

---

# Replacement Instructions

---

**Backplane PCA  
for the HP Router 650**

---

© Copyright Hewlett-Packard Company 1994.  
All rights reserved.

Publication Number  
5962-8369  
Edition 1, August 1994  
Printed in USA

This guide provides installation instructions for the following Hewlett-Packard Company non-exchange assembly:  
5063-5961

**Warranty**

The information contained in this guide is entirely unwarranted.

This document contains proprietary information, which is protected by copyright. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of Hewlett-Packard. The information contained in this document is subject to change without notice.

---

Hewlett-Packard  
8000 Foothills Boulevard  
Roseville, California 95747-6588  
916-786-8000

---

## Preparation

### Description

If diagnosis of a failing HP J2430A Router 650 indicates replacement of the router, and the router's problem can be isolated to the backplane (to which the routing engine and the interface cards connect), then you can replace only the backplane instead of the entire router chassis. (Note that the chassis exchange assembly includes the backplane. It does not include the routing engine or interface cards.) See chapter 3 in the *Installation Guide* for the HP Router 650, part number 5962-8317.

### What's Included and Not Included

This backplane non-exchange assembly consists of the following items:

- *Replacement Instructions* (this manual, 5962-8369)
- The backplane printed circuit assembly
- Seven 8-mm-long #M3 × .5 Torx T-10 screws

(These screws are duplicates of screws that you will remove to remove the backplane. The original screws probably will be usable as well. This is the same type of screw used on the metal back panel of the router, on the power supply, and on the cooling module. HP part number 0515-2471)

This assembly does *not* include the following items that were attached to the router. You must save these items for reassembly.

- The metal panel on the back of the router and its fourteen 8-mm-long #M3 × .5 Torx T-10 screws

You will need the following additional items:

- A grounding wrist strap, such as the Disposable Wrist Strap (9300-1408) supplied with interface cards for the HP Router 650.
- Torx T-10 screwdriver
- The *Installation Guide* for the HP Router 650 (5962-8317)

## Preparation

---

### Caution

*Use the precautions described below while performing the procedures described in this manual.*

To avoid damage to the HP Router 650, disconnect all power cords before removing the back panel of the router to access the backplane. Do not attempt to access the backplane—by either hand or tool—from the front of the router chassis for any repair or replacement. Purely visual inspection from the front, however, could detect bent pins, which helps in diagnosing backplane failure.

The backplane contains electrical components that are easily damaged by small amounts of static electricity. This can happen when it is removed or replaced. Follow these precautions to avoid damage:

- Store the backplane PCA in an antistatic box or bag when it is not installed in the HP Router 650.
  - Before unpacking the backplane, use a grounding wrist strap. (The Disposable Wrist Strap supplied with some of the router products has instructions on its envelope.) Attach the strap to your wrist, and attach the other end to a grounded unpainted metal surface on the HP Router 650 chassis. The replacement instructions in this booklet suggest attachment locations for various steps in the procedure.
  - Handle the backplane PCA only by its edges. Do not unnecessarily touch electrical components on the card.
  - Do not remove the wrist strap until the backplane has been installed and the chassis has been reassembled, or the backplane has been stored in an antistatic box or bag.
-

---

## Replacement Procedure

The backplane is accessed from the back of the router for replacement. From the front of the router, when one or more cards are removed, visual access could help in diagnosis of the backplane. That is, you may be able to see bent pins on the backplane connectors where the card's connectors attach.

### Removal

1. Disconnect the power cord(s) from all power supplies, at the back of the router.
2. Connect a grounding wrist strap to your wrist and to the metal panel on the back of the router.
3. Disconnect all cables from the routing engine and all interface cards, including the console cable. Save cables for reconnection after reassembly.
4. Repeat the following steps a through c for the routing engine, each interface card, and each blank (all generically called "card" here) in slots 1 through 5. Illustrations of card removal can be found in the "Replacing a Module" section in chapter 3 of the *Installation Guide* for the HP Router 650.
  - a. Press down slightly on the insides of both locks on the front bezel card. Then swing them outward until the bezel disengages from the chassis.
  - b. Grasping the left and right edges of the bezel, pull out until the tray is about half exposed.
  - c. Grasping the sides of the tray, remove it from the router. Record which slot it came from and save it for reinstallation after replacement of the backplane.

## Replacement Procedure

5. Unlock the front door of the router by pulling its lock—the round post at the upper right—to the right, and open the door to about 90°. Be careful not to open the router door more than 90°. Opening the door further could damage it.
6. Using the Torx T-10 screwdriver, remove the #M3 screws from the top corner(s) of each power supply. A power supply installed in the left compartment has screws in both corners; a power supply installed in the right compartment has a screw only in the upper-left corner. Save the screws.
7. For each power supply, pull the handle and remove it from its compartment. All power supplies must be removed and saved for reinstallation later.
8. Using the Torx T-10 screwdriver, remove the #M3 screws from the upper- and lower-right corners of the cooling module (fan tray). Save the screws. Illustrations of cooling module removal can be found in the “Replacing a Module” section in chapter 3 of the *Installation Guide* for the HP Router 650.
9. Holding the door open at 90°, grasp the handle on the cooling module and pull it out about 1 inch. Pull the white tab to disconnect the ribbon cable from its connector inside the door.

---

### Note

---

While removing the cooling module from its compartment in the next step, ensure that the cooling module housing does not catch on the three screws on the inside of the router door.

