

Installation Note

**Agilent Technologies ESG and ESG-D Series Signal Generators
Semi-Rigid Cable Replacement Kits**

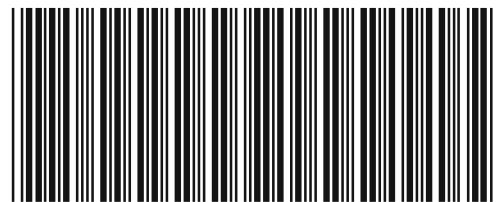
**Kit Numbers E4400-60059, E4400-60060, E4400-60061,
E4400-60176, E4400-60177, and E4400-60726**



Agilent Technologies

Part Number E4400-90096

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E4400-90096

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Semi-Rigid Cable Replacement Kits

E4400-60059, E4400-60060, E4400-60061, E4400-60176, E4400-60177, and E4400-60726

Product Affected:	ESG and ESG-D Series Signal Generators
Models Affected:	E4400A/B/BU, E4420A/B/BU, E4421A/B/BU, E4422A/B/BU, E4430A/B/BU, E4431A/B/BU, E4432A/B/BU, and E4433A/B/BU
Serial Numbers:	All
To Be Performed By:	(x) Agilent Service Center (x) Personnel Qualified by Agilent Technologies (x) Customer
Estimated Installation Time:	1 Hour
Estimated Verification Time:	6 Hours

Introduction

This kit contains the parts and instructions to replace the semi-rigid cables on the ESG and ESG-D Series Signal Generators. Kits E4400-60176 and E4400-60177 are for instruments equipped with Option UNB. Kit E4400-60726 is for instruments equipped with the E4400-60680 attenuator.

Tools Required

- Needlenose pliers (used to remove snap rings from cable retainers)
- 5/16-inch open-end wrench
- T-20 TORX screwdriver
- T-15 TORX screwdriver
- T-8 TORX screwdriver

WARNING **Before you disassemble the instrument, turn the power switch off and unplug the instrument. Failure to unplug the instrument can result in personal 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.

Installation Kit Parts List

Table 1 Replacement Cable Kit for W11 E4400-60059 Contents

Item	Quantity	Description	Part Number
1	1	CBL AY-Synth Out	E4400-20020
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Table 2 Replacement Cable Kit for W12 E4400-60060 Contents

Item	Quantity	Description	Part Number
1	1	CBL RF Aux Out	E4400-20024
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Table 3 Replacement Cable Kit for W14 E4400-60061 Contents

Item	Quantity	Description	Part Number
1	1	CBL AY Atten Synth	E4400-20019
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Tables 4 and 5 below describe the cable replacement kits for instruments equipped with Option UNB.

Table 4 Replacement Cable Kit for W12 E4400-60176 Contents

Item	Quantity	Description	Part Number
1	1	CBL RF Aux Out	E4400-20130
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Table 5 Replacement Cable Kit for W14 E4400-60177 Contents

Item	Quantity	Description	Part Number
1	1	CBL AY Atten Synth	E4400-20129
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Table 1 Replacement Cable Kit for W14 E4400-60726 Contents

Item	Quantity	Description	Part Number
1	1	CBL AY Atten Input	E4400-20558
2	1	Retainer Cable	E4400-40002
3	1	Retainer Ring	0410-1643
4	1	Installation Note	E4400-90096

Functionality Check

This procedure verifies that the signal generator powers up and that the internal instrument check identifies no errors. The internal check evaluates the correctness of operation and returns an error message if a problem is detected.

1. Turn power on to the signal generator by pressing the power switch. The green LED will light. Let the instrument warm up for one hour.
2. Cycle the power to the signal generator. The green LED should again be lit and the instrument will perform a check.
3. When the display is lit, check to see if the **ERR** annunciator is turned on.
4. If the **ERR** annunciator is turned on, review the error messages in the queue by pressing **Utility, Error Info, View Next Error Message**. The first error message in the queue will be shown in the text area of the display. Refer to the error messages guide for information about the error message.

If there is more than one error message (each message will be designated as 1 of n), continue pressing the **View Next Error Message** softkey until you have seen all of the messages.

5. When you have resolved all of the error messages, press **Clear Error Queue(s)** to delete the messages. Then restart this procedure at step two.

