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Kodak Point-of-Care CR 120/140 Systems

Software Version 2.5 Troubleshooting Guide

Important
When doing the procedures in this document, you must use safe work practices and wear the correct Personal Protective Equipment (i.e. SAFETY EYEWEAR) according to your Company's Standard Operating Procedures.

Carestream HEALTH

Point-of-Care CR 120/140 Systems - Troubleshooting Guide

Publication Number: AT000115-02

CE

Use of Manual

The *Kodak* Point-of-Care CR 120/140 Systems are designed to meet international safety and performance standards. Personnel operating the CR Reader must have a thorough understanding of the proper operation of the system. This manual has been prepared to aid medical and technical personnel to understand and operate the system. Do not operate the system before reading this manual and gaining a clear understanding of the operation of the system. If any part of this manual is not clear, please contact your Carestream representative for clarification.

Authorized European Representative

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Table of Contents

List of Figures

Section 1: Safety and Regulatory Information

Introduction

The information contained herein is based on the experience and knowledge relating to the subject matter gained by Carestream Health, Inc. prior to publication. No patent license is granted by this information.

Carestream Health, Inc. reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Carestream shall not be liable for any loss or damage, including consequential or special damages, resulting from any use of this information, even if loss or damage is caused by Carestream's negligence or other fault.

General Safety Guidelines

Important

When doing the procedures in this document, you must use safe work practices and wear the correct Personal Protective Equipment (i.e. SAFETY EYEWEAR) according to your Company's Standard Operating Procedures.

Electrical Hazards

Caution

- Do not remove or open system covers or plugs. Internal circuits use high voltage capable of causing serious injury.
- Fuses blown within 36 hours of being replaced by a qualified technician may indicate malfunctioning electrical circuits within the system. Have the system checked by qualified service personnel. Do not attempt to replace any fuse.
- Fluids that seep into the active circuit components of the system may cause short circuits that can result in electrical fires. Therefore, do not place any liquid or food on any part of the system.

CE Conformity

This product conforms to the requirements of council directive 93/42/EEC. The Point-of-Care CR 120/140 is a Class I medical device. The Point-of-Care CR 120/140 bears the following mark of conformity.

CE

The name and address of the CE representative appears on the back of the front page of this manual.

Device-Specific Safety Information

LIFTING HAZARD

The Point-of-Care CR 120/140 weighs 45 Kg (100 lb.). Do not try to lift the unit by yourself. Always seek assistance from another person. Lifting equipment that is too heavy may result in serious injury and/or damage to equipment.

IEC Symbols Used

The system may have labels with one or more of the following symbols. These symbols indicate the IEC standards to which the system conforms.

Caution – consult accompanying documents

Protective earth points

Power ON

Power OFF

Caution – Electrical shock hazard

Labelling Summary

Internal Safety Labels	
 	Laser-emitting product
	Class 3B laser product inside unit
	High voltage
	Protective earth point (chassis stud)

Laser Safety Instructions

The Point of Care 120/140 CR Reader is classified as a CLASS 1 Laser product.

Laser Warning

- During normal operation, always keep the unit enclosed in its protective cover.
- Do not attempt to remove the cover. Only a qualified technician may remove the cover to service this product.

COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50, DATED JULY 26, 2001.

CLASS 1 LASER PRODUCT, and IEC/EN 60825-1.

CLASS 1 EQUIPMENT.

INTENDED FOR CONTINUOUS OPERATION.

PRODUCT IS PROVIDED WITH ORDINARY PROTECTION AGAINST THE HARMFUL INGRESS OF WATER.

NOT SUITABLE FOR USE IN THE PRESENCE OF A FLAMMABLE ANESTHETICS MIXTURE WITH AIR OR WITH OXYGEN OR WITH NITROUS OXIDE.

The use of accessory equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:

- Use of the accessory in the patient vicinity.
- Evidence that the safety certification of the accessory has been performed in accordance with IEC 60601-1 or the system to IEC 60601-1-1 or local equivalent.

Section 2: How to Use This Document

Introduction

The purpose of this manual is to assist field and service engineers when providing service and supporting the Point-of-Care 120\140 CR Readers.

This manual is a supplementary document to the Point-of-Care CR Reader Service Manual. Please review the Service Manual before applying the procedures described in this manual.

The manual lists various types of problems and error messages and detailed explanations of suggested fix directions.

The Chapters in this Manual

Hardware Error Messages

Provides information concerning hardware failure driven error messages and measures to take to fix them. For each failure there are recommendations for the user and recommendations for the field/ service engineer.

Software Error Messages

Provides information for all software error messages and measures to take to fix them. For each failure there are recommendations for the user and recommendations for the field/service engineer.

General CR Failures

Provides information for general failures in the CR Reader and how to fix them.

Image Artifacts

Provides images of all known artifacts, origin causes for each of them and what steps to take in order to fix the problem.

Tests

Tests – Provides information for general tests which are used in some of the chapters above.

For your convenience you can access the specific failure directly by clicking the relevant line in the Table of Contents.

Section 3: Hardware Error Messages

“Z0 Sensor at Wrong State”

Scenario

Screen Carrier is stuck while the screen is being loaded. As a result the Screen Carrier doesn’t reach the Z0 Sensor (J505) so that it doesn’t change its position from “1” to “0”.

