VAX 4000

BA42B-Based Easy System Expansion Upgrade Manual

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Digital Equipment Corporation
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Preface

This expansion upgrade manual describes how to convert VAX 4000-200 systems (BA213, BA215, BA430) and MicroVAX 3300, 3400, 3500, 3600, 3800 and 3900 systems (BA213, BA213/CAB, BA215) to Q–bus expansion enclosures when upgrading to a BA42B-based VAX 4000 system.

Intended Audience

This document is intended for Digital Services personnel and licensed self-maintenance customers.

Customer Responsibilities

Only qualified maintenance personnel (Digital Services representatives or qualified self-maintenance customers) should perform the installation procedure.

If you are not a qualified self-maintenance customer, call Digital Services to schedule a system conversion. It is the customer's responsibility to perform a software backup before a Digital Services representative arrives at your site.

When the conversion is complete, return the old CPU and memory modules to Digital. Appendix A contains forms that need to be completed by the Digital Services representative and signed by both the customer and the Digital Services representative.

Digital Services Responsibilities

Before arriving at the site, the Digital Services representative should contact the customer to ensure that the customer's software is backed up before arriving at the site.

After installation of the conversion kit, the Digital Services representative must complete the forms in Appendix A and remove them from this document. The forms must be signed by the customer and the Digital Services representative.

The following forms are in Appendix A:

- Digital Services Worksheet
- Installation Receipt: Customer Copy
- Installation Receipt: Digital Services Copy
- Returned Material Checklist

The Digital Services representative should give the customer the signed Installation Receipt–Customer Copy. The representative should include the signed Installation Receipt–Digital Services Copy with the CPU module that is being returned to Digital to ensure that the customer receives credit.

Organization

This document contains three chapters and one appendix:

- Chapter 1 describes how to install the conversion kit for BA215 enclosures.
- Chapter 2 describes how to install the conversion kit for BA213 and H9644 enclosures.
- Chapter 3 describes how to install the conversion kit for BA430 enclosures.
- Appendix A contains forms for the return of the module and a list of the Customer Administrative Services (CAS) district offices.

Conventions

The following conventions are used in this guide:

Convention	Description
x	A lowercase italic *x* indicates the generic use of a letter. For example, *xxx* indicates any combination of three alphabetic characters.
italic type	Italic type emphasizes important information or indicates variables. It is also used for the titles of manuals.
boldface type	Boldface type in examples indicates either user input or the first instance of terms defined in the text.
nn nnn.nnn nn	A space character separates groups of 3 digits in numerals with 5 or more digits. For example, *10 000* equals *ten thousand*.
n.nn	A period in numerals signals the decimal point indicator. For example, *1.75* equals *one and three-fourths*.
MONOSPACE	Text displayed on the screen is shown in monospaced type.
Radix indicators	The radix of a number is written as a word enclosed in parentheses. For example, 23(decimal) or 34(hexadecimal).
UPPERCASE	A word in uppercase indicates a command.
Note	A note contains information that is of special importance to the user.
Caution	A caution contains information to prevent damage to the equipment.

Related Documents

The following list contains related documents:

Documentation	Order Number
BA215 Enclosure Maintenance Manual	EK–191Ax–MG
BA213 Enclosure Maintenance Manual	EK–189Ax–MG
B400X Expander Installation Manual	EK–400Ax–MG
BA430/BA440 Enclosure Maintenance Manual	EK–348Ax–MG

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Upgrading BA215 Enclosures

1.1 In This Chapter

This chapter describes the procedures necessary to convert systems housed in the BA215 enclosure to a Q–bus expansion system.

1.2 Overview of Conversion

Tasks required to convert a BA215 enclosure are summarized below. To begin the actual conversion, turn to Section 1.3.

1. Have the customer back up the system software.
2. Run diagnostics to verify system operation.
3. Unpack and verify the conversion kit.
4. Determine the DSSI node IDs to be used.
5. Shut down the operating system.
6. Remove the front door.
7. Turn off the system power and remove the power cord.
8. Disconnect the console and Ethernet cables.
9. Remove the CPU console cover and disconnect the cables.
10. Remove the CPU and adjacent memory module.
11. Remove the bulkhead covers from any remaining memory modules, disconnect the cables, and remove all memory boards.
12. Insert a grant continuity card in the slot formerly occupied by the CPU module.
13. Install one gap filler panel to the left side of the DSSI bulkhead assembly.
14. Attach the internal DSSI cable to the DSSI bulkhead assembly and install the assembly.

15. Insert the Q–bus expander module.
16. Fill the open slots with grant cards.
17. Remove the option and revision labels from the bulkhead covers.
18. Install a gap filler panel on the bulkhead cover; install the cover to the left of the Q–bus expander module.
19. Cover the remaining open slots with the previously removed bulkhead covers and label the top and bottom of each bulkhead.
20. Attach the DSSI cable from the expander enclosure to the BA42B-based VAX 4000.
21. Attach the Q–bus cables to the Q–bus expansion module and the back of the BA42B-based VAX 4000 system.
22. Install the ground wire.
23. Turn on the Q–bus expansion box before the BA42B-based VAX 4000 system box.
24. Replace the door of the expansion enclosure.
25. Turn on the system and run diagnostics, if purchased (MDM 137 minimum revision).
26. Attach the conversion label and fill in the appropriate information. (Change from "current model listed" to "BA215.")
27. Remove the system medallion.
28. Have the customer reinstall system data (if necessary).
29. Fill out the appropriate paperwork (Appendix A).

1.3 Unpacking the Kit

Unpack the kit as follows:

1. Make sure there is no external damage to the shipping container, such as dents, holes, or crushed corners.
2. Unpack the conversion kit and check its contents against the shipping invoice. Table 1–1 lists the kit contents necessary for this conversion kit. Other items will be present, but are not required for this conversion.

CAUTION

Modules can be damaged by static discharge if an antistatic wrist strap and antistatic mat are not used during handling. The wrist strap and mat are in the antistatic kit in the Digital Services toolkit.

3. Unpack the Q–bus expander module and place it on a grounded antistatic mat.
4. Save the packing material, and use it to return the old CPU module.
5. If any item is missing or damaged:
   - Contact the customer's sales representative.
   - Contact the customer's delivery agent.

Table 1–1 lists only the kit contents needed for the BA215 conversion; other items will be present as well.

Table 1–1 Conversion Kit Contents for BA215

Description	Part Number	Quantity
Q–bus grant continuity kit	M9047–SA	4
M9045 with S-box handle	M9405–PA	1
Ground strap with label	12–13756–A8	1
50 cond shielded cable assembly	17–02048–01	2
50 cond molded Micro-D cable assembly	17–02152–03	1
Product conversion label	36–15946–00	1
BA2xx rev sheeted label	36–29164–07	1
Bulkhead panel kit	70–24505–01	1
R215F DSSI bulkhead assembly	70–26223–01	1
Machine screw, 6-32 trs .500 xrcs	90–06024–03	1
Internal steel lock washer	90–06633–00	1
Flat steel washer	90–06656–00	1
External steel lock washer	90–07649–00	2
Sems screw 6-32 pan .375 xrs	90–09984–00	1

There are no VMS licenses necessary with this conversion kit.

1.4 Before Installing the Kit

Before installing the kit:

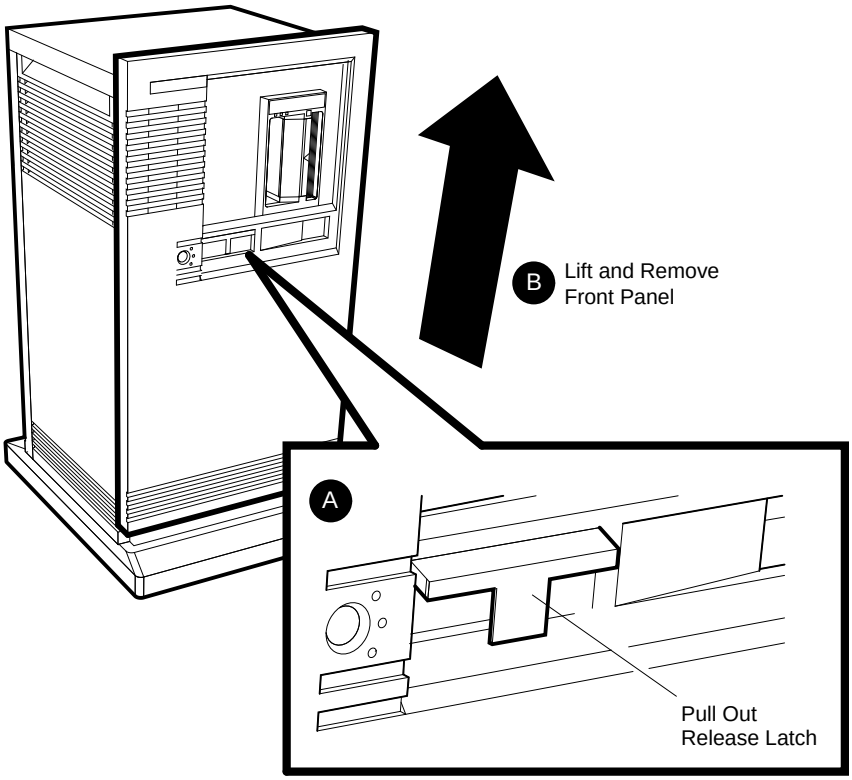
1. Have the customer back up the system software before the Digital Services representative arrives. It is the customer's responsibility to back up the system software.
2. Power up the system and run diagnostics to verify system operation.
3. Shut down the operating system in the proper manner.
4. Turn off the system power before installing the kit.
   a. To reach the on/off power switch, turn the universal key in the front panel lock to the bottom position and lower the grey window.
   b. Set the on/off power switch to off (0), and unplug the ac power cord from the wall outlet.

1.5 Installing the Kit

To install the conversion kit (convert to a BA215 enclosure):

1. Make note of the DSSI node IDs on the BA42B-based VAX 4000 (refer to the appropriate System Manual for proper procedure). Ensure that each DSSI drive ID in your newly configured expansion enclosure will not conflict with the DSSI drive IDs in the BA42B-based VAX 4000 system box. (In most cases the DSSI drive IDs in the expander will have to be renumbered.)
2. Remove the front door of the unit for conversion to a Q–bus/DSSI expander using the following steps:
   a. Pull the release latch toward you, but do not attempt to remove it (Figure 1–1).
   b. Using the release latch as a handle, lift the front panel off (see Figure 1–1).

Figure 1–1 Removing the BA215 Front Panel (Pedestal)



3. Disconnect the console and Ethernet cables attached to the console cover.
4. Use a Phillips-head screwdriver to remove the CPU console cover. Disconnect the flat cable, which goes from the console cover to the CPU. Next, disconnect the memory and DSSI cables from the CPU.
5. Remove the CPU and adjacent memory module.
6. Remove the bulkhead covers from any remaining memory modules. Disconnect the memory cable from the remaining memory modules and remove all memory boards. (The Digital Services representative is responsible for returning the boards to Digital for credit.)
7. Insert a M9047–SA module (grant continuity card) in the slot formerly occupied by the CPU module. Use the 74–33507–01 stabilizer card when inserting the M9047. The grant card goes in the top half of the slot and the stabilizer in the bottom half.

8. Install one gap filler panel (70–24071–01, which is a part of the 70–24505–01 kit) to the left side of the DSSI bulkhead assembly (70–26223–01).

