Kodak

i7300 Scanner

User's Guide

A-61404
Part No. 3E9366

Safety and Installation Information for the *Kodak* i7300 Scanner / *Kodak Digital Science* Intelligent Microimage Scanner

IMPORTANT: Equipment shall be installed by qualified personnel.

CAUTION: Hot surface, avoid contact.

CAUTION: Moving parts, avoid contact.

User Precautions

Users and their employer need to observe the common sense precautions applicable to the operation of any machinery. These include, but are not limited to, the following:

- Do not wear loose clothing, unbuttoned sleeves, etc.
- Do not wear loose jewelry, bracelets, bulky rings, long necklaces, etc.
- Hair length should be kept short, using a hair net if needed, or tying long hair up in a bundle.
- Remove all other loose objects from the area that could be drawn into the machine.
- Take sufficient breaks to maintain mental alertness.

Supervisors should review their practices and make compliance with these precautions a part of the job description for operation of the scanner or any mechanical device.

ElectroMagnetic Compatibility Statements

For the United States

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

For Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective action.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波障害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Taiwan

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，
可能會照造成射頻干擾，在這種情況下，使用者
會被要求採取某些適當的對策。

Environmental

Information and Disposal

- The scanner is designed to meet worldwide environmental requirements.
- Guidelines are available for the disposal of consumable items that are replaced during maintenance or service; follow local regulations or contact Kodak locally for more information.
- The scanner contains lead in the circuit board solder and the glass lens in the scan tower assembly. Also, there is a lithium battery in the Dallas Semiconductor chip on the CPU board (6000 board). This should be unsoldered for removal by a qualified person. For disposal information, please contact your local authorities or, in the USA, visit the Electronics Industry Alliance website: www.eiae.org.
- The product packaging is recyclable.
- Parts are designed for reuse or recycling.

Acoustic Noise

Acoustic Noise Level (sound power levels [L_{wa}])

Operating Status	Noise Level dB (A)
Operating	<70 dB (A)

NOTE: All data measured in accordance with DIN 45 635, ANSI S12.10-1985, and ISO 7779 in a hemi-anechoic chamber.

Safety, Regulatory Conformance and Certifications

The *Kodak* i7300 Scanner conforms to all applicable national and international product safety and electronic emission regulatory requirements. This includes, but is not limited to, the following:

- UL 60950, 3rd Edition
- CAN / CSA, C22.2 No. 60950-00, 3rd Edition
- EN 60950 with +A1, +A2, +A3. +A4, +A11

AC Power Distribution Systems

This equipment was designed for connection to IT Power Systems.

Electromagnetic Compatibility

- USA: CFR47 part 15 sub B, FCC Class A
- Canada: ICES-003 Issue 3, Class A
- Australia / New Zealand: AS/NZS 3548, Class A
- Japan: VCCI, Class A
- Taiwan: CNS 13438, Class A
- China (PRC): GB 9254:98, Emissions Class A / GB 17625.1:98, Harmonics
- European Union
  - EN 55022:95, ITE Emissions Class B
  - EN 61000-3-2 Powerline Harmonics
  - EN 61000-3-3 Flicker
  - EN 55024:95 ITE Immunity

Getting Technical Support

If you experience problems with your system, contact the Integrator or Kodak Response Center:

Within New York State: 1-800-462-6494
Outside New York State: 1-800-822-1414
Alaska and Hawaii: 1-800-466-1414

For other countries, contact your local Kodak Service Support Center.

When contacting technical support, be prepared to supply the following information:

- The names and models of the computer and the scanner you are using.
- Any memory-resident software installed, including memory managers, with version numbers.
- Any resident anti-virus software.
- Contents of the Error log file.
- Any information and the action taken that can reproduce the problem you experienced. Include the exact text of any error messages you received.

Table of Contents

1 Introduction

This manual provides information and procedures for using the *Kodak* i7300 Scanner and the *Kodak Digital Science* Intelligent Microimage Scanner. For the purpose of this manual, the term ***scanner*** will be used when referring to the *Kodak* i7300 Scanner and/or the *Kodak Digital Science* Intelligent Microimage Scanner unless otherwise noted.

The scanner is a 16 mm film retrieval subsystem that is interfaced with a personal computer (PC), which is used to retrieve 16 mm film with and without image marks. The *Kodak* i7300 Scanner Application Software, provided by Kodak, controls the scanner.

Information regarding the application software can be found in the User's Guide for the *Kodak* i7300 Scanner Application Software, A-61133.

The following information is provided in this manual:

Chapter 1, *Introduction* — includes information regarding product features, system requirements, and a product overview.

Chapter 2, *Using the Scanner* — provides procedures for turning the power on and off, inserting a film magazine and loading/unloading film.

Chapter 3, *Maintenance* — includes procedures for replacing the projection lamp as well as a list of supplies and how to order them.

Chapter 4, *Troubleshooting* — provides a listing of possible error codes you may encounter while using the scanner.

Appendix A, *Microfilm Information* — includes microfilm information that is helpful when using the scanner.

Features

The scanner provides the following features:

- **Desktop film scanner** — the scanner is compact and easily sits on the desktop for ease of use and minimal space requirements.
- **Advanced transport** — the design eliminates glass guides, which minimizes the possibility of film scratches.
- **Accurate retrieval** — the scanner accurately retrieves the image you want.
- **CAR capability** — the PC for the scanner can be setup to accept CAR (Computer-Aided Retrieval) commands by adding the optional *Kodak* CAR Interface Software to the standard user interface software. The CAR 278 Interface, CAR 278 Synchronous Interface Unit or Hostlink for Micrographics by eiStream Kofile may be required for interfacing with the mainframe computer system. Check with your CAR integrator for details.

System requirements

Following are the minimum software and hardware requirements to run the scanner. Hardware and software components are supplied by the customer unless otherwise noted.

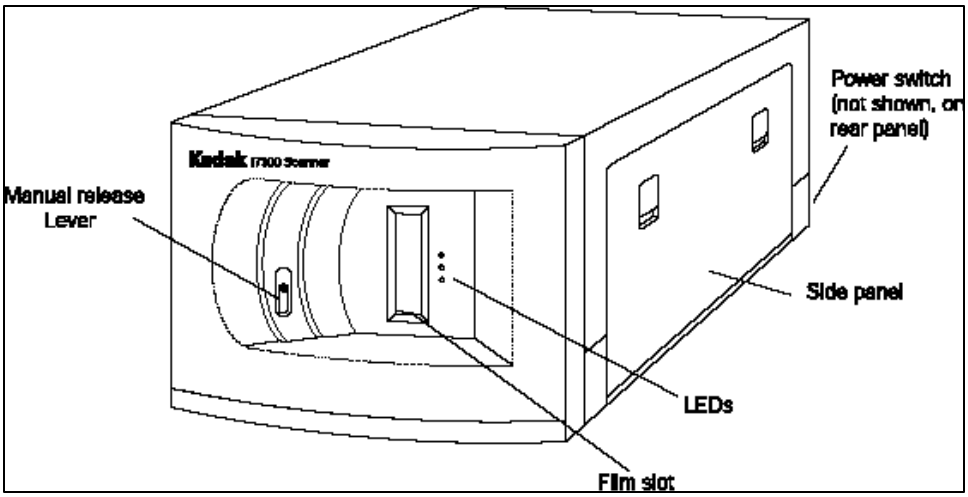
*** Supplied from Kodak (when purchased as separate products)**

