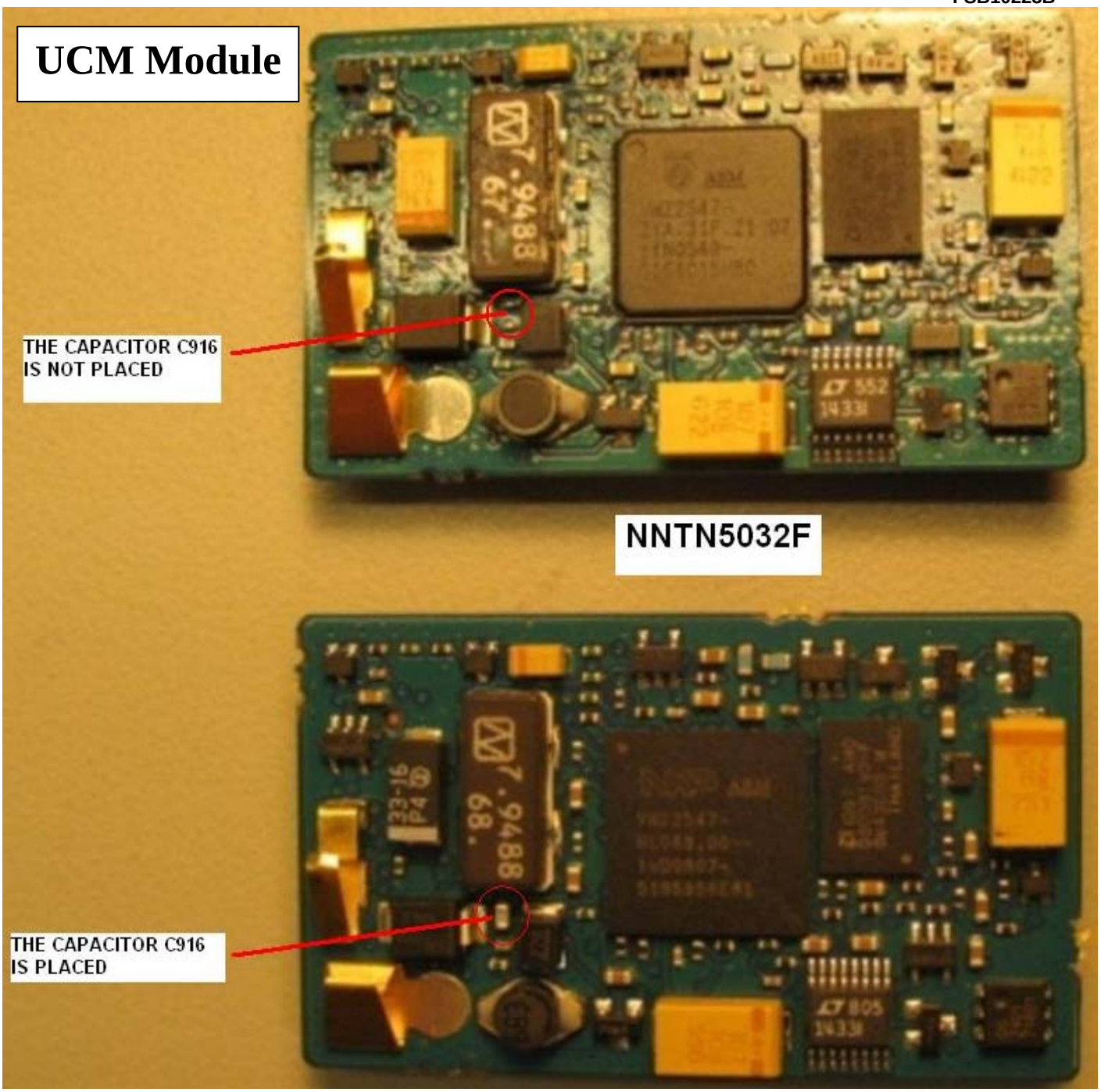
1. Flat head screw driver
2. T10 Torz bit with driver
3. KEY Loader (i.e. KVL3000 or KVL3000 Plus)

Parts Needed:

2113944C47 (150pF), 50V, CAP CER CHP 5%

Rework Procedure:

