Installation Manual

Network Computing Devices, Inc.

XP Series

SIMM Expansion Memory Field Kit

September 1999

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Manual Revision Status

Product: Expansion Memory Field Kit

Rev Date	Description
May 1992	Original Issue. Provided instructions for installing Expansion Memory in the XP10 Series.
July 1993	Added installation instructions for the XP10T, XP330, and XP350 Series. Manual part number rolls to 070-8577-01.
October 1993	Expanded instructions to include XP100 Series. Manual part number rolls to 070-8577-02.
September 1994	Expanded instructions to include XP200 Series. Manual part number rolls to 070-8577-03.
February 1995	Expanded instructions to include XP400 Series. Manual part number rolls to 070-8577-04.
May 1995	Updated Memory Compatibility Chart. Manual part number rolls to 070-8577-05.
June 1995	Added System Performance Test for XP400. Manual part number rolls to 070-8577-06.
June 1996	Updated Memory Compatibility Chart. Corrected the piece of art used for XP200 instructions. Manual part number rolls to 070-8577-07.
September 1999	Modified to reflect current contents of the Expansion Memory Field Kit, updated the Netstation Memory Compatibility Chart, and redone as an NCD manual.

Safety Summary

Terms In This Document

CAUTION statements identify conditions or practices that can result in damage to the equipment or other property.

WARNING statements identify conditions or practices that can result in personal injury or loss of life.

Symbols on Equipment

 Protective ground (earth) terminal

Do Not Work Alone

Do not work inside this product unless another person capable of rendering first aid and resuscitation is present.

Work Only With Power Off

Dangerous voltages may exist at several points in this product. To avoid personal injury, disconnect power before installing or replacing components inside the product.

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Introduction

These instructions explain how to install expansion memory in Tektronix Netstations. Note that Network Computing Devices, Inc. (NCD) purchased the Tektronix netstation business on January 1, 1999. NCD now offers service and support for these former Tektronix products.

Expansion memory modules plug into one or more connectors on the Netstation's Main Logic board to increase the size of system memory.

These instructions are divided into five sets of procedures, one for each of the cabinet styles currently used for the logic module. Within the procedures, further division occurs based on the Netstation model. Before you begin, determine your Netstation's cabinet style to choose the appropriate procedure set, and determine the model number to select the parts of the procedure that apply to your Netstation.

Determine your Netstation cabinet style by matching it to one of the five cabinet styles shown in Figure 1.

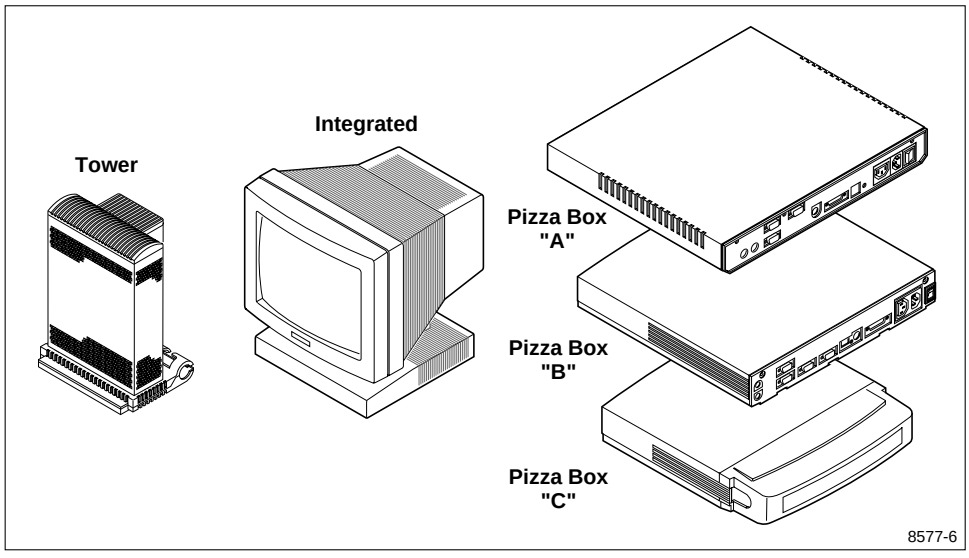


Figure 1. TekXpress Logic Module Cabinets

Pizza Box “B” can be distinguished by its curved front with a Tektronix logo on the front. Pizza Box “A” has a flat front and no logo. Pizza Box “C” has a power switch and power indicator on the front and a cable cover on the back.

Determine your Netstation model by checking the serial number tag. You can also look at the main menu in Setup or the boot monitor banner.

When you finish installing the memory module, you’ll need to verify that it works correctly in the Netstation. At the end of this document there are instructions for running the verification tests and a troubleshooting guide to help identify and correct system malfunctions should a problem occur.

Kit Contents

The optional Expansion Memory kit includes the following:

- One Expansion Memory board
- These installation instructions

Depending on which Expansion Memory kit you ordered, the board has 4, 16, or 32 megabytes of random access memory (RAM). However, some of the boards are not compatible with all of the Netstations. The following chart shows which boards are compatible with each Netstation series.

Table 1. Netstation Memory Compatibility Chart

	XPF024 4 MB	XPF028 16 MB	XPF029 32 MB
XP10 Series[a]	Yes	No	No
XP10T Series[b]	Yes	No	No
XP100 Series	Yes	Yes	Yes
XP200 Series	Yes	Yes	Yes
XP330 Series[c]	Yes	Yes	No
XP350 Series[d]	Yes	Yes	Yes
XP400 Series[e]	Yes	Yes	Yes

a. One slot available for Expansion Memory. 12 MB system memory addressability limit.
b. One slot available for Expansion Memory. 16 MB system memory addressability limit.
c. Three slots available. Allowable sizes can be mixed.
d. Four slots available. Memory boards must be installed in pairs in alternate slots.
e. Four slots available. Memory boards must be installed in pairs in alternate slots, and must be 60 ns boards.

The XP330 can accept up to 32 MB of Expansion memory. The XP350 can accept up to 64 MB. The XP400 can accept up to 128 MB. The XP10 and XP10T can accept up to 8 MB of Expansion Memory for a maximum total of 12 MB of system memory.

Tools Required

Installation of Expansion Memory requires these tools:

- Anti-static wrist strap
- Anti-static conductive pad
- Screwdriver, POZIDRIV, #1 tip (for integrated cabinet) or #2 tip (for all modular cabinets except the XP200)

Electrostatic Precautions

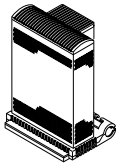
This product contains components that are highly sensitive to electrostatic discharge. To protect these components from damage and to maintain product reliability, take the following precautions when handling the circuit boards:

- Handle all circuit boards in a static-protected area capable of controlling static charge on conductive materials, people, and non-conductive materials. Static-protected areas include non-static table tops and non-static floor mats.
- Use an anti-static wrist strap and conductive pad when working with circuit boards.
- Handle the circuit boards only by the edges. Avoid touching the printed wires on the back of the circuit board as much as possible.
- Leave the board in its static-shielded bag until you are ready to install the board.

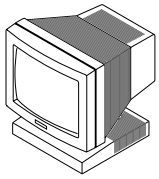
Before You Begin

>>> ***CAUTION: Do not remove the Expansion Memory board from its static-shielded bag until you are ready to install it. The bag protects the board from static discharge and electrostatic fields.***

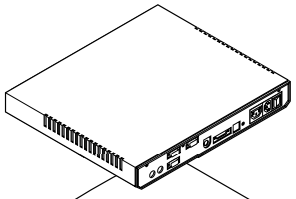
1. Turn off the power and unplug the power cord. This is important to avoid inadvertently damaging the Expansion Memory.
2. Disconnect as many of the other cables as necessary to easily reach the retaining screws on the rear panel.
3. Turn to the procedure for your cabinet type:



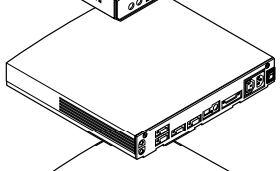
Tower — turn to page 6



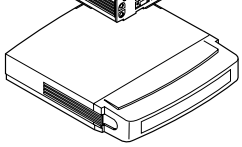
Integrated Cabinet — turn to page 11



Pizza Box “A” — turn to page 15



Pizza Box “B” — turn to page 19



Pizza Box “C” — turn to page 25

Installation in the Tower Cabinet

Perform the following steps to install the Expansion Memory in the Tower cabinet, which is used for the XP330 Series Netstations.

NOTE: ***4 and 16 MB Expansion Memory boards can be mixed in any combination, and any board can be installed in any slot.***

1. Remove the logic module cover. First remove the two screws that fasten the cover to the chassis (see Figure 2), then grasp the cover by its sides and carefully lift it straight up. Be careful not to drag the cover across the circuit boards.

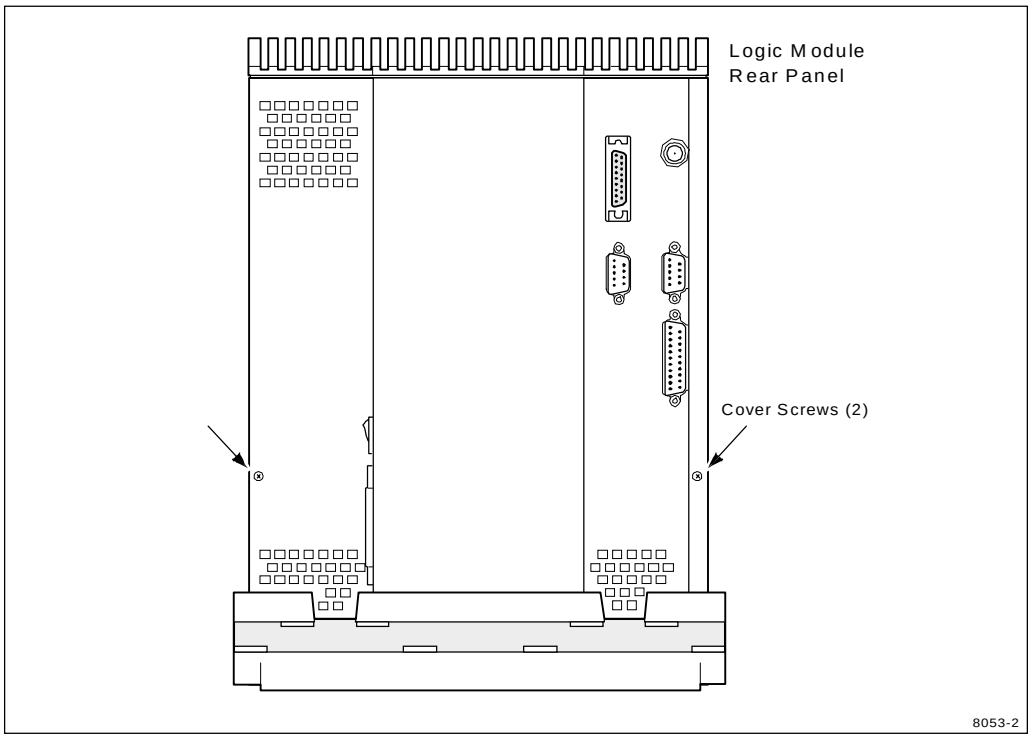


Figure 2. Removing the Tower Logic Module Cover

2. Put on an anti-static strap following the instructions that come with it. Attach the adhesive end to the side of the metal chassis (see Figure 3). Spread an anti-static pad on your work surface.
3. Unplug the Main Logic board. Gently rock the board up and down while pulling on it as shown by the arrows in Figure 3.