Hardware/Software	**Stand -alone**	**CAR Interface** with Local Printer	**E-mail** via Network connection	**E-mail** via Dial-up connection	**Fax**	**Network Printing**	**Separate CAR Terminal** (not on scanner PC)	**CAR Mainframe** Emulator on same PC as scanner (i.e. Hostlink, AS/400, etc)	***** Image Server Software
CPU: Pentium 2 GHz	•	•	•	•	•	•	•	•	•
Serial port for scanner	•	•	•	•	•	•	•	•	•
Parallel port		•					•	•	
19/21-inch monitor	•	•	•	•	•	•	•	•	•
CD-ROM	•	•	•	•	•	•	•	•	•
384 MB RAM	•	•	•	•	•	•	•	•	•
8M Video RAM	•	•	•	•	•	•	•	•	•
Bus Master ¾ length slot full height	•	•	•	•	•	•	•	•	•
Keyboard and mouse	•	•	•	•	•	•	•	•	•
Hard drive – 4 GB min.	•	•	•	•	•	•	•	•	•
Fax modem					•				
Data modem				•					
Network card			•			•		•	
2nd Serial port							•	•	
3rd Serial port								•	
Printer		•							
Network printer						•			
Appropriate CAR cables							•		
Null modem cable								•	
Operating System Windows 98/NT 4.0 Workstation (SP3), 2000 Professional XP Professional	•	•	•	•	•	•	•	•	•
i7300 Scanner Software, or Intelligent Microimage Scanner Software	•	•	•	•	•	•	•	•	•
Fax software					•				
E-mail – MAPI interface			•	•					
***** CAR Interface Software							•	•	
Network software						•			
CAR interface							•	•	
Hostlink for Micrographics by eiStream Kofile								•	
***** *Kodak* 278/Sync Interface Unit – CICS/i7300 only							•		

NOTE: Performance is dependent upon processor speed and memory.

Product overview

The following illustration and descriptions will help you become familiar with the components of the scanner.



The Manual Release Lever allows you to manually release the magazine by inserting a thin object, such as a pencil, into the slot. This lever should be used if a film jam or film breakage occurs. You may also use this lever to release the film magazine if power is unavailable.

Power switch — this toggle switch allows you to turn the power on and off. The power switch is located in the back of the scanner.

Side panel — provides access to the lamp housing and film path.

Film slot — use this slot to insert the film magazine from which images will be retrieved.

LEDs — the status of the scanner can be determined by looking at the LED display (when the power is on).

- **Green** — indicates the scanner is ready for use.
- **Yellow** — indicates an action is in process; i.e., threading film, searching for an image address, scanning, refiling film, etc. If the yellow light is steady, the scanner is searching for an image; if the yellow light is flashing, an image is being scanned.
- **Red** — indicates that an error has been detected, the scanner has lost communication with the host, or the scanner application is not active on the host PC. Error messages are displayed on the scanner host PC in the Status bar or via a dialog box.

2 Using the Scanner

This chapter provides:

- Instructions for turning the power on and off.
- How to insert a film magazine.
- Instructions for loading and unloading film.

Before you begin make sure the PC and the scanner are connected and power is applied to both devices.

Turning on/off the power

The scanner can be powered on and off by using the toggle switch located in the back of the scanner (next to the scanner power cord).

To turn on the power:

- Place the On/Off switch in the On (-) position. The scanner takes only a few seconds to become ready.

NOTE: If microfilm is present in the film path when power is applied, the film is automatically refiled upon power-up.

To turn off the power:

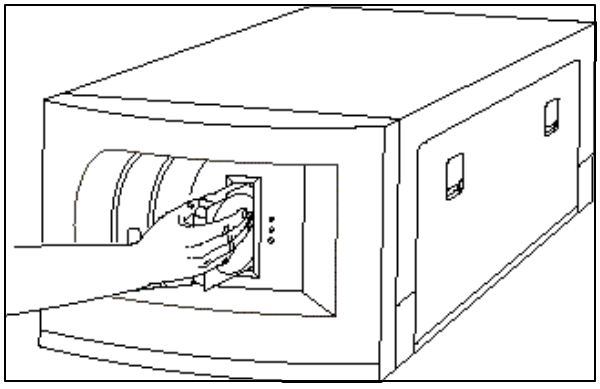
- Place the On/Off switch in the Off (O) position.

Inserting a film magazine

To load film and the magazine in the scanner:

For *Ektamate* or *Ektamate* A magazines:

1. Insert the film into the magazine so that:
   - The film feeds off the top.
   - The round hole of the reel is facing to the right.
   - The slot on the bottom of the magazine is facing down.
   - The leader is fully rewound into the magazine.



2. Insert the magazine into the film magazine slot until it stops. Be sure the film magazine is inserted securely along the bottom edge.

   NOTE: Film in *Ektamate*-type magazines will thread automatically.

3. When the green Ready light is illuminated, the scanner will be ready to use.

   NOTE: The scanner application must also be active on the host PC for the green Ready light to continue to illuminate.

For M-type magazines:

1. Insert the magazine so the core hole is to the left and the opening for the film slot is inserted first into the scanner. Be sure the film magazine is inserted securely along the bottom edge.
2. Film in M-type magazines will thread after an image address is entered and the Srch button is selected on the keypad in the scanner Application Software.

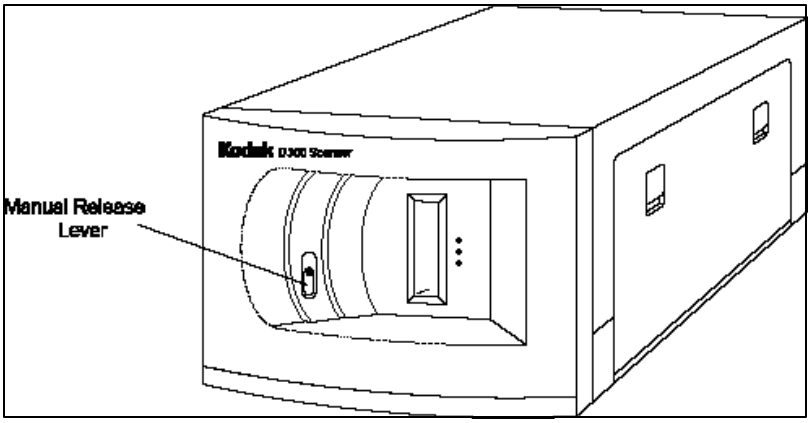
   When the green Ready light is illuminated, the scanner will be ready to use.

Unloading a magazine

To unload a film magazine from the scanner:

1. Select **Refile** on the Image Retrieval keypad of the *Kodak* i7300 Scanner Application Software or **Navigate>Refile Film** from the menu. The film will be rewound.

