



GainMaker Amplifier Reverse Switch Removal Instruction Sheet

Overview

Introduction

This document explains how to remove the reverse switch from a GainMaker™ System Amplifier and GainMaker Line Extender amplifier. This removal procedure should be performed on amplifiers that do not require ingress troubleshooting.

Audience

These instructions are intended for service personnel who are responsible for installing and maintaining GainMaker products. The personnel should have experience with hardware component installation.

Document Version

This is the third release of this document.

Related Publications

Refer to the following publications for more information about GainMaker amplifiers.

- *GainMaker Broadband Amplifier Platform System Amplifier Modules and Housings Installation and Operation Guide*, part number 593161
- *GainMaker Broadband Amplifier Platform Line Extender Modules and Housings Installation and Operation Guide*, part number 593057

Overview, Continued

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System Amplifier Reverse Switch Removal

Introduction

The steps required to remove a reverse switch from a system amplifier vary, depending on whether or not the system amplifier is located in the field.

The following is a list of all possible steps:

- Disconnecting power from the system amplifier
- Removing the amplifier module from the housing
- Removing the reverse switch
- Repositioning the amplifier module in the housing
- Reconnecting power to the system amplifier
- Closing the system amplifier housing
- Re-boxing the system amplifier

Required Tools and Equipment

Before you start, make sure you have the following tools and equipment:

- Torque wrench with a 1/2-in. socket
- Flat-head screwdriver
- Three two-pin jumpers, S-A part number 81630 (provided with these instructions)
- Two product labels (provided with these instructions)
 - 3" x 1" amplifier chassis label
 - 3" x 2" box label (for amplifiers not located in the field)

System Amplifier Reverse Switch Removal, Continued

Disconnecting Power From the System Amplifier

These instructions explain how to disconnect the power from a system amplifier located in the field. This step is required before the amplifier module can be removed from the housing.

If your system amplifier is not located in the field, proceed to **Removing the Amplifier Module From the Housing**.

 **WARNING!**

Protect yourself from electric shock and your system from damage! Take precautions when working with this equipment. Certain components can deliver an electrical shock or cause burns. Disconnect the power before removing the amplifier module from the housing.

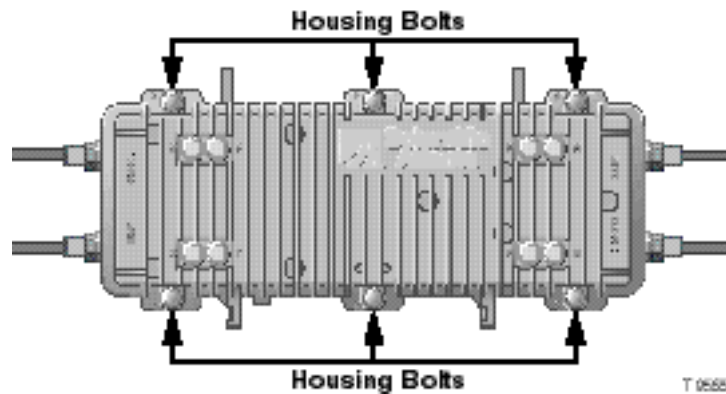
 **CAUTION:**

RF connectors and housing seizure assemblies can be damaged if AC shunt power directors are not removed from the system amplifier before removing the amplifier module from the housing.

System Amplifier Reverse Switch Removal, Continued

Follow these steps to disconnect the power from a system amplifier located in the field.

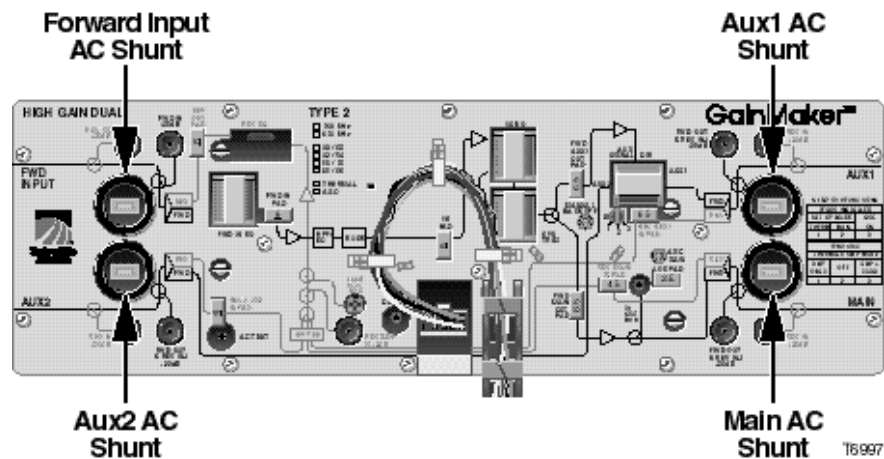
1. Using a torque wrench, loosen the six housing bolts in the housing lid, and open the housing.



2. Pull straight up on each of the AC shunt power directors to remove them.

Important: Be sure to remove all four of the AC shunt power directors.

Refer to the following illustration for the locations of the AC shunt power directors.



Result: Power is disconnected from the system amplifier.

3. Proceed to **Removing the Amplifier Module From the Housing.**

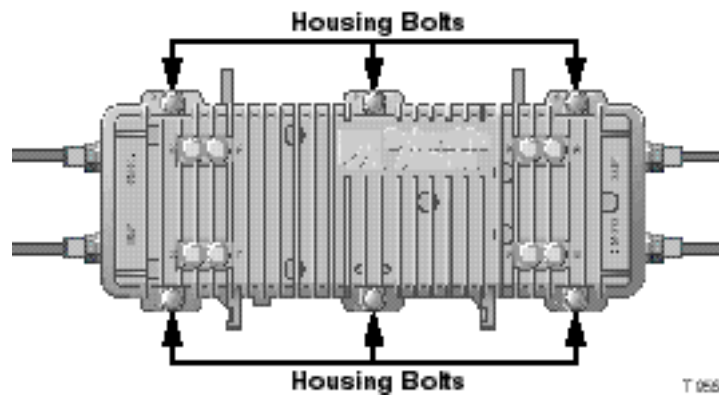
System Amplifier Reverse Switch Removal, Continued

Removing the Amplifier Module From the Housing

Important: If the system amplifier is located in the field, follow the instructions in **Disconnecting Power From the System Amplifier** before removing the amplifier module from the housing.

Follow these steps to remove the amplifier module from the housing.