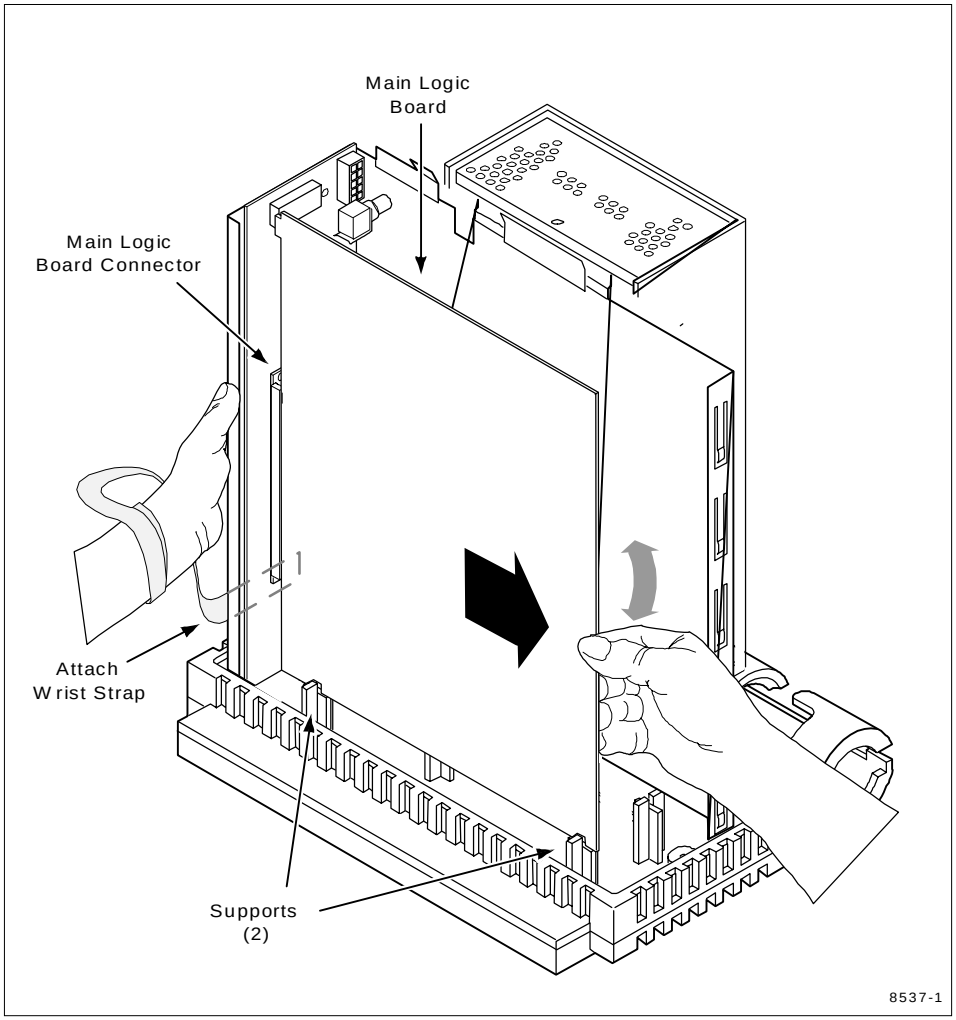


Figure 3. Removing the Main Logic Board from the Tower Cabinet

4. Remove any currently installed Expansion Memory boards (as shown in Figure 4) that may interfere with the installation of the new board.

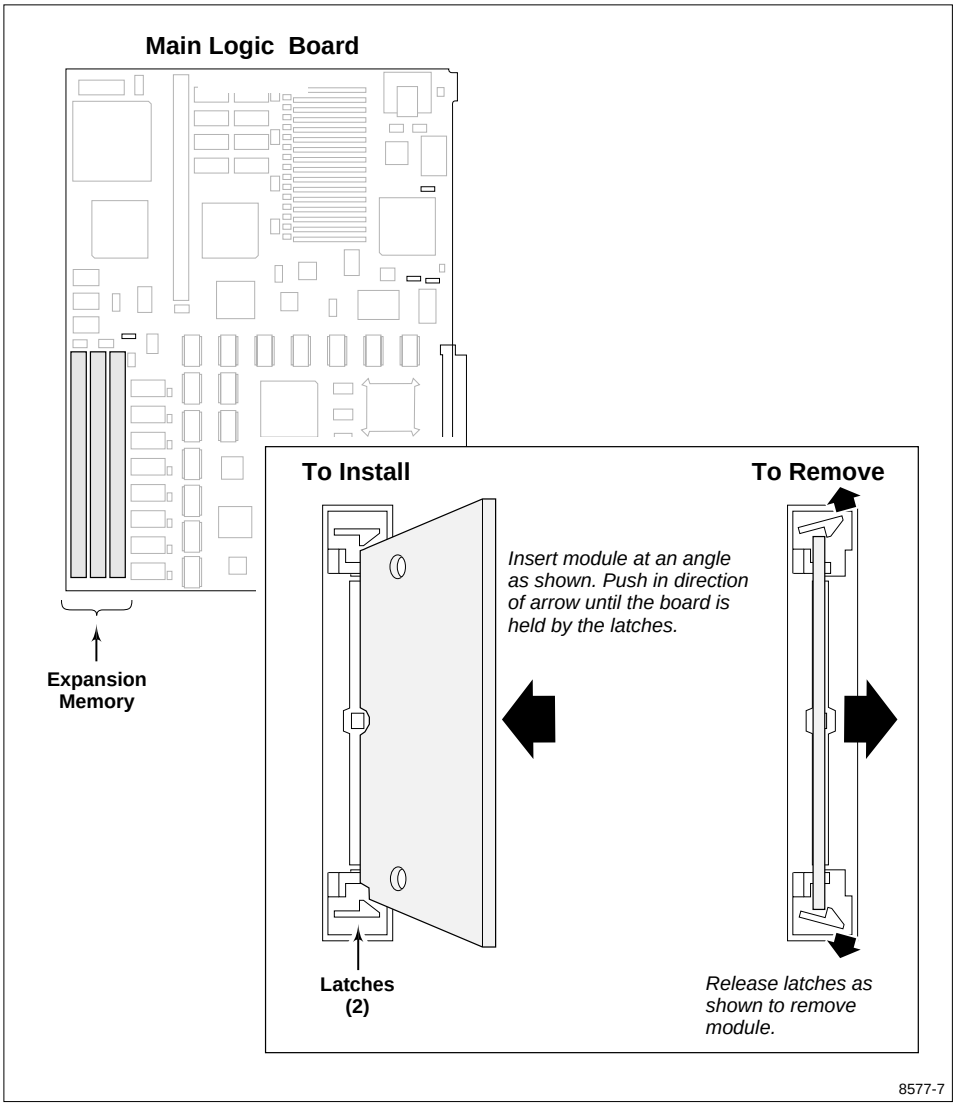


Figure 4. Installing and Removing the Expansion Memory

5. Install the new Expansion Memory board (again, see Figure 4), then re-install (if necessary) any Expansion Memory boards previously removed.
6. Re-install the Main Logic board as shown in Figure 5. Rest the bottom edge of the Main Logic board on the supports and slide it in the direction of the arrow. Make sure the connector is correctly aligned, then push firmly to seat the board completely in the connector.
7. Detach the anti-static strap from the logic module chassis.
8. Slide the logic module cover in place and install the screws.
9. Plug in all the cables you unplugged at the beginning. Plug in the power cable last.
10. Verify the installation using the procedures that begin on page 29.