NOTE

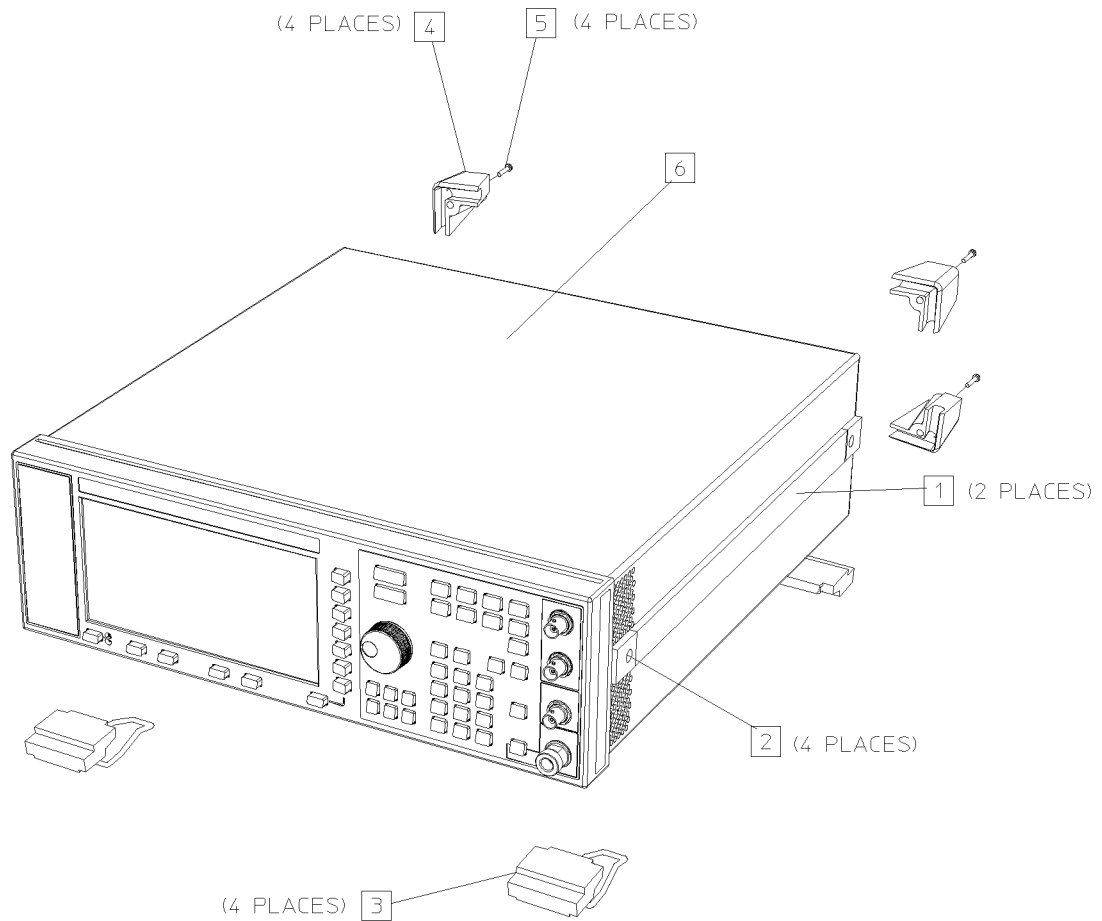
For instruments with Option 1E5, **ERROR 514, Reference Oven Cold** will occur whenever the signal generator is first connected to AC line power. The **OVEN COLD** annunciator and the **ERR** annunciator will both turn on. The **OVEN COLD** annunciator will automatically clear after approximately 5 minutes. The error queue *cannot* be cleared, however, until the **OVEN COLD** annunciator has turned off.

Procedure

Remove Instrument Cover

1. Remove the two strap handles (item 1) from each side of the signal generator by loosening the two screws (item 2) on each handle.
2. Remove the four bottom feet (item 3).
3. Remove the four rear feet (item 4) from the signal generator by removing the four screws (item 5) that secure them.
4. Slide the instrument cover (item 6) off the back of the signal generator.

