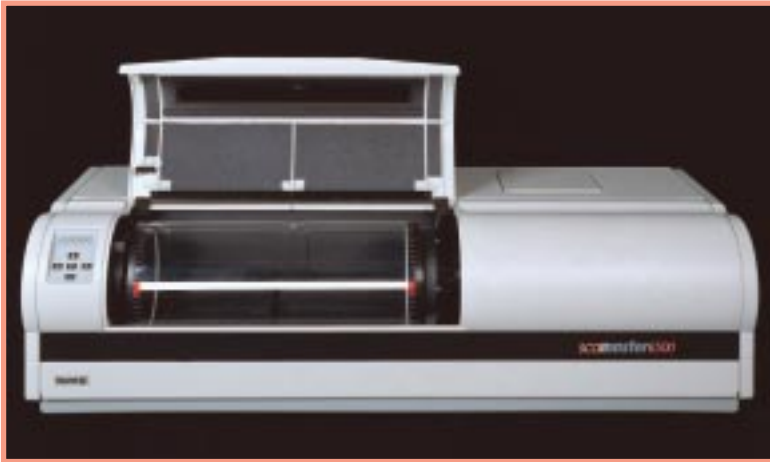


*scanmaster*6500

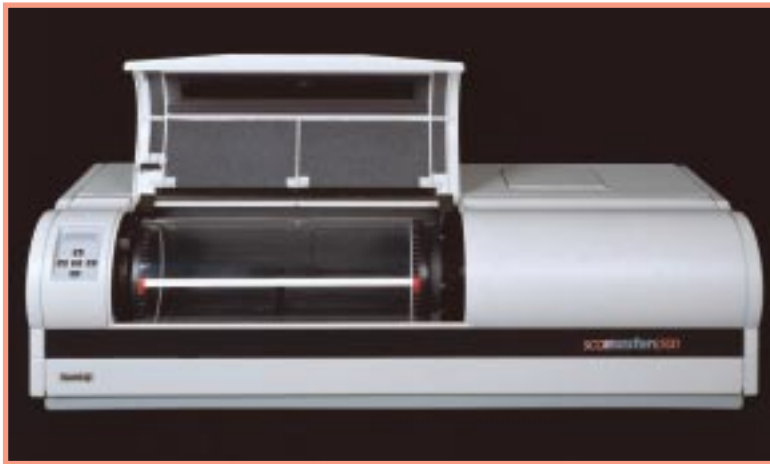


User Guide



Imaging that makes a difference.™

*scanmaster*6500



User Guide

Part Number HTM118
Revision A



Imaging that makes a difference.™

Declaration of Conformity

We,

Howtek, Inc.
21 Park Avenue
Hudson, NH 03051

declare under our sole responsibility that the product:

**Scanmaster 7000 Scanner
including Scanmaster 6500**

to which this declaration relates, is in conformity with the following standards or other normative documents:

Product Safety: EN60950

EMC: EN55022, Class A
EN50082-1: 1992

Following the provisions of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Signature: 

Name: M. Russell Leonard

Title: Chief Operating Officer

Date: May 14, 1997

Place: Hudson, New Hampshire (USA)

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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communication.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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Scanmaster 6500 User Guide
Howtek part number: HTM118
Produced in the United States of America

Howtek Inc.
21 Park Ave.
Hudson, NH 03051

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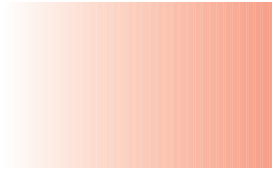
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Preface

Congratulations on the purchase of your new Scanmaster 6500 from Howtek, Inc.! We at Howtek are committed to helping you start scanning as quickly as possible. This document is designed to prepare and inform you of the system and site requirements for using your scanner.

This document contains information on:

- ◆ Installing, configuring, and setting up your Scanmaster 6500.
- ◆ Using the Scanmaster 6500 control panel and mounting originals on the drum.
- ◆ Maintaining your scanner and troubleshooting in the event of a problem.

Please read the installation instructions carefully. Proper installation and configuration will ensure safe and efficient operation of your Scanmaster 6500. If you have any questions, please contact your local dealer.

Guide Conventions

The following typographical conventions are used throughout this guide:

- ◆ Control panel messages and buttons are indicated in all capital letters, e.g.: OFFLINE, ENTER, etc.

Note: Provides useful information about the current topic.

CAUTION: Provides information for the prevention of damage to the hardware.



WARNING! Provides information to prevent injury to the scanner operator.

Related Documentation

This guide provides details on using the Scanmaster 6500. However, you may need additional information contained in other documents. Your computer's installation guide provides detailed instructions for installing the interface card in the computer and cabling the scanner. The user guide for your software application contains instructions for controlling the scanner from the computer and processing the resulting images.



Installation and Setup

Installation Requirements

Before installing your Howtek Scanmaster 6500, make sure the following installation requirements are met.

Physical Requirements

A rigid and sturdy table must be installed in the scanner room (it must be able to support at least 160 lbs (73 kg) and be free of vibrations). Allow for sufficient clearance (at least 15 feet [45 cm]) around the scanner and its furniture for cables, ventilation, and access by operating personnel. See Figure 1-1.

Figure 1-1

Recommended system layout.

①—Overhead view.

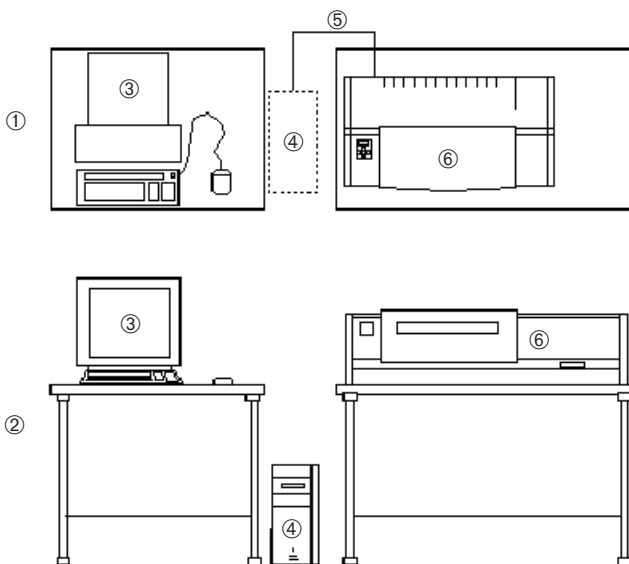
②—Front view.

③—Monitor.

④—CPU.

⑤—SCSI cable (2 m).

⑥—Scanmaster 6500.



If you have purchased the optional Drum Mounting Station, you will need a separate table large enough to accommodate it. The dimensions of the Drum Mounting Station are: 15" W x 16" L x 6" H (38 cm x 41 cm x 15 cm).

Electrical Specifications

The specified operating range for the Scanmaster 6500 is as follows:

110 Volt Systems (North America)

- ◆ Low operating range: 90–132 VAC (47–63 Hz).
- ◆ At a minimum, use a 10 amp circuit (the scanner draws up to 6 amps peak).

220 Volt Systems

- ◆ High operating range: 180–264 VAC (47–63 Hz).
- ◆ At a minimum, use a 5 amp circuit (the scanner draws up to 3 amps peak).

The Scanmaster 6500 is equipped with an autoranging power supply and requires a 3-prong grounded receptacle and common ground potential.

Note: It is recommended that your entire system be connected to an Uninterruptible Power Supply (UPS) or, at a minimum, plugged directly into surge-protected power strips.

Host System Configuration

The host computer system must meet the following minimum requirements:

Macintosh

- ◆ Quadra series with Floating Point Coprocessor installed (Power Macintosh™ recommended).
- ◆ 64 MB of RAM.
- ◆ 24-bit color display adapter.
- ◆ 17" or larger high-resolution monitor (1024 x 768 dpi).
- ◆ 1 GB hard disk.
- ◆ System 7.1 or higher.
- ◆ SCSI cable* – 25-pin to 50-pin Apple system cable.

** Please refer to Page 1-15.*

Note: Your system must have an active SCSI terminator plugged into one of the two 50-pin SCSI ports on the back of the Scanmaster 6500. One active terminator is shipped with your scanner.

PC/Windows

- ◆ PC 486DX – 66 Mhz with 1 available EISA or VESA local bus slot for one of the SCSI boards listed below (Pentium processor recommended).
- ◆ 64 MB of RAM.
- ◆ 24-bit color display adapter.*
- ◆ 17" or larger, high-resolution monitor (1024 x 768 dpi).
- ◆ 1 GB hard disk.
- ◆ Adaptec SCSI board – AHA-1742, AHA-2740/42 or AHA-2842.**
- ◆ SCSI cable.
- ◆ Windows 3.1 with a graphics display application, e.g. Adobe Photoshop.

** Please refer to Howtek Document HTB111 Rev. C.*

*** Please refer to Howtek Document HTB109.*

Note: Your system must have an active SCSI terminator plugged into one of the two 50-pin SCSI ports on the back of the Scanmaster 6500. One active terminator is shipped with your scanner.

Installing the Scanmaster 6500

Follow the procedures below to unpack and install your Scanmaster 6500.

Receiving the Scanmaster 6500

Your facility must have a suitable location for receiving and unpacking the Scanmaster 6500 (e.g. a loading dock). For the physical specifications and weights of the pallet and the scanner, see Chapter 7.

Make sure there is free access to the scanner's proposed location. A forklift or pallet jack is helpful, but not required, to off-load the palletized scanner from the truck and move it to its location. If the Scanmaster 6500 is to be installed on an upper floor, an elevator large enough to hold the scanner and pallet should be used, if available.

Note: The scanner itself weighs 160 lbs (73 kg). If necessary, it can be carried by 3–4 people, although this is not recommended.

Moving the Scanmaster 6500 to the Scanner Location

Move the Scanmaster 6500 strapped to the pallet to the scanner location before unpacking. Avoid jarring or bumping the scanner while transporting it.

Unpacking and Setup



WARNING! Follow the instructions below carefully to unpack your scanner. Failure to do so could result in damage to the scanner or personal injury.