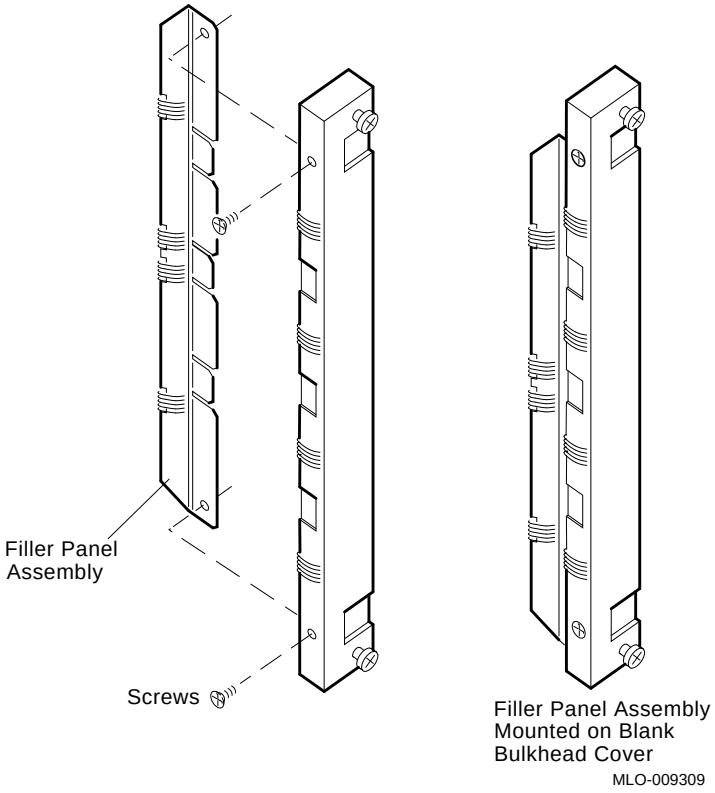
   When you install a module that has either a bulkhead cover or a flush handle next to a module with a recessed handle, you must install a filler panel (70–24071–01) between the modules to meet regulations for electromagnetic interference (EMI). Without the filler panel, circuitry on the module with a recessed handle is exposed.

   Check the modules in the card cage to see if any module with a recessed handle is next to a module with a bulkhead cover or a flush handle. Install the filler panel, if needed, as follows:

   a. Fit the filler panel onto the side of the bulkhead cover or flush-handle module that is next to the module with a recessed handle. Make sure the tabs on the filler panel fit into the tab indentations on the bulkhead cover or flush handle (Figure 1–2).

   b. Using the two screws that come with the filler panel, attach the filler panel to the top and bottom of the bulkhead cover or flush handle (see Figure 1–2).

Figure 1–2 Attaching the Filler Panel



9. Attach the internal DSSI cable (17–01963–01) to the connector on the back of the DSSI bulkhead assembly (70–26223–01). Place over the M9047 grant card that was installed in the former CPU slot.

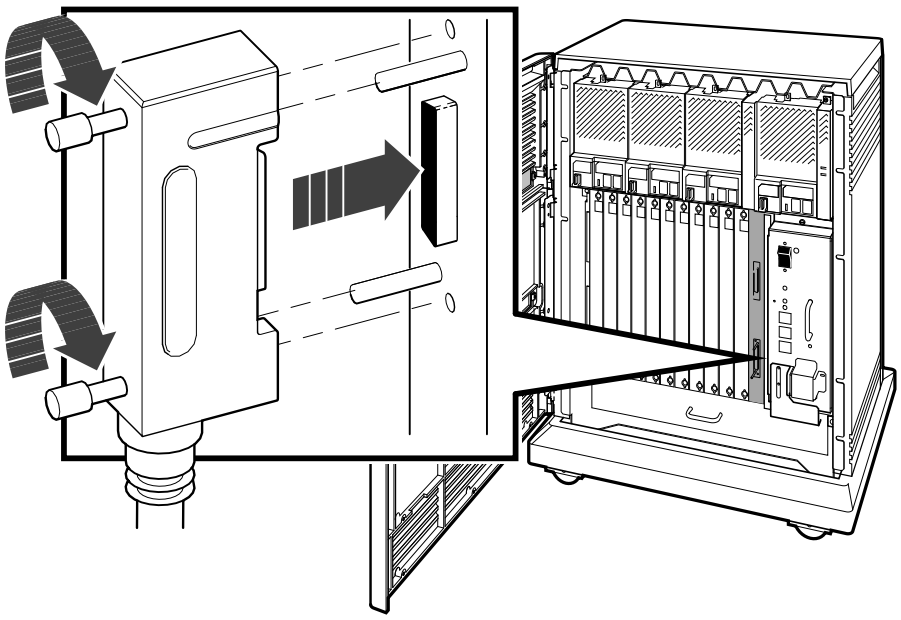
Note

Remove the two keys from the cable with a pair of diagonal cutters before attaching it to the bulkhead assembly. The orientation of the cable will remain unchanged.

10. Insert the M9405–PA Q–bus expander module in the slot formerly occupied by the first memory module.

11. Fill any remaining open slots between the M9405–PA and the next Q–bus option with M9047–SA grant cards. Again, use the 74–33507–01 stabilizer card when inserting the M9047. The grant card goes in the top half of the slot and the stabilizer in the bottom.
12. Remove the option and revision labels from the single bulkhead covers.
13. Install a gap filler panel on the right-hand side of one bulkhead cover. Place this bulkhead immediately beside the M9405–PA module.
14. Cover the remaining open slots with the previously removed bulkhead covers. Place a 36–26883–18 option label at the top of all bulkheads covering the M9047 grant cards and a 36–29164–07 revision label at the bottom of these same bulkheads. Write the revision level on these lower labels.
15. Attach the BC21M–09 (17–02152–03) (DSSI cable) from the expander enclosure's newly configured DSSI bulkhead to the DSSI port on the back of the BA42B-based VAX 4000. (Figure 1–3 shows the DSSI cable connections to a typical system.)
    a. Fit the cable connector over the two pins on the BA42B DSSI port. Tighten them first by hand, then use a screwdriver to firmly secure the connection.
    b. Feed the opposite end of the cable under the BA215 expander from the back or side. Attach the cable to the DSSI connector to the right of the card cage.

Figure 1–3 Connecting the DSSI Cable



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16. Attach the two BC04V–09 (17–02048–01) cables to the M9405–PA module (using either end), and then attach the other ends to the Q–bus connections on the back of the BA42B-based VAX 4000 system. The connections are keyed to guarantee proper connection. Connect the cables as follows (Figure 1–4):

    a. Locate the two 2.74-m (9-ft) cables labeled BC04V–09 in the expander kit.

    b. Check that the sliding lock on each of the four connectors is up.

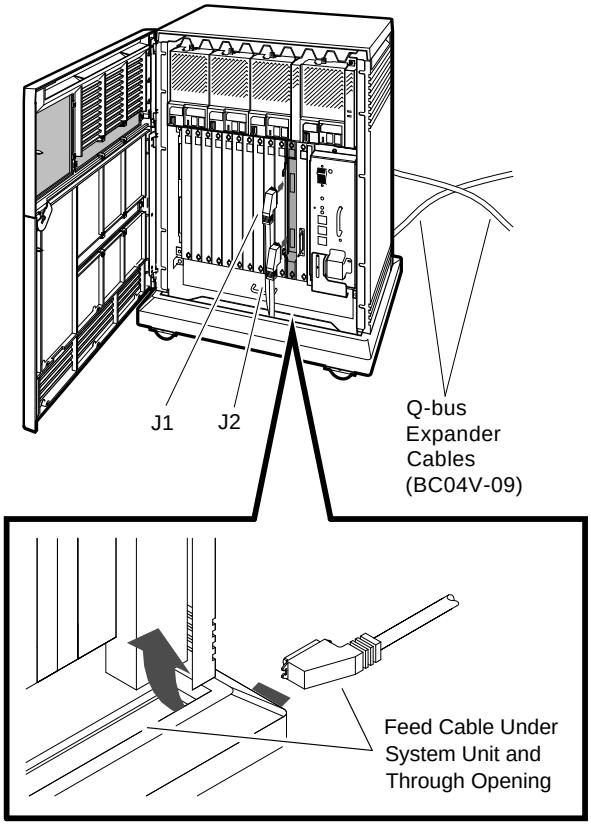
    c. Feed the plug end of one of the cables to the BA42B-based VAX 4000 system box port. Lock the connector by sliding down the lock.

    d. Feed the socket end of the same cable under the BA215 from the back or side and insert it into the plug connector labeled J1 on expansion module M9405–PA. Lock the connector in place by sliding down the lock.

    e. Feed the socket end of the second cable to the BA42B-based VAX 4000 system box from the back and insert it into the plug connector labeled J2 on the expansion port. Lock the connector by sliding down the lock.

f. Feed the plug end of the same cable under the BA215 from the back or side and insert it into the socket connector labeled J2 on expansion module M9405–PA. Lock the connector by sliding down the lock.

Figure 1–4 Connecting Q–bus Cables Expander



17. Install the ground wire (12–13756–A8) from the newly configured expander to the ground insert on the system box. Ground wires provide a common signal ground for systems with two or more enclosures; systems with multiple enclosures are daisy-chained.

Note

No more than two ground wires should be attached per ground terminal.

Connect the ground wire as follows:

a. Remove the two Phillips-head screws that attach the metal grill (known as the ac access panel) to the BA215 enclosure (Figure 1–5).

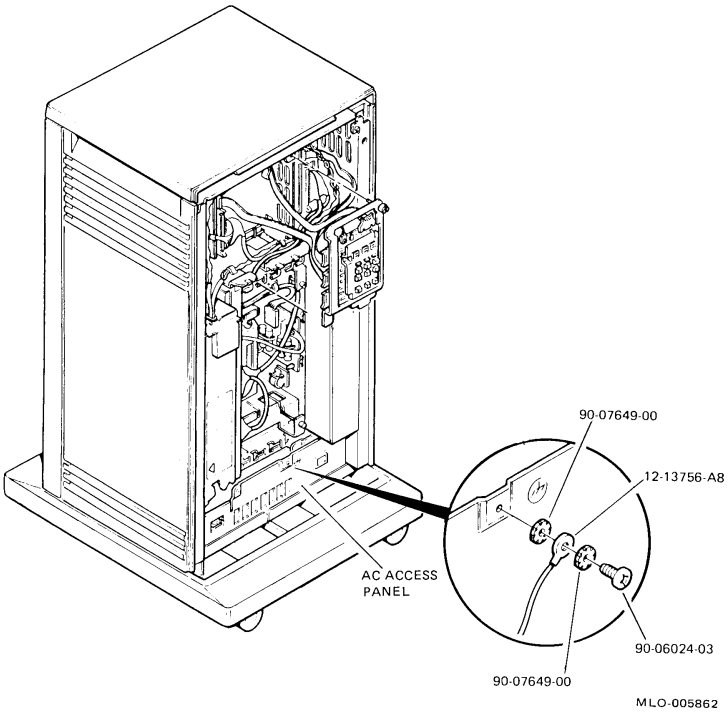
b. Remove the ac access panel.

c. Pull the captive hardware off the screw on the right-hand side of the ac access panel (shown on Figure 1–5), using a pair of diagonal cutters; discard the captive hardware and screw.

d. Reattach the ac access panel using only one of the screws that previously connected it to the chassis; leave the screw hole shown in Figure 1–5 empty.

e. Place one lock washer (90–07649–00) on the inside of the ring terminal of the ground wire (12–13756-A8) and one lock washer on the outside of the ring terminal. Attach the ring terminal to the chassis with lock washers by inserting the new screw (90–06024–03) into the remaining hole (see Figure 1–5). Tighten the screw.