IMPORTANT: *If the Kodak i7300 Scanner Application Software is not running, use the Manual Release Lever on the front of the scanner and pull the film out or power down the scanner, wait 5 seconds, and power up the scanner.*



2. When the green Ready light is illuminated, pull the film magazine from the film slot.

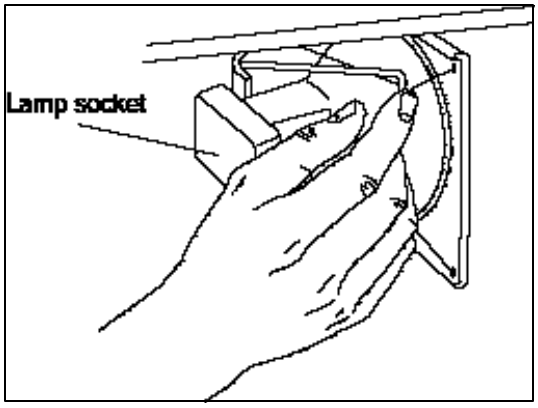
   IMPORTANT: *Do not remove the film magazine until the film is completely refiled.*

Replacing the projection lamp

When the projection lamp burns out, replace the projection lamp as follows:

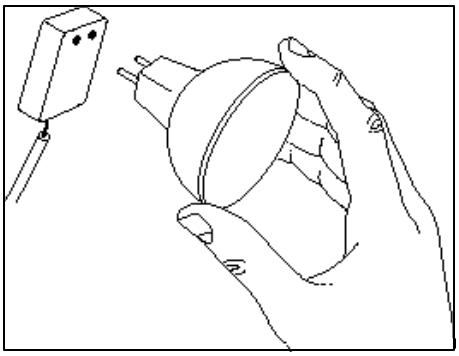
WARNING: ***If the scanner has been in use, the lamp assembly will be HOT. Allow the lamp area to cool a minimum of 5 minutes before attempting to change the lamp.***

1. Turn off the scanner.
2. When you are sure the projection lamp area is cool, open the side panel.
3. Pull the lever back to release the bulb and pull the lamp straight out from the lamp housing.



4. Hold the lamp socket in one hand and use the other hand to pull the lamp away from the socket.

5. Gently pull the wire connectors away from the projection lamp and discard the used lamp.



6. Insert a new lamp by connecting the pins.

NOTES:

- Hold the lamp by the edges as shown in the illustration. Oil from your fingers may reduce lamp life.
- Using an incorrect replacement bulb results in damage to the scanner components and poor image quality.

7. Slide the lamp back into the lamp housing.
8. Close the side panel.
9. Turn on the scanner.
10. Calibrate the scanner.

Supplies

The following supplies are available. Order them in the United States by calling Kodak Supply at 1-888-247-1234 or contact your local Kodak Reseller.

Outside of the United States, contact your local Kodak dealer.

Description	Order No.
Projection Lamp for i7300 Scanner (12V, 20 W)	3E9031
Projection Lamp for Intelligent Microimage Scanner	2E4704 or 3E9031
Kodak Ektamate Magazine	178 5443
Kodak Ektamate A Magazine	111 9130

4 Troubleshooting

Error messages

This chapter contains information on analyzing and correcting operating problems or errors that may occasionally arise during use of the scanner.

To correct an error condition, refer to the Corrective Action listed below. If the error condition is not corrected, contact your System Administrator. If the problem persists, call Kodak Service.

Error	Error message	Possible Cause	Corrective Action
E200	An inverted magazine has been detected.	The film magazine is inserted upside down.	Remove the magazine and reinsert it right side up.
E201	The spindle in the film magazine slot has failed to latch onto the reel of the film magazine.	– The reel is not correctly loaded into the magazine. – The Manual Release Lever may be obstructed.	– Remove the magazine. Check reel loading into the magazine and correct it if needed. – Remove the magazine. Check the Manual Release Lever and make sure it is free from external obstructions. Reinsert the magazine.
E202	The software has detected the use of large voltages for a long period of time.	The film may be jammed, broken, or not properly positioned on the take-up reel.	Select **Navigate>Refile Film** to attempt to rewind the film. If the film does not rewind, turn off the scanner, wait 10 seconds, then turn on the scanner. If the problem persists, check the film take-up area and try again.
E203	The software has detected conflicting or unbalanced film speeds.	– Film threading was unsuccessful but not detected as such. – Film is jammed or broken. – Film reel is not moving freely. – The **Refile Film** option was selected repeatedly during film threading.	Turn off the scanner, wait 10 seconds, then turn on the scanner. If the problem persists, check the film take-up area and try again.
E204	The film magazine has become detached from the spindle in the magazine slot while film was threaded.	The Manual Release Lever was inadvertently activated while the film was threading.	Remove the film from the film path by selecting **Navigate>Refile Film** or remove the film manually. Reinsert the magazine.
E205	Film was detected in the film path upon insertion of a magazine.	– A film rewind was attempted when film was threaded but no magazine was in the film magazine slot. – A piece of film from a previous roll may have broken off and left in the film path.	– Remove film from the film path. Insert the magazine. – Remove the magazine. Check the film path and remove any film. Reinsert the magazine.

Error	Error message	Possible Cause	Corrective Action
E206	The software has detected a stalled motor.	The film has jammed.	Remove the film from the film path.
E207	The film refile was not completed within the allowed amount of time.		Remove film from the film path by selecting **Navigate>Refile Film** or removing the film manually. Insert a magazine and try to refile the film.
E208 E209	A faulty film sensor reading has been detected.	– The film has broken and some film remains on the take-up reel. – The film is intact but is not being detected by the film sensor(s).	– Remove the magazine. Check the film path and remove any film. Reinsert the magazine. – Open the side panel and manually rotate the take-up reel ½ turn in either direction and then select **Navigate>Refile Film**. Reinsert the magazine.
E210	The software could not calculate the radius of the supply film.	The film did not thread properly.	Remove the film by selecting **Navigate>Refile Film** or using the Manual Release Lever. Turn off the scanner, wait 10 seconds, then turn on the scanner. Reinsert the magazine.
E211	The spindle in the film magazine slot did not release as expected.	The magazine has been partially pulled out of the film nest with the spindle still in the reel.	Push the magazine completely into the film nest and use the Manual Release Lever to release the spindle.
E212	The film magazine has been moved out of its inserted position while film was threading.	The film magazine was jarred or removed while film was in the scanner.	Make sure the film magazine is fully inserted, then select **Navigate>Refile Film** and remove the magazine. Reinsert the magazine and make sure it is fully seated.
E213	The take-up radius on the film magazine is too large.	The supply reel in the magazine has too much film on it. The take-up radius cannot exceed 1 ¾ in. (45 mm).	Remove some of the film on the supply reel and transfer it to another reel. (Also check the take-up reel for any broken film from a previous roll.) Reinsert the magazine and try again (see *Appendix* A).
E214	An abnormal motor motion has been detected.	A film loop or interruption may have disrupted normal film transport motion.	Remove the film from the film path by selecting **Navigate>Refile Film** or remove the film manually. Reinsert the magazine.
E215	A faulty film sensor reading has been detected.	Film or debris was detected in the film path.	Check the film path and remove any film debris. If no film debris is found, turn off the scanner, wait 10 seconds, then turn on the scanner. Reinsert the magazine.
E216	A faulty film magazine sensor reading has been detected.		Turn off the scanner, wait 10 seconds, then turn on the scanner. Reinsert the magazine.