Carefully unpack each carton. Report any damage to your dealer immediately.

The Scanmaster 6500, Drums and Accessories Kit, and optional Drum Mounting Station are shipped in readily identifiable cartons:

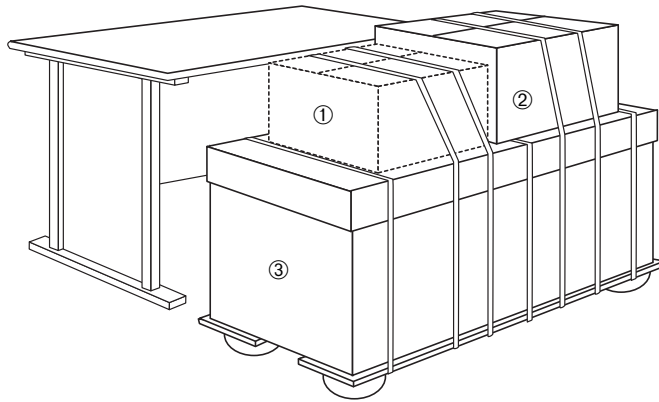
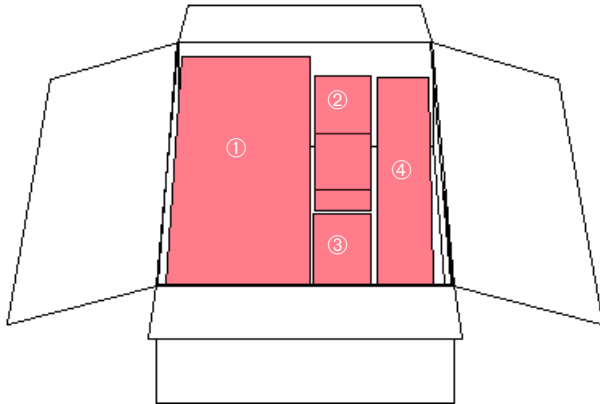


Figure 1-2
Shipping cartons.
①-Drum Mounting
Station (optional).
②-Drums and Acces-
sories Kit.
③-Scanmaster 6500.

Unpacking the Drums and Accessories Kit (small carton)

Unpack the carton labeled “Drums and Accessories Kit” first since you will need the 3/8" Allen wrench, contained in the large plastic bag with the power cord, to unbolt the scanner mechanism. Cut the bands securing the boxes to the pallet:

Figure 1-3
Drums and
Accessories Kit.
①-Large drum.
②-Software kit.
③-Scanner kit.
④-Small drum.



Please take a minute to verify the contents of the Drums and Accessories Kit:

- ◆ 3/8" Allen wrench.
- ◆ Mounting kit (cleaning and image mounting materials).
- ◆ Spare drive belt.
- ◆ Power cord.
- ◆ Imaging drums.
- ◆ Active SCSI terminator.
- ◆ Leadscrew lubricant (3 grams).
- ◆ Software kit (3.5" diskettes).

Report any missing items to your Howtek dealer immediately.

To unpack the scanner (large carton), follow these steps:

1. Cut the two packing straps and lift the cardboard cover and box off the pallet. Remove the foam supports and poly bag from the scanner:

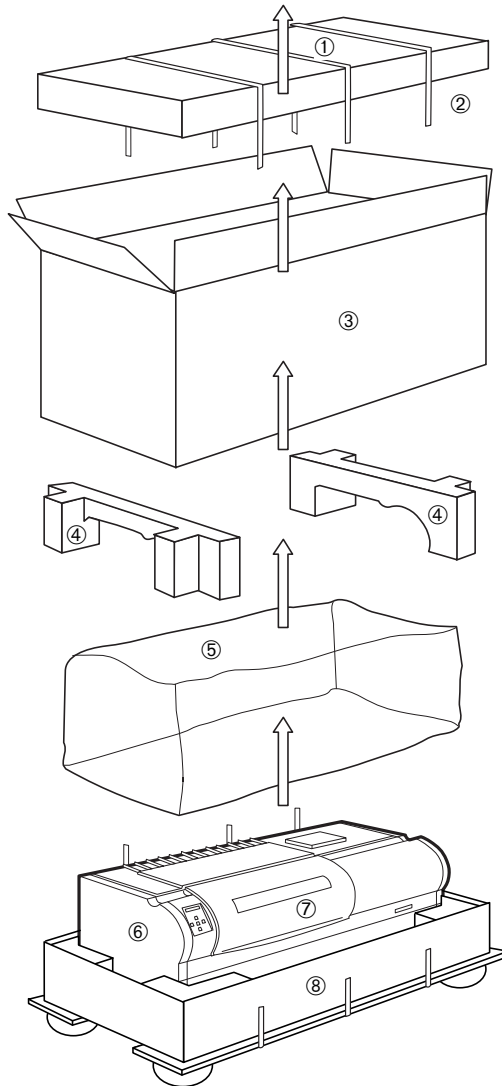
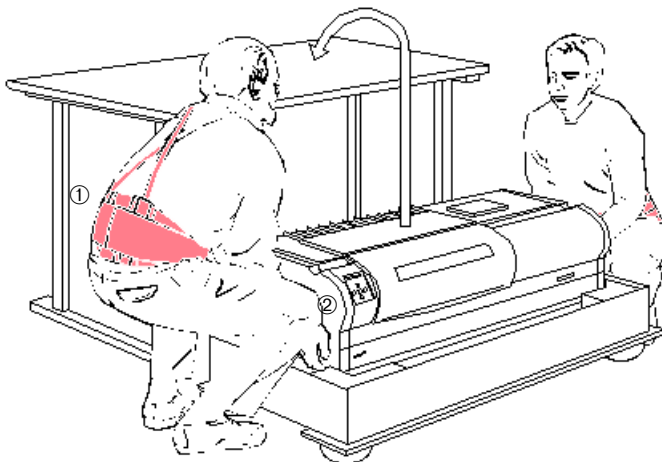


Figure 1-4
Unpacking the
Scanmaster 6500.
①-Cardboard cover.
②-Packing straps.
③-Cardboard box.
④-Foam supports.
⑤-Poly bag.
⑥-Scanmaster 6500.
⑦-Drum access door.
⑧-Pallet.

2. Stand facing your helper with the scanner between you. Bend your knees, keeping your back straight. Slide your hands into the hand holds at the end of the scanner, lift with your legs to protect your back, and carefully place the scanner on a stable surface:

Figure 1-5
Lifting the
Scanmaster 6500.
①-Back brace (highly
recommended).
②-Hand holds.



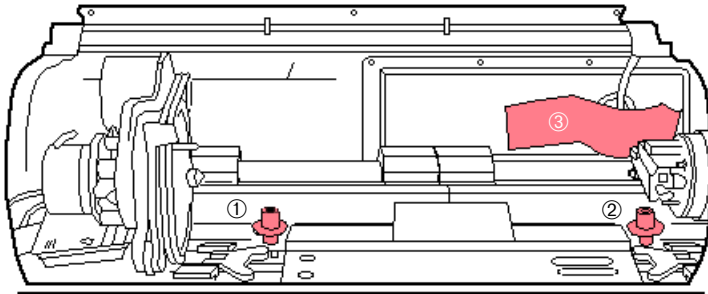
WARNING! When moving the Scanmaster 6500, always lift it, do not slide it.

3. Remove the white tape securing the drum access door and stick the tape to the inside of the resealable bag that contains the power cord (for safekeeping).

4. Open the drum access door. Using the 3/8" Allen wrench from the Drums and Accessories Kit, remove the two shipping bolts with yellow tops and the white tape from the Fiber Optic Reflective Illuminator (FORI):

Figure 1-6
Removing shipping
bolts and tape.

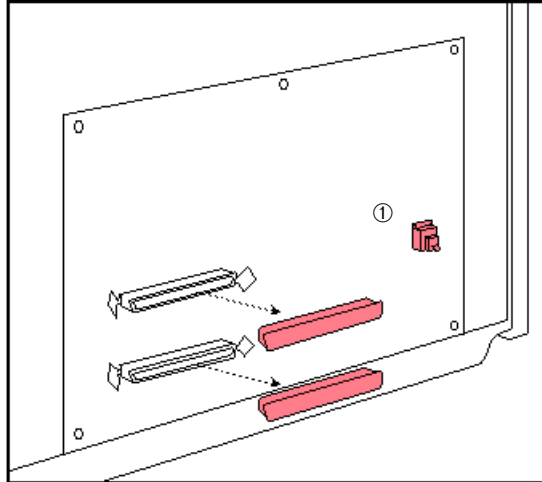
- ①-Left bolt.
- ②-Right bolt.
- ③-Tape.



5. Remove the two white plastic covers on the SCSI ports, located on the right rear of the scanner and place them in the large resealable bag containing the power cord.

Note: Do not remove the plastic insert from the RJ-11 connector (phone-style jack); this connection is for service technicians only.

Figure 1-7
SCSI cover removal.
①-RJ-11 connector
(do not remove).



6. Close the drum access door by lifting the door slightly and pulling the support lever at the lower left side of the door toward you, then lower the door.
7. Store all packing materials, including the pallet, in a secure, dry area for later use in transporting the scanner, should it become necessary. Place the following items in the large resealable bag that contained the power cord:
 - ◆ 3/8" Allen wrench.
 - ◆ Two shipping bolts and washers.
 - ◆ Two white plastic covers from the SCSI ports.
 - ◆ Tape from the drum access door and the FORI.

Connecting the Scanmaster 6500

This section outlines steps to connect the power and interface cables to the scanner.

Connecting Power

1. The power switch is located on the left rear of the scanner. Make sure the power switch is in the OFF position (press the **O** side of the switch).
2. Plug one end of the power cord into the power cord receptacle located below the power switch.
3. Plug the other end of the power cord into a grounded AC outlet.



WARNING! Always plug the scanner into a grounded AC outlet. Have an electrician verify that your outlets are correctly grounded. Protect against power line surges by using a surge suppressor.