Hardware and Software Response

[1] Screen unload is halted.

[2] Cassette is still locked in the Reader.

[3] CR Reader operating status changes to “State stalled”.

Fix

User Response

[1] Click [OK]; the CR Reader is halted. Status remains “state stalled”.

[2] Manually release the cassette using the Release knob under the cassette tray, and remove the cassette.

[3] Reset the CR Reader by turning it OFF and ON again.

[4] Insert the cassette again; does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader

Service Response

[1] Remove the CR Reader cover.

[2] Is the Screen Carrier stuck?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">a. Manually move the Screen Carrier to its homing position.
b. Turn the CR Reader ON.
c. Insert a cassette and see if one of the sensors is interfering with the Screen Carrier movement.</td><td rowspan="2">Check/replace the Z0 J505 Sensor according to “Sensors Tests” on Page 53</td></tr>
<tr><td>Yes</td><td>No</td></tr>
<tr><td>Adjust the sensor position.</td><td>Check that the Rotational motor cable in the middle of the drum isn’t interfering with the Linear Slide movement.</td><td></td></tr>
</table>

“Plate Carrier Stuck Please Call Service”

Scenario

Plate Carrier (Screen Carrier) gets stuck when the user inserts the cassette and locks it into the Reader. As a result the CR Reader gets an alarm that the Z0 Sensor (J505) didn’t change its position from “0” to “1”.

Hardware and Software Response

[1] The plate (screen) is not loaded.

[2] The cassette is ejected.

[3] CR Reader operating status returns to “Insert Cassette”.

Fix

User Response:

[1] Click [OK]; the CR Reader performs the unload cassette operation.

[2] Does the error message, “Z0 Sensor at wrong state” appear?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">a. CR operating status changes to “State stalled.”
b. Reset the CR Reader by turning it OFF and ON again
c. Does the message, “Z0 Sensor at wrong state” appear again?</td><td>Continue using the CR Reader</td></tr>
<tr><th>Yes</th><th>No</th><td></td></tr>
<tr><td>Contact Service</td><td>Continue using the CR Reader</td><td></td></tr>
</table>

Service Response

[1] Remove the CR Reader cover.

[2] Does the Screen Carriage continue to get stuck while crossing the drum?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">a. Manually move the Screen Carrier to its homing position.
b. Turn the CR Reader ON.
c. Insert a cassette and see if one of the sensors is interfering with the Screen Carrier movement.</td><td rowspan="2">Check /replace the Z0 J505 Sensor by means of “Sensors Tests” on Page 53.</td></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Adjust the sensor position.</td><td>Check for mechanical issues, the carrier track might be too narrow and cause the carrier to stick.</td><td></td></tr>
</table>

“Loader Didn’t Reach Back Sensor”

Scenario

[1] While loading the screen the CR Reader indicates that the Loader Pin didn’t return to its back position (Sensor J508). (Time-out is 4 seconds)

[2] Stepper motor failure.

Hardware and Software Response

[1] There might be a mechanical noise.

[2] The error message appears.

[3] Click [OK]; the screen is returned to the cassette, and the cassette is ejected.

[4] The CR Reader operating status is changed to “Insert cassette”.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON again.

[2] Insert the cassette again; does the error repeat after unloading the screen?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the Back Service panel.

[2] Activate the Stepper Loader Motor by means of the Diagnostic screen. Is there a mechanical noise while operating the motor?

Yes	No
Check/replace J508 (“Sensors Tests” on Page 53)	a. Open the bottom service panel. b. Verify that the Loader Stepper motor coupling is firmly fastened from both sides. c. Replace Stepper motor.

“Loader Didn’t Reach Forward Sensor”

Scenario

[1] While unloading the screen, an error message indicates that the Loader Pin didn’t return forward to its Start position (Time-out is 5 seconds); and didn’t activate the loader forward sensor (J514).

[2] While the loader performs homing sequence, the loader moves away from sensor J514 towards J508. If the axis doesn’t deactivate the sensor within 4 seconds, an error message is generated.

Hardware and Software Response

[1] The error might include a mechanical noise.

[2] The screen is returned to the cassette, and the cassette is ejected.

[3] The error message appears.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON again.

[2] Insert the cassette again; does the error repeat after unloading the screen?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the Back Service panel.

[2] Activate the Stepper Loader Motor by means of the Diagnostic screen. Does it move?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">Is there any mechanical noise while operating the motor?</td><td rowspan="2">a. Check Stepper motor connection J204 on the Motion board.
b. Check for xx volts when motor is activated.
c. If it still does not work, replace the Stepper motor.</td></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Check/replace J514 (“Sensors Tests” on Page 53)</td><td>a. Open the bottom service panel.
b. Verify that the Loader Stepper motor coupling is firmly fastened from both sides.</td></tr>
</table>

“Plate Didn’t Reach W0 Sensor”

Scenario

The User inserts a cassette and one of the following occurs:

- The CR Reader fails to load the screen to the drum.
- The screen is loaded to the drum but the CR Reader reports that the W0 sensor (J511) didn’t change its position when the screen was loaded.
- The error message will appear within 5 seconds if one of the above problems occurs.

Hardware and Software Response

[1] Ejects the cassette.

Fix

User Response

[1] Check if the screen is in the cassette.