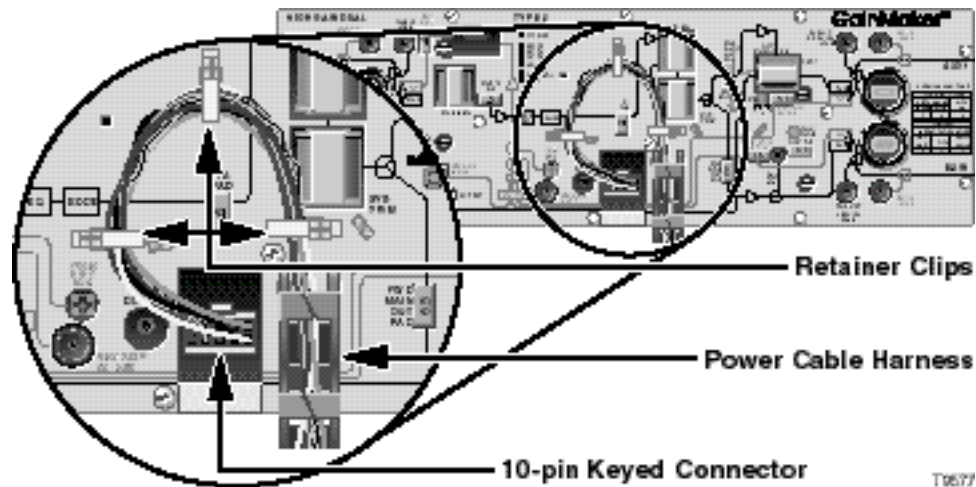
1. Is the system amplifier housing open?
 - If **Yes**, proceed to step 2.
 - If **No**:
 - Use a torque wrench to loosen the six housing bolts in the housing lid.
 - Open the housing.



2. Unplug the 10-pin keyed connector of the power supply cable from the amplifier module.

System Amplifier Reverse Switch Removal, Continued

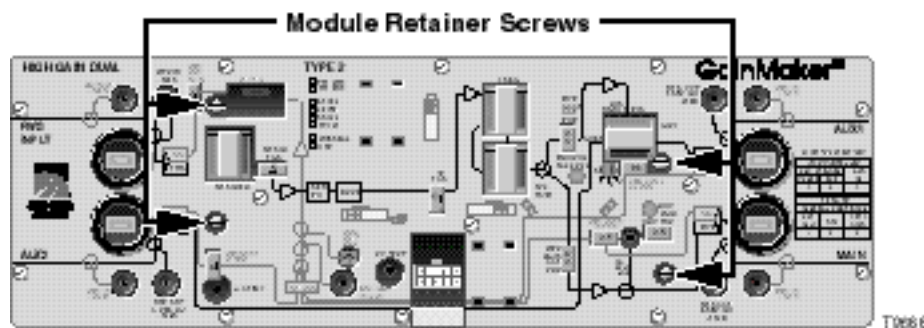
3. Remove the power cable from the white plastic retainer clips.



4. Disconnect the power cable harness from the holes in the amplifier module cover.

Note: The cable can remain plugged into the power supply module.

5. Using a flat-head screwdriver, loosen the four module retainer screws, and remove the amplifier module from its housing.



6. Place the amplifier module upside down on a secure surface.

⚠ WARNING:

Avoid personal injury and damage to the amplifier module! Make sure you place the amplifier module on a secure surface.

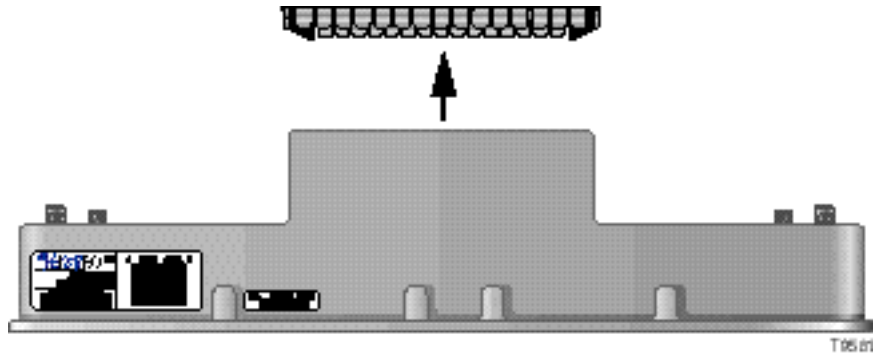
7. Proceed to **Removing the Reverse Switch**.

System Amplifier Reverse Switch Removal, Continued

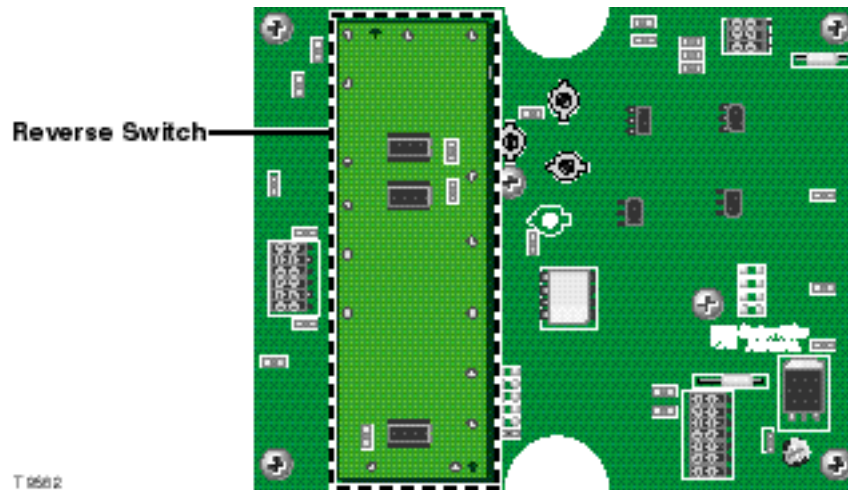
Removing the Reverse Switch

Follow these steps to remove the reverse switch.