Error	Error message	Possible Cause	Corrective Action
E217	A film motor error has been detected.	There is tension loss, abnormal friction, or other similar transport problems with the film.	Check the film path and remove any film debris. Remove the magazine and confirm that the film trail end holder is not protruding from the reel. Reinsert the magazine.
E219	A motor error was detected during self-check at power-up.	– An improperly installed magazine or foreign object is lodged in the magazine slot. – The supply motor may have failed.	– Clear the magazine slot. Reinsert the magazine and make sure it is properly seated. – Turn off the scanner, wait 10 seconds, then turn on the scanner.
E220	A motor error was detected during self-check at power-up.	– The take-up reel or belt may not be properly installed. – The take-up motor may have failed.	– Check the take-up area and make sure the reel and belt are installed correctly. – Turn off the scanner, wait 10 seconds, then turn on the scanner.
E221 E222	A communications error was detected during the self-check at power-up.		Turn off the scanner, wait 10 seconds, then turn on the scanner.
E225	Slack or broken film has been detected.		Select **Navigate>Refile Film**. If the film does not rewind, rotate the take-up reel manually 1 or 2 turns counter-clockwise and select **Navigate> Refile Film** again. If the film still does not rewind, remove the magazine. Check the film path and remove any broken film. See *Clearing a film jam or break* later in this chapter. Reinsert the magazine.
E226	A thermal error has been detected in the supply motor.		Call for service.
E227	A thermal error has been detected in the take-up motor.		Call for service.
E240	An open interlock error has been detected.	– Cover to the side access door has been removed or is ajar. – The safety interlock circuit or side door has failed.	– Make sure the side access door is correctly aligned and fully seated. – Turn off the scanner, wait 10 seconds, then turn on the scanner.
E242	End code error	An error occurred while the scanner was attempting to read film containing Lead End or Trial End Code. – The machine setup is incorrect. – There is a problem with the film or image management encoding.	– Check with the system administrator. – Check the film for fog. If problem persists, call service.

Error	Error message	Possible Cause	Corrective Action
E243	Random Batch Code error	An error occurred while the scanner was attempting to read film containing Random Batch Code. – The machine setup is incorrect. – There is a problem with the film code.	 – Check the film. If problem persists, call service.
E244	Scanner control error	Scanner components are not working correctly.	Click **OK** and try again.
E245	Scanner data error	– The calibration process failed. – Projection lamp may need to be replaced or is not seated properly.	Turn off the scanner, wait 10 seconds, then turn on the scanner. Recalibrate the scanner. – Power off the scanner and wait until the projection lamp cools (minimum of 5 minutes). Check to be sure the wiring harness is connected and the lamp is seated properly. – If the lamp is burned out, replace the lamp.
E246	Host communication error	There is a communication problem between the host PC and the scanner.	Be sure the cables are properly connected.
E247	Scanner did not engage	The take-up hub or take-up belt may not be in the proper position.	Lower the side access door and visually check the routing diagram on the panel to be sure it matches the take-up hub and belt placement within the scanner. Securely close the side access door and try the search and scan request again.
E248	Scanner communication error	Scanning components are not working correctly.	Click **OK** and try again.
E800 E801 E802	A system software error has been detected.		Turn off the scanner, wait 10 seconds, then turn on the scanner.

Additional error codes:

Error	Message	Corrective Action
4000	Problem with host software – call for service.	Click **OK** and try again.
4001	Internal timeout error: calibrating.	The scanner is currently being calibrated. When calibration is complete, continue with the desired function.
4002	Internal timeout error: searching.	The scanner is currently searching for the desired image address. When the search function is complete, continue with the desired function.
4004	Internal time error: refiling.	The scanner is currently refiling the film. When the film is refiling, continue with the desired function.
4005	Internal error: unknown event.	
4006	Timeout waiting for response from film controller.	Re-try operation.
4007	Timeout waiting for film controller to be ready.	Re-try operation.
4008	Film controller is not ready.	Wait until the film controller has completed the requested task, then try again.
4009	Host received an unknown command.	Re-try operation.
4010	Missing end character at end of command.	Re-try operation.
9038	Unhandled software error.	
9039	User retried command after software error.	
9040	User ignored software error.	
9041	User aborted program.	
9042	Program execution aborted due to previous error.	

Problem solving chart

Use the chart below as a guide to check possible solutions to problems you may encounter when using the scanner.

Problem	Possible Solutions
The 3 front LEDs on the scanner are on and will not go off.	Reset the circuit breaker on the back of the scanner. If the problem persists, call service.

Clearing a film jam or break

If a film jam or film break occurs in the take-up area, the jammed or broken film must be removed in order to continue operations.

Tools needed:

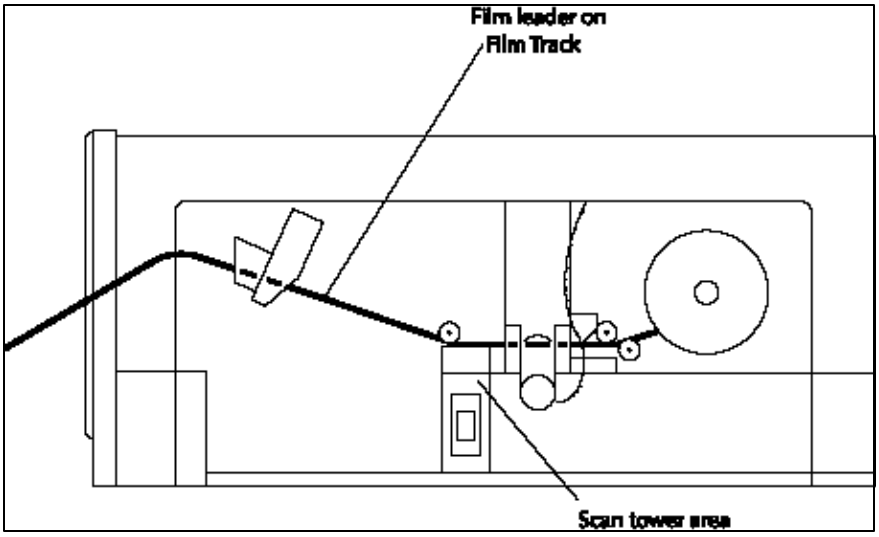
The following will help in the film recovery procedure:

- A piece of heavier film or film leader approximately 2 ft. (61 cm) in length to manually slide through the film path to help move the broken or loose film.
- Scissors to cut the damaged end of the film, if required.

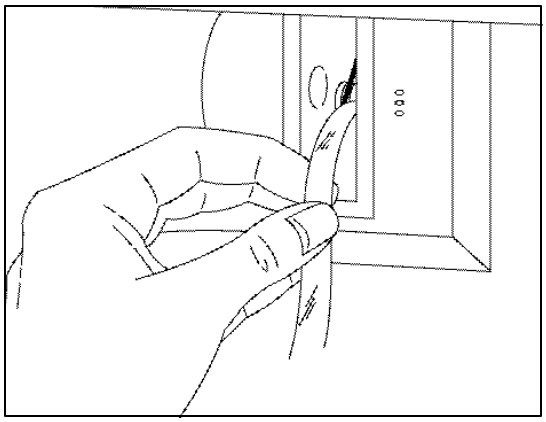
To clear a film jam or break:

1. Turn off the scanner.
2. Open the side panel of the scanner by lifting the two side indents to release the catches and gently pulling the side cover down.
3. Use the Manual Release Lever to release the supply spindle from the film magazine.
4. Remove the magazine from the film slot. Take note of the orientation of the magazine before removing it.
5. Set the magazine aside.

