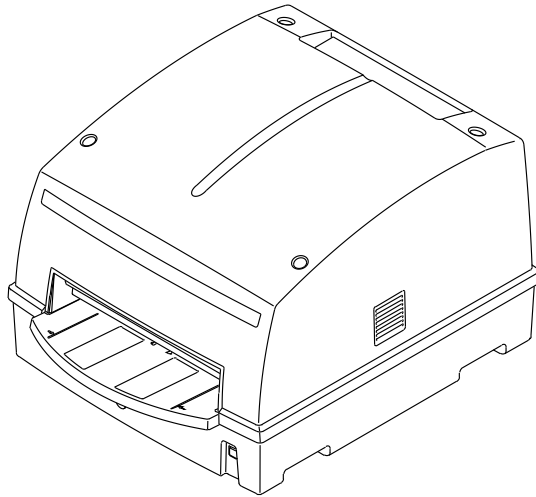# KODAK INDUSTREX HPX-1 Hardware

User's Guide
with
Safety and Regulatory Information

Carestream
HEALTH

PN 9G1285

Version 1.0

23 June, 2010

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5 Troubleshooting

6 Maintenance

1 Safety and Regulatory Information

User Guide Conventions

Special Messages

The following special messages emphasize information or indicate potential risks to personnel or equipment.

NOTE: Notes provide additional information, such as expanded explanations, hints, or reminders.

IMPORTANT: *Important notes highlight critical policy information that affects how you use this guide and this product.*

⚠ **CAUTION:**
Cautions point out procedures that you must follow precisely to avoid injury to the user, damage to the system or any of its components, loss of data, or corruption of files in software applications.

⚠ **LASER WARNING:**
Laser warnings warn personnel that access to laser radiation is possible and all personnel must avoid direct exposure to the beam.

Typeface Conventions

Boldface type represents buttons or selections that you make on the interface and to identify screen names, cautions and warnings.

INDUSTREX HPX-1

Labels

Dataplate

Protective Earth Icon

Electrical Hazard

CAUTION: HIGH VOLTAGE, AVOID CONTACT

Hot Surface

CAUTION: HOT SURFACE, AVOID CONTACT

Class 1 Laser Product

Class 3B Laser Warning

Health and Safety Compliance

The following Standards apply to the INDUSTREX HPX-1:

Safety

- United States: UL 60950-1:2007
- Canada: CAN/CSA-C22.2 No. 60950-1-07
- European Union (EU): EN 60950-1:2006
- European Union (EU): EN 60825-1:1994 + A1:1997 + A2:2001
- International: IEC 60950-1:2005 with country and group differences
- International: IEC 60825-1:1993 + A1:1997 + A2:2001

EMC

- United States: FCC Part 15, Sub B, Class A
- Canada: ICES-003 Issue 4, Class A
- Europe:
  - EN 55022:2006 Class A
  - EN 61000-3-2:2006
  - EN 61000-3-3:1995 + A2:2005
  - EN 55024:1998 + A2:2003
- International:
  - CISPR 22:2005 Class A
  - CISPR 24:1997 + A2:2002

Laser

- This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

- This product is a Class 1 laser product in accordance with EN 60825-1 and IEC 60825-1.

Environmental

⚠ **CAUTION:**

Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.
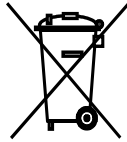
In the European Union, this symbol indicates that when the last user wishes to discard this product, it must be sent to appropriate facilities for recovery and recycling. Contact your local representative for additional information on the collection and recovery programs available for this product.

Acoustic Noise Emission

The sound pressure level is less than 70 dB.

Electrical

⚠ **CAUTION:**

The socket-outlet must be installed near the equipment and easily accessible.

2   Hardware Overview

INDUSTREX HPX-1

The INDUSTREX HPX-1 is a compact laser reader designed specifically for Non-Destructive Testing (NDT) that can scan plates up to 35x 152 cm (14 x 60 in.) in size. It is a precision instrument designed to scan storage phosphor imaging plates over a wide dynamic range with a high signal-to-noise ratio.

This is accomplished with light derived from a laser diode, scanned across the plate as it moves perpendicular to the laser scan. The computed radiography phosphor emits light proportional to the radiographic exposure level. The light is collected, converted to an electrical signal and digitized to provide 12-bit log data in a 16-bit pixel that is stored on the computer. The reader is intended for imaging operations such as welding inspection, casting, corrosion inspection, stress inspection, and assembly positioning. The system can read, capture, display, manipulate and store images.

The system includes the use of a flexible plate feed tray allowing you to scan multiple width (same length) plates at the same time. In addition, three rigid cassettes can be used (14 x 17, 10 x 12, and 10 x 8 in.) containing 10 mil of copper on the back of the cassette and either no copper or 10 mil of copper on the front of the cassette. The HPX-1 offers pixel resolutions of 100m, 50m, 35m, and 25m as well as in-line Halogen erase.

HPX-1 Reader
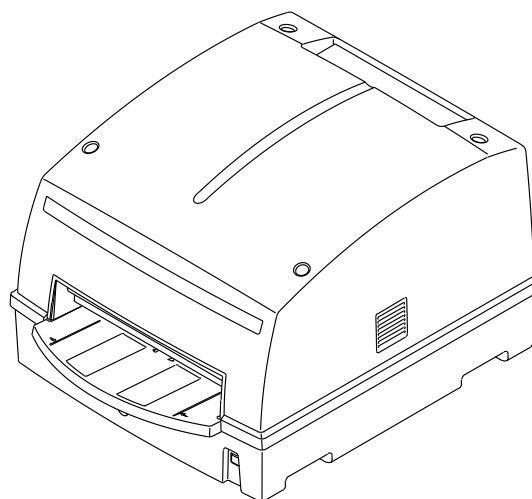
NOTE: The HPX-1 reader weighs 120 pounds (54.4 kg). Molded hand-holds along the side of the machine allow two-person handling. The HPX-1 has a transport case accessory from which the reader can be operated without lifting it to a table surface. The transport case has four locking caster wheels and tie-down points for secure transport.
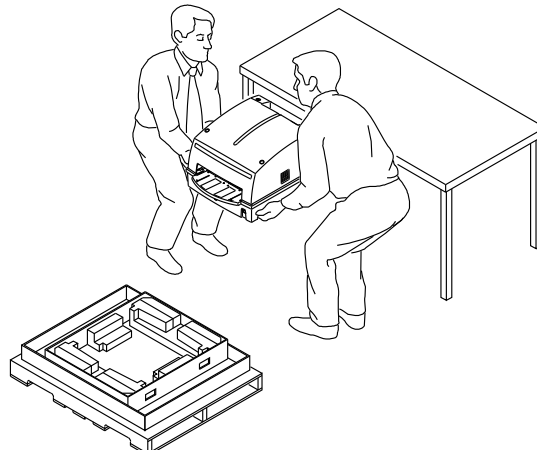
LASER WARNING:

The HPX-1 reader uses a laser for scanning. Do not look directly at the laser light.

Personal Computer

Minimum Requirements:

Processor	2.83 GHz Intel Core 2 Processor with 6 MB cache and 1333 FSB
RAM	4 GB DDR2-800 ECC RAM
Video Card	(minimum) nVidia FX 3700 512 MB
	(recommended) nVidia Quadro FX4800 1.5 GB
Storage	500 GB SATA 3 GB/s
Drives	16x DVD +/- RW SuperMulti SATA

Two networking connections are required:

Networking	STD Connection Required
Reader	Broadcom 5751 Netxtreme Gigabit or equivalent
Software	WINDOWS XP Professional 64-bit Operating System (required)