1. Remove the reverse amplifier cover on the bottom of the amplifier module chassis.

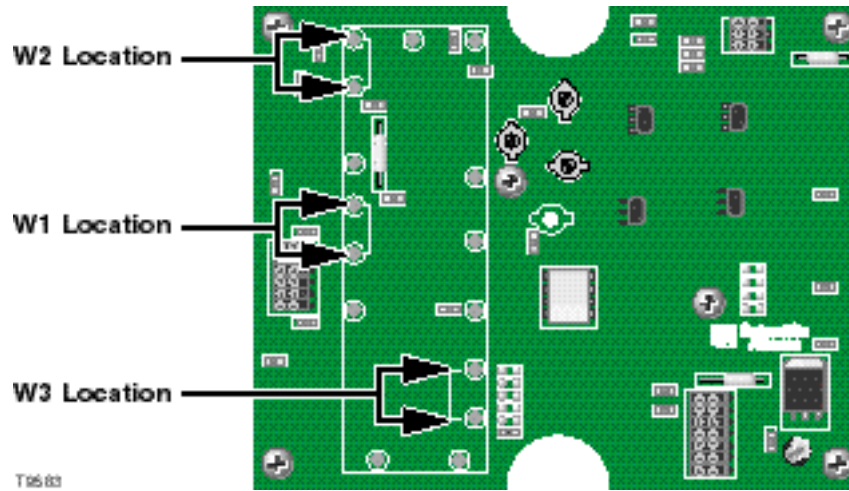


2. Carefully pull straight up on the reverse switch to remove it.

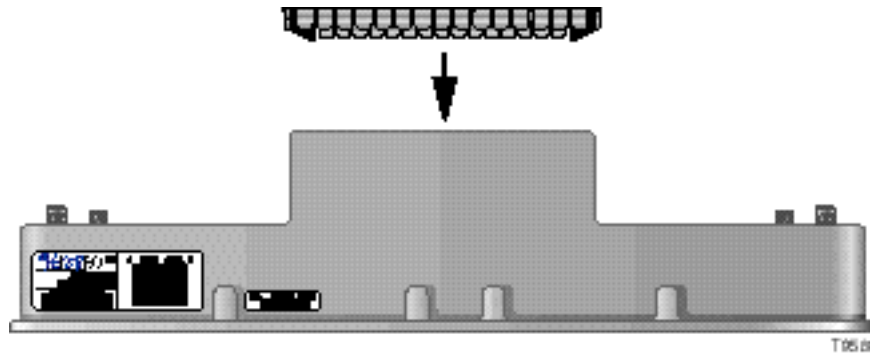


System Amplifier Reverse Switch Removal, Continued

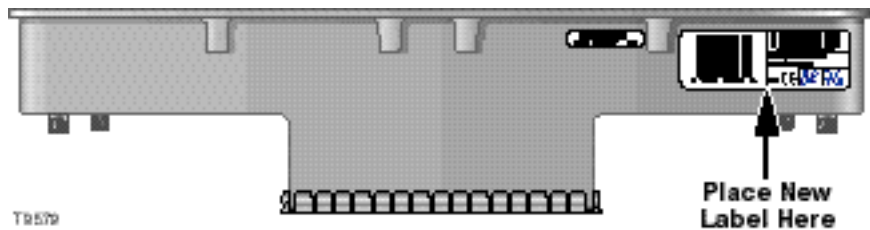
3. Plug three two-pin jumpers into the W1, W2, and W3 reference locations.



4. Replace the reverse amplifier cover on the chassis.



5. Turn the chassis right side up.
6. Place the new 3"x 1" label over the existing label on the side of the chassis.



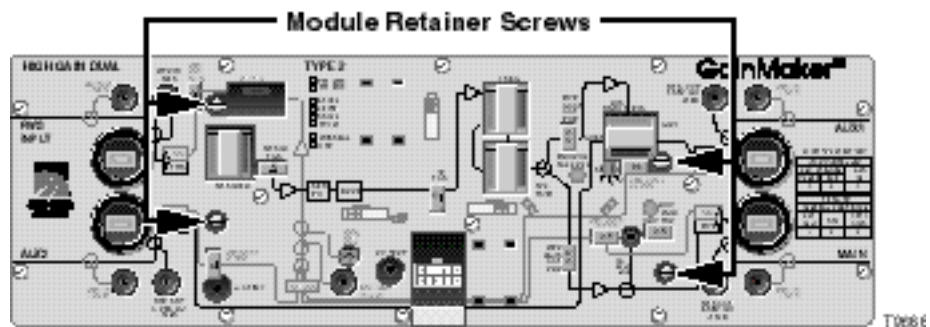
7. Proceed to **Repositioning the Amplifier Module in the Housing.**

System Amplifier Reverse Switch Removal, Continued

Repositioning the Amplifier Module in the Housing

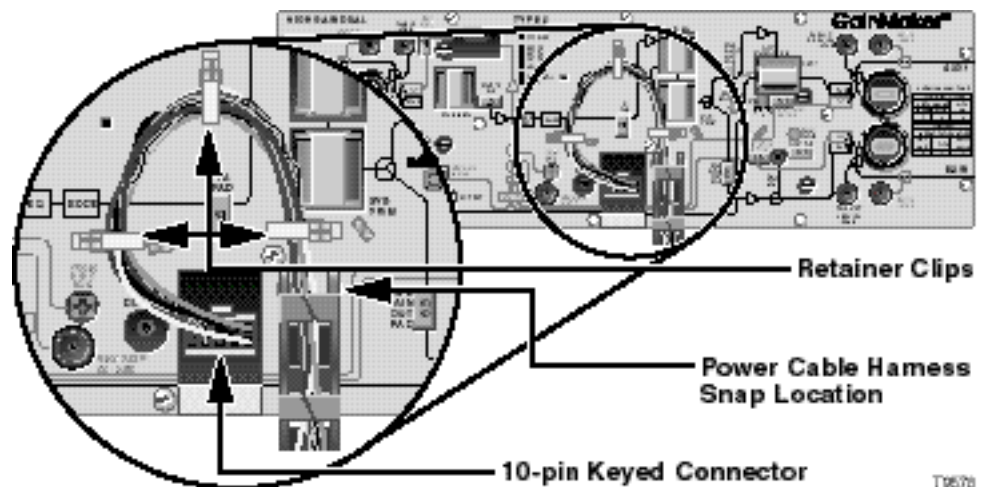
Follow these steps to reposition the amplifier module in the housing.

1. Line up the RF connectors on the amplifier module and the housing, then push the module into the housing.
2. Using a flat-head screwdriver, secure the amplifier module to the housing by tightening the four module retainer screws from 6 in-lb to 9 in-lb (0.7 Nm to 1.0 Nm).



3. Plug the 10-pin keyed connector of the power supply cable into the amplifier module.

Note: The connector can be attached only one way. Be sure it installs securely to the module.



4. Route the power cable through the white plastic retainer clips.

System Amplifier Reverse Switch Removal, Continued

5. Snap the power cable harness into the holes in the amplifier module cover. Be sure the harness locking tabs are fully seated under the cover.
6. Is the system amplifier located in the field?
 - If **Yes**, proceed to **Reconnecting Power to the System Amplifier**.
 - If **No**, proceed to **Closing the System Amplifier Housing**.