6. Insert the heavier film (or film leader) into the film slot and manually feed the film through the film track. You will see it pass through the scan tower area.



7. Pull the loose end of the film being recovered off of the take-up reel and cut off the damaged, curled or bent end of the film, as needed.
8. Feed the end of the film from the take-up reel on top of the leader. The leader will be used as a *ramp* to guide the film back through the film track.
9. Manually rotate the take-up reel clockwise. The end of the film will be fed back through the film path and out the film slot.
10. Pull the film leader out of the film slot.



11. Reattach the end of the film to a supply reel. Be sure to wind the film onto the supply reel in the correct direction. Wind several wraps of film around the reel core so the film is held securely on the reel.
12. Install the reel into a film magazine.
13. Rotate the reel clockwise, applying and maintaining gentle film tension as you insert the magazine completely back into the film slot.
14. Turn the scanner power on.

Appendix A Microfilm Information

This appendix contains the following information that will be helpful when operating the scanner. Some of the information is general, while some of it supports specific operating procedures.

- Image mark sizes
- Loading film
- Film and reel checks
- Film leader, trailer, splicing, curl, twist, and magazine condition
- Microfilm storage

Microfilm guidelines and specifications

The microfilm used in the scanner must meet the following specifications:

Width — 16 mm, unperforated.

Types — silver halide microfilm. Duplicates from silver halide such as diazo microfilm (provides direct duplicates of the original), or vesicular/ thermal microfilm (provides reverse polarity duplicates). Microfilm must have a clear base. Tinted base microfilms cannot be retrieved by the scanner. However, if tinted base originals are duplicated on clear base microfilms, the duplicate copies can be used for retrieval.

Thickness — 2.5 to 5.0 mil.

NOTE: Thermal films less than 4 mils thick can stretch during processing and become narrower than 16 mm, which can result in unpredictable results.

Polarity — either negative (dark) or positive (clear) image marks and negative or positive image polarity.

Leader — black leaders are not to be used with the scanner. Only transparent leaders can be used.

Indexing — images can be retrieved using standard and non-standard image marks. Standard image marks should meet the AIIM/ANSI standard. Non-standard image marks require specific setup information in order for the images to be retrieved.

Reels — the solid flange microfilm reel used in the scanner must be housed in one of the following:

- *Kodak Ektamate* Magazine
- *Kodak Ektamate* A Magazine
- ANSI Standard Magazine (open and enclosed designs)
- M-type Magazine

This reel should be installed in the magazine so the film feeds from the top, and the magazine's threading symbol is on the same side as the reel's square hole.

NOTE: The scanner does not support the use of black camera spools or open flange reels.

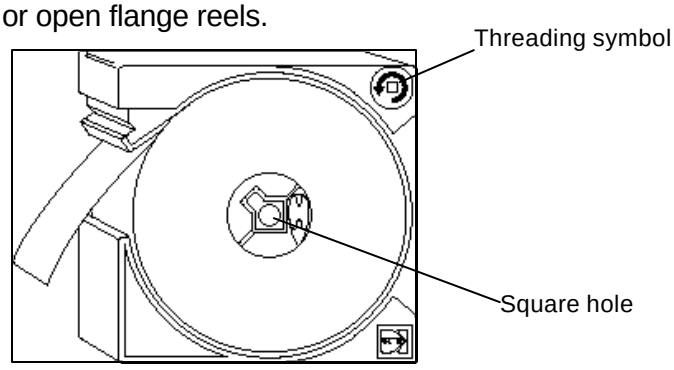
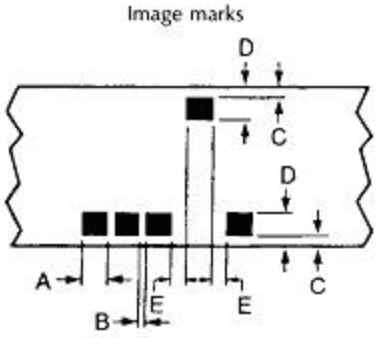


Image mark sizes

The scanner can accept a set of three customer-specified image mark sizes in the overall range of 0.024 to 0.310 inches (0.61 to 7.87 mm). Image mark sizes can be specified in the machine setup.

		Small mark	Medium mark	Large mark
Image Length* A	Min	0.024 in (.61 mm)	0.085 in (2.16 mm)	0.165 in (4.19 mm)
	Nominal	0.027 in (0.69 mm)	0.090 in (2.29 mm)	0.170 in (4.32 mm)
	Max	0.050 in (1.27 mm)	0.122 in (3.10 mm)	0.3.10 in (7.87 mm)
Intermark spacing		B Min	0.024 in (0.61 mm)**	
Mark from edge of channel		C Max	0.045 in (1.14 mm)	
Mark from edge of channel		D Min	0.074 in (1.88 mm)	
Alternate channel spacing		E Min	0.048 in (1.22 mm)	



NOTE: The minimum large image mark size must exceed the maximum medium image mark size by at least 0.038 in. (0.97 mm). The minimum medium image mark size must exceed the maximum small image mark size by at least 0.035 in. (0.89 mm).

* In multi-level search programs, the best stopping position of documents results if mark lengths are the nominal size.

** For silver film with maximum Dmin 0.35 and minimum Dmax 0.90, intermark spacing (B) is 0.019 in. (0.47 mm) min.

Loading film

The scanner is designed to offer optimum performance with ANSI magazines (*Kodak Ektamate* Magazines, or equivalent, and *Kodak Ektamate* A Magazines). In addition, the scanner accepts M-type magazines and enclosed ANSI magazines. Enclosed ANSI magazines may experience reduced threading performance when compared with "open" magazines such as the *Ektamate* or *Ektamate* A magazine.

NOTE: Dual M- and Dual K-format film magazines cannot be used with the scanner.

The different magazine loading and usage conditions for the various magazines are detailed in the following section.

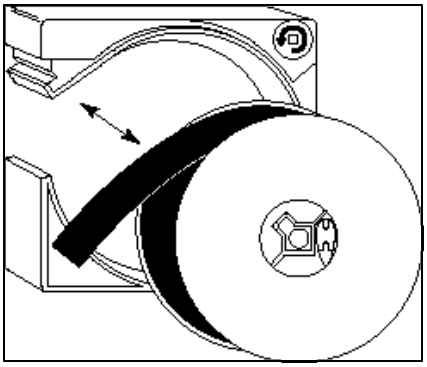
Standard ANSI magazines

To insert the reel into the magazine:

- Orient the magazine with the slot on top and the reel opening on the left.
- Spread the top and bottom of the magazine slightly apart.
- Snap in the reel with the film feeding counterclockwise off the top of the reel.

Note the proper orientation of film and magazine in the illustration below.