Yes	No
a. Insert the cassette into the CR Reader. b. Go to Step 2	a. Insert the screen into the cassette. Pay attention to insert the screen right side up. b. Insert the cassette into the CR Reader. c. Go to Step 2

[2] Does the error message repeat?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">Insert another cassette. Does the error message repeat?</td><td rowspan="2">Continue working as usual.</td></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Contact Service</td><td>This is a cassette problem, contact Service to replace cassette.</td></tr>
</table>

Service Response

[1] Activate the Roller Motor by means of the Diagnostic screen. Is it turning?

Yes	No
a. Open the back service panel. b. Check/replace fuse F4 -0.8 A c. Go to Step 2.	Go to Step 2.

[2] Install Service Pack according to the software version. Check the right Service Bulletin:

- For V2.1.2/V2.2.1 SB000046 - K-QC PoC 120/140 SP 2
- For V2.4.2 SB000048 - K-QC PoC 120/140/260 SP 3
- For V2.5 SB000053 - K-QC PoC 120/140/260 SP 2

“W0 Sensor at Wrong State”

Scenario

The CR Reader indicates that the W0 sensor (J511) is in failed state; it is in “1” position instead of “0”.

Hardware and Software Response

[1] Cassette is immediately ejected when inserted.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Insert the cassette again, see if the error repeats.

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Check/replace the W0 sensor (J511 on the Sensor board) (SK250013) according to “Sensors Tests” on Page 53.

“Roller Sensor at Wrong State”

Scenarios

[1] While inserting a cassette and the Roller sensor (J509) is in position “1” instead of position “0”, the cassette will be ejected automatically.

[2] While inserting a cassette and the Roller sensor (J509) doesn’t change its position from “0” to “1”, the error will exist in the Firmware and appears only after the scan is completed.

Hardware and Software Response

[1] The screen is ejected and reinserted into the cassette.

[2] The image is saved after the scan.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Insert the cassette again, perform a Demo Scan, see if the error repeats.

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the CR Reader cover.

[2] Switch the CR Reader ON; does the Roller Motor spin without stopping?

<table>
<tr><th rowspan="2">Yes</th><th colspan="2">No</th></tr>
<tr><td colspan="2">Perform Demo Scan, does error repeat?</td></tr>
<tr><td rowspan="2">a. Check / replace Roller Sensor J509 according to “Sensors Tests” on Page 53.
b. Perform Roller Sensor Adjustment according to SB000028</td><th>Yes</th><th>No</th></tr>
<tr><td>Perform Roller Sensor Adjustment Test according to SB000028.</td><td>Repeat load/unload screen test ten times to validate that error does not repeat.</td></tr>
</table>

“Homing cycle was not completed”

Scenario

The Linear motor moves too slowly or is stuck or does not reach the Right Limit sensor. (J515) (Time-out is 45 seconds)

Hardware and Software Response

[1] The error might include a mechanical noise.

[2] The CR Reader operating status is changed to “State stalled”.

[3] CR Reader will perform Homing loop until the problem is corrected.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the CR Reader cover.

[2] Turn ON the CR Reader.

[3] Does the Linear Assembly move to the left and right when controlled from the Diagnostic screen?

Yes	No
The Linear Assembly is sticking on the right side and making loud noises. Check/replace J515 (“Sensors Tests” on Page 53)	a. Check if the Linear Screw is stuck. b. Verify that the coupling between the Linear Screw and the Linear motor is firmly fastened from both sides. c. Check/replace the Linear motor.

“Scanning was not completed”

Scenario

The Rotational motor spin decreases below 10 RPS during scan.

Hardware and Software Response

a. While scanning, the CR Reader ejects the screen and the cassette.

b. The error message appears.

c. The scan image will show as incomplete.

d. The next scan, error message “Rotational motor is not working” might appear. See ““Rotation motor is not working”” on Page 20.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader.

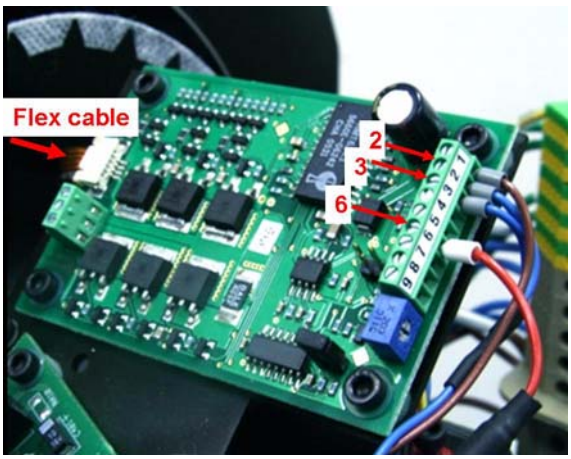
Service Response

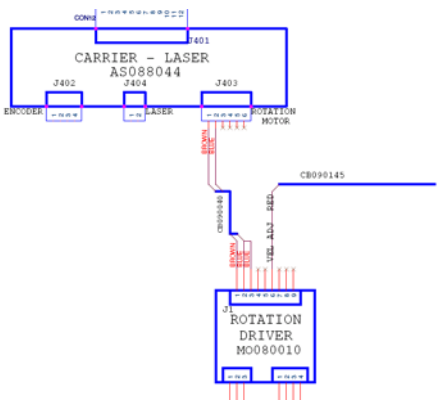
[1] Open the CR Reader cover.