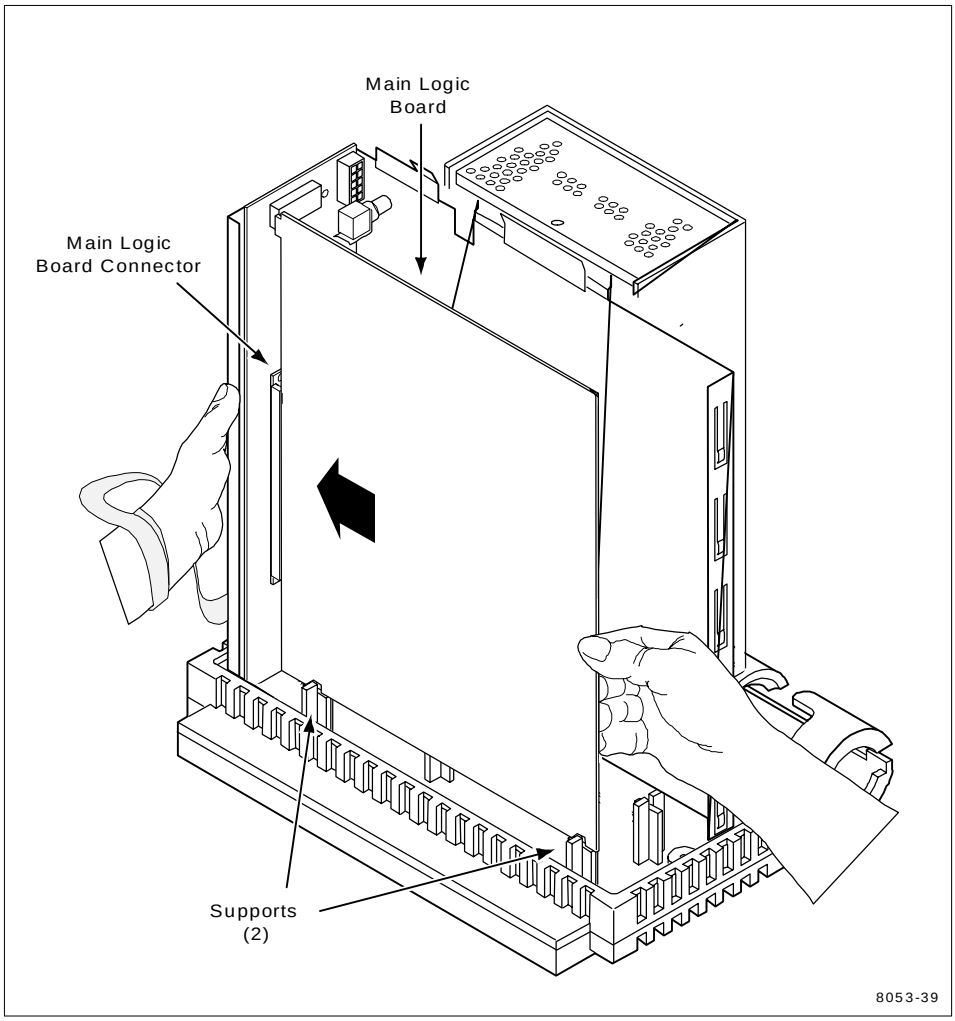


Figure 5. Installing the Main Logic Board in the Tower Cabinet

Installation in the Integrated Cabinet

The integrated cabinet is used for some models of the XP10 (Ethernet), XP10T (Token-Ring), and XP100 Series Netstations.

1. Spread the anti-static pad on your work surface.
2. Put on an anti-static wrist strap.
3. Remove the two retaining screws from the Netstation rear panel (see Figure 6).
4. Carefully withdraw the logic board assembly so that the power and video cables are accessible.

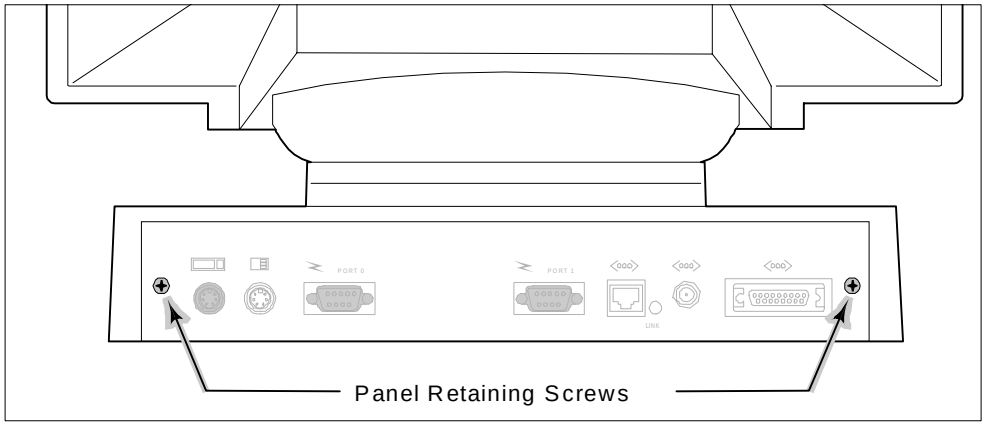


Figure 6. Integrated Cabinet Rear Panel Retaining Screws

5. Release the power and video cables from the cable retainers (shown for the XP10 logic board assembly in Figure 7 — the XP10T and XP100 logic board assemblies are similar) and unplug the cables from the Main Logic board (squeeze the retaining-latch tab, then pull the connector off the pins).
6. Remove the logic board assembly completely from the chassis, and lay the assembly component-side up on the anti-static, conductive pad.
7. Locate the expansion memory socket (shown for the XP10 logic board in Figure 7 — similarly located on the XP10T and XP100 Main Logic boards) and install the new memory board as shown in Figure 8 (if a memory board is currently installed in the socket, remove it first).

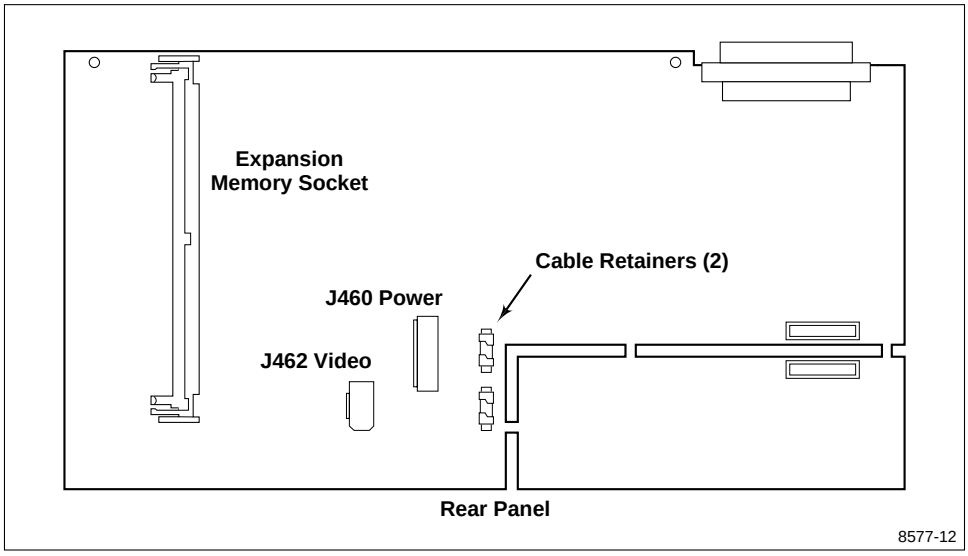


Figure 7. Connector and Cable Retainer Locations

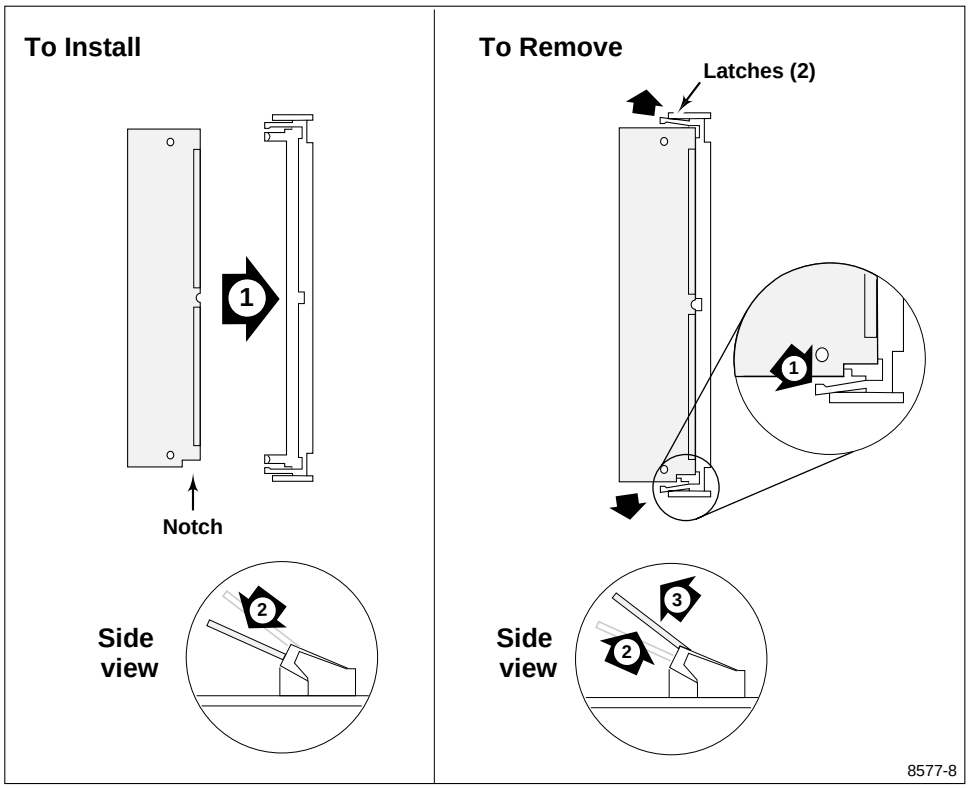


Figure 8. Installing or Removing the Memory Board

8. Install the memory size jumper as shown in Figure 9 for the XP10 Main Logic board, or in Figure 10 for the XP10T Main Logic board. There is no jumper to install on the XP100 Main Logic board.
9. Insert the logic board assembly into the chassis so that the board ends fit into the board guides.
10. Connect the power and video cables to their respective connectors, and lay the cables in the cable retainers.
11. Hold the power and video cables down so that they clear the chassis, and slide in the logic board assembly. The rear panel must fit flush with the chassis.
12. Install the rear-panel retaining screws.

13. Connect the LAN (Ethernet or Token-Ring), keyboard, and mouse cables.
14. Connect the ac power cord to the monitor power connector.
15. Verify the installation using the verification procedures that begin on page 29.