Figure 1–5 Installing the Ground Wire

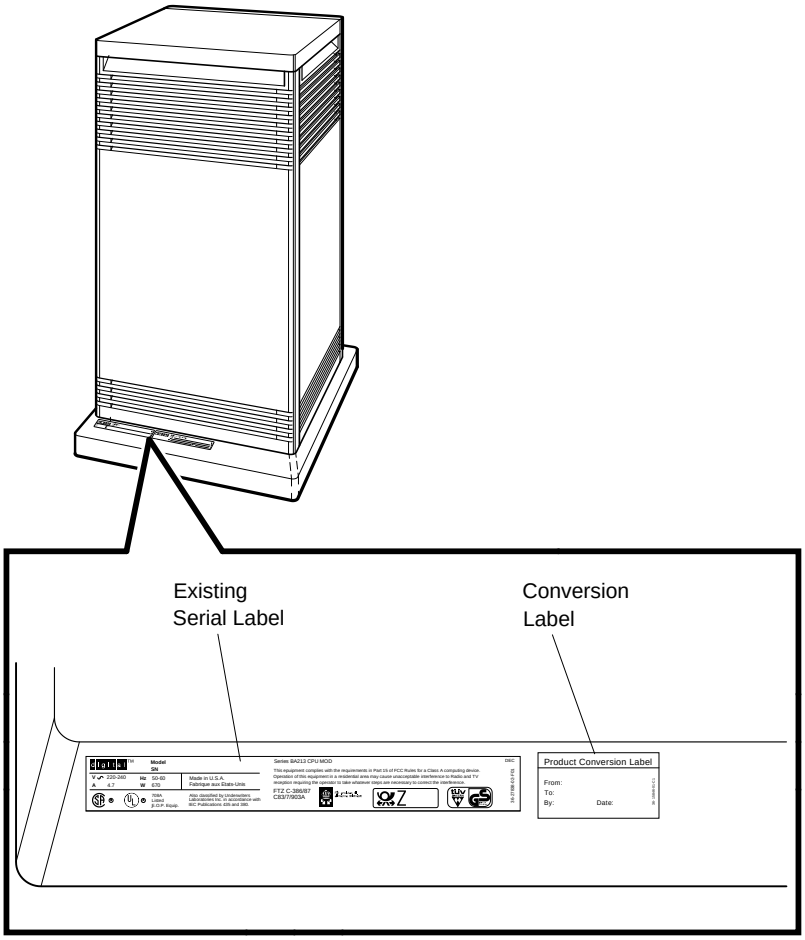


Caution

The BA42B-Based VAX 4000 system should never be placed on top of the enclosure you are upgrading to a Q–bus expander.

18. Turn on the Q–bus expansion box before you power up the BA42B-based VAX 4000 system box.
19. Replace the door of the expansion enclosure.
20. Turn on the system and run the system diagnostics, if purchased (MDM 137 minimum revision), to verify system operation.
21. Attach the conversion label (36–15946–00) next to the serial label on the back of the expander base. Fill in the appropriate information. (Change from "current model listed" to "BA215.") See Figure 1–6.

Figure 1–6 BA215 Conversion and Serial Label Locations



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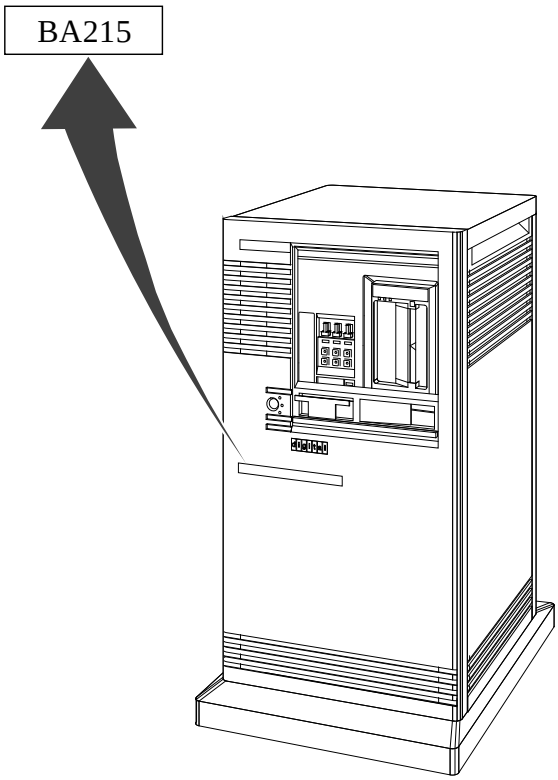
22. Use a flat-bladed screwdriver to remove the system medallion. See Figure 1–7.

Figure 1–7 BA215 Medallion Location



23. Have the customer reinstall the system backup data.
24. Fill out the forms in Appendix A.

Note

Version 5.5-2 of VMS is needed to operate the BA42B-based VAX 4000 system. The VMS disk from the system that just became an expansion box is no longer needed as a system disk.

2

Upgrading BA213 and H9644 Enclosures

2.1 In This Chapter

This chapter describes the procedures necessary to convert systems housed in the BA213 and H9644 enclosures to a Q–bus expansion system.

2.2 Overview of Conversion

Note

These particular enclosures may have the following types of drives residing in the enclosure: RD, RA, and RF.

The tasks required to convert a BA213 or H9644 enclosure are summarized below. To begin the actual conversion, turn to Section 2.3.

1. Have the customer back up the system software.
2. Run diagnostics to verify system operation.
3. Unpack and verify the conversion kit.
4. This step varies according to the type of drives you have.
   a. For RF drives (DSSI), make note of all DSSI node IDs to avoid conflicts.
   b. For RD and RA drives, proceed directly to the next step.
5. Shut down the operating system.
6. Remove/open the front door (also the rear door for the H9644 enclosure).
7. Turn off the system power and remove the power cord.
8. Disconnect the console and Ethernet cables.
9. Remove the CPU console cover and disconnect the cables.
10. Remove the CPU and adjacent memory module.

11. Remove the KFQSA bulkhead cover.
12. Disconnect the DSSI cable, and remove the KFQSA module.
13. Remove the bulkhead covers from any remaining memory modules, disconnect the cables, and remove all memory boards.

Note

If your system is not DSSI based, skip to step 17b.

14. Insert a grant continuity card in the slot formerly occupied by the CPU or KFQSA module.
15. Install one gap filler panel to the left side of the DSSI bulkhead assembly.
16. Attach the internal DSSI cable to the DSSI bulkhead assembly.
17. Insert the Q–bus expander module:
    a. For DSSI-based systems, insert the M9405–PA Q–bus expander module in the slot formerly occupied by the first memory module.
    b. For non-DSSI-based systems, insert the M9405–PA Q–bus expander module in the slot formerly occupied by the CPU module.
18. Install the M9060–YA load module immediately after the M9405–PA expander module.
19. Fill the open slots with grant cards.
20. Remove the option and revision labels from the bulkhead covers.
21. Install a gap filler panel on the right-hand side of the bulkhead cover, and install the bulkhead to the left of the Q–bus expander module.
22. Cover the remaining open slots with the previously removed blank bulkhead covers, and label the top and bottom of each bulkhead.
23. For DSSI-based systems only: Attach the DSSI cable from the expander enclosure to the BA42B-based VAX 4000.
24. Attach the Q–bus cables to the Q–bus expansion module and the back of the BA42B-based VAX 4000 system.
25. Install the ground wire.
26. Turn on the Q–bus expansion box before you turn on the BA42B-based VAX 4000 system box.
27. Replace the door of the expansion enclosure.

28. Turn on the system and run diagnostics, if purchased (MDM 137 minimum revision).
29. Attach the conversion label and fill in the appropriate information. (Change from "current model listed" to "BA213" or "H9644.")
30. Remove the system medallion and replace it with the new enclosure medallion.
31. Reinstall system data.
32. Fill out the appropriate paperwork (Appendix A).

2.3 Unpacking the Kit

Unpack the kit as follows:

1. Make sure there is no external damage to the shipping container, such as dents, holes, or crushed corners.
2. Unpack the conversion kit and check its contents against the shipping invoice. Table 2–1 lists only the kit contents necessary for this conversion. Other items will be present, but are not required for this conversion.

CAUTION

Modules can be damaged by static discharge if an antistatic wrist strap and antistatic mat are not used during handling. The wrist strap and mat are in the antistatic kit in the Digital Services Toolkit.

3. Unpack the Q–bus expander module and place it on a grounded antistatic mat.
4. Save the packing material, and use it to return the old CPU module.
5. If any item is missing or damaged:
   - Contact the customer's sales representative.
   - Contact the customer's delivery agent.

Table 2–1 lists only the kit contents for this conversion; other items will be present as well.

Table 2–1 Conversion Kit Contents for BA213

Description	Part Number	Quantity
Q–bus grant continuity kit	M9047–SA	4
+5/12V load module	M9060–YA	1
M9045 with S-box handle	M9405–PA	1
Ground strap with label	12–13756–A8	1
50 cond shielded cable assembly	17–02048–01	2
50 cond molded Micro-D cable assembly	17–02152–03	1
Ground label (H9644)	36–12680–04	1
Product conversion label	36–15946–00	1
M9060–YA S-box module number label	36–26883–17	1
BA2xx rev sheeted label	36–29164–07	1
Bulkhead panel kit	70–24505–01	1
R215F DSSI bulkhead assembly	70–26223–01	1
BA213 nameplate	74–34425–30	1
H9644 nameplate	74–34425–31	1
Machine screw, 6-32 trs .500 xrcs	90–06024–03	1
Internal steel lock washer	90–06633–00	1
Flat steel washer	90–06656–00	1
External steel lock washer	90–07649–00	2
Sems screw 6-32 pan .375 xrs	90–09984–00	1

There are no VMS licenses included with this conversion kit.

2.4 Before Installing the Kit

Before installing the kit:

1. Have the customer back up the system software before the Digital Services representative arrives. It is the customer's responsibility to back up the system software.
2. Power up the system and run diagnostics to verify system operation.
3. Turn off the system power before installing the kit.

2.5 Installing the Kit

Note

These particular enclosures may have the following types of drives residing in the enclosure: RD, RA, and RF.

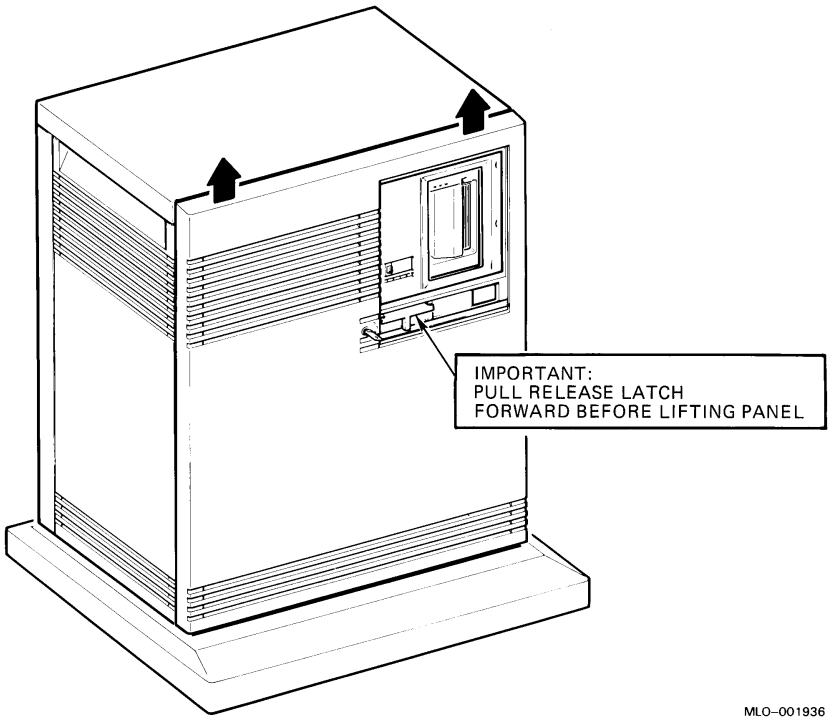
To install the conversion kit (convert a BA213 or H9644 enclosure):

1. The first step differs according to the drives you have.
   a. For RF drives (DSSI):

      Make note of the DSSI node IDs on your BA42B-based VAX 4000 (refer to the appropriate System Manual for proper procedure). Ensure that each DSSI drive ID in your newly configured expansion enclosure will not conflict with the DSSI drive IDs in your BA42B-based VAX 4000 system box. (In most cases, the DSSI drive IDs in the expander will have to be renumbered.)

   b. For RD and RA drives, proceed directly to the next step.
2. Shut down the operating system in the proper manner.
3. Remove/open the front door of the unit for conversion to a Q–bus expander.
   a. In order to turn off the power, and to make the necessary modifications to a **Pedestal (MicroVAX 3400/3500/3800 or VAX 4000–200)**, you must remove the front panel as follows (see Figure 2–1):
      - Pull the release latch toward you, but do not attempt to remove it.
      - Using the release latch as a handle, lift the front panel off.
      - To reach the on/off power switch, turn the universal key in the front panel lock to the bottom position and lower the grey window.
      - Set the on/off power switch to off (0), and unplug the ac power cord from the wall outlet.