1. Following the "DISASSEMBLY PROCEDURE", as described in steps 1 to 7 in Attachment 4 to disassemble unit and remove the UCM.
    a. If the part number is NNTN5032 or NNTN7427A/B proceed with steps 3 thru 8
    b. If the part number is NNTN7427C, no rework is needed. Proceed with steps 6 thru 8.
2. Locate the capacitor location on the UCM: C916 (Shown on the NNTN5032F board in Picture 1)
    a. **Note:** Location placement of C916 is the SAME on NNTN7427A/B as it is for NNTN5032_ UCM kit
3. If C916 not installed, install/solder the new part, 2113944C47, in the C916 location
4. If board already has C916 installed, replace the existing part with a 150pF capacitor, part number 2113944C47
5. Visually inspect that the part is well soldered
6. Following the "REASSEMBLY PROCEDURE", as described in steps 8-13 in Attachment 4 to install the UCM into the radio and reassemble unit.
7. If needed: Re-KEY your appropriate KEY/Algorithm (i.e. DES-XL, DES-OFB, AES-256, etc) into your UCM using your Key Loader.
8. Test the radio for resets when PTT



Picture 1: Location of C916 for installation on a NNTN5032_ (or NNTN7247A/B) board

Attachment 2 – Instructions to return unit to Motorola for Rework

If Sending to Motorola Service Center for Rework

It is recommended that if returning a unit to one of the Motorola Service Centers for rework; that the transceiver and control head are sent in together. This will make it possible to maintain the software synchronization between the control head and the transceiver.

If it is not possible to send in both the control head and the transceiver together, then it is recommended that the transceiver and control head are synchronized using CPS (6.11 or newer) tool when the transceiver is returned.

This can be done from the following CPS screen (CPS Menu Bar > Tools > Synchronize Control Head with Radio). The latest control head software version is available through Motorola On Line where you would acquire CPS downloads. **Note: A tutorial is in the CPS for those who are not familiar with this function.**

Attachment 3: UCM Replacement Procedure

This procedure will serve as a guide to properly replace an UCM module in high power XTL5000/2500 models

Equipment Needed:

1. Flat head screw driver
2. T10 Torz bit with driver
3. KEY Loader (i.e. KVL3000 or KVL3000 Plus)

Parts Needed:

1. Replacement UCM as listed in Table 1.

Replacement Procedure

1. Following the "DISASSEMBLY PROCEDURE", as described in steps 1 to 7 in Attachment 4 to disassemble unit and remove the UCM.
    a. If the part number on the UCM is NNTN5032_ or NNTN7427A/B, replace UCM. See Table 1 for replacement UCM part numbers.
    b. If the part number on the UCM is NNTN7427**C**, no replacement of the UCM is needed.
2. Following the "REASSEMBLY PROCEDURE", as described in steps 8-13 in Attachment 4 to install the UCM into the radio and reassemble unit.
3. Re-KEY your appropriate KEY/Algorithm (i.e. DES-XL, DES-OFB, AES-256, etc) into your UCM using your Key Loader.
4. Test for secure communication

NOTE 1: This procedure will take approximately 5 minutes per radio
NOTE 2: If ordering NEW UCMs, the original UCMs **MUST** be returned to avoid being billed for the parts.

Attachment 4 – Disassembly and Reassembly Procedure

DISASSEMBLY PROCEDURE

High Power Models

Use the following procedure to disassemble your radio:

1. Ensure all accessory connections, power, antenna, and microphone are unplugged.

2. Remove the two screws using a T10 Torx bit. Save them for later use.

NOTE: For radios using a quick release trunnion, a handle is attached at this point with a 4 mm socket head bolt. The handle can be removed by unscrewing these two bolts but is not required to disassemble the radio.