System Amplifier Reverse Switch Removal, Continued

Reconnecting Power to the System Amplifier

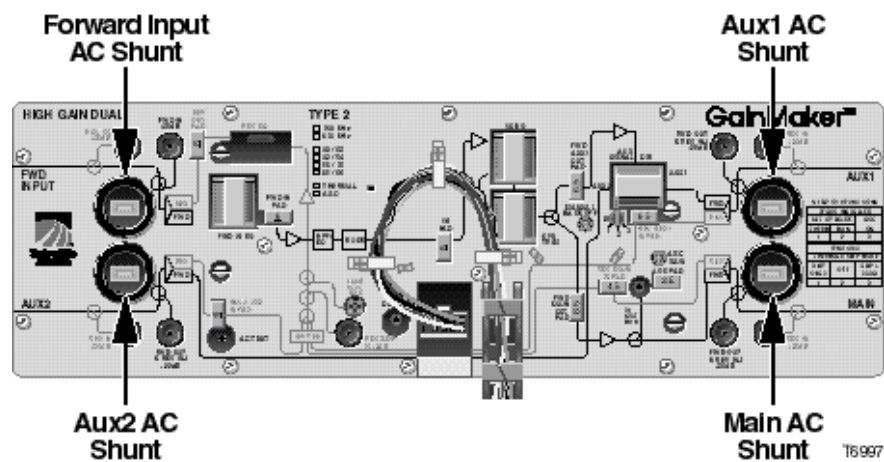
These instructions explain how to reconnect the power to a system amplifier located in the field. If your system amplifier is not located in the field, proceed to **Closing the System Amplifier Housing**.

Power direction is set by installing AC shunt power directors for the ports through which AC power should pass.

Note: A red AC shunt power director is included with the system amplifier. This is intended to be used to activate the port that supplies power. The red shunt identifies the shunt to be pulled to remove power for insertion and removal of the amplifier module.

Follow these steps to reconnect the power to a system amplifier located in the field.

1. Refer to the systems design print to determine AC power routing and reinstall the proper AC shunt power directors in the required locations.



Result: Power is reconnected to the system amplifier.

2. Proceed to **Closing the System Amplifier Housing**.

System Amplifier Reverse Switch Removal, Continued

Closing the System Amplifier Housing

Follow these steps to close the system amplifier housing.

1. Inspect the housing gasket and all mating surfaces. Wipe off any dirt and debris.

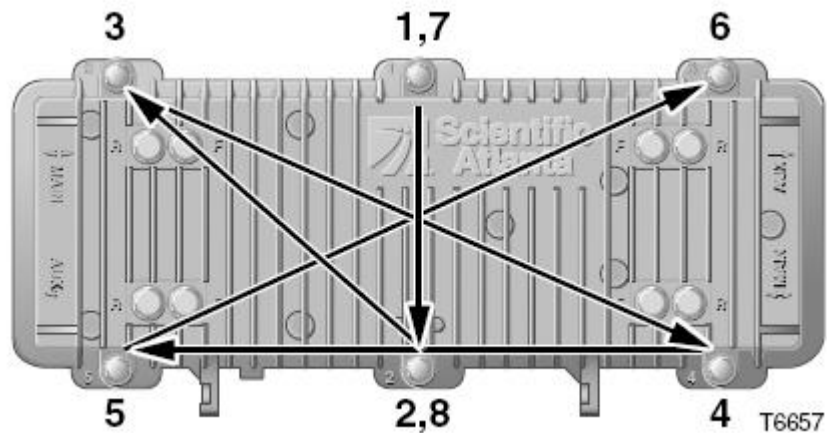


CAUTION:

Avoid moisture damage and RF leakage! Follow steps 2 and 3 *exactly* as explained below to ensure a proper seal.

2. Close the housing and finger-tighten all closure bolts.
3. Using a torque wrench, tighten each closure bolt from 5 ft-lb to 12 ft-lb (6.8 Nm to 16.3 Nm).

Important: Follow the numbered sequence shown below to tighten the bolts.



4. Is the system amplifier located in the field?
 - If **Yes**, the reverse switch removal procedure is complete.
 - If **No**, proceed to **Re-Boxing the System Amplifier**.

Re-Boxing the System Amplifier

Follow these steps to re-box the system amplifier.

1. Put the system amplifier back into its original box, then seal the box.
2. Place the new 3" x 2" label over the original label on the side of the box.

Line Extender Reverse Switch Removal

Introduction

The steps required to remove a reverse switch from a line extender vary, depending on whether or not the line extender is located in the field.

The following is a list of all possible steps:

- Disconnecting power from the line extender
- Removing the amplifier module from the housing
- Removing the reverse switch
- Repositioning the amplifier module in the housing
- Reconnecting power to the line extender
- Closing the line extender housing
- Re-boxing the line extender

Required Tools and Equipment

Before you start, make sure you have the following tools and equipment:

- One two-pin jumper, S-A part number 81630 (provided with these instructions)
- Torque wrench with a 1/2-in. socket
- Flat-head screwdriver
- Screwdriver appropriate for the type of screws on the amplifier module cover
 - Phillips-head screwdriver
 - T-15 Torx bit screwdriver
- Two product labels (provided with these instructions)
 - 3" x 1" amplifier chassis label
 - 3" x 2" box label (for line extenders not located in the field)

Line Extender Reverse Switch Removal, Continued

Disconnecting Power From the Line Extender

These instructions explain how to disconnect the power from a line extender located in the field. This step is required before the amplifier module can be removed from the housing.

If your line extender is not located in the field, proceed to **Removing the Amplifier Module From the Housing**.

 **WARNING!**

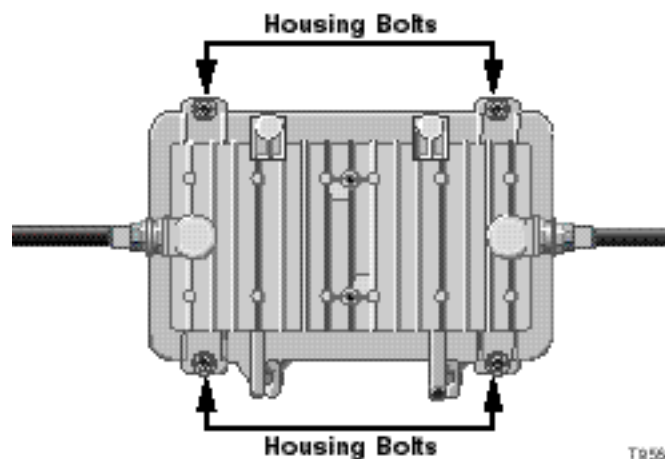
Protect yourself from electric shock and your system from damage! Take precautions when working with this equipment. Certain components can deliver an electrical shock or cause burns. Disconnect the power before removing the amplifier module from the housing.