Figure 2 Instrument Cover



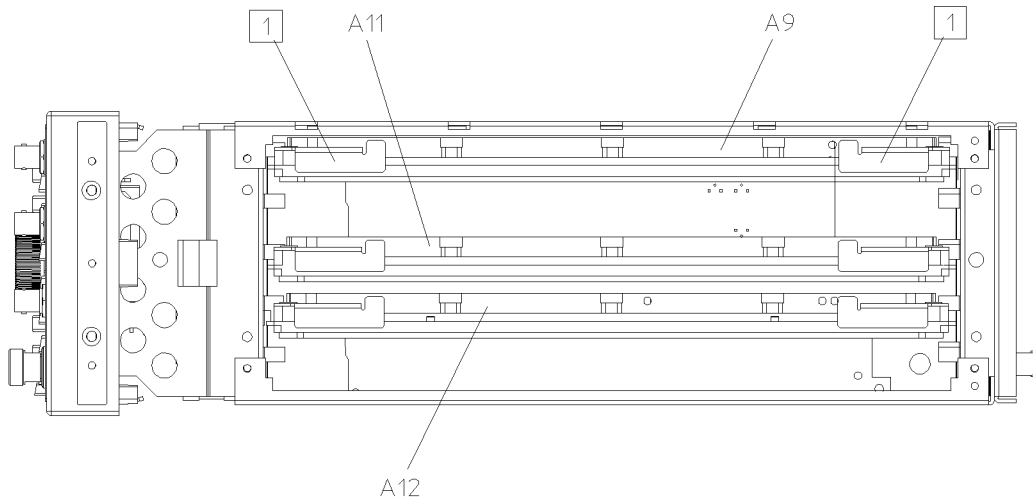
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Remove A9, A11, and A12 Daughterboard Card Cage Boards

Use this procedure to remove each of the following assemblies:

- Output Board (A9)
 - Reference Board (A11)
 - Synthesizer/Doubler Board (A12)
1. Remove the right-side cover by removing the four screws that attach it to the instrument chassis.
 2. Simultaneously lift the left and right extractors (item 1) on the board you want to remove.
 3. Remove the board from the card cage slot.

Figure 3 A9, A11, and A12 Daughterboard Card Cage Boards



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Replace W11, W12, and W14 Semi-Rigid Cables

Remove Old Semi-Rigid Cables

Refer to,

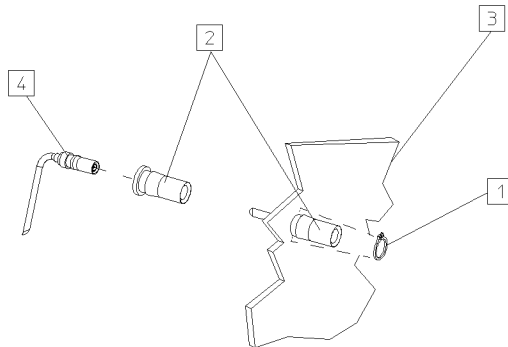
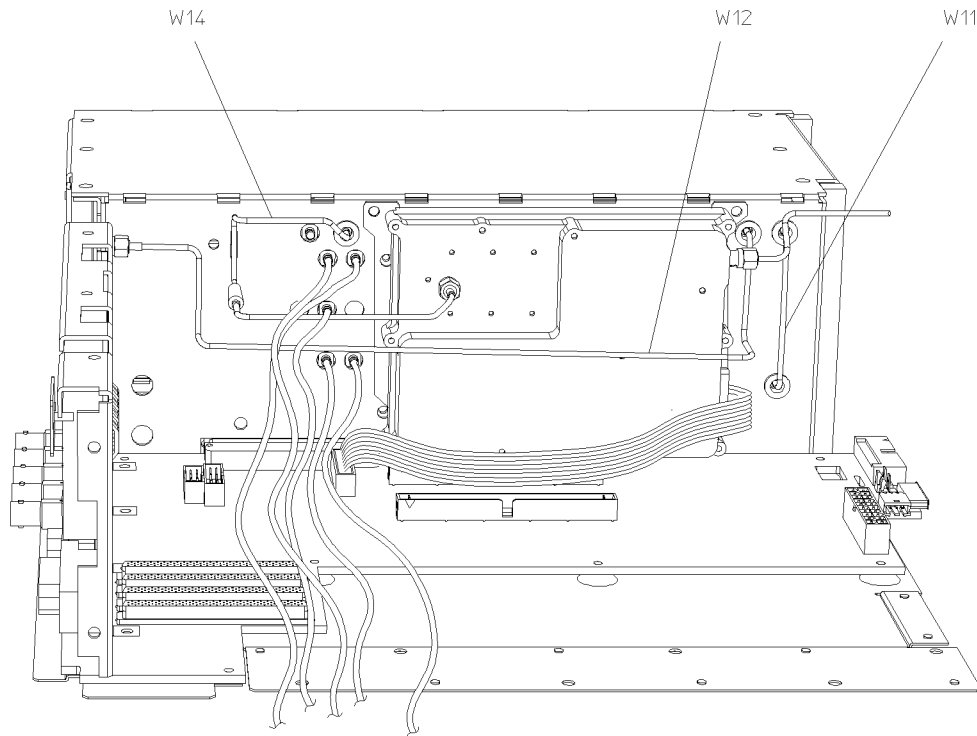
Figure 4 for E4400 A-Series Signal Generators

