Installation

NC200 and NC400 Network Computer

LAN Option Board

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

Only qualified personnel should perform service procedures.

Injury precautions

Use proper power cord

To avoid fire hazard, use only the power cord specified for this product.

Ground the product

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground.

Do not operate in wet/damp conditions

To avoid electric shock, do not operate this product in wet or damp conditions.

Do not operate in an explosive atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid exposed circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product damage precautions

Use proper power source

Do not operate this product from a power source that applies more than the voltage specified.

Provide proper ventilation

To prevent product overheating, provide proper ventilation.

Do not operate with suspected failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.

Safety terms and symbols

Terms in this manual

These terms may appear in this manual:

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

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

Terms on the product

These terms may appear on the product:

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.

WARNING indicates a personal injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the product

The following symbols may appear on the product:

DANGER high voltage

Protective ground (earth) terminal

ATTENTION – refer to manual

LAN Option Board Installation

Introduction

Use these instructions to install the LAN option board in your NC200 or NC400 network computer. These instructions cover all three LAN options: thicknet (10Base-5), thinnet (10Base-2), and twisted-pair (10Base-T/100Base-Tx). After you check the contents of the kit and read the electrostatic precautions, begin the installation procedure.

Kit contents

This field installation kit includes the following:

- one LAN option board (thicknet, thinnet, or twisted-pair);
- one adaptor plate (thinnet and twisted-pair only);
- one self-adhesive foam label-plug (twisted-pair only);
- two 6-32 phillips screws;
- two jacknuts;
- one anti-static wrist strap;
- one anti-static conductive pad; and
- these installation instructions.

Tools required

Installation of the LAN option board requires these tools:

- #2 phillips screwdriver;
- 3/16" nutdriver; and
- small diagonal cutters.

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:

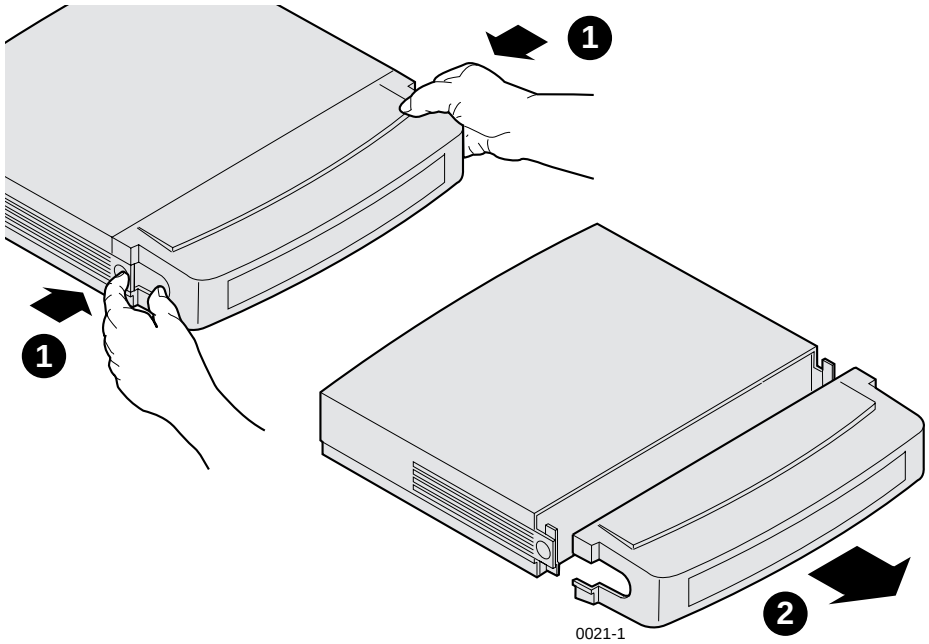
- Leave the board in its static-shielded bag until you are ready to install it.
- Handle all circuit boards in a static-protected area capable of controlling static charge on conductive materials, people, and non-conductive materials. Static-protected areas include non-static table tops and non-static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

Installing the LAN board

1. Set the Standby/On or Power switch to Standby or 0.
2. **NC200:** Remove the cable cover from the rear of the logic module as shown in *Figure 1*.