Figure 2–1 Removing the Pedestal Front Panel (MicroVAX 3400/3500/3800, VAX 4000–200)

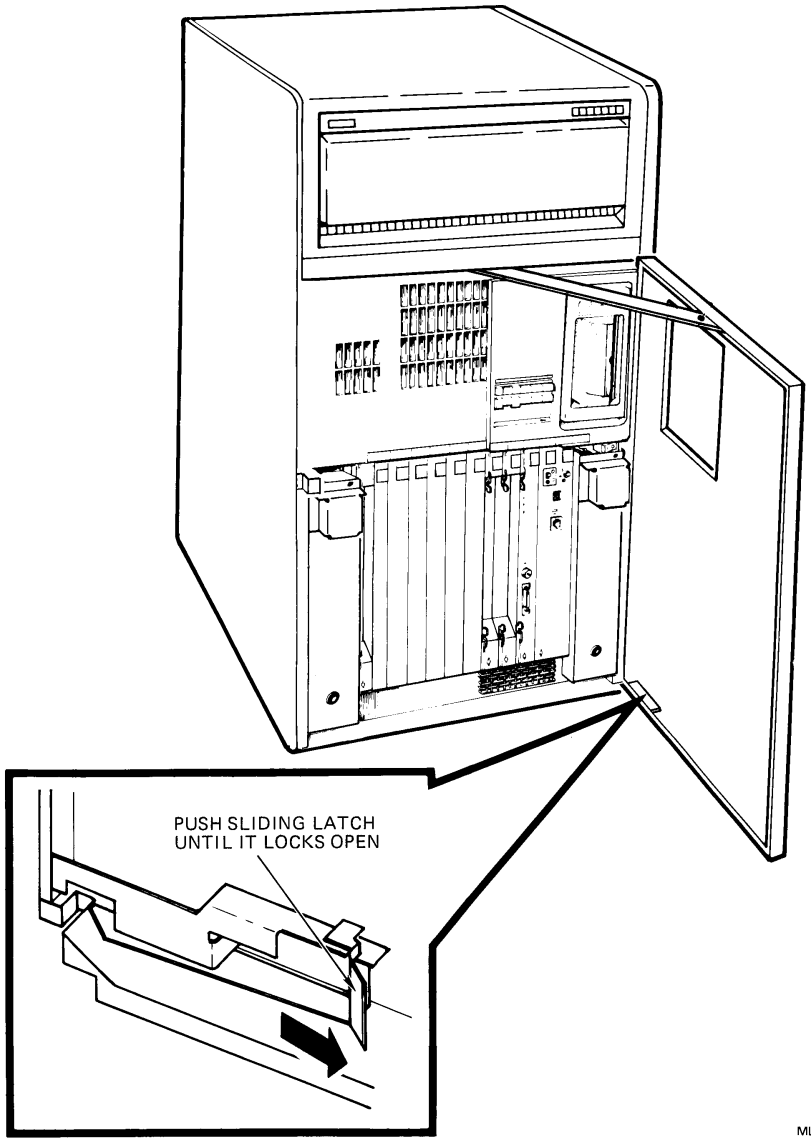


b. In order to turn off the power, and to make the necessary modifications to a **Cabinet (MicroVAX 3600/3900)**, you must open the front door and rear panel as follows (Figure 2–2):

- Unlock and lower the window on the front panel to reach the on/off switch; turn the on/off switch to the off position.
- Move the release latch to the right.
- Swing the front panel open while holding the release latch to the right.
- Set the on/off power switch to off (0), and unplug the ac power cord from the wall outlet.

- Use the hex key to open the rear panel.

Figure 2–2 Opening the Cabinet (MicroVAX 3600/3900) Front Panel



4. Disconnect the console and Ethernet cables attached to the console cover.
5. Using a Phillips-head screwdriver, remove the CPU console cover. Disconnect the flat cable that goes from the console cover to the CPU. Next, disconnect the memory cable (and internal DSSI cable if present) from the CPU.
6. Remove the CPU and adjacent memory module.
7. Remove the bulkhead covers from any remaining memory modules. Disconnect the memory cable from the remaining memory modules and remove all memory boards. (The Digital Services representative is responsible for returning the boards to Digital for credit.)

Note

If your system is not DSSI-based, skip to step 12b.

8. For 3800 and 3900 systems only:

   Remove the KFQSA bulkhead cover, disconnect the DSSI cable, and remove the KFQSA (internal DSSI controller) module.
9. For non-KFQSA systems only:

   Insert the M9047–SA module (grant continuity card) in the slot formerly occupied by either the KFQSA or the CPU module. Use the 74–33507–01 stabilizer card when inserting the M9047–SA module. The grant card goes in the top half of the slot and the stabilizer in the bottom.
10. Install one gap filler panel (70–24071–01, which is part of the 70–24505–01 kit) to the left side of the DSSI bulkhead assembly (70–26223–01).

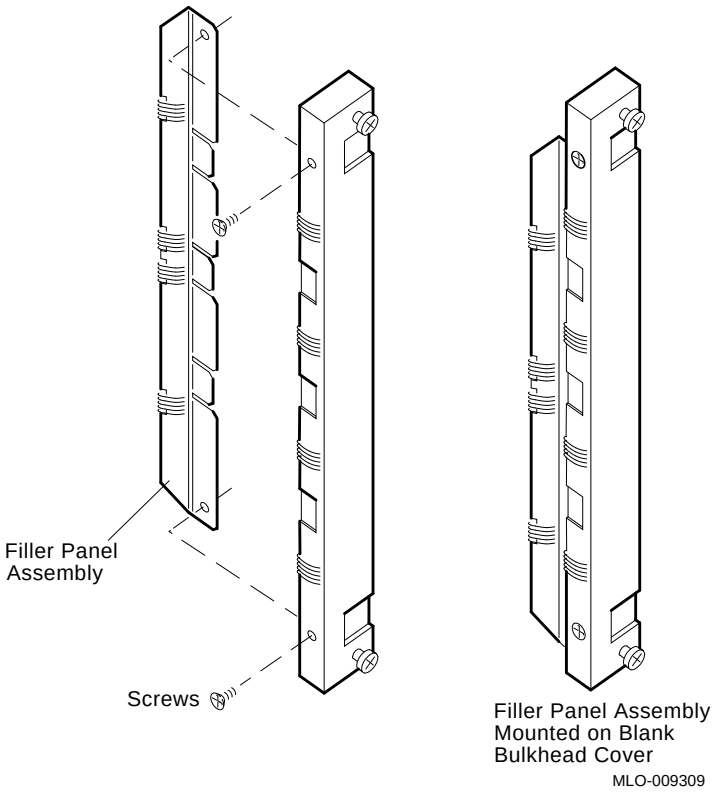
    When you install a module that has either a blank cover or a flush handle next to a module with a recessed handle, you must install a filler panel (70–24505–01) between the modules to meet regulations for electromagnetic interference (EMI). Without the filler panel, circuitry on the module with a recessed handle is exposed.

    Check the modules in the card cage to see if any module with a recessed handle is next to a module with a blank cover or a flush handle. Install the filler panel, if needed, as follows:

    a. Fit the filler panel onto the side of the blank cover or flush-handle module that is next to the module with a recessed handle. Make sure the tabs on the filler panel fit into the tab indentations on the blank cover or flush handle (Figure 2–3).

b. Using the two screws that come with the filler panel, attach the filler panel to the top and bottom of the blank cover or flush handle (Figure 2–3).

Figure 2–3 Attaching the Filler Panel



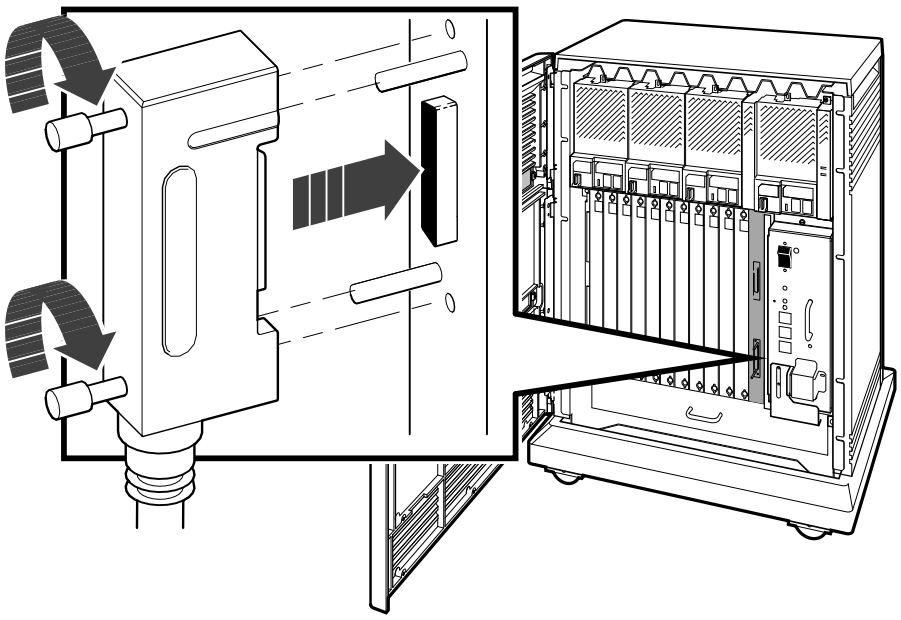
11. Attach the internal DSSI cable (17–02059–01) to the connecter on the back of the DSSI bulkhead assembly (70–26223–01) and place over the M9047 grant card that was installed in the former CPU or KFQSA slot.

Note

Remove the two keys from the cable with a pair of diagonal cutters before attaching it to the bulkhead assembly. The orientation of the cable will remain unchanged.

12. Insert the M9405–PA Q–bus expander module.
    a. For DSSI-based systems other than 3800 or 3900 systems, insert the M9405–PA module in the slot formerly occupied by the first memory module.
    b. For non-DSSI-based systems and for 3800/3900 systems, insert the M9405–PA module in the slot formerly occupied by the CPU module.
13. Install the M9060–YA load module immediately beside the M9405–PA expander module.
14. Fill any remaining open slots between the M9060–YA load module and the next Q–bus option with M9047–SA grant cards. Use the 74–33507–01 stabilizer card when inserting the M9047–SA grant cards. The grant card goes in the top half of the slot and the stabilizer in the bottom half.
15. Remove the option and revision labels from the bulkhead covers.
16. Install a gap filler panel on the right-hand side of one bulkhead cover. Place a 36–26883–17 option label at the top and a 36–29164–07 revision label at the bottom of this bulkhead. Place over the slot containing the M9060–YA module.
17. Cover the remaining open slots with the previously removed blank bulkhead covers. Place a 36–26883–18 option label at the top of all bulkheads covering the M9047 grant cards and a 36–29164–07 revision label at the bottom of these same bulkheads.
18. For DSSI-based systems only:
    Attach the BC21M–09 (17–02152–03) DSSI cable from the expander enclosure's newly configured DSSI bulkhead to the DSSI port on the back of the BA42B-based VAX 4000. (Figure 2–4 shows the DSSI cable connections to a typical system.)
    a. Fit the cable connector over the two pins on the BA42B DSSI port. Tighten them first by hand, then use a screwdriver to firmly secure the connection.
    b. For a pedestal expander, feed the opposite end of the cable under the BA213 expander from the back or side. Attach the cable to the DSSI connector.
    c. For a cabinet (H9664) expander, feed the opposite end of the cable from the rear of the H9644 expander to the front. Attach the cable to the DSSI connector.

Figure 2–4 Connecting the DSSI Cable



19. Attach the two BC04V–09 (17–02048–01) cables to the M9405–PA module (using either end). Then attach the other ends to the Q–bus connections on the back of the BA42B-based VAX 4000 system. The connections are keyed to guarantee proper connection. Connect the cables as follows (Figure 2–5):

    a. Locate the two 2.74 m (9 ft) cables labeled BC04V–09 in the expander kit.

    b. Check that the sliding lock on each of the four connectors is up.

