

# **Installation Note**

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**Agilent Technologies ESA Spectrum Analyzer  
Gasket Upgrade Kit  
Kit Number E4411-60019**



**Part Number E4411-90045    Supersedes October 1998**

**Printed in USA    May 2000**

**Notice.**

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## E4411-60019

Product Affected: .....	ESA Spectrum Analyzers
Serial Numbers: .....	All
Options: .....	All
To Be Performed By: .....	(X) Agilent Technologies Service Center ( ) Personnel Qualified by Agilent Technologies ( ) Customer
Estimated Installation Time: .....	0.5 hour
Estimated Verification Time: .....	0.5 hour

### Introduction

This kit is intended for customers whose ESA spectrum analyzers have accumulated dust particles or cloudiness on the lens. It provides gaskets for placement around the lens to reduce further contamination. Also, a new lens/keypad assembly is required for this upgrade and must be ordered separately.

### Installation Kit Parts List

**Table 1**                      **Parts Kit E4411-60019 Contents**

Item	Quantity	Description	Part Number
1	2	Long Gaskets 6.3 in.	8160-0959
2	2	Short Gaskets 4.4 in.	8160-0960
3	1	Installation Note	E4411-90045

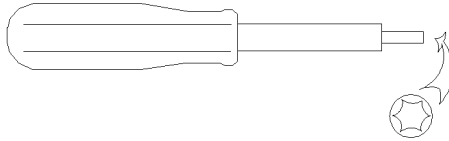
**NOTE**

This kit does not include a lens/keypad assembly. Because of variations in these assemblies, it has been left up to the person performing the upgrade to order the appropriate lens/keypad assembly for the instrument. Refer to the instrument service guide for the applicable part number.

## Tools Required

Description	Part Number
TORX Hand Driver — Size T10	8710-1623
TORX Hand Driver — Size T15	8710-1622

**Figure 1**      **TORX Tool**



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**WARNING**      **Opening covers or removing parts is likely to expose dangerous voltages. Disconnect the product from all voltage sources before opening covers.**

**WARNING**      **The spectrum analyzer contains potentially hazardous voltages. Failure to heed the safety precautions can result in severe or fatal injury.**

**CAUTION**      Electrostatic discharge (ESD) can damage or destroy electronic components. All work on electronic assemblies should be performed at a static-safe workstation. Refer to the documentation that pertains to your instrument for information about static-safe workstations and ordering static-safe accessories.