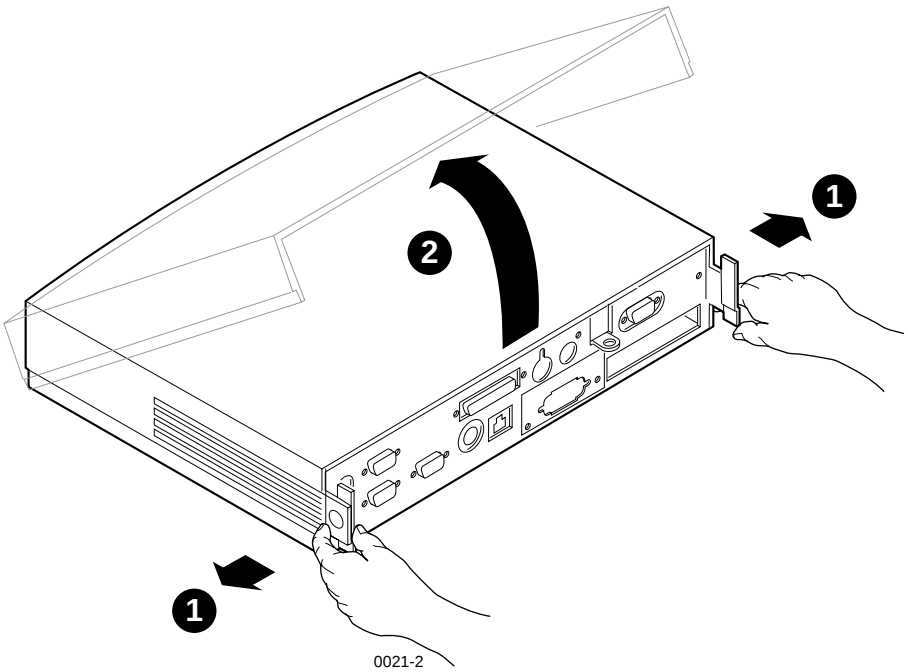
CAUTION: ***The standby/on switch on the NC200, when set to standby, does not turn off the power to the circuitry inside. To avoid the possibility of damage to the circuitry, be sure to disconnect the AC line cord to the power supply before doing any work inside the logic module.***

Figure 1. Removing the NC200 cable cover



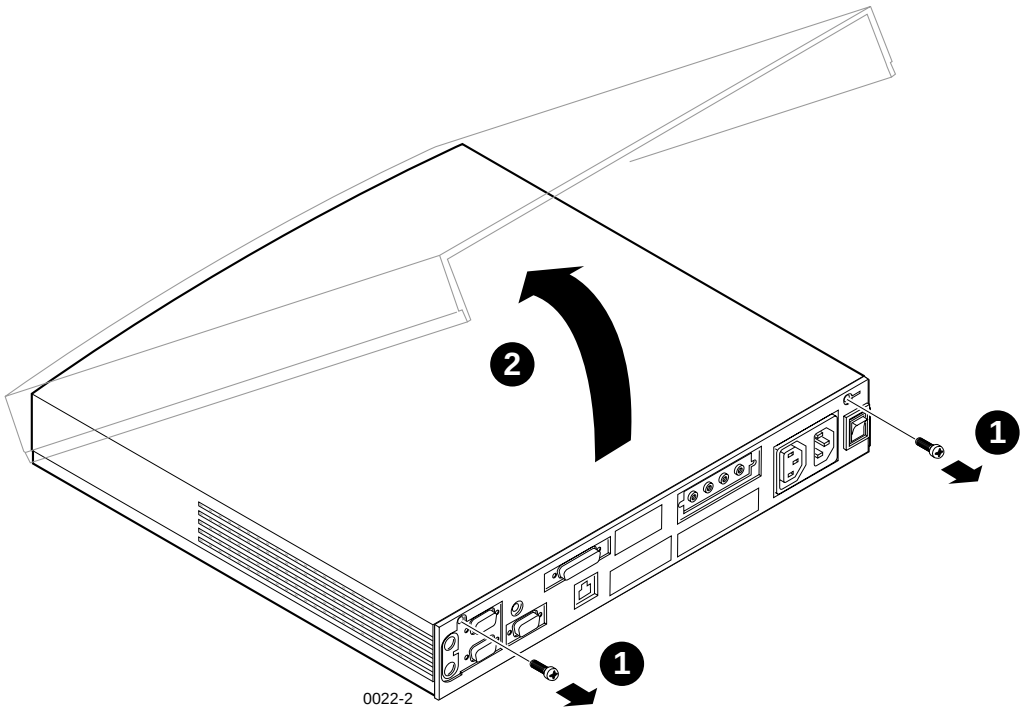
3. Disconnect the AC power. **NC200:** Unplug the power supply from the AC power outlet, then disconnect the power supply connector from the rear panel. **NC400:** Unplug the AC line cord from the rear panel.
4. Disconnect as many other cables as necessary to easily reach the rear of the logic module.