Components
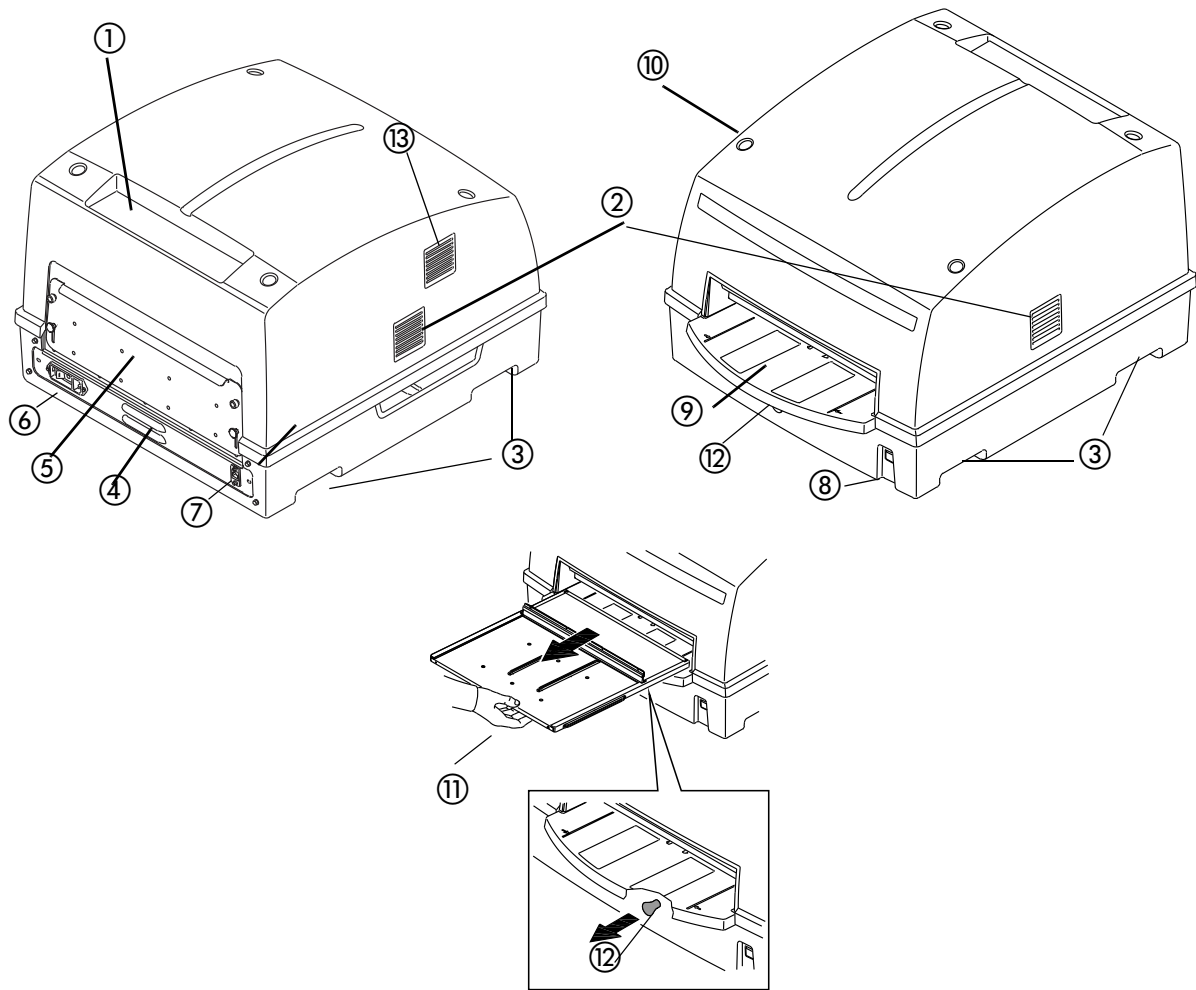
H231_0010GC

①	Top filter	⑧	Status indicator / Scan button
②	Cooling vent	⑨	Cassette tray
③	Hand grips	⑩	Top cover screw (four total)
④	Vent	⑪	Flex feed tray
⑤	Plate return ramp	⑫	Manual release knob
⑥	I/O switch	⑬	Vent
⑦	Ethernet port		

System Specifications

Scan Configuration

Calibration Width (inches)	Size		Pixel Resolution				Laser Power	
	Centimeters	Inches	100μ	50μ	35μ	25μ	25 mW	2.5 mW
Flex Plate - Left Justified								
4.5	7 x 43 cm	2.75 x 17 in.	X	X		X	X	X
	10 x 24 cm	3.9 x 9.5 in.	X	X		X	X	X
	10 x 40 cm	3.9 x 15.75 in.	X	X		X	X	X
	11 x 25 cm	4.5 x 10 in.	X	X		X	X	X
	11 x 43 cm	4.5 x 17 in.	X	X		X	X	X
	70 mm x 25.4 cm	2.75 x 10 in.	X	X		X	X	X
	90 mm x 25.4 cm	3.5 x 10 in.	X	X		X	X	X
	90 mm x 43 cm	3.5 x 17 in.	X	X		X	X	X
10	12.7 x 17.8 cm	5 x 7 in.		X		X	X	X
	18 x 43 cm	7 x 17 in.	X	X		X	X	X
	25 x 20 cm	10 x 8 in.	X	X		X	X	X
	25 x 30 cm	10 x 12 in.	X	X		X	X	X
14	30 x 40 cm	12 x 15.75 in.	X	X	X		X	X
	35 x 43 cm	14 x 17 in.	X	X	X		X	X
	35 x 92 cm	14 x 36 in.	X	X			X	X
	35 x 129 cm	14 x 51 in.	X	X			X	X
	35 x 152 cm	14 x 60 in.	X	X			X	X
Cassette - Center Justified								
10	25 x 20 cm	10 x 8 in.	X	X		X	X	X
	25 x 30 cm	10 x 12 in.	X	X		X	X	X
14	35 x 43 cm	14 x 17 in.	X	X	X		X	X

Specifications

| Item	Description
Reader Dimensions	(W) 58.42 x (L) 72.4 x (H) 43.8 cm
	(W) 23 x (L) 28.5 x (H) 17.25 in.)
Power Requirements	100-240 Volts ac (± 10%) 50/60 Hz
Temperature Constraints • System Operating Temperature • Rigid Cassette (After normalization to ambient)	• 10°-35° C (50°-95° F) (Nominal) • -40°-50° C (-40°-122° F) (Nominal)
Relative Humidity • System • Readers, plates, and cassettes	• 10% to 90% non-condensing (Nominal) • 10% to 90% non-condensing (Nominal)
Altitude	No limit.
Weight (Reader only)	54.43 kg (120 lb)
Vibration/Acceleration	The HPX-1 reader reduces transmission of environmental vibration from the reader support surface.

3 Operation

Starting the System

1. Turn the reader on by pressing the |/O (**on/off**) toggle to | (**on**).

   The **Status Indicator** button on the front of the machine blinks and changes color. For a description of status definitions, see "Status Indicator Button" on page 3-2. The button turns green, indicating that the reader is ready to scan when the system has initialized and synchronized with the software.

2. Turn on the computer and the monitor.

3. Wait for the software and reader to initialize.

4. Double-click the INDUSTREX software icon.

Indicator Light

|/O (on/off) Button
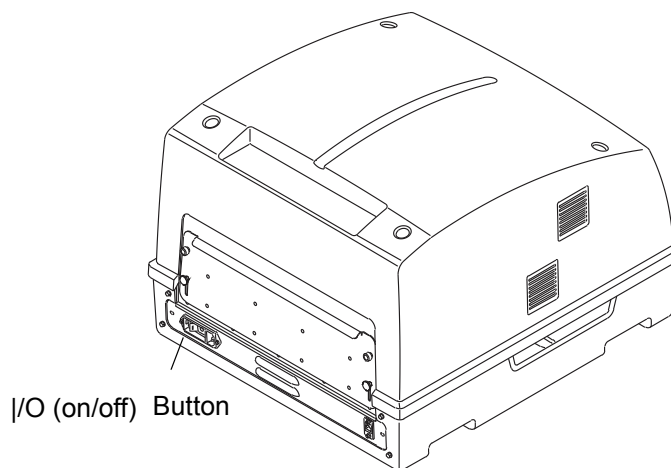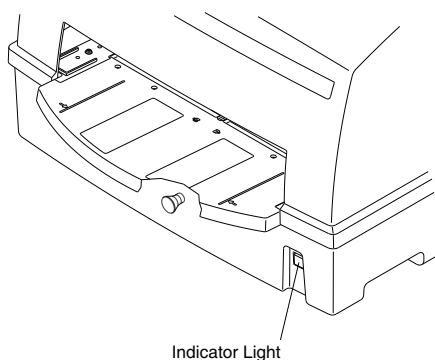
Status Indicator Button

Indicator	Status
No Light	Power off.
Green	Ready to scan.
Blinking Green	Erase only mode.
Orange	Busy - Scanning, Diagnostics, INDUSTREX Software offline, Normal scanning operation in progress.
Blinking Orange	Attention - Look for a message on the workstation or workstation not communicating.
Red	Error state. Reader hardware needs attention. Operations cannot continue.

Processing Plates

IMPORTANT: *Clean phosphor plates before using them for the first time!*

See "Cleaning the Plate" on page 6-13.

Expose a phosphor plate using a flexible cassette, or expose a number of plates *the same length* that you can batch process.

⚠ **CAUTION:**
Water and isopropyl alcohol (isopropanol, rubbing alcohol) and plate cleaners containing Isopropyl alcohol are NOT recommended. Cleaning solutions other than those recommended can contain chemicals that cause visible or hidden damage to the plate and could result in immediate or future image artifacts. Do not use isopropyl alcohol (isopropanol, rubbing alcohol) to clean plates or cassettes.
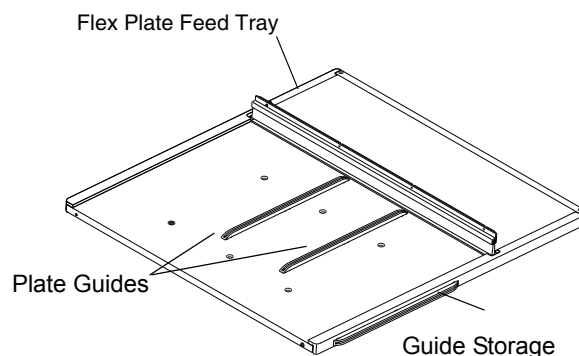
To process a phosphor plate:

⚠ **CAUTION:**
**Make sure the reader is initialized before inserting the flexible feed tray.**

1. Insert the flexible feed tray into the reader.

Flex Plate Feed Tray

Plate Guides

Guide Storage

⚠️ **CAUTION:**

Phosphor plates can be erased in ambient light. Handle exposed plates in very subdued light conditions.

2. Turn off monitors and all extraneous light when handling unprocessed plates.

3. In subdued light, remove the phosphor plate from the flexible cassette and place it on the flexible feed tray with the (white) phosphor side up, and with the left edge flush against the left edge of the tray.

   To load multiple plates of the same length, secure the plate guides in the tray as shown. Place the left edge of each plate against the left guide. See "Plates" on page 4-2 for information about placing more than one plate on the feed tray.

