INSTALLATION

Nikon® **Coolscan**™ Installation and Basic Operation Guide

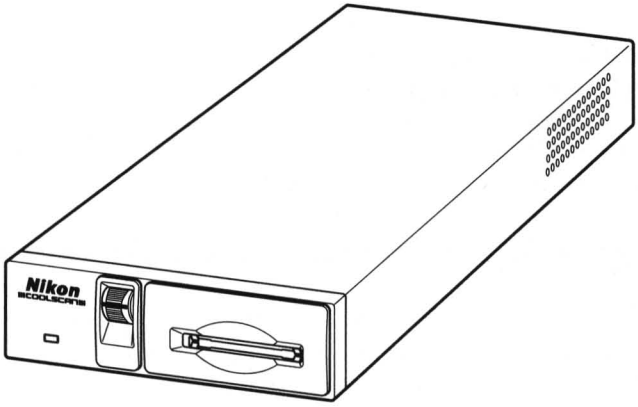
for Macintosh™

Nikon®
ELECTRONIC IMAGING

Nikon

Coolscan™ Installation and Basic Operation Guide

for Macintosh™



FCC Radio Frequency Interference Statement for Coolscan

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Installation Safety Regulation of Coolscan Internal Model

This scanner has been approved by the Underwriters Laboratories, Inc., in the U.S., the Canadian Standards Association, and as a class B device under Part 15 of the FCC (Federal Communications Commission) Rules. This unit should only be installed in equipment that has been approved according to the same standards.

AC Line Cord

Note that different power cords are needed for different line voltage. If the line voltage is greater than 230V AC, the plug should be rated for 250V AC and 15A (NEMA 6P-15), this cord insulation should be at least STV type, and the gauge of the cord should be at least AWG 18. If the line voltage is 115V AC or less, the plug should be rated for 125V AC and 10A with SVT type resistance for the cord insulation and a gauge of at least AWG 18, and the cord should meet the safety standards of the country where the unit is used.

When Taking this Product Out of the Country

The use of this product may violate local laws and restrictions in some countries. If this is the case, Nikon can not bear any responsibility for any violations resulting from the use of this product. Note that, in some countries, this product can be made to conform with regulations through an internal adjustment. Therefore, before taking this product out of the country, consult with your Nikon service representative.

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Acknowledgments

Nikon acknowledges with gratitude the contributions of the Design, Planning and Production Sections of the Electronic Image Engineering Division of Nikon Corp. and the Marketing & Development Group at Nikon Electronic Imaging. Nikon Electronic Imaging would also like to thank all those who helped test Coolscan and its software.

Trademark Information

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Introduction

Thank you for purchasing the Nikon Coolscan™ 35mm Film Scanner, and welcome to our family of electronic imaging products. We are confident that Coolscan will meet and exceed the high standard of quality, reliability, innovative design, and ease of use which you have come to expect from Nikon.

Before proceeding, make sure that you have read the *Open Me First* documents enclosed with Coolscan, including a packing Check List and important operator safety precautions.

Before You Begin

The installation procedures for Coolscan are straightforward. The instructions provided in this manual will lead you through these procedures and have you scanning within an hour. However, if you are not comfortable mounting hardware into your computer, please contact a qualified service person to assist in the installation of your scanner.

There are two models of Coolscan. The first is the *LS-10 internal* model, which is mounted into your computer just like a floppy disk drive. The other is the *LS-10E external* model, which is a peripheral device and cannot be mounted into your computer. As you follow the installation procedures in this guide, refer only to the sections which are appropriate to the Coolscan model you have purchased. In this guide, the Coolscan *internal* model will always be referred to as "LS-10." The Coolscan *external* model will always be referred to as "LS-10E," in which the "E" designates "external." If you are unsure of which model you are installing, refer to the sticker on the base of the scanner, which will indicate either "LS-10" or "LS-10E."

At the time of this printing, optional mounting kits for the LS-10 are available from Nikon Authorized Resellers for the following Macintosh CPU's *only*:

- Quadra 900/950
- PowerMac 7100
- Quadra 650 (formerly the Centris 650)
- IIvx
- Performa 600
- IIvi

These mounting kits include faceplate bezel, mounting bracket(s), cables and installation instructions for the particular model you wish to match.

The LS-10 can be mounted in any available 5-1/4" half-height drive bay of the CPU's listed above. Please consult the installation instructions enclosed with the mounting kit for your particular CPU. Note that mounting kits for other Macintosh CPU's *may* be available from third-party suppliers. Typically, these are for internal hard disk installations. These *may* be suitable for LS-10 installations. Consult with your Nikon Authorized Reseller or Nikon Electronic Imaging to help make this determination.

Due to the presence of metallic shielding material, it is not currently possible to mount the LS-10 in the Macintosh Quadra 800/840av without completely removing the CPU's front faceplate. Custom solutions might be provided by some third-party companies, but are not available at the time of this printing.

About this Manual

The function of this manual is to provide both the novice and expert user with information to successfully install Coolscan. A complete description of scanner hardware installation and scanner software installation is provided.

Very important informational items are printed in boldfaced type with a triangular alert icon located in the margin.

Following is a summary of the contents of this manual:

Chapter One – Introduction • (this chapter) Provides an overview of the Coolscan documentation package, product registration information, system requirements, and information on backing up the software.

Chapter Two – Setting Up Coolscan • Describes how to set up the scanner, where to place the scanner, transporting the scanner, and safety notes regarding the usage and installation of the scanner.

Chapter Three – The SCSI Interface • Describes the SCSI Interface, including setting up the SCSI ID, terminating the SCSI bus, how to connect to the computer SCSI bus, the SCSI chain, and a general description of the pro's and con's of the SCSI bus.

Chapter Four – Basic Operation • Covers the fundamentals of 35mm film, slide mounts, film handling, proper insertion of film in Coolscan, and use of the film strip holder.

Troubleshooting • Solutions to problems you may encounter in installing and operating your Coolscan.

Unpacking

Again, if you have not done so already, **please review the *Open Me First* documents enclosed with your Coolscan before proceeding in this manual.**

Welcome back!

By this point you have:

1. Removed all packaging materials from the scanner and the interface kit.

2. Confirmed that you have received all the parts that you were supposed to by using the packing Check List.

3. Checked for damage to the scanner caused by shipping. If you noticed any damage, you have notified the authorized Nikon reseller from whom you purchased the scanner.

4. Saved all shipping and packaging materials in case you need to ship the scanner in the future.

Registration

Completing and returning the enclosed Product Warranty Registration Card is very important to you. It is the only way that we can ensure that you promptly receive the latest information and software updates from Nikon. We feel that it is so important that we are offering an added incentive – upon receipt of your completed card, we will send you Nikon's *Guide to Scanning,* free of charge! This is an invaluable comprehensive manual on scanning and color reproduction. So, please complete the Product Warranty Registration Card and mail it today!

Software Installation

Installation of the Nikon scanning software accompanying Coolscan is covered in detail in the companion user manual *Software Reference for Scanners.* As is the practice with any software, it is strongly advised that you make a complete backup of the enclosed distribution software diskette and store the original master diskette in a safe place. Always work with the backup copies when installing the Nikon software.

Minimum Macintosh System Requirements

As an absolute minimum, your Macintosh computer system must be configured with the following components:

- Macintosh family of computers with SCSI interface
- Macintosh System 6.0.5 or later
- 32-bit Quickdraw (when using models preceding Macintosh IIci)
- 8 Megabytes of RAM (more recommended)
- 80 Megabyte Hard Disk (300 MB or more recommended)
- 8-bit display (24-bit true-color display *strongly* recommended)

Suggested System Configurations

Following these suggestions will yield the best scanning results:

- Set your disk cache (found in the "Memory" Control Panel in System 7, and in the Control Panel in System 6) to the minimum setting, as scan times increase if the RAM cache is set above the minimum. Most imaging applications, including Nikon Control, have their own method for dealing with images larger then available RAM.

- Virtual Memory, also in the "Memory" Control Panel in System 7, should be switched off.

- File Sharing should be switched off. Any extended background operation, such as copying large files from your system to another over a network, may cause Coolscan to 'time out' during operation.

- Allocate at least 80% of your available memory to the application that is hosting the Nikon Scanner plug-in (see your Macintosh User's Guide if you are are not familiar with this procedure). Nikon Control requires a minimum of 4 megabytes of RAM to operate. Adding memory to your system is one of the best investments you can make to increase overall performance.

- Coolscan will only operate from the SCSI controller that is part of the main logic board, also referred to as the 'motherboard.' Do not connect Coolscan to any third-party SCSI controller in an attempt to increase your scanning speed. Nikon's Marketing & Development Group is working with a number of third-party vendors to gain compatibility with such controllers. The limiting factor is the rate of data

delivered by Coolscan, not the rate that the SCSI controller card can accept data. The Nikon Scanner plug-in software will not find Coolscan unless it is connected to the main SCSI bus.

• For the most pleasing display, set your "Monitors" Control Panel to the maximum number of colors available. "Thousands" or "Millions" of colors will provide an excellent display of your image. If your system only supports a maximum of 256 colors you will see a 'dithered' image, which looks grainy or speckled. The monitor setting has no effect on the actual quality of your image, which is always captured in 24-bit mode (16.7 million colors).

• Color images can occupy large amounts of disk space. So, make sure your hard disk has sufficient free space to store the images you plan to scan. You should have at least 60 megabytes of free space available if you plan on maximum resolution scans.

Setting Up Coolscan

This chapter will introduce you to the main components of the LS-10 and LS-10E models, proper placement of the LS-10E, safely transporting your scanner, and precautions for safe operation.

The Front Panel

Let's take a look at Coolscan's front panel, as shown in Figure 2.1. The uncomplicated design of the front panel is indicative of how simple Coolscan is to use. The front panel of the LS-10 and LS-10E is identical. The front panel consists of the *film slot, focus wheel,* and *power/busy/error indicator light.*

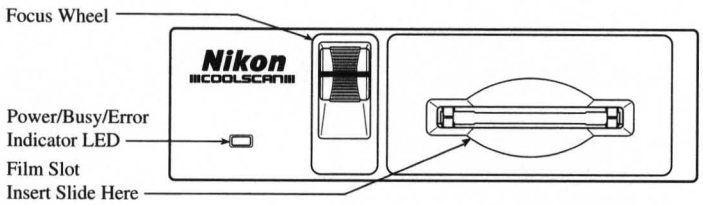


Figure 2.1 Coolscan's front panel.

Film Slot

The *film slot* is the opening into which you insert your slides or film strips (using the supplied film strip holder) for scanning. Slides and film strips are likewise ejected from the film slot.

A high degree of care must be exercised with the film slot. Since this opening allows the film to enter the scanner, it thus provides access to its delicate instrumentation.

Never insert any object into the film slot, other than mounted film or the provided film strip holder. Flammable materials, metals, water, etc., will cause fire, electrical shock and damage to the unit.

Focus Wheel

The *focus wheel* is used to fine-focus during scanning operation. This control is provided because of the wide variety of film and film mounts available, which affect the focusing function of the scanner.

The focus wheel must be in its center position during power up. The center position is indicated by the black line across the focus wheel being centered in the visible portion of the focus wheel.

Power/Busy/Error Indicator Light

The green *power/busy/error indicator light* has several functions. First, during power-up it blinks at one-second intervals until Coolscan's power-on self-test and autocalibration has completed. Second, after the self-test and autocalibration is complete, the light stays on constantly, indicating that Coolscan is ready to scan. Third, during scanning, the light will blink at two-second intervals, indicating that the scanning operation is in progress. Lastly, the light will blink rapidly if an error is detected, in which case the scanner will either recover on its own, or may have to be powered off and back on to effect a reset.

To summarize:

Power-up: LED blinks at 1 second intervals

Coolscan is ready: LED is on constantly

Coolscan is scanning: LED blinks at 2 second intervals

Error condition: LED blinks rapidly

If you are installing an LS-10 model, please proceed to the section "The Rear Panel - LS-10."

The Rear Panel – LS-10E

The rear panel of the LS-10E is shown in Figure 2.2. Note that there are five items of interest on the rear panel. These are the *AC power switch, AC power connector,* the two *SCSI connectors,* the *SCSI termination power switch,* and the *SCSI ID switch.*

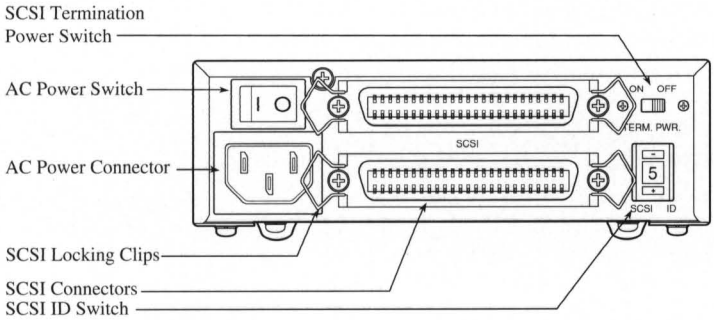


Figure 2.2 Coolscan's rear panel - LS-10E.

The *AC power switch* and *AC power connector* should be familiar to you. The AC power switch is used to turn power to the scanner on and off. The AC power connector receives the female end of the AC power cord.

The three SCSI-related items on the rear panel will be explained in detail in the next chapter, "The SCSI Interface."

Please proceed to the section "Orientation and Placement of the LS-10E."