Figure 2. Removing the NC200 logic module cover



5. Remove the logic module cover as shown in *Figure 2* above (NC200) or as shown in *Figure 3* below (NC400).

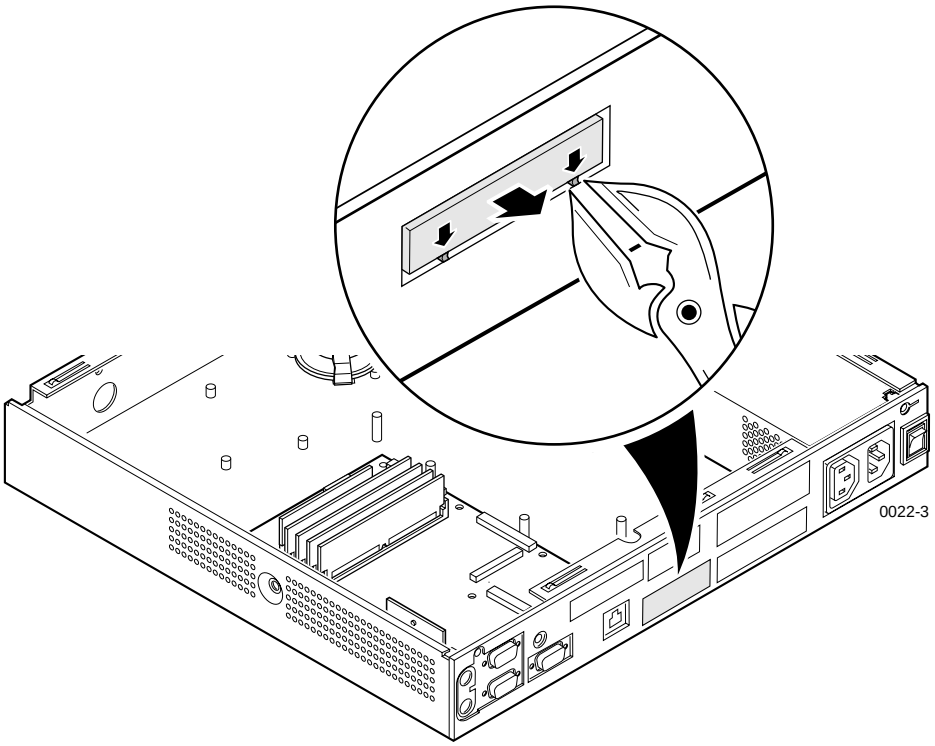
Figure 3. Removing the NC400 logic module cover



6. **NC400:** Remove the plastic blank that covers the cabinet opening for the LAN option board as shown in *Figure 4*. Use a pair of thin diagonal cutters to cut the bridges that support the blank cover.

NOTE: ***A few early production models of the NC400 have a foam overlay on the rear panel instead of the molded plastic overlay. To uncover the cabinet opening, peel out the foam plug.***