Connecting the SCSI Cable

The Scanmaster 6500 uses the Small Computer System Interface (SCSI). The SCSI port permits high-speed communication between the scanner and the computer. Up to seven SCSI peripheral devices (such as scanners, hard disks, tape backup drives, CD-ROM drives, and printers) may be attached to your computer at the same time.

Only one SCSI device is cabled directly to the computer. The other SCSI devices are cabled to each other to form a so-called “daisy chain.” The combined length of cables in the daisy chain may not exceed 19.7 feet (6 m). The SCSI devices’ priority in communicating with the computer is determined not by their arrangement in the chain, but by their SCSI ID numbers.

CAUTION: Each SCSI device must have a unique SCSI ID number. Failure to follow this precaution could result in damage to your equipment.

To ensure accurate transmission of data between the computer and the SCSI devices connected to it, a special connector called an **active SCSI terminator** must be placed at each end of the SCSI chain. Some computers and some devices have an internal terminator. The Scanmaster 6500 is NOT internally terminated.

Macintosh SCSI Connections

To connect your scanner to a Macintosh computer using the SCSI port, follow these steps:

1. Turn off power to the computer and to all attached devices. The computer and all devices should remain plugged into grounded outlets.

2. Make sure you have the proper SCSI cables for your needs:

SCSI system cable: Use this cable if the Scanmaster 6500 is the only SCSI device connected to your Macintosh. Refer to Figure 1-8.

SCSI peripheral interface cable: Connect this cable to the last device in the SCSI chain if more than one SCSI device is connected to your Macintosh. Refer to Figure 1-8.

Cables from the following two manufacturers have been tested by Howtek and found to function properly:

- ◆ SCSI system cables 1.64 feet (0.5 m), Apple P/N M0206.
- ◆ SCSI peripheral cables 3.28 feet (1 m), Apple P/N M0207.
- ◆ SCSI extender cables 3.28 feet (1 m), Apple P/N M0208.
- ◆ SCSI peripheral cables 6.56 feet (2 m), Belden P/N 49801.

Active SCSI terminator: supplied in the Drums and Accessories Kit.

3. Connect the SCSI cables as outlined below, depending on your configuration.

If the Scanmaster 6500 is the only SCSI device attached to the SCSI port of your Macintosh:

- ◆ Connect one end of the SCSI system cable to your Macintosh and the other end to the scanner.
- ◆ Attach the active terminator to the unused SCSI port on the Scanmaster 6500.

If there is more than one SCSI device attached to your Macintosh:

- ◆ Locate the last device in the chain and disconnect its terminator (if present).
- ◆ Connect one end of the SCSI peripheral interface cable to the open port on the last SCSI device and the other end to one of the SCSI ports on the Scanmaster 6500.
- ◆ Attach the active terminator to the unused SCSI port on the scanner:

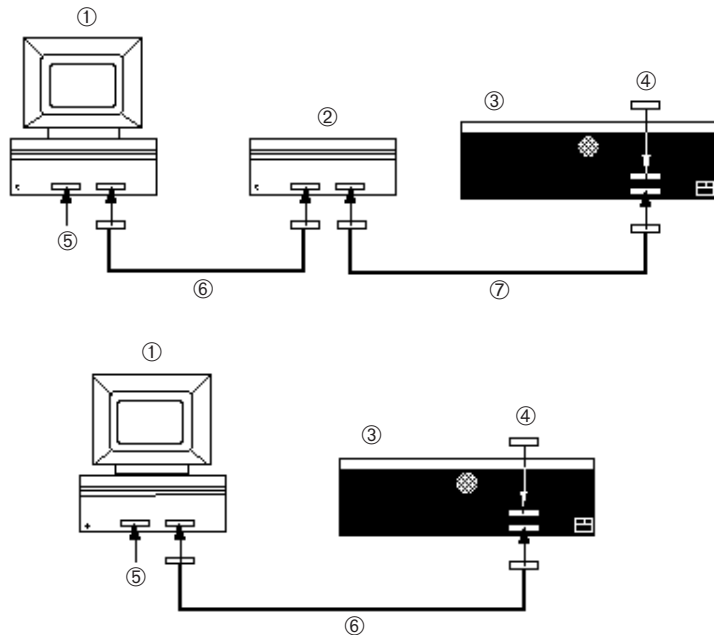


Figure 1-8
Macintosh SCSI
connections.

- ①-Macintosh.
- ②-SCSI device.
- ③-Scanmaster 6500.
- ④-Active SCSI terminator.
- ⑤-Internal termination.
- ⑥-SCSI system cable.
- ⑦-SCSI peripheral interface cable.

PCs and Compatibles

Note: For proper operation, your scanner's SCSI interface should only be driven with the recommended SCSI controller and terminator. Howtek can only guarantee correct operation if the Scanmaster 6500 is the only device on the SCSI bus. Refer to the guidelines below for a list of recommended SCSI adapters.

Adaptec SCSI boards:

EISA Bus AHA-1740/42AT*

EISA Bus AHA-2740/42AT Kit**

VESA Bus AHA-2842VL

** The AHA-1740/42AT board has 2 connections but it has only 1 SCSI bus.*

*** The AHA-2740/42AT board has 2 true SCSI buses on it, Channel A and B. This board can have both a Howtek scanner (Channel B) and the main system hard disk (Channel A) connected to it.*

To connect your scanner to a PC or compatible computer using the SCSI port:

1. Turn off power to the computer and to all attached devices. The computer and all devices should remain plugged into grounded outlets.
2. Verify the card configuration against the documentation in the SCSI interface adapter kit. Install the SCSI interface card in your PC following the instructions in the SCSI interface kit and in your computer's documentation.
3. Connect one end of the SCSI cable to the SCSI interface card and the other end to either SCSI port at the rear of the Scanmaster 6500. Attach the SCSI terminator to the unused SCSI port on your scanner.

Powering Up

Like all SCSI devices, the Howtek Scanmaster 6500 must be powered up before the host system. Turn the scanner on by pressing the I side of the power switch. The power switch is located at the left rear of the scanner (see Figure 1-9). While the scanner is powered up, the display window on the control panel is illuminated.

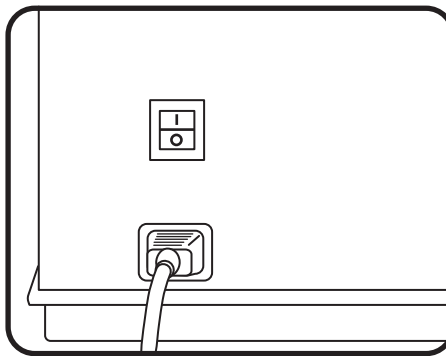


Figure 1-9
Power switch

During power-up the Scanmaster 6500 performs extensive internal diagnostics prior to going on-line.

Note: To bypass the diagnostics, press the ENTER button on the scanner's control panel immediately after turning the power on. It is recommended that you let the scanner complete this diagnostic test when it is powered up at the start of each workday.

Once the scanner reaches on-line status the control panel displays the message READY TO SCAN. It takes approximately five minutes for the scanner to warm up and stabilize, but the scanner can be used as soon as the message READY TO SCAN appears on the control panel.

Note: The accuracy of color scans may be compromised if the scanner is used before the recommended five-minute warm-up/diagnostic period.

Selecting the SCSI ID

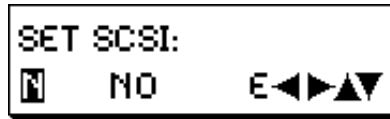
The SCSI ID: N function allows you to set the SCSI identification number of the Scanmaster 6500. The factory default setting is 4. If this value conflicts with another SCSI device, the scanner's ID number must be changed.

CAUTION: If two or more SCSI devices are set to the same address, your computer may act erratically and your equipment may become damaged. Make sure the scanner's SCSI address is unique.

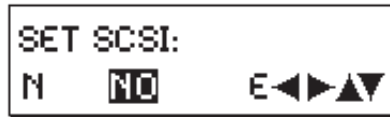
To change the scanner's SCSI ID number:

1. With READY TO SCAN in the display window, press ENTER on the control panel to take the scanner OFFLINE.
2. Press ► until the display reads SCSI ID: N.

3. Press ENTER. The following information appears in the display window:



4. The current SCSI ID number appears in the lower left corner (N). Change the address using the ▲/▼ buttons.
5. Confirm the new ID number:
 - ◆ Press ► to highlight NO:



- ◆ Press ▲ or ▼ to change to YES:



If you do not wish to confirm the number, press the ▲ or ▼ to change back to NO.

- ◆ Press ENTER to confirm the new ID number.

Once you have installed the scanner and selected the SCSIID, power up all remaining SCSI devices and boot your computer.

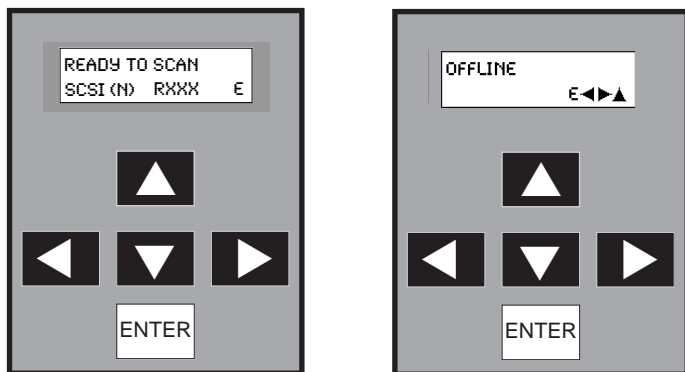


Operating the
Scanmaster 6500

The majority of the scanner's functions are controlled through the software on your computer. This chapter outlines the basic operations that are performed on the Scanmaster 6500 control panel.

Setting the Scanner On/Off-Line

The ENTER button toggles the scanner between the READY TO SCAN state (left) and OFFLINE (right):



The scanner must be OFFLINE to access the various control panel functions, and on-line to perform a scan.

CAUTION: If you press the ENTER button while a scan is in progress, scanning will stop and the host software may lock up or generate an error message.