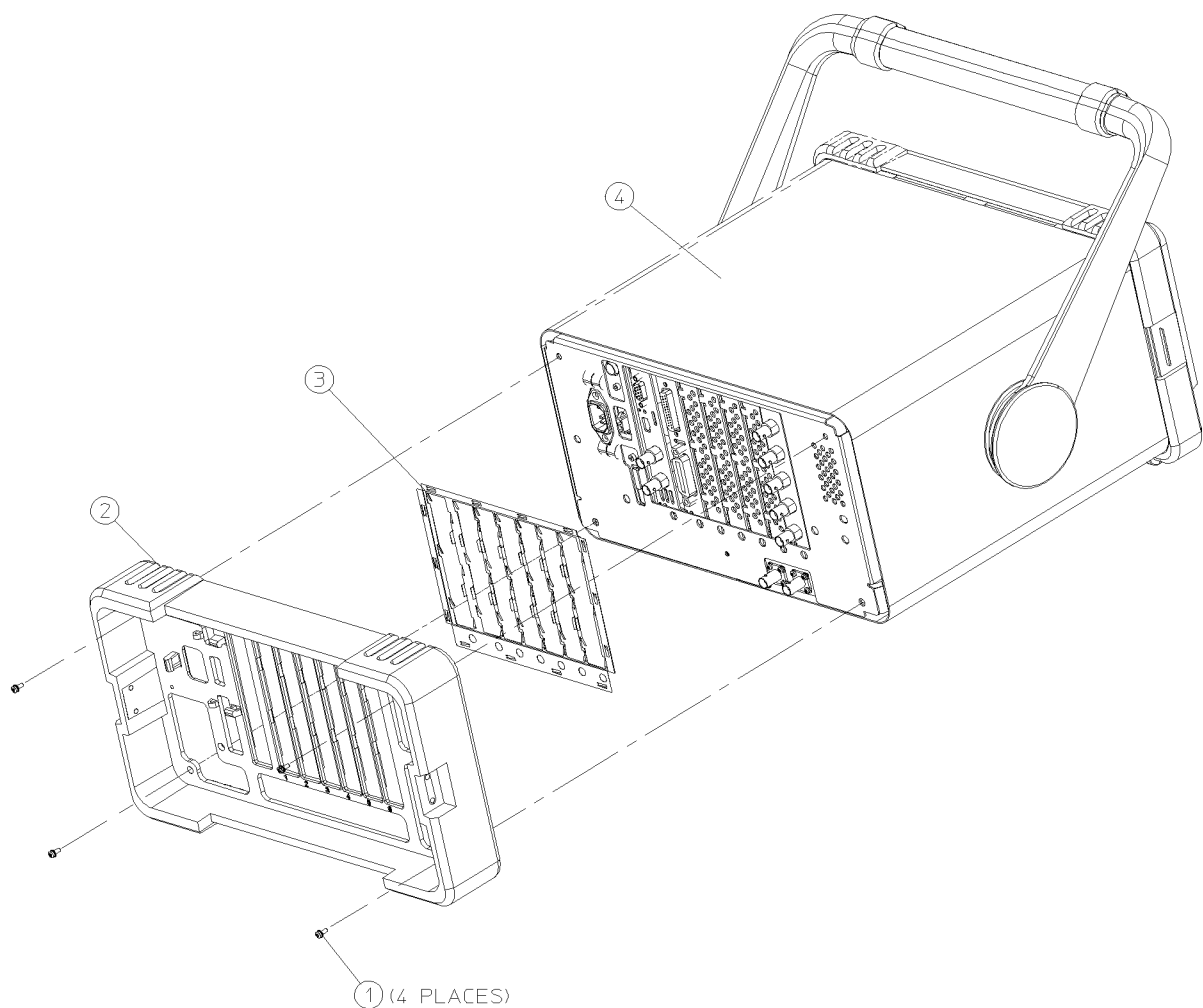
# Procedure

## Removing the Outer Case

1. Disconnect the spectrum analyzer from ac power.
  2. Carefully place the analyzer on the work surface with the front frame facing down.
- Refer to [Figure 2](#) for steps 3 and 4.
3. Remove the four screws (1) that hold the rear frame (2) and outer case (4) in place.
  4. Pull the instrument outer case and rear frame off toward the rear of the instrument.

**CAUTION** The rear EMI contact grid (3) that clips onto the rear panel can come loose. Note the correct position to reattach the gasket.