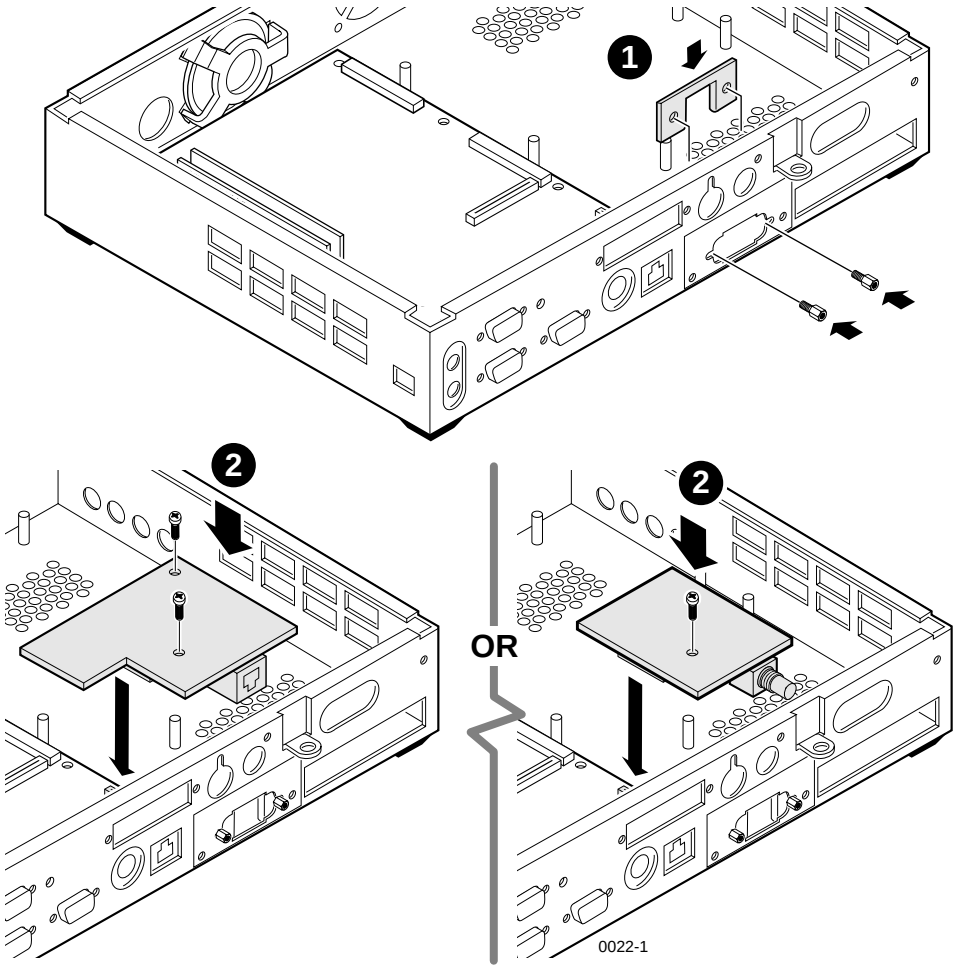
Figure 4. Removing the blank cover from the rear panel overlay



7. Put on the anti-static wrist strap. (Follow the instructions on the wrist strap package.)
8. Remove the circuit board from the protective package.

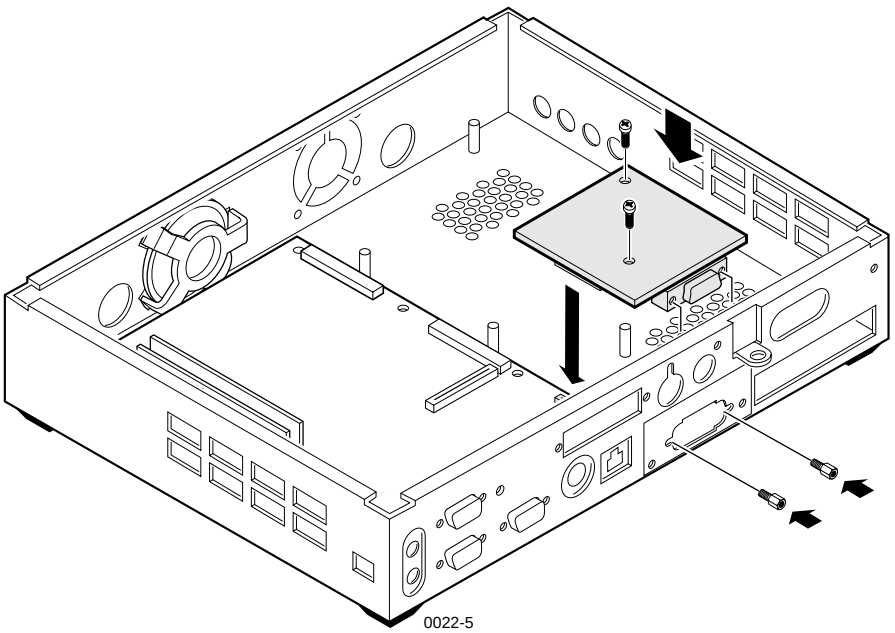
9. If you are installing either the thinnet or twisted-pair LAN board, install the adaptor plate as shown at ❶ in *Figure 5*. (The figure shows a twisted-pair adaptor plate attaching to a NC200; installation of a thinnet adaptor in a NC200, and installation of the thinnet or twisted-pair adaptor in an NC400 will be essentially the same.) Do not tighten the jacknuts, but leave the plate loosely attached.