[2] Does the Rotational motor work from the Diagnostic screen?

<table>
<tr><th>Yes</th><th colspan="2">No</th></tr>
<tr><td rowspan="3">a. Check the error message again.
b. If the error message, “Y Encoder failure” appears, go to ““Y Encoder failure”” on Page 21.</td><td colspan="2">a. Check connection on Driver Motor board connector (Pins 1, 3, 6) as shown in Figure below for 12 V.
b. Check that the motor flex cable is attached to the rotation driver connector board.
c. Check voltage of Pin 6 to verify it is constantly between 1.4 V and 1.8 V.</td></tr>
<tr><td>Yes</td><td>No</td></tr>
<tr><td>a. Scan demo cassette.
b. Go back to Step 2.</td><td>a. Check white flex cable from the USB to the PM board connection.
b. Replace the USB board.</td></tr>
</table>

Driver Motor Board Check





“Rotation motor is not working”

Scenario

The CR Reader checks the Rotation motor during the initialization stage and before beginning a scan cycle. If the Rotation motor does not respond, or its speed is below 10 RPS, the scanning cycle is not performed.

Hardware and Software Response

[1] The CR Reader ejects the cassette on insertion. (Only in autoscan)

[2] The error message appears.

[3] The CR Reader will not begin a scanning procedure until the problem is fixed.

Fix

User Response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the CR Reader cover.

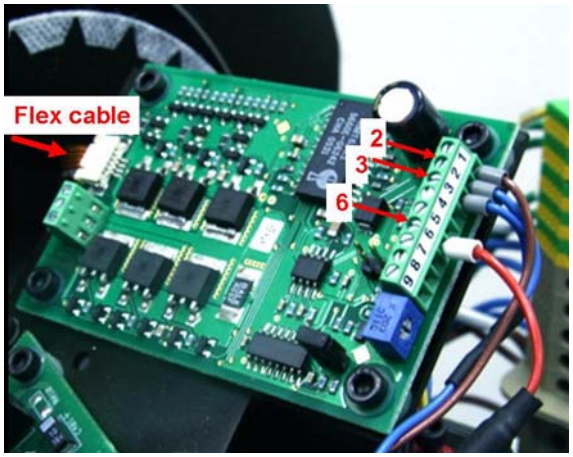
[2] Turn OFF/ON the CR Reader.

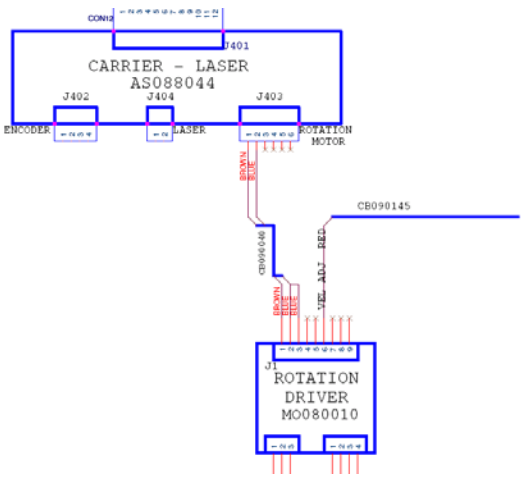
[3] Go to **Settings>Diagnostic** tab and click on the Rotational Motor “On” button.

[4] Does the Rotation Motor spin?

<table>
<tr><th>Yes</th><th>No</th></tr>
<tr><td rowspan="2">a. Exit Diagnostic mode.
b. Continue using the CR Reader.</td><td>a. Check connection on Driver Motor board connector (Pins 1, 3, 6) as shown in Figure below for 12 V.
b. Check that the motor flex cable is attached to the rotational driver connector board.
c. Check voltage on Pin 6 to verify it is constantly between 1.4 V and 1.8 V.</td></tr>
<tr><td>
<table>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>a. Scan demo cassette.
b. Go back to Step 2.</td><td>a. Check white flex cable from the USB to the PM board connection.
b. Replace the USB board.</td></tr>
</table>
</td></tr>
</table>

Driver Motor Board Check





“Y Encoder failure”

Scenario

The Rotation motor was commanded to rotate but no pulses were detected from the Encoder.

Hardware and Software Response

- Ejects the cassette immediately with the screen still inside the casette when it is in Auto Scan and after pushing Scan button in manual scan.
- If error occurred during a scan, the image that was acquired before the breakdown will be saved.
- Error message “Linear Motor stopped” appears.
- The CR Reader will not start scanning until the problem is fixed.

Fix

User response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Remove the CR Reader cover.

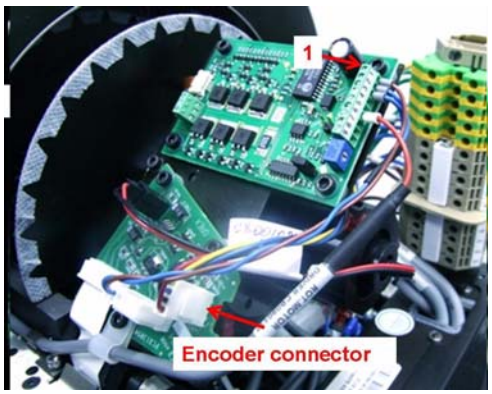
[2] Turn OFF/ON the CR Reader.