Installing the Drums

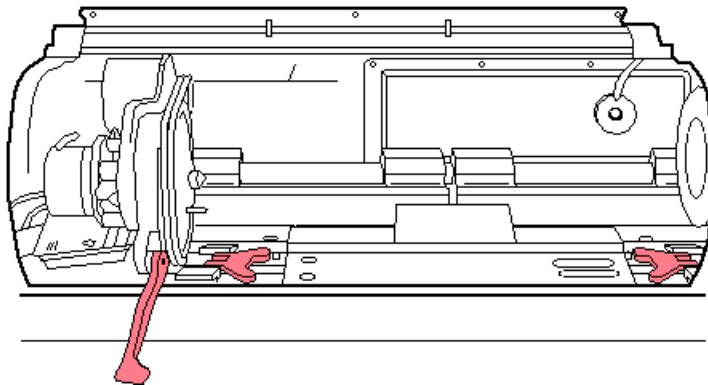
It is recommended that you mount your original on the drum before installing the drum into the scanner. For instructions on mounting originals, refer to Chapter 3.

Large Drum

To install the large drum, follow this procedure:

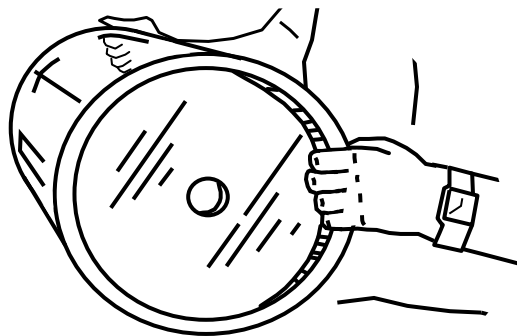
1. Lift the drum access door at the front of the scanner.
2. Move the drum mounting lever and both drum supports to the down position:

*Figure 2-1
Lever and support
positions for inserting
the large drum*



3. Grasp the drum at both ends:

*Figure 2-2
Holding the large
drum*



4. Set the drum into the scanner cavity.
5. Align the white index mark on the spindle with the mark on the top of the drum's endcap:

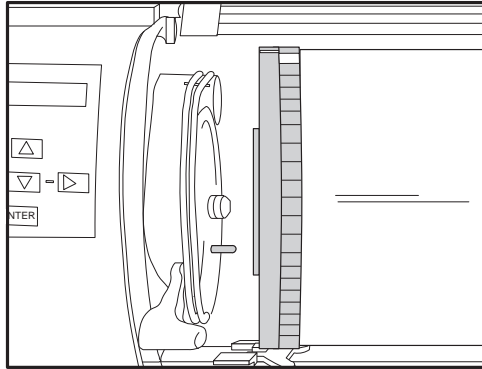


Figure 2-3
Index marks

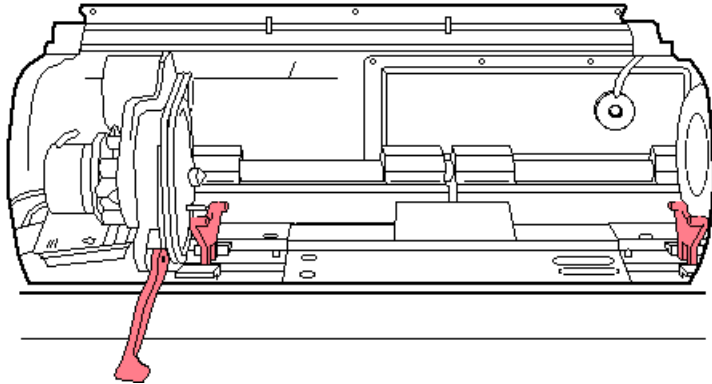
6. Move the drum mounting lever to the up position making sure the alignment pin engages the drum endcap.
7. Close the drum access door.

Small Drum

To install the small drum, follow this procedure:

1. Lift the access door at the front of the scanner.
2. Move the drum mounting lever to the down position, making sure both drum supports are in the up position:

*Figure 2-4
Lever and support
positions for inserting
the small drum*



3. Place the drum onto the supports.

4. Align the white index mark on the spindle with the mark on the top of the drum's endcap:

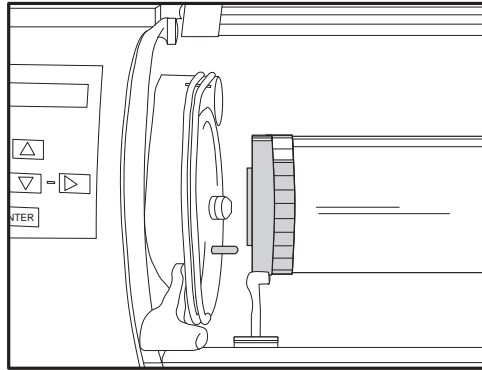


Figure 2-5
Index marks

5. Move the drum mounting lever into the up position making sure the alignment pin engages the drum endcap.
6. Close the access door.

Using the Control Panel

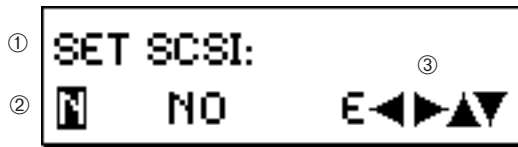
This section describes the various menu functions on the Scanmaster 6500 control panel. From the control panel you can take the scanner offline, set timers, perform a system reset, select the SCSI ID, view the status of many of the scanner's functions, and run diagnostics. The last two features should be used when working with a technical support representative to help locate a problem.

Display Window

At the top of the control panel is a two-line display window. The current available function is displayed on the top line of the LCD display. Additional information and/or secondary functions are displayed on the lefthand side of the bottom line. The righthand side of the bottom line displays symbols representing the currently active directional buttons (▲, ▼, ◀, ▶, and ENTER):

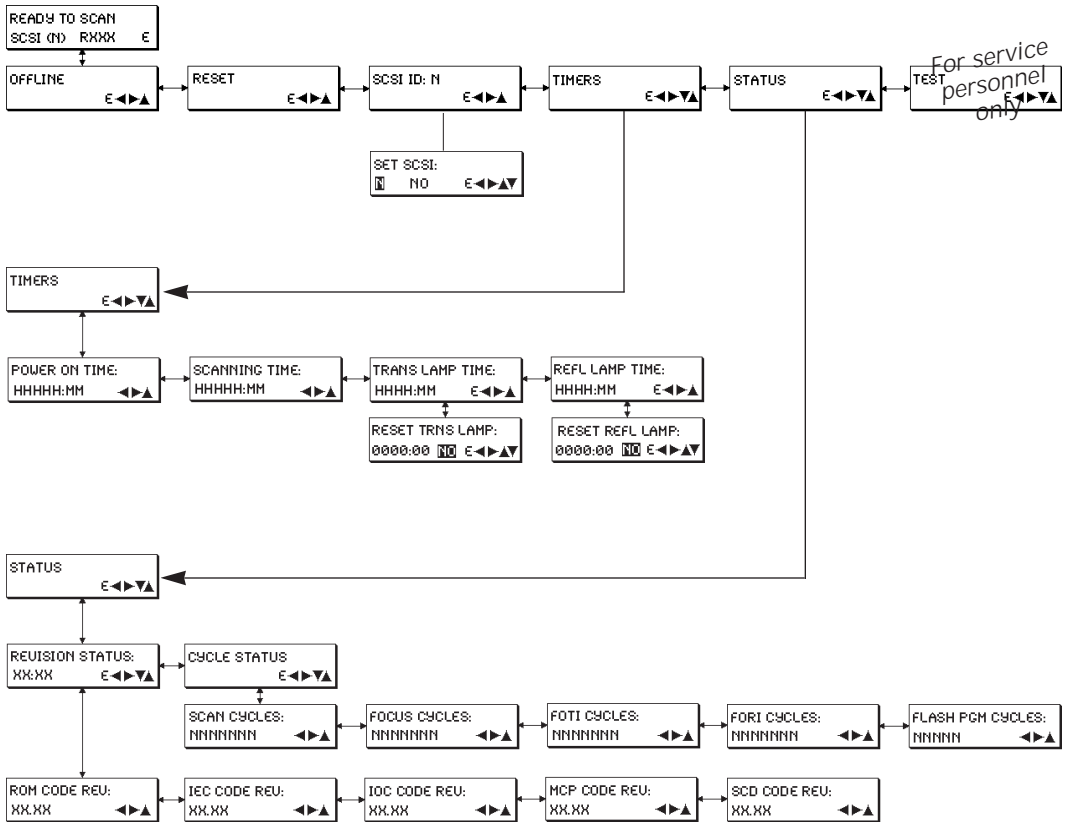
Figure 2-6
Display window
features.

- ①-Active function.
- ②-Secondary function/status display.
- ③-Available buttons.



The control panel is set up on multiple levels. The main functions are located on Level 1. To access these functions, press the ENTER button on the control panel when the display reads READY TO SCAN.

Below are maps of the Level 1 functions and their corresponding sub-levels. The menus are discussed in detail in the remainder of this chapter:



READY TO SCAN

After the scanner is turned on and has finished its internal diagnostics, READY TO SCAN appears on the top line of the display window. The bottom line indicates the SCSI ID number and the current FLASH software revision.

OFFLINE

When READY TO SCAN is displayed in the window, press the ENTER button on the scanner's control panel to take the scanner OFFLINE. In this state, the scanner's Level 1 functions can be accessed by pressing the arrow buttons. To return to the READY TO SCAN state, press ENTER again.

RESET

This function is used to perform a soft restart of the Scanmaster 6500. With RESET displayed, press the ENTER button on the scanner's control panel to perform the restart.

SCSI ID: N

The SCSI ID: N function allows you to set the SCSI identification number of the Scanmaster 6500. The factory default setting is 4. If this value conflicts with another SCSI device, the scanner's ID number must be changed. For instructions on how to set the SCSI ID number, see the section *Selecting the SCSI ID* in Chapter 1.

