

# Installation Note

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## Removable Hard Disk Drive Upgrade Kit

For All PNA Series RF Network Analyzers

Network Analyzer Model Number	Upgrade Kit Part Number
E8356A, E8357A, E8358A E8801A, E8802A, E8803A N3381A, N3382A, N3383A	E8356-60120



Agilent Part Number: E8356-90068

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E8356-90068

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## Safety Notes

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

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<b>WARNING</b>	<b>Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.</b>
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<b>CAUTION</b>	Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.
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This information supersedes all prior HP contact information.			
<b>Online assistance:</b> <a href="http://www.agilent.com/find/assist">www.agilent.com/find/assist</a>			
<b>Americas</b>			
<b>Brazil</b> (tel) (+55) 11 3351 7012 (fax) (+55) 11 3351 7024	<b>Canada</b> (tel) +1 877 894 4414 (fax) +1 303 662 3369	<b>Mexico</b> (tel) 1 800 254 2440 (fax) 1 800 254 4222	<b>United States</b> (tel) 800 829 4444 (alt) (+1) 303 662 3998 (fax) 800 829 4433
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<b>Australia</b> (tel) 1 800 225 574 (fax) 1 800 681 776 (fax) 1 800 225 539	<b>China</b> (tel) 800 810 0508 (alt) 800 810 0510 (fax) 800 810 0507 (fax) 800 810 0362	<b>Hong Kong</b> (tel) 800 933 229 (fax) 800 900 701	<b>India</b> (tel) 1600 112 626 (fax) 1600 112 727 (fax) 1600 113 040
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<b>Taiwan</b> (tel) 0800 047 669 (fax) 0800 047 667 (fax) 886 3492 0779	<b>Thailand</b> (tel) 1 800 2758 5822 (alt) (+66) 2267 5913 (fax) 1 800 656 336	<b>Malaysia</b> (tel) 1800 880 399 (fax) 1800 801 054	
<b>Europe</b>			
<b>Austria</b> (tel) 0820 87 44 11* (fax) 0820 87 44 22	<b>Belgium</b> (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	<b>Denmark</b> (tel) (+45) 7013 1515 (alt) (+45) 7013 7313 (fax) (+45) 7013 1555	<b>Finland</b> (tel) (+358) 10 855 2100 (fax) (+358) (0) 10 855 2923
<b>France</b> (tel) 0825 010 700* (alt) (+33) (0)1 6453 5623 (fax) 0825 010 701*	<b>Germany</b> (tel) 01805 24 6333* (alt) 01805 24 6330* (fax) 01805 24 6336*	<b>Ireland</b> (tel) (+353) (0)1 890 924 204 (alt) (+353) (0)1 890 924 206 (fax) (+353) (0)1 890 924 024	<b>Israel</b> (tel) (+972) 3 9288 500 (fax) (+972) 3 9288 501
<b>Italy</b> (tel) (+39) (0)2 9260 8484 (fax) (+39) (0)2 9544 1175	<b>Luxemburg</b> (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	<b>Netherlands</b> (tel) (+31) (0)20 547 2111 (alt) (+31) (0)20 547 2000 (fax) (+31) (0)20 547 2190	<b>Russia</b> (tel) (+7) 095 797 3963 (alt) (+7) 095 797 3900 (fax) (+7) 095 797 3901
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## About the Upgrade Kit

Products affected . . . . .	E8356A, E8357A, E8358A, E8801A, E8802A, E8803A, N3381A, N3382A, N3383A; all options
Installation to be performed by . . . . .	Agilent service center or personnel qualified by Agilent
Estimated installation time . . . . .	45 minutes
Estimated verification time . . . . .	5 minutes

## Description of the Upgrade

This upgrade moves the hard disk drive to a rear panel location where it can be removed without the necessity of removing the instrument covers.

## Items Included in the Upgrade Kit

Check the contents of your kit against the following list. If any item is missing or damaged, contact Agilent Technologies. Refer to [“Getting Assistance from Agilent” on page 3](#).

**Table 1 Upgrade Kit to Install a Removable Hard Disk Drive (E8356-60120)**

Description	Qty	Part Number
Installation note (this document)	1	E8356-90068
Cover plate, rear (right-side rear panel cover)	1	E8356-00038
Cover plate, hard disk drive (left-side rear panel cover)	1	E8356-00040
Ribbon cable, hard disk drive to interconnect board	1	8121-0817
Flexible RF cables, W44 and W45	2	8120-5056
<b>The following are extra parts intended for personal use by the end-user. These parts are provided to allow the user to assemble an additional disk drive onto another rear panel cover. These parts should be packaged and delivered with the analyzer to the end-user.</b>		
Cover plate, hard disk drive (left-side rear panel cover)	1	E8356-00040
Bushing (for mounting hard disk drive)	8	0340-1525
Screw, M3.0 x 12 (to attach hard disk drive to left-side rear panel cover)	4	0515-0664

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## Installation Procedure for the Upgrade Kit

The network analyzer must be in proper working condition prior to installing this option. Any necessary repairs must be made before proceeding with this installation.

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**WARNING**      **This installation requires the removal of the analyzer's protective outer covers. The analyzer must be powered down and disconnected from the mains supply before performing this procedure.**

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### Electrostatic Discharge Protection

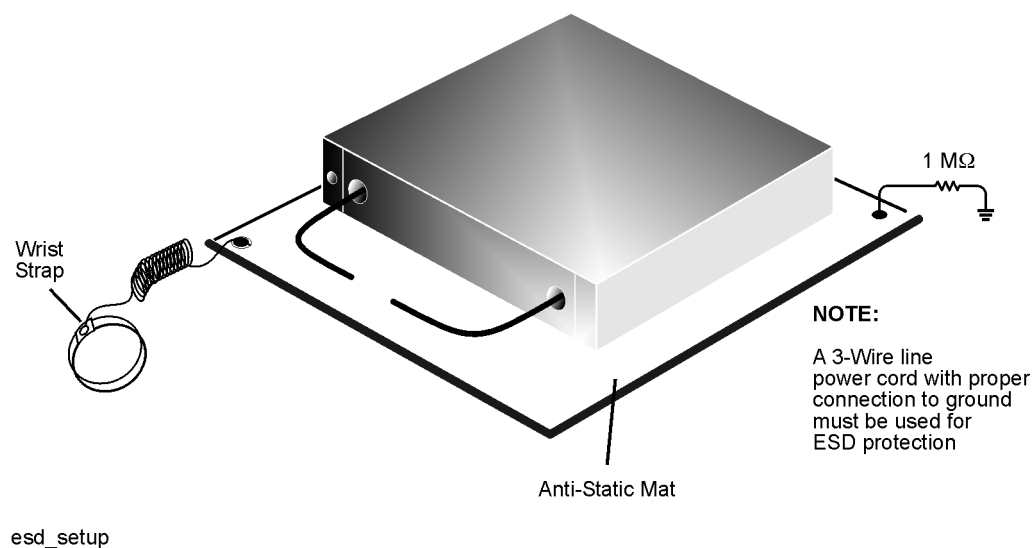
Protection against electrostatic discharge (ESD) is essential while removing or connecting cables or assemblies within the network analyzer.