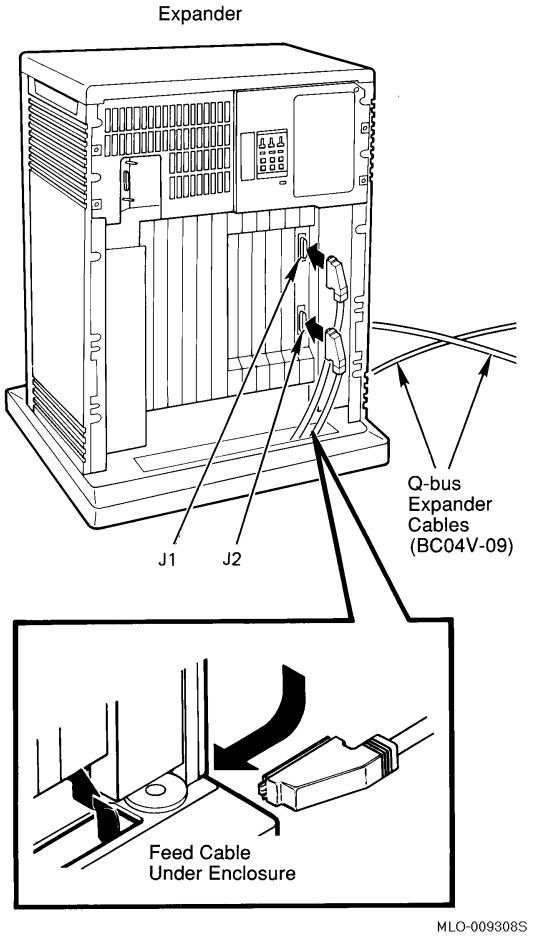
    c. Feed the plug end of one of the cables to the VAX 4000 (BA42B) system box port. Lock the connector by sliding down the lock.

    d. Feed the socket end of the same cable under the BA213 from the back or side (rear only for the H9644) and insert it into the plug connector labeled J1 on expansion module M9405–PA. Lock the connector in place by sliding down the lock.

    e. Feed the socket end of the second cable to the BA42B-based VAX 4000 system box from the back, and insert it into the plug connector labeled J2 on the expansion port. Lock the connector by sliding down the lock.

f. Feed the plug end of the same cable under the BA213 from the back or side (rear only for the H9644) and insert it into the socket connector labeled J2 on expansion module M9405–PA. Lock the connector by sliding down the lock.

Figure 2–5 Connecting Q–bus Cables



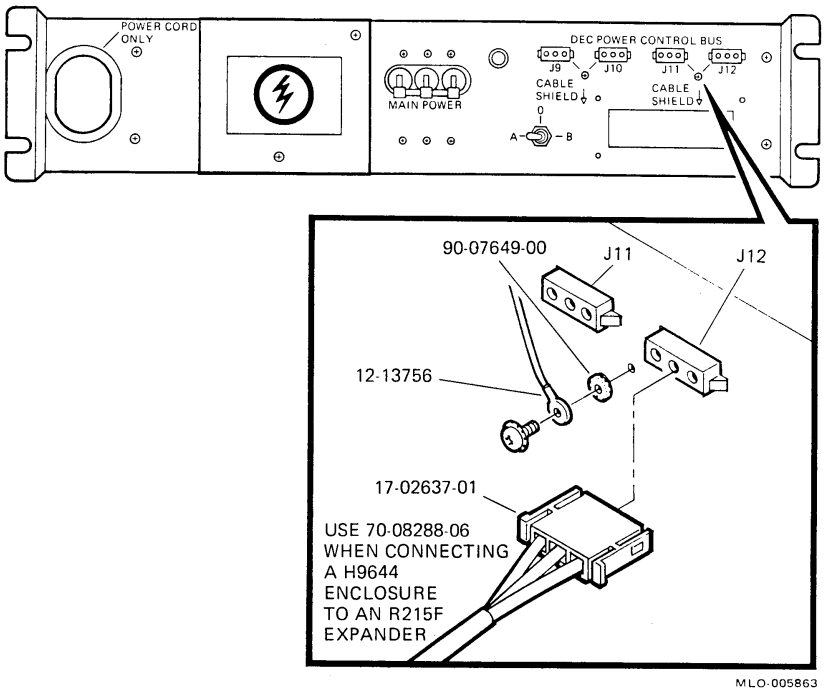
20. Install the ground wire (12–13756–A8) from the newly configured expander to the ground insert on the system box. Ground wires provide a common signal ground for systems with two or more enclosures; systems with multiple enclosures are daisy-chained.

Note

No more than two ground wires should be attached per ground terminal.

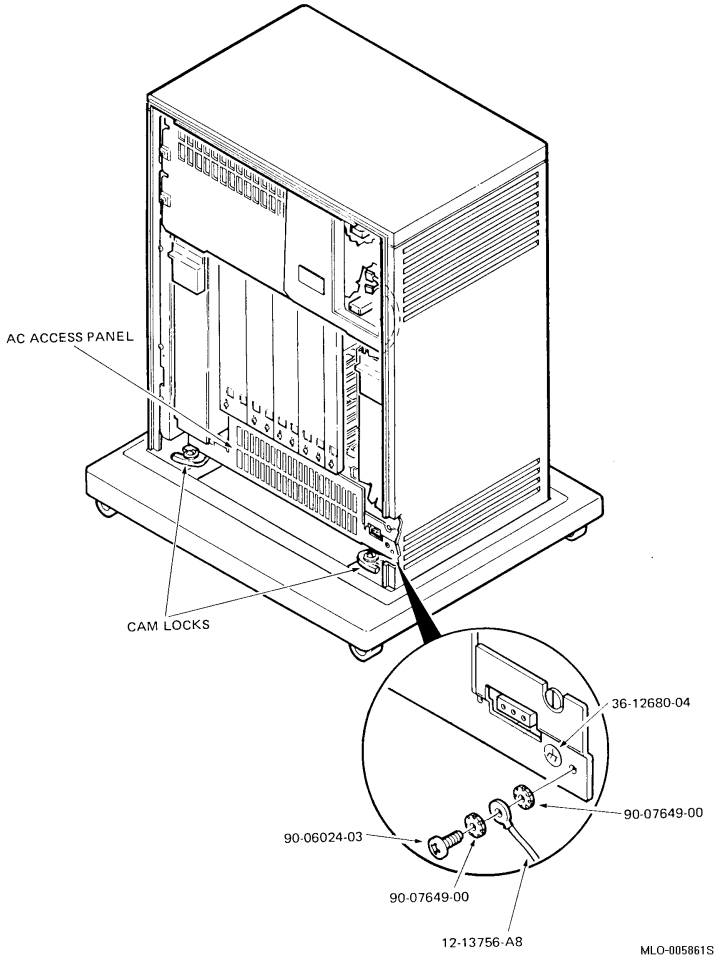
21. Perform the following steps to install the 12–13756–A8 ground wire on the H9644 Enclosure (Figure 2–6):
    a. Remove the screw depicted in Figure 2–6; save it for later use, leaving the screw hole empty.
    b. Place one lock washer (90–07649–00) on the inside of the ring terminal of the ground wire (12–13756–A8). Attach the ring terminal with the lock washer to the chassis by inserting the screw back into the empty hole; tighten the screw.

Figure 2–6 Connecting the H9644 Ground Wire



22. Perform the following steps to install the 12–13756–A8 ground wire on the BA213 Expander (Figure 2–7):
    a. Remove the screws that hold the pedestal cam locks in place, and then remove the pedestal cam locks. Note that there are two pedestal cam locks, one on each side of the metal grill (known as the ac access panel). See Figure 2–7 for their locations.
    b. Remove the five Phillips-head screws that attach the ac panel to the enclosure.
    c. Remove the ac access panel.
    d. Pull the captive hardware off the screw in the lower right-hand corner of the access panel using a pair of diagonal cutters. Discard the captive hardware and the screw.
    e. Reattach the ac access panel, using only four of the screws that previously connected it to the chassis. Leave one screw hole empty (shown in Figure 2–7).
    f. Tighten the pedestal cam locks in place and replace the screws that secure them.
    g. Attach the ground sticker (36–12680–04) to the ac access panel to the left of the empty screw hole.
    h. Place one lock washer (90–07649–00) on the inside of the ring terminal of the ground cable (12–13756–A8), and one lock washer on the outside of the ring terminal. Then attach the ring terminal with the lock washers to the chassis by inserting the new screw (90–06024–03) into the remaining empty hole. Tighten the screw.
    i. Attach the other end of the ground cable to the BA42B (see Related Documents).

Figure 2–7 Connecting the BA213 Ground Wire



Caution

The BA42B-Based VAX 4000 system should never be placed on top of the enclosure you are upgrading to a Q–bus expander.

23. Turn on the Q–bus expansion box before turning on the BA42B-based VAX 4000 system box.
24. Replace/close the door of the expansion enclosure.

25. Turn on the system and run the system diagnostics, if purchased (MDM 137 minimum revision), to verify system operation.
26. Attach the conversion label (36–15946–00) next to the serial label on the back of the expander. Fill in the appropriate information. (Change from "current model listed" to "BA213" or "H9644.") See Figure 2–8 for Pedestal (MicroVAX 3400/3500/3800 or VAX 4000–200), or Figure 2–9 for Cabinet (MicroVAX 3600/3900).

Figure 2–8 BA215 Pedestal Conversion and Serial Label Locations (MicroVAX 3400/3500/3800 or VAX 4000–200)

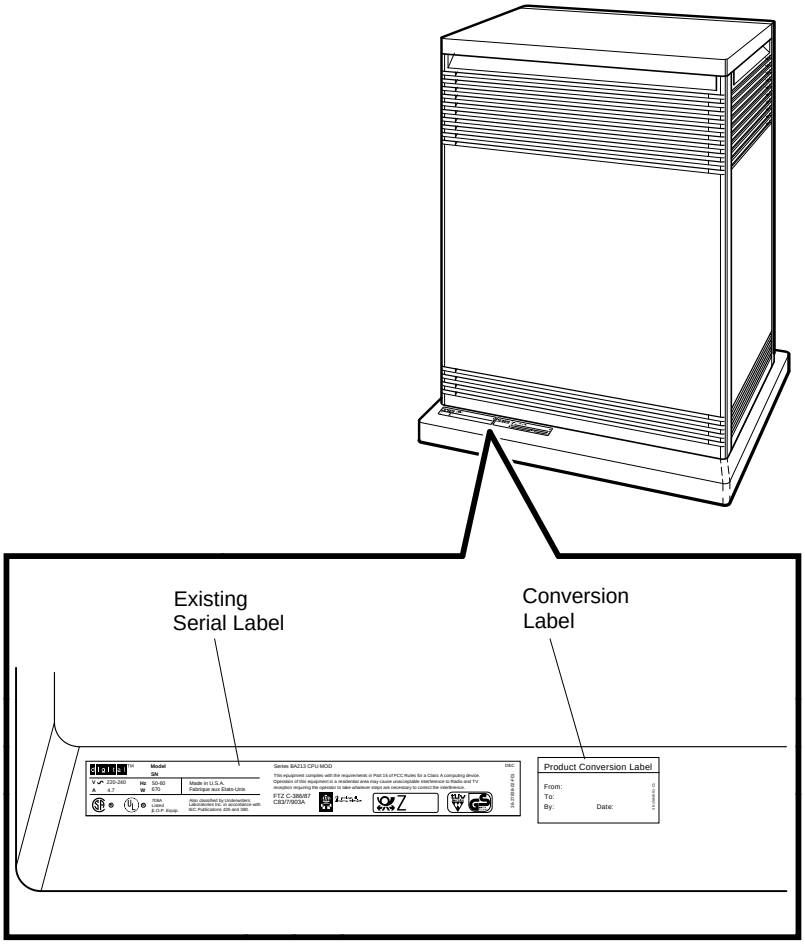


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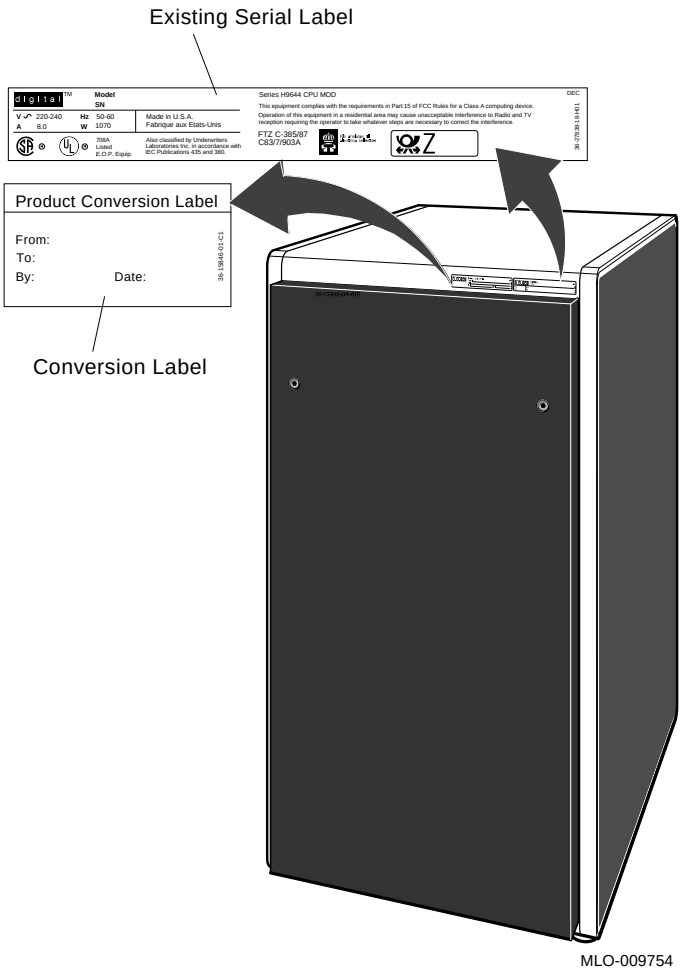
Figure 2–9 H9644 Cabinet Conversion and Serial Label Locations (MicroVAX 3600/3900)



27. Remove the system medallion from the BA213/H9644, and replace it with the new enclosure medallion (74–34425–30 or 74–34425–31, respectively).
    a. Remove the old medallion by using a flat-bladed screwdriver to lift it off the front panel.

b. Attach the new medallion as shown in Figure 2–10 or Figure 2–11.