**Figure 2 Outer Case, Rear Frame Removal**



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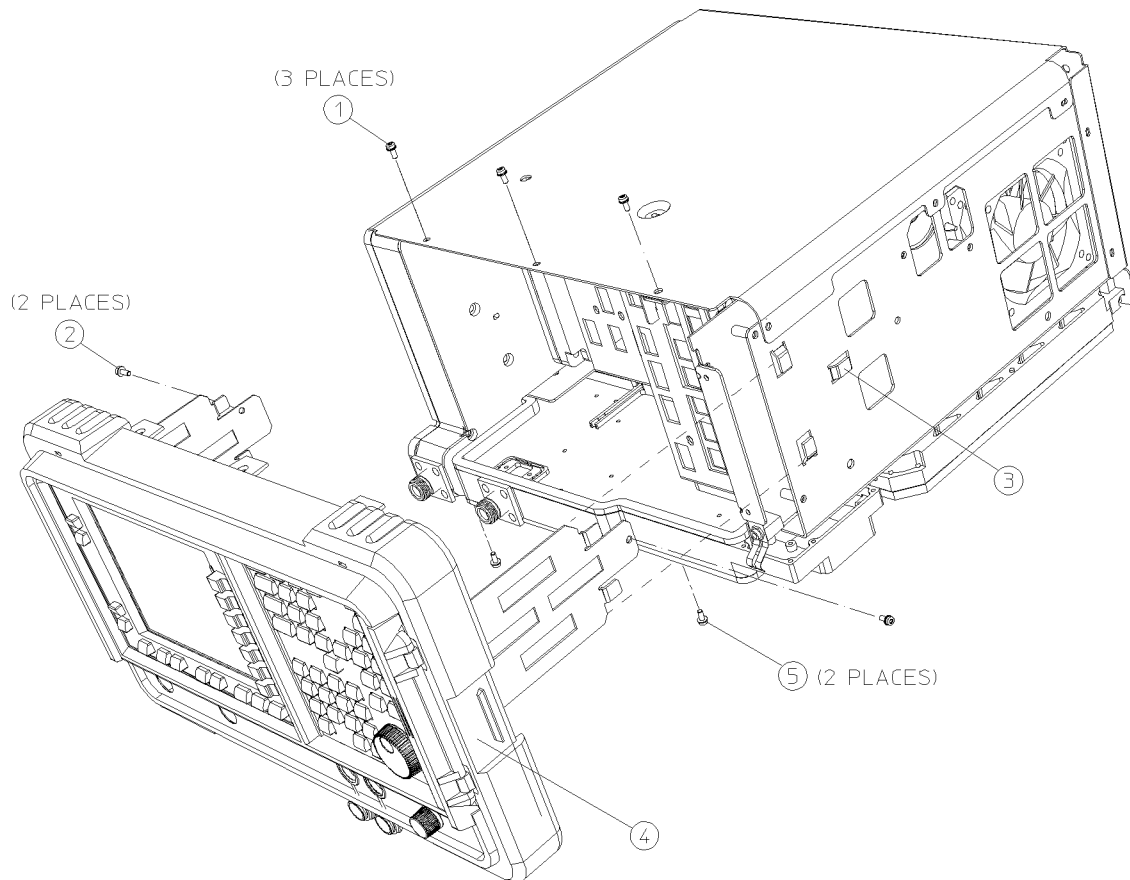
## Removing the Front Frame

The front frame assembly can be extended from the instrument without detaching any connections.

Refer to [Figure 3](#) for steps 1 through 3.

1. With the instrument still on its face, remove the two screws (5) on the bottom side of the instrument that secure the front frame to the RF assembly.
2. Place the instrument with the top side facing up and remove the remaining three screws (1) that secure the front frame to the inner shield. Remove the two screws (2) that secure the front frame subpanel to the chassis.
3. Slide the front frame (4) forward until it catches on the tabs (3) on the sides of the chassis.