Static electricity can build up on your body and can easily damage sensitive internal circuit elements when discharged. Static discharges too small to be felt can cause permanent damage. To prevent damage to the instrument:

- *always* wear a grounded wrist strap having a 1 M $\Omega$  resistor in series with it when handling components and assemblies.
- *always* use a grounded, conductive table mat while working on the instrument.
- *always* wear a heel strap when working in an area with a conductive floor. If you are uncertain about the conductivity of your floor, wear a heel strap.

Figure 1 shows a typical ESD protection setup using a grounded mat and wrist strap. Refer to “Tools and Equipment Required for the Installation” on page 6 for part numbers.

**Figure 1 ESD Protection Setup**



## Overview of the Installation Procedure

Step 1. Remove the Outer and Inner Covers from the Analyzer

Step 2. Disconnect Cables to the Rear Panel Cover

Step 3. Remove the Rear Panel Cover

Step 4. Install the New Right-Side Rear Panel Cover

Step 5. Reconnect the Rear Panel Cables

Step 6. Remove the Hard Disk Drive Assembly (HDDA)

Step 7. Disassemble the Hard Disk Drive Assembly (HDDA)

Step 8. Install the HDDA on the New Rear Panel Cover

Step 9. Form and Install the New Ribbon Cable

Step 10. Connect Ribbon Cable and Reinstall Interconnect Board

Step 11. Install the New Left-Side Rear Panel Cover With the HDDA Attached

Step 12. Verify That the Hard Disk Drive Functions Properly

Step 13. Reinstall the Inner and Outer Covers

## Tools and Equipment Required for the Installation

Description	Model/Part Number
T-10 TORX driver (set to 9 in-lbs)	N/A
T-20 TORX driver (set to 21 in-lbs)	N/A
1/2-inch torque wrench (set to 21 in-lbs)	N/A
<b>ESD Equipment</b>	
ESD grounding wrist strap	9300-1367
5-ft grounding cord for wrist strap	9300-0980
2 x 4 ft conductive table mat and 15-ft grounding wire	9300-0797
ESD heel strap (for use with conductive floors)	9300-1308

## Step 1. Remove the Outer and Inner Covers from the Analyzer

Refer to [Figure 2](#).

### Remove the Outer Cover

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**CAUTION** This procedure is best performed with the analyzer resting on its front handles in the vertical position. *Do not place the analyzer on its front panel without the handles.* This will damage the front panel assemblies.

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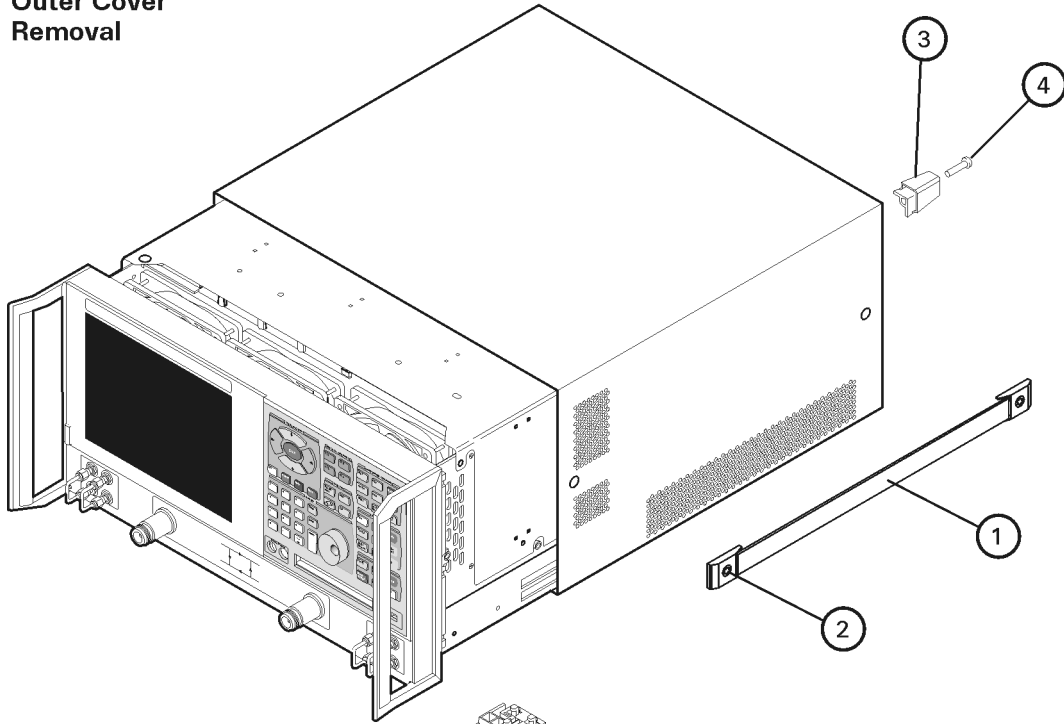
1. Disconnect the power cord (if it has not already been disconnected).
2. With a T-20 TORX driver, remove the strap handles (item ①) by loosening the screws (item ②) on both ends until the handle is free of the analyzer.
3. With a T-20 TORX driver, remove the four rear panel feet (item ③) by removing the center screws (item ④).
4. Slide the four bottom feet (item ⑤) off the cover.
5. Slide the cover off of the frame.