 **CAUTION:**

RF connectors and housing seizure assemblies can be damaged if AC shunt power directors are not removed from the line extender before removing the amplifier module from the housing.

Follow these steps to disconnect the power from a line extender located in the field.

1. Using a torque wrench, loosen the four housing bolts in the housing lid, and open the housing.

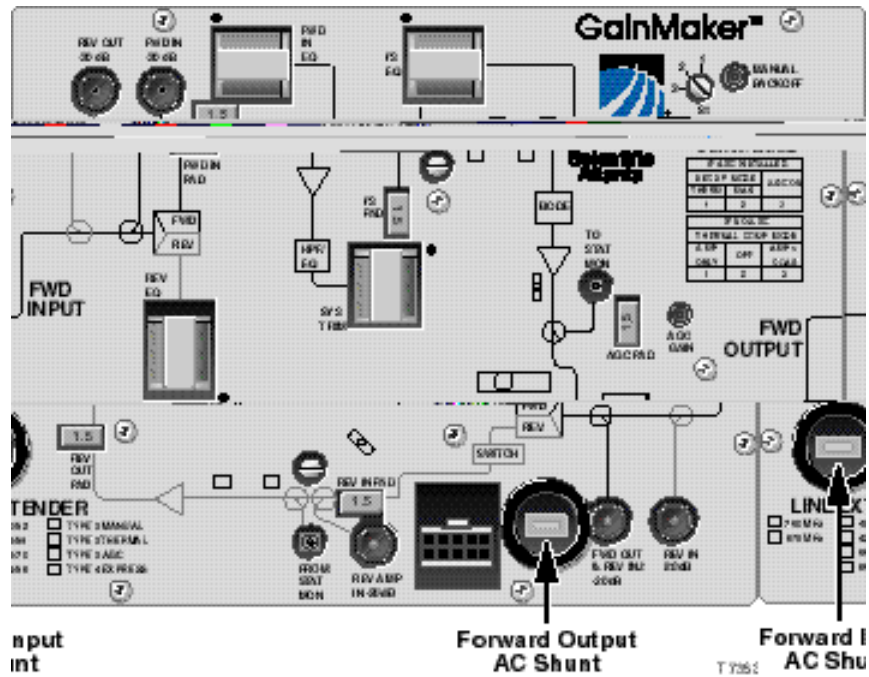


Line Extender Reverse Switch Removal, Continued

-
2. Pull straight up on each of the AC shunt power directors to remove them.

Important: Be sure to remove both of the AC shunt power directors.

Refer to the following illustration for the locations of the AC shunt power directors.



Result: Power is disconnected from the line extender.

-
-
3. Proceed to **Removing the Amplifier Module From the Housing.**

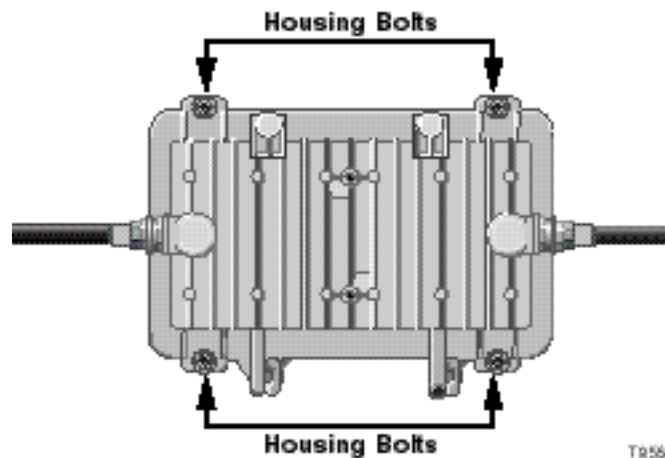
Line Extender Reverse Switch Removal, Continued

Removing the Amplifier Module From the Housing

Important: If the line extender is located in the field, follow the instructions in **Disconnecting Power From the Line Extender** before removing the amplifier module from the housing.

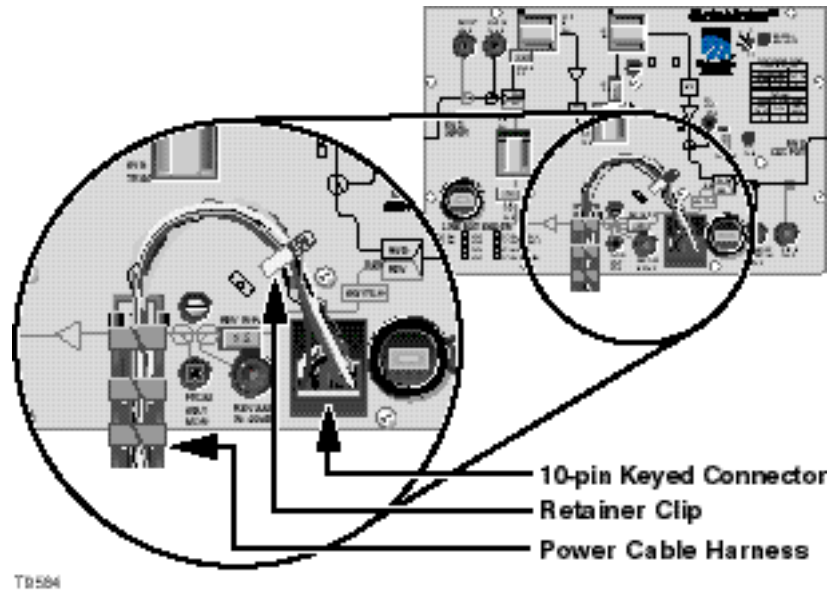
Follow these steps to remove the amplifier module from the housing.

1. Is the line extender housing open?
 - If **Yes**, proceed to step 2.
 - If **No**:
 - Use a torque wrench to loosen the four housing bolts in the housing lid.
 - Open the housing.