The Rear Panel – LS-10

The rear panel of the LS-10 is shown in Figure 2.3. Note that there are three items of interest on the rear panel. These are the *DC power connector, SCSI connector,* and *configuration DIP switch.*

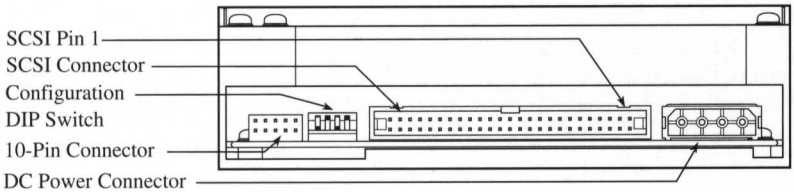


Figure 2.3 Coolscan's rear panel - LS-10.

The *configuration DIP switch* is shown in Figure 2.3. In almost all cases, the factory default settings of these switches will be proper for your installation. The default settings for the configuration DIP switch block are shown in Table 2.1.

The significance of the SCSI connector, DC power connector, and the configura-

tion DIP switch is discussed in greater detail in Chapter 3, "The SCSI Interface." For now, note that the scanner is set at the factory to SCSI ID #5 and to termination OFF. Disregard the *10-pin connector* at the bottom-left side of Figure 2.3. This connector is not used when installing the LS-10 in a Macintosh.

DIP Switch	Default	Usage
1 (Down)	On	SCSI ID bit 0 = 1
2 (Up)	Off	SCSI ID bit 1 = 0
3 (Down)	On	SCSI ID bit 2 = 1
4 (Up)	Off	SCSI Termination = Off

Table 2.1 Factory default settings for configuration DIP switch block.

Please proceed to the section "Transporting Coolscan."

Orientation and Placement of the LS-10E

Proper Orientation

The following guidelines and precautions should be adhered to when deciding on orientation of your LS-10E.

Let's take a look at Coolscan, as shown in Figure 2.4. Although Coolscan can be oriented on either of its sides, it is strongly recommended that you orient Coolscan on its base, or feet, to ensure that it won't fall down. In this orientation, the "Nikon Coolscan" label on the front panel will read properly.

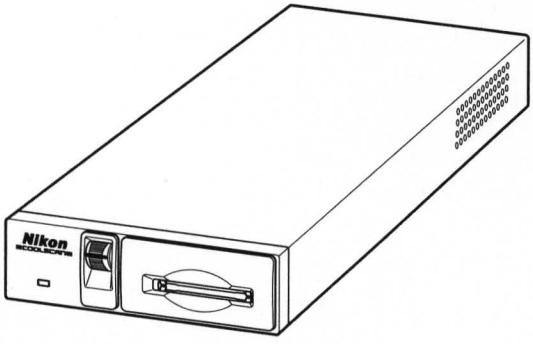


Figure 2.4 LS-10E, properly oriented.

Proper Placement

The following guidelines and precautions should be adhered to when deciding on placement of your LS-10E:

1. Place Coolscan near the computer so that the maximum suggested SCSI cable length (6 feet) is not exceeded.

2. Place the scanner so that it is easy to reach.

3. Coolscan should be placed on a flat, stable surface, free from vibration.

4. Keep the scanner away from damaging liquids by locating it away from sinks, coffee pots, etc.

5. Protect Coolscan from dampness, high humidity, and excessive dust or smoke. Dust and smoke, in particular, can cause undesirable effects on the scanner's optical systems, requiring extensive cleaning and maintenance to correct.

6. Avoid locations where a sudden change in temperature might cause condensation inside the scanner.

7. Protect the front of the scanner from direct sunlight or bright lights.

8. Avoid places with extremely hot or cold temperatures (below 10 degrees Celsius or above 35 degrees Celsius).

9. Avoid placing Coolscan near heat sources.

10. Avoid any physical shocks to the scanner. Do not store the unit where it will be subject to vibration.

11. Avoid placing Coolscan too close to other peripherals, and make sure there is sufficient air circulation on all sides of the scanner.

Transporting Coolscan

The following guidelines and precautions should be adhered to when transporting your Coolscan:

1. Always use the original packaging materials.

2. If the original packaging materials are unavailable, use appropriate packaging

materials for precision instruments. If you are shipping your Coolscan back to Nikon, Nikon will not be responsible for damages incurred due to improper packaging.

3. The focus wheel must be turned all the way downward to the end of its travel before shipping.

4. Pay special attention to the air or courier service to ensure that they can properly handle this precision instrument.

If you are installing an LS-10, please proceed to the section "Installation Precautions."

Connecting AC Power to the LS-10E

The scanner's AC power cord is a standard three-wire grounding plug. This plug will fit only a grounded AC outlet. Intended to be a safety feature, *the grounding connector should not be defeated.* Additionally, an electronic surge protector is highly recommended.

Safety Precautions When Connecting AC Power to the LS-10E

The following precautions should be complied with when connecting AC power to the scanner:

1. Always use a proper power source of 115V AC or 230V AC, 50 to 60 Hz.

2. Do not hold the cord itself when plugging or unplugging the AC power. Hold the plastic portion of the connector itself rather than pulling on the cord.

3. If you lose the supplied power cord, use an appropriate replacement that is subject to the voltage of the power source, using the following guidelines:

- If a 230V AC power source is used, make sure that the plug is rated at 250V AC, 15A (NEMA 6P-16).

- If a 115V AC power source is used, the plug must be rated at 120V AC, 10A.

- The gauge of the cord must be at least 18 gauge (remember, the smaller the gauge, the thicker the wire. For example, 18 gauge is thicker than 20 gauge).

• The cord must be approved by the safety regulations of the country where it is used.

• A properly grounded three-conductor AC power source is required in order to reduce electrical noise and the possibility of electrical shock.

AC Power Safety Precautions – LS-10E

The following safety guidelines should be adhered to concerning AC power and Coolscan:

1. Once the AC power source is turned off, either through the Coolscan power switch or other AC power switch, wait at least 5 seconds before powering on again to ensure the proper power-up sequence.

2. Don't unplug the AC power cord from the AC source or from the Coolscan AC power connector while the Coolscan AC power switch is on. To be completely safe, don't unplug any other peripheral while Coolscan is powered on.

3. Do not move Coolscan while its power is on.

4. Never disassemble the scanner. It is very dangerous to touch the devices inside the unit due to high voltages, and there are no user serviceable parts inside. Such action may be a violation of your Nikon Limited Warranty, and would render the warranty null and void.

Installation Precautions

The following guidelines should be observed when installing Coolscan:

1. Make certain that power to all instruments directly connected to Coolscan (via SCSI) is turned off before beginning the installation. This includes the AC power switch on Coolscan (LS-10E only).

If you are installing an LS-10, there is no AC power switch since it relies on the Macintosh's power. Therefore, make sure that the Macintosh's power is off.

2. Turn off the power to all peripherals connected to the computer (display, printer, etc.).

3. If your Macintosh has a key-lock facility, turn the key to the unlock position.

4. Unplug the AC power cable to the Macintosh.

5. When mounting Coolscan into the Macintosh (LS-10 only), be especially mindful to eliminate electrostatic discharge, as it can damage the scanner.

Electrostatic discharge will damage the scanner if you touch its SCSI connector pins. Do *not* touch the pins.

General Safety Precautions

Always power off Coolscan and/or remove the power cord from the AC source when any one of the following occurs:

1. The AC power cord (LS-10E only) or 4-pin DC power plug (LS-10 only) becomes damaged.

2. Any liquids are spilled into the scanner.

3. The scanner is exposed to excessive moisture.

4. The housing of the scanner is opened or has become damaged (LS-10E only).

5. You suspect the scanner is not functioning properly.

6. Something unusual occurs, such as abnormal noise, odor, or smoke. In this case, bring your Coolscan to the dealer where it was purchased or to an authorized Nikon repair facility.

Operational Precautions

Never power on the scanner while the film strip holder is in the scanner slot. Doing so will interfere with the scanner's normal startup calibration procedure, resulting in incorrect color capture while scanning, and possible SCSI errors.

2. Do not attempt to insert slide mounts into Coolscan that are over 3mm thick. Remount the film into an appropriate holder.

3. Do not attempt to insert slide mounts into Coolscan that are not flat. Remount the film into an appropriate holder.

4. Do not force a slide or the film strip holder into the Coolscan film slot. A smooth gliding action should be used during both insertion and removal.

5. Do not attempt to remove or reposition the slide or film strip holder in the Coolscan film slot during the scanning process.

The SCSI Interface

The computer interface used exclusively with Coolscan is called a Small Computer System Interface (SCSI – pronounced 'scuzzy'). This interface has been adopted as the standard in the Macintosh computing environment, and is utilized by many computer peripherals including disk drives, scanners, printers and CD-ROM drives.

System Requirements for SCSI Installation

In order to connect a SCSI device to the Macintosh, the following requirements must be met:

1. The computer system must have a SCSI controller (most Macintosh computers do).

2. The SCSI device must be set to an unused SCSI ID number.

3. A proper SCSI cable must connect the SCSI controller to the SCSI device.

4. The SCSI bus cabling must be correct if more than one peripheral shares the bus.

5. The SCSI bus must be properly terminated.

6. Appropriate SCSI driver software must be used.

These requirements will be addressed in the following sections.

Setting the SCSI ID

The SCSI bus is a sort of 'data highway,' with the SCSI devices connected to the SCSI bus representing 'stops' on this highway. Each device requires its own distinct SCSI ID number so that the Macintosh can easily locate it through the SCSI controller. Because the SCSI bus can accommodate up to seven devices, internal or external, a SCSI ID number can have a value between 0 and 6. There are no implicit regulations regarding the allocation of these numbers. Typically, however, the Macintosh's SCSI controller would be assigned SCSI ID number 7, while the SCSI devices would be numbered 0 through 6.

The SCSI ID number is commonly set by a switch on the rear of the SCSI device. *The default SCSI ID number of Coolscan, set at the factory, is ID #5.*

Determining Which SCSI ID Number to Use

If Coolscan is the only external SCSI device that will sit on the SCSI bus, there is no need to change the SCSI ID number from the factory setting. This is assuming that your internal hard disk is set to SCSI ID #0.

If Coolscan must share the SCSI bus with one or more other SCSI devices, it is necessary to ensure that no two devices are using the same SCSI ID number. Create a list of all SCSI devices (See Table 3.1) on the SCSI bus of the Macintosh you will be installing Coolscan on, noting the device type and the SCSI ID number of each device. You can discover the SCSI ID of some disk drives by selecting the disk drive in the Macintosh Finder and selecting GET INFO from the FILE menu. To determine the SCSI ID number of other devices, look at the rear of each for some indication. If there is no indication as to the SCSI ID number, then consult with the device's user's manual or contact the peripheral manufacturer to ascertain this information.

Never change the SCSI ID number of a SCSI device while its power or the computer's power is on.

SCSI ID	Device Type
0	Internal Disk Drive
1	_____
2	_____
3	_____
4	_____
5	**Coolscan Scanner (default)**
6	_____
7	Macintosh Computer

Table 3.1 Typical SCSI ID number chart.

If another SCSI device shares the same SCSI ID #5 of Coolscan, change the SCSI ID number of Coolscan to an unused number, as indicated in the following sections. Note any changes in Table 3.1.

If you are installing an LS-10, please proceed to the section "Setting the SCSI ID – LS-10."

Setting the SCSI ID – LS-10E

If necessary, the SCSI ID number of the LS-10E can be set via a switch on the back of the scanner, as shown in Figure 3.1. Simply push the button *above* the SCSI ID number indicator to *decrement* the SCSI ID number. Conversely, push the *lower* button to *increment* the SCSI ID number.

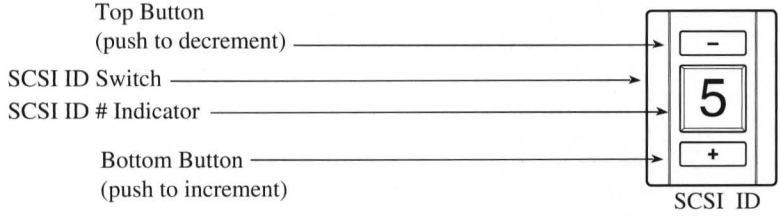


Figure 3.1 SCSI ID switch on the rear of Coolscan - LS-10E.

Please proceed to the section "Terminating the SCSI Chain."

Setting the SCSI ID – LS-10

If necessary, the SCSI ID number of the LS-10 can be set via the block of configuration DIP switches on the back of the scanner, as shown in Figure 3.2. For most installations, these configuration DIP switches will not require changing.

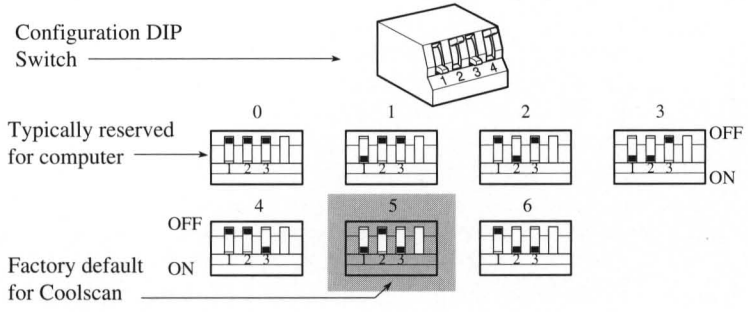


Figure 3.2 Configuration DIP switch block on the rear of Coolscan - LS-10.

To change the positions of the configuration DIP switches to the desired SCSI ID number, use Table 3.2 for proper switch positions. Use a small pointed instrument to toggle the switches, such as a very small screwdriver. It is not recommended to use a

pencil or pen, since these will discolor the switch and make it hard to differentiate the ON versus OFF position.