2 Guides
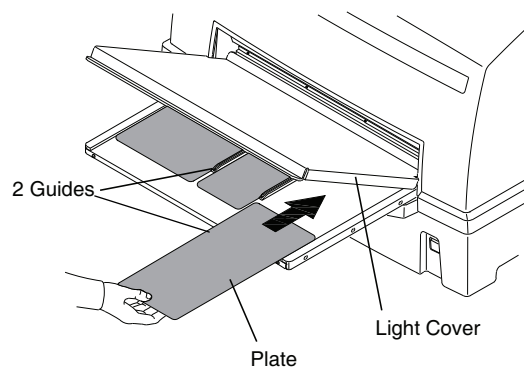
Light Cover

Plate

4. Push the plate(s) under the feed tray brush until it stops.

5. Cover the flexible feed tray with the light cover.

6. Turn on the monitor.

7. Select **File** > **Scan and Erase Setup**.
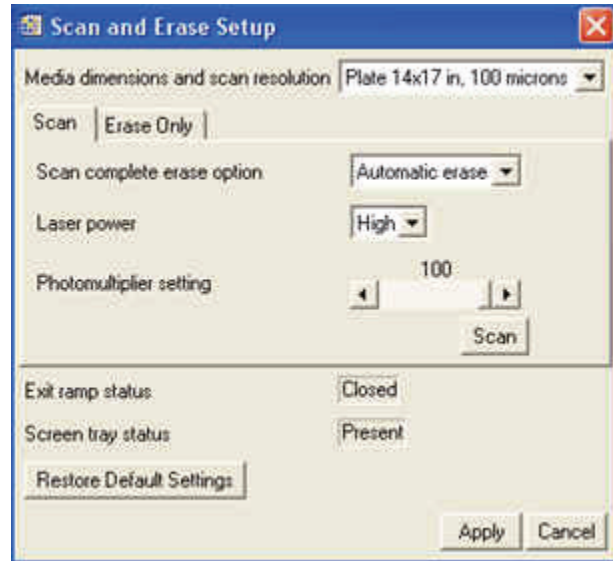
NOTE: See the *INDUSTREX Online Help* for information about selecting scanning parameters. See "Scan Configuration" on page 2-4.

8. Select **Apply** to set the scan parameters.

9. Start the scan using one of these methods:

- Push the **Status Indicator** button on the reader.
- Select **Scan** from the toolbar on INDUSTREX Software.
- Select **Scan** from **File** > **menu**.
- Select **Scan** from the **Scan Erase Setup** screen.

NOTE: If you are scanning a plate longer than 43.18 cm (17 in.), before starting the scan, raise the Screen Return Ramp so that the plate can exit freely out the back of the reader.

To raise the panel:

1. Loosen the four thumbscrews on the panel.
2. Slide the panel up.
3. Tighten the thumbscrews.

Screen Return Ramp

Screen Return
Ramp

4 Thumbscrews
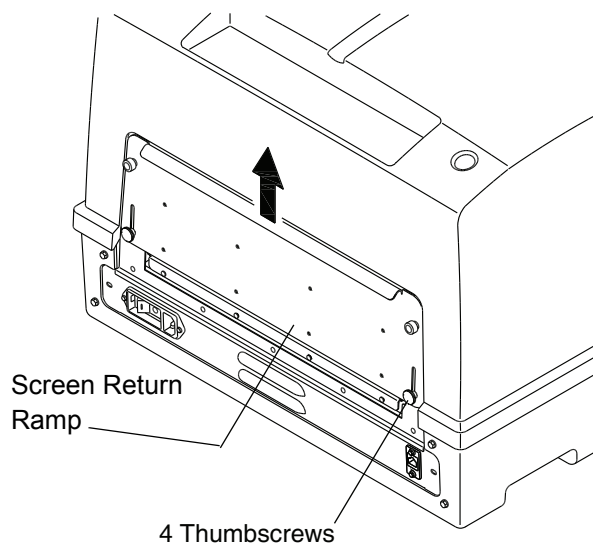
Processing Rigid Cassettes

To process a rigid cassette:

1. Go to the workstation and select **File** > **Scan and Erase Setup**.

2. Select the size of the rigid cassette from the screen.

3. At the reader, make sure the **Status Indicator** button is green.

4. Do not use the Flexible Feed Tray. Pull the manual Release Knob and remove the tray before scanning a rigid cassette.

5. Wait until the machine initializes before inserting a cassette.

NOTE: The cassette cannot be inserted until the reader resets after releasing the Flexible Feed Tray. The reader takes a few moments to set the rigid cassette and prepare the transport mechanics.

6. Center the rigid cassette on the cassette tray. For 25 x 20 cm (10 x 8 in.) and 25 x 30 cm (10 x 12 in.) cassettes, use the guide arrows on the tray for positioning reference.

Rigid Cassette

Manual Release Knob
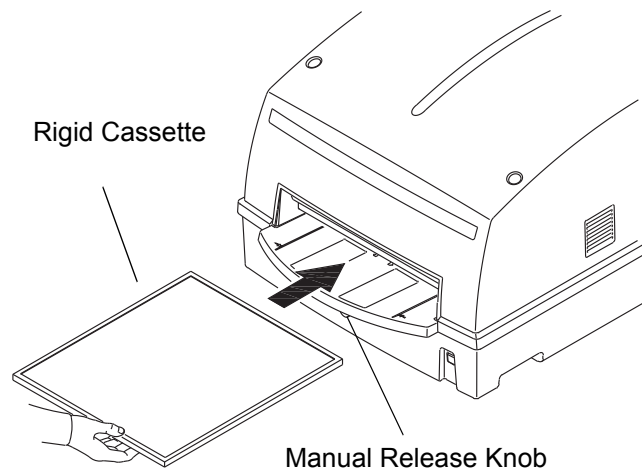
7. Gently, push the rigid cassette all the way in.

8. Push the green **Status Indicator** button to start a scan, or use a previously defined start scan method. The button turns solid orange. See .

Manual Release Knob

Status Indicator
Button
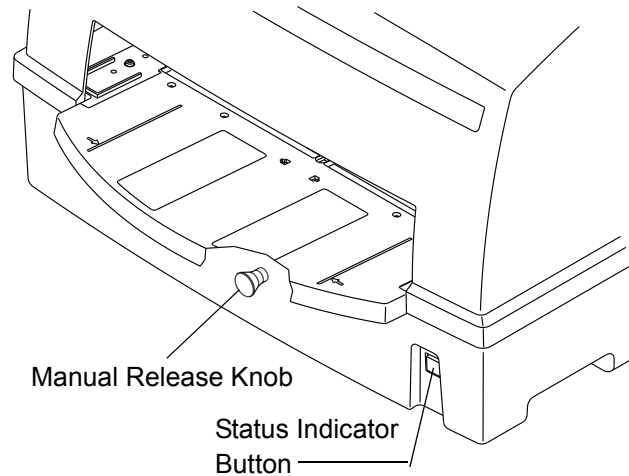
9. The **Status Indicator** button is orange while the reader is scanning and erasing. When scanning is finished, the **Status Indicator** button returns to its green ready state. The cassette ejects automatically. The erased plate is ready for reuse.

Shutting Down the System

1. Verify that there are no plates left inside the reader. Make sure the **Status Indicator** button is green. Turn off the reader; press the toggle button on the back of the reader to the **O (off)** position.

2. Select **File** > **Exit** to close INDUSTREX software.

3. Select **Start** > **Turn Off Computer** > **Turn Off** to shut down Windows and power-down the computer.

4. Lightly touch the **Monitor Control** next to the **Power Indicator Light** to turn off the monitor.

4   Cassettes and Plates

Rigid Cassettes

The following cassette sizes are supported by the HPX-1 reader:

- 25 x 20 cm (10 x 8 in.)
- 25 x 30 cm (10 x 12 in.)
- 35 x 43 cm (14 x 17 in.)

  Cassettes are labeled with product labels that fit within a recess on the bottom panel and contain the following information:

  - Presence of copper: No copper (10 mil back copper only), Copper, 10 mil front and back copper
  - Cassette size: indicated below
  - Serial Number: indicated on cassette
  - Insertion end: indicated by red arrow
  - Tube Side: not indicated (Tube Side panel is gray.)

Plates

The following plate sizes are supported by the HPX-1 reader:

Plate Size		Multiple Plate Capacity
7 x 43 cm	2.75 x 17 in.	1, 2, 3, 4
10 x 24 cm	3.9 x 9.5 in.	1, 2, 3
10 x 40 cm	3.9 x 15.75 in.	1, 2, 3
11 x 25 cm	4.5 x 10 in.	1, 2, 3
11 x 43 cm	4.5 x 17 in.	1, 2, 3
12.7 x 17.8 cm	5 x 7 in.	1, 2
18 x 43 cm	7 x17 in.	1, 2
25 x 20 cm	10 x 8 in.	1
25 x 30 cm	10 x 12 in.	1
30 x 40 cm	12 x 15.75 in.	1
35 x 43 cm	14 x 17 in.	1
35 x 92 cm	14 x 36 in.	1
35 x 129 cm	14 x 51 in.	1
36 x 152 cm	14 x 60 in.	1
70 mm x 25.4 cm	2.75 x 10 in.	1, 2, 3, 4
90 mm x 25.4 cm	3.5 x 10 in.	1, 2, 3, 4
90 mm x 43 cm	3.5 x 17 in.	1, 2, 3, 4

NOTE: You can process different combination of plate widths side-by-side as long as the plates are the same length.

Custom-Size Plates

The HPX-1 reader processes custom-size plates as well as the standard plates listed in this manual. If you cut your own plates, use precisely the specifications and procedure listed below:

Maximum width	35 cm (14 in)
Minimum length	17.8 cm (7 in.)