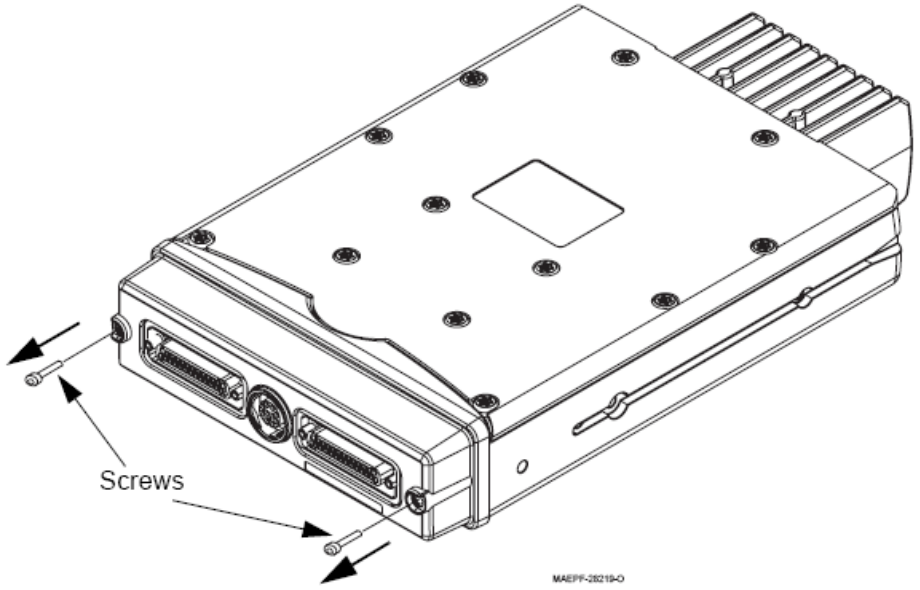


Figure 8-20. Removing the Control Head Screws

NOTE: Control Head (M5 or O5), cables, or accessories are not shown NOTE: For additional information, please refer to

3. Remove the front panel by gently lifting the housing so that it disengages from the hooks underneath and lay it down on a clean, flat surface. It may be necessary to gently pry the housing free of the hooks using a plastic tool. Be careful not to pull the attached flex as the panel is being removed.