**Figure 3**                      **Front Frame Assembly Removal**

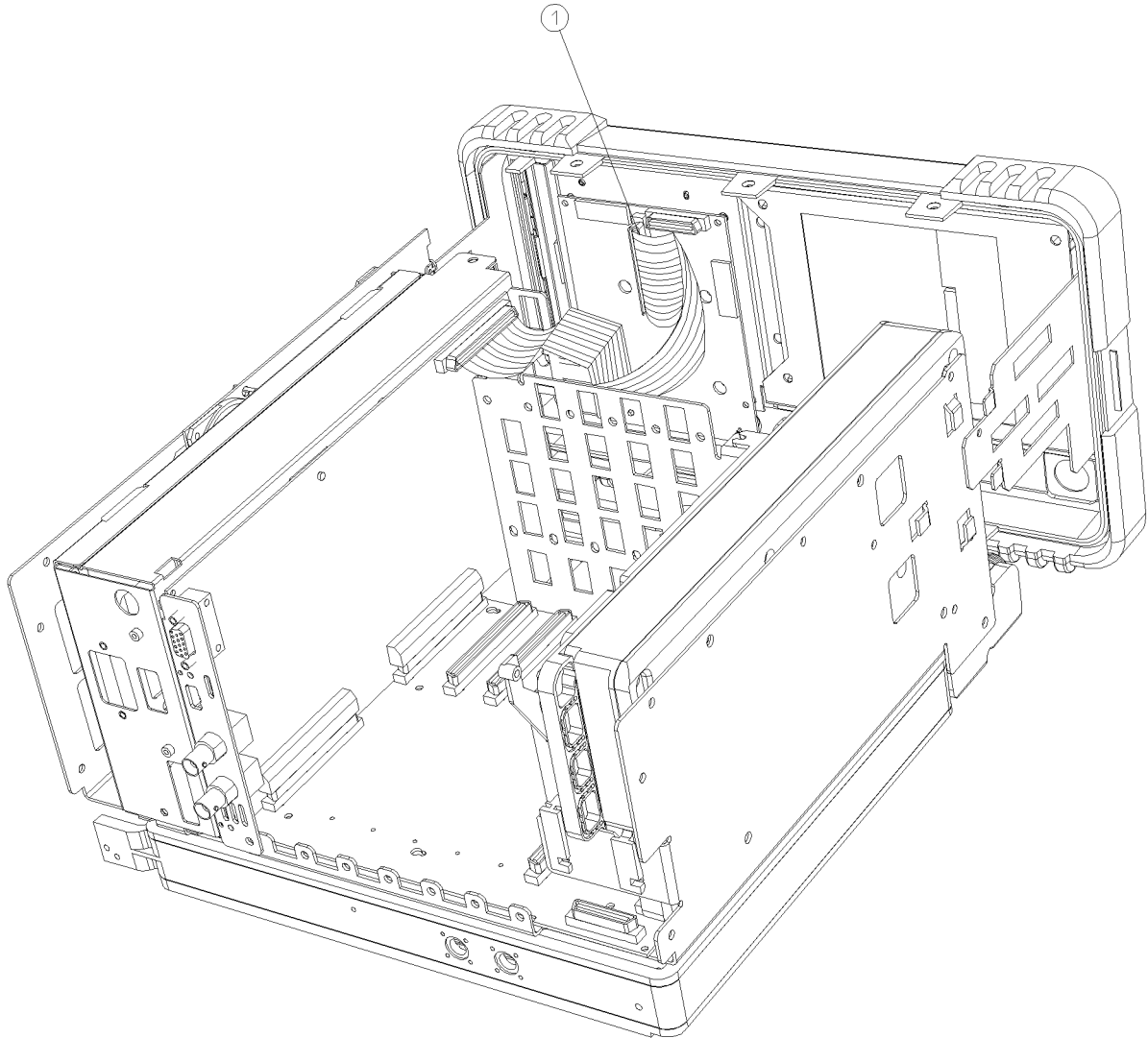


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Refer to [Figure 4](#) for steps 4 through 6.

4. Disconnect the ribbon cable (1) from the front panel interface board.
5. Carefully pull the sides of the front frame subpanel away from the chassis and over the tabs.
6. Slide the front frame forward to disengage from the chassis assembly.

**Figure 4**                      **Front Frame Ribbon Cable**



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## Removing the Display

**CAUTION** The display and lens surfaces are very easily scratched. Avoid touching them with your bare hands or other objects.

1. Place the front frame assembly face down on the work surface.

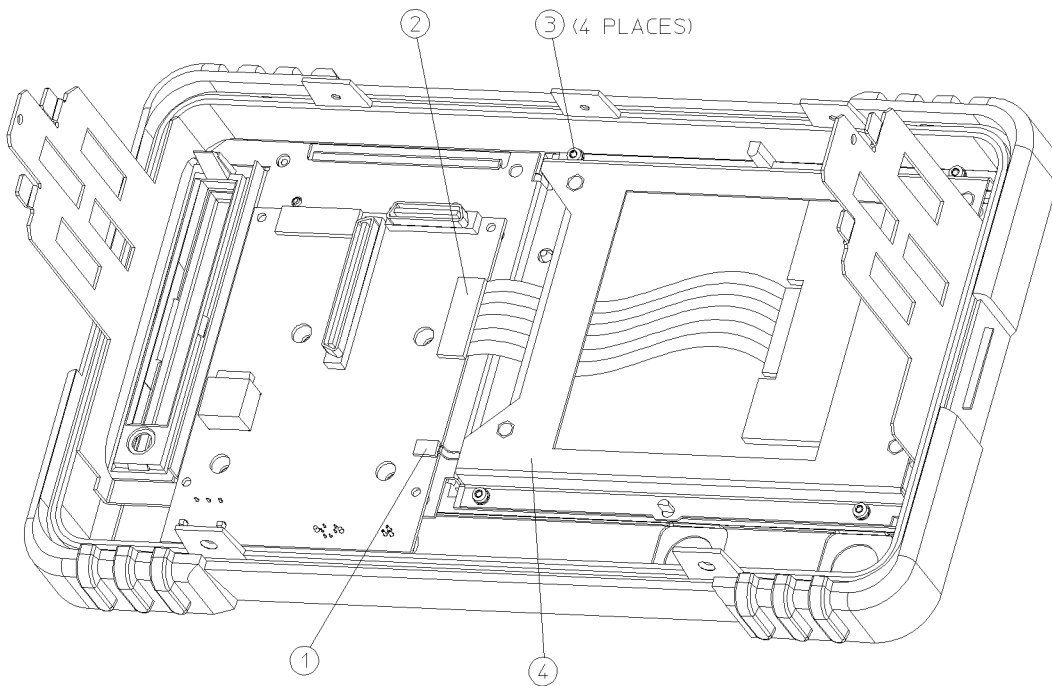
Refer to [Figure 5](#) for steps 2 through 5.