Figure 5 for E4400 B- and BU-Series Signal Generators or

Figure 6 for E4400 B- and BU-Series Signal Generators with Option UNB

1. Remove the snap ring (item 1) from the cable retainer (item 2) on W11, W12, and W14. The cables are now disconnected from the instrument chassis (item 3).
2. Disconnect the other end of the cables and discard.

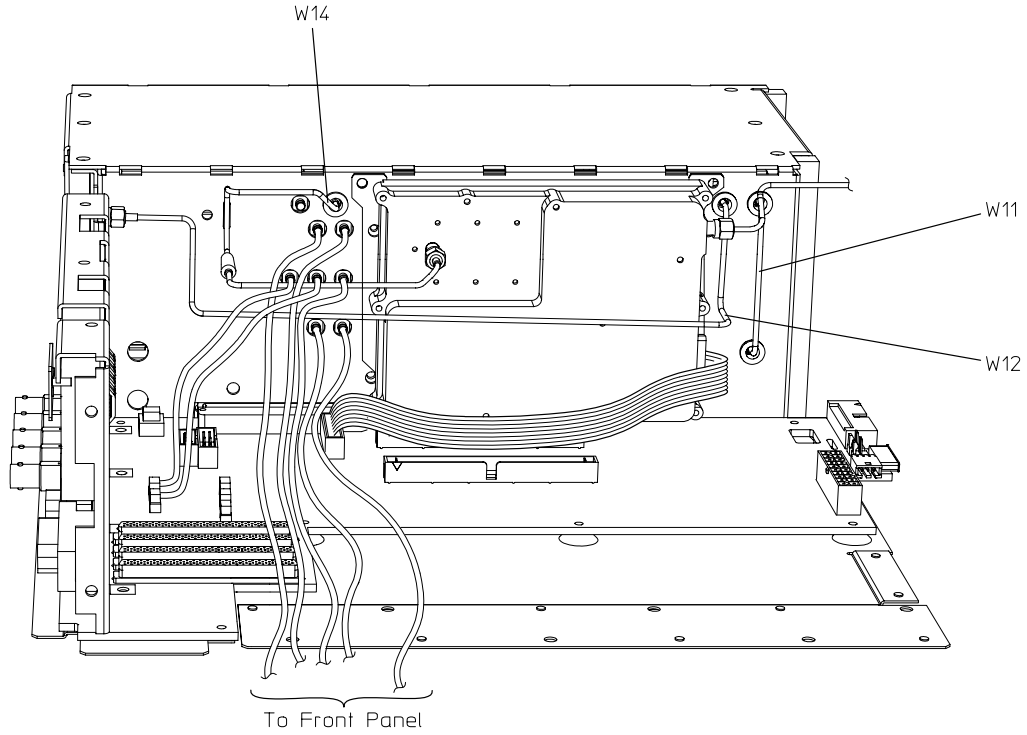
Figure 4 W11, W12 and W14 Semi-Rigid Cable Locations for E4400 A-Series Signal Generators