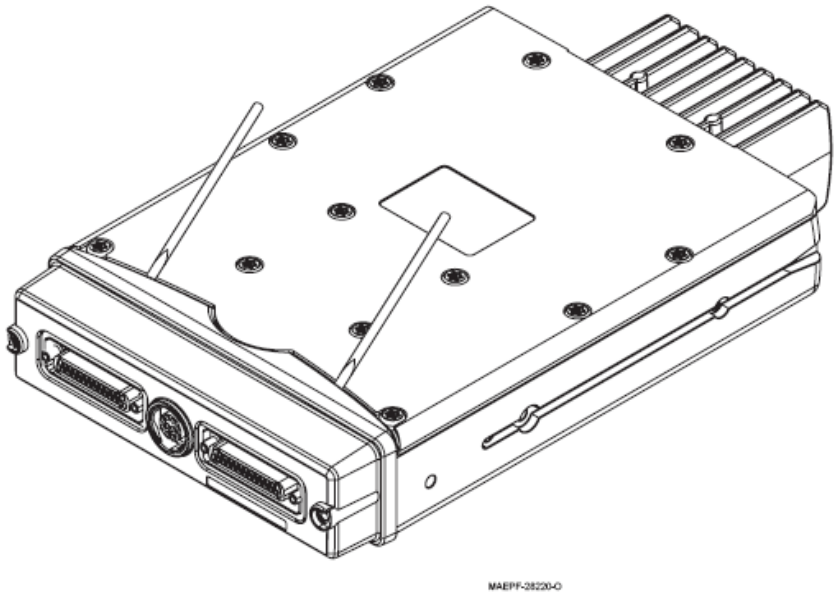


Figure 8-21. Removing the Remote Interface Assembly

our manuals

4. Carefully disconnect the flex from the front panel, and set the panel aside.

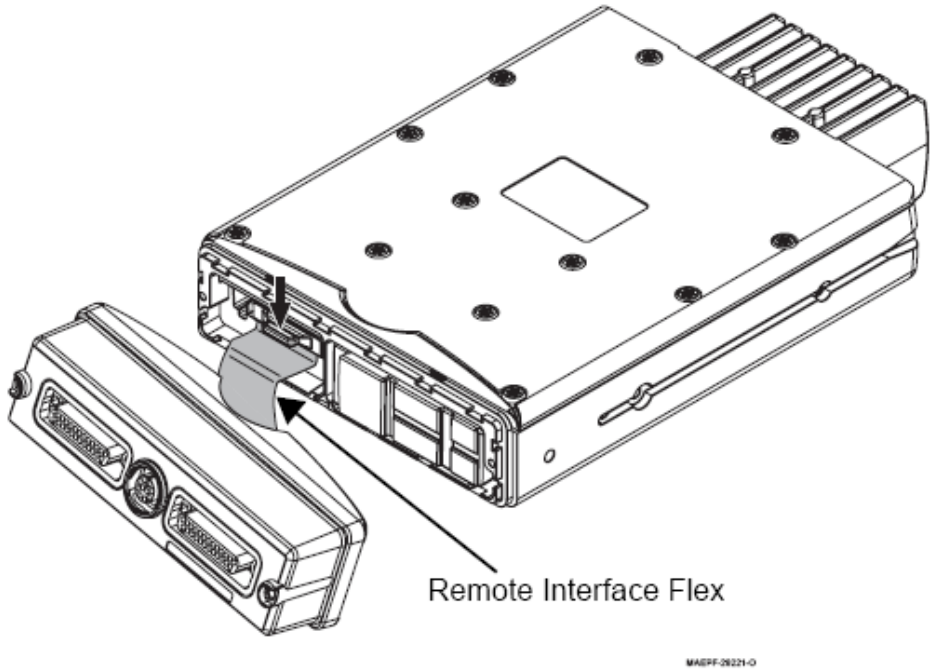


Figure 8-22. Removing the Flex (Control-Head Connector)

5. Carefully remove the flex from the transceiver by grasping the provided handle and separating it from the connector.

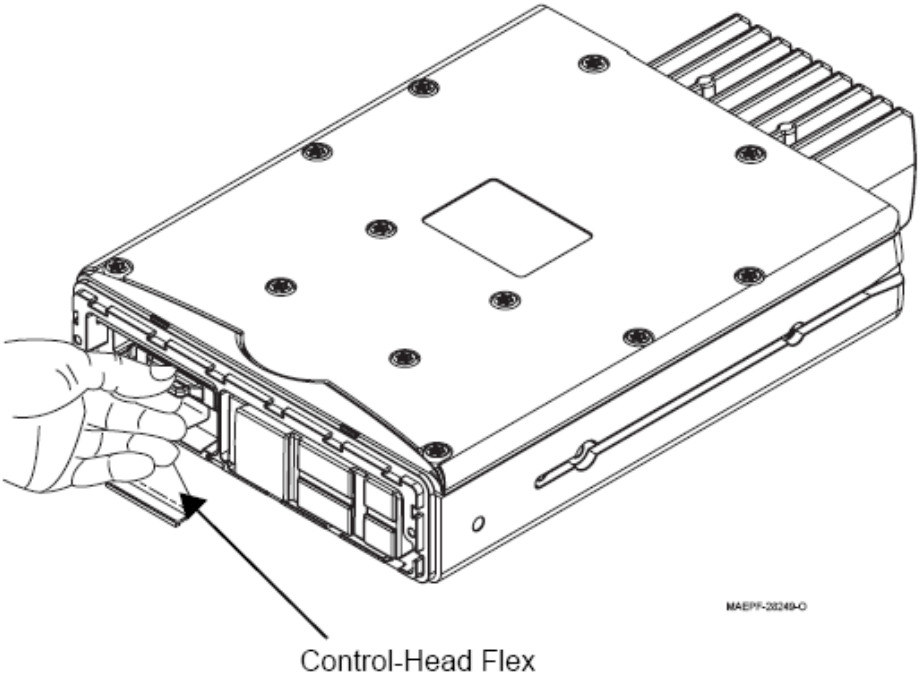


Figure 8-23. Removing the Flex (Main-Board Connector)