TIMERS

The Scanmaster 6500 has several built-in timers which display elapsed time in hours and minutes:

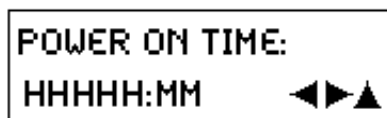
- ◆ POWER ON TIME indicates how long the scanner has been turned on.
- ◆ SCANNING TIME shows how long the Scanmaster 6500 has been in the scanning mode.
- ◆ TRANS LAMP TIME indicates how long the transparency scanning lamp has been in use since it was installed.
- ◆ REFL LAMP TIME indicates how long the reflective scanning lamp has been in use since it was installed.

Note: The lamp timers must be reset manually every time a lamp is changed.

POWER ON TIME

To display the time the scanner has been turned on, follow this procedure:

1. From OFFLINE, press ► until the display reads TIMERS.
2. Press ENTER. The display now shows the elapsed time:

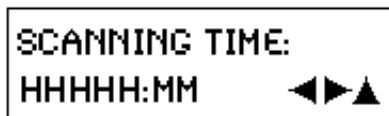


3. Press ▲ to return to Level 1.

SCANNING TIME

To display the amount of time the scanner has been in scanning mode, follow this procedure:

1. From OFFLINE, press ► until the display reads TIMERS.
2. Press ENTER.
3. Press ► to display the elapsed scanning time:



SCANNING TIME:
HHHHH:MM ◀▶▲

4. Press ▲ to return to Level 1.

TRANS/REFL LAMP TIME

To display and reset the lamp times, proceed as follows:

1. From OFFLINE, press ► until the display reads TIMERS.
2. Press ENTER.
3. Press ◀ or ▶ to display the current elapsed time for the lamp you want to change:

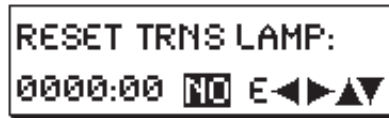


TRANS LAMP TIME:
HHHH:MM E◀▶▲

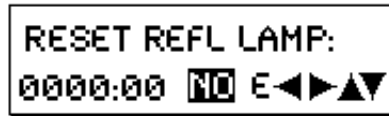


REFL LAMP TIME:
HHHH:MM E◀▶▲

4. Press ENTER. The display now shows:



```
RESET TRNS LAMP:
0000:00 NO E ◀▶▲▼
```



```
RESET REFL LAMP:
0000:00 NO E ◀▶▲▼
```

5. To reset the timer, press ▲ or ▼ to change to YES. NO leaves the timer untouched.
6. Press ENTER to accept the YES or NO setting and return to the previous menu level.
7. Press ENTER again to return to Level 1.

STATUS

The STATUS menu is part of the Scanmaster 6500's diagnostic routines. This mode is used by your technical support representative or on-site service technician to check the status of your scanner's key components.

Note: You should not need to use this function. However, if you encounter a hardware problem, your service representative may instruct you on how to access and use the STATUS menu (refer to the menu maps on page 2-7 for an overview of this menu).

TEST

The TEST function is part of the Scanmaster 6500's diagnostics and should be used only by a qualified service technician to test the operation of the scanner's components.

Soft Restart

To perform a “soft” restart of the scanner and return all settings to their default values, simultaneously press the three middle buttons on the scanner's control panel:





Using the Drums

This chapter outlines the procedures for dry and oil mounting originals onto the drum using the optional Drum Mounting Station.

One 4" (102 mm) drum and one 8" (203 mm) drum are included with your scanner. The small drum permits scanning originals up to 11.38" x 18.38" (289 x 467 mm) with a maximum resolution of 5000 dpi, while the large drum allows originals up to 23.38" x 18.38" (594 x 467 mm) at a maximum of 2500 dpi.

Note: The procedure for mounting originals is the same for both drums.

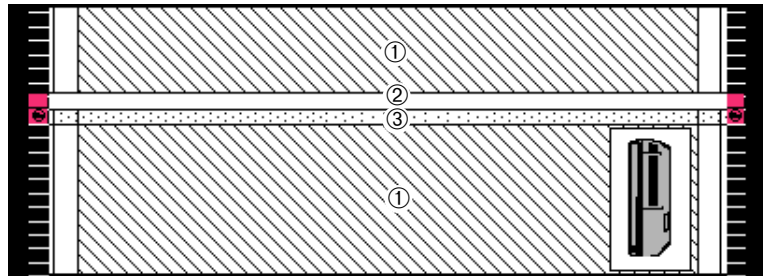
Dry Mounting Reflective Media

Note: All images to be scanned and all mounting materials (tape, mylar, etc.) must be located within the striped regions illustrated in Figure 3-1. Do not cover the white calibration strip or the adjacent transparent calibration area. Anything in this region will interfere with the calibration and affect the quality of the scanned image.

The portion of the image to be scanned must be located between the two circumferential scribe lines. However, mounting materials may extend the full length of the drum, from one index ruler to the other.

Originals can be positioned in any orientation within the mounting area. For the final scanned image to appear perfectly upright, align the top edge of the original image with the right side of the drum (as installed), parallel to the circumferential scribe lines:

Figure 3-1
Drum surface.
①-Mounting area.
②-White calibration strip.
③-Transparent calibration area.



The Howtek Scanmaster 6500 is designed to maximize the speed of the scan, based on size, position on the drum, and selected magnification of the mounted original. Typically, best performance is achieved when the image is located nearest the upper righthand side of the drum (as installed) with the long edge of the original parallel to the circumferential scribe lines.

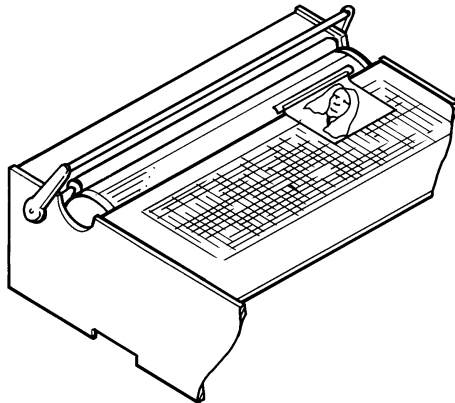
Transparencies may either be mounted dry or oiled, but reflective originals should be dry mounted only. Transparencies and reflective originals may be dry mounted on the drum at the same time. However, do not mix oil mounted transparencies with reflective artwork.

Make sure the drum and originals are clean and free of dust, oil, and debris before mounting. Clean the drum frequently with drum cleaner. Use only drum cleaner of the type provided in the Drums and Accessories Kit.

CAUTION: Do not use film cleaner to clean the drum.

To dry mount reflective media, follow this procedure:

1. Install the drum in the Drum Mounting Station.
2. Position the original on the mounting table with the top of the original to the right side (open end) of the drum:



*Figure 3-2
Placing artwork on
the drum*

3. Place tape along the edge of the original that is in contact with the drum.

Note: Using any tape other than the type supplied may leave a residue on the drum.

4. Rotate the drum away from you until the original is fully over the drum:

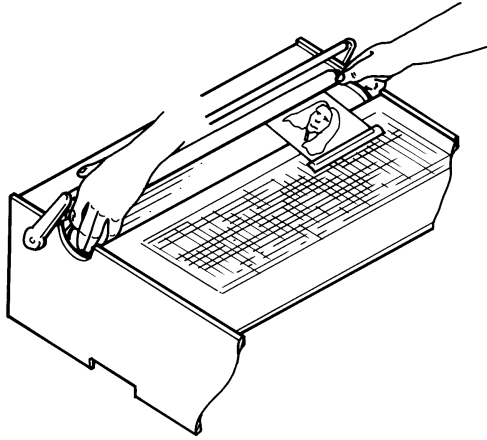


Figure 3-3
Rotating the drum

5. With slight pressure applied to the handle, tape the lower edge of the original to the drum.
6. Rotate the drum away from you until the padded roller fully presses the original against the drum.
7. Tape the circumferential edges of the original.
8. Remove the drum with the mounted original from the Drum Mounting Station.

Dry Mounting Transparent Media

Transparencies can be mounted directly on the drum. Make sure they are clean and always mounted with the emulsion side down against the surface of the drum. Secure them with clear cellophane tape. Sample tape is included in the scanner mounting kit.

When scanning transparencies Newton's Rings may appear in the separations. These irregular shaped patterns (rainbows) are caused by the prismatic action of two surfaces coming into contact with each other.

Newton's Rings can appear when the drum and a transparency are pressed together. The anti-Newton's Ring spray provided with the Scanmaster 6500 consists of a very fine powder that clings to the transparency, slightly separating it from the drum. Anti-Newton's Ring spray should not be used on images that are to be enlarged more than 300% since the granules of powder from the spray may be visible in the final separations. For enlargements of more than 300% oil mounting is recommended.

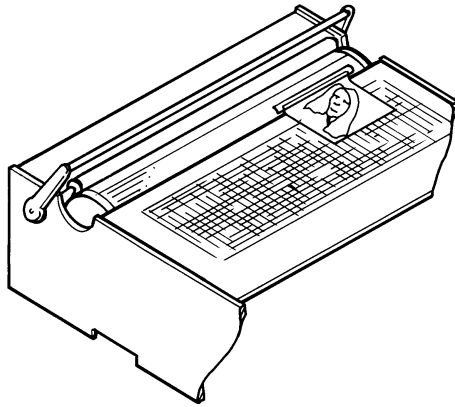
Follow the directions for mounting reflective media. Before a transparent original is taped to the drum, anti-Newton's Ring spray may be applied to the original by spraying a short burst of powder into the air and waving the transparency back and forth through the airborne powder.

CAUTION: Spraying the powder directly onto the transparency at a close distance will leave a residue on the transparency. Never spray anti-Newton's Ring spray directly onto the drum, as this may cause the drum to become fogged.

Oil or Gel Mounting Transparent Media

When scanning transparencies at a high resolution or enlarging a scanned image, optimal results can be achieved by mounting the transparencies with oil. Follow this procedure:

1. Place the drum into the Drum Mounting Station.
2. Tape the top edge of the transparency to the drum as shown below. Be sure to leave room on all sides of the film for the mylar sheet overlay that will cover it:



*Figure 3-4
Positioning
transparent art*

3. Place a sheet of mylar over the image. Use a piece of mylar that extends at least 1/2" (12 mm) past the transparency on all sides.