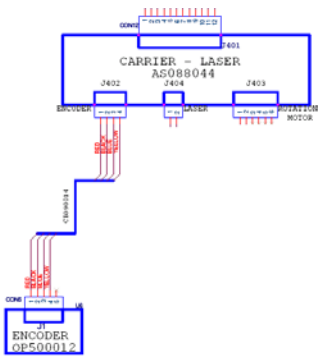
[3] Go to **Settings>Diagnostic** tab and click on Rotation Motor “On” button.

[4] Does the Rotation Motor spin?

<table>
<tr><th>Yes</th><th>No</th></tr>
<tr><td rowspan="3">a. Check Y encoder connection to the laser board as shown in the figure below.
b. Replace the Laser Board
c. Check again from Diagnostic screen</td><td>a. Check the Fuse 2A.
b. Check the flex cable connector between the Laser board and the Motion board.
c. Check voltage on Pin 6 to verify constant 1.4 V to 1.8 V.
d. Check the Motor Driver connector -Pin 1 as shown in the picture below.
e. Check that the voltage in Pin 1 and Pin 3 are 12 V while operating the Rotation motor.</td></tr>
<tr><td><table><tr><th>Yes</th><th>No</th></tr><tr><td>a. Scan a demo cassette.
b. Check again from Diagnostic screen</td><td>Check if Power Supply is producing 12 V according to PS test. (See “No Power in the CR Reader” on Page 33</td></tr></table></td></tr>
</table>

Encoder Connection





“WARNING: Erase lamps are functioning at reduced capacity. Image erasing not assured. Please call service. Erasing time has been increased”

Scenario

- On power up after 1.5 minutes of warming up.
- After abort, Erase Lamps turn on for one minute and sensors are sampled after 50 seconds.
- During periodic warning when the Reader is in idle state, every 8 minutes the Erase Lamps are turned on for one minute, after 50 seconds the sensor is sampled.

Hardware and Software Response

After User clicks **[OK]** to acknowledge the error message, the CR Reader will continue the scanning and erasing functions but the error message will appear until it is fixed.

Fix

User Response

[1] Click [OK] to acknowledge the error message.

[2] Continue with CR Reader operation.

[3] Contact Service.

Service Response

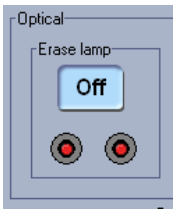
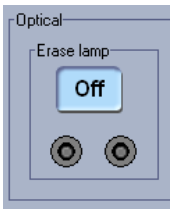
[1] Install Service Pack according to the software version. Check the correct Service Bulletin.

V2.1.1 / V2.1.2 / V2.2 / V2.2.1 - SB000027 PoC 120/140/260 *Kodak* QC SP1

[2] Open the Reader cover.

[3] Turn on the Erase Lamps from **Settings>Diagnostic** tab.

[4] Do both Erase Lamps LED indicators light red?

Yes	No (at least on indicator is disabled)
	
a. Check visually that all the Erase Lamps are turned on. b. If one of the Erase Lamps is not working, replace the Erase Lamp assembly.	a. Check that Erase Lamp sensor cable connects properly. (Cable between the sensor board and the Inverters assembly. b. Replace the Sensor board. c. Return to Step 2.

“Cassette release failure...manually remove the cassette.”

Scenario

[1] The loader moves towards the forward end of travel (Sensor 514) in order to release the cassette, but when it reaches J514 the cassette is still detected as present in the reader by J513; an error message is generated.

[2] If Sensor 514 is broken or not adjusted or the motor is not working or the motor coupling is disconnected.

Hardware and Software Response

- The error might be accompanied by a mechanical noise.
- The screen is inside the cassette.
- The CR Reader is stuck until the cassette is released.

Fix

User Response

[1] Manually release the cassette using the Release knob under the cassette tray.

[2] Reset the CR Reader by turning it OFF and ON.

[3] Try to load the cassette again. Does the message appear again?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">a. Upload a different cassette. Does the message re-appear?</td><td rowspan="3">Continue working with the CR Reader.</td></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Contact Service</td><td>a. There is a problem with the first cassette. Inform Service.
b. Continue working with the CR Reader.</td></tr>
</table>

Service Response

Is it a cassette problem or a CR Reader problem.

<table>
<tr><th colspan="2">CR Reader Problem</th><th>Cassette Problem</th></tr>
<tr><td colspan="2">a. Perform Cassette Presence Sensor flag replacement according to SB000034 with Kit SK000036.
b. Is problem solved?</td><td rowspan="3">Replace the cassette only. insert the old screen into a new cassette.</td></tr>
<tr><th>Yes</th><th>No</th></tr>
<tr><td>Check other cassettes.</td><td>a. Check/replace Sensor J513 - cassette presence sensor.
b. Adjust Sensor J514 to right position so that loader motor moves all the way to its forward position.
c. Check other cassettes.</td></tr>
</table>

“Loop Solenoid is in wrong position”

Scenario

[1] When the user inserts the cassette, the cassette presence is detected by the cassette presence sensor (J513) and the Auto-loop sensor J504 is at wrong state (J504 = “1”).

[2] After unloading, the Auto-loop sensor remains at wrong state (J504 = “1”).

Hardware and Software Response

The message will appear every time the CR Reader initializes or ejects a screen until the problem is fixed.

Fix

User response

[1] Reset the CR Reader by turning it OFF and ON.