⚠ **CAUTION:**
Handle plates with care to avoid introducing artifacts. Always cut plates with the phosphor side up.

Materials

- Metal straight-edge measuring tool
- Sharp razor-edge cutting tool
- Soft, dry cloth

Procedure

1. Place the plate on a smooth, sturdy, flat surface with the phosphor side facing you.
2. Measure the size of the plate you want to cut.
3. Place the straight-edge tool on the plate, being careful not to scratch the phosphor surface.
4. Firmly cut the plate by pressing straight down along the straight-edge tool.

⚠ **CAUTION:**
Do not cut plates longer than specified.

⚠ **CAUTION:**
Do not cut plates shorter than specified.

5. Clean the edges of the phosphor screen with a soft cloth.

NOTE: The edges of a custom-cut plate may yellow over time approximately 1.2 mm (1/16 in.) due to moisture absorption. To avoid this, you can coat the edge with a thin coat of a clear acrylic, such as common clear nail polish.

5 Troubleshooting

Errors are displayed as individual messages and machine state conditions requiring action. In many cases these issues can be resolved by following this procedure:

1. Verify the Ethernet cable connection between the HPX-1 reader and the computer.

2. Verify that the bare plates are loaded correctly:
   – Left-justified
   – Positioned forward to the start of **Scan Stop Gate**.

3. Verify that the **Cassette** or **Feed Tray** is inserted correctly and latched.

4. Make sure there is no additional software running on the computer.

⚠ **CAUTION**:
   Do not perform audio, video, Internet browsing, or high-intensity computing during scanning operations. These, and actions such as an anti-virus system can slow the Windows-controlled Ethernet communications.

NOTE: Anti-virus On-Access should not cause issues. If you experience performance issues, temporarily disable the anti-virus application and disconnect the computer from the WAN. You may need to install and alternative anti-virus application.

5. Reset the reader by pressing the **Status** button for approximately six seconds, or go to the INDUSTREX software User Interface (UI) and select **File > Return Stalled Plate Menu**.

   The mechanical systems reinitialize and typically return a stalled plate.

6. Close the software, turn off the computer, and turn off the reader.

7. Restart the reader and wait approximately 15 seconds for the internal systems to initialize; the connection is active.

IMPORTANT: *Back-up all image files and system files to DVD, network, or USB drive as a best practice.*

8. Restart the software and ensure that the connection messages are displayed in the Message Tool Bar.

   The system successfully restarts when the **File > Scan and Erase Setup** menu selection is active and the **Status** button is green.
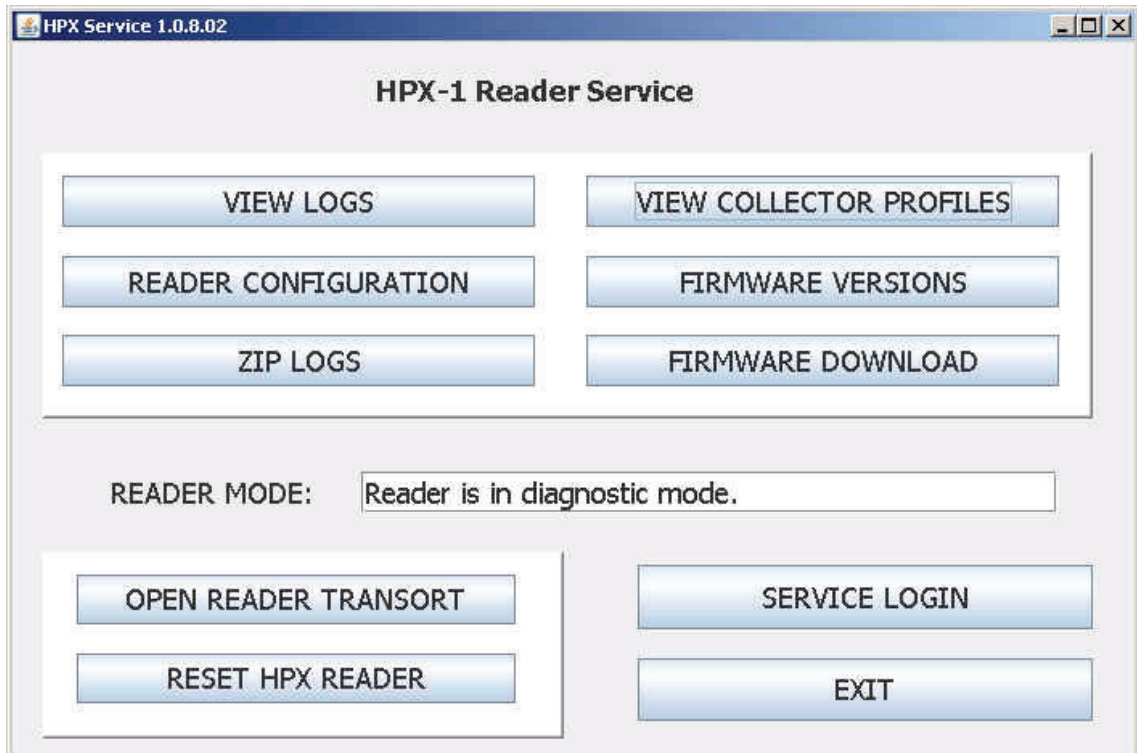
System Status

See "Status Indicator Button" on page 3-2.

System Reset, Releasing Stalled Plates

- Select **File** > **Clear Stalled Plate** on the interface.

  This command resets the mechanical plate transportation systems to home position, returning the plate so that it can be scanned again.

- Or, press the **Status Indicator** button on the reader.

Service Menu

The HPX-1 **Reader Service Menu** lets customers access screens that are designed for service personnel. These screens are readily available and do not require a special password. Your service provider may ask you to check the data on these screens and convey that information to TSC. The menu includes access buttons for the following screens:

- View Logs
- View Collector Profiles
- Reader Configuration
- Firmware Versions
- Zip Logs
- Firmware Download

IMPORTANT: *The **Reader Mode** field provides an important source of status information, such as:*

- *connection with the reader*
- *failure to connect*
- *reader is in Diagnostic Mode*

When the **Reader Mode** field indicates that the reader is in **Diagnostic** mode, no scanning is done, and the **Status Indicator** button on the reader turns orange. Select **Exit** to return to **Scan** mode, and the **Status Indicator** button turns green.

View Logs

Select the **View Logs Screen** to:

- sort customer error logs by date
- sort customer error logs by Error Code
- view customer error logs by frequency
- refresh customer error logs

Use the scroll bar to view errors that have an earlier date.

View Collector Profiles

On the **View Collector Profiles Screen**:

- display pre-determined profiles for selected plate and cassette sizes
- display last calibration results

To display a profile:

1. Select a button for a cassette or plate size. The profile appears.
2. Select **Done** to exit the screen.

Reader Configuration

View the following on the **Reader Configuration Screen**:

- K Number
- Serial Number
- IP Address
- Service Code

NOTE: This information is assigned by manufacturing. **Save Changes** is disabled on this screen. It is only active to a Service login.
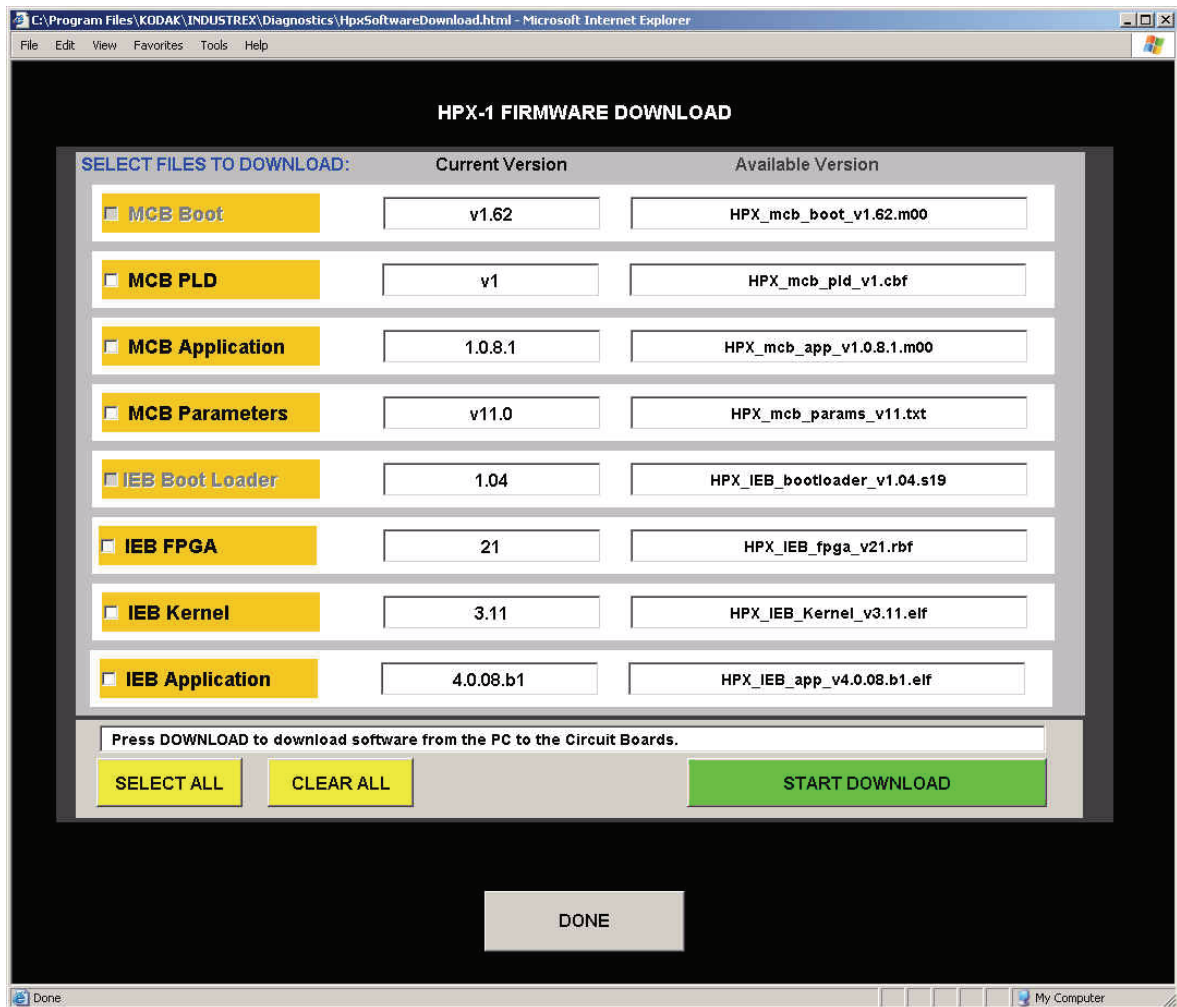
Firmware Versions
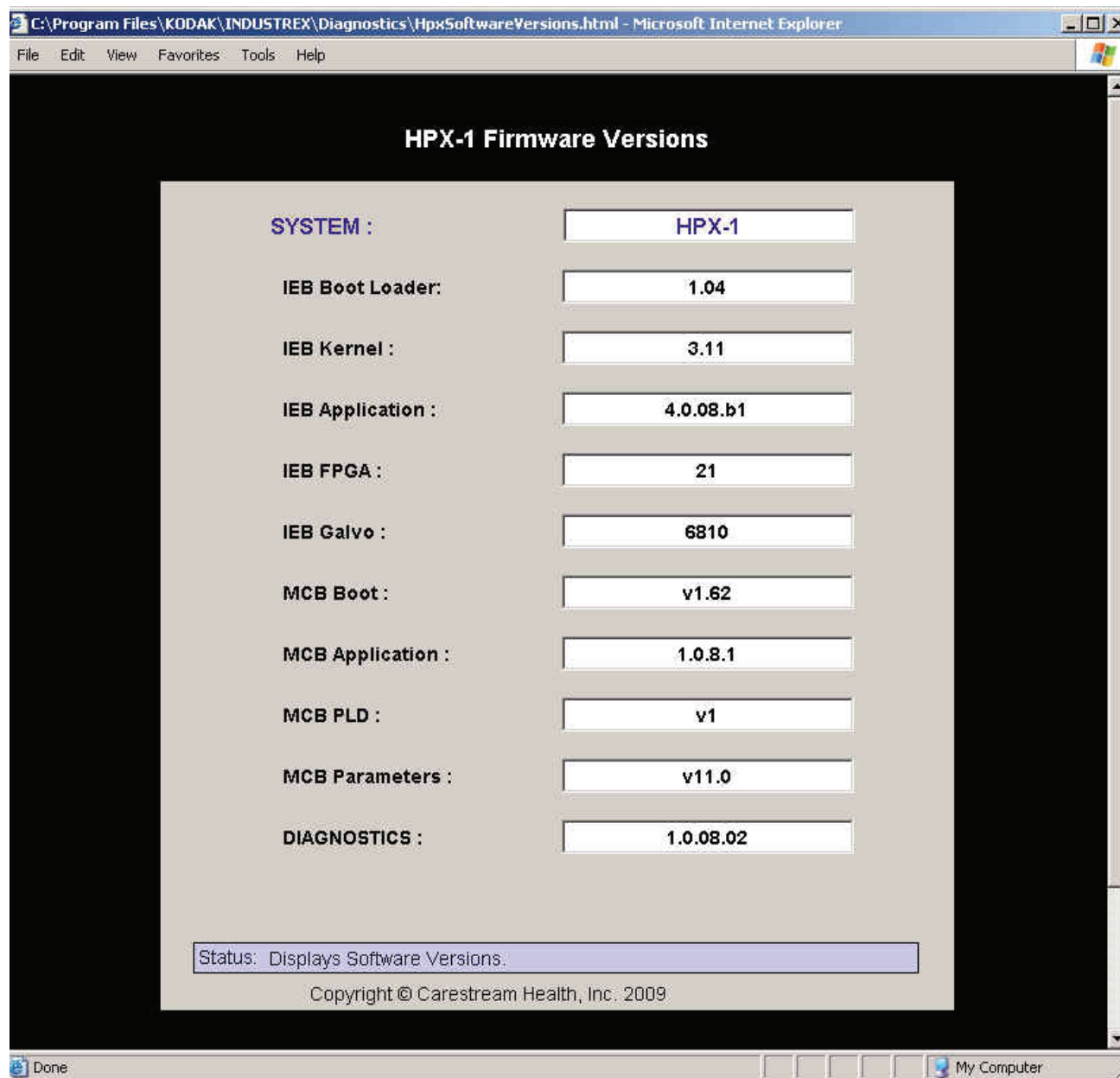
The **Firmware Versions Screen** displays all of the current embedded firmware versions.

Zip Logs

You can **export** a compressed file containing the **system log files** to a selected drive.

Firmware Download

The **Firmware Download Screen** lets you download the available firmware.

1. Select the checkbox to download the files. Press the Select All button to select every file, or the Clear All button to deselect all files.

2. Select **Start Download**. A progress bar appears as the firmware is automatically installed in the reader. The word **Done** appears in place of **Current Version** when the download is complete.

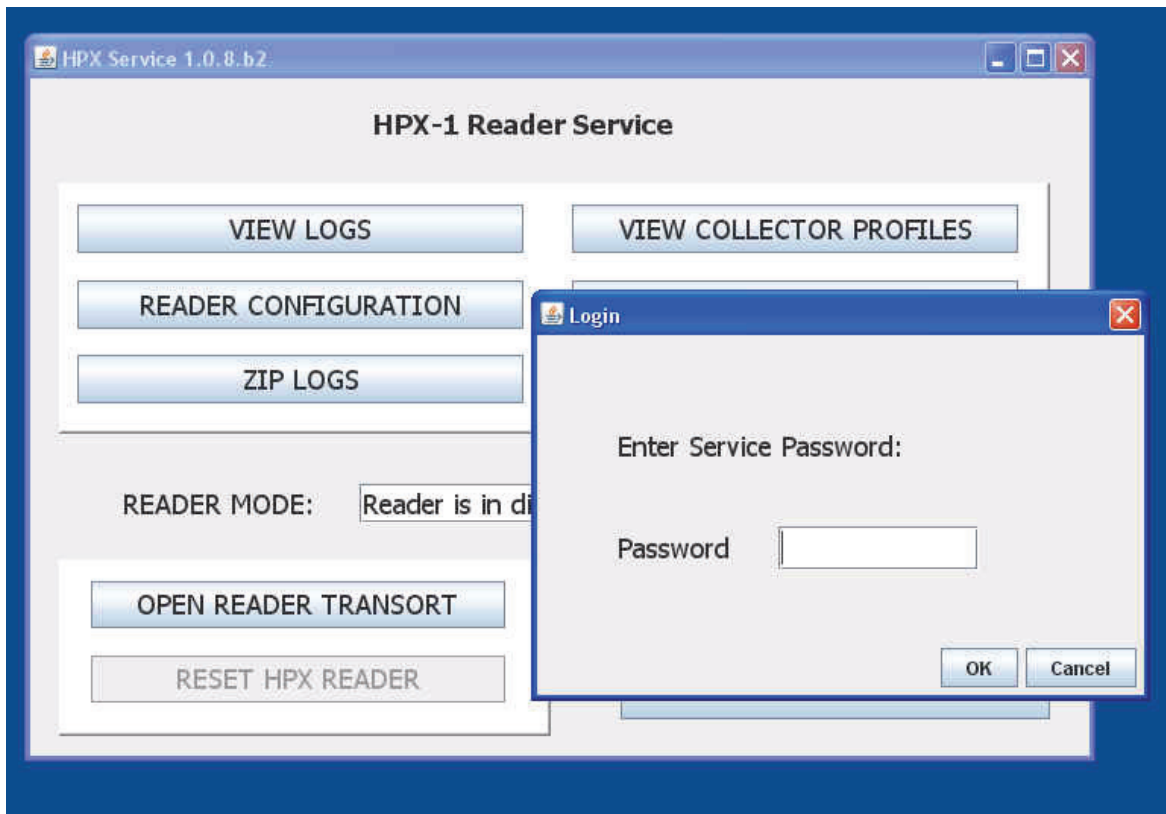3. Select **Done** when you want to leave the screen.

Open Reader Transport

The **Open Reader Transport** button opens the rollers to release the plate that is trapped.

Reset HPX Reader

The **Reset HPX Reader** button sends the **Reset** command to the HPX-1 reader.

Service Login

You must enter a Service password on the **Service Login** prompt to access the Service screens.

6 Maintenance

Preventive Maintenance

Perform Preventive Maintenance annually. For Preventive Maintenance Kit contents and ordering information, see "Preventive Maintenance Kit" on page 6-14. To obtain parts that you can replace, see "User-Replaceable Parts" on page 6-15.