4. Tape the top edge of the mylar sheet to the drum 1/2" to 3/4" (12-19 mm) above the transparency:

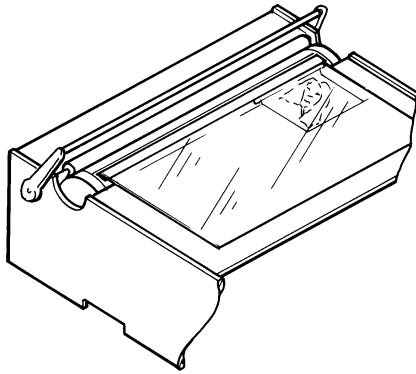


Figure 3-5
Taping top of mylar

5. Move the padded roller forward to contact the drum.
6. Rotate the drum away from you until the mylar sheet makes contact with the padded roller. Apply a bead of oil or gel along the taped edge of the transparency to the emulsion (drum) and non-emulsion (mylar) sides of the transparency:

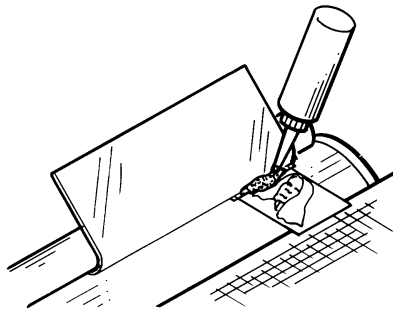
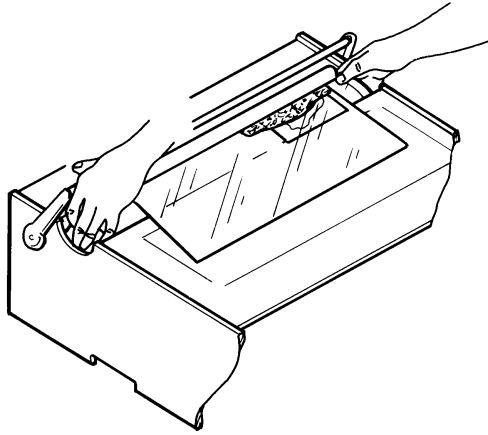


Figure 3-6
Applying oil or gel

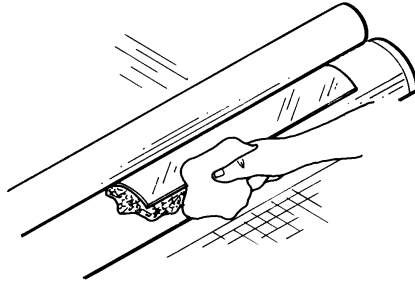
7. Grasp the ends of the drum and turn to the edge of the transparency to press out all the air and any excess oil:

Figure 3-7
Spreading oil or gel



8. Wipe away any excess oil, using a soft cloth and drum cleaner. This will ensure that the tape sticks to the drum:

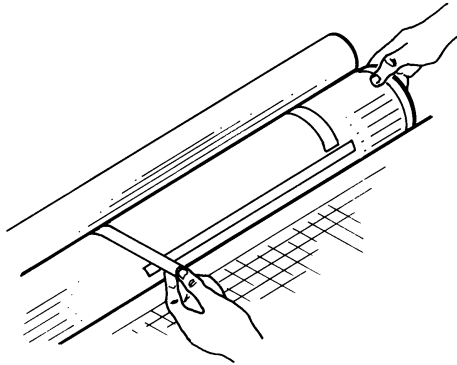
Figure 3-8
Wiping away excess
oil or gel



9. Tape the bottom of the mylar sheet to the drum.
10. Move the padded roller back.

11. Tape the sides of the mylar, overlapping the top and bottom tape with the tape on the sides of the image:

Figure 3-9
Taping all sides of
mylar



CAUTION: The mylar must be completely taped down. Otherwise, the centrifugal forces of scanning may cause the mylar to detach or oil to leak out of the sides and spray into the scanner cavity.

12. Remove the drum with the mounted original from the Drum Mounting Station.
13. Hold the drum up to a light and look through the film to check for air bubbles. If you see any, rub a soft cloth firmly over the mylar to squeeze them out.
14. Make sure the tape is securely holding the mylar and that the mylar is holding the transparency flat against the drum.
15. Install the drum in the scanner.

When you are finished scanning, remove all mounting materials from the drum and remove the oil from the drum with the cleaning solution included with your scanner. This should be done even if you are going to scan additional transparencies with oil. Be sure to clean the transparency itself with film cleaner.

Do NOT clean the drum with the film cleaner. To avoid damage to the transparency, never leave it mounted in oil for more than a few hours.



Maintaining the Scanmaster 6500

Regular maintenance of your Howtek Scanmaster 6500 consists of periodic cleaning, replacement of the lamps, drum drive belts, and drum calibration strip when necessary, and lubrication of the leadscrew. How often the scanner requires cleaning depends on how much scanning you do, how frequently you mount transparencies with oil, how much excess oil remains on the drum, and the cleanliness of the room in general.



WARNING! To prevent personal injury, always turn the power switch off and unplug the power cord from the outlet before cleaning or performing any maintenance on the scanner.

Cleaning

CAUTION: Do not use ammonia-based cleaning products on the scanner. Do not disassemble the scanner or lubricate any parts other than those specifically indicated in this chapter.

Cleaning the Scanner Cabinet Exterior

To clean the exterior of the Scanmaster 6500, follow this procedure:

1. Turn the power switch off.
2. Unplug the power cord from the outlet.
3. Clean the exterior of the scanner with a soft, lint-free, damp cloth and wipe dry.

CAUTION: Do not use paper materials such as facial tissue or paper towels. You may use a mild cleaning solution if the cabinet has become so soiled that a damp cloth does not remove the stain. If you have questions about a particular cleaning solution, contact your dealer.

Cleaning the Scanner Cavity

For optimum performance, the scanning cavity must be kept free of dust and oil. Follow this procedure:

1. Turn the power switch off.
2. Unplug the power cord from the outlet.
3. Clean the cavity with a soft, lint-free cloth moistened with a non-volatile degreasing solution. You may use the recommended drum cleaner included in the Drums and Accessories Kit that comes with the scanner. You may also use an aerosol can of compressed air to remove dust.

CAUTION: Do not spray cleaning solution directly onto surfaces inside the scanner. Use only a lightly moistened cloth. Do not use paper materials such as facial tissue or paper towels. If you have questions about a particular cleaning solution, contact your dealer.

Cleaning the Analyzer Lens

If you frequently scan oil mounted transparencies, the analyzer lens may become contaminated with oil. Oil or foreign matter on the lens may cause distortions in your scans.

To clean the analyzer lens follow this procedure:

1. Remove the drum and return the drum mounting lever to the up position.
2. From READY TO SCAN, press ENTER to take the scanner OFFLINE.
3. Press ◀ to access the TEST function.
4. Move the carriage all the way to the right (ship position):
 - ◆ Press ENTER to display the CABLE CHECK function.
 - ◆ Press ▶ to move to the CARRIAGE function.
 - ◆ Press ENTER. The display shows the carriage's current position (HOME PSTN).
 - ◆ Press ◀ to access the ship position function.
 - ◆ Press ENTER to move the carriage into the ship position.
5. Power down the scanner.
6. Remove the FORI:
 - ◆ Insert the long end of the Allen wrench included in the Drums and Accessories Kit into the small hole on the left side of the FORI and turn counterclockwise one revolution:

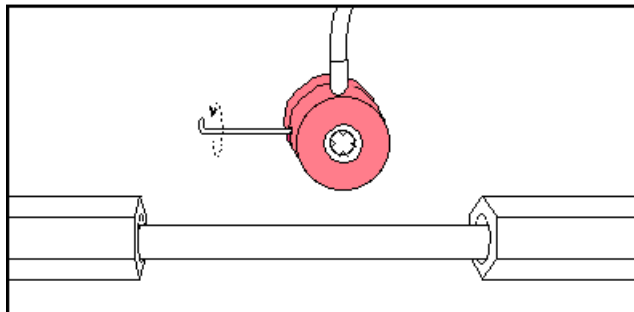


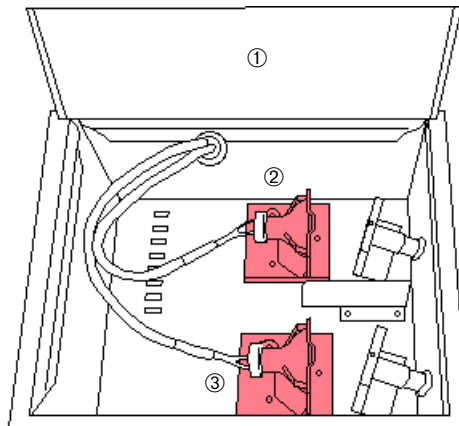
Figure 4-1
Loosening the FORI's
Allen screw

- ◆ Gently pull the FORI assembly off and place it into the scanner cavity.
7. Using only lens tissue and lens cleaner, wipe the surface of the lens. Use a can of clean compressed air to blow any remaining particles off the lens.
 8. Reinstall the FORI:
 - ◆ Place the FORI over the lens with the attached cable slightly to the left of top center.
 - ◆ Tighten the Allen screw by turning it clockwise one revolution. Do not over-tighten.

Replacing the Lamps

The scanner includes two identical tungsten halogen reflector lamps, one lamp for the reflective mode and one for the transparency mode. Each lamp is mounted in a mechanical assembly that ensures proper alignment when installed:

Figure 4-2
Lamp compartment.
①-Lamp compartment cover.
②-Transparency lamp
③-Reflective lamp.





WARNING! The lamps are hot during scanning. Wait at least five minutes after the lamps have been turned off before replacing them.