2. Disconnect the two-wire backlight cable (1) from the front panel interface board.

**CAUTION** The W3 display ribbon cable connector (2) is delicate. With a small screwdriver or similar tool, gently push the lock tabs out from the back of the connector. Excessive force on the locking tab will brake the retaining clips, and if broken, board replacement will be necessary.

3. Disconnect the W3 display ribbon cable (2) from the front panel interface board. The ribbon cable connector has a lock that needs to be slid out before removing the ribbon cable.
4. Remove the four screws (3) securing the display bracket (4) to the front frame.
5. Carefully lift the display and bracket out of the front frame assembly and put it in a safe place.

**Figure 5**                      **Display Removal**



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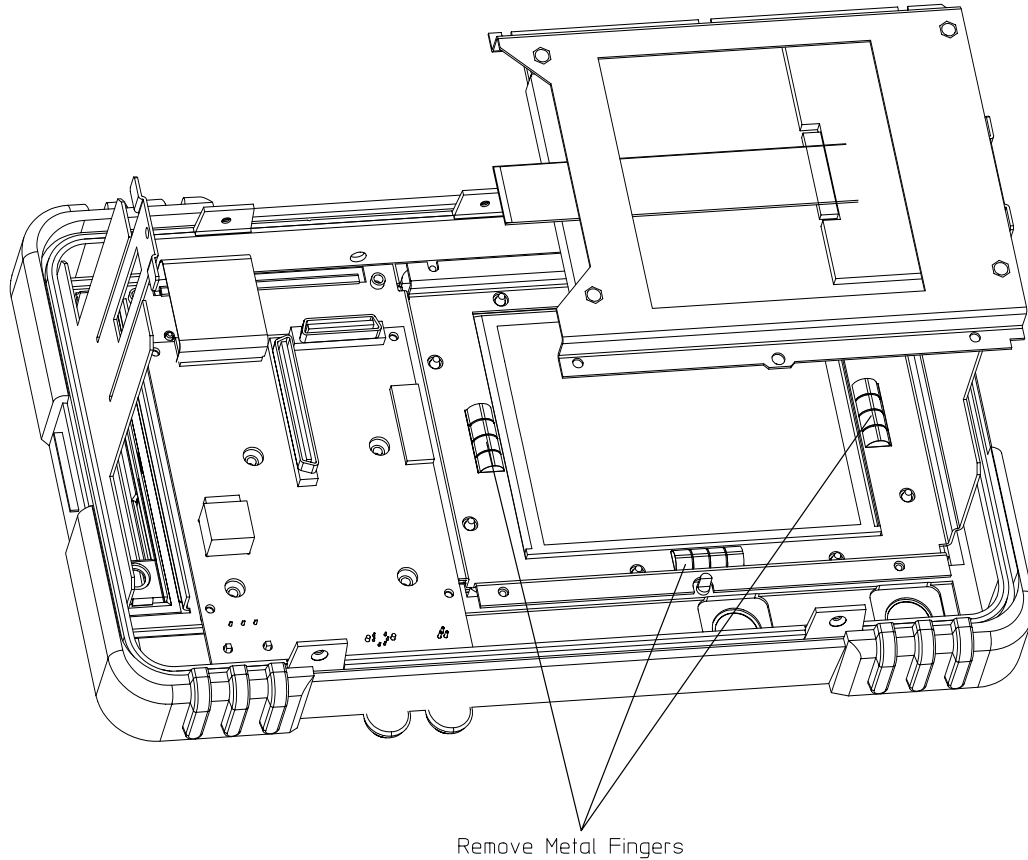


## Installing the EMI Gaskets

1. Refer to [Figure 6](#). Use a pair of needle-nose pliers to remove the metal fingers located in three places on the front frame around the lens opening.