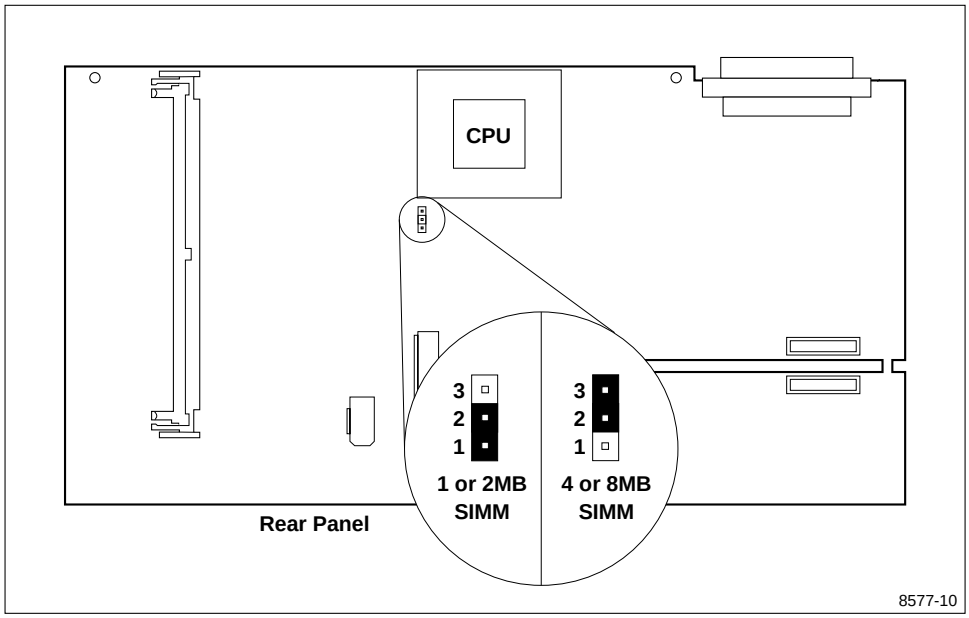


Figure 9. Memory Size Jumper Setting on the XP10 Main Logic Board

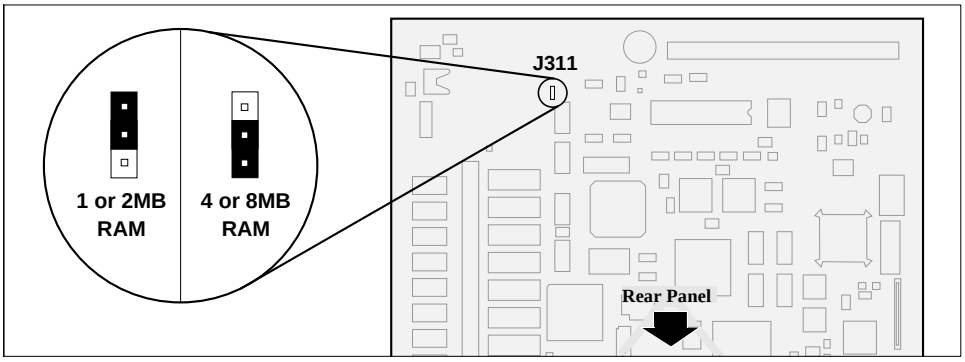


Figure 10. Memory Size Jumper Settings on the XP10T Main Logic Board

Installation in the Pizza Box “A” Cabinet

The Pizza Box “A” cabinet houses some of the XP10 (Ethernet) Series Netstations. Perform the following steps to install expansion memory.

1. Remove the logic module cover as shown in Figure 11. Remove the three cover screws on the rear of the logic module; lift the cover slightly at the rear and slide it in the direction of the large arrow, then lift up.

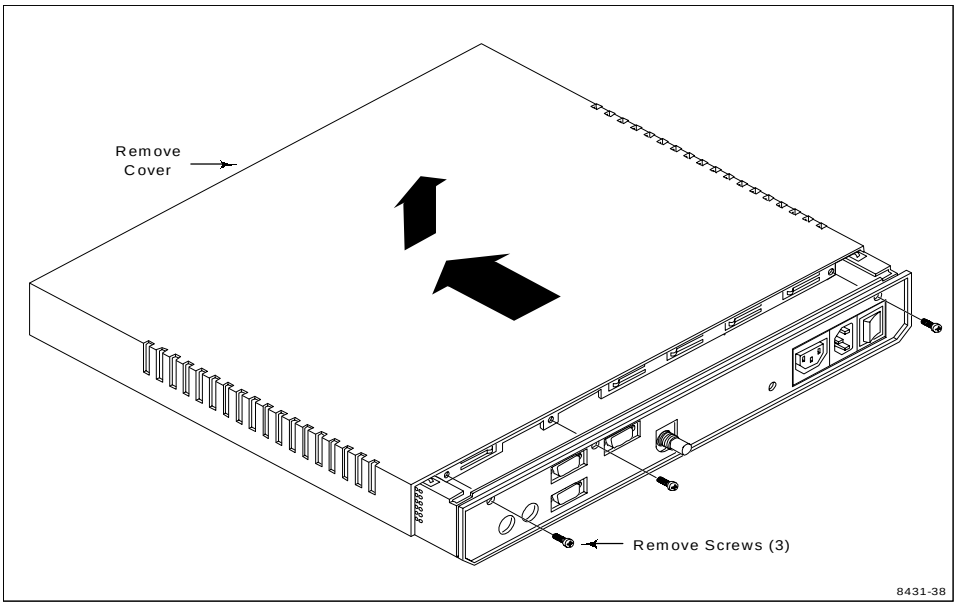


Figure 11. Removing the Pizza Box “A” Logic Module Cover

2. Put on an anti-static wrist strap.
3. Locate the expansion memory socket (see Figure 12) and install the new memory board as shown in Figure 13 (if a memory board is currently installed in the socket, remove it first).

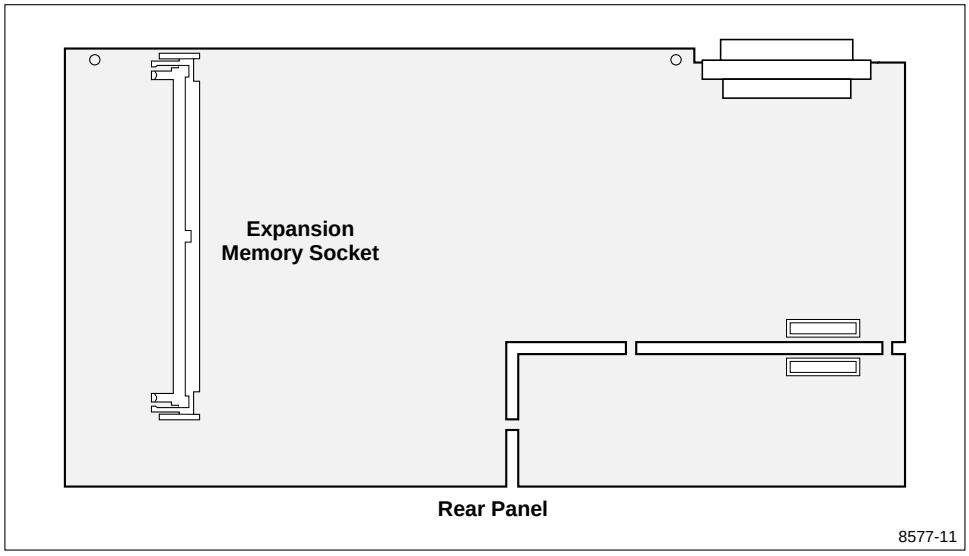


Figure 12. Memory Socket Location

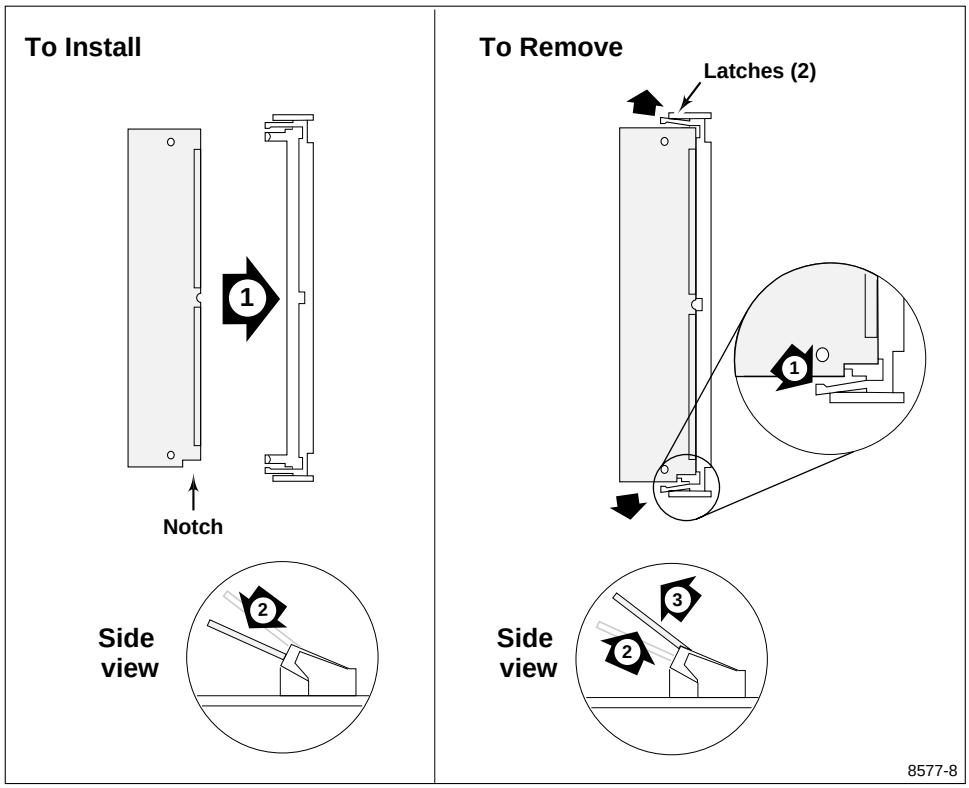


Figure 13. Installing or Removing the Memory Board

4. Install the memory size jumper as shown in Figure 14.
5. Replace the cover on the chassis, and install the cover-retaining screws.
6. Attach the serial number tag to the bottom of the cabinet.
7. Connect all cables to the rear panel that were disconnected at the beginning of the procedure. Connect the ac power cord last.
8. Verify the installation using the verification procedures on page 29.

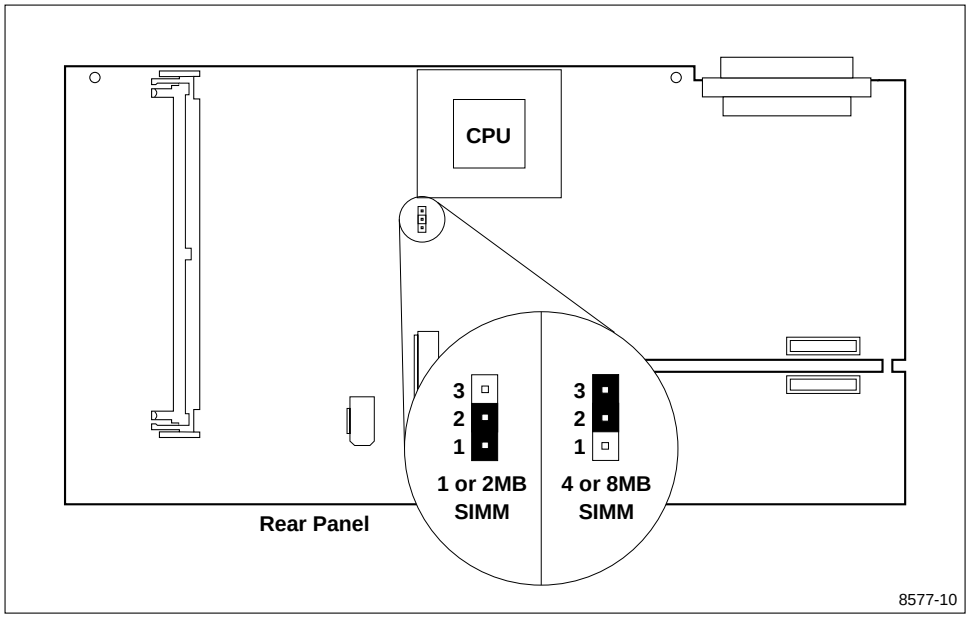


Figure 14. Memory Size Jumper Setting

Installation in the Pizza Box "B" Cabinet

The Pizza Box "B" cabinet is used for some of the XP10T (Token-Ring) and XP100 Series Netstations, and all of the XP350 and XP400 Series.