### Remove the Inner Cover

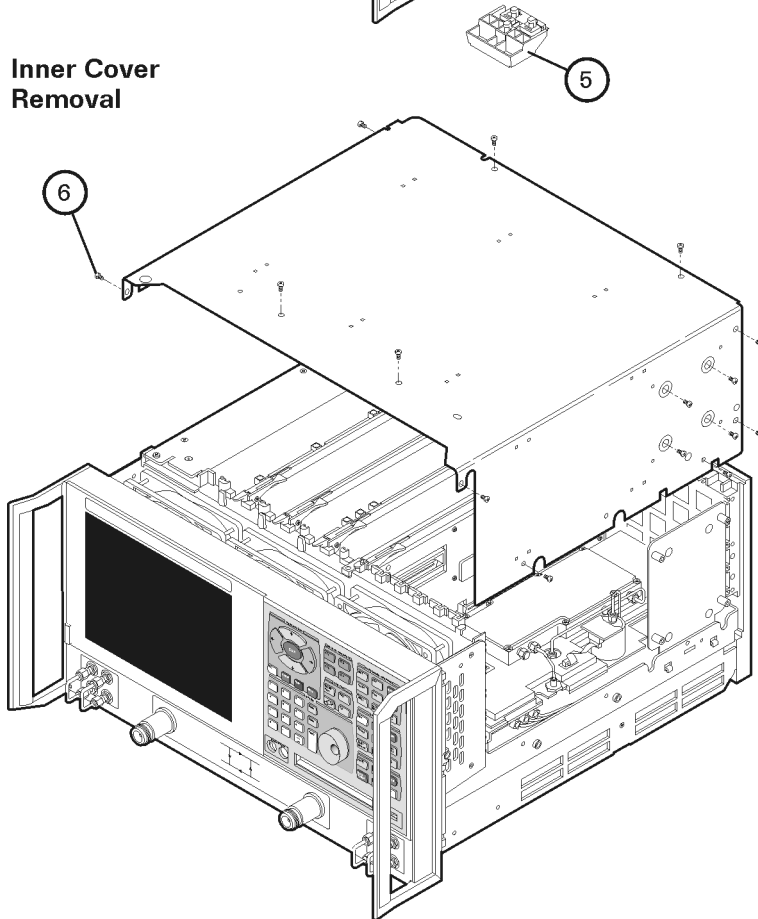
1. With a T-10 TORX driver, remove the 15 screws (item ⑥).
2. Lift off the cover.

## Figure 2 Outer and Inner Cover Removal

### Outer Cover Removal



### Inner Cover Removal



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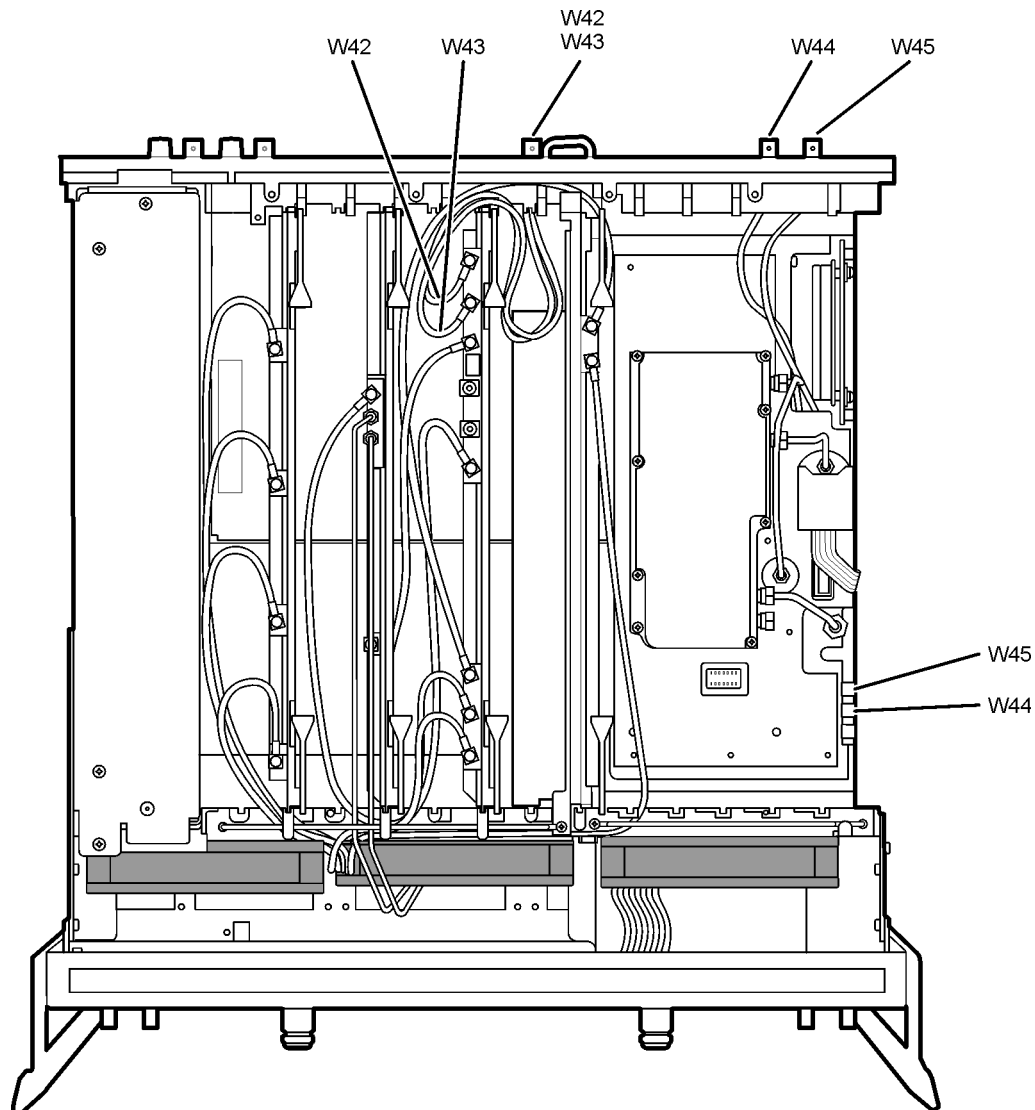


## Step 2. Disconnect Cables to the Rear Panel Cover

Refer to [Figure 3](#).

1. Disconnect the two flexible cables, W42 (10 MHz REF. INPUT) and W43 (10 MHz REF. OUTPUT), from the A10 reference board J2 and J3 respectively.
2. Disconnect the two flexible cables, W44 (EXT. AM INPUT) and W45 (EXT. DETECTOR INPUT), from the A12 source assembly J6 and J7 respectively.

**Figure 3** Disconnecting the Rear Panel Cables



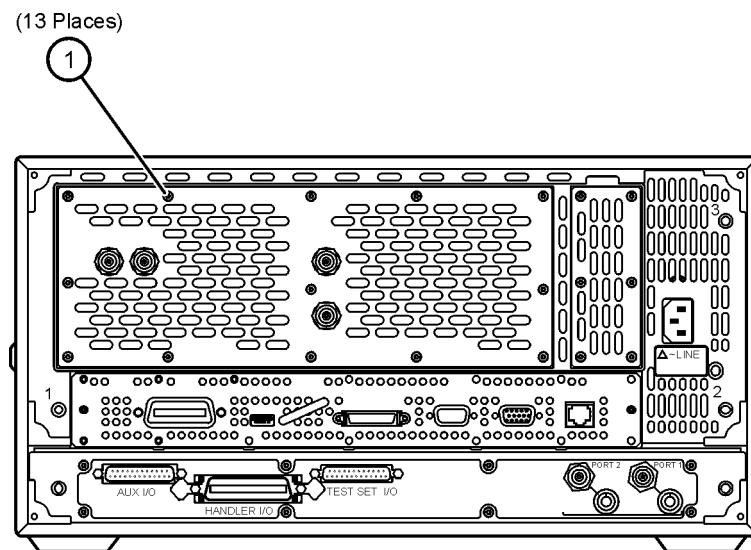
8356\_068\_01

### Step 3. Remove the Rear Panel Cover

Refer to [Figure 4](#).