[2] Does the error repeat?

Yes	No
Contact Service	Continue using the CR Reader.

Service Response

[1] Check the Loop Solenoid checkbox in the Setting screen.

[2] Install Service Pack according to the software version. Check for the correct Service Bulletin.

- V2.1.2 / V2.2.1 - SB000046 -PoC 120/140 *Kodak* QC SP2
- V2.4.2 - SB000048 -PoC 120/140/260 *Kodak* QC SP1
- V2.5 - PoC 120/140/260 *Kodak* QC SP2

[3] Does the Solenoid work from the Diagnostic screen?

Yes	No
Perform Point-of-Care Loop Solenoid Adjustment according to SB000050.	Replace the Loop Solenoid according to Kit No.SK000107.

Loop Solenoid

Section 4: Software Error Messages

Introduction

The CR Reader software sends various event information to the User screen regarding wrong steps taken by the User, notes and error messages. The events presented in this section deal with software errors, giving the reason for the events and how to handle them.

Error Description

This section is divided into several categories:

1. Errors from *Kodak* QC User Interface.
2. Errors from Settings screen in Technician Mode.
3. Errors from Image Storage in *Kodak* QC User Interface.
4. Errors from Procedure tool screen in *Kodak* QC User Interface.

Error Messages

The messages are displayed as a pop-up screen. Each event has a constant distinct description.

Error Number

The error numbers in the list below are for User convenience only.

Point-of-Care120/140 Software Error Messages

Kodak QC User Interface

Error #.	Error Message Text	Possible Reason and Solution
1	Cassette was ejected due to two minutes time-out.	User inserted a cassette, but didn't scan within two minutes. The SW is notified and generates an abort command. Insert the cassette again to perform a scan.
2	The following image(s) should be Accepted/ Rejected first.	User didn't choose Reject or Accept option.
3	Please note: Modality Query has failed. Patient list is taken from the XML file.	Connection has failed with the RIS\HIS. List will be taken from the local database.
4	Please note; Modality Query has failed.	No access to RIS\HIS. No XML was found. Can't present patient list.
5	CR Reader is ready for rollers cleaning. Please insert cleaning tray and then insert cleaning Plate.	Technician/User needs to execute the rollers cleaning process.
6	Pull out the cleaning Plate and then release the cleaning tray.	Technician/User needs to complete the rollers cleaning process.
7	Note: Host name and Port number are invalid. MWL mode will be disabled until those values configured via the DicomSetting tool.	DICOM Settings needs to be reconfigured.
8	This patient was found in the Patient list.	ID number appears in the database.
9	Can't choose BOTTOM before TOP was scanned or scan TOP twice. Operation is cancelled.	Insert **LLI 1—top** before **LLI 2—bottom or insert LLI 2—bottom after scanning LLI 1—top.**
10	The cassette is not an LLI cassette. Please either replace the cassette or re-select sub-organ.	Cassette type not compatible to sub-organ.
11	The cassette does not match the selected sub-organ. Please either replace the cassette or re-select sub-organ.	Cassette type not compatible to sub-organ or to BMD scanning type.
12	Can't choose a sub-organ during scanning. Operation is cancelled.	No thumbnail is added.
13	Can't choose a sub-organ during LLI procedure. Operation is cancelled.	To choose a different sub-organ after LLI scan, go to patient list and choose the patient again without LLI procedure.
14	Can't choose an LLI sub-organ without a dongle. Operation is cancelled.	LLI procedure is protected by Dongle license. Check if license is available in the Dongle.
15	Can't choose a sub-organ which is not for LLI during an LLI study. Operation is cancelled.	If working within a LLI procedure, User can't choose a sub-organ that is not part of LLI procedure.
16	Can't choose an LLI sub-organ without image processing. Operation is cancelled.	*Kodak* Image Processing should be checked. (See Setup screen in the Technician mode).
17	Can't choose LLI sub-organ after regular sub-organ was chosen. Operation is cancelled.	To perform LLI sub-organ, go to patient list, reselect the patient and perform **only** LLI sub-organ.
18	Press Cassette Size button and select cassette.	Bar code failure or unrecognized Cassette bar code.
19	The cassette Barcode ID does not match the top side. Operation is cancelled.	Check that the Barcode ID label on the LLI 1 cassette is readable.
20	This patient was found in the patients list.	Unable to add a patient that is already in patient list.
21	No available demo image for the selected sub-organ.	No existing demo image for the selected sub-organ in database. not all sub-organs have demo image.

Setting Screen in *Kodak* Technician Interface

Error no.	Error Message Text	Possible Reason and Solution
1	Failed opening the file.	Failed to open the files that were requested for updating. (FW = iic & FPGA = rpd)
2	The file is in a wrong format.	If the selected file for import operation is in a wrong format (for example: not an XML file or switching between Anatoms and ScannerSettings).
3	Barcode CR Reader fails. (applicable only if LLI application is installed)	Check Barcode operation.
4	Value is out of range.	Can happen during calibration. Recalibrate.