Figure 5. Installing the adaptor plate and thinnet or twisted-pair LAN board



10. Install the LAN option board as shown at ❷ in *Figure 5* (thinnet, twisted-pair) or as shown in *Figure 6* below (thicknet). (Both of these figures show a NC200; installation in an NC400 is essentially the same.)
    a. Insert the LAN socket through the opening in the adaptor plate. (The thicknet socket fits directly through the rear of the cabinet.)
    b. Align the board socket with the plug on the main logic board and press down on the board to seat the plug in the socket.
    c. Secure the board to the cabinet with the two 6-32 screws. (Use only one screw for thinnet.)
    d. Tighten the two jacknuts to secure the adaptor plate or the thicknet connector to the the chassis's rear panel.

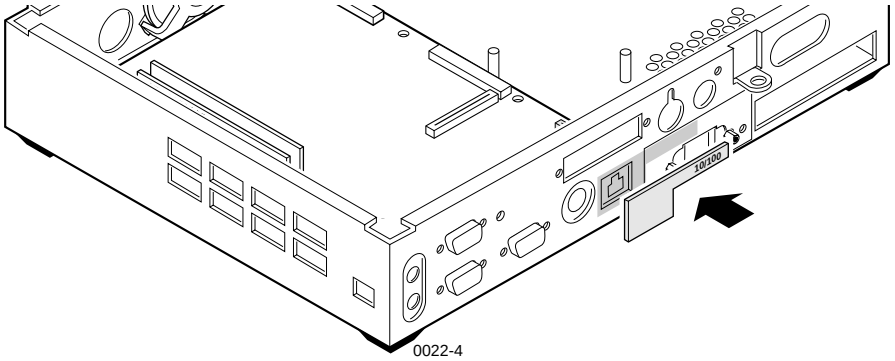
Figure 6. Installing the thicknet LAN board



11. Re-install the logic module cover.

12. If you are installing the 10Base-T/100Base-Tx LAN option board, peel the protective backing from the foam label-plug and attach it over the standard 10Base-T connector as shown in *Figure 7*.

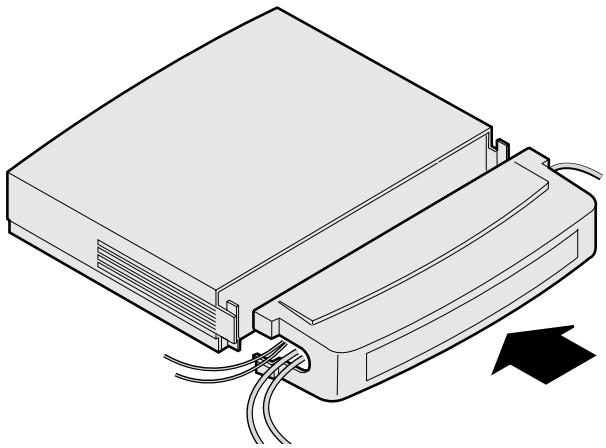
Figure 7. Covering the 10Base-T connector (100Base-Tx installations only)



NOTE: ***Installing the 10Base-T/100Base-Tx LAN option board disables the standard 10Base-T connector. The label-plug prevents the user from installing a twisted-pair LAN cable into a nonfunctional connector.***

13. Connect your LAN cable to the newly installed LAN option board connector.
14. Connect all other cables that you disconnected from the rear panel at the beginning of the installation. **NC200:** Connect the power supply to the logic module before plugging it into the AC power outlet. **NC400:** Connect the AC power cord to the rear panel.
15. **NC200:** Replace the cable cover, routing the cables out the slots in the cover sides as shown in *Figure 8*.