1. Using a T-10 TORX driver, remove 13 screws (item ①). Retain the screws to install the new rear panel covers later.
2. Remove the rear panel cover from the analyzer with the four cables and BNC connectors attached.

**Figure 4** Removing the Rear Panel Cover



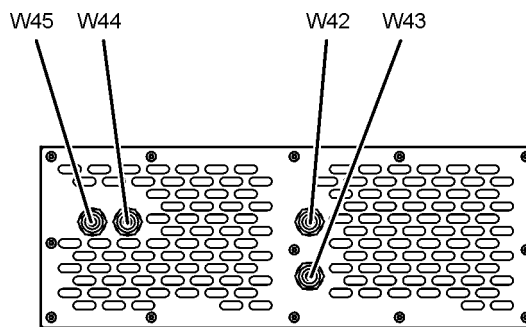
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## Step 4. Install the New Right-Side Rear Panel Cover

Refer to [Figure 5](#) and [Figure 6](#).

1. Using a 1/2-inch wrench, remove the hex nuts from the BNC connectors, on the old rear panel cover, for W42, W43, W44, and W45.
2. Remove the lock washers. Retain the hex nuts and lock washers for reinstallation.
3. Remove the cables from the panel. Discard the panel and cables W44 and W45; new ones are provided. Retain W42 and W43 for reinstallation on the new panel.

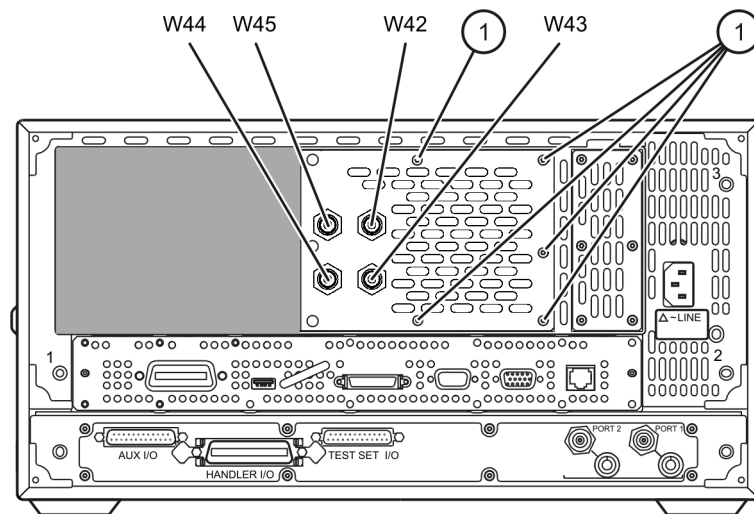
**Figure 5 Removing the Cables from the Old Rear Panel Cover**



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4. Insert old cables W42 and W43, and new cables W44 and W45 in the new right-side rear panel cover in the locations shown. Cables W42 and W43, the two shorter cables, are identical so are interchangeable. Cables W44 and W45, the two longer cables, are also identical so are also interchangeable.
5. Install the lock washers and hex nuts to secure the cables to the panel.
6. Place the new right-side rear panel cover into position, being careful to route the cables for reconnection later. Final cable connections are shown in [Figure 7 on page 13](#).
7. Reinstall five screws (item ①) that were removed from the old panel. Do not install screws in the remaining three holes at this time.

**Figure 6 Installing the Right-Side Rear Panel Cover**



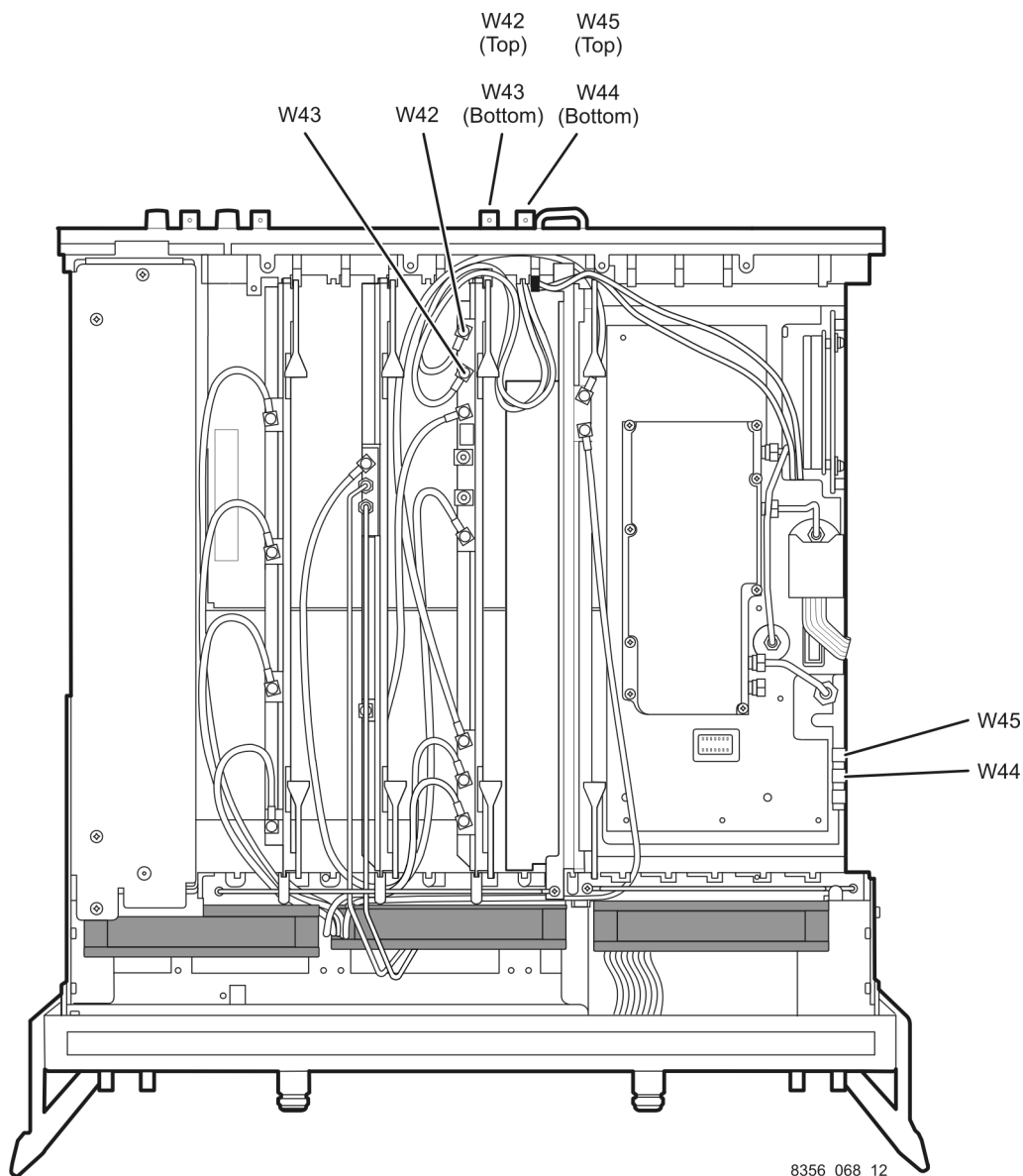
8356\_068\_04

## Step 5. Reconnect the Rear Panel Cables

Refer to [Figure 7](#).