10. Holding the door open at 90°, grasp the handle on the cooling module and remove it from its compartment.
11. Close and lock the router door.
12. Then, working at the back of the chassis, use the Torx T-10 screwdriver to remove the fourteen #M3 screws from the metal back panel. Save the screws.
13. Once detached, the panel may fall down and/or out. If not, then insert the tip of your screwdriver into the screw hole at the top center, and gently nudge the panel out and down toward you. The panel may remain held at the bottom by its four tabs. If so, return the panel to a vertical position and pull vertically toward you to release

the tabs from the slots. The backplane card is visible behind the metal panel.

Remove the foil end of the wrist strap and reattach it to another metal panel behind the backplane, directly beneath one of the power plugs. Set aside the back panel.

---

**Note**

---

Verify that all interface cards, routing engine, power supplies, and cooling module are removed from the front of the chassis before proceeding with the following steps.

14. Using the Torx T-10 screwdriver, remove the seven #M3 screws securing the backplane printed circuit assembly. The unsecured backplane remains hanging on six sheet metal hooks protruding from the back of the router chassis. With a finger on the left edge and a finger on the right edge of the backplane, push it up and over the hooks to remove it.

### **Installation**

---

**Caution**

---

Precise alignment of the backplane is critical to reinstalling the routing engine and interface cards. Install the replacement backplane exactly in the sequence of the following steps. Imprecise installation of the new backplane will cause the reinstalled cards to bend the backplane pins, making the backplane unusable.

15. Face the rear of the router chassis. With the new backplane held in front of you—the component side with the backplane connectors facing away from you into the chassis—first insert the two power supply connectors—on the top of the other side of the backplane—into the large holes in the sheet metal. Pushing the backplane up and in as far as possible and as vertically as possible, align the six slots in front of the six hooks. Hook the backplane over all six hooks and release.
16. Verify that the backplane is flush with and aligned with the seven screw holes. Then install the screws in the sequence described in steps 17 and 18. Note that all of the 8-mm-long #M3 × .5 Torx T-10 screws that you removed from the power supplies, cooling module (fan tray), back panel, and backplane, plus the screws that come with the replacement backplane, are identical. Use any of them for resecuring the components described below.

## Replacement Procedure

17. Install the two #M3 screws on the left edge of the card (as you face the back of the router) into the two left openings. These are the smallest of the the backplane's screw openings. This is critical for alignment.
18. Then install the other five #M3 screws in any sequence.
19. Remove the foil end of the wrist strap and reattach it to the outside of the back panel.
20. Reinstall the back panel by first inserting the four sheet metal tabs at its bottom edge into the four slots in the bottom edge of the chassis. Then fit the top of the back panel around the power plugs, top panel, and side panels, until it is flush with all back surfaces. Reinstall the fourteen #M3 screws securing the pack panel.
21. Then, working at the front of the chassis, unlock the front door of the router by pulling its lock—the round post at the upper right—to the right, and open the door to about 90°. Be careful not to open the router door more than 90°. Opening the door further could damage it.

---

### Note

---

In the next step, be sure that the cooling module is aligned vertically and parallel to the walls of the housing in the router. If the module is tilted, you might not be able to insert it further into the module housing.

22. Holding the door open at 90°, place the cooling module at the front of its housing (with the ribbon cable at upper front). Then carefully push it back into the housing until the mounting ears for the screws are about 1 inch from the holes in the router chassis. You may need to wiggle the cooling module and/or adjust its position so that it slides in properly.
23. Reconnect the cable that you disconnected in step 9. Press the connector in place with your finger.
24. Holding the door open at 90°, continue sliding the cooling module back until the mounting ears for the screws are flush against the holes in the router chassis.
25. Insert and tighten the two #M3 screws you removed in step 8.



26. For each power supply, insert the supply into the compartment, and push it all the way back. Insert and tighten the #M3 screw(s) you removed in step 6.
27. Repeat the following steps a through c for the routing engine, each interface card, and each blank in slots 1 through 5. An illustration of card insertion can be found in the “Replacing a Module” section in chapter 3 of the *Installation Guide* for the HP Router 650.

---

**Caution**

Each of these items must be returned to the same slot from which it was removed, or else the configuration will not be implemented and/or the self-test will fail.

If any of these items does not fit as easily into its slot as it previously fit, then do not force it in. The connectors on the replacement backplane may have been misaligned as it was installed in steps 15 through 18. It is best to rework the procedure.

- a. Holding the sides of the tray, slide the back of the tray about half-way into the router.
  - b. Pull the locks on the bezel outward; then push evenly on both ends of the bezel until it engages fully and the locks swing inward to about 45°.
  - c. Push the two locks evenly to close them, pressing downward slightly to secure them in place.
28. Reconnect the cables that you disconnected in step 3.
  29. Detach the grounding wrist strap.
  30. Reconnect the power cord(s), switch on the power switches of the power supplies, and close and latch the front door.
  31. As self-test runs, check the LEDs. If one or more cards that previously operated correctly now appears to fail, then check the slot configuration; cards may have been returned to the wrong slots.  
  
Repeat any other diagnostic procedure you originally used to pinpoint the backplane as a fault. See chapter 3 in the *Installation Guide* for the HP Router 650.







**HEWLETT®  
PACKARD**

**Part number: 5962-8369  
E0894  
Printed in U.S.A.**