To replace a lamp assembly, follow these steps:

1. Turn the power switch off.
2. Unplug the power cord from the outlet.
3. Open the drum access door.
4. Locate the desired lamp assembly.
5. Gently unplug the lamp connector from behind the bulb:

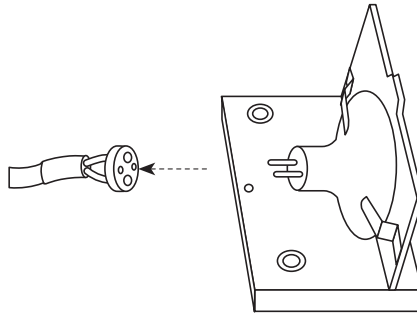


Figure 4-3
Unplugging a lamp

Note: The reflective and transparency lamp assemblies are interchangeable; the connectors, however, are not.

6. Pull up on the two locking pins that hold the lamp assembly in place:

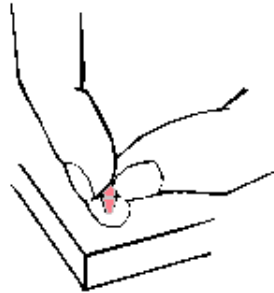


Figure 4-4
Lamp locking pin

7. Lift the lamp mount with bulb up and out of the scanner cavity.
8. Grasp the new lamp assembly by the base plate (DO NOT TOUCH THE LAMP WITH YOUR FINGERS) and place into position. When the assembly is in position, the alignment pins on the bottom of the base plate will click into place.
9. Press down on the two locking pins. Make sure the lamp assembly is securely in place.
10. Connect the lamp assembly to the proper electrical connector and close the drum access door.

Replacing the Drum Drive Belts

The drum drive belts connect the motor with the headstock spindle. Replace both belts at the same time if either one appears chipped or cracked or if you find pieces of rubber on the bottom of the scanner cavity.

To replace a belt, follow this procedure:

1. Remove the drum from the scanner.
2. Pull the old belt off with your fingers.
3. Put the new belt on. No tools or tension adjustments are required.

Replacing the Drum Calibration Strip

The calibration strip should be replaced if it becomes scratched or visibly damaged. A damaged calibration strip can result in horizontal light or dark streaks across the scanned image. If the strip becomes dirty, it can be cleaned with drum cleaner.

CAUTION: The drum surface is fragile; be careful not to scratch it. Do not use hard instruments to remove the calibration strip or adhesive. Do not use any unauthorized cleaning materials.

To replace the calibration strip, proceed as follows:

1. Remove the drum from the scanner.
2. Peel off the old strip.
3. Remove any adhesive residue with drum cleaner.
4. Clean the entire area where the new strip will be mounted. Let the drum dry thoroughly. Make sure your hands are clean and dry before proceeding.
5. Mount the drum into the scanner.
6. Peel the adhesive backing off the new strip.
7. Align the strip between the two red areas.
8. Press the edge of the strip against the axial scribe line.
9. Roll the strip onto the drum. Smooth out the strip with your fingers, making sure to remove any bubbles or wrinkles.

Lubricating the Leadscrew

The leadscrew drives the drum carriage and is located beneath it. Apply the lubricating gel to both ends of the screw every 18 months or at the first sign of any unusual noise during operation.

Left Side

To lubricate the left side of the leadscrew, follow these steps:

1. Power on the scanner.
2. Open the drum access door and remove the drum, leaving the drum mounting lever in the up position.
3. Move the carriage into the ship position (for detailed instructions, see the section *Placing the Carriage in the Ship Position* in Chapter 6).
4. Tear open the top of the lubricant pack and squeeze a dab of the lubricant on three equidistant points along the length of the screw (about every 3–4" [75–100 mm]):

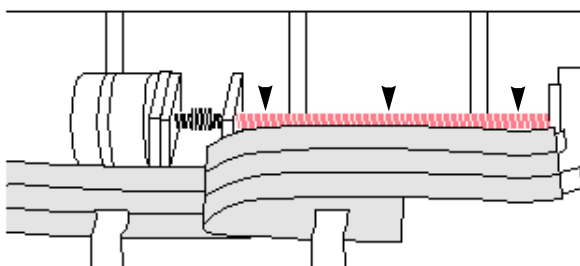


Figure 4-5
Lubrication points
on the left side of
the leadscrew

5. Press the middle three buttons on the scanner's control panel simultaneously to perform a soft restart and return to the READY TO SCAN state. The carriage will return to the home position.

Right Side

To lubricate the right side of the leadscrew, follow these steps:

1. Make sure the carriage is in the home position. (If not, press the middle three buttons on the scanner's control panel to perform a soft restart.)
2. Power down the scanner.
3. Locate the right-hand shipping bolt access hole inside the scanner cavity:

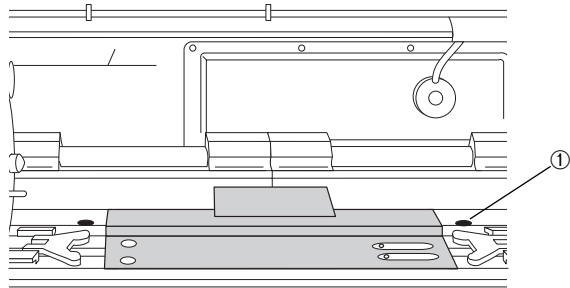


Figure 4-6
Leadscrew access
hole (lever up).
①-Access hole.

4. Place a dab of the lubricant on the supplied applicator and insert it into the access hole. The leadscrew is located slightly toward the rear below the hole. Spread the lubricant over the screw.

5. Move the drum mounting lever to the down position. The access hole will now be in another position relative to the lead screw:

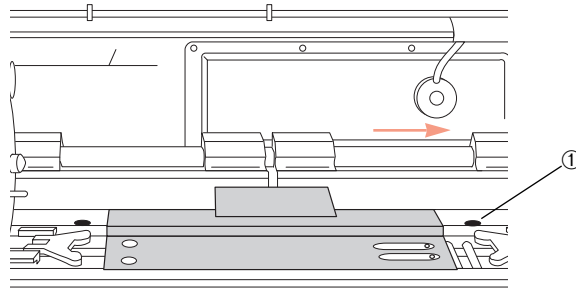


Figure 4-7
Leadscrew access
hole (lever down).
①-Access hole.

6. Repeat Step 3.
7. Discard the remaining gel and the applicator.



Troubleshooting

The Howtek Scanmaster 6500 is designed to be highly reliable. However, problems may occasionally arise during operation. This chapter describes some of the most common problems and the recommended corrective actions.

Technical Support

If you are unable to correct a problem using the information provided on the following pages, contact your local dealer or sales representative. Make sure you have the following available:

- ◆ Your scanner's serial number (located on the scanner's rear panel).
- ◆ The FLASH revision number (indicated on the control panel).
- ◆ The type of computer system you are using, including amount of RAM, operating system version, and revision level of your scanner software.
- ◆ A telephone located near the scanner.

Problem	Cause	Solution
The control panel display does not light up.	The scanner is not plugged in.	<i>Make sure the power cord is securely plugged into both the scanner and the AC power outlet.</i>
	The scanner is not turned on.	<i>Make sure the on/off switch is in the ON position (the I is pushed in).</i>
	The AC power outlet is not "live".	<i>Verify proper operation of the outlet by plugging in a desk lamp.</i>
The control panel display is lit, but the scanning application cannot locate the scanner.	The scanner is OFFLINE.	<i>Return the scanner to the on-line state. See Chapter 2 for more information.</i>
	The SCSI cable is loose or not connected.	<i>Make sure all the SCSI connections in the chain are secure.</i>
	The SCSI chain is not properly terminated.	<i>Refer to Chapter 1.</i>
	Two or more devices are set to the same SCSI address.	<i>Check the device addresses in the chain for duplicate ID numbers. (Refer to Chapter 1 for more information.)</i>
	The SCSI devices have not been powered on in the correct sequence.	<i>Make sure the devices in the SCSI chain are turned on before or at the same time as the host computer.</i>
	Defective SCSI cable.	<i>Replace the cable.</i>

Problem	Cause	Solution
The scanned image is marred by specks or horizontal lines.	The original to be scanned is dirty.	<i>Clean the original.</i>
	There is tape or media in the calibration areas of the drum.	<i>Remove any tape or media that is obscuring the calibration areas on the drum; clean the areas if they are dirty.</i>
	The white calibration strip is damaged.	<i>Replace the calibration strip. Refer to Chapter 4.</i>
The scanned image is marred by vertical bands.	The drum is dirty.	<i>Clean the drum with drum cleaner.</i>
	The drum is not mounted securely.	<i>Reinstall the drum, making sure that the pulley and drum are aligned with the index marks. (Refer to page 2-3 for further information.)</i>
	Hardware failure.	<i>Contact your dealer for assistance.</i>
The scanned image is too light (overexposed).	There is tape in the calibration areas of drum.	<i>Remove tape and clean drum surface.</i>
	The drum is damaged.	<i>Replace drum.</i>

Problem	Cause	Solution
The scanned image is too dark.	The wrong lamp is selected.	<p><i>Make sure the reflective lamp has been selected if you are scanning a print or line art.</i></p> <p><i>Make sure the transparency lamp has been selected if you are scanning a transparency.</i></p>
The scanned image is out of focus.	The scanner is not in the autofocus mode.	<p><i>Make sure autofocus has been selected, or refocus interactively (using Aurora software).</i></p>
	The analyzer lens is dirty.	<p><i>Clean the lens with rubbing alcohol and lens tissue (see Chapter 4).</i></p>
The scanned image is marred by Newton's Rings.	There are bands of interference caused by thin layer of air between the drum and the mounted transparency.	<p><i>Oil mount the transparency or apply anti-Newton's Ring spray.</i></p>



Transporting the Scanmaster 6500

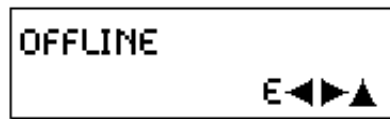
Your Scanmaster 6500 may be shipped safely by following the simple preparations and procedures indicated in this chapter.

CAUTION: Use care when repacking your equipment. Your scanner is a delicate instrument. If it is dropped or otherwise jarred, it can be severely damaged.