Image Storage Screen in *Kodak* QC User Interface

Error no.	Error Message Text	Possible Reason and Solution
1	Search in database failed	Query to database failed.
2	Image Search in database failed	Query of an image from database failed.
3	Global status count failed	Failed to get number of studies from the database.
4	Destinations/Jobs Search in database failed	Failed to find destination or job in the database.
5	Failed to delete processed image	Uncompleted job may exist.
6	There's no image selected	User didn't choose an image.
7	Failed to send one or more images	Send all failed images operation failed.
8	Failed to send image	Failed to send an image to the printer.
9	Failed to show image thumbnail	A failure occurred when trying to display an image in the thumbnail.
10	Log file not found	Log file was not found when selecting the "Log File" button.
11	No such patient in database	The patient was not found in the database.
12	Update procedure failed!	If User is trying to edit the patient details.
13	Patient with same ID already exists.	Click [OK] to Continue.

Procedure Mapping Screens in *Kodak* QC User Interface

Error no.	Error Message Text	Possible Reason and Solution
1	This User does not have the required permissions to access this utility.	User permission is denied.
2	Procedure Mapping Tool application is already running.	If User tries to open Procedure Mapping tool more than once.
3	Please fill a procedure name,	User needs to write the Procedure Name inside the tab frame.
4	A procedure with this name already exists	Procedure name is duplicated.
5	Please select an item	No item was selected when clicking on ADD button.
6	A restart is needed for all changes to take effect	Restart the *Kodak* QC. Click [OK] then exit and restart the *Kodak* QC.

EEPROM

Error no.	Error Message Text	Possible Reason and Solution
1	This operation will require re-calibration of the CR Reader. Are you sure you want to continue?	Technician selected “Restore to Factory” button.
2	This operation will override existing CR Reader parameters. Are you sure you want to continue?	Technician selected “Import Scanner Settings” button.
3	Please Note: Failed to read the machine’s settings. Current settings files will be loaded.	Cannot read machine S.N. from the EEPROM. Settings will be loaded from the PC (calib folder).

Section 5: General Operation Failure

Rollers fail to stop spinning on Power up

Possible solution

Perform a "Sensors Tests" on Page 53 to check roller sensor J509 and perform sensor adjustment according to SB000028.

When the cassette is pushed, the CR Reader does not load the screen

Suggested solution

Is there an error message, "Plate didn't reach W0 Sensor"?

Yes	No
Go to ""Plate Didn't Reach W0 Sensor"" on Page 15	a. Open the cover. b. Unscrew the USB board retaining screw. c. Check fuses on the USB board according to "USB Fuses Test" on Page 56. **Caution** Slide the USB board out gently to avoid the USB board from shorting.

No communication with the CR Reader. Disconnected messaged.

Solution

a. Check power cable connection and that CR Reader is turned ON.
b. Check version\CR Reader type compatibility between the CR Reader and the installed software.
c. Check the CR Reader Driver version. Make sure the version is the latest.
d. Connect to a different PC with the required instructions according to the specifications.
e. Replace USB cables connecting the PC and the CR Reader.
f. Replace the USB board.

Note
If one of the steps solves the problem, there is no need to continue to the following steps.

CR Reader doesn't Start or is Stuck in Initialization Mode

Suggested solutions

[1] Check system power (cable connection and system turned ON).

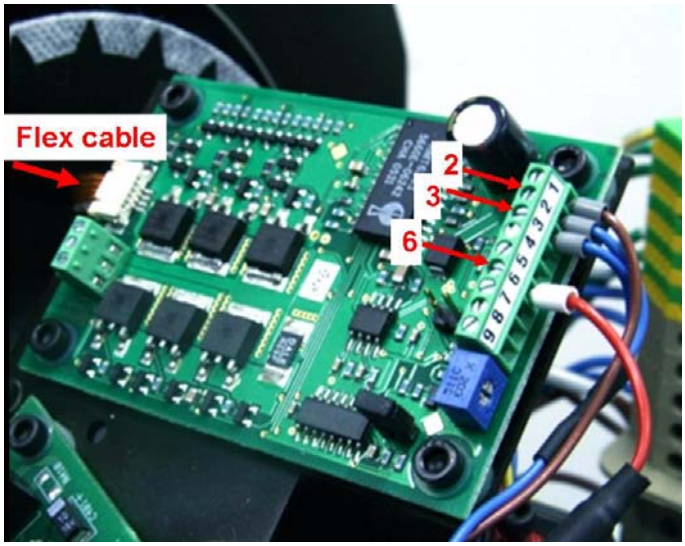
[2] Remove CR Reader cover.

[3] Go to Diagnostic screen and operate the Rotation motor.

[4] Check Rotation motor speed.

<table>
<tr><th colspan="2">Less than 10 RPS</th><th>Normal Speed according to CR Reader Type</th></tr>
<tr><td colspan="2">a. Check the flex cable connection between the USB board and the Motion board.
b. Check connection on the Driver motor board (Pins 2,3,6) as shown in the figure below.
c. Check the motor flex cable from the Rotation driver connector board.
d. Is the voltage in Pin 6 1.4 V to 1.8 V constant?</td><td>21 RPS for PoC 120
41 RPS for PoC 140
81 RPS for PoC 260</td></tr>
<tr><th>Yes</th><th>No</th><td rowspan="2">Check the Reader back fuses and perform power supply check according to "No Power in the CR Reader" on Page 33</td></tr>
<tr><td>Perform USB test. ("USB Fuses Test" on Page 56)</td><td>Check the white flex cable to the PM board or replace the USB board.</td></tr>
</table>

Driver Motor Board



[5] Go to the Diagnostic screen and operate the Linear Stepper motor. Does it move?