Replacement Procedures

Replacing Erase Lamps

To test and identify the bulbs that should be replaced, the power must be left on. Follow the instructions carefully. Connectors are labeled.

⚠ **CAUTION: Internal surfaces may be very hot! Allow to cool before performing a procedure.**

Removing the Top Cover

1. Using a Phillips-head screwdriver, unscrew the four screws in the top cover.

4 Screws

Top Cover
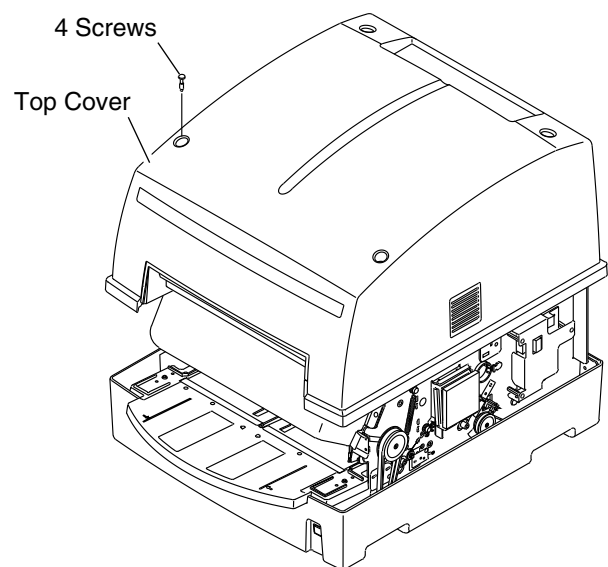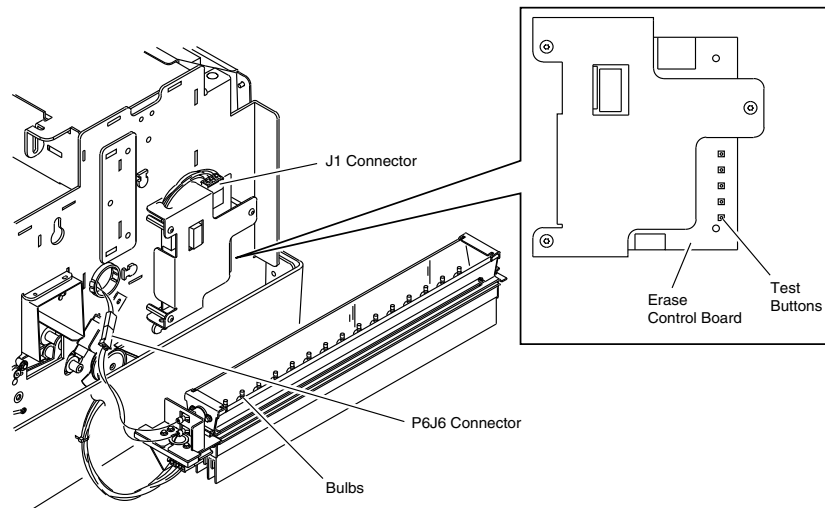
2. Lift off the cover and set aside.

⚠ **CAUTION:**

Assembly may be very hot! Allow to cool before performing any procedure with the cover off.
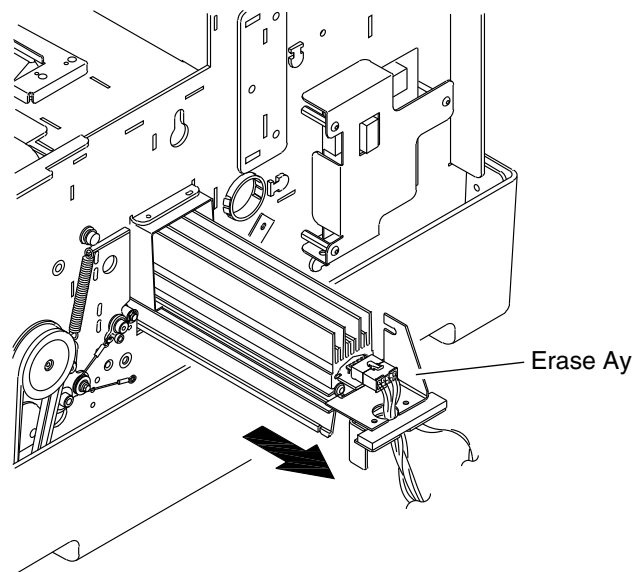
Removing the Erase Assembly

1. Disconnect the J1 Connector on the right side of the reader.
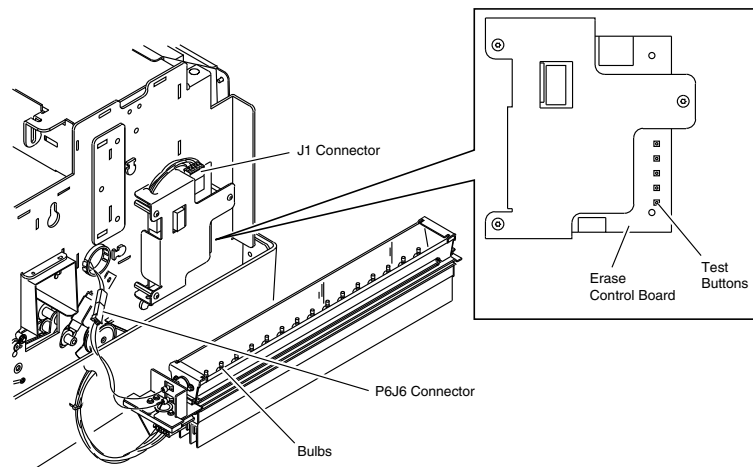
Erase Assembly Connectors

2. Disconnect the J1 Connector.

3. Loosen the Wing Nut from inside the Erase Assembly frame.

4. Carefully pull the Erase Assembly straight out.

Removing Erase Assembly

Erase Ay

5. Place the Erase Assembly next to the reader.

Locating Erase Lamp Tester Buttons

J1 Connector

Erase Control Board

Test Buttons

P6J6 Connector

Bulbs

6. Reconnect the J1 connector.

7. Press and hold each red Test button one at a time. The tester lights three bulbs at a time at a low light level so that you can visually identify which bulb(s) should be replaced.

8. Disconnect the J1 connector when you have identified the failed bulb(s).

9. Remove the two Phillips-head fasteners from the Eraser Assembly end-plate (non-connector end). Remove the end-plate.

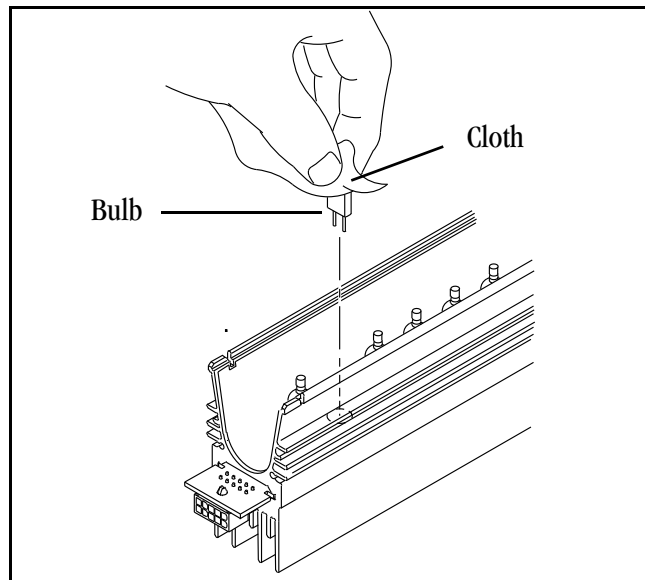Cover Glass

End-plate

2 Screws
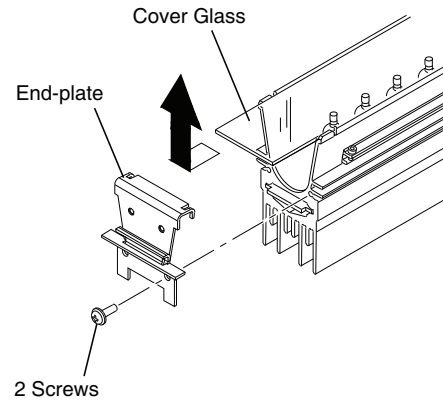
10. Slide the cover glass forward. Carefully remove the cover glass and set aside.

11. Using a soft, oil-free, lint-free cloth or tissue, grasp the expired bulb and pull it out, holding it straight.

⚠ **CAUTION:**
   Bulbs may be hot! Allow the bulbs to cool before removing.

⚠ **CAUTION:**
   Never touch bulbs with your hands.

Handling Erase Bulbs

Cloth

Bulb

12. Insert the new bulb by holding it in its original packaging, or by using a clean, oil-free, lint-free cloth or tissue. DO NOT TOUCH BULBS WITH YOUR HANDS.

13. Replace the glass and end-plate.

14. Reconnect the J1 connector.

15. Verify that all the bulbs light when tested with the five Test buttons.

16. Remove the connectors and replace the assembly by reversing steps 1 through 4.

Replacing Filters and Baffles

There are three user-replaceable baffles located in the top cover. For a list of user-replaceable parts, see "User-Replaceable Parts" on page 6-15. The baffles on the side of the reader keep light from entering the reader. There is one filter located on the top of the reader that filters air that enters the machine.