Figure 8. Installing the NC200 cable cover



16. Verify the installation using the procedure that follows.

Verification

To verify that your network computer is operating correctly after installing the LAN option board:

1. Set the standby/on or on/off switch to on (1) and watch for the *Boot Monitor* screen to appear.
2. Press any keyboard key before the network computer completes the boot process. This stops the boot process and transfers control to the *Boot Monitor*. The following message appears:

   ```
   Boot process interrupted by key press...
   Type HELP for a list of commands
   BOOT> _
   ```

Figure 9. Boot Monitor REport screen

3. There are two ways to determine whether you have properly installed the LAN option board. At the `BOOT>` prompt, enter the **REport** command to generate a report screen similar to the one in *Figure 9*.

   ```
   BOOT>  re
   ```

   If you have properly installed your LAN option board, you will notice that "LAN" is listed in the `options` line. If you not see the LAN option listed in your thin client's report screen, inspect your physical installation.

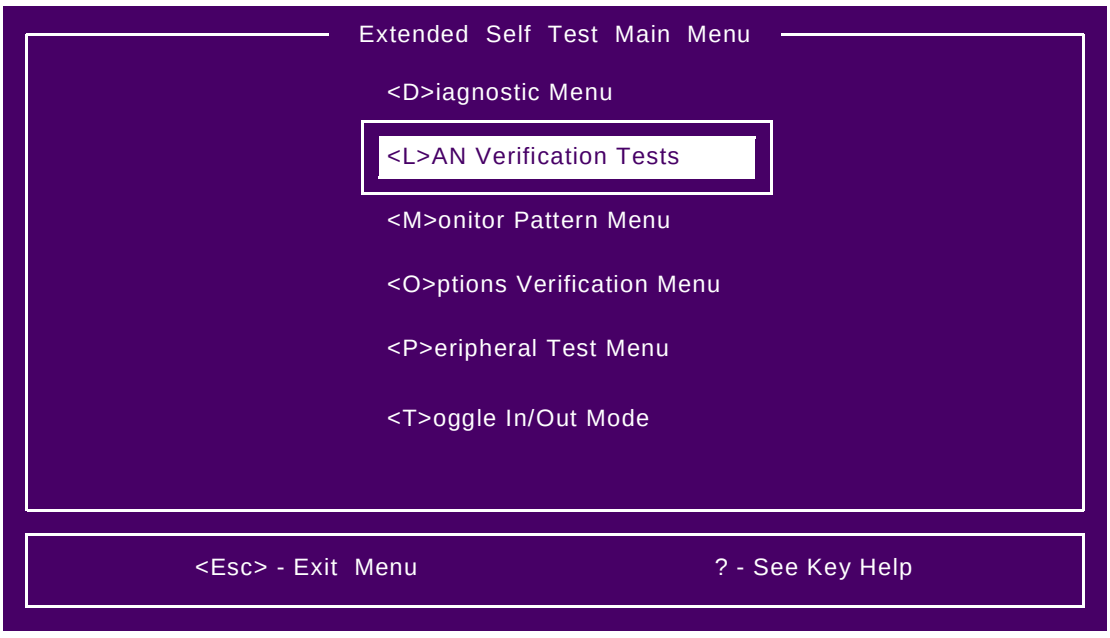
   Another method of verifying a correct installation is to start the Extended Self Test and execute the LAN Verification Tests.

4. To verify installation with the Extended Self Test, use the **BPath** command to point to the appropriate *selftest.xxx* file (usually in the same directory as your OS file) and enter the **Boot** command.

   ```
   BOOT>  bp /<bootpath>/selftest.500
   BOOT>  b
   ```

   In the Extended Self Test Main Menu, select LAN Verification Tests (*Figure 10*).