1. Reconnect the two flexible cables, W42 and W43, to the A10 reference board being careful to route them so that they will not be pinched by the inner cover.
  - W42 10 MHz REF. INPUT Connects to A10 J2.
  - W43 10 MHz REF. OUTPUT Connects to A10 J3.
2. Connect the two flexible cables, W44 and W45, to the A12 source assembly.
  - W44 EXT. AM INPUT Connects to A12 J6.
  - W45 EXT. DETECTOR INPUT Connects to A12 J7.

**Figure 7 Reconnecting the Rear Panel Cables**



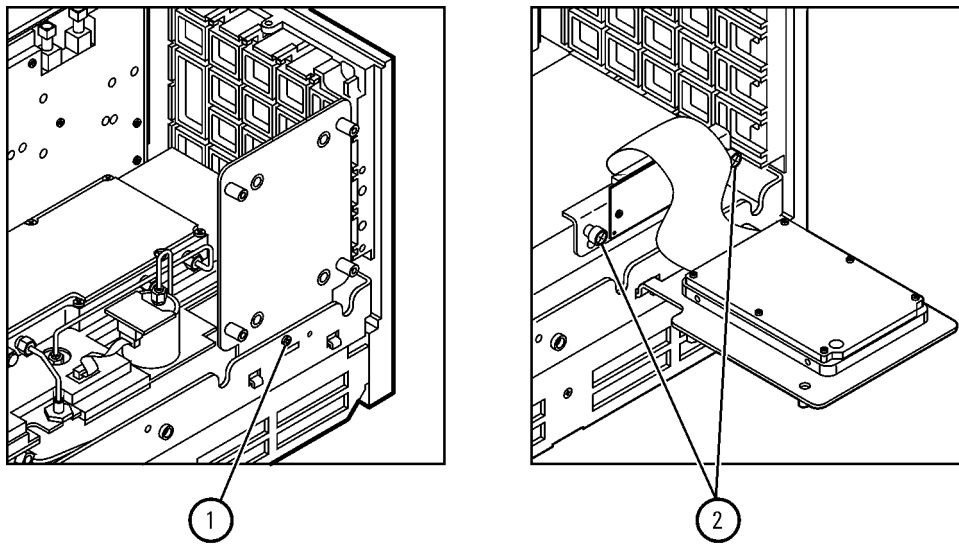
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## Step 6. Remove the Hard Disk Drive Assembly (HDDA)

Refer to [Figure 8](#).

1. With a T-10 TORX driver, remove the mounting screw (item ①).
2. Move the HDDA to the outside of the analyzer and slide the HDDA bracket feet into the slots on the frame to place it in a horizontal position.
3. Remove the two screws (item ②) to remove the interconnect board.
4. Remove the HDDA and interconnect board from the analyzer.

**Figure 8 Removing the Hard Disk Drive Assembly**



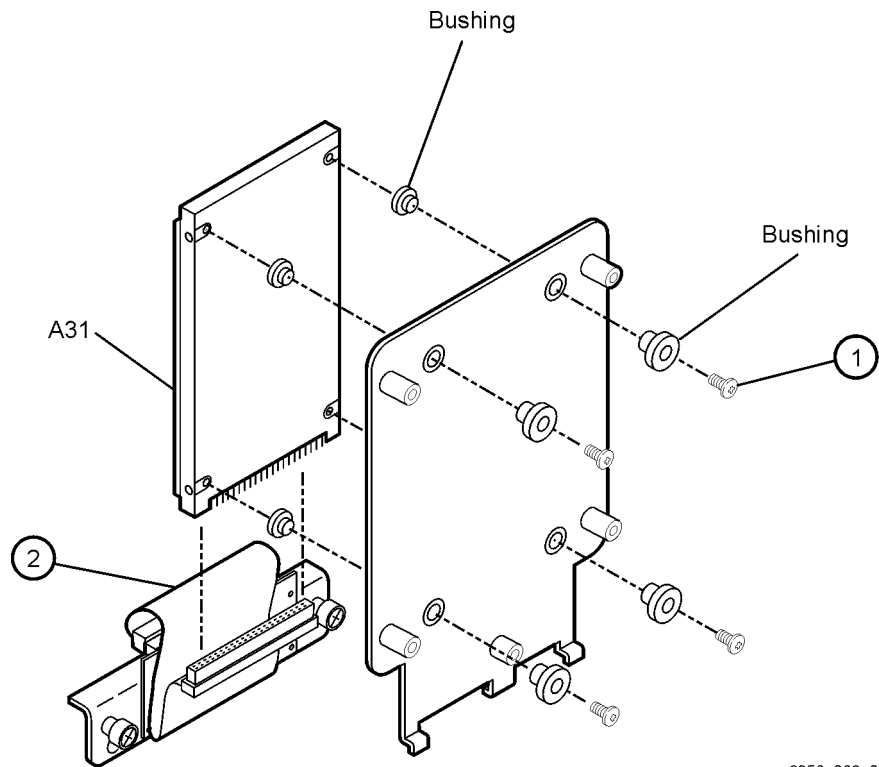
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## Step 7. Disassemble the Hard Disk Drive Assembly (HDDA)

Refer to [Figure 9](#).

1. With a T-10 TORX driver, remove the four mounting screws (item ①) that attach the hard disk to the bracket. Retain the eight bushings and screws to install the hard disk on the new left-side rear panel cover. Discard the mounting bracket.
2. Disconnect the ribbon cable (item ②) and discard it. A new cable is provided. Retain the hard disk and the interconnect board for reinstallation later.

**Figure 9 Disassembling the Hard Disk Drive Assembly**



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## Step 8. Install the HDDA on the New Rear Panel Cover

Refer to [Figure 10](#).