Filter and Baffle Placement
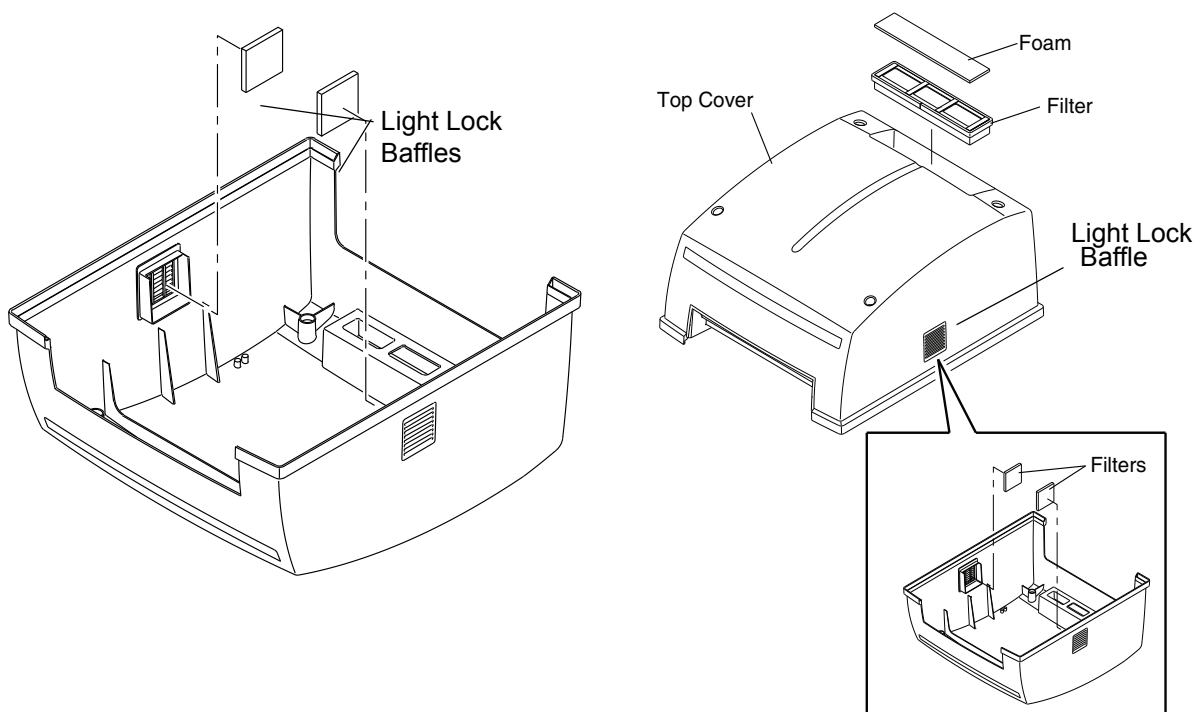
To change the top filter:

1. Remove the filter and foam cover from the back of the top cover.

2. Replace with the new filter and foam.

To change the side light-lock baffles:

1. Remove the top cover.

2. Slide the light-lock baffles from the holders on the inside of the cover.

3. Slide new baffles into the holders.

Replacing the Light-Lock Brush

To remove and replace the light-lock brush:

1. Pull the Flex Feed Tray out to remove it.

2. Remove four screws that hold the light-lock brush in place.

Light Lock Brush
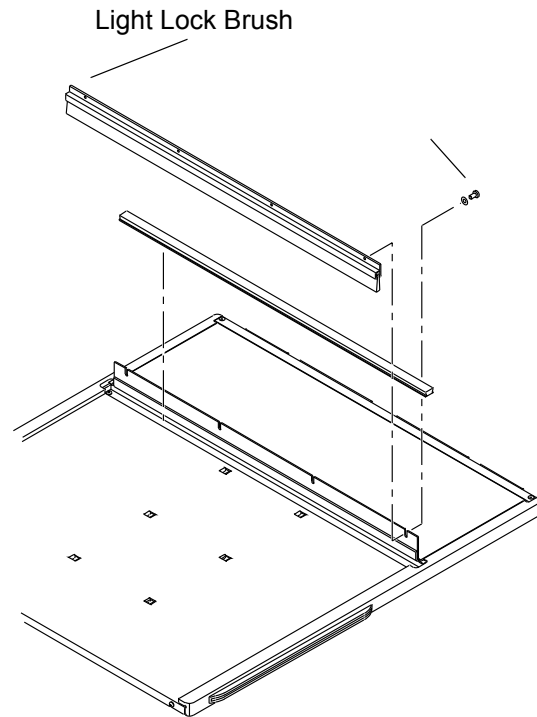
3. Replace the brush. See "User-Replaceable Parts" on page 6-15.

4. Replace the screws.

5. Place a plate in the tray.

6. Manually loosen and tighten the screws to adjust the brush so it lightly touches the plate.

Replacing Plush Strips

There are seven plush strips to remove and replace. Six plush strips are located in the reader. One plush strip is located in the feed tray.
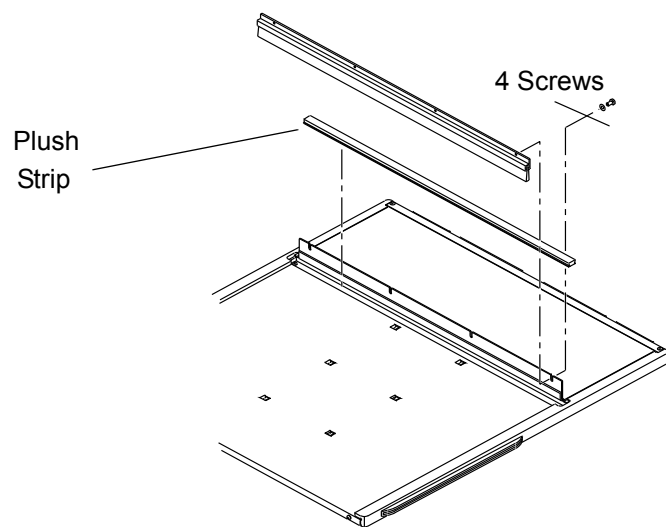
To remove and replace a plush strip:

1. Remove the Top Cover.

2. Gently pull up on one end of the strip and pull the strip out of the track.

3. Place the new strip over the track and press into place.
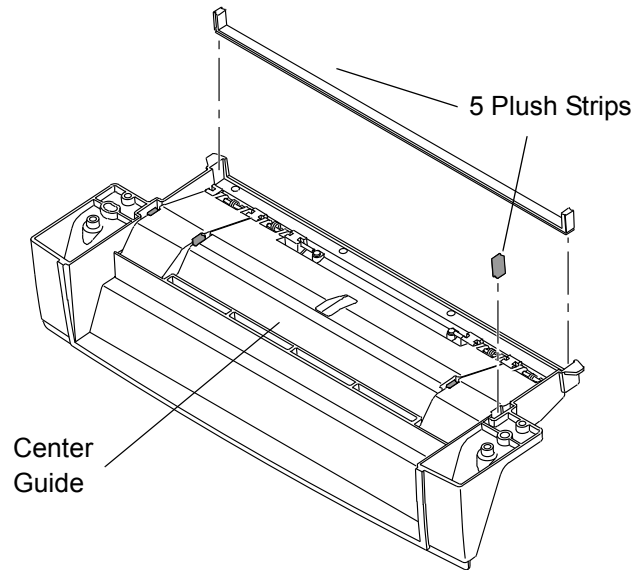
Cassette Tray

Cassette Tray

3 Plush Strips

Flex Feed Tray

4 Screws

Plush
Strip
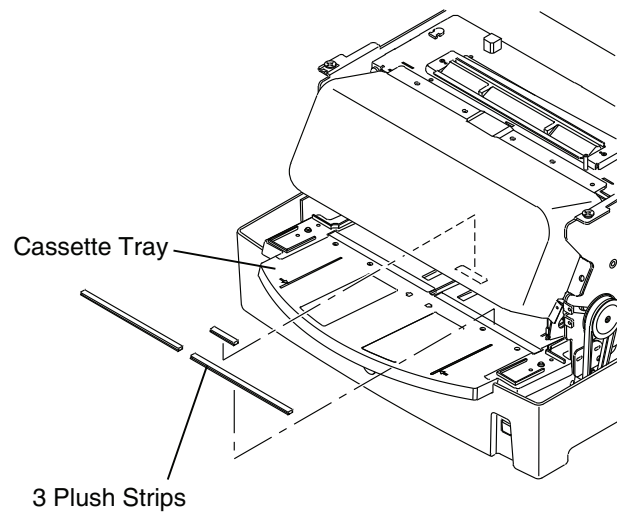
H231_024GC

Roof Assembly (upside down)

5 Plush Strips

Center
Guide

To remove the roof assembly, remove four fasteners with a Phillips-head screwdriver.

Cleaning Surfaces

Clean the outer surfaces of the reader with water using a soft, lint-free cloth. Dampen the cloth, then wipe the outer surfaces lightly.

⚠ CAUTION:
Do not use alcohol or alcohol-based products to clean the pinch rollers, belts, entrance guide or any urethane parts on the reader.

⚠ CAUTION:

Monitor
To avoid damage, do not use liquid cleaners, abrasive cleaners or strong solvents to clean the plate.

1. Turn off the monitor.

2. Spray LCD screen cleaner on a soft cloth and gently wipe the screen surface.

3. Use a soft cloth dampened with water to clean the housing around the screen.

Cassettes

⚠ **CAUTION:**
Prior to using, read and follow instructions in material safety data sheets (MSDS) for KODAK Screen Cleaner.

Use of a cleaning agent other than those specifically suggested is not recommended.

Cleaning Materials

- soft cloth

- mild soap-and-water solution or KODAK Screen Cleaner

⚠ **CAUTION:**
Do not use soaps or detergents containing brightening agents. Use of a cleaning agent other than those specifically suggested is not recommended.