1. Remove the cover-retaining screws on the rear of the logic module and remove the cover.
2. Put on an anti-static wrist strap.

To install expansion memory in an XP10T or XP100, see the next topic; for an XP350 or XP400, skip to page 22.

Installing Expansion Memory in an XP10T or XP100

1. Locate the expansion memory socket (shown in Figure 15) and install the new memory board as shown in Figure 16 (if a memory board is currently installed in the socket, remove it first). The numbered arrows in the figure show the sequence of operations.
2. Install the memory size jumper on the XP10T Main Logic board as shown in Figure 17. There is no jumper to install on the XP100 Main Logic board.
3. Connect all cables to the rear panel that were disconnected at the beginning of the procedure. Connect the ac power cord last.

4. Verify the installation using the verification procedures on page 29.

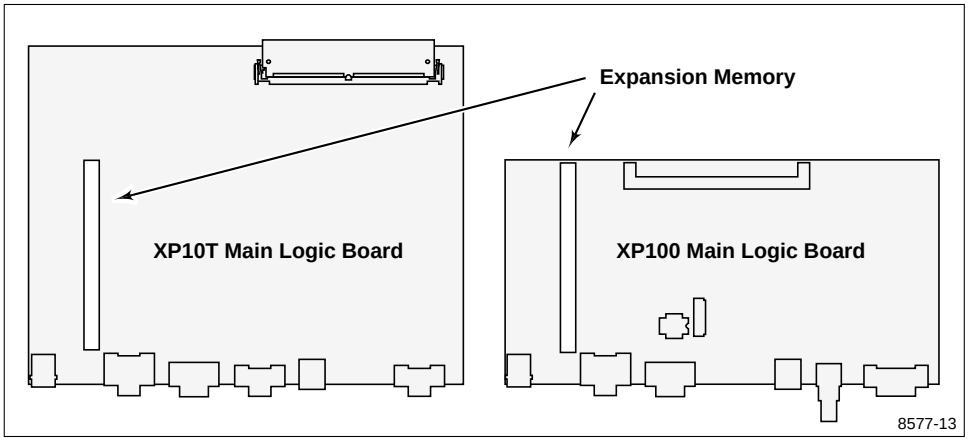


Figure 15. XP10T and XP100 Expansion Memory Socket Location

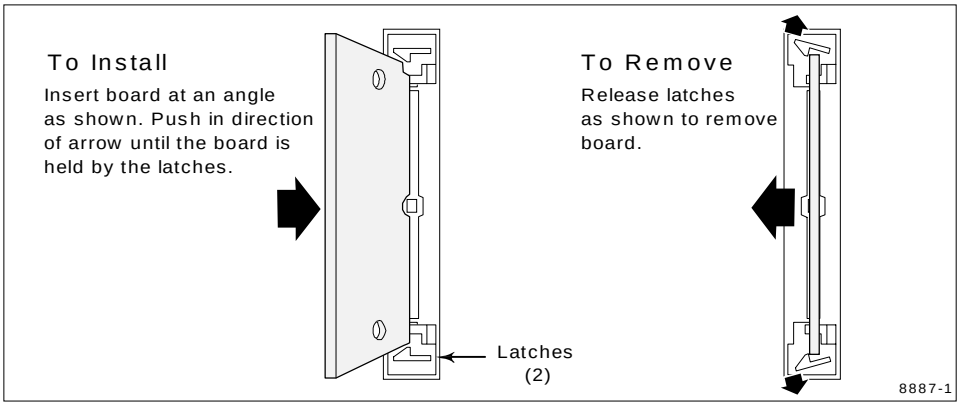


Figure 16. Installing and Removing XP10T or XP100 Expansion Memory

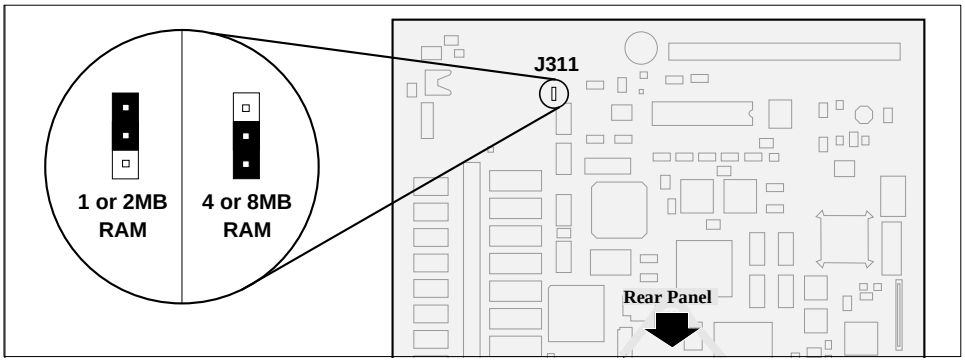


Figure 17. Memory Size Jumper Locations on the XP10T Main Logic Board

Installing Expansion Memory in an XP350 or XP400

Expansion Memory must be installed in the XP350 and XP400 Series in board pairs. On the XP350 the boards must be installed in alternate slots, not adjacent slots. On the XP400, the boards must be installed in one of the socket pairs shown in the XP400 socket location drawing. When two pairs of Expansion Memory boards are to be installed, the pairs can be of different sizes, but both boards in the pair must be the same size. For example, a pair of 4 MB boards can be installed in the first and third slots, and a pair of 8 MB boards can be installed in second and fourth slots.

NOTE: ***If two of the slots are already filled, temporarily remove the installed boards as necessary to allow access to the empty slots.***

1. Locate the Expansion Memory sockets (refer to Figure 19 or to Figure 20), then plug the pair of Expansion Memory boards into two of the four sockets. Latch each board in place as shown in Figure 18. Remember that the boards must be installed in alternate (non-adjacent) sockets.
2. Replace the cover on the logic module, and install the cover-retaining screws.
3. Connect all cables to the rear panel that were disconnected at the beginning of the procedure. Connect the ac power cord last.
4. Verify the installation using the procedures on page 37.

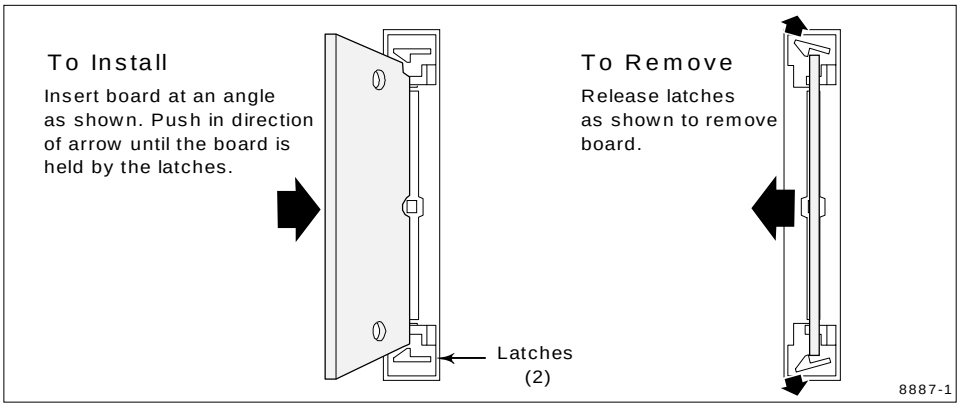


Figure 18. Installing and Removing Expansion Memory

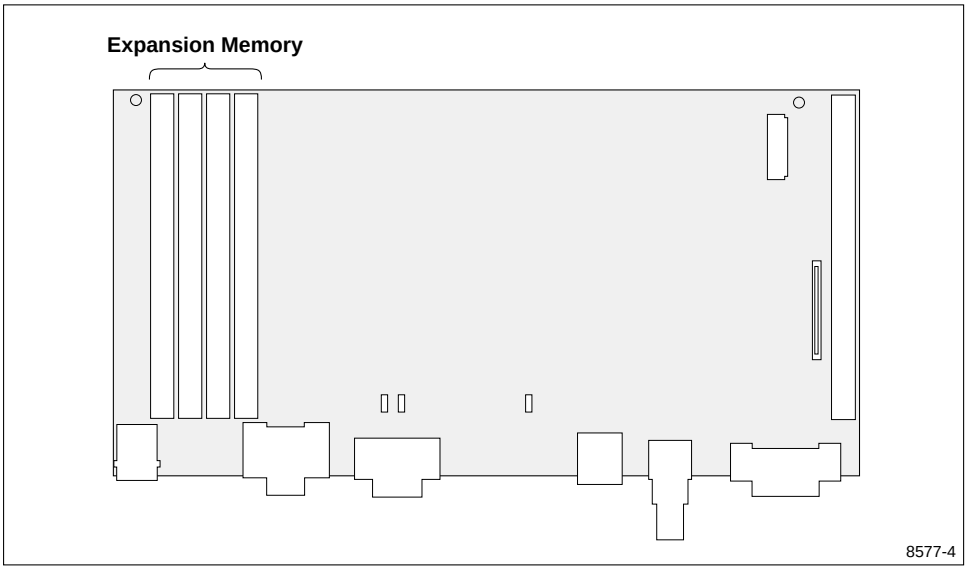


Figure 19. XP350 Expansion Memory Socket Location

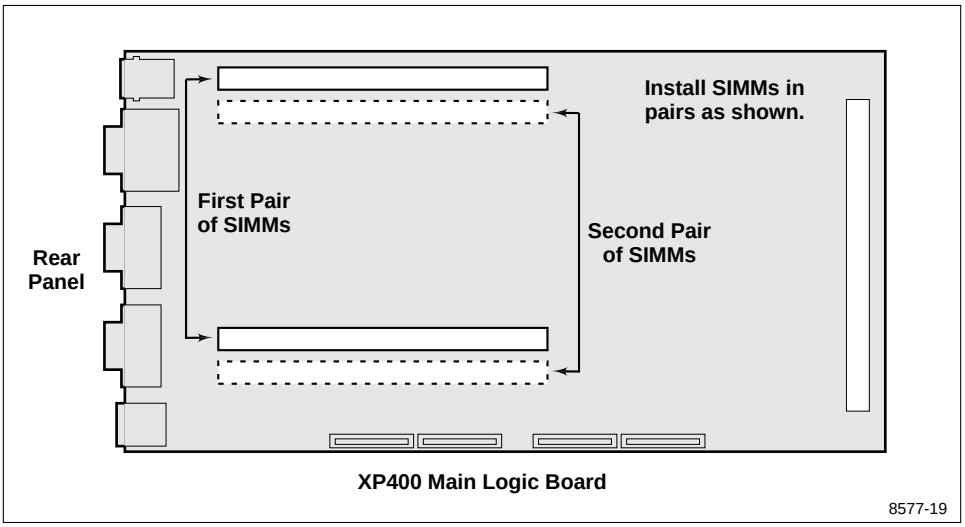


Figure 20. XP400 Expansion Memory Socket Location

Installation in the Pizza Box “C” Cabinet

The Pizza Box “C” cabinet is used for the XP200 Series Netstations.