Figure 2–10 BA213 Pedestal Medallion Location

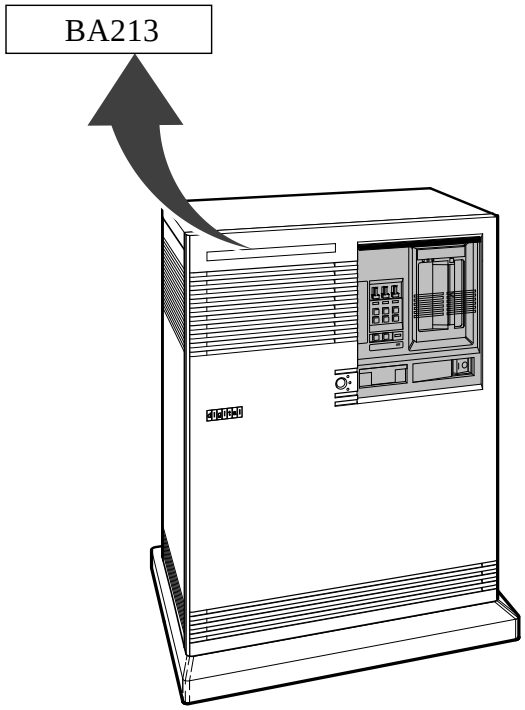


Figure 2–11 H9644 Cabinet Medallion Location

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28. Have the customer reinstall the system backup data.
29. Fill out the forms in Appendix A.

Note

Version 5.5-2 of VMS is needed to operate the BA42B-based VAX 4000 system. The VMS disk from the system that just became an expansion box is no longer needed as a system disk.

3

Upgrading BA430 Enclosures

3.1 In This Chapter

This chapter describes the procedures necessary to convert systems housed in the BA430 enclosure to a Q–bus expansion system.

3.2 Overview of Conversion

Tasks required to convert a BA430 enclosure are summarized below. To begin the actual conversion, turn to Section 3.3.

1. Have the customer back up the system software.
2. Run diagnostics to verify system operation.
3. Unpack and verify the conversion kit.
4. Determine the DSSI node IDs to be used.
5. Shut down the operating system.
6. Open the front door.
7. Turn off the system power and remove the power cord.
8. Disconnect the console and Ethernet cables.
9. Remove the CPU console cover, and disconnect the cables.
10. Remove the CPU and adjacent memory module.
11. Remove the blank covers from any remaining memory modules, disconnect the cables, and remove all memory boards.
12. Remove the recessed blank cover and the M9715 interface card to the left of the power supply.
13. Attach the M9715 interface card to the DSSI bulkhead assembly. Reinstall the M9715 and secure the bulkhead assembly.
14. Insert the Q–bus expander module.

15. Fill the open slots with grant cards.
16. Remove the option and revision labels from the single bulkhead covers.
17. Install a gap filler panel on the bulkhead cover and install the cover next to the Q–bus expansion module.
18. Cover the remaining open slots with the previously removed bulkhead covers and label the top and bottom of each bulkhead.
19. Attach the DSSI cable from the expander enclosure to the BA42B-based VAX 4000.
20. Attach the Q–bus cables to the Q–bus expansion module and the back of the BA42B-based VAX 4000 system.
21. Install the ground wire.
22. Close the door of the expansion enclosure.
23. Turn on the Q–bus expansion box before the BA42B-based VAX 4000 system box.
24. Turn on the system and run diagnostics, if purchased (MDM 137 minimum revision).
25. Attach the conversion label, and fill in the appropriate information. (Change from "current model listed" to "BA430.")
26. Remove the system medallion, and replace it with the new enclosure medallion.
27. Reinstall system data.
28. Fill out the appropriate paperwork (Appendix A).

3.3 Unpacking the Kit

Unpack the kit as follows:

1. Make sure there is no external damage to the shipping container, such as dents, holes, or crushed corners.
2. Unpack the conversion kit and check its contents against the shipping invoice. Table 3–1 lists only the kit contents for this conversion. Other items will be present, but are not required for this conversion.

CAUTION

Modules can be damaged by static discharge if an antistatic wrist strap and antistatic mat are not used during handling. The wrist strap and mat are in the antistatic kit in the Digital Services toolkit.

3. Unpack the Q–bus expander module, and place it on a grounded antistatic mat.
4. Save the packing material, and use it to return the old CPU module.
5. If any item is missing or damaged:
   - Contact the customer's sales representative.
   - Contact the customer's delivery agent.

Table 3–1 lists only the kit contents for this conversion; other items will be present, but are not required for this conversion.

Table 3–1 Conversion Kit Contents for BA430

Description	Part Number	Quantity
Q–bus grant continuity kit	M9047–SA	4
M9045 with S-box handle	M9405–PA	1
Ground strap with label	12–13756–A8	1
50 cond shielded cable assembly	17–02048–01	2
50 cond molded Micro-D cable assembly	17–02152–03	1*
Product conversion label	36–15946–00	1
BA2xx rev sheeted label	36–29164–07	1
Bulkhead front assembly	70–23981–01	1
Bulkhead panel kit	70–24505–01	1
Bulkhead assembly	70–28083–01	1
BA430 nameplate	74–40913–09	1

*For those customers with an embedded TLZ04, a BC06P–06 may be ordered to run SCSI directly from the system box.

(continued on next page)

Table 3–1 (Cont.) Conversion Kit Contents for BA430

Description	Part Number	Quantity
Machine screw, 6-32 trs .500 xrcs	90–06024–03	1
Internal steel lock washer	90–06633–00	1
Flat steel washer	90–06656–00	1
Sems screw 6-32 pan .375 xrs	90–09984–00	1

There are no VMS licenses included with this conversion kit.

3.4 Before Installing the Kit

Before installing the kit:

1. Have the customer back up the system software before the Digital Services representative arrives. It is the customer's responsibility to back up the system software.
2. Power up the system, and run diagnostics to verify system operation.
3. Shut down the operating system in the proper manner.
4. Turn off the system power before installing the kit.

3.5 Installing the Kit

Use the following procedures to convert a BA430 enclosure:

1. Make note of the DSSI node IDs on your BA42B-based VAX 4000 (refer to the appropriate System Manual for proper procedure). Ensure that each DSSI drive ID in your newly configured expansion enclosure will not conflict with the DSSI drive IDs in your BA42B-based VAX 4000 system box. (In most cases the DSSI drive IDs in the expander will have to be renumbered.)
2. Open the front door of the unit for conversion to a Q–bus/DSSI expander as follows (Figure 3–1):
   a. Insert the key in the lock on the front door. Turn the key to the bottom position to open the entire door.
   b. With the key in the bottom position, the upper and lower portions of the door will open together (Figure 3–2).

c. Swing the door open.

Note

To close the door, reverse the procedure; when pushing the doors closed, push gently at the top right of the upper door and the bottom right of the lower door.

3. Turn off the system power and remove the power cord from the wall outlet.

Figure 3–1 Opening the Door

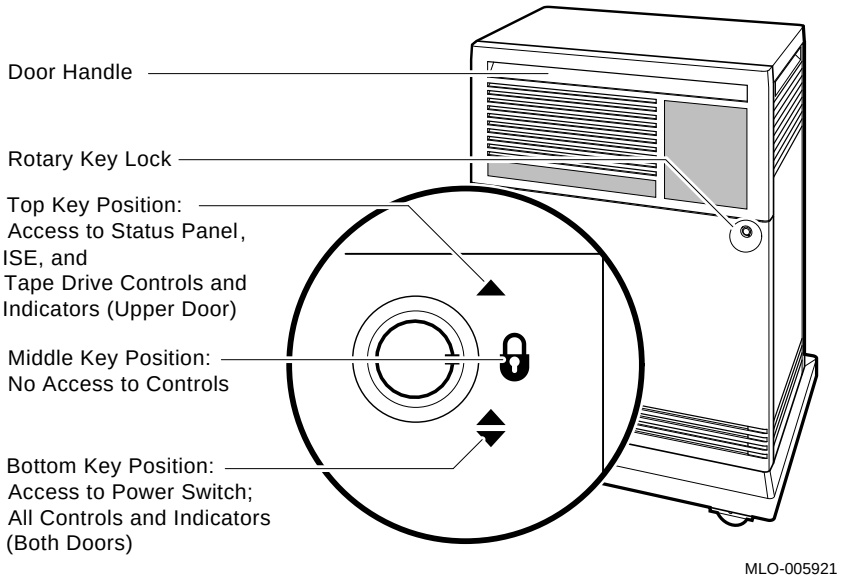
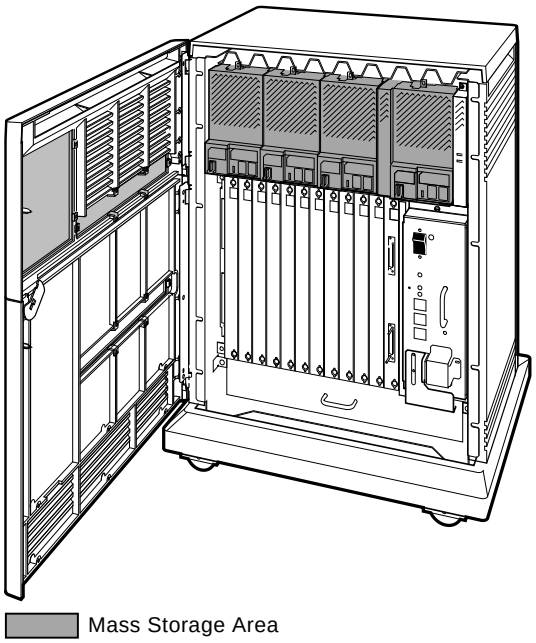


Figure 3–2 System with Door Open



4. Disconnect the console and Ethernet cables attached to the console cover.
5. Using a Phillips-head screwdriver, remove the CPU console cover. Disconnect the flat cable that goes from the console cover to the CPU. Next, disconnect the memory cable from the CPU.
6. Remove the CPU and adjacent memory module.
7. Remove the bulkhead covers from any remaining memory modules. Disconnect the memory cable from the remaining memory modules and remove all memory boards. (The Digital Services representative is responsible for returning the boards to Digital for credit.)
8. Using the Phillips-head screwdriver, remove the recessed bulkhead cover to the left of the power supply. Remove the M9715 interface card from this slot.
9. Attach the cable from the 70–28083–01 DSSI bulkhead assembly to the M9715 interface card. Reinstall the M9715 card, and secure the 70–28083–01 bulkhead assembly over the M9715 card.
10. Insert the M9405–PA Q–bus expander module in the slot formerly occupied by the CPU module.