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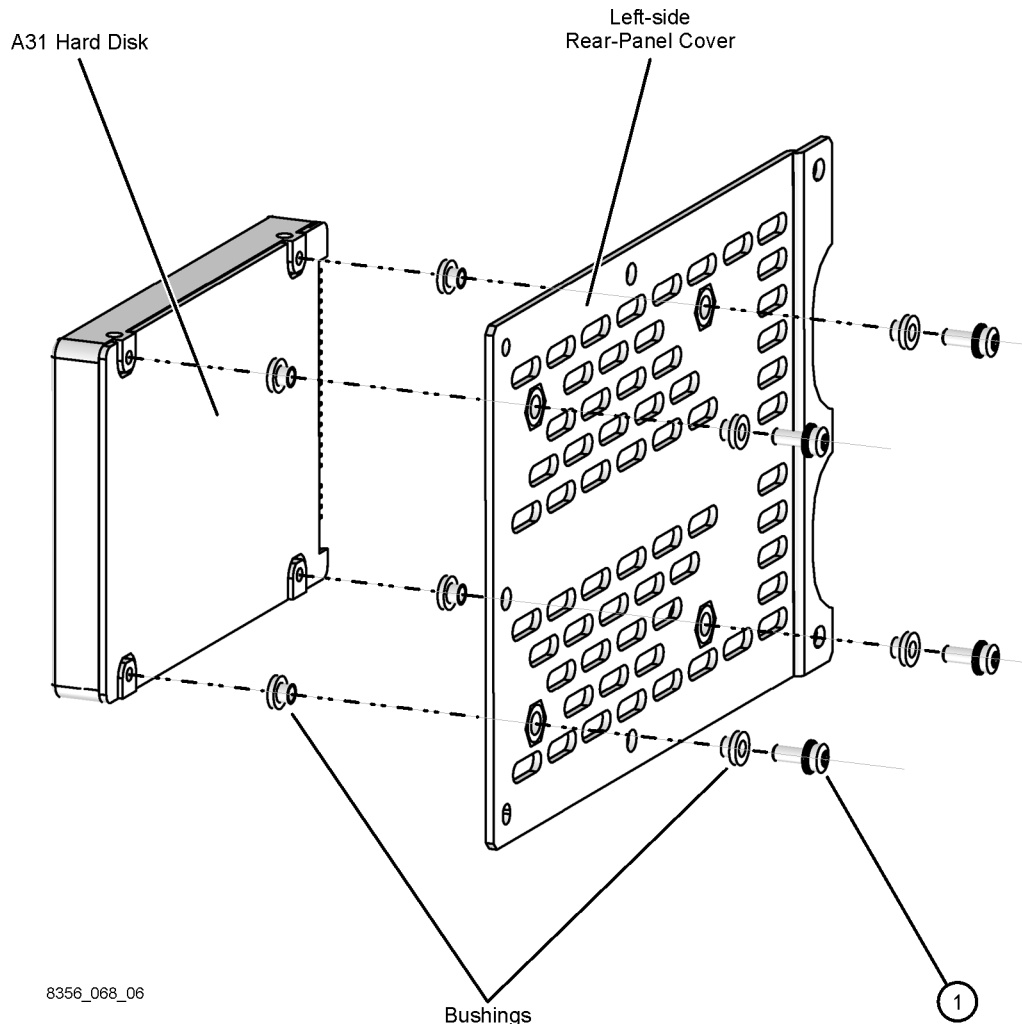
**NOTE**

**An extra set of hardware (left-side rear panel, bushings, and screws) has been provided to allow an additional disk drive (not provided) to be mounted to a separate rear panel, making it easy and quick to swap hard disk drives. This extra set of hardware should be packaged and delivered with the analyzer to the end-user.**

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1. Using the bushings and screws (item ①) removed from the old bracket (or the new ones provided), assemble the HDDA to the new left-side rear panel cover as shown.
2. Using a T-10 TORX driver, tighten the four mounting screws (item ①).