Ektamate and ANSI Magazines



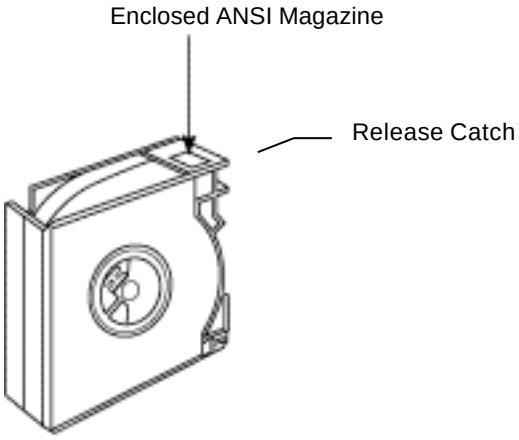
IMPORTANT: *Microfilm rolls should not have any tears or holes on any part of the film. The first 72 inches (182 cm) of the leading end of the film should be free of wrinkles and of image marks or Image Management Code. Image Management Code should not begin after 120 inches (304 cm) of film.*

Enclosed ANSI magazines

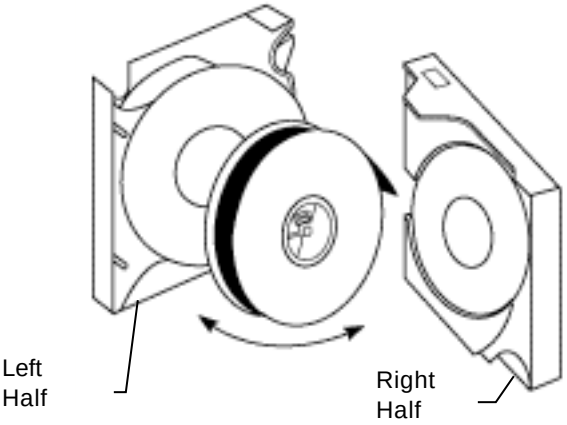
IMPORTANT: *Enclosed ANSI magazines **must** be used with solid flange reels designed specifically to fit with these magazines. Standard ANSI film reels designed for open ANSI magazines may cause film transport performance problems when used in an enclosed magazine.*

To insert the reel into the magazine:

- Locate the release catch on the magazine (see the illustration) and release it by pressing with a small pointed object (such as a ball point pen).



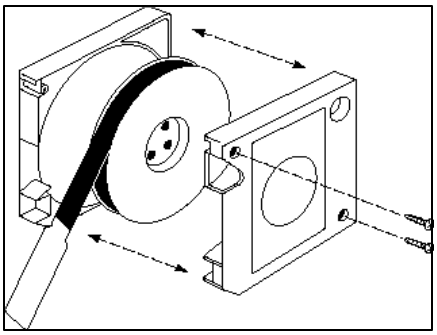
- Place the reel into the left half of the magazine with the film feeding clockwise off the top of the reel.
- Join the two parts of the magazine by aligning the four edges and snapping the release catch and edges securely into place to form an enclosed magazine.



M-type magazines

To insert the reel into the magazine:

- Orient the magazine as shown in the illustration. Remove the two retainer screws and set them aside. Separate the two parts of the magazine.

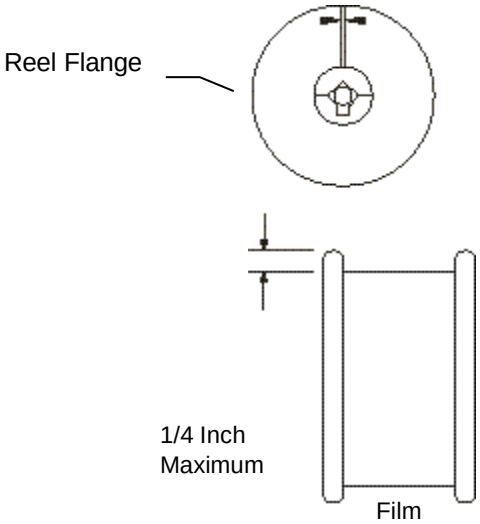


- Place the film into the magazine with the film feeding counterclockwise off the reel.
- Place the two parts of the magazine together and replace the two screws.

CAUTION: Core fillers should not be used and existing fillers should be removed from reels. Damage could occur to your film and/or the scanner if core fillers are used.

M-Film and reel checks

Reels used with the scanner should be *Kodak* Solid Flange Reels (or equivalent).



The amount of film on the reel should not go past the arrows indicated on the reel; there should be at least a ¼-inch distance from the edge of the reel to the film.

For correct feeding of film on and off the reel without binding or damaging the film:

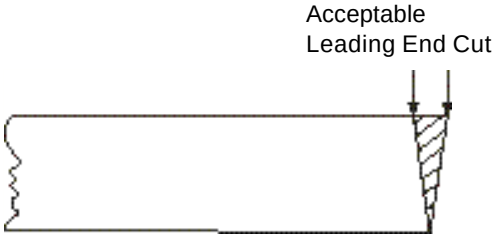
- Pass the film in and out between the flanges (sides) of the reel.
- If the film is pinched by the flanges at any point, have the film rewound onto a new reel.

Make sure that the reel is not overfilled, as follows:

- If you are using a *Kodak* Solid Flange Reel, make sure that the film (when fully rewound) is not above the arrows on the reel's side.
- If you are using an equivalent reel, check that the film (when fully rewound) stops at least 1/4 in. from the top edges of the reel flanges.

Film leader — ANSI magazines

When using an ANSI magazine, the leader end of the film should meet the following criteria:

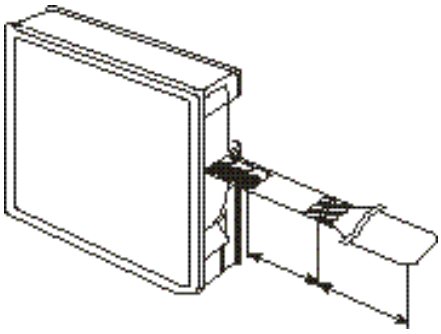


- The leader end should be cut as square as possible (see illustration).
- For reliable threading, the first 36 in. (915 mm) should be free of wrinkles, splices, tears, or holes. The first 72 in. (1830 mm) should be free of image marks or Image Management Code.

If the film is less than 2.5 mils thick, it should have a leader (preferably 5-mil polyester) that is at least 36 in. (915 mm) long.

Film leader — M-type magazine

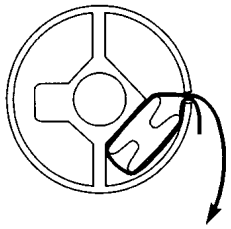
When using an M-type magazine, a 31.5 in. (800 mm) leader must be affixed to the film. The following criteria should also be met:



- The leader must be square to the attached film.
- The first film images should not be closer than 16 in. (400 mm) from the leader-film splice location.
- The leader must be clean and in good condition (free of creases, burrs, bends, etc.).
- Only *transparent* leader tapes can be used.

Film trailer — ANSI magazines

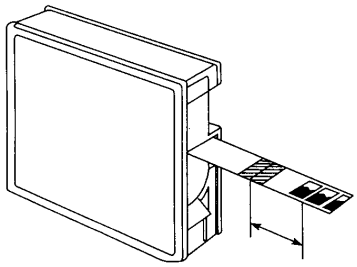
When using an ANSI magazine, use a trailer end holder to fix the film end to the supply reel. The following criteria should also be met.



- Be sure to wind the film onto the supply reel in the correct direction.
- The film trailer must contain no images and must be at least 18 in. (450 mm) long as measured from the supply reel to the last image on the film.

Film trailer — M-type magazine

When using an M-type magazine, use a trail end holder to fix the film end to the supply reel. The following criteria should also be met.