Line Extender Reverse Switch Removal, Continued

2. Unplug the 10-pin keyed connector of the power supply cable from the amplifier module.

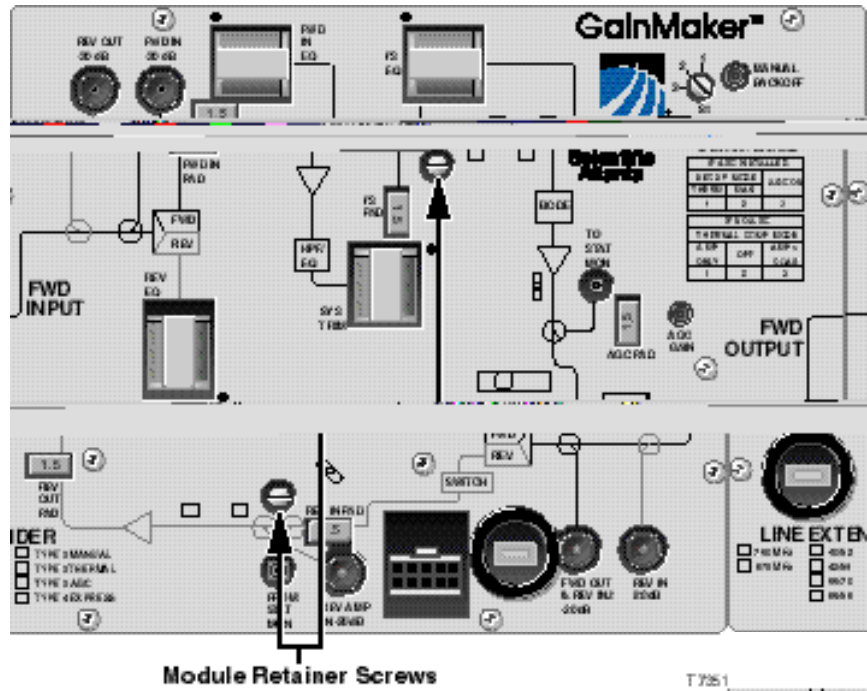


3. Remove the power cable from the white plastic retainer clip.
4. Disconnect the power cable harness from the holes in the amplifier module cover.

Note: The cable can remain plugged into the power supply module.

Line Extender Reverse Switch Removal, Continued

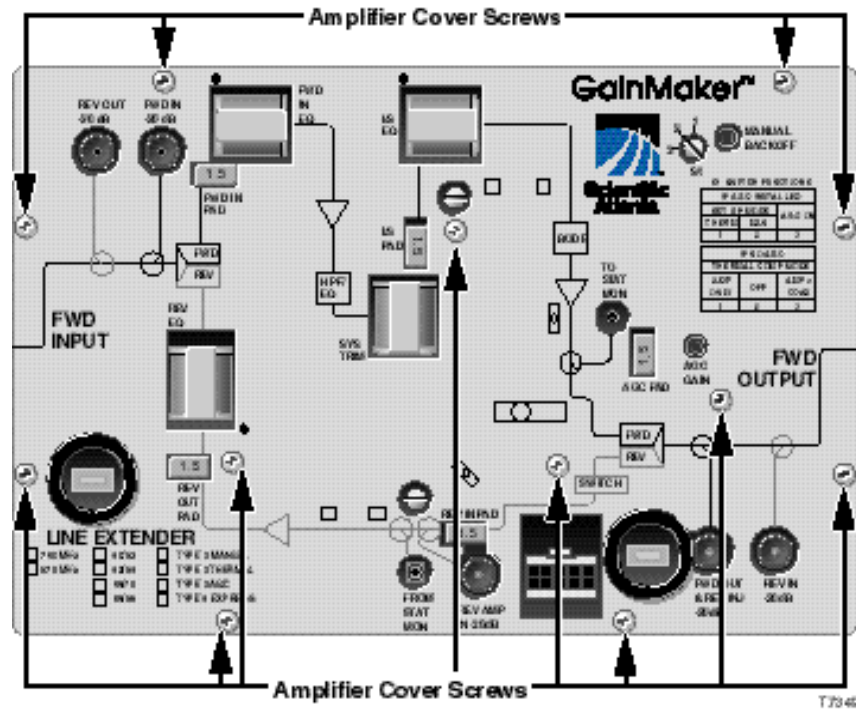
- Using a flat-head screwdriver, loosen the two module retainer screws.



Line Extender Reverse Switch Removal, Continued

- Depending on the type of amplifier cover screws on the amplifier module cover, use either a Phillips-head or T-15 Torx bit screwdriver to loosen the 12 screws, then remove the cover.

Note: The screws are captive to the cover, so they will not become lost.



- Remove the amplifier module from its housing, and place the amplifier module on a secure surface.



WARNING:

Avoid personal injury and damage to the amplifier module! Make sure you place the amplifier module on a secure surface.

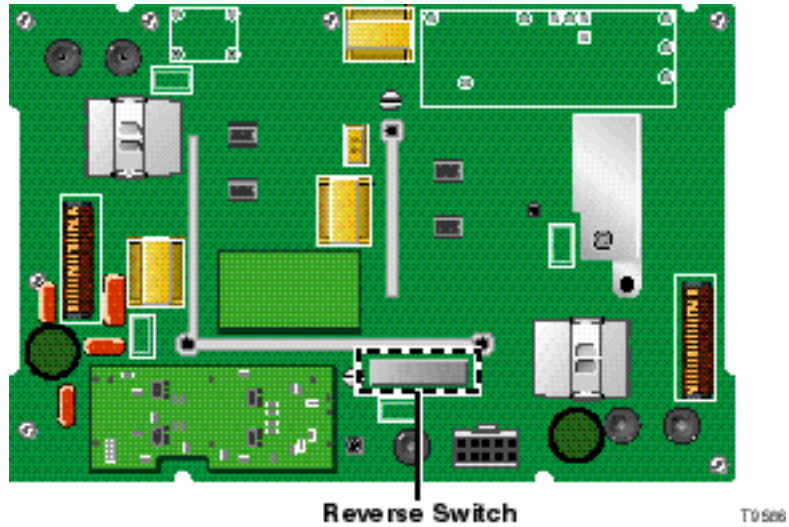
- Proceed to **Removing the Reverse Switch**.