**Figure 10** Installing the HDDA on the New Rear Panel Cover

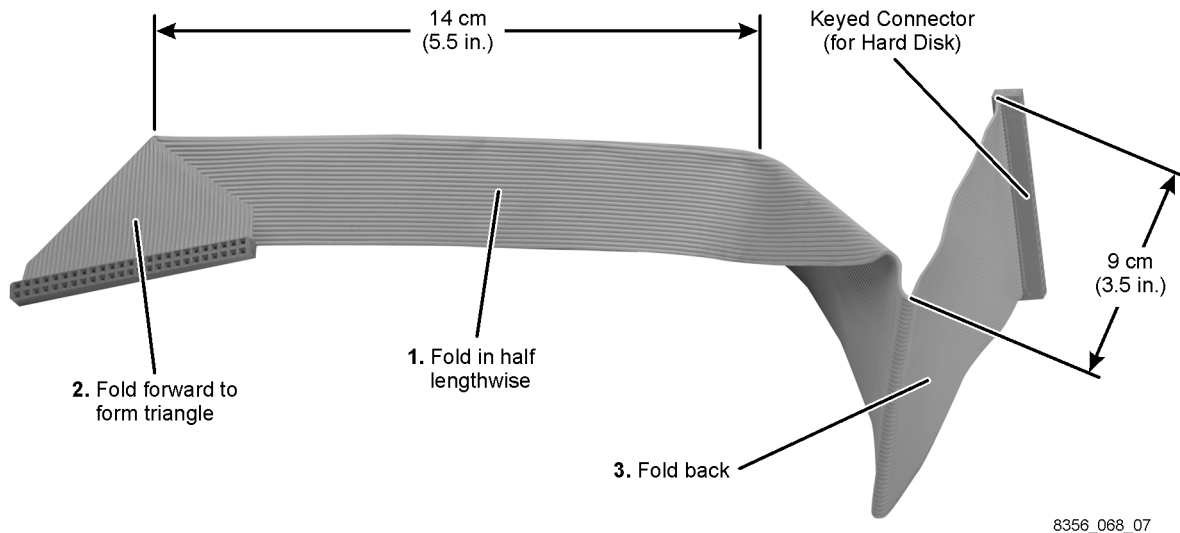




## Step 9. Form and Install the New Ribbon Cable

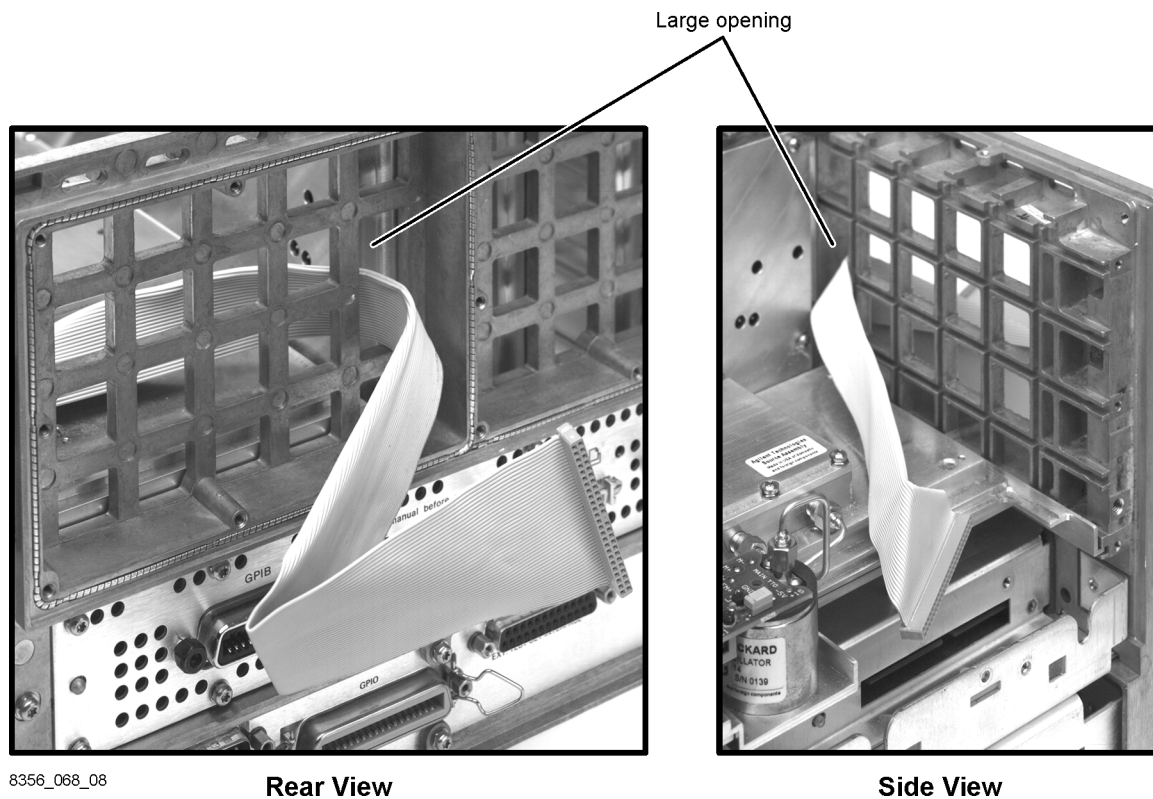
1. Form the new ribbon cable as shown. The cable connector for the hard disk is keyed (one pin missing). This is the end of the cable that folds back; not the triangular shaped end.

**Figure 11 Forming the New Ribbon Cable**



2. Install the new ribbon cable into the analyzer, as shown in [Figure 12](#), by passing the smaller end of the cable through the one large opening in the rear frame.

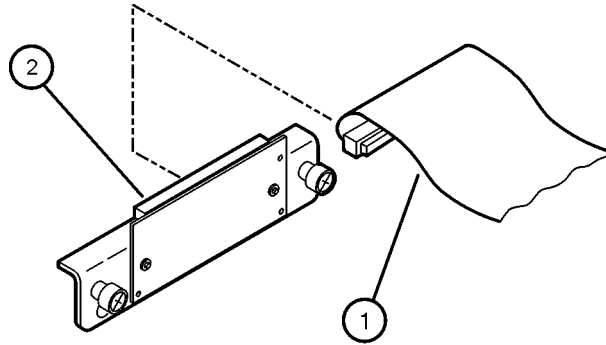
**Figure 12 Installing the New Ribbon Cable**



## Step 10. Connect Ribbon Cable and Reinstall Interconnect Board

1. Unfold the triangular end of the new ribbon cable (item ①) and connect it to the HDDA interconnect board (item ②) as shown in [Figure 13](#). Be extremely careful. The connectors pins are easily bent. A misconnection caused by a bent pin could result in serious damage to the hard disk drive.

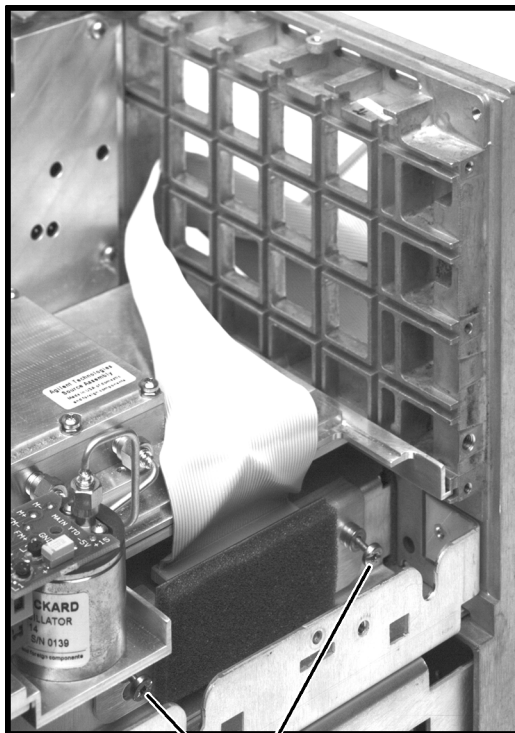
**Figure 13 Connecting the New Ribbon Cable to the Interconnect Board**



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2. Using a T-10 TORX driver, reinstall the HDDA interconnect board, with the ribbon cable attached, by reinstalling the two screws (item ①) as shown in [Figure 14](#).

**Figure 14 Reinstalling the Interconnect Board**



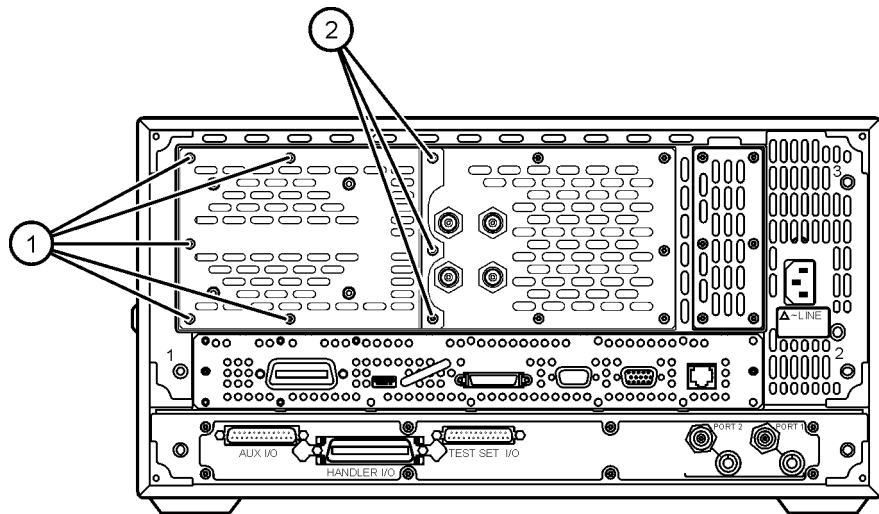
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## Step 11. Install the New Left-Side Rear Panel Cover With the HDDA Attached

Refer to [Figure 15](#).