***Never* use SCSI ID #7 for a SCSI device, as it is reserved for the Macintosh.**

DIP Switch Configuration

	SCSI ID	DIP #1	DIP #2	DIP #3
	0	Off	Off	Off
	1	On	Off	Off
	2	Off	On	Off
	3	On	On	Off
	4	Off	Off	On
Default ID	**5**	**On**	**Off**	**On**
	6	Off	On	On

Table 3.2 Configuration DIP switch values for corresponding SCSI ID number. SCSI ID #5 indicates factory default setting.

Terminating the SCSI Chain

The *SCSI chain* is the electrical bus connecting two or more SCSI devices. It is critical that this bus be correctly terminated for the SCSI devices to operate properly.

Termination is an electronics term that applies to the impedance found at both ends of the bus. The electrical signals on the SCSI bus are changing rapidly between their digital 'on' and 'off' states. To minimize electrical 'noise,' a *terminator* is placed on each end of the SCSI bus. The effects of this termination may be unseen to you, but are critical nonetheless.

Incorrect SCSI termination can cause unpredictable errors.

Typically, the Macintosh internal SCSI connector has a hard disk drive connected to it and is terminated. Quadra models have a special internal SCSI cable which has termination installed at the end of the cable. All internally mounted SCSI devices in Quadra 900/950 systems should *not* be terminated.

If one other SCSI device shares the SCSI bus, it also must be terminated. If additional SCSI devices sit on the bus in between the two end SCSI devices, these devices *cannot* be terminated. *The SCSI chain will only operate properly if termination is in place at the beginning and end of the SCSI bus.*

SCSI termination remains more of an art than a science. You may find that your computer will not recognize all of the SCSI devices installed when you restart your system after connecting Coolscan. You may need to deal with a number of special case situations. For example, the Macintosh Quadra requires specific installation procedures not applicable to other Macintosh systems. The Macintosh IIfx is another special case. The IIfx should only be terminated using the *black* terminator that is supplied with the system. Using the *gray* terminator, which is supplied with Coolscan, may cause damage to the computer. If you don't have the special black terminator, contact your authorized Apple dealer to obtain one.

If you are installing an LS-10, please proceed to the section "Terminating the LS-10."

Terminating the LS-10E

The LS-10E is configured with two 50-pin SCSI connectors on the rear of the unit, as shown in Figure 3.3. Install the standard 50-pin SCSI terminator (remember, you need the special black terminator for a IIfx) onto the bottom connector if termination is desired. If you would like Coolscan to reside in the center of the SCSI chain, then by necessity, the bottom connector will be used for a SCSI to SCSI jumper cable.

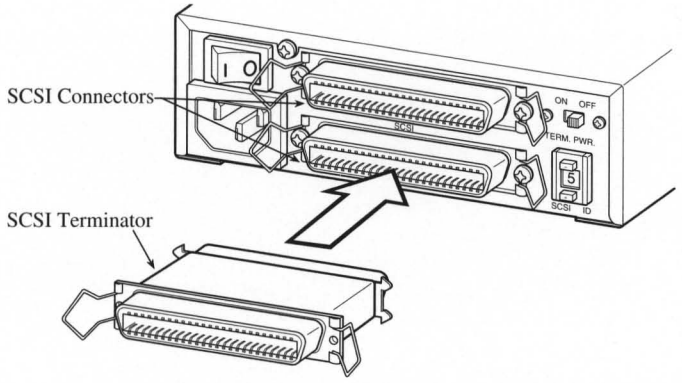


Figure 3.3 SCSI Terminator on the rear of Coolscan - LS-10E.

Termination Power

Unlike other Macintosh computers, the PowerBook does *not* supply SCSI termination power. To use the LS-10E with a PowerBook, the SCSI Termination Power Switch, labeled "TERM PWR" on the rear of the unit (see Figure 2.2) must set to the ON position. This configuration will require termination at both ends of the SCSI chain. For further information, refer to the Macintosh User's Guide for Macintosh PowerBook Computers.

To use the LS-10E with all other Macintosh computers, the TERM PWR switch must be set to the OFF position.

Please proceed to the section "SCSI Cables."

Terminating the LS-10

Setting termination on the LS-10 is simple. Termination is controlled by the position of the #4 switch of the configuration DIP switch block. If you recall, setting the SCSI ID number required use of only the #1, #2, and #3 switches.

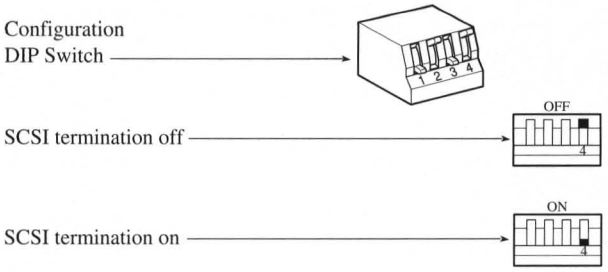


Figure 3.4 SCSI termination using configuration DIP switch #4 on the rear of the LS-10.

If switch #4 is in the ON position, Coolscan is internally terminated. If switch #4 is in the OFF position (the factory default setting), Coolscan is *not* internally terminated. These two settings are shown in Figure 3.4.

SCSI Cables

There are three basic types of SCSI cables that can be used with Coolscan. These are all 50 conductor cables, i.e. they have 50 *contacts*, or 'pins.' These three cables are described below.

If you are installing an LS-10, please proceed to the section "SCSI Cables Used With the LS-10."

SCSI Cables Used With the LS-10E

Three different types of SCSI connectors exist on Macintosh computers. The first is a *25-pin DB-25* type connector, the second is a *Centronics 50-pin* type connector, and the third is the *HDI-30* connector, found on Macintosh Powerbooks. To use Coolscan (or any other SCSI device) with a Powerbook, you should purchase the Apple HDI-30 SCSI Cable, which plugs into the Powerbook's SCSI connector and provides a

Centronics 50-pin female connector, similar to what is found on the rear of Coolscan. The SCSI cable provided with your LS-10E has a DB-25 connector on one end, and a Centronics 50-pin connector on the opposite end, as shown in Figure 3.5a. *This cable is used for the default configuration of Coolscan, which is making the scanner the first device on the SCSI bus.*

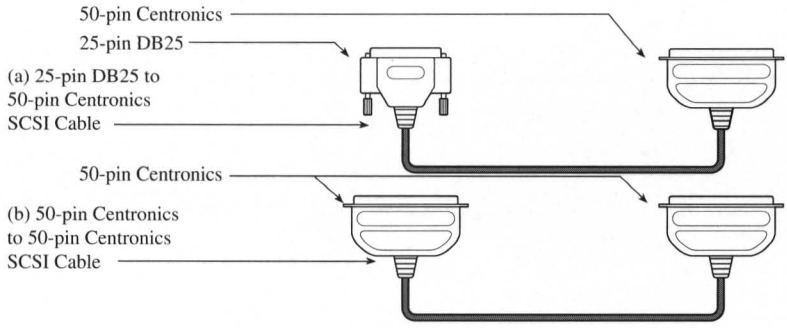


Figure 3.5 SCSI external cables. a) The 25-pin DB-25 to Centronics 50-pin cable. (b) The Centronics 50-pin to Centronics 50-pin cable.

If you plan on placing Coolscan in the middle of the SCSI chain, you will need a Centronics 50-pin to Centronics 50-pin SCSI cable, as shown in Figure 3.5b. This cable is *not* supplied with Coolscan.

SCSI cables should never be connected or disconnected while the computer's or SCSI device's power is on. Such action can damage the SCSI controller chip on your Macintosh, requiring a motherboard replacement.

Please proceed to the section "The Macintosh's External SCSI Connector."

SCSI Cables Used With the LS-10

The SCSI cable provided with the LS-10 enables you to connect the scanner to the Macintosh's SCSI chain as either the only device on the SCSI bus, or as an additional device. This is a *chainable SCSI flat cable* with two identical crimped connectors on each end and one connector crimped in the center, as seen in Figure 3.6a.

If Coolscan is to be the only internal SCSI device: Connect one end of this cable to the existing SCSI bus in the Macintosh (connecting the SCSI cable to the Macintosh's SCSI bus will be explained in the next section), then connect the opposite end to the SCSI connector on the rear of Coolscan (refer to Figure 2.3 to locate the SCSI connector). The center connector is *not* used. Make sure that DIP switch # 4 is in the termination ON position, as indicated in Figure 3.4.

If Coolscan is to be connected in the middle of the SCSI chain: Connect one end of this cable to the existing SCSI bus (connecting the SCSI cable to the Macintosh's SCSI bus will be explained in the next section), connect the center connector to the SCSI connector on the rear of Coolscan, and connect the last connector to your internal disk drive.

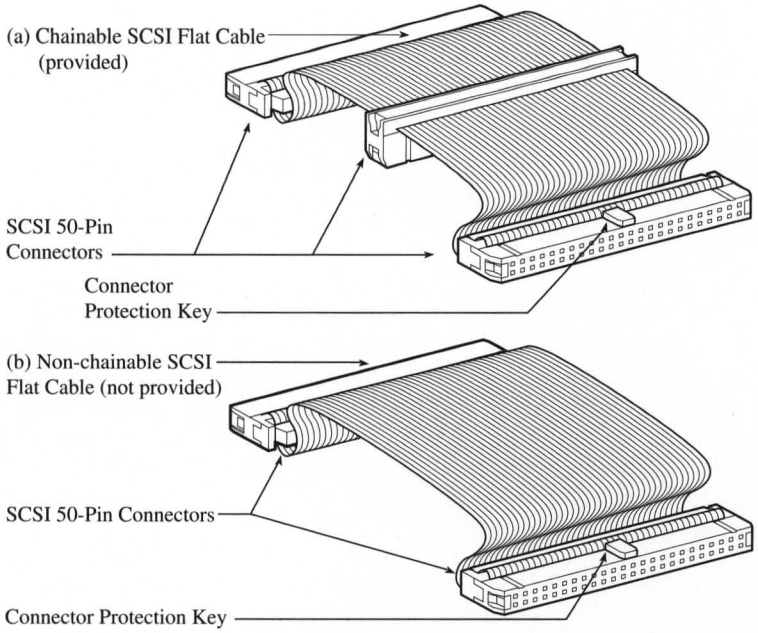


Figure 3.6 SCSI flat cables. (a) Chainable SCSI flat cable provided with Coolscan. (b) Non-chainable SCSI flat cable.

The cable seen in Figure 3.6b is a *non-chainable SCSI flat cable.* If you already have one of these, it can be used instead of the supplied cable if you are installing Coolscan as the last device in the SCSI chain.

Make sure that DIP switch #4 is in the termination OFF position, as indicated in Figure 3.4.

SCSI cables should never be connected or disconnected while the computer's or SCSI device's power is on. Such action can damage the SCSI controller chip on your Macintosh, requiring a motherboard replacement.

Please proceed to the section "The Macintosh's Internal SCSI Connector."

The Macintosh's External SCSI Connector

The SCSI connector for external SCSI devices on the Macintosh, which is a 25-pin DB25-type connector, is found on the Macintosh's rear panel. This connector is indicated by the Macintosh's SCSI symbol, shown in Figure 3.7.

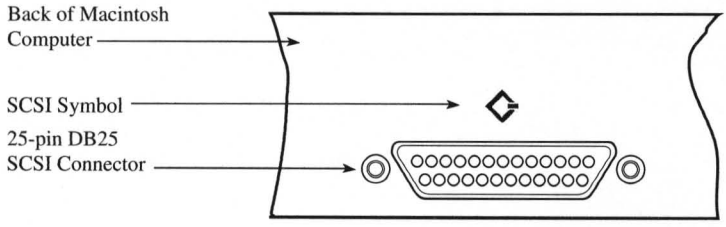


Figure 3.7 Simplified rear view of the Macintosh computer's SCSI connector.

The 50-pin Centronics connector, the type used on Coolscan, is the most common connector used for external SCSI devices on the Macintosh. This is why a *25-pin DB25 to 50-pin Centronics* cable has been provided with your Coolscan. The 25-pin end of the cable is connected to the SCSI connector on the Macintosh, and the 50-pin end to Coolscan. Examples of these connectors are shown in Figure 3.8.

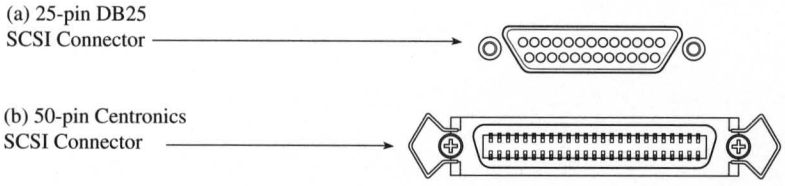


Figure 3.8 Typical SCSI connectors. (a) DB25 connector. (b) 50-pin Centronics connector.

Please proceed to the section "The SCSI Chain."

The Macintosh's Internal SCSI Connector

The Macintosh's SCSI connector for internal SCSI devices, a 50-pin flat connector, resides inside the Macintosh on the motherboard (the main circuit board inside the Macintosh). This is shown in Figure 3.9. Please note that Coolscan will not operate properly unless it is connected to the main Macintosh SCSI port. Do *not* connect Coolscan to any SCSI *accelerator card* that may be installed.

Connecting to the Internal SCSI Connector

Again, the SCSI connector on the Macintosh's motherboard is a 50-pin flat connector, as shown in Figure 3.9. Note the position of pin 1 and the *safety key.* The safety key provides a level of protection against inserting the cable improperly.