6. Remove the front panel seal from the transceiver.

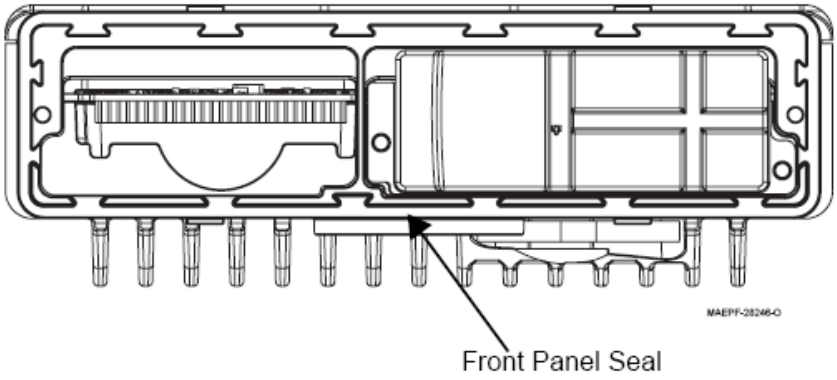


Figure 8-24. Removing the Front Panel Seal

> **Caution** The following steps MUST be performed for secure-equipped radios prior to removal of the cover or damage to the radio could occur.

7. For secure option-equipped radios, do the following prior to disassembly of the transceiver:

a. Remove the two screws holding the secure (UCM) shield in place.

b. Pull the UCM shield away from the assembly and remove it.

c. Insert a flat-blade screwdriver into the space in the upper-left corner of the secure pocket, and gently pry the secure interface board (universal encryption module) away from the chassis.

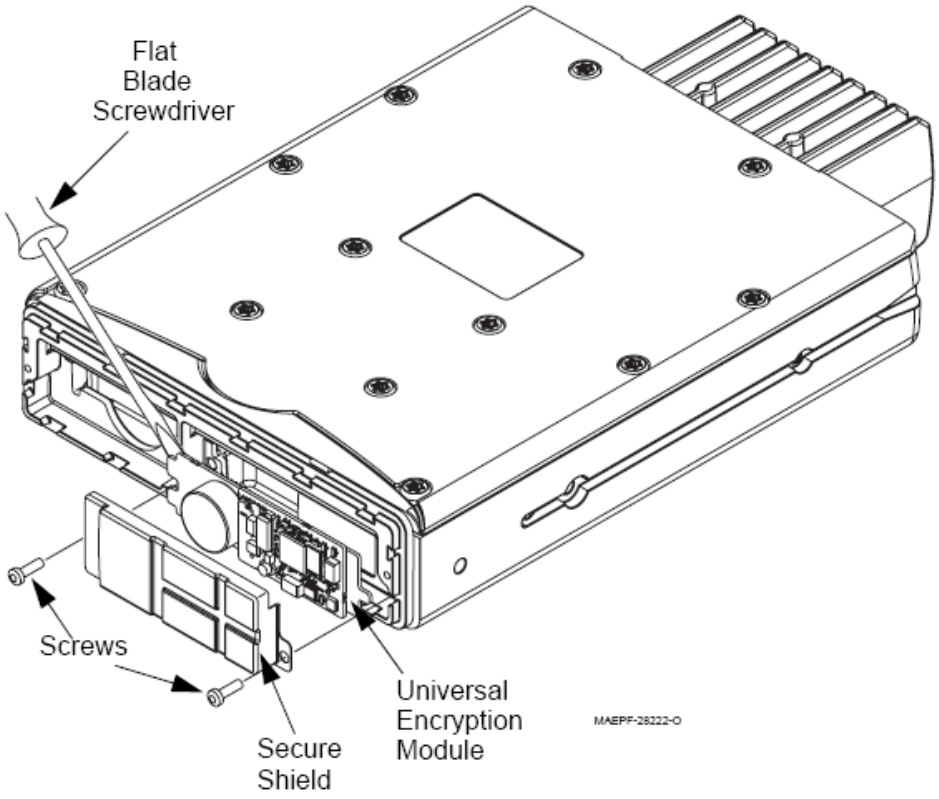


Figure 8-25. Removing the Secure Interface Board

REASSEMBLY

8. For secure option-equipped radios, do the following:
   a. Inspect the kapton tape on the back of the secure interface board for damage and replace if necessary.
   b. Ensure the universal encryption module (UCM) is securely plugged into the secure interface board.
   c. Carefully align the secure interface board in its chassis pocket, and plug it into the main board. Press down along the edges of the board to fully seat it, and then verify that the UCM is still fully plugged in.
   d. Position the secure shield over the secure interface board, and secure it with the two screws. Torque the screws to 6-8 in.-lbs. using a Torx T10 bit.