1. If you have not already removed the cable cover, remove it now. Press in on the tab on each side of the cover as shown in part A of Figure 21. Holding the tabs in, pull the cable cover from the chassis in the direction of the large arrow (see part B).

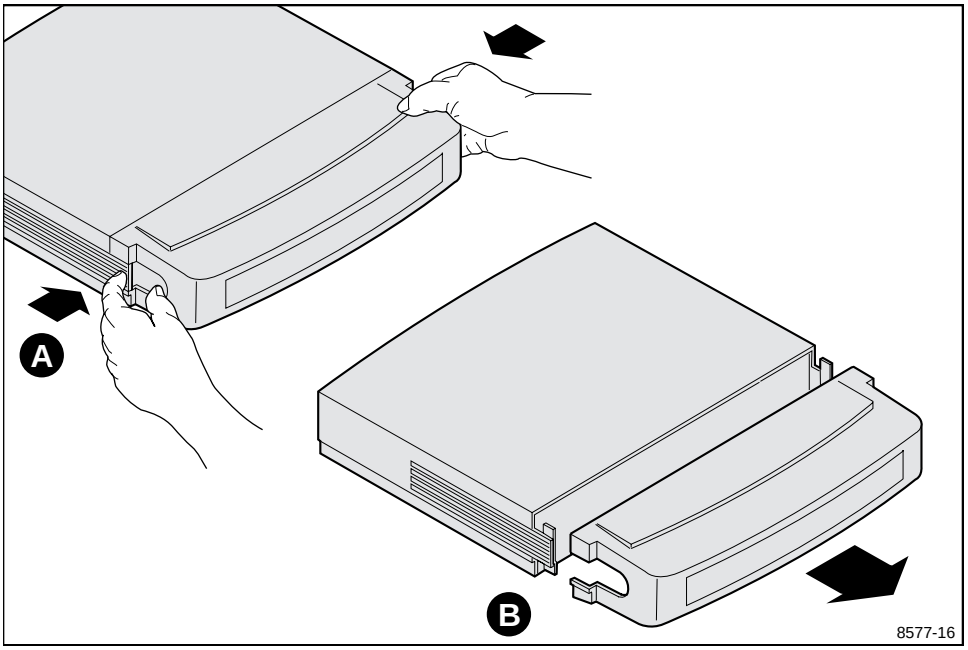


Figure 21. Removing the Cable Cover

2. Remove the logic module cover. (No screw removal is required.) Pull out on the tab on each side of the cover as shown in part A of Figure 22, and lift the back part of the cover up in the direction of the large arrow (part B).

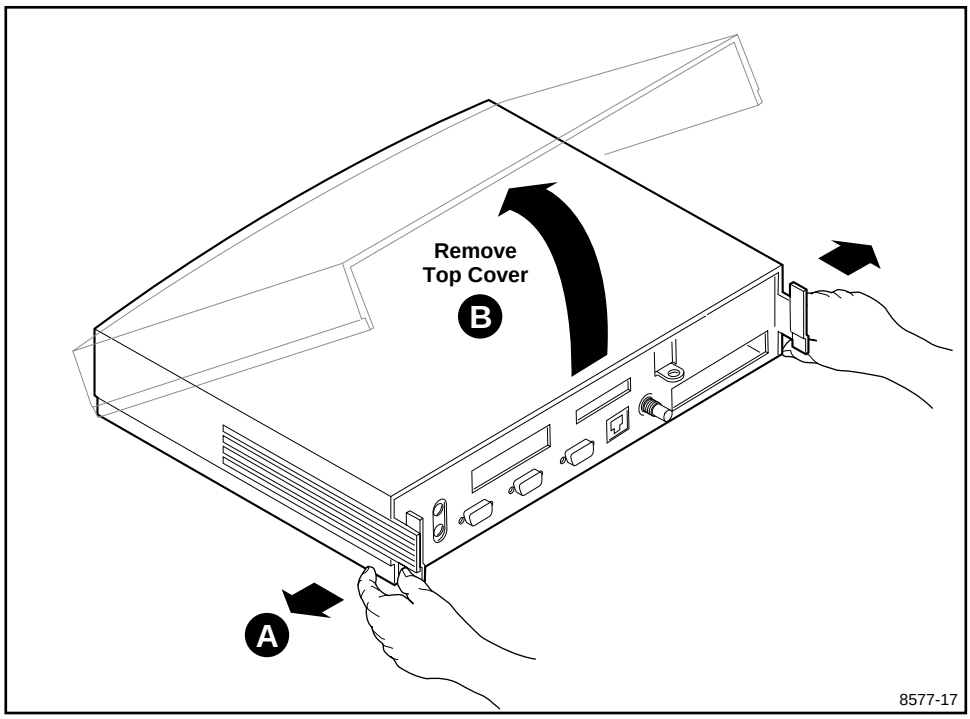


Figure 22. Removing the Pizza Box "C" Logic Module Cover

3. Put on an anti-static wrist strap.
4. Locate the expansion memory socket (see Figure 23).

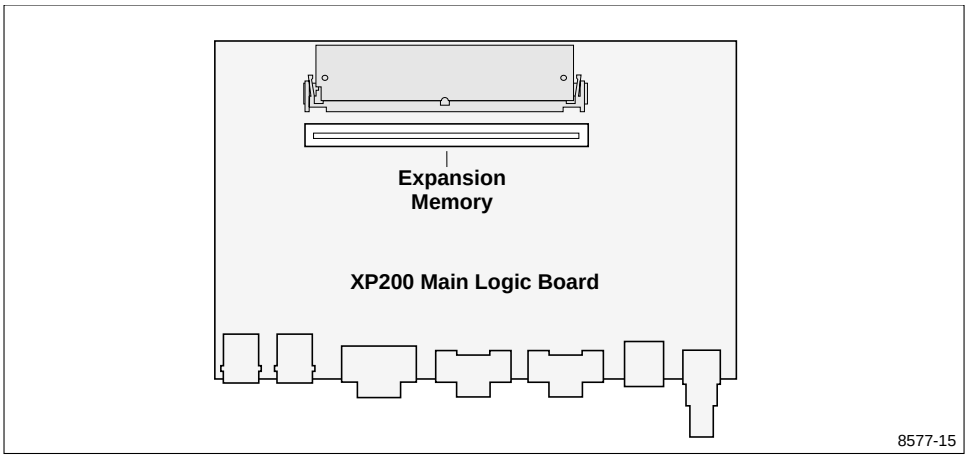


Figure 23. XP200 Expansion Memory Socket Location

5. Plug the new memory board into its socket and latch in place (refer to Figure 24. (If a memory board is currently installed in the socket, remove it first.

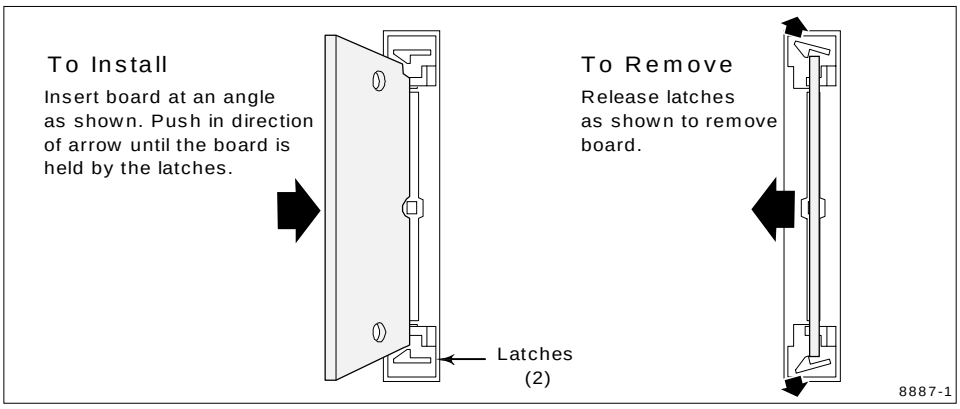


Figure 24. Installing or Removing the Memory Board

6. Replace the logic module cover on the chassis.
7. Attach the serial number tag to the bottom of the cabinet.
8. Reconnect all cables removed earlier.
9. Replace the cable cover, routing the cables out the slots in the cover sides.
10. Verify the installation using the verification procedures on page 37.

XP10/XP10T/XP330 Verification Testing

After installing Expansion Memory, verify that the Netstation is operating correctly with the following procedure:

1. Turn the power switch on and watch for the Boot Monitor screen to appear.
2. Press any keyboard key before the Netstation completes the boot process.

Pressing any key during Kernel Self-Test tells the Netstation not to perform an auto-boot, and transfers control to the boot monitor. This message appears on the display:

```
Boot process terminated due to key press...
File transfer failed[1]
Type HELP for a list of commands
BOOT> _
```

(If a different message appears on the Netstation display or if nothing appears and you hear two or three beeps, note the condition of the LED indicators and see *Troubleshooting*, which follows this procedure.)