1. Position the new left-side rear panel cover close to the rear frame of the analyzer and connect the ribbon cable to the hard disk drive. Be extremely careful. The connectors pins are easily bent. A misconnection caused by a bent pin could result in serious damage to the hard disk drive.
2. Place the new left-side rear panel cover into position, being careful not to pinch the ribbon cable. Using a T-10 TORX driver, install five screws (item ①) retained from removal of the old panel.
3. Install the remaining three screws (item ②) to secure both the left- and right-side rear panel covers.

**Figure 15** Installing the New Left-Side Rear Panel Cover



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## Step 12. Verify That the Hard Disk Drive Functions Properly

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**WARNING**

**This procedure is performed with power supplied to the analyzer while its protective covers are removed. Be extremely careful. Energy available at many points may, if contacted, result in personal injury.**

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1. Connect the power cord to the analyzer and turn on the power.
2. Verify operation of the hard disk drive by starting the Network Analyzer application.
3. If the application does not start, turn off the analyzer, remove the power cord, wait 30 seconds, and recheck all cable connections made in this installation procedure. **Do not attempt to troubleshoot the problem with power supplied to the analyzer.**
4. Reconnect the power cord to the analyzer, turn on the power, and again attempt to start up the network analyzer application.
5. If the application still does not start, contact Agilent for assistance. Refer to [“Getting Assistance from Agilent”](#) on page 3.

## Step 13. Reinstall the Inner and Outer Covers

Refer to [Figure 16](#) for this procedure.

### Reinstall the Inner Cover

1. Place the inner cover on the analyzer. There are two alignment pins on the front frame that must be aligned with holes in the cover.
2. With a T-10 TORX driver, install 11 screws (item ①) to secure the cover. Note that four of the original 15 screws were used to fasten the hard disk drive in its original location and are no longer required.

### Reinstall the Outer Cover

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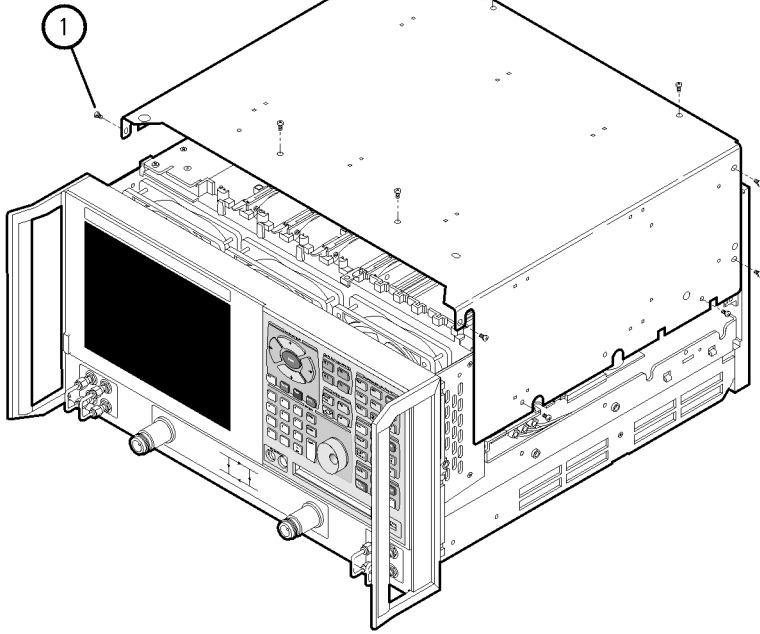
**CAUTION** This procedure is best performed with the analyzer resting on its front handles in the vertical position. *Do not place the analyzer on its front panel without the handles.* This will damage the front panel assemblies.

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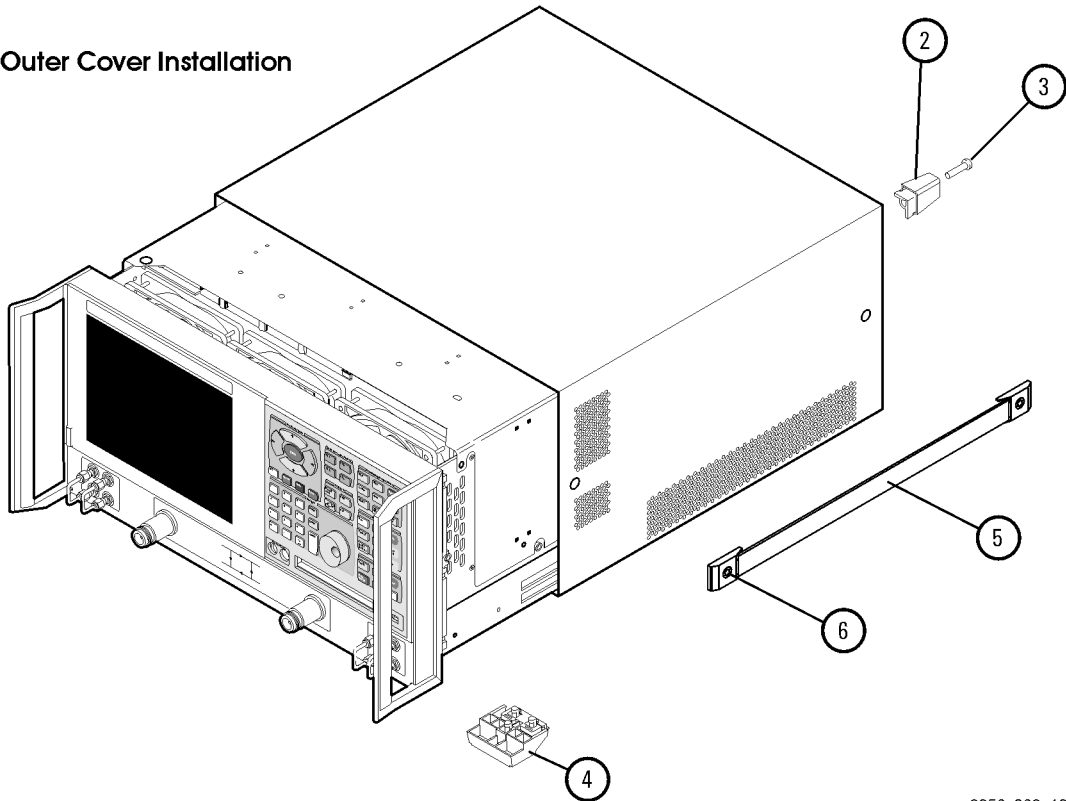
1. Slide the cover onto the frame.
2. With a T-20 TORX driver, install the four rear panel feet (item ②) by installing the center screws (item ③).
3. Slide the four bottom feet (item ④) onto the cover.
4. With a T-20 TORX driver, install the strap handles (item ⑤) by tightening the screws (item ⑥) on both ends.

**Figure 16 Inner and Outer Cover Reinstallation**

**Inner Cover Installation**



**Outer Cover Installation**



8356\_068\_13