Placing the Carriage in the Ship Position

Before transporting the Scanmaster 6500, the scanner's carriage must be placed in the ship position. Proceed as follows:

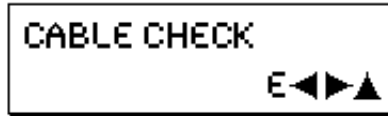
1. Remove the drum and return the drum mounting lever to the up position.
2. With READY TO SCAN on the control panel display window, press ENTER to take the scanner OFFLINE:



3. Press ◀ to access the TEST function:




4. Press ENTER to display the CABLE CHECK function:



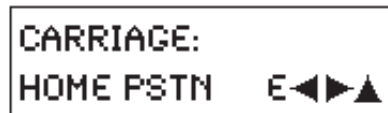
A rectangular terminal window with a black border. The text 'CABLE CHECK' is displayed in a monospaced font at the top. Below it, on the right side, are navigation icons: a small 'E' followed by left, right, and up arrow symbols.

5. Press ► to move to the CARRIAGE function:



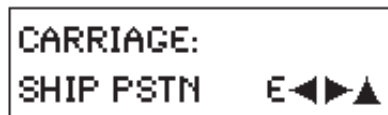
A rectangular terminal window with a black border. The text 'CARRIAGE' is displayed in a monospaced font at the top. Below it, on the right side, are navigation icons: a small 'E' followed by left, right, and down arrow symbols.

6. Press ENTER. The display now reads:



A rectangular terminal window with a black border. The text 'CARRIAGE:' is on the top line and 'HOME PSTN' is on the bottom line. On the right side of the bottom line, there are navigation icons: a small 'E' followed by left, right, and up arrow symbols.

7. Press ◀ to access the ship position function:



A rectangular terminal window with a black border. The text 'CARRIAGE:' is on the top line and 'SHIP PSTN' is on the bottom line. On the right side of the bottom line, there are navigation icons: a small 'E' followed by left, right, and up arrow symbols.

8. Press ENTER to move the carriage into the ship position.

Packing the Scanmaster 6500

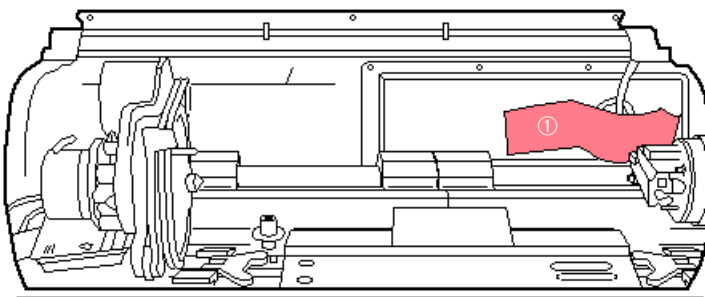
To pack up your scanner use the original shipping cartons, pallet, Allen wrench, shipping bolts, and packing materials. If you no longer have the original cartons, replacements can be ordered from Howtek.

CAUTION: Before packing the scanner, make sure the carriage is in the ship position (see previous section).

To pack up the Scanmaster 6500 for shipping, follow these steps:

1. Make sure the scanner is powered down (press the **O** side of the on/off switch).
2. Unplug the power cord from the AC outlet and disconnect it from the scanner.
3. Open the drum access door. Tape down the analyzer lens:

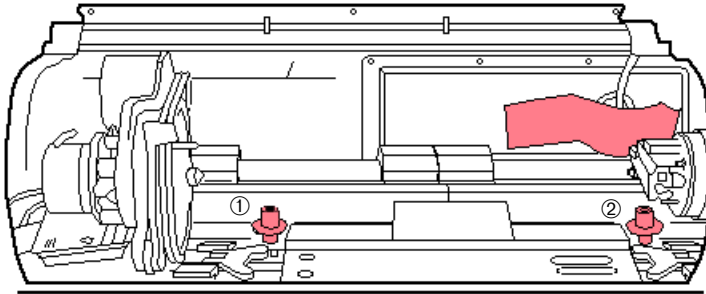
Figure 6-1
Taping the analyzer lens.
①-Tape.



4. Secure the scanner's drum drive mechanism to prevent shifting during transport:
 - ◆ Place the supplied shipping bolts (with yellow tops) into the holes in the base of the scanner cavity:

Figure 6-2
Shipping bolts.

- ①-Left.
- ②-Right.



- ◆ Using the supplied 3/8" Allen wrench, tighten the bolts until you feel significant resistance and the lock washers start to flatten.
5. Close the drum access door and tape it closed.

6. Stand facing your helper with the scanner between you. Bending your knees to protect your back, carefully lift the scanner and place it in the pallet, aligning the scanner with the alignment blocks on the pallet:

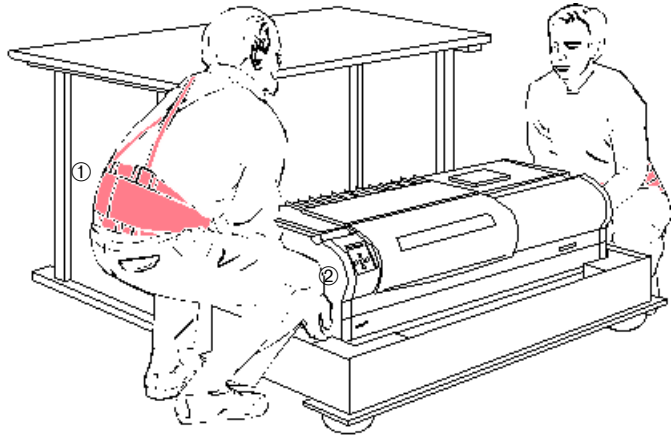


Figure 6-3
Placing the scanner
into the pallet.
①-Back brace (highly
recommended).
②-Hand holds.

7. Cover the scanner with the poly bag and foam supports.

8. Place the cardboard box and cover over the scanner and strap the carton securely to the pallet:

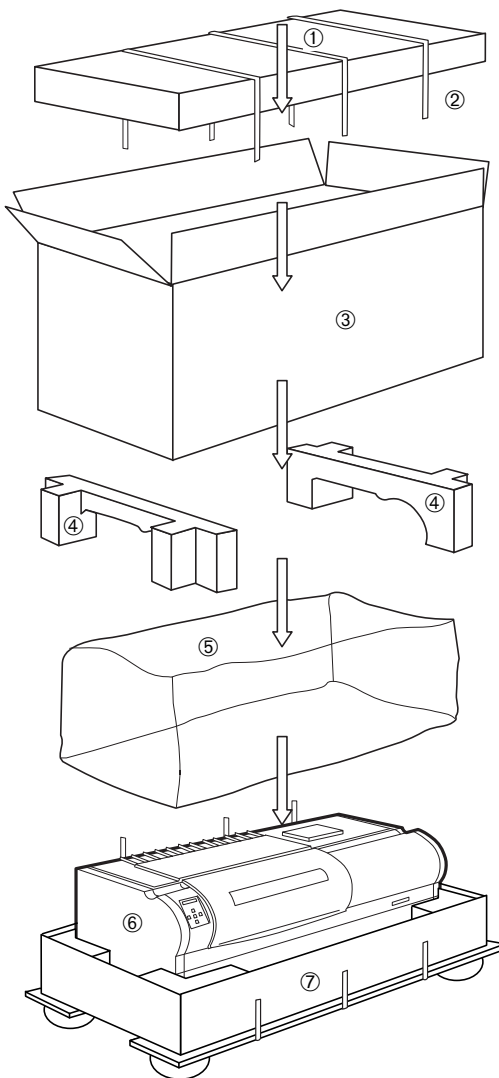


Figure 6-4
Packing the
Scanmaster 6500.
①-Cardboard cover.
②-Packing straps.
③-Cardboard box.
④-Foam supports.
⑤-Poly bag.
⑥-Scanmaster 6500.
⑦-Pallet.



Technical Information

Physical Characteristics

Dimensions and Weight

	Scanner (without pallet)	Scanner (with pallet)
Width:	51.5" (1.31 m)	60.0" (1.53 m)
Height:	14" (356 mm)	28.0" (711 mm)
Depth:	21.5" (546 mm)	28.0" (711 mm)
Weight (max.):	160 lbs (72.5 kg)	250 lbs (113.3 kg)

Scanner Type

Interchangeable drum, photomultiplier tubes (PMT): RGB, grayscale, and black and white scanning system.

Light Source

Two tungsten halogen reflector lamps.

Color Separation

Three PMT sensors (red, green, blue) with dichroic beam splitters and interference filters.

Focus Control

Automatic and host-based interactive controls.

Interface

SCSI-2 Fast.

Electrical Characteristics

Power Supply

90–132 VAC (47–63 Hz).
180–264 VAC (47–63 Hz).

Power Consumption

Maximum: 500 W.
Operating: 380 W.
Standby: 150 W.

Environmental Requirements

Temperature

Operation: 65 to 75°F (18 to 24°C).
Shipping or storage: -30 to 160°F (-34 to 71°C).

Relative Humidity

Operation: 40–60%.
Shipping or Storage: 10–95%.

Scanning Characteristics

Spatial Resolution

User selectable from 50 to 5000 dpi.

A/D Conversion

12 bits per color; 4096 levels of gray.

Data Conversion

Linear and logarithmic.

Drum Speed

600 to 1600 rpm.

Effective Scanning Area

Large drum: 23.38" x 18.38" (594 x 467 mm).

Small drum: 11.38" x 18.38" (289 x 467 mm).

Image Types

Reflective and transparent copy (positive and negative).

Scanning Modes

Color or grayscale (8 or 12 valid bits per pixel, giving 256 or 4096 colors or levels of gray) and binary (for line art or halftones).

Field Stops (Aperture)

Fourteen.

Approvals

Safety

UL: 1950.

CSA: C22.2 No. 950.

TÜV: EN60950.

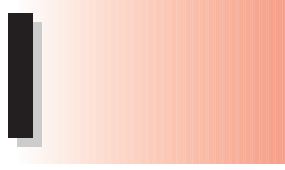
Emissions

FCC part 15 Class A.

CISPR 22 (EN55022) Class A.

European Community

CE Marking.



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