3. Type *report* at the *BOOT>* prompt and note the figure reported for the opt mem: item. The figure should indicate in kilobytes the amount of Expansion Memory you installed. If anything else appears, see *Troubleshooting*, which follows this procedure.

   NOTE: ***When a 16 MB Expansion Memory board is installed in the XP10T, the*** *report* ***command reports 8192 kB for both*** opt mem ***and*** std mem. ***The total memory appears in the Boot Monitor banner.***

4. Type *Selftest* at the *BOOT>* prompt. The Extended Self-Test Main Menu, shown in Figure 25, appears.
5. Enter *O* to display the Options Verification Menu.

1. This message does not appear on the Token-Ring Netstations.

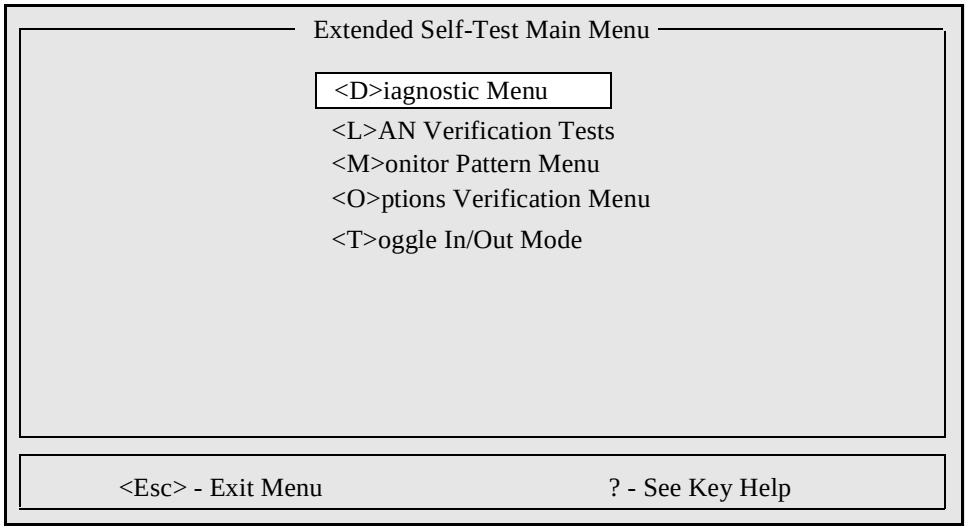


Figure 25. Extended Self-Test Main Menu

The Options Verification Menu, shown in Figure 26, offers tests for installed memory and ROM options. These tests require no user intervention.

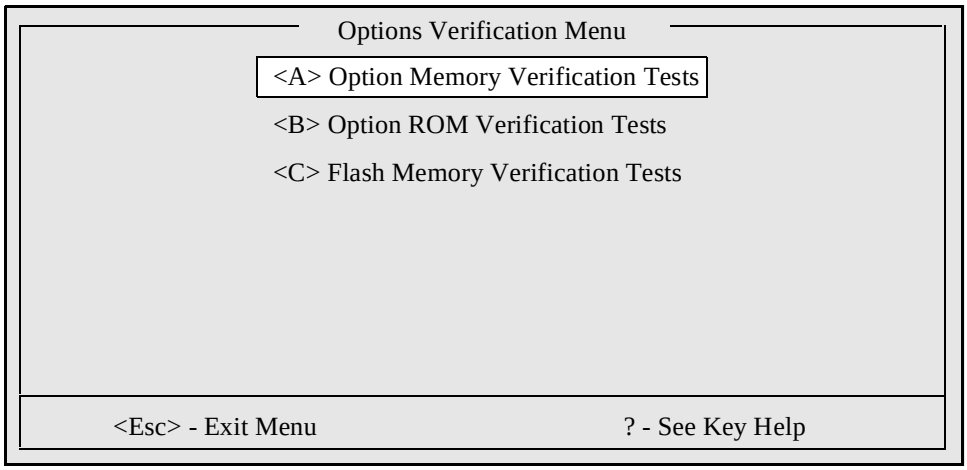


Figure 26. Options Verification Menu

To start the Expansion Memory verification, type *A* for Option Memory Verification Test. The test runs and results are displayed on the screen. Figure 27 shows the screen display after a successful Option Memory Verification test.

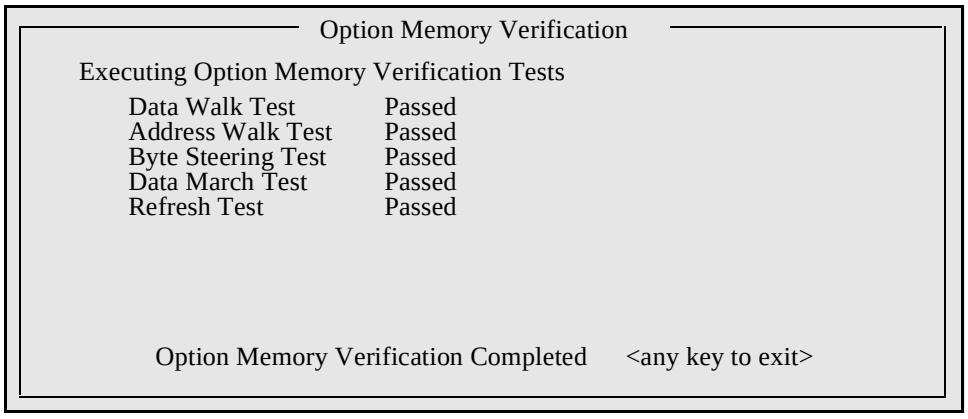


Figure 27. Screen Display After Successful Expansion Memory Verification Test

If any of the verification tests fail, see *XP10/XP10T/XP330 Troubleshooting* on the following page.

After verifying options, pressing any key returns the External Self-Test Main Menu to the screen. Then press Esc to return to the Boot Monitor.

This completes the options verification tests.

XP10/XP10T/XP330 Troubleshooting

If the Netstation does not work when the installation is complete, use the troubleshooting guide in Table 2. It can help you identify the problem and determine whether you can correct it or if you need to call your NCD representative for assistance. The remainder of the information in this section provides the more advanced troubleshooter with additional tools for isolating the fault.

Table 2. Troubleshooting Guide

If . . .	Then . . .
The Netstation does not start up; nothing appears on the monitor screen, all keyboard LED indicators are lit.	1. Turn off the power and check that the Expansion Memory is installed properly in its connector. 2. Re-assemble, re-connect, and try to start again. If this doesn't work, contact your NCD representative.
The Netstation does not start up; nothing appears on the monitor screen, one or more keyboard LED indicators are flashing.	Notice the status of the keyboard LED indicators (are they all on, all off, some on, which ones?). Write it down and report it to your NCD representative. Use Table 4 to help interpret the fault code displayed on the LEDs.
The Netstation starts but rings the bell and displays the boot monitor screen. One or more fault messages appear on the screen.	1. Write down all the fault messages. Use Table 5 to help you interpret the fault messages and determine the faulty field-replaceable unit. 2. Check the position of the size jumper on the Main Logic board (see Figure 9, Figure 10, Figure 14, or Figure 17). 3. Start Extended Self-Test (described under *Installation in the Pizza Box "B" Cabinet* on page 19).
The Netstation does not start up with the new Expansion Memory installed, but works when the new Expansion Memory is removed.	Contact your NCD representative for a replacement Expansion Memory.

Table 2. Troubleshooting Guide (Continued)

If . . .	Then . . .
One or more tests fail during verification (indicated on the Option Memory Verification Display shown in Figure 27).	Write down the names of the tests that failed. Contact your NCD representative.
The Netstation starts normally but reports an incorrect amount of option memory.	Check that the Expansion Memory is correctly installed and the size jumper(s) properly set. If this doesn't work, contact your NCD representative.

Kernel Self-Test

Each Netstation includes the Kernel Self-Test program that verifies operation each time you turn the power on. Normally, Kernel Self-Test completes without detecting a hardware fault and the operating system loads (or "boots") from the remote host or ROM or Flash Memory. During this boot process, Kernel Self-Test reports boot status to the LED indicators. Table 3 lists the condition of these indicators as they chart the progress of Kernel Self-Test and the boot process.

Table 3. Boot Sequence LED Indicator Status Code Definitions[a]

Outer Left LED[b]	Inner Left LED	Inner Right LED	Outer Right LED	Meaning
l	l	l	l	Kernel Self-Test started
m	m	m	l	Boot process begun
m	m	m	m	Boot complete (or in boot monitor)

a. l is on, m is off.
b. VT200 and UNIX keyboards only.

Fault Indications

If Kernel Self-Test detects a hardware fault, the following occurs:

- The bell rings twice for non-fatal faults or three times for fatal faults.
- The LED indicators display a special fault code that identifies the faulty field-replaceable unit.
- The boot monitor displays a fault message and assumes control.

On a fatal fault, the LED indicators flash five times at roughly half-second intervals. On a non-fatal fault, the indicators blink three times with the fault code. After display of the fault code, Kernel Self-Test passes control to the boot monitor, which displays the fault message followed by the *BOOT>* prompt. The fault code is loaded again and continuously displayed on the LED indicators until the Return key is pressed.

Table 4 lists the fault codes that Kernel Self-Test displays on the LED indicators.

Table 4. LED Indicator Fault Code Definitions[a]

Outer Left LED[b]	Inner Left LED	Inner Right LED	Outer Right LED	Meaning
m	m	m	*f*	Control Processor section
m	m	*f*	*f*	Keyboard
m	*f*	m	m	Flash Memory or ROM option board
m	*f*	m	*f*	Expansion Memory
m	*f*	*f*	*f*	System

a. ⊗ is blinking, m is OFF.
b. VT200 and UNIX keyboards only.

If the test discovers a fault in Expansion Memory the bell rings twice; after a short time the boot monitor is displayed with a message such as:

```
TekXpress Boot Monitor - Version: X.XX
Kernel Self Test hardware fault detected -
module:cpo,subsystem:optram
BOOT>
```

The message indicates a fault with Expansion Memory. If the boot monitor returns this message, turn the power off, check your installation, and run the verification tests again. If the problem persists, turn the power off, remove the Expansion Memory, and attempt another boot using the *boot* command described earlier.

If your Netstation boots successfully without Expansion Memory, call your NCD representative for information about a replacement Expansion Memory.

In cases where the fault message describes a fault relating to a field-replaceable unit other than Expansion Memory, identify the faulty field-replaceable unit by interpreting the fault message using Table 5. Once you determine the faulty field-replaceable unit, report it to your NCD representative.