Cleaning Method

⚠ **CAUTION:**
PREVENT ALL LIQUIDS FROM ENTERING THE CASSETTE.

1. Clean the outer cassette surfaces using a soft cloth moistened with a mild soap-and-water solution or KODAK Screen Cleaner.

2. Be sure all external and internal surfaces are thoroughly dry before reassembling and returning plates and cassettes to use.

3. Dry the cassette with a soft cloth.

IMPORTANT: *Clean the phosphor plate before using it for the first time.*

See "Cleaning the Plate" on page 6-13.

Handling and Maintaining the Plate

Clean the plate regularly to ensure its proper operation.

INDUSTREX Digital Imaging Plates use a phosphor that is moisture sensitive. When exposed to water, in either liquid or vapor form, the phosphor breaks down and liberates iodine. The iodine can become trapped within the phosphor layer or at the interface between the overcoat and phosphor layer. The yellow-brown color in the iodine strongly absorbs the blue light emitted by the phosphor. This results in a loss in plate speed, which causes image quality problems.

The phosphor plate is over-coated with a highly moisture resistant polymer blend. However, the overcoat is very thin (less than 0.001 inch) and has limited resistance to mechanical abrasion that may occur during cleaning.

Thus, it is possible to lower the resistance to water during use or cleaning. This can result in damage to the plate.

Handling and Maintaining the Plate

Under normal use conditions, phosphor plates will eventually show wear. Plate wear can result in artifacts on radiographs. This may occur from abrasion of the protective overcoat or inadvertent physical damage to the surface or edge. Certain chemical agents, such as non-approved plate cleaners, hand lotions, topical medications, food, etc., may also damage the plates. Make sure hands are clean when handling plates.

Phosphor plates are extremely sensitive to moisture. Exposure to moisture can cause damage to the phosphor plates, which results in image quality problems.

IMPORTANT: *Inspect phosphor plates every week and replace when wear is evident. Clean every 200 exposures, every 30 days, or as necessary with a recommended cleaning solution according to the manufacturer's instructions. Clean phosphor plates before using them for the first time!*
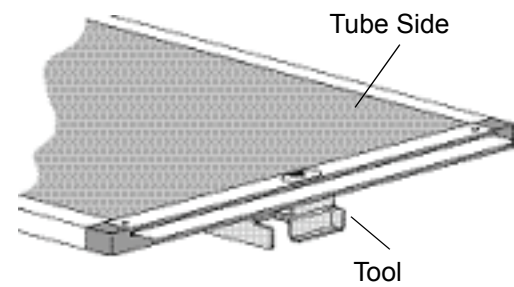
Inserting the Plate

Insert the plate into the cassette as follows. If you fail to insert the casette correctly:

- The plate may not feed properly from the cassette, causing an error message.
- An exposed image may not be processed.
- The plate may fall out of the cassette.

1. Slide the edge of the Extraction Tool (PN 2G6580) over the back of the cassette. Pull the tool down until it enters the square slots in the back of the cassette.


Square Hole   Extraction Tool
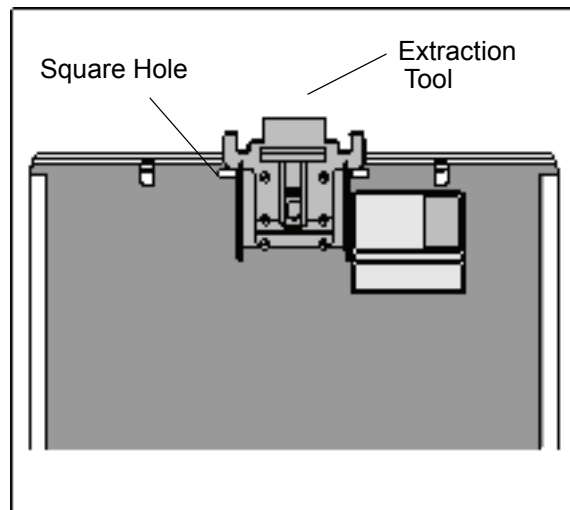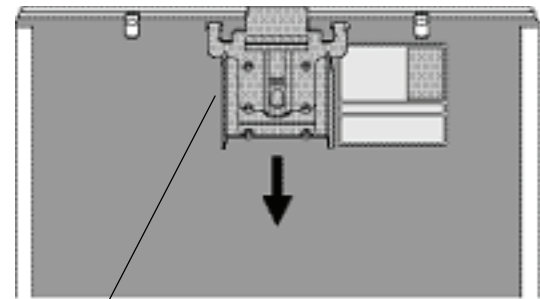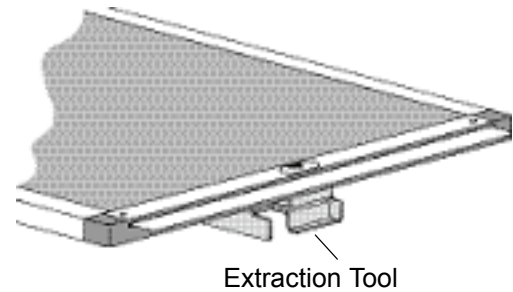
Slider

Tube Side

Tool

2. With the extraction tool in place, hold the plate with the white (phosphor) side up. Insert the plate into the cassette so that the back side (dark side) is facing the back of the cassette.

3. Hold the cassette vertically and make sure that the plate is fully inserted into the cassette.

4. Pull up on the release lever to remove the tool.

Release Lever
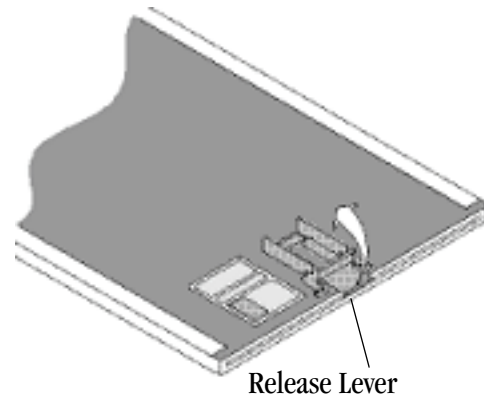
Removing the Plate

1. Follow the instructions for "Inserting the Plate" on page 6-10 to install the extraction tool.

Extraction Tool

2. Hold the cassette horizontally. Push the sliders in the middle of the extraction tool towards the open edge of the cassette until the plate is visible.

3. Carefully pull the plate out.

4. Pull up on the release lever to remove the tool.

Cleaning the Plate

⚠ **CAUTION:**
Read and follow instructions in Material Safety Data Sheets (MSDS) for KODAK Screen Cleaner.

⚠ **CAUTION:**
Handle plate carefully to avoid damage to the phosphor plate.

Cleaning Materials

- Catalog No. 845 4977 - KODAK Screen Cleaner
- Soft, lint-free cloth, provided

⚠ **CAUTION:**
Water and isopropyl alcohol (isopropanol, rubbing alcohol) and plate cleaners containing Isopropyl alcohol are NOT recommended. Cleaning solutions other than those recommended can contain chemicals that cause visible or hidden damage to the plate and could result in immediate or future image artifacts. Do not use isopropyl alcohol (isopropanol, rubbing alcohol) to clean plates or cassettes.

Cleaning Procedure

⚠ **CAUTION:**
Do not soak the cloth.

1. Clean the phosphor plate with a SOFT, dry, lint-free cloth. Most minus density artifacts are caused by loosely adhered dirt. Normally, a gentle wipe is all that is needed.

2. If the dry cloth does not remove the dirt, perform the following:

3. Place the plate with the white (phosphor) side up.

4. Wipe the plate gently to remove dust. Remove other dirt by following the directions for the cleaning product being used. Clean and dry the plate's entire phosphor side.

5. Moisten a SOFT cloth with KODAK Screen Cleaner.

6. Clean the phosphor plate.

7. After the soil is removed, wipe the phosphor plate gently with a SOFT, dry, lint-free cloth.

Disposing of the Plate

⚠ CAUTION:

Due to the presence of barium, the plate may be considered a hazardous or special waste at the end of its useful service life. For disposal or recycling information, contact your local authorities.

⚠ CAUTION:

Recycling the Cassette

The INDUSTREX Cassette contains lead. Disposal of lead is regulated due to environmental considerations. For disposal or recycling information, contact your local authorities.

Preventive Maintenance Kit

To order the Kit, part number SP2G7712, contact Customer Order Service at: carestreamhealth.com/ndt-contact-us.html.

PM Kit Contents:

Description	Quantity
Brush - Assembly Input	1
Filter, Foam	1
Filter, Air Intake	1
Filter - Light Lock, Erase	3
Plush, Light Lock	6
Seal - Light Plush, 390 mm	1
Seal - Light Lock	2
Seal - Light Plush	1

User-Replaceable Parts

The following table lists the user-replaceable parts available for your system. Use the contact information described above for placing your order.

Part Number	Description
2G3058	Flex Screen Tray
2G3066	Guide, Flex Feed Tray
2G3202	Light Cover, Flex Feed Tray
2G3161	Input Brush Assembly
8G6041	Erase Bulbs
2G3232	Filter, Foam
2G3224	Filter, Air
2G4471	Filter, Light-Lock

Publication Date	Publication No.	Changed Pages	File Name	Notes
4 September 2009	8H6662	-------------------------	8H6662_HPX-1 HW.fm 4.08.09	first issue
15 June 2010	9G1285	Add 5x7, Custom Plates section, removed Errors section	9G1285_HPX-1 HW.fm 06.15.10	Revised for V 3.5