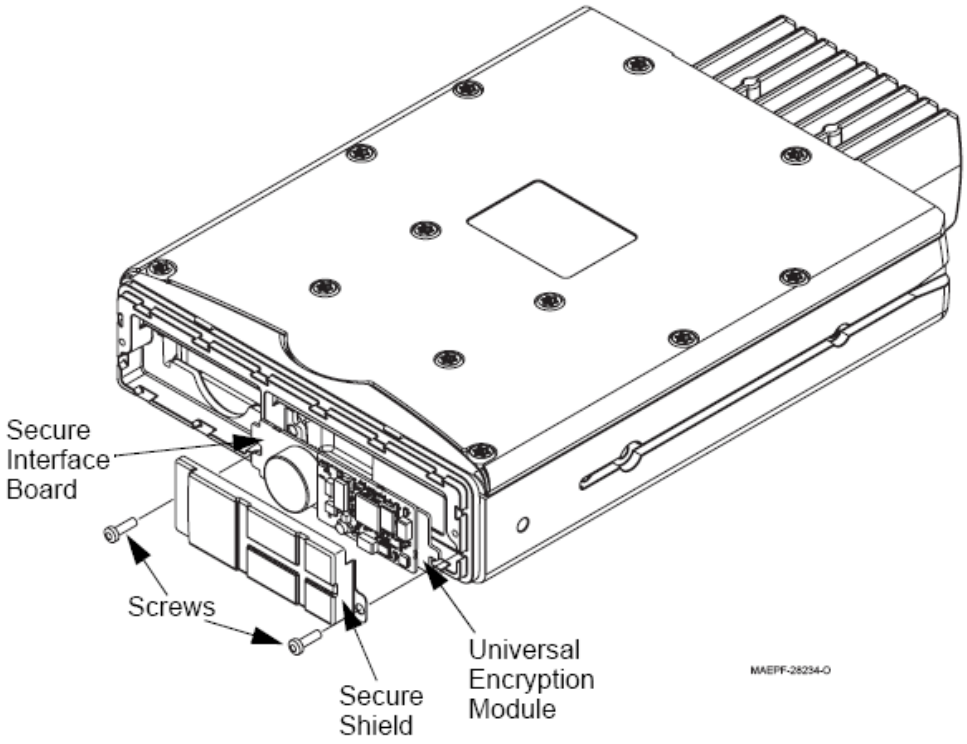


Figure 8-53. Installing the Secure Interface Board

9. Verify that the front panel seal has no defects; replace the seal if it does.
10. Align the front panel seal on the transceiver, and insert the seal tabs into their slots along the front edge of the transceiver (Figure 8-41 on page 8-33). Ensure that all the seal tabs are in place.

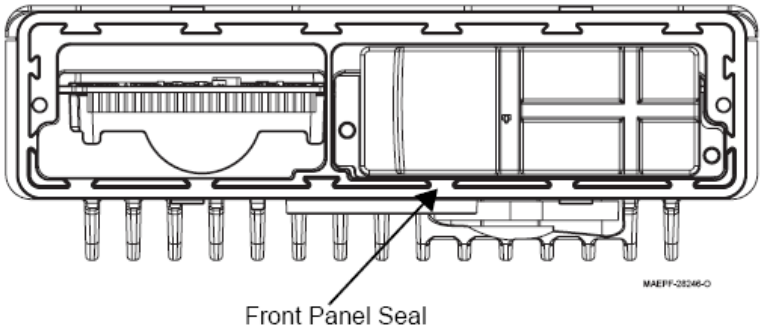


Figure 8-54. Installing the Front Panel Seal

11. Grasp the handle on the transceiver end of the remote interface flex, and plug the flex into the 60-pin connector on the side of the main board.