Table 5. Self-Test Fault Messages

Module	Subsystem	Description
cpo		Optional Memory
	optram	Optional Expansion Memory
cpu		Main Logic Board
	btrom	Boot ROM
	decodr	Address Decoder
	eeprom	EEPROM (nonvolatile memory)
	except	Processor exception
	intrup	Interrupt
	laninf	LAN interface
	ramdac	Digital-to-analog converter
	sysram	Standard RAM
	vidram	Video circuitry
rom		Optional ROM board
	optrom	Option ROM
kbd		Keyboard
	keybrd	Main operating module

XP100/XP200/XP350/XP400 Verification Testing

After installing the Expansion Memory, verify that the Netstation is operating correctly with the following procedure. If you installed the Expansion Memory in an XP400 Series Netstation, perform the System Performance Test (found on page 41) after running the Verification Test.

1. Turn the power switch on and watch for the Boot Monitor screen to appear.
2. Press any keyboard key before the Netstation completes the boot process.

Pressing any key before the boot process is complete stops the process and transfers control to the boot monitor. The following message appears on the display:

```
Type HELP for a list of commands
BOOT> _
```

3. Type **selftest** at the BOOT> prompt. The Self Test Menu, shown in Figure 28, appears.

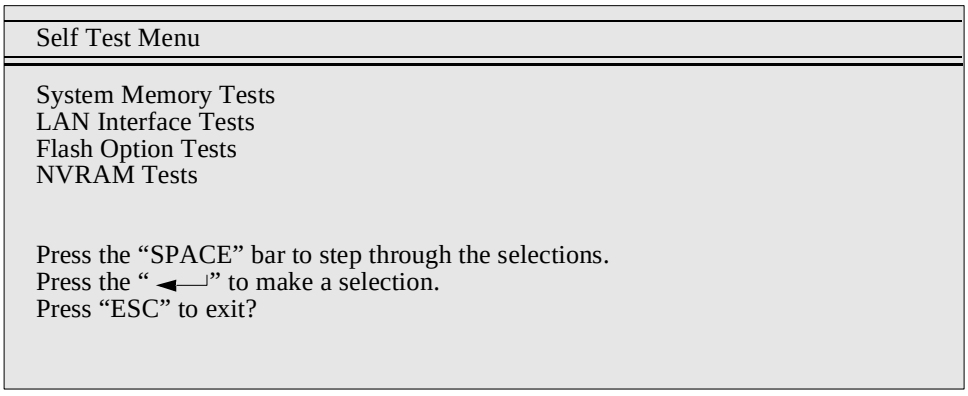


Figure 28. Self Test Menu

4. Following the instructions below the menu, select the System Memory Test and start the test by pressing " ↵ " (Enter or Return). When the test successfully completes, the messages on the screen appear as shown in Figure 29.

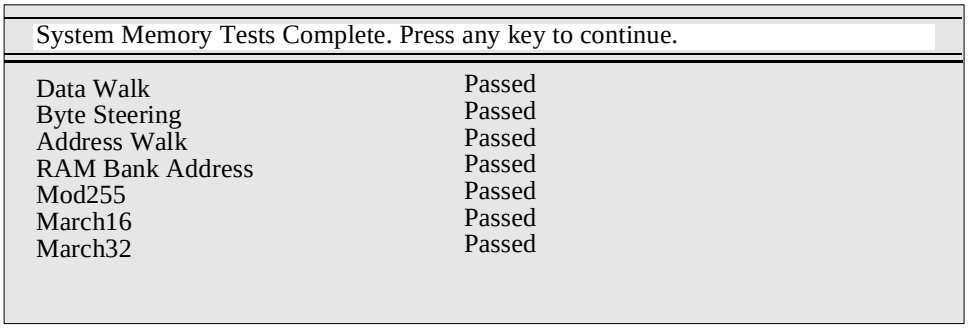


Figure 29. Display Messages After Successful System Memory Verification Test

XP100/XP200/XP350/XP400 Troubleshooting

If the Netstation does not work when the installation is complete, use the troubleshooting guide in Table 6. It can help you identify the problem and determine whether you can correct it or if you need to call your NCD representative for assistance.

Table 6. Troubleshooting Guide

If . . .	Then . . .
The Netstation does not start up; nothing appears on the monitor screen, all keyboard LED indicators are lit.	1. Turn off the power and check that the Expansion Memory is installed properly in its connector. 2. Re-assemble, re-connect, and try to start again. If this doesn't work, contact your NCD representative.
The Netstation does not start up; nothing appears on the monitor screen, one or more keyboard LED indicators are flashing.	Notice the status of the keyboard LED indicators (are they all on, all off, some on, which ones?). Write it down and report it to your NCD representative.
The Netstation starts up but rings the bell and displays the boot monitor screen. One or more fault messages appear on the screen.	1. Write down all the fault messages. 2. Start the System Memory test to determine if any of the new memory is defective.
The Netstation does not start up with the new Expansion Memory installed, but works when the new Expansion Memory is removed.	Contact your NCD representative for replacement Expansion Memory.
One or more tests fail during verification (indicated in the Memory Verification Display shown in Figure 29).	Write down the names of the tests that failed. Contact your NCD representative.

Table 6. Troubleshooting Guide (Continued)

If . . .	Then . . .
The Netstation starts normally but reports an incorrect amount of option memory.	In the XP100 and XP200, check that the memory board is correctly installed in the connector. In the XP350 and XP400, check that the memory boards are correctly installed in alternate slots. If all four slots are filled, be sure the boards in the alternate slots are the same size (both have the same storage capacity). If this doesn't work, contact your NCD representative.

XP400 System Performance Test

After you've installed Expansion Memory in your XP400, run the system performance test to insure that the Netstation performs at the fastest reliable speed.

Restart the Netstation either by turning the power off and then on, or by simultaneously pressing Ctrl+Alt+Del. Then enter the Boot Monitor by pressing any key before the boot load indicator reaches 100%.

1. At the BOOT> prompt, type

   `BOOT> bp /`*`bootpath`*`...../selftest.350`

   `BOOT> b`

   where *bootpath*. . . . . is the bootpath (bp) listed in the Boot Monitor banner, and the file name *selftest*.350 takes the place of *os*.350 in the path.

   NOTE: The .350 file name extension is correct for the XP400 Series .

   The Netstation downloads the self-test software and enters Extended Self-Test displaying the Extended Self-Test Main Menu shown in Figure 30.

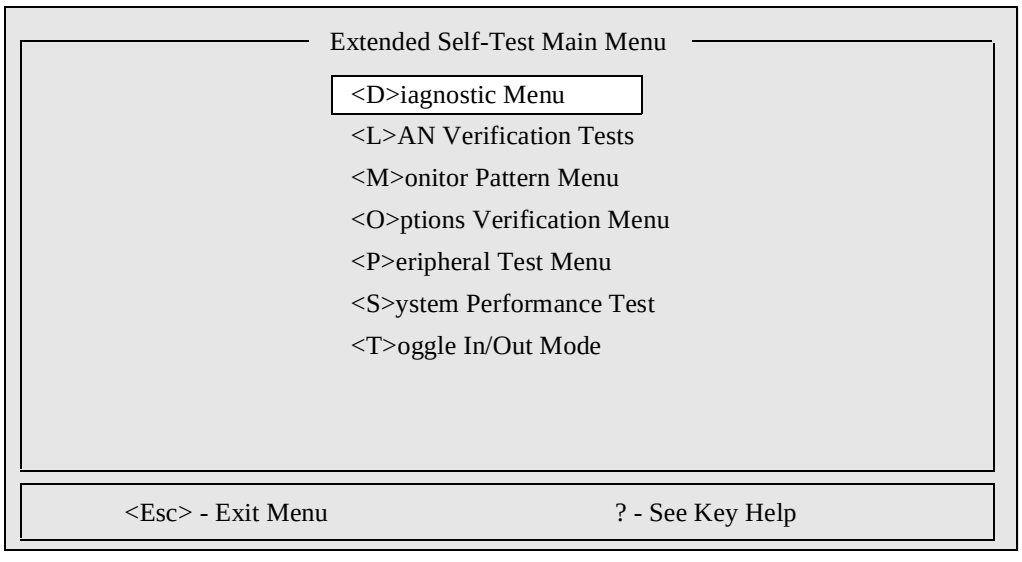


Figure 30. Extended Self-Test Main Menu

2. Type “s” to select the System Performance Test.

Selecting the System Performance test displays the text shown in Figure 31. This text explains the purpose of the test, and explains what to do if the screen becomes garbled or the Netstation “hangs”.

When you start the test, a message appears on the screen to let you know that the Netstation is waiting for ambient temperature stabilization. This lasts a minimum of ten seconds and could last as long as five minutes.

3. Exit Extended Self Test, which automatically resets the Netstation.
4. Enter the Boot Monitor by pressing any key before the boot load indicator reaches 100%.
5. Type “report” and note the “clock max:” value.

If the “clock max:” value is less than 40, remove the newly installed Expansion Memory and rerun the System Performance Test. If the “clock max:” value without the new memory is 40 or greater (typically it’s 44), then the new memory may be defective and you should contact your NCD representative.

NOTE: ***If, during the course of the test, the screen becomes garbled or the Netstation “hangs”, the Netstation has not failed the test; the test has just raised the CPU clock frequency higher than the system limits tolerate. Restore the Netstation to operation as explained in the text shown in Figure 31.***

System Performance Test

You have initiated the System Performance Test. The purpose of this test is to determine the performance limits of the system with respect to the CPU clock rate. The test evaluates the system performance by stepping through a range of CPU clock rates, performing a quick test at each. Before the quick test is run, NVRAM is written with the current rate minus a guardband of two, so that should the system "crash" during the test due to an excessive CPU clock speed, the NVRAM contains a record of the last "safe" operating frequency.

During this test, status messages appear on the screen as the NVRAM is being updated on each pass. As mentioned above, it is possible that the system may "crash" during the testing. If this happens, the screen of the unit may become garbled, or the system may simply "hang". At this point, cycle the power on the unit and press the space bar on the keyboard as the unit is coming up to prevent the unit from autobooting. To observe the results of the test, enter the REPORT command at the "BOOT>" prompt and check the value of "clock max:", located at the end of the report. This value represents in MHz the upper limit of the CPU clock for the system. Should this value be less than 40, call your NCD representative.

Press the RETURN key to proceed with the test, or press the ESC key to exit . . .

Figure 31. System Performance Test Display

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