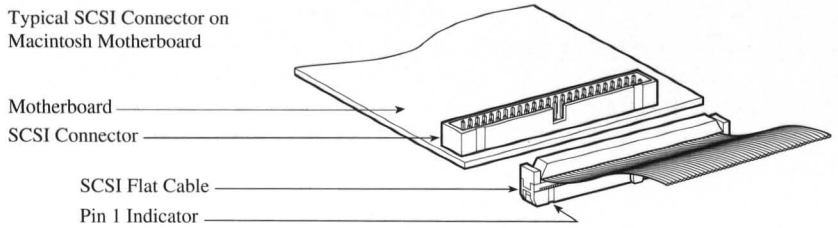


Figure 3.9 The 50-pin flat SCSI connector inside the Macintosh on the motherboard.

If for some reason you choose not to use the internal SCSI cable provided with your Coolscan (you won't be using it for installing Coolscan in the Macintosh Quadra Series), note that there is a wide variety of 50-pin flat SCSI connectors and SCSI cables. They are all functionally the same, yet vary in some important ways:

1. Some cables might not have a safety key. In this case, take extra precautions to ensure that the mating cables' connectors are properly aligned prior to insertion.

2. Some connectors may not have Pin 1 clearly marked on the connector.

3. Some cables may have Pin 1 on the cable indicated in red.

4. Some connectors will not have mechanical side levers to assist in plugging and unplugging the cable.

Care must be exercised when inserting and removing these 50-pin connectors, shown in Figure 3.9, as they are rather fragile. Observe the following guidelines when handling these connectors:

1. Never force the connector in or out. If you bend or break any of the pins, replacement of your motherboard will be required.

2. Make sure that the mating connectors are aligned properly before inserting. Take extra care in this very critical step.

3. Push the cable connector gently into the mating connector. Once in place, push down firmly.

Never remove a cable from the connector by pulling on the cable. If you cannot remove the cable by hand, use a small screwdriver to pry each of the sides out, a little at a time. Use caution at all times.

4. Make sure that Pin 1 of the cable connector mates with Pin 1 of the computer connector. Never guess.

5. *Never* plug or unplug a SCSI connector while the computer is powered on. This can result in damage to the SCSI controller.

The SCSI Chain

The SCSI chain, as you learned earlier, is the electronic data and control bus that connects two or more SCSI devices. The SCSI bus is the 'data highway' and the SCSI devices linked together forming the SCSI chain represent 'stops' on the highway. As mentioned at the start of this chapter, the SCSI chain can accommodate up to seven devices on the SCSI bus.

On any SCSI bus, there must be at least one *SCSI host* and one *SCSI target device.* Coolscan is always a SCSI target device. This is the standard configuration for SCSI-based scanners. In fact, most devices connected to computers will be SCSI target devices. Typically, the Macintosh will always be the SCSI host.

In any case, the SCSI ID number of each device must be unique.

If you are installing an LS-10, please proceed to the section "Setting Up the SCSI Chain – LS-10."

Setting Up the SCSI Chain – LS-10E

The LS-10E can reside at any position in the SCSI chain. The two 50-pin connectors on the rear of Coolscan are both used for this purpose. There are essentially two possible SCSI chain configurations, the *two SCSI devices* configuration, and the *multiple SCSI devices* configuration.

Unlike other Macintosh computers, the PowerBook does *not* supply SCSI termination power. To use Coolscan with a PowerBook, the SCSI Termination Power Switch on the rear of the LS-10E (see Figure 2.2) must set to the ON position. This configuration will require termination at both ends of the SCSI chain. For further information, refer to the *Macintosh User's Guide for Macintosh PowerBook Computers.*

Connecting Two SCSI Devices

In the simplest case, only two devices share the SCSI chain – the SCSI host and the SCSI target device. In our case, the SCSI host is the Macintosh and the SCSI target device is the scanner. This simple configuration is shown in Figure 3.10.

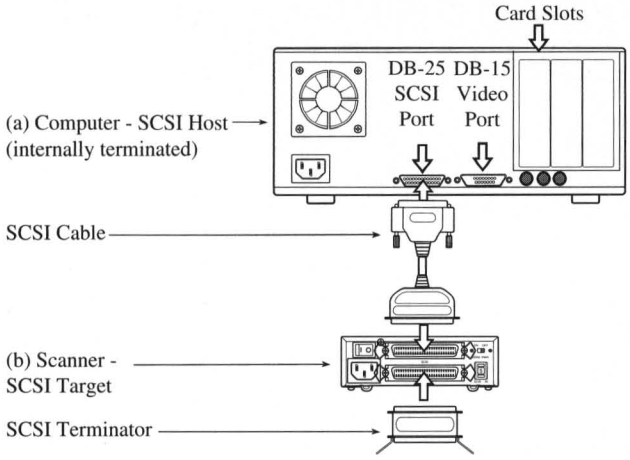


Figure 3.10 Two SCSI devices on the SCSI bus. (a) The Macintosh is the SCSI host. (b) Coolscan is the SCSI target device. The rear view of your system may not be the same.

Procedure (Use the SCSI cable supplied with Coolscan):

1. Make sure that the Macintosh is powered off.

2. Connect the DB25-pin side of the cable to the Macintosh's SCSI connector (on the back of the Macintosh).

3. Connect the Centronics 50-pin side of the cable to the top SCSI connector on the back of Coolscan. This cable will connect Coolscan to the Macintosh's SCSI bus.

4. Connect a SCSI terminator to the bottom SCSI connector on the back of Coolscan, since this is the end of the SCSI chain. Termination on Macintosh IIfx systems requires the proper *black* terminator, supplied by Apple. Do *not* use the gray terminator supplied with Coolscan.

In this case, both the SCSI host side of the bus and the SCSI target device side of the bus must be terminated, as shown in Figure 3.10.

Connecting Multiple SCSI Devices

In many cases, more than one SCSI target device will be connected to the SCSI bus. When this is true, the chain of SCSI cables must connect or 'daisy chain' each device together, even though the devices will typically only communicate directly with the Macintosh, not with each other. In this example, Coolscan is placed at the end of the SCSI chain. This daisy chaining configuration, as shown in Figure 3.11, minimizes the number of cables and connectors required.

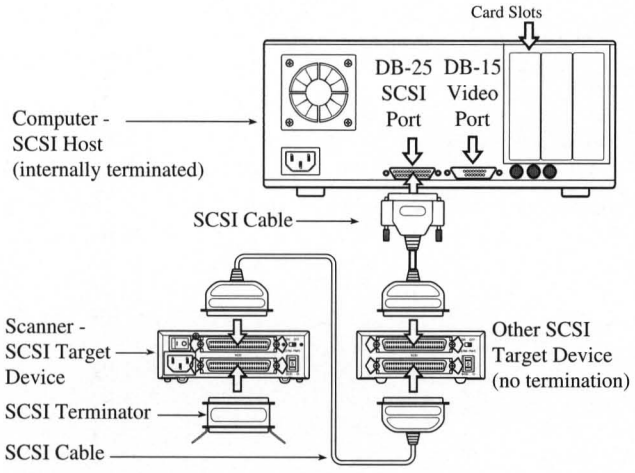


Figure 3.11 Daisy chaining SCSI devices. Coolscan is at the end of the chain. The rear view of your system may not be the same.

Procedure (using a Centronics 50-pin to Centronics 50-pin SCSI cable):

1. Make sure that the Macintosh and all other SCSI devices are powered off.

2. Remove the SCSI terminator from the last device in the SCSI chain.

3. Insert one end of the unused SCSI cables into the top SCSI connector on the back of Coolscan.

4. Connect the other end of the unused SCSI cable to the free SCSI connector of the neighboring SCSI device.

5. Connect the SCSI terminator to the bottom SCSI connector on the back of Coolscan.

It is equally possible to configure the SCSI chain with Coolscan in the center of the chain. In this case, the SCSI terminator would reside on the optional device, as opposed to Coolscan.

Please proceed to the section "Important Information About the SCSI Interface."

Setting Up the SCSI Chain – LS-10

The LS-10 can reside at any point in the SCSI chain. There are essentially two possible SCSI chain configurations, the *two SCSI devices* configuration, and the *multiple SCSI devices* configuration.

Connecting Two SCSI Devices

In the simplest case, only two devices share the SCSI chain – the SCSI *host* and the SCSI *target device.* In our case, the SCSI host is the Macintosh and the SCSI target device is the scanner. This simple configuration is shown in Figure 3.12.

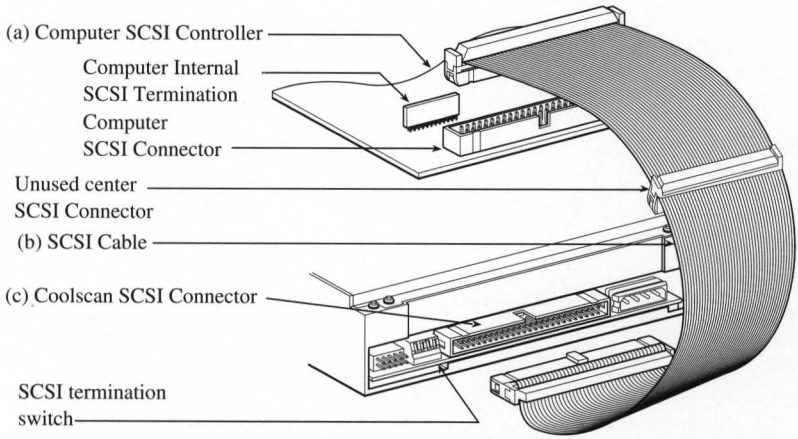


Figure 3.12 The Macintosh internal SCSI Bus. (a) The Macintosh motherboard's SCSI connector and internal SCSI cable. (b) SCSI cable. (c) The Coolscan SCSI connector and termination DIP switch.

Procedure (Use the SCSI cable supplied with Coolscan):

1. Make sure that the Macintosh is powered off.

2. Connect one end of the flat SCSI cable to the Macintosh's SCSI connector, mak-

ing sure that they are properly aligned.

3. Connect the opposite end of the flat SCSI cable to the SCSI connector on the back of Coolscan, making sure that the connectors are properly aligned.

In this case, both the SCSI host side of the bus and the SCSI target device side of the bus must be terminated. Refer to the section "Terminating the SCSI Chain - LS-10" for the proper DIP switch setting.

Connecting Multiple SCSI Devices

In many cases, more than one SCSI target device will be connected to the SCSI bus. When this is true, the chain of SCSI cables must connect or 'daisy chain' each device together, even though the devices will typically only communicate directly with the Macintosh, not with each other. In this example, shown in Figure 3.13, Coolscan is placed at the end of the SCSI chain. This daisy chaining configuration minimizes the number of cables and connectors required.

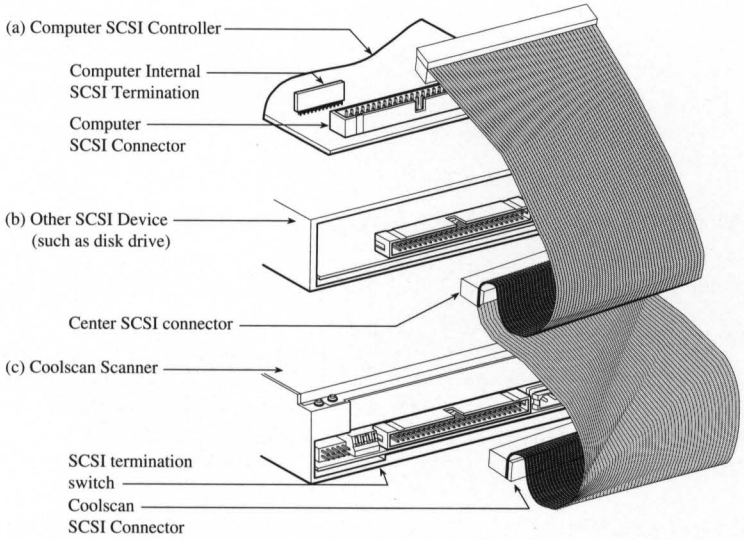


Figure 3.13 Multiple SCSI devices on the Macintosh SCSI bus. (a) The Macintosh motherboard's SCSI connector and internal cable. (b) Second SCSI device. (c) The Coolscan SCSI connector and termination DIP switch.

Procedure (using the supplied 3-connector 50-pin flat SCSI cable):

1. Make sure that the Macintosh and all other SCSI devices are powered off.

2. Remove SCSI termination from the last device in the SCSI chain.

3. Remove the SCSI cable currently in use from the Macintosh's SCSI connector on the motherboard, and the other end from the SCSI device.

4. Connect one end of the supplied 3-connector flat SCSI cable to the SCSI connector on the Macintosh's motherboard.

5. Connect the middle connector of the supplied SCSI cable to the SCSI connector of the neighboring, now middle, SCSI device.

6. Insert the unused end of the SCSI cable into the SCSI connector on the back of Coolscan.

7. Since Coolscan is now at the end of the SCSI chain it must terminated. Refer to the section "Terminating the LS-10" for the proper DIP switch setting. Because the Macintosh is at the other end of the chain, it also must be terminated.

It is equally possible to configure the SCSI chain with Coolscan in the center of the chain. In this case, the SCSI terminator would be installed on the last device in the SCSI chain, as opposed to Coolscan. Don't forget, Quadra systems should have no termination on any internal device when using the Apple internal SCSI cable. If the LS-10 is the last device in the SCSI chain, then DIP switch #4 should be set to the termination ON position.