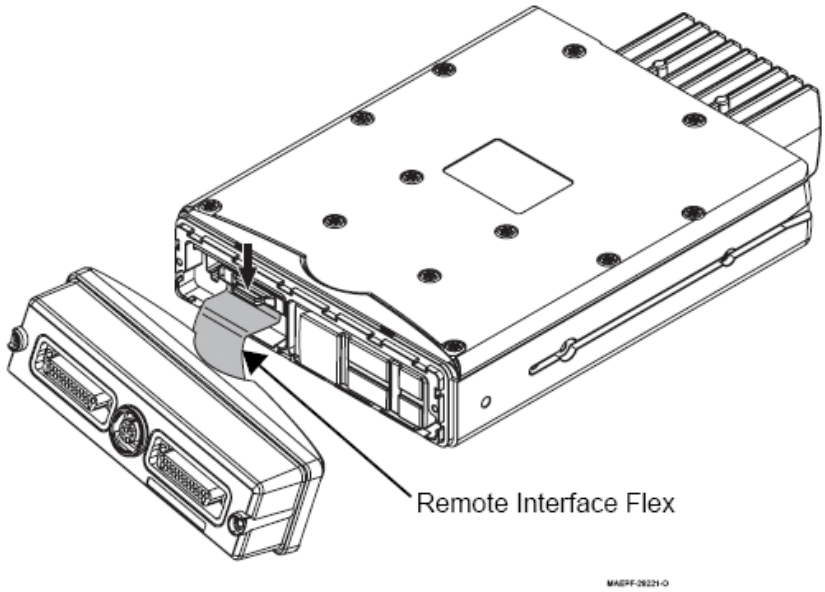


Figure 8-55. Installing the Control-Head Flex in the Transceiver

12. Hold the front panel with one hand and reinstall the front panel flex onto the 60-pin connector. Align the front panel with the transceiver push it into place, being careful not to roll or pinch the front panel seal. You might hear a small snap as the alignment hooks engage. If the front panel does not align properly on the first try, do not try to slide it back and forth on the transceiver. This will cause the seal to roll out of place. Instead, remove the front panel and try again, taking care to align it properly before fully seating it.

13. Secure the front panel to the transceiver with the two screws using the 2.5 mm hex-key bit. Apply 6-8 in.-lbs. of torque for each screw.

NOTE: Quick Release handle is not shown.

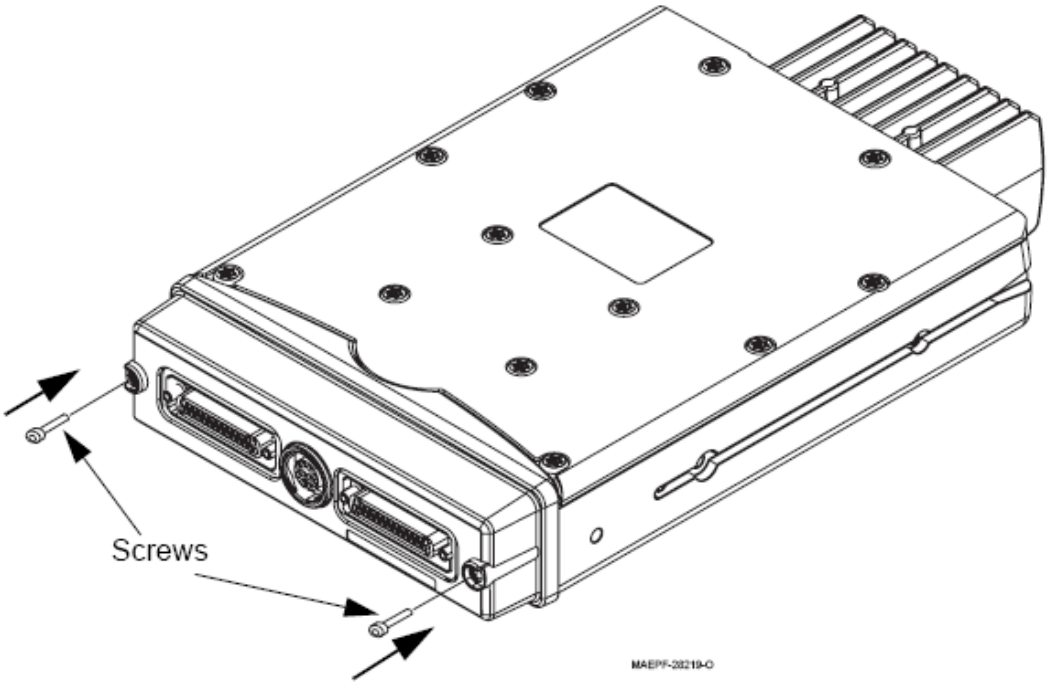


Figure 8-56. Installing the Control-Head Screws