11. Fill all the remaining open slots between the M9405–PA module and the next Q–bus option with M9047–SA grant cards. Use the 74–33507–01 stabilizer card when inserting the M9047 cards. The grant card goes in the top half of the slot and the stabilizer in the bottom.
12. Remove the option and revision labels from the single bulkhead covers.
13. Install a gap filler panel (70–24071–01, which is part of the 70–24505–01 kit) on the right-hand side of one blank bulkhead. Place this bulkhead immediately beside the M9405–PA module.

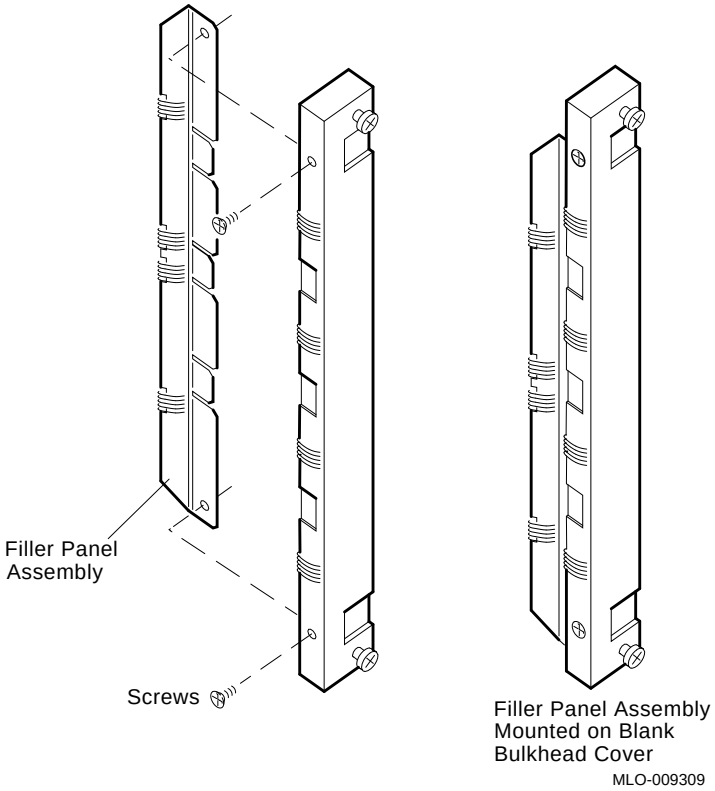
    When you install a module that has either a blank cover or a flush handle next to a module with a recessed handle, you must install a filler panel (70–24505–01) between the modules to meet regulations for electromagnetic interference (EMI). Without the filler panel, circuitry on the module with a recessed handle is exposed.

    Check the modules in the card cage to see if any module with a recessed handle is next to a module with a blank cover or a flush handle. Install the filler panel, if needed, as follows:

    a. Fit the filler panel onto the side of the blank cover or flush-handle module that is next to the module with a recessed handle. Make sure the tabs on the filler panel fit into the tab indentations on the blank cover or flush handle (Figure 3–3).

    b. Using the two screws that come with the filler panel, attach the filler panel to the top and bottom of the blank cover or flush handle (Figure 3–3).

Figure 3–3 Attaching the Filler Panel



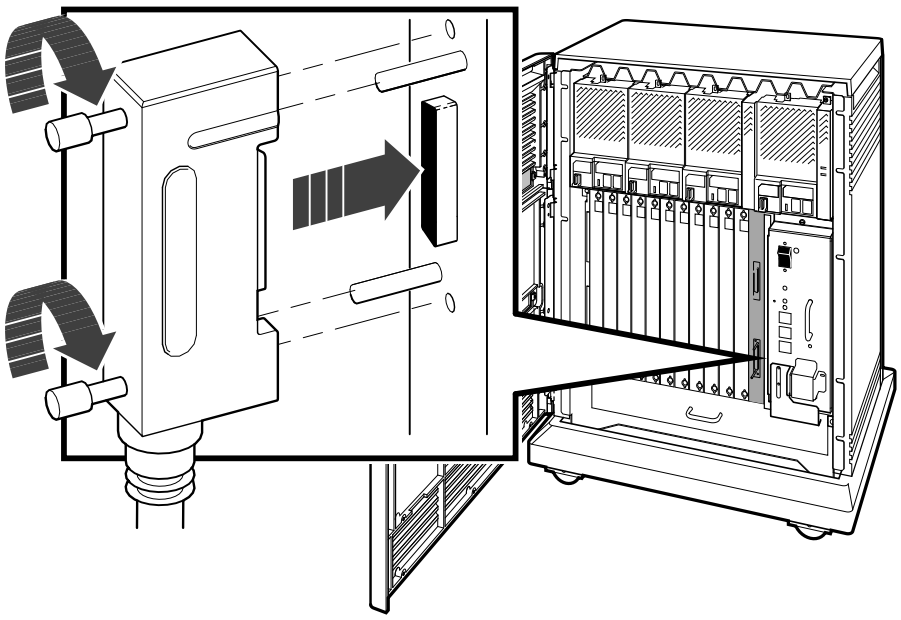
14. Cover the remaining open slots with the previously removed blank bulkheads. Place a 36–26883–18 option label at the top of all bulkheads covering the M9047 grant cards and a 36–29164–07 revision label at the bottom of these same bulkheads.

15. Attach the BC21M–09 (17–02152–03) (DSSI cable) from the expander enclosure to the DSSI port on the back of the BA42B-based VAX 4000 as follows (see Figure 3–4):

    a. Fit the cable connector over the two pins on the BA42B DSSI port. Tighten them first by hand, then use a screwdriver to firmly secure the connection.

    b. Feed the opposite end of the cable under the BA430 expander from the back or side. Attach the cable to the DSSI connector to the right of the card cage.

Figure 3–4 Connecting the DSSI Cable



16. Attach the two BC04V–09 (17–02048–01) cables to the M9405–PA module (using either end) and then attach the other ends to the Q–bus connections on the back of the BA42B-based VAX 4000 system. The connections are keyed to guarantee proper connection. Connect the cables as follows (Figure 3–5):

    a. Locate the two 2.74-m (9-ft) cables labeled BC04V–09 in the expander kit.

    b. Check that the sliding lock on each of the four connectors is up.

    c. Feed the plug end of one of the cables to the system from the back, and insert it into the socket connector labeled J1 on the expansion port. Lock the connector by sliding down the lock.

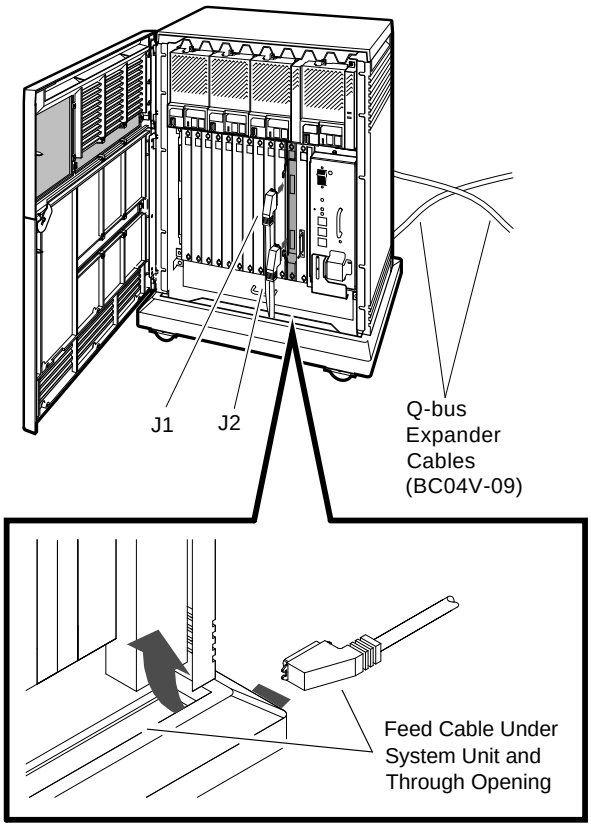
    d. Feed the socket end of the same cable under the BA430 expander from the back or side, and insert it into the plug connector labeled J1 on the expansion module M9405–PA. Lock the connector in place by sliding down the lock.

e. Feed the socket end of the second cable to the system from the back, and insert it into the plug connector labeled J2 on the expansion port. Lock the connector by sliding down the lock.

f. Feed the plug end of the same cable under the BA430 expander from the back or side and insert it into the socket connector labeled J2 on expansion module M9405–PA. Lock the connector by sliding down the lock.

Figure 3–5 Connecting Q–bus Cables

Expander



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17. Install the ground wire (12–13756–A8) from the ground stud provided on the power supply of the newly configured expander to the ground insert on the system box. Ground wires provide a common signal ground for

systems with two or more enclosures; systems with multiple enclosures are daisy-chained.

Note

No more than two ground wires should be attached per ground terminal.

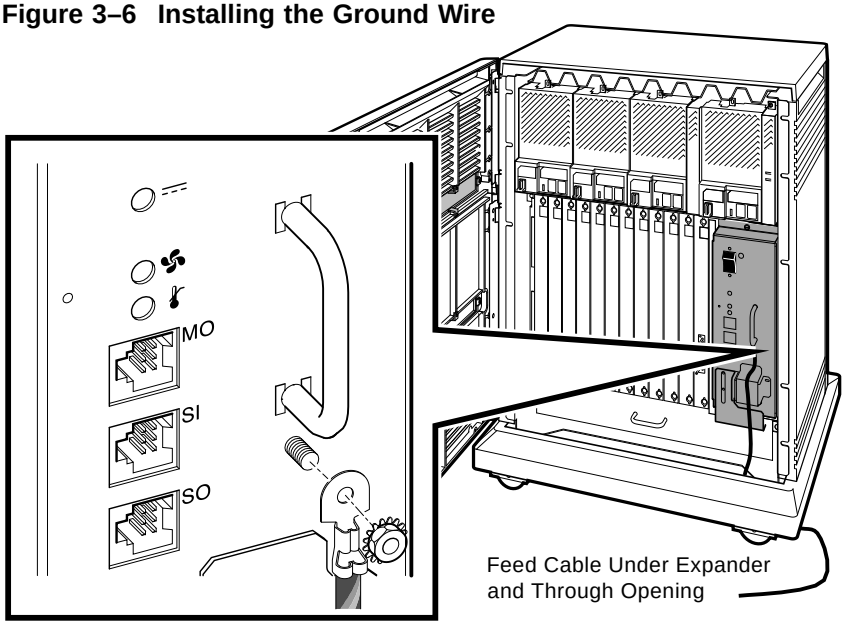
Connect a ground cable as follows (Figure 3–6):

a. Find the ground wire (12–13756–A8); it has lugs on each end.

b. Remove the nuts on the ground terminals of the expander power supply.

c. Slide the ground wire lug over the ground terminal stud, and replace the nut.

Figure 3–6 Installing the Ground Wire



Caution

The BA42B-Based VAX 4000 system should never be placed on top of the enclosure you are upgrading to a Q–bus expander.