Important Information About the SCSI Interface

There are several advantages and limitations to the SCSI interface which you should be aware of:

1. It is a standardized interface • The SCSI-1 ASPI 3.1 interface was standardized in 1986. This has made possible the use of any single SCSI-1 standard device with any computer system that supports the SCSI-1 interface standard, such as the Macintosh.

Advantages: • Because of the vast array of competing third-party developers, SCSI hardware is relatively inexpensive and plentiful. • SCSI-based software is well defined and widely supported.

Limitations: • Although the SCSI-1 interface itself is standardized, the computer-to-SCSI interface is not. Consequently, each SCSI controller may have its own computer interface. • Different SCSI devices cannot necessarily be controlled with the same host code. Therefore, there are times when it is best to use provided SCSI controllers for different SCSI devices instead of chaining the SCSI devices.

2. It is a multi-device interface.

As noted throughout this chapter, the SCSI interface can support up to seven independent SCSI devices, one of which is your Macintosh.

Advantages: • Ability to daisy chain multiple devices off of one interface to the computer. • Allows easy system expandability.

Limitations: • Not all SCSI devices can work together on the same SCSI bus. • Some SCSI devices will not operate correctly if daisy chained in a particular order. This may require that you experiment with the order of the devices in the daisy chain. • Some SCSI devices are internally-terminated at the factory. This may require that you or a qualified technician remove this termination if the device is to be placed in the middle of a SCSI chain. • When daisy chaining many SCSI devices together, the total length of all the SCSI cables used in the chain should not exceed 18 feet. A chain of more than 18 feet may result in lost data and 'lost' devices. • System performance can suffer as devices are added to the SCSI bus. This is related to the length of the SCSI chain. Data has a longer path to travel as more devices and cables are added to the SCSI chain, resulting in electrical instability and signal reflections. This leads to miscommunicated bytes, which must be re-sent until they are received correctly, a lengthy procedure.

3. It is a fast parallel interface.

Advantages: • The complex SCSI 'handshaking' is managed in hardware, allowing high speed variable size block transfers. In other words, the SCSI interface allows fast transfer of blocks of data.

Limitations: • The parallel bus limits the length of the SCSI chain, and therefore the distance between SCSI devices.

4. SCSI devices can easily be connected, disconnected, and moved.

Advantages: • Allows portability of devices between different computers. • Allows easy relocation of devices. • Allows easy system expandability.

Disadvantages: • Connecting and disconnecting SCSI devices that reside on the same SCSI bus as the computer's bootable disk can cause loss of data and/or damage to the SCSI devices if performed while the computer or any SCSI device is powered on.

Never connect or disconnect SCSI devices while the computer or any SCSI device is powered on.

Basic Operation

Introduction

By this time you have completed the hardware setup portion of your Coolscan installation. Installation of the Nikon scanning software is covered in the companion user manual *Software Reference for Scanners.*

Before proceeding to the software installation, this chapter will introduce you to the basic mechanical operation of Coolscan, including attributes of various film types and slide mounts, orientations supported by Coolscan, care and preparation of the film, proper usage of the film strip holder, and focusing.

Film

Coolscan is a 35mm film scanner. Cameras using 35mm film are widely available and handle a wide variety of film types, including color negative, color transparency (slide) and monochrome (Black and White). The 35mm frame format is shown in Figure 4.1.

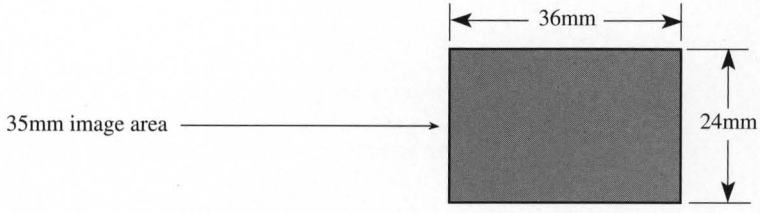


Figure 4.1 35mm film image area.

In the case of slides, 35mm film will be returned from your film processor in 35mm slide mounts, or in the case of negatives, cut into strips of 5 or 6 frames in length. Coolscan can accommodate either of these two film types. Film mounted in a slide holder is shown in Figure 4.2a, while an uncut strip of negative film is shown in Figure 4.2b.

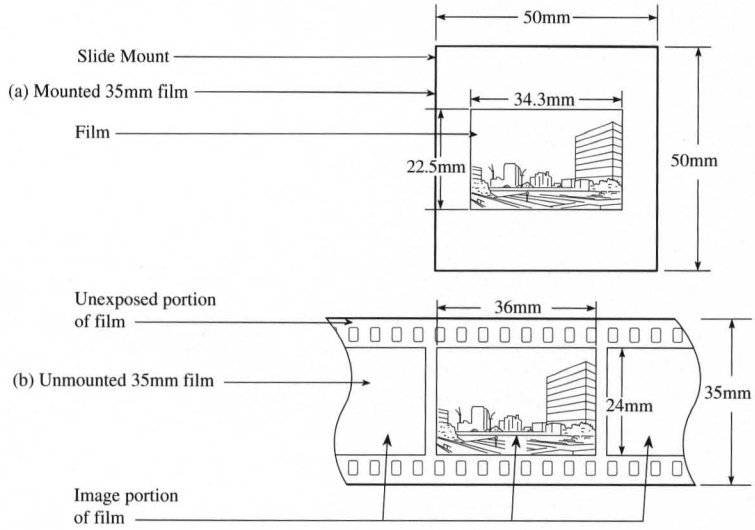


Figure 4.2 35mm film mounting. (a) Film in a typical slide mount. (b) Film in an uncut strip.

There are two basic formats for 35mm film, one being positive (slide or transparency) and the other negative. When looking at positive film, the image appears as you would expect the printed image to appear. When looking at negative film, the image is color reversed, with light areas appearing dark and dark areas appearing light. Typically, negative film is used for making prints, and positive film is used to make slides. Positive film is sometimes referred to as 'reversal' film.

The front and back surfaces of the film are not the same. One side is known as the *emulsion.* The opposite side is the *base.* To achieve optimal results when scanning, the emulsion side should face the top of the scanner, as shown in Figure 4.3.

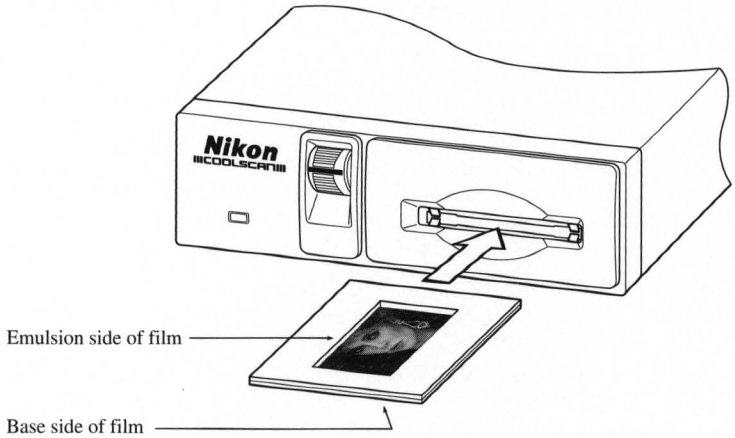


Figure 4.3 Inserting the emulsion side of the film facing the top of Coolscan.

Slide Mounts

Both positive and negative film can be cut and mounted. These mounts can vary in thickness and material. Typical 35mm slide mounts are composed of either cardboard or plastic, and may or may not use glass. Coolscan can accept slide mounts that are up to 50mm wide by 3mm thick.

The mounted film is assumed to be at the center of the slide mount, as shown in Figure 4.4. The film will be centered in the scanner's focal field without user intervention.

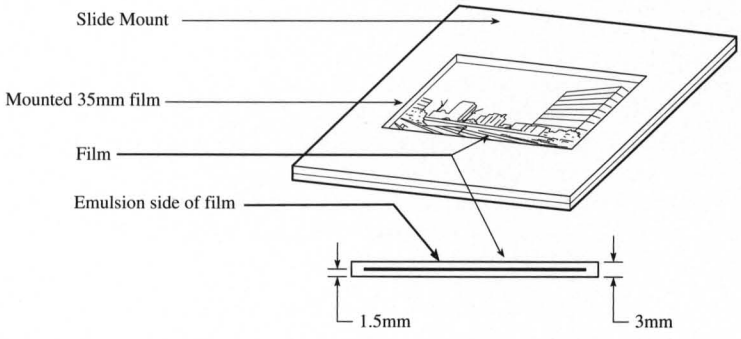


Figure 4.4 The film position concerning the center of the slide frame.

Handling the Film

Proper handling and care of the film is critical to ensure high-quality scans, and protect against damage. The film is easily scratched, smudged with fingerprints, and collects dust. In some cases, it is possible to remove the imperfections that these substances will cause during scanning by using image retouching tools found in popular software packages, such as Photoshop and ColorStudio. However, a great deal of time and effort will be saved if the film is cleaned *prior* to scanning.

Dust Removal

Dust is the leading cause of image imperfections when scanning. Dust can typically be removed by blowing air across both sides of the film. The best way to accomplish this is by using spray cans of compressed air, available from most photo processing or camera stores. Follow the cleaning directions accompanying these, making sure to direct the air stream onto both sides of the film, then checking to see if any dust remains. Be careful not to move the can while spraying, or liquid freon will be released, contaminating the film.

Stain and Fingerprint Removal

Often film can be stained by fingerprints, water or other materials. It will be much more difficult, and in some cases impossible to remove stains if they are located on the emulsion side of the film. For example, fingerprints on the emulsion side of the film cannot be removed later than 10 minutes after they occur. They literally become part of the emulsion film layers. Once again, the best technique for removing stains is preventing them in the first place. Care for your film. When possible use white cotton gloves when handling your film, and *always* handle it from the edges.

There are several ways to clean film. The first is to use water to remove water-based pollutants. Hold the film under a gentle stream of water for about 3 minutes at about 68° to 70° F. After washing, *very* gently rub the film between your thumb and forefinger with some dish washing liquid. Rinse thoroughly for 3 minutes and hang the film up to dry. The film sprocket holes can be used to hang the film. A paper clip works well for this purpose. When hanging, a droplet of water will form on the bottom of the film. Carefully use tissue paper to remove the water by just touching the droplet of water with a corner of the tissue paper. The water will be absorbed into the tissue paper. Never let droplets of water dry on the film. The film is *extremely* vulnerable during the washing procedure, so be very careful not to scratch its surface. Although the emulsion will change to a brown or blue color while wet, do not be alarmed. This will disappear as the film dries.

Removal of non-water based pollutants can be accomplished using a film cleaner, typically Trichloroethene NU. Note that this substance is very volatile and *very flammable.* It evaporates quickly and should be handled *very* carefully. It is very effective at removing adhesives or glue residue from the film. Apply the film cleaner, following

instructions included with the film cleaner, using a cotton swab. Film cleaner is available at many photo retailers.

Motion picture film cleaner uses lubricants to condition the film. In general, this type of film cleaner is *not* used on film used to shoot stills.

Hiding Scratches

Scratches can be made less visible on the base of the film. Film often has scratches on its base caused either by the photo processor or by a defective camera pressure plate. These scratches will produce annoying thin black lines on the resultant scan. The most common way to hide these scratches is to use a light lubricant, such as skin oil. Commonly, this can be accomplished by rubbing the forefinger across the side of the nose. Enough oil will rub off on the finger such that the finger can be wiped across the base side of the film. This will typically hide the scratches by filling them in with the oil. Notice that very little oil is needed. If you prefer, you can also use proprietary solutions sold in photo stores. Dip a cotton swab into the solution and carefully wipe it across the base side of the film. *Never* use these techniques on the emulsion of the film. A scratch in the emulsion of the film is unfortunately permanent.

Finding the Emulsion Side of the Film

In order to maximize the performance of Coolscan, it is necessary to learn how to identify the emulsion side of the film. One important reason has to do with sharpness. There will be lower losses in detail if the image layers in the emulsion face the scanner's lens directly. In the other orientation, the image-forming rays of light pass through the celluloid base, lowering definition.

In order to find the emulsion side of mounted film it is necessary to either remove the film from the mount or perform a simple experiment. In Figure 4.5a, the film is held at an angle with respect to a light source such that the reflected light from the surface of the film strikes the eye. The emulsion side of the film will produce a duller reflection than will the base side. The difference is subtle, but definitely noticeable. However, if this does not provide a clear indication of the emulsion side, it may be necessary to remove the film from the holder and follow the instructions below for unmounted film.

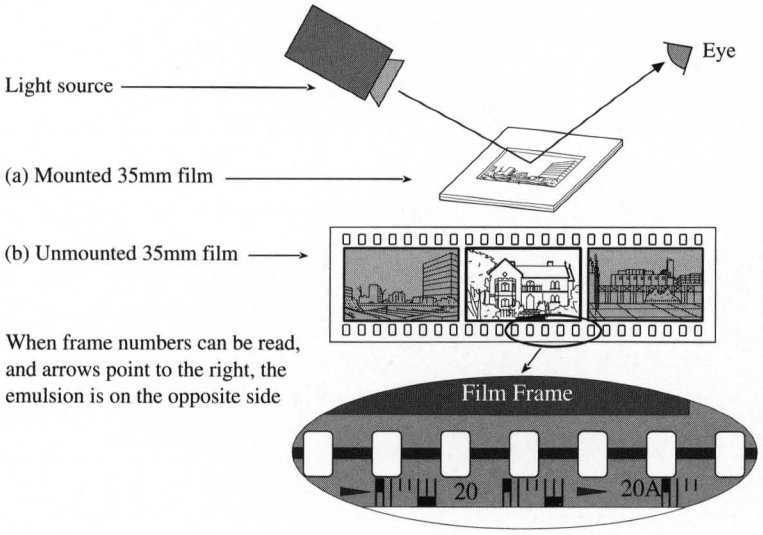


Figure 4.5 Finding the emulsion side of the film. (a) Reflecting light off of a mounted slide. (b) Inspecting the text on unmounted film.