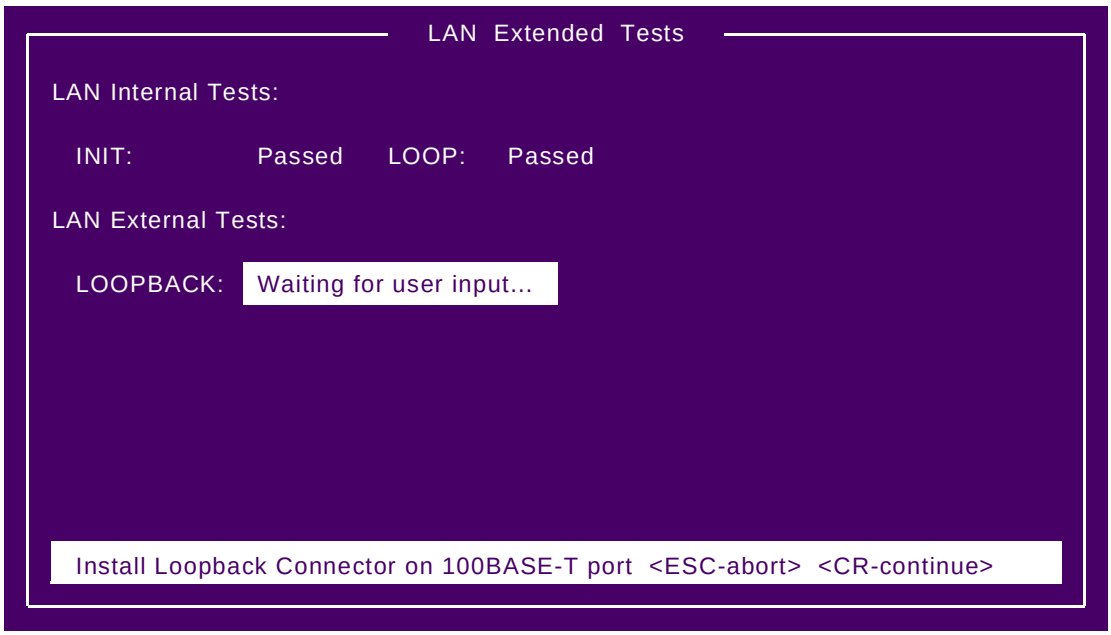
Figure 10. Extended Self Test Main Menu



If the **10Base-T/100Base-Tx** LAN option is installed, a message (as shown in *Figure 11*) will prompt you for input:

```
Install Loopback Connector on 100BASE-T port <ESC-abort> <CR-continue>
```

Figure 11. LAN Extended Tests



If the installed LAN option board is either **thicknet** (AUI) or **thinnet**, the prompt message will read:

```
Select LAN port: <0>AUI, <1>Thinnet, <2>10BASE-T, <ESC>Abort
```

If **no** LAN option board is installed, the prompt message will read:

```
Install Loopback Connector on 10BASE-T port <ESC-abort> <CR-continue>
```

This is the default loopback test prompt. This indicates that the LAN option board may not be installed properly. If you see this, go back and inspect your physical installation.

5. Press the appropriate key to start the test:
   - If you are testing **thicknet**, press the **"0"** key. Ignore the message to install a loopback connector and press Return to continue the test.
   - If you are testing **thinnet**, press the **"1"** key. Ignore the message to install a loopback connector and press Return to continue the test.
   - To test either **10Base-T** or **100Base-Tx**, you will need a full duplex network connection or a loopback connector. If you have neither, press the Escape key to abort the test. (See *Making a loopback connector for 100Base-Tx* on page 15 for instructions on making your own loopback connector.) If you are connected to a full duplex network, press Return to start the test. If you have the loopback connector, replace the connected network cable with the loopback connector, then press Return to start the test.

   After the test completes, press any key to return to the Extended Self Test Main Menu. Then press the Escape key to exit the Extended Self Test and return to the *Boot Monitor* `BOOT>` prompt.

6. If you tested 10Base-T/100Base-Tx using a loopback connector, reconnect the LAN cable into the 10Base-T/100Base-Tx socket and install the cable cover, routing the cables through the side slots.

7. After you have confirmed that you have installed the LAN option board properly, enter the **Boot** command to boot your thin client.

   ```
   BOOT>  b
   ```

Making a loopback connector for 100Base-Tx

A loopback connector for 100Base-Tx is easily constructed by sacrificing an unused CAT5 (Category 5 twisted-pair) network cable. This loopback connector can also be used for testing 10Base-T.

1. Cut off the RJ-45 plug, leaving three or four inches of cable remaining with the plug.
2. Strip back the outer covering to reveal the wires inside.
3. Determine which wires are connected to pins 1, 2, 3, and 6. The wires are usually color-coded, and the plug is usually made of clear plastic, making this an easy task.
4. Strip about 1/4-inch of insulation from the wires connected to pins 1, 2, 3, and 6.
5. Twist the ends together as shown in *Figure 12*, connecting wires 2 and 6, and 1 and 3.
6. Insulate the twisted ends with electrical tape, heat-shrink sleeving, or similar material. The loopback connector is ready to use.

Figure 12. Constructing a 100Base-Tx loopback connector