**NOTE** The fingers are held in place with adhesive and some force may be required to remove them.

**Figure 6** Metal Finger Location



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Refer to [Figure 7](#) for steps 2 through 6.

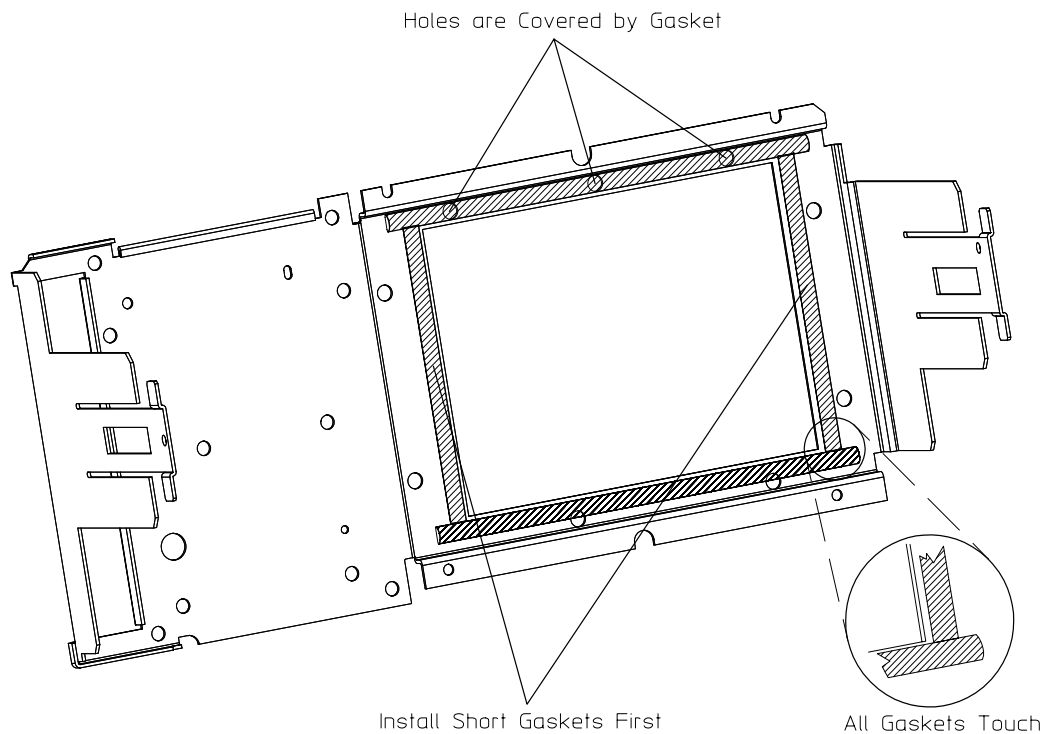
2. Locate the two long (8160-0959) and two short (8160-0960) EMI foam gaskets.
3. Install one of the short gaskets, along the left or right edge of the opening, approximately 1 mm from the edge, as shown in the figure. Use the following steps:
  - a. Remove the protective paper backing from the gasket strip, to expose the self-stick adhesive.
  - b. On the inside of the front frame, center and align the gasket along the edge of the opening. (The short gaskets should have approximately equal amounts of overlap at the top and bottom of the opening.)
  - c. Firmly press along the length of the gasket to adhere it to the frame.
4. Repeat steps 3a through 3c with the remaining short gasket along the opposite edge of the opening.
5. Repeat steps 3a through 3c to install one of the long gaskets, along the top or bottom edge of the opening as shown in the figure.

**NOTE** Make sure that the long gaskets touch the ends of the short gaskets. This is necessary to create an airtight seal around the inner plastic lens and the LCD display. The seal minimizes particulate contamination that may cloud the lens.

6. Repeat steps 3a through 3c with the remaining long gasket along the opposite edge of the opening.

**NOTE** The long gaskets will either partially or completely cover holes in the subpanel through which rubber front panel alignment posts protrude. This is normal and will not adversely affect the function of the gasket.

**Figure 7 Gasket Placement**



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## Removing and Replacing the Lens

Due to the nature of the inner surface of the lens, it is not readily cleanable, and therefore it is recommended that you replace rather than attempt to clean the lens.