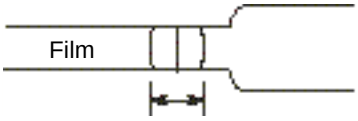


- Be sure to wind the film onto the supply reel in the correct direction.
- The film trailer must be at least 31.5 in. (800 mm) long.
- There must be at least 12 in. (300 mm) of unexposed film between the last image and the trailer end splice connection.

Film splicing

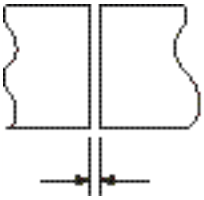
Use the following guidelines when splicing film:

- For M-type magazines, the section connecting the leader tape and film should be at least 0.826 in. (21 mm) long.



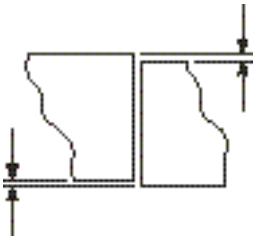
0.826 in (21 mm) or longer

- The gap between the leader tape and film should be no more than 0.009 in. (0.25 mm).



Cap
0.009 in. (0.25 mm) or less

- The leader tape and the film should be aligned closely. The offset should be no more than 0.005 in. (0.13 mm).



- Make sure there is minimal skew (a slanted cut leaving an angled gap) between the leader tape and film. The skew should be no more than 0.002 in./in. (0.05 mm/mm).

- The thickness of the connecting section should be no more than 0.014 (0.38 mm).

Film curl

For most film types and operating conditions, a certain amount of film curl can exist without adversely affecting the performance of the scanner (see the next section entitled, “Microfilm curl check”). Under certain conditions, however, curled film ends may result in degraded threading performance. Specific conditions that may result in degraded performance with curled films include:

- partial reels (reels containing less than a full amount of film)
- operating environments with low relative humidity
- enclosed ANSI magazines

In order to maintain reliable film threading under these conditions or others where curled films may cause degraded performance, certain steps can be taken:

- Straighten the film end (leader) by forcing it over a straight edge or surface to remove the curl and/or twist from the first 6 to 8 inches. (150 to 200 mm). Care must be taken not to crease or damage the film end during straightening.
- Attach a straight film leader in good condition that is approximately 36 in. (915 mm) long. (A leader of 5-mil thick polyester film will obtain the best results.)

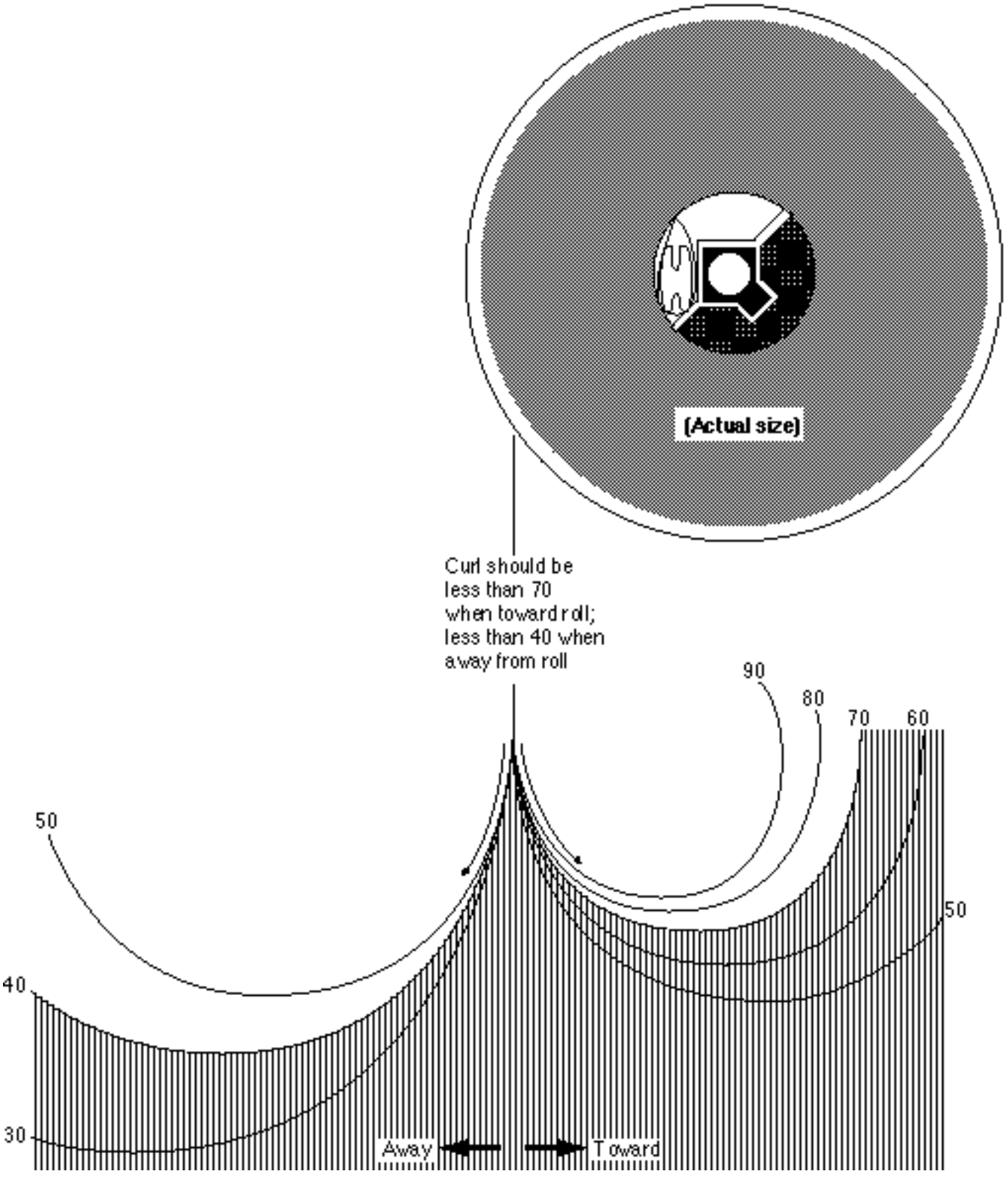
Microfilm curl check

The microfilm can have a certain amount of curl without affecting operation. To check the curl of your microfilm:

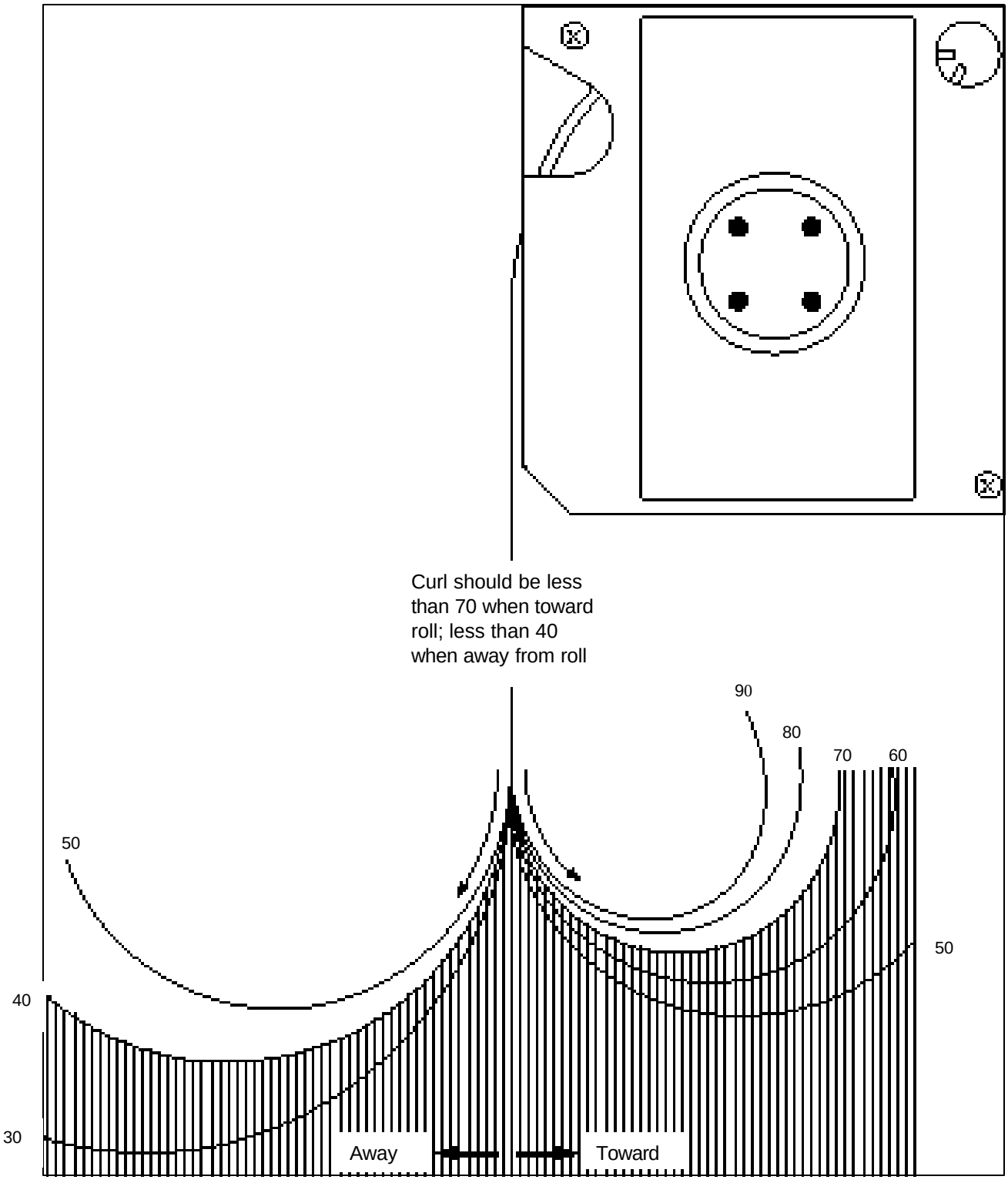
1. Place the diagram upright with the outline of the reel at the top of the page.
2. Place your reel over the outline and let the film hang down.
3. Move your reel until the film’s curl matches one of the arcs in the diagram.

The film curl is acceptable if it falls within the shaded area (see the next page).

Film Curl ¾ *Ektamate* Cartridge



Film Curl ¾ M Cartridge



Film twist

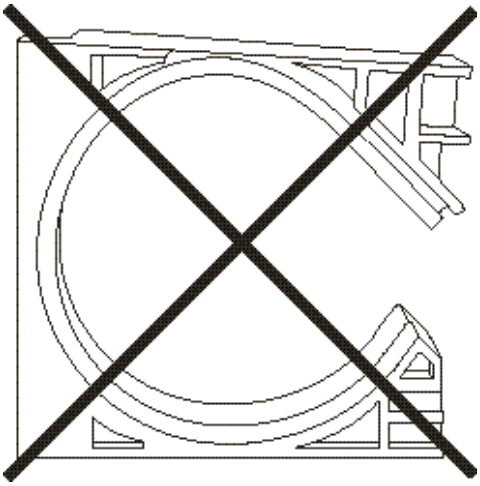
Besides curl, the film should also be checked for twist. To make sure that the film's twist is within allowable limits:

- Allow about 12 in. (305 mm) of film to hang down from the reel.
- If the film twists more than 90° in either direction, a leader should be attached.

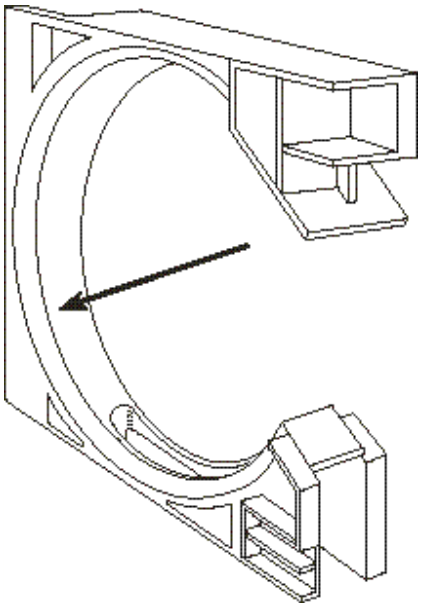
Film magazine condition

The condition of the film magazine is another factor affecting optimum performance of the scanner. Film magazine conditions should meet the following criteria:

- The film magazine must not be distorted in shape (either closed downward or stretched outward).



- The film magazine's internal walls should be free of nicks, burrs, or other surface defects that lead to reduced threading and other problems.



Microfilm storage

Microfilm should always be handled and stored with care. Storage of your film should be based on the following:

- How long you want to keep the images on the microfilm: short, medium, long term, or permanently.
- How difficult the images are to replace.
- The cost of preserving the microfilm.

For maximum protection of your microfilmed images, you should duplicate each reel of film and use the duplicate reels for retrieval operations. The original reels should be stored at a different location.

In general, use the same rules for storing microfilm as you would for storing paper documents. For example:

- A relative humidity level between 15 and 60 percent should be maintained.
    - ◊ Relative humidity above 60 percent can cause mildew to form on stored microfilm. Moisture-tight cans can help protect the film against moisture.
    - ◊ Relative humidity below 15 percent can cause a static charge to build up on the microfilm, or cause older film to become brittle.
- Water damage: if microfilm becomes wet, the film may warp. Store your film off the floor to protect it from flooding. If your microfilm becomes wet, do not let it dry. This can cause the film to stick together. Completely immerse the film in clean water, and have it rinsed and dried by a professional processing lab as soon as possible.
- Exposure to contaminants: paint fumes, coal gas, ozone, ammonia (produced by some photo copiers), and other chemical contaminants can cause microfilm to fade or form microscopic blemishes. To avoid this damage, use air conditioning, air filtration, and other means to remove airborne contamination.
- Using rubber bands on microfilm: residual sulfur from the vulcanizing process can promote the growth of microscopic blemishes on the film.

  Excessive heat: heat can cause the microfilm to buckle and distort, or decrease readability. To protect your film from fire, consider using fireproof storage vaults, cabinets, or safes.

EASTMAN KODAK COMPANY
Document Imaging
Rochester, New York 14650

Printed on recycled paper.

A-61404 2/2003
CAT No. 120 8206

DOCUMENT
IMAGING