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Figure 5

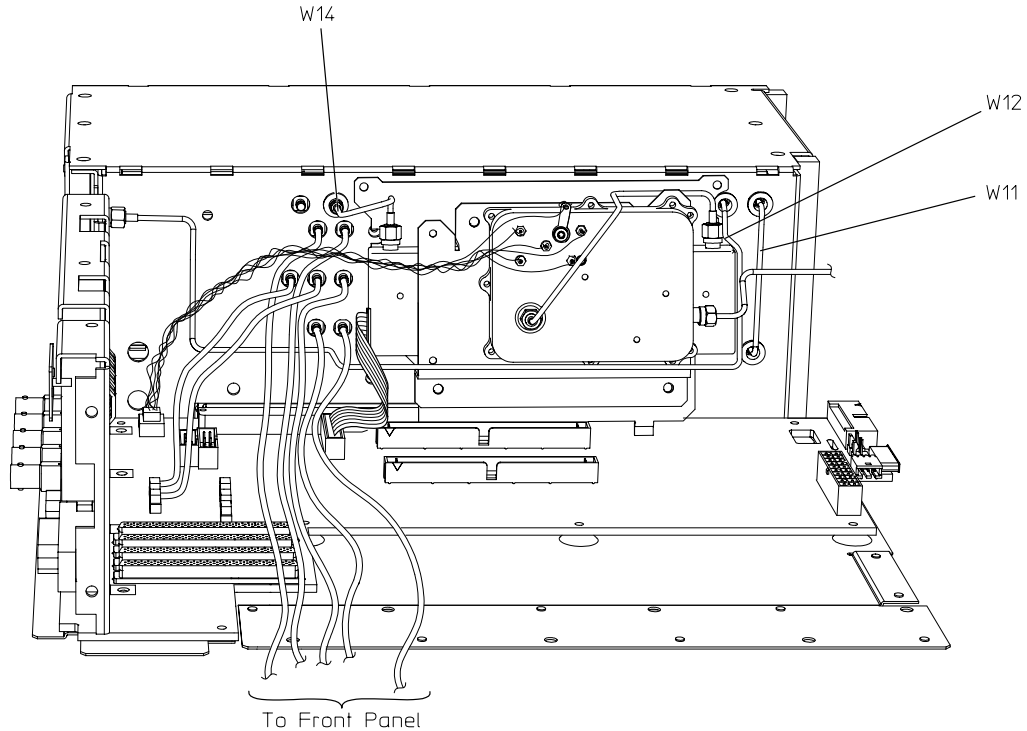
**W11, W12 and W14 Semi-Rigid Cable Locations
for E4400 B- and BU-Series Signal Generators**



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Figure 6

**W11, W12 and W14 Semi-Rigid Cable Locations
for E4400 B- and BU-Series Signal Generators Option UNB**



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Replace Semi-Rigid Cables

1. If you're installing a new cable, refer to Figure 3. A *new* cable retainer (item 2) must first be attached to the end of the cable (item 4). Verify the cable retainer is correctly attached by listening for an audible "click" as you slide it over the end of the cable.
2. Insert the cable-retainer end of the cable assembly into the opening of the instrument chassis and then secure it with a snap ring.
3. Connect the other end of the cable. All semi-rigid cables should be torqued to 9 in-lbs.

Replace Daughterboard Card Cage Boards

1. Replace each board into the appropriate card cage slot.
2. Simultaneously push down on the left and right extractors (item 1) on the board you are replacing.
3. Replace the right-side cover by attaching it to the instrument chassis with the four screws that were previously removed. Torque all T-8 TORX screws to 9 in-lbs.

Replace Inside Cover

1. Replace inside top cover and secure it with the 11 screws which were previously removed. Torque the screws to 9 in-lbs.

Verification

1. Power on the signal generator and check for error messages. Let the signal generator warm up for at least five minutes.
 - a. Press the front panel **PRESET** button to reset the signal generator.
 - b. Rerun the “Functionality Check” on page 6 of this installation note.

Perform the Following Adjustments and Performance Tests

NOTE These adjustments are automated using the ESG Series Support Software Analog / Digital E4400-10001.

Adjustments

1. Gain Adjust
2. ALC adjustments
3. Power Level Accuracy

Performance Tests

1. Power Level Accuracy
2. Pulse Rise/Fall Time (Option 1E6)
3. Alternate Timeslot (Option UNA)
4. Digital Mod: Internal I/Q Quality (Options UN3, UN4, and UN8)

Replace Instrument Cover

1. Replace inside top cover and secure it with the 11 screws which were previously removed. Torque the screws to 9 in-lbs. Refer to Figure 1.
2. Slide the instrument cover (item 6) on from the back of the signal generator.
3. Replace the four rear feet (item 4) onto the signal generator by using the four screws (item 5) that secure them. Torque the rear feet screws (item 4) to 21 in-lbs.
4. Replace the four bottom feet (item 3).
5. Replace the two strap handles (item 1) onto each side of the signal generator using the two screws (item 2) on each handle. Torque the strap handle screws (item 2) to 21 in-lbs.