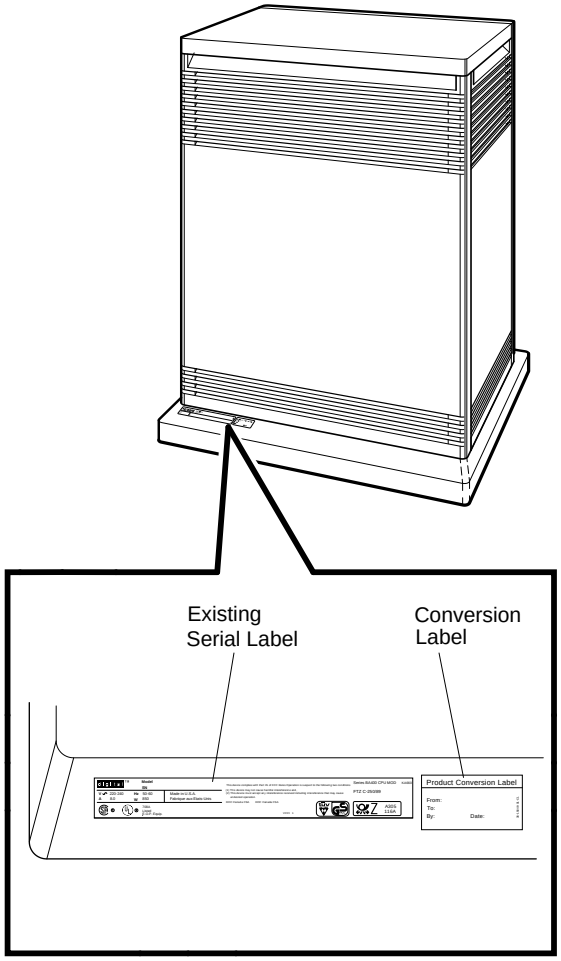
18. For units with an embedded TLZ04 only:

Note

The BC06P–06 must be ordered separately.

    a. Disconnect the existing 2.5-ft SCSI cable (BC06P–2F) from the KFQSA and BA430 enclosures.
    b. Terminate the KFQSA.
    c. Connect the BC06P–06 from the SCSI connector on the back of the BA42B system box to the SCSI connector on the BA430 expansion box. Dress the BC06P in the same manner as the Q–bus and DSSI cables.
19. Turn on the BA430 expansion box before you power up the BA42B-based VAX 4000 system box.
20. Turn on the system and run the system diagnostics, if purchased (MDM 137 minimum revision), to verify system operation.
21. Close the door of the expansion enclosure.
22. Attach the conversion label (36–15946–00) next to the serial label on the back of the expander base. Fill in the appropriate information. (Change from "current model listed" to "BA430.") (See Figure 3–7).

Figure 3–7 BA430 Conversion and Serial Label Locations



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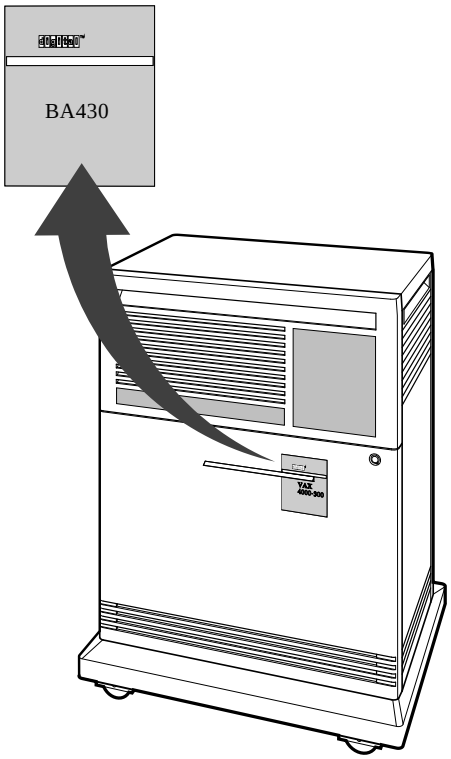
23. Remove the system medallion from the BA430, and replace it with the new enclosure medallion (74–40913–09). See Figure 3–8.

Figure 3–8 BA430 Medallion Location



24. Have the customer reinstall the system backup data.
25. Fill out the forms in Appendix A.

Note

Version 5.5-2 of VMS is needed to operate the BA42B-based VAX 4000 system. The VMS disk from the system which just became an expansion box is no longer needed as a system disk.

A

Mandatory Module Return Procedure and Forms

The old CPU modules must be returned to Digital Equipment Corporation. Digital Services personnel must ensure that the instructions to repackage and return the old CPU module are followed. The instructions apply only to United States area installations.

For installations outside the United States area, contact the local Digital Equipment Corporation office for return destination instructions.

A.1 Return Procedure

Return the modules as follows:

1. Obtain the serial number of the system being converted. Customer Administrative Services, (CAS), cannot process the order without this serial number.
2. Ensure that the serial number is on the purchase order.
3. Issue a hardcopy quotation to the customer, referencing the serial number, and state the following:

   "Return of the replaced modules to Digital is a condition of sale for this conversion. Failure to return the modules will result in a penalty charge. Installation of hardware by Digital Services personnel is required."

4. Pack the old modules using the packaging material set aside from the carton of the conversion kit.

   Pack the modules first in the nickel-plated bag, then in the pink plastic wrapping, and finally in the box.

5. Complete the Digital Services Worksheet in Section A.2. It documents the work you performed.

   Return the worksheet to your contract administrator at the branch office.

6. Contact your local Digital CAS office to obtain information for the Installation Receipt and the Return Material Checklist in Section A.2. Section A.3 lists the CAS district offices and their phone numbers.

   Ask the CAS representative for a return authorization (RA) number. CAS will contact the customer to arrange for carrier pickup and return of the module to Digital Equipment Corporation.

7. Complete both copies of the Installation Receipt.

   The first copy is the customer's receipt. It shows that the installation was completed and that Digital Services contacted CAS.

   Return the second copy to Digital Services along with the old modules to ensure that the customer does not incur a penalty charge.

8. Complete the Returned Material Checklist.

   Return the checklist with the old modules.

9. Place the self-adhesive mailing label on the box to be returned.

   Write the return authorization (RA) number in the space provided on the label.

10. Seal the box for shipment.

Refer questions regarding the return procedure to the local account representative.

Note

Customers who do not return their old CPU modules will be charged a fee.

A.2 Return Forms

This section contains the:

- Digital Services Worksheet
- Installation Receipt: Customer Copy
- Installation Receipt: Digital Services Copy
- Returned Material Checklist

Digital Services Worksheet

This form acts as a verification of the work performed on the system and as a check on the procedures used. Please fill out this form and return it to your Contract Administrator for updating the customer's contract.

Customer: _____

Old System Model Number: _____

Old System Serial Number: _____

Old CPU Module Serial Number: _____

Old Memory Module(s) Serial Number(s): _____

_____

_____

New System Name: _____

New System Model Number: _____

New System Serial Number: _____

Comments: _____

_____

_____

Mandatory Module Return Procedure and Forms
A.2 Return Forms

Installation Receipt—Customer Copy

For the conversion of VAX 4000-200s (BA213, BA215,BA430) and MicroVAX 3300, 3400, 3500, 3600, 3800 and 3900 (BA213, BA213/CAB, BA215) systems to Q–bus expansion enclosures when upgrading to a BA42B-based VAX 4000 system.

This form acts as a customer receipt and as verification for Digital Services that the BA42B (H9548–Ax) conversion kit was installed.

Digital Services:	Complete both copies of this form. Give a copy to the customer and a copy to the local CAS office for filing with customer documents.
Customer:	Digital Equipment Corporation will contact you within the next several days to arrange for package pickup and return. Keep this copy as your record of installation by Digital Equipment Corporation.

Note

Contact the local CAS office to obtain the RA (return authorization) number. See Section A.3 for the closest CAS office. You should have the Digital order number available. Be sure to note the name of the person you speak with.

Name of CAS representative: _____

Branch Office: _____, will arrange for package pickup and return.

Return Authorization (RA) Number: _____

Digital Order Number: _____

Old CPU Module Serial Number: _____

Converted to: _____

New System Serial Number: _____

Installation was performed on this date: _____

(See overleaf for signatures)

Module Packed for Return:

Customer Name: _____ Phone Number: _____

Customer Signature: _____

Digital Services Representative Signature: _____

Installation Receipt—Digital Services Copy

For the conversion of VAX 4000-200s (BA213, BA215,BA430) and MicroVAX 3300, 3400, 3500, 3600, 3800 and 3900 (BA213, BA213/CAB, BA215) systems to Q–bus expansion enclosures when upgrading to a BA42B-based VAX 4000 system.

This form acts as a customer receipt and as verification for Digital Services that the BA42B (H9548–Ax) conversion kit was installed.

Digital Services:	Complete both copies of this form. Give a copy to the customer and a copy to the local CAS office for filing with customer documents.
Customer:	Digital Equipment Corporation will contact you within the next several days to arrange for package pickup and return. Keep this copy as your record of installation by Digital Equipment Corporation.

Note

Contact the local CAS office to obtain the RA (return authorization) number. See Section A.3 for the closest CAS office. You should have the Digital order number available. Be sure to note the name of the person you speak with.

Name of CAS representative: _____

Branch Office: _____, will arrange for package pickup and return.

Return Authorization (RA) Number: _____

Digital Order Number: _____

Old CPU Module Serial Number: _____

Converted to: _____

New System Serial Number: _____

Installation was performed on this date: _____

(See overleaf for signatures)

Module Packed for Return:

Customer Name: _____ Phone Number: _____

Customer Signature: _____

Digital Services Representative Signature: _____

Returned Material Checklist

For the conversion of VAX 4000-200s (BA213, BA215,BA430) and MicroVAX 3300, 3400, 3500, 3600, 3800 and 3900 (BA213, BA213/CAB, BA215) systems to Q–bus expansion enclosures when upgrading to a BA42B-based VAX 4000 system.

This form must be filled out and returned with the old modules to ensure that the customer does not incur a penalty charge.

Return Authorization (RA) Number: _____

Digital Order Number: _____

Customer Name: _____

Customer Address: _____

_____

_____

Customer Contact: _____

********** Include This Form With Your Module Return**********

Mandatory Module Return Procedure and Forms
A.2 Return Forms

A.3 Customer Administrative Services (CAS) District Offices

Name, Location	Phone Number
Allegheny District, Pittsburgh, PA	(412) 244–7410
Carolinas District, Columbia, SC	(803) 798–6477
Chicago District, Chicago, IL	(312) 806–2478
Connecticut District, Meriden, CT	(203) 634–5325
CSS District, Nashua, NH	(603) 884–6549
DECdirect District, Nashua, NH	(603) 884–9115
Florida District, Tampa, FL	(813) 882–6822
Greater Boston District, Waltham, MA	(617) 895–5455
Great Lakes District, Detroit, MI	(313) 344–2285
Los Angeles District, Culver City, CA	(213) 417–4232
Midsouth District, Memphis, TN	(901) 761–6712
New England District, Bedford, MA	(603) 472–6061
New Jersey Commercial District, Piscataway, NJ	(201) 562–4728
New Jersey Financial District, New York, NY	(212) 714–2648
New York Financial District, New York, NY	(212) 714–2648
New York Suburban District, Tarrytown, NY	(914) 524–5284
North Central District, Minneapolis, MN	(612) 851–2225
North Texas/Oklahoma District, Dallas, TX	(214) 404–6135
Northwest District, Bellevue, WA	(206) 462–2540
Ohio Valley District, Cincinnati, OH	(513) 984–7739
Philadelphia District, Blue Bell, PA	(215) 834–4115
Rocky Mountain District, Englewood, CO	(303) 649–3073
Santa Clara District, Santa Clara, CA	(408) 496–4274
Southeast District, Atlanta, GA	(404) 257–2282
Southern California District, Costa Mesa, CA	(714) 850–7606
South Texas District, Houston, TX	(713) 953–3918
Southwest District, Tempe, AZ	(602) 894–4747

Mandatory Module Return Procedure and Forms
A.3 Customer Administrative Services (CAS) District Offices

Name, Location	Phone Number
Upstate New York District, Rochester, NY	(716) 385–7152
U.S. Distribution/Sales District, Marlboro, MA	(508) 480–4259
Virginia District, Landover, MD	(301) 306–2566
Washington DC District, Landover, MD	(301) 459–2890
Washington DC District, FDA Landover, MD	(301) 459–2292

Reader's Comments

VAX 4000
BA42B-Based Easy System
Expansion Upgrade Manual
EK–VXHWS–OM. B01

Your comments and suggestions help us improve the quality of our publications.

Please rate the manual in the following categories:	Excellent	Good	Fair	Poor
Accuracy (product works as described)	☐	☐	☐	☐
Completeness (enough information)	☐	☐	☐	☐
Clarity (easy to understand)	☐	☐	☐	☐
Organization (structure of subject matter)	☐	☐	☐	☐
Figures (useful)	☐	☐	☐	☐
Examples (useful)	☐	☐	☐	☐
Table of contents (ability to find topic)	☐	☐	☐	☐
Index (ability to find topic)	☐	☐	☐	☐
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Additional comments or suggestions: _____

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I found the following errors in this manual:

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