Line Extender Reverse Switch Removal, Continued

Removing the Reverse Switch

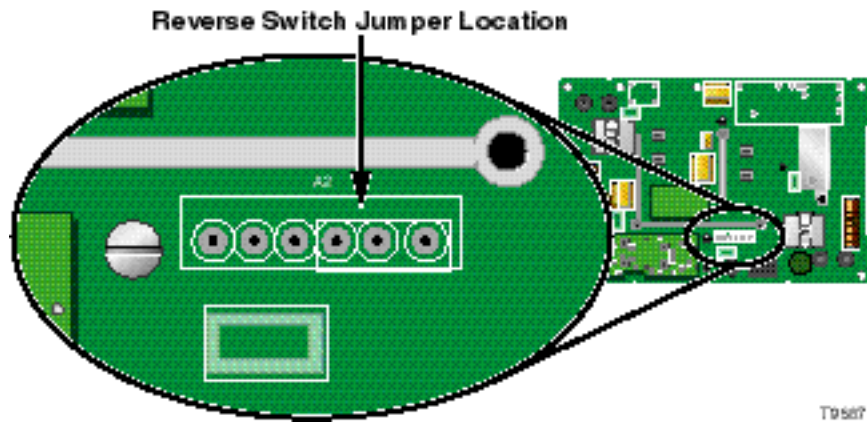
Follow these steps to remove the reverse switch.

1. Carefully unplug the reverse switch printed wiring board assembly.



2. Plug the two-pin jumper into the silk-screened rectangle of the A2 reference location.

Refer to the following illustration for the reverse switch jumper location (A2).



Line Extender Reverse Switch Removal, Continued

- Place the new 3" x 1" label over the existing label on the side of the chassis.



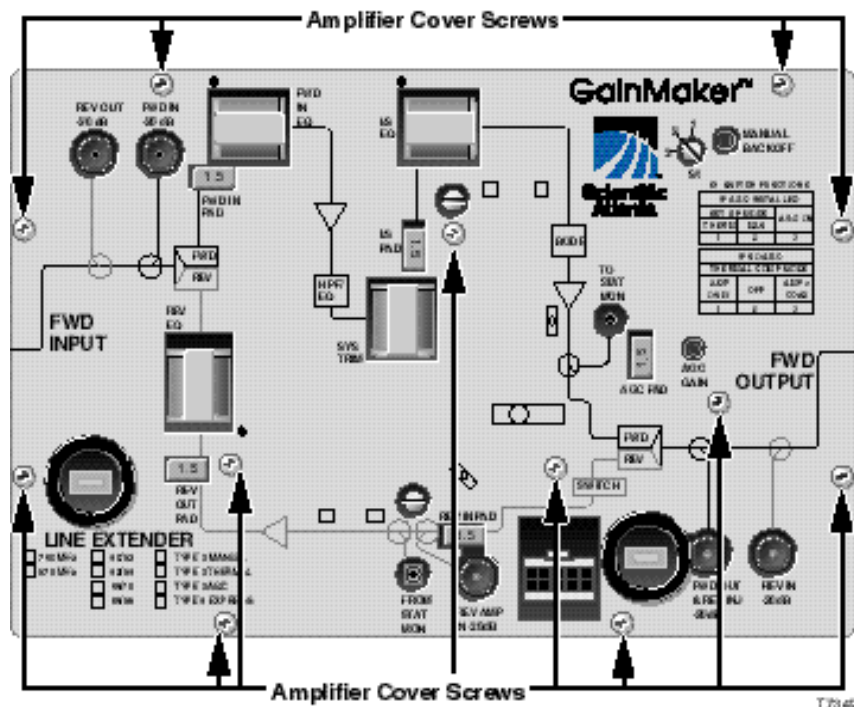
- Proceed to **Repositioning the Amplifier Module in the Housing.**

Repositioning the Amplifier Module in the Housing

Follow these steps to reposition the amplifier module in the housing.

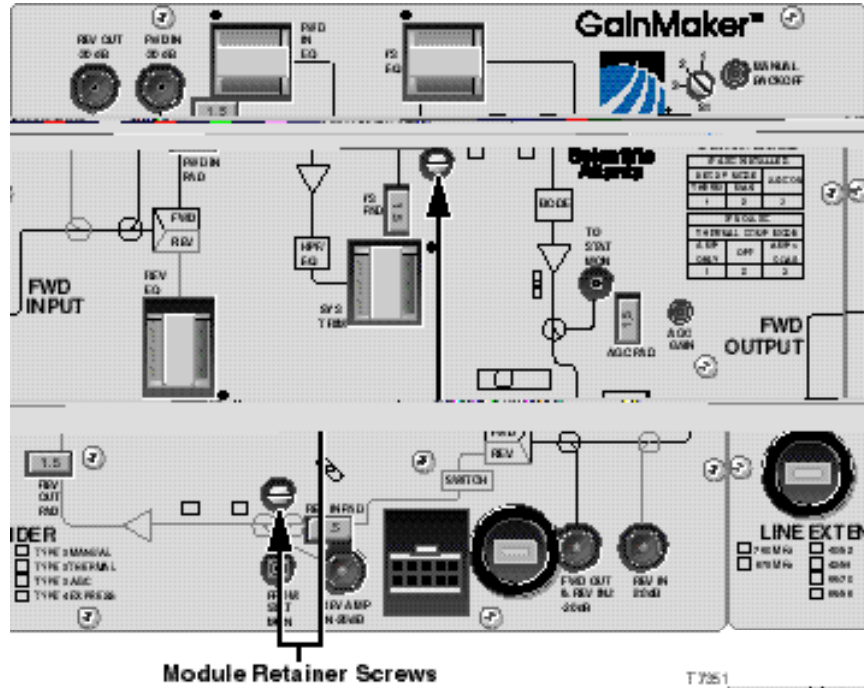
- Line up the RF connectors on the amplifier module and the housing, then push the amplifier module into the housing.
- Using either a Phillips-head or T-15 Torx bit screwdriver, secure the cover to the amplifier module by tightening the 12 amplifier cover screws from 10 in-lb to 12 in-lb (1.3 Nm to 1.4 Nm).

Important: The cover should lie completely flat on the amplifier chassis. Make sure none of the amplifier accessories prevent the cover from lying flat.