It is much easier to find the emulsion side of the film when the film is not mounted. First remove the film from the slide mount. Then, position the film such that you can read the text along the edge of the film surface. In Figure 4.5b, an enlargement of this portion of the film shows the frame numbers clearly visible and in the proper orientation for reading. Note that the arrows point to the right. This is the base side of the film. The opposite side is the emulsion side.

Slide Orientation

Since the slide mount is typically square, it could be inserted into Coolscan in any orientation. However, the orientation of the slide frame when inserted will affect the image area scanned.

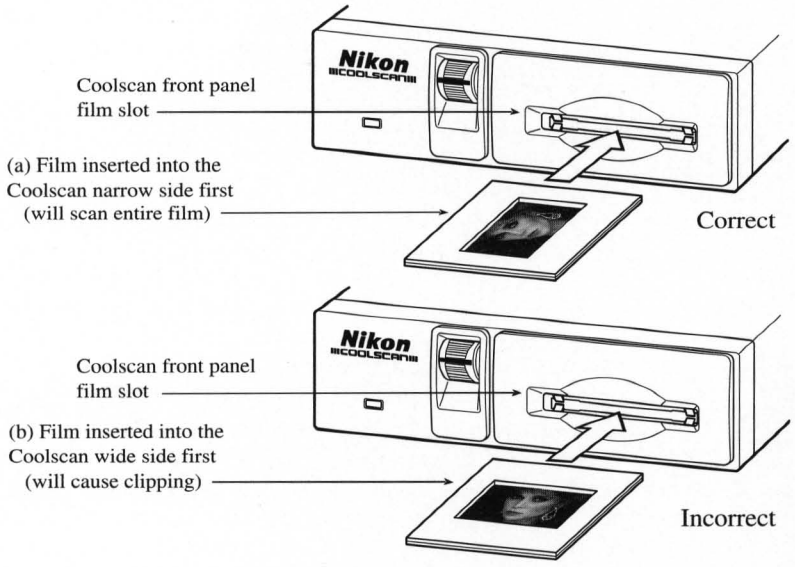


Figure 4.6 Inserting a slide into the Coolscan scanner. (a) Inserting the narrow side first, resulting in a scan of the entire film. (b) Inserting the wide side first, resulting in a scan that clips the film.

As shown in Figure 4.2, the film aperture is rectangular. For the entire film area to be scanned, it is necessary to insert the slide with the narrow side of the film, the 24mm side, first into the scanner. This is shown in Figure 4.6a. The entire film surface cannot be scanned if the wide side of the film, the 36mm side, is inserted into Coolscan first. This incorrect insertion is illustrated in Figure 4.6b. If the film is incorrectly inserted, as shown in Figure 4.6b, the resulting scan will not cover the entire film area. This outcome, known as *clipping*, is shown in Figure 4.7.

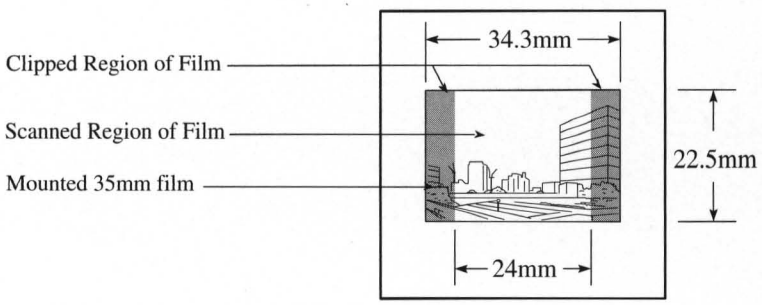


Figure 4.7 The effect of inserting the wide side of the film first into Coolscan.

There is common terminology used to describe a rectangular film format. If the image on the film is oriented so that the top of the image corresponds to the wide side of the film, the orientation is called *landscape.* Landscape orientation is illustrated in Figure 4.8a. Conversely, if the image on the film is oriented so that the top of the image corresponds to the narrow side of the film, the orientation is known as *portrait.* Portrait orientation is illustrated in Figure 4.8b. This terminology is identical to that used in preparing an 8.5 x 11 inch page for text processing or printing.

Although film is inserted in *portrait orientation only*, either landscape or portrait can be produced by software control, resulting in correctly oriented previews and final scans.

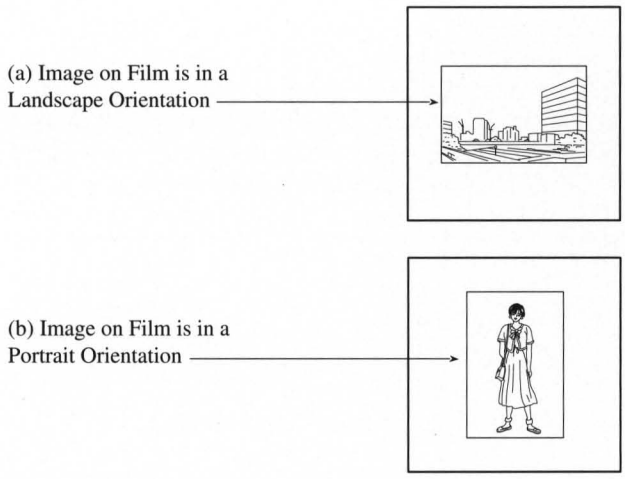


Figure 4.8 The landscape and portrait orientation of the film.

Inserting Slides

Now that you understand how to prepare your film, determine whether it is a portrait or landscape image, and identify its emulsion side, you are ready to insert the slide for scanning. The slide is inserted into Coolscan in much the same way as a floppy diskette is inserted into a disk drive. First, determine the proper orientation for insertion by using the guidelines below. Then, insert the slide into the slot in the front of the scanner, gently pushing the slide in as far as it will go, *without forcing it.* The slide will be difficult to grasp once properly inserted.

Inserting Portrait Orientation Slides

If the film is in a portrait orientation, determine the emulsion side of the film and ensure that this side of the film faces towards the top of the scanner. Insert the slide into the scanner with the top of the image entering into the scanner first. This is shown in Figure 4.9.

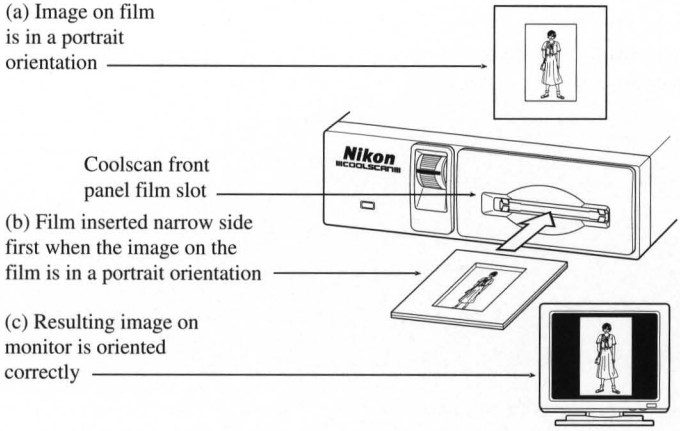


Figure 4.9 Inserting film into Coolscan that is in a portrait orientation.

If the bottom of the image inserted first, the resulting scan will be upside-down. This can be corrected in the scanning software before the final scan by performing a vertical flip. This operation is fast and causes absolutely no loss of image quality.

Inserting Landscape Orientation Slides

If the film is in a landscape orientation, determine the emulsion side of the film and ensure that this side of the film faces the top of the scanner. Insert the slide, making

sure that the top of the image enters the film slot facing the left side of the scanner. This is shown in Figure 4.10.

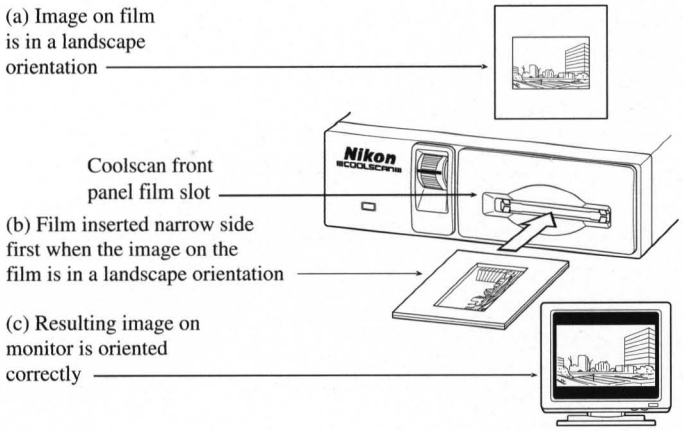


Figure 4.10 Inserting film into Coolscan that is in a landscape orientation.

If the top of the image is inserted facing the right side of the scanner, the resulting scan will be upside-down. Again, this can be corrected in the scanning software before the final scan by performing a vertical flip.

Ejecting Slides

There are three ways in which you can eject film from Coolscan:

- You can eject the slide through a software command.
- You can use the Eject Coolscan Film application.
- The film is also ejected when power is first applied to the scanner. There is no method for removing the film if electrical power is not available.

All of these methods are explained in the *Software Reference for Scanners.*

Do not use any tool other then your fingers to remove a slide. If a slide cannot be removed easily you should contact Nikon's Service Department at 516-547-4351 for advice. Using tweezers or similar tools can damage the scanner, void your warranty and cause possible electric shock.

The Film Strip Holder

Negative processed film is typically cut into strips of five or six frames per strip. To eliminate the need for you to cut and mount strip film for scanning, we have supplied you with a film strip holder. The Coolscan film strip holder can accommodate film strips up to six frames long, then be inserted into Coolscan for scanning. The film strip holder is shown in Figure 4.11.

The front of the film strip holder is the tapered end. It is designed to fit easily into the scanner film slot, similar to inserting a slide.

The back of the film strip holder is wider than the front. It extends out of the front of the scanner during scanning operations. Additionally, excess film always extends out the back of the film strip holder.

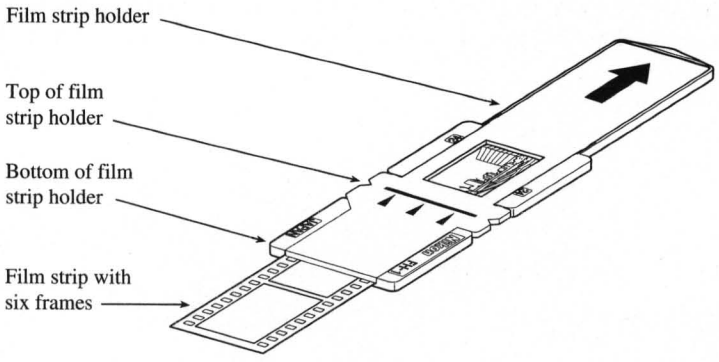


Figure 4.11 The closed film strip holder.

When closed, as shown in Figure 4.11, the film strip holder fits into the scanner just as a slide would. Of course, the back end of the film strip holder extends out of the scanner during the scanning operation.

A typical example is shown in Figure 4.12. Note that the portion of the film strip not being scanned extends out the back of the film strip holder.

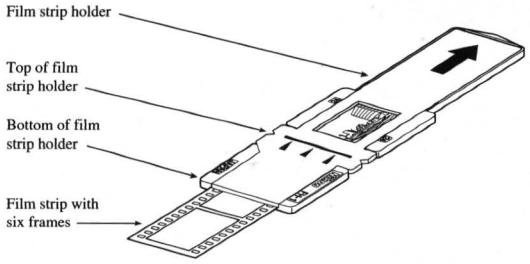


Figure 4.12 The film strip holder with film inserted, ready for scanning.

When open, as shown in Figure 4.13, film can be placed in the holder by positioning the desired frame so that it aligns with the holder's open window. Only one frame of the film strip can be scanned at a time. To scan additional frames, the film must be moved to the appropriate position in the film strip holder.

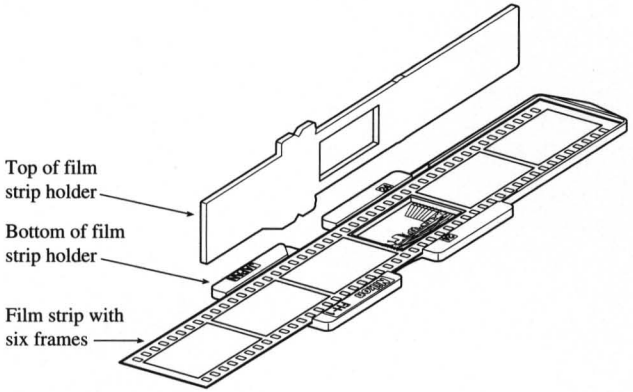


Figure 4.13 The open film strip holder.

Positioning the Film in the Holder

There is one window on the film strip holder, as shown in Figure 4.11. This window will contain the only portion of the film that will be visible to Coolscan during scanning operation. Therefore, it is necessary to align the frame you wish to scan within this window when positioning the film in the holder.

In order to scan every frame, film strips should be limited to six frames in length because of the length of the holder. No film can extend out of the front of the film strip holder (the end which is inserted into Coolscan), and no more than two frames can reside in front of the desired frame for scanning.