**NOTE** If the gasket is being added as a preventive measure and the lens is not impaired, go to [“Reinstalling the Display” on page 12.](#)

**NOTE** If the lens is scratched or damaged, you will need to order a new lens and keypad assembly for the repair.

## Removing the Keypad/Flex Circuit

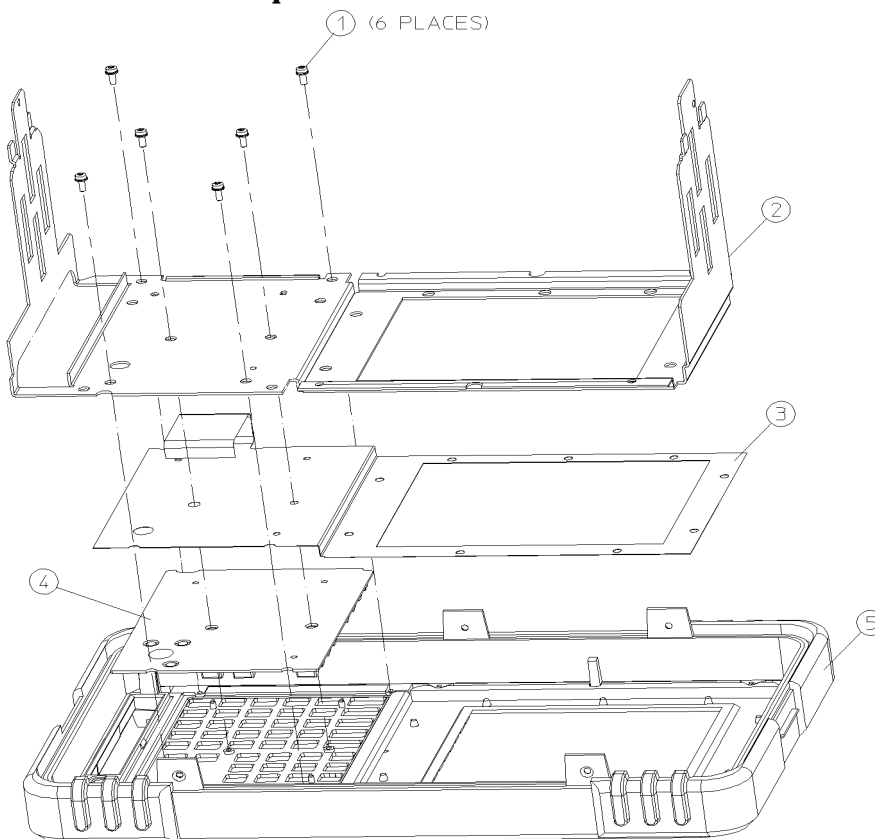
1. Remove the volume knob and the RPG knob by pulling straight off of the control shafts.

**NOTE** There is a water seal gasket placed around the volume control shaft that will need to be repositioned during the replacement procedure.

Refer to [Figure 8](#) for steps 2 and 3.

2. Remove the six screws (1) securing the subpanel (2) to the front frame (5). Lift the subpanel, with the front panel interface board attached, from the front frame assembly.
3. Lift out the flex circuit (3) and the main keypad (4). Be careful to avoid touching the keypad contacts with your fingers.

**Figure 8** Front Frame Subpanel Removal



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## Removing the Lens/Keypad Assembly

1. The lens/keypad assembly is secured in place, with adhesive instead of hardware. To remove it from the front frame, apply pressure along the edges of the lens from the front side until it pops out.

## Replacing the Lens/Keypad Assembly

1. Remove the paper covering the adhesive on the lens/keypad assembly.
2. Carefully fit the new lens/keypad assembly into place in the front frame. Press along the edges of the lens from the inside to adhere it to the front frame.
3. Make sure the inside of the lens is clean from contaminants such as lint and fingerprints before proceeding.

## Replacing the Keypad/Flex Circuit

1. Place the main keypad (4) so it lays flat in the front frame (5). Be careful to avoid touching the keypad contacts with your fingers.

Refer to [Figure 8](#) for steps 2 through 5.