Line Extender Reverse Switch Removal, Continued

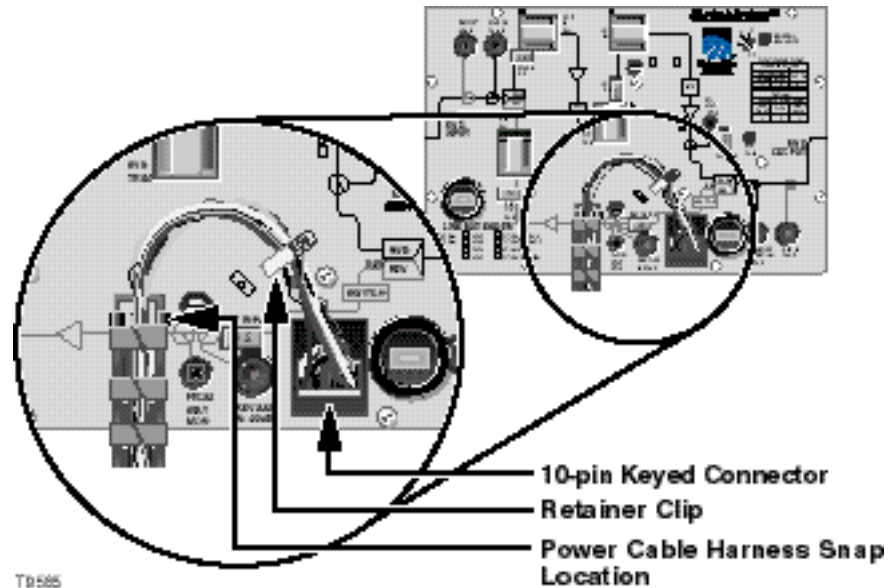
- Using a flat-head screwdriver, secure the amplifier module to the housing by tightening the two module retainer screws from 6 in-lb to 9 in-lb (0.7 Nm to 1.0 Nm).



Line Extender Reverse Switch Removal, Continued

4. Plug the 10-pin keyed connector of the power supply cable into the amplifier module.

Note: The connector can be attached only one way. Be sure it installs securely to the amplifier module.



5. Route the power cable through the white plastic retainer clip.
6. Snap the power cable harness into the holes in the amplifier module cover. Be sure the harness locking tabs are fully seated under the cover.
7. Is the line extender located in the field?
 - If **Yes**, proceed to **Reconnecting Power to the Line Extender**.
 - If **No**, proceed to **Closing the Line Extender Housing**.

Line Extender Reverse Switch Removal, Continued

Reconnecting Power to the Line Extender

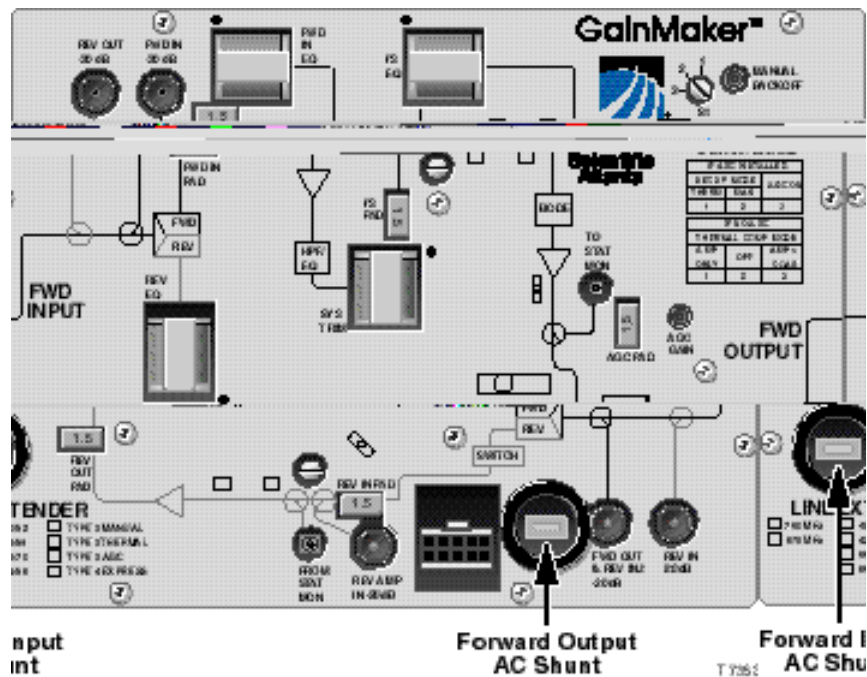
These instructions explain how to reconnect the power to a line extender located in the field. If your line extender is not located in the field, proceed to **Closing the Line Extender Housing**.

Power direction is set by installing AC shunt power directors for the ports through which AC power should pass.

Note: A red AC shunt power director is included with the line extender. This is intended to be used to activate the port that supplies power. The red shunt identifies the shunt to be pulled to remove power for insertion and removal of the amplifier module.

Follow these steps to reconnect the power to a line extender located in the field.

1. Refer to the systems design print to determine AC power routing and reinstall the proper AC shunt power directors in the required locations.



Result: Power is reconnected to the line extender.

2. Proceed to **Closing the Line Extender Housing**.

Line Extender Reverse Switch Removal, Continued

Closing the Line Extender Housing

Follow these steps to close the line extender housing.

1. Inspect the housing gasket and all mating surfaces. Wipe off any dirt and debris.

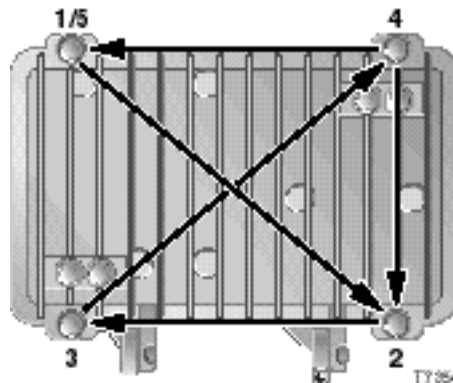


CAUTION:

Avoid moisture damage and RF leakage! Follow steps 2 and 3 *exactly* as explained below to ensure a proper seal.

2. Close the housing and finger-tighten all closure bolts.
3. Using a torque wrench, tighten each closure bolt from 5 ft-lb to 12 ft-lb (6.8 Nm to 16.3 Nm).

Important: Follow the numbered sequence shown below to tighten the bolts.



4. Is the line extender located in the field?
 - If **Yes**, the reverse switch removal procedure is complete.
 - If **No**, proceed to **Re-Boxing the Line Extender**.

Re-Boxing the Line Extender

Follow these steps to re-box the line extender.

1. Put the line extender back into its original box, then seal the box.
2. Place the new 3" x 2" label over the original label on the side of the box.

For Information

Customer Support

Obtaining Support

IF...	THEN...
you have general questions about this product	contact your distributor or sales agent for product information or refer to product data sheets on http://www.cisco.com/web/consumer/support/index.html .
you have technical questions about this product	call the nearest Technical Service center or Cisco Services.
you have customer service questions or need a return material authorization (RMA) number	call the nearest Customer Service center or Cisco Services.

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.



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