It is therefore necessary to position the film so that no more than two frames are to the front of the scanning window.

Similar to slides, the emulsion side of the film strip should face upward in the film strip holder so that it will also be face up when inserted into the scanner.

Based on these two constraints, it is not always possible to scan the frame right-side-up. If the frame is scanned backwards or up-side-down, the scanning software can be used to rotate the image before scanning. Again, because this operation is a 90 or 180 degree flip, it is very fast and causes no image degradation.

Examples of positioning film in the film strip holder are shown in Figure 4.14.

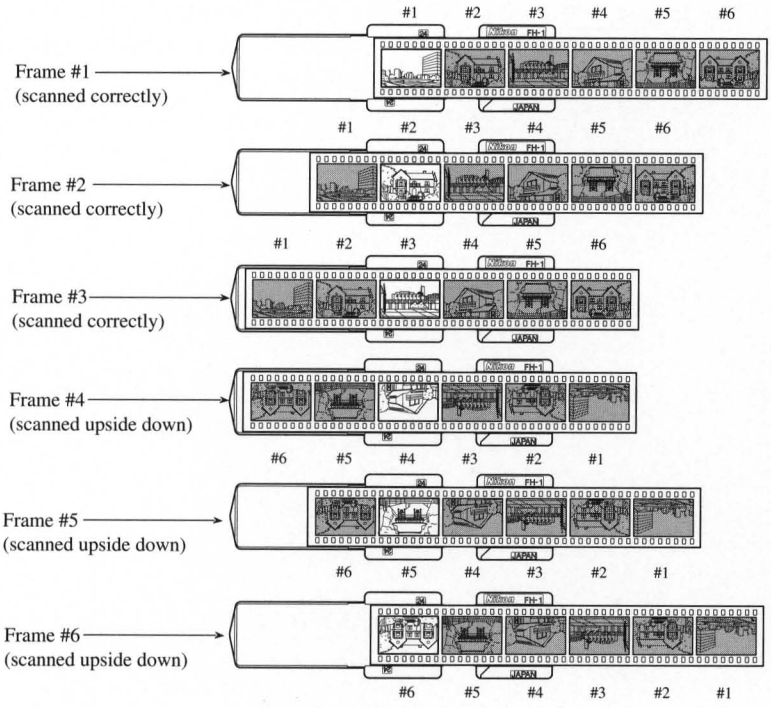


Figure 4.14 Positioning film in the film strip holder.

Care should be taken not to touch the portion of the film to be scanned when loading the film into the film strip holder. To avoid fingerprints or scratches, you may wish to consider wearing film handling cotton gloves during this procedure.

The window in the film strip holder is slightly smaller than the typical 35mm

frame. Position the desired frame for scanning so that the film strip holder window properly frames the image.

Inserting the Film Strip Holder into the Scanner

The film strip holder is inserted into Coolscan by holding the back end of the holder and pushing the front end into the film slot of the scanner. The holder should be pushed in gently until the triangular notches on the sides of the holder, and/or the silver line across it are flush with the face of the scanner. If inserted correctly, the film strip holder window will be entirely inside the scanner slot and out of view.

Never power on the scanner while the film strip holder is in the scanner slot. Doing so will interfere with the scanner's normal startup calibration procedure, resulting in incorrect color capture while scanning, and possible SCSI errors.

It is best to align the film strip holder before inserting it into Coolscan so that it is in the same plane as the scanner's film slot, and it will insert straight into the scanner. This is illustrated in Figure 4.15.

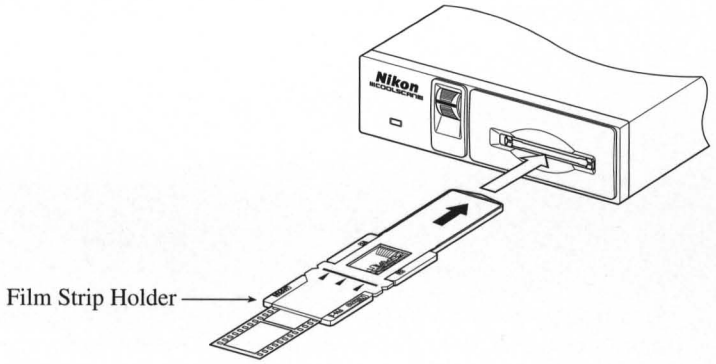


Figure 4.15 Aligning the film strip holder with the scanner's film slot.

When the film strip holder is inserted and in the proper position to commence scanning, it will extend out of the front of Coolscan, as shown in Figure 4.16.

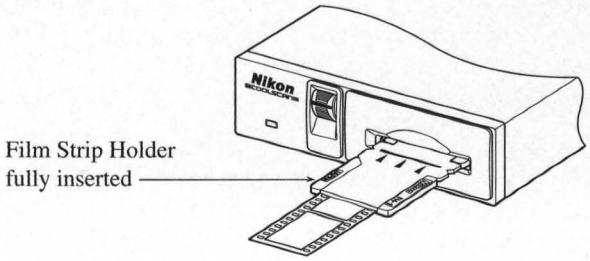


Figure 4.16 The film strip holder ready for scanning.

Removing the Film Strip Holder

To remove the film strip holder, grasp the portion that protrudes from the film slot and pull gently toward you. It should slip out easily. In the extremely unlikely event that the film strip holder is jammed inside the scanner slot, *do not* apply added force to remove it. Such action may damage the scanner. Instead, contact your Nikon service representative immediately.

Focus

There may be instances when it is necessary to adjust the focus wheel on Coolscan's front panel in order to achieve the best sharpness. The position of the focus wheel becomes particularly critical when a *high resolution* scan is being performed. High resolution scans typically range from 2700 DPI (dots per inch) down to 1350 DPI.

Image focus is affected by the position of the film in the scanner with respect to the optics in the scanner. The parameter which most commonly causes focus problems is the thickness of the slide mount. Fortunately, Coolscan utilizes a self-centering stage mechanism.

The use of the focus wheel will not sharpen film which is unfocused to begin with. If you must use any unfocused film there are some software image processing techniques, such as applying what is called an *Unsharp Mask* that can be used to help effect sharpening. It is important to realize, though, that you cannot dramatically improve what is on your film originally. If the original image is severely out of focus, your final results may not be acceptable.

Thickness of the Slide Mount

There are a wide variety of slide mounts in popular use. The thickness of these mounts affects where the film will be positioned within the slide mount itself and consequently within the scanner. Another factor affecting the thickness of the slide mount

would be the existence of any adhesive labels attached to the slide mount. This would cause the mount to be slightly thicker on the side with the label affixed.

The Mount Type

Plastic, cardboard and glass mounts are commonly used to frame film. Typically, the plastic and cardboard mounts center the film in an open window. Thus, the light passes through the air on both sides of the film and through the film. When the film is mounted in glass, there is a thin piece of glass sandwiching the film as shown in Figure 4.17. Glass mounted slides are *not* recommended for scanning because they tend to diffuse the image sharpness and they accumulate dirt and dust. In the case of a glass mount, light must pass through the air, film and both sides of the glass. If you must, you can scan a glass mounted slide whose frame thickness is less than 3mm, however this will require use of the manual focus wheel to achieve optimum focus.

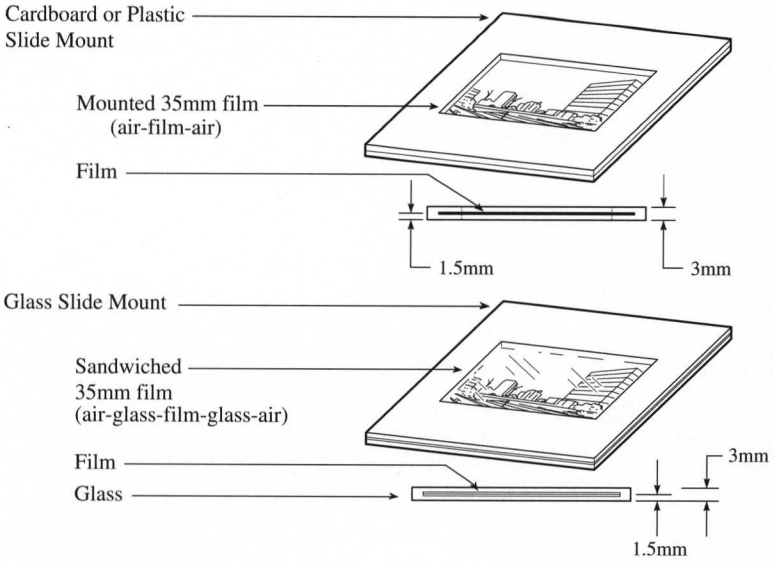


Figure 4.17 Slide mounts.

The Film Location in a Mount

Many film types are commonly used today. The film material and film thickness of, and dyes and emulsions used on the film can affect how light passes through the film and consequently the focus. In some instances, film will not be positioned in the center of the slide mount due to labels being attached to the slide mount. It is important to remove any foreign matter from the slide mount, if possible, before scanning.

Emulsion Side of the Film

As you learned in a previous section, the two sides of the film are not the same. One side is the emulsion side, and the opposite side is known as the base. In order to achieve maximum definition, the emulsion side needs to be face up when inserted into Coolscan.

Non-flat Film

The film's surface is not necessarily flat. It may be curved, or *buckled*, due to age and storage conditions. If the film's surface is not flat, the scanner cannot accurately focus on the entire film surface at the same time. The most common cause of non-flat film is *bowing*, caused by heat. This often occurs when slides are stored for several years under poor conditions. This phenomenon is shown in Figure 4.18.

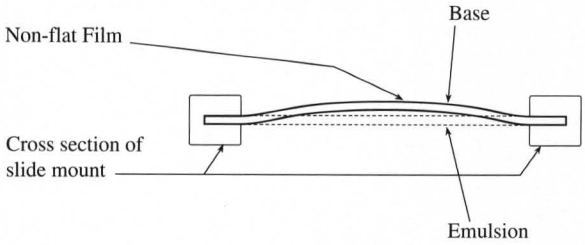


Figure 4.18 Non-flat film.

35mm film *always* buckles towards the emulsion, as shown in these illustrations.

In the case of non-flat film, it is therefore necessary to compensate in the focus, based on the area of the slide being scanned. By scanning only a section of the film, it may be possible to adjust the focus to best suit the film being scanned. This is shown in Figure 4.19.

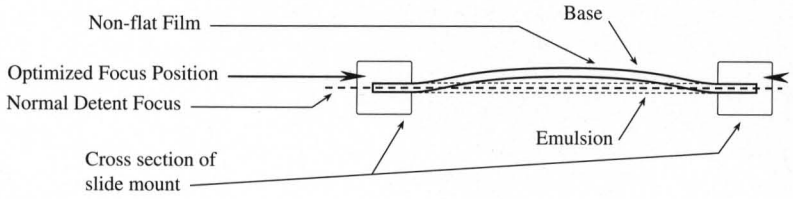


Figure 4.19 Optimizing focus for a section of non-flat film.

If this focusing method does not yield satisfactory results, an alternative is to re-mount the film in a glass mount. This can help to flatten non-flat film. It is best to use glass on the base side only, as a support surface.

The Focus Wheel

The focus wheel is located on Coolscan's front panel, as shown in Figure 4.20. This wheel can be easily adjusted by rotating it with your thumb. A line is provided to center the film in the field of focus. Rotating the wheel in either direction will affect the focus.

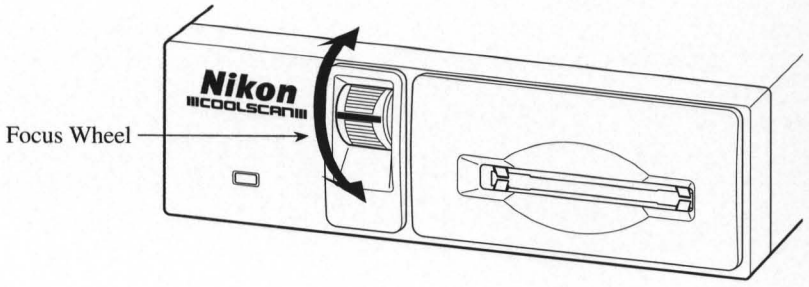


Figure 4.20 Coolscan's focus wheel.

The technique used to focus film is described in detail in the *Software Reference for Scanners.* Briefly, after a preview scan is performed, the result is displayed in the preview window on your screen. By manually rotating the focus wheel while the image is on screen, you can see how the resulting scan would be affected by changes to the position of the wheel. The wheel should then be left to rest at the setting which yields the sharpest image on the screen, before proceeding with the final scan.

Calibration

Coolscan is a self-calibrating scanner. Due to Coolscan's patented light source, there is no significant warm up time required. A calibration procedure occurs automatically during the power-up cycle of your Coolscan. This procedure is part of a diagnostic cycle, and typically takes thirty seconds to complete. Once the LED located on the front panel shows steady green, Coolscan is ready to operate.