2. Lay in the flex circuit (3) so it aligns with the pegs on the front frame and lays flat. A small amount of circuit ripple will be unavoidable.
3. Place the subpanel (2), with the display and the front panel interface board attached, on top of the flex circuit, taking care to not pinch the flex circuit ribbon cable underneath.
4. Ensure that the water seal gasket on the volume control shaft is correctly positioned.
5. Ensure that the flex circuit is aligned with the pegs and not visible through the screw holes in the subpanel. Replace the six screws that secure the subpanel to the front frame. Replace the four screws that secure the display to the front frame. Torque to 101 N/cm (9 inch pounds).
6. Press the volume and RPG knobs onto their control shafts.

## Reinstalling the Display

**NOTE** If the LCD display requires cleaning, Isopropyl Alcohol on a soft wipe may be used to gently wipe the glass lens of the display.

1. Place the display (4) into the front frame assembly. Make sure that the cables are not pinched between the display and the front frame.

Refer to [Figure 5](#) for steps 2 through 4.

2. Replace the four screws (3) that secure the display bracket to the front frame. Torque to 101 N/cm (9-inch pounds).

**CAUTION** The W3 display ribbon cable connector (2) is delicate. Use a small screwdriver or similar tool to push the lock tabs into the back of the connector.

3. Connect the display ribbon cable (2) to the front panel interface board. Make sure that the display ribbon cable is fully inserted into the connector body and aligned straight in the connector before pressing the locking bar into place.

**TIP** An easy way to insert this delicate cable into the connector is to place your finger on the cable, in the center of the LCD display, and gently slide the cable away from the connector until they align.

Gently slide the cable toward the connector providing guidance with the other hand as necessary until the cable end slips into the connector

Ensure the cable end is seated completely in the connector, and is square within the connector.

Continue to hold the cable in place with your finger, and with the other hand gently press the locking tab into place.

**NOTE** If you experience display problems, check this connection.

4. Connect the backlight cable (1) to the front panel interface board.

## Replacing the Front Frame

1. Refer to [Figure 3](#). Align the front frame subpanel rails with the chassis.
2. Refer to [Figure 4](#). Connect the ribbon cable (1) to the front frame assembly.
3. Carefully slide the front frame toward the chassis, assuring the ribbon cable is not pinched between assemblies, and the RF input connector lines up correctly with the opening in the front frame.

**NOTE** Make sure the water seal is still in place around the input connector (and around the tracking generator connector if the instrument has Option 1DN or 1DQ) before reinstalling the front frame assembly.

4. Carefully place the spectrum analyzer on the work surface with the front frame facing down.
5. Refer to [Figure 3](#). Replace the seven screws that secure the front frame to the chassis. Torque to 101 N/cm (9-inch pounds).

## Replacing Outer Case

1. Replace the instrument outer case by matching the grill on the side of the case to the fan on the power supply assembly.
2. Fit the leading edge of the case completely into the slot on the back of the front frame assembly.

Refer to [Figure 2](#) for steps 3 through 5.

3. Replace the rear frame assembly (2) on the instrument.

**NOTE** The rear EMI gasket (3) that clips onto the rear panel can come loose. When replacing the outer case, make sure the gasket is in the correct position.

In some cases, the rear EMI gasket may be misaligned, or the fingers may not be bent far enough to make proper contact. Poor contact will negatively impact the EMI performance of the instrument.

4. Check to make sure that all fingers of the rear EMI gasket (3) contact the rear panels of the boards/blank panels. Each pair of fingers should contact the faceplate to its left and right, respectively.

If the contacts of the rear EMI gasket are misaligned, remove the rear frame, loosen all the rear card cage screws, power supply screw, IF screws, and option card screws, and move the whole group of parts in the direction needed to ensure that the fingers of the gasket make contact with the rear panels.

If the panels are properly aligned, but the EMI fingers do not reach the panels, remove the rear frame and bend the fingers farther out to ensure that they make contact with the rear panels.

5. Use the four screws (1) to fasten the rear frame to the instrument. Torque to 247 N/cm (21-inch pounds).

## **After a Spectrum Analyzer Repair**

After the spectrum analyzer assemblies have been repaired or replaced, perform the related adjustments and performance verification tests. Refer to the *Adjustment and Tests for Replacement or Repaired Assemblies* in the *Post-Repair Procedures* chapter of the service guide for the related adjustments and performance verification tests required for each assembly.