Troubleshooting

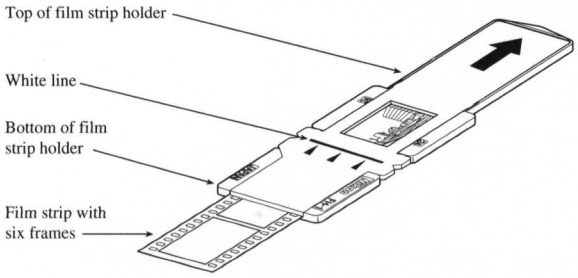
Following are some common problems you may encounter in the installation and operation of your scanner. Corrective action for each problem is listed by order of most likely cause. If a corrective action does not solve the problem, proceed to the next listed corrective action. If the problem persists after exhausting all of the suggested corrective actions, contact Nikon Technical Support at (516) 547-4311, or via FAX at (516) 547-0305 for assistance. Nikon Technical Support can also be contacted through the following electronic information services at the corresponding addresses:

AppleLink	Nikontech
PressLink	Nikon.Tech
America Online	Nikontech
Internet	Nikontech @ AOL.COM
CompuServe	GO Nikon
BBS	516-LISTENS

#1 Support Call for Coolscan. Important information for using the film strip holder.

Please follow these directions to prevent unnecessary difficulty when scanning images using the film strip holder supplied with your Coolscan:

When powering on Coolscan, make sure that the film strip holder or mounted slide is *not* inserted in the scanner. *Do not* insert a slide or the film strip holder until the green LED on the front of the scanner is a steady green. The scanner automatically performs a calibration procedure during power-up. If the scanner has film inserted, it will affect the calibration, resulting in poor color reproduction. You will see cyan or other color imbalances and/or receive error codes during previews and scans.



When scanning with the film strip holder, it is imperative that the holder is pushed in until the white line or side notches, seen in the figure above, are flush with the scanner. This means that the film to be scanned is *completely inside* the scanner and cannot be seen. Do not be hesitant to insert the holder into the scanner, but use reasonable care. You will experience error codes during previewing and scanning if the holder is not inserted properly. When scanning a slide, push the slide in all the way.

If you encounter error codes such as "-21000" on the Macintosh, or "-222" on the PC, or your scans show poor color balance, eject the slide or film strip holder using the *Eject Coolscan Film* application or software Eject button in the Nikon plug-in, then power down the scanner to completely reset it. Count to 10, and power up the scanner following the directions listed above. This will resolve the problem 99% of the time. Please try this power-off procedure at least once before contacting your authorized Nikon dealer or Nikon Technical Support.

It is recommended that after using the film strip holder you run the Eject Coolscan Film application to ensure that the scanner's film stage is set to the proper position to receive a mounted slide. Removing the film strip holder without using the Eject function will leave the scanner's stage in an improper position, leading to possible loss of the next mounted slide you attempt to insert. If your slide falls into the scanner, contact the Electronic Imaging Service department at 516-547-4351. *Do not* attempt to retrieve it using tweezers or similar implements. This action can cause serious damage to the scanner's optics which is not covered under your Nikon warranty.

General Problems

These are the most common problems reported by Coolscan users on both Macintosh and PC computers.

Problem: Slide fell in scanner.

Cause: Possible causes could be that the slide was inserted with the stage in improper position, the scanner was switched off during power up, or the film strip holder was removed during a scan.

Solution: Send to Nikon Service Department for removal of slide.

Problem: Scan has cyan or green and yellow tint. Color balance is poor, or getting colored lines through image.

Cause: Film strip holder was left in scanner during power-up, resulting in improper calibration.

Solution: Eject film, shut down system, restart Coolscan without film strip holder inserted. Wait for green LED on front panel of scanner to stop flashing before inserting slide or film strip holder. Verify that default brightness, contrast and color values are set correctly (58, 0, 50, 50, 50).

Problem: No image appears when scanning using the film strip holder.

Cause: Holder inserted in reverse or not fully inserted into scanner.

Solution: Insert pointed end of film strip holder (with arrow) first and push firmly until seated (to white indication line on newer holders, to side notches on older holders).

Problem: Scanner is not being found on SCSI bus, scanner software says "no scanner connected."

Cause: Scanner may not be powered on. Cables may be improperly connected. SCSI ID number of Coolscan may be in conflict with another SCSI device if there are several others connected.

Solution: Verify that scanner is powered on and cables are properly connected. Confirm that SCSI ID number of Coolscan is not in conflict with other devices. If so, change to unused ID number. Use SCSI search software to locate scanner.

Problem: When performing a high resolution scan in Photoshop, the resulting image has lines through it or 'dropped' pixels.

Cause: Memory management problem.

Solution: Contact Adobe for Photoshop 2.5 update.

- **Problem: The scanner is not found by the Nikon Scanner plug-in.**

Action: Attempt to locate the scanner on the SCSI bus by first clicking on the Tools icon. Once inside the Tools dialog, attempt to manually address the scanner by clicking on the SCSI icon and the ALWAYS FIND DEVICE button. Once you have determined the scanner's SCSI address, set that address in this dialog, click the DONE button, then set the scanner's defaults.

- **Problem: The plug-in fails to find the scanner when I click** FIND DEVICE.

Action: Proceed with the following corrective action:

1. You may need to power on all of your SCSI devices *before* starting your computer. If this fails to correct the problem, the scanner may be defective, or you may have a rare conflict on your SCSI bus.

2. You may have two SCSI devices set to the same SCSI ID number, such as the Nikon scanner and an external hard drive. Make sure that no two SCSI devices are set to the same SCSI ID number.

3. For Macintosh, try starting your systemwith the Shift key held down (System 7) in order to disable all of your Extensions. Then, try using the scanner. If the scanner functions normally, you should examine the contents of your Extensions and Control Panel folders to make sure that you don't have outdated or incompatible software. "Inits" used with some removable cartridge drives may cause SCSI difficulties. Some utilities that display the active drive number may also cause problems.

It is best to start with nothing but Apple-issue system files installed. Have your scanner up and running, then start reinstalling your accessory files. You may need to change the order in which these files are loaded. You can do so by adding an "A" or a "Z" to the very beginning of the file name to change the loading order (Apple system software loads these files in alphabetical order).

- **Problem: I can't find the Nikon Scanner plug-in in my third-party application software.**

Action for Adobe Photoshop 2.01 Users: All plug-ins (including Nikon's) must be in the same folder as the Photoshop Prefs files,"PS Prefs." If the ACQUIRE menu is not available, locate *all* copies of the PS Prefs file, delete them, and *empty the trash.* If the trash is not emptied, Photoshop will follow the PS Prefs file to the trash and use it!

The next time you start Photoshop you will be asked where the PS Prefs file is. Click on the NEW button and then SAVE the new PS Prefs file into your Photoshop plug-ins folder. You should then be able to find the Nikon Scanner plug-in in the ACQUIRE menu.

Action for Adobe Photoshop 2.5 Users: Using the PREFERENCES menu in Photoshop, set the proper plug-in folder.

Action for ColorStudio Users (Version 1.5 or later): Hold down the Command key when launching ColorStudio. You will be asked to identify your plug-in folder. Once you copy the Nikon Scanner plug-in to this folder you will be able to scan directly into ColorStudio.

- **Problem: When I try to scan negative film on Coolscan I get an error 32208.**

Action: The strip film holder is not inserted properly. Remove, then re-insert the film strip holder, making sure that it is in firmly.

Macintosh-Specific Problems

- **Problem: After installing the scanner, my Macintosh is displaying the flashing question mark when I start up.**

Action: You most likely have a SCSI address conflict that is preventing your system from recognizing the disk used to start the system.

1. Shut the system off, remove the scanner, then restart.

If the system starts normally, check the SCSI ID number of all disk drives and other attached SCSI devices. Make sure that no device has the same SCSI ID number as the scanner. If so, power off all SCSI devices and reset their ID numbers accordingly. Reconnect the scanner, power-up, and proceed.

2. If the Macintosh still is displaying the flashing "?" you may have a termination

problem. Make sure that you have a terminated device at the end of the SCSI chain. Macintosh IIfx systems require a special *black* terminator. One is supplied with every IIfx system. If you are installing a Coolscan, do *not* use the gray terminator that ships with Coolscan to terminate a IIfx system. Doing so may result in damage to your Macintosh's motherboard.

3. You may wish to eliminate all non-essential items from the SCSI chain and try restarting again.

4. You may have to rearrange your SCSI devices and cables on the SCSI chain until you find a combination that works.

5. You may have to remove SCSI devices with DB-25 connectors.

6. You may need to contact the vendors of your other SCSI devices to determine if they are internally terminated. Generally, you should not have more then one terminated device on your SCSI chain. Certain devices and arrangements may require more then one terminator. However, these instances are rare.

You should contact Nikon Technical Support if you are experiencing severe difficulty and have worked through the preceding corrective steps without success.

- **Problem: I can't get the software installation to finish.**

  Action: You may have an extension conflict. Restart your Macintosh with the Shift key held down, then run the Installer again.

- **Problem: My Centris 610/650/660AV or Quadra 800/840AV 'hangs' at the completion of a scan.**

  Action: Version 4.0 of the Nikon Scanner plug-in software will not operate properly on these particular systems. Check your distribution diskette for the version number, then contact Nikon for a software update.

- **Problem: I can't open TIFF files created by Coolscan Control in other applications.**

  Action: Use *Nikon Control* for saving TIFF files. TIFF files created in Coolscan Control can only be opened by Photoshop 2.0.1.

- **Problem: If I open SCSI Probe or other software that lists SCSI devices while scanning in Photoshop 2.5, the scan stops.**

  Action: When scanning in the background, do not use software that sends an

Inquiry on the SCSI bus. This would include SCSI Probe, most disk utilities, and back-up software.

Problem: The watch cursor keeps turning at the end of acquiring an image and the image never appears. Computer seems 'locked up' and system needs to be rebooted.

Cause: Probably using a Quadra 800/840AV, Centris 610/650/660AV or possibly Quadra 900/950 computer. May also happen when using PLI disk drives with an auto-mounting extension/init.

Solution: Need Nikon software update 4.5.1 to resolve problem with these computers' SCSI Managers. Call Nikon for new software or download from Nikon bulletin board services (BBS), such as America Online, keyword "Nikon." If using a Syquest drive with auto-mount init, this must be disabled.

- **Problem: When I attempt to run the Nikon Scanner plug-in software through Fractal Design Painter I can't activate any buttons.**

Action: Before attempting to use the Nikon Scanner plug-in with Painter close all open windows and palettes.

Problem: Getting "Error -32008" when either previewing or scanning.

Cause: Dark or 'contrasty' film requires very long scan time, causing SCSI to 'timeout.'

Solution: Remove film strip holder and restart scanner. Obtain updated Nikon software version 4.5.1 from Nikon Technical Support, or download via BBS.

Problem: Getting "Error type 1" or "Error code 108: Not enough memory" when scanning with Nikon Control.

Cause: Not enough memory allocated to application.

Solution: Allocate more memory to Nikon Control. The default value is too low if using the large dialog and needs to be increased to 8Mb, minimum.

Problem: "Error -21000" when previewing or scanning.

Cause: Film strip holder may have been left inside scanner during power-up. SCSI cables may not be connected properly or film strip holder not inserted all the way.

Solution: Power down system and Coolscan. Remove and reattach SCSI cable to

Coolscan, engaging wire clips to cable connector. Restart scanner, waiting until the indicator LED is a steady green, then properly insert film strip holder.

Problem: System won't start properly after scanner is connected (see flashing disk w/question mark).

Causes:

1) SCSI ID conflict.

2) Defective SCSI cable.

3) Improper SCSI termination.

Solutions:

1) Change SCSI ID to unused address.

2) Disconnect Coolscan, but leave SCSI cable connected to computer. If system still fails to boot properly, cable is defective. Replace SCSI cable.

3) Termination should be at end of SCSI chain. If system appears to be properly terminated, rearrange devices in SCSI chain until system boots correctly.

Problem: Lines or dark bands through image, scan is slow or crashes system.

Cause: Memory management problems.

Solution: Set Virtual Memory and File Sharing to OFF, set Disk Cache to minimum (32k), and allocate 80% of available RAM to Photoshop or other host application, with a minimum of 8Mb System RAM installed.

Problem: Scanning is too slow.

Cause: Scan pitch setting may be non-integer number, or there may be a memory management problem.

Solution: Set pitch setting to an integer value. Check that File Sharing and Virtual Memory are turned off, and that disk cache is set to 32k.

Problem: TIFF files created by Coolscan Control cause "parse errors" in other software when trying to open file.

Cause: Coolscan Control software causes this problem.

Solution: Need Nikon Control version 1.1.1. Call Nikon Technical Support to obtain Nikon software version 4.5.1(free update), or download via BBS.

Problem: Missing scanning Focus command in Tools dialog of Nikon software.

Cause: Old software version.

Solution: Call Nikon Technical Support to obtain latest version 4.5.1 (free update).

Problem: Getting "error code -32003" or "-32207".

Cause: SCSI device has gone 'offline' or is not ready to receive commands. System may be waiting for another SCSI device to respond.

Solution: Check for 'locked up' device. Reset scanner by powering off and on. Confirm proper cable connection and scanner SCSI ID number.

Problem: Software reports SCSI errors.

Cause: SCSI incompatibilities.

Solution: Check that Coolscan's Term Power switch is in the OFF position for non-portable computers (for Macintosh PowerBooks the switch must be ON and *two* SCSI terminators should be used. Refer to the Apple PowerBook User's Guide). Also check that the SCSI terminator is secure. Verify that Coolscan is not set to the same SCSI ID as another SCSI device, and that the last device in the chain is terminated.

A defective SCSI cable is another possibility. Test with another cable if possible. Send bad cable to Nikon Service Department for replacement.

Problem: Cursor in Nikon software driver is square and has a 'cotton-like' texture to it.

Cause: Corrupted scanner preferences file.

Solution: Throw away the Nikon scanner preferences file in the Preferences folder. A new one will be created the next time you launch the Nikon plug-in.

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