<table>
<tr><th colspan="2">Yes</th><th>No</th></tr>
<tr><td colspan="2">Does it stop at the left and right limit sensors?</td><td>Replace the Linear motor or replace the Motion board.</td></tr>
<tr><th>Yes</th><th>No</th><td></td></tr>
<tr><td>scan a demo image and check the CR Reader operation.</td><td>Check/replace the relevant switch according to the "Sensors Tests" on Page 53</td><td></td></tr>
</table>

[6] Close the CR Reader cover.

No Power in the CR Reader

Solution

[1] Check that the power cable is connected, and the CR Reader is turned ON.

[2] Turn OFF the CR Reader and check the two fuses (3.15 A) in the Power Cable connector.

[3] Remove the CR Reader cover.

[4] Check the Power Supply voltage:

(a) Measure the 12 V voltage in the Motion board J213.

Yes	No
Go to the next measure.	a. Check Fuse F3. b. Replace 12 V Power Supply. (SK250039)

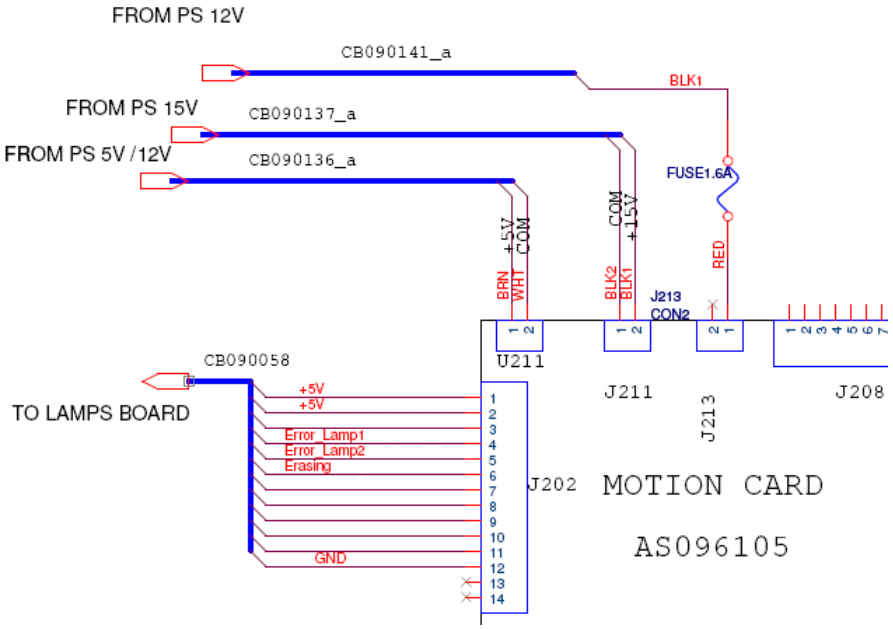
(b) Measure the 15 V voltage in the Motion board J211.

Yes	No
Go to the next measure.	Replace one of the two 15 V power supplies. (SK250038)

(c) Measure the 5 V voltage in the Motion board U211.

Yes	No
Replace entire Power Supply assembly.	Replace 5 V/12 V power supply. (SK250037)

Power Supply Schematics



Replacing the relevant Power Supply

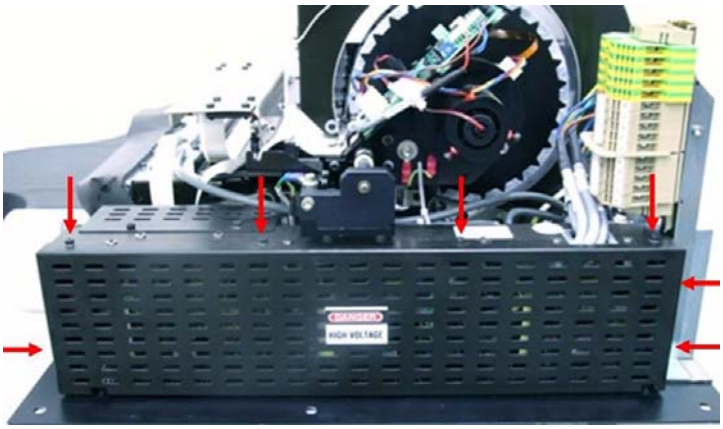
It is recommended to replace the whole Power Supply assembly.

Power Supply assembly Replacement description appears in the Service Manual.

You can, however, replace only the specific PS card that is defective. This section describes how to replace only the defective PS card.

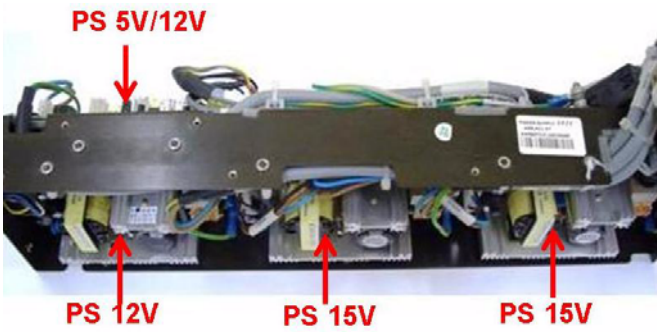
[1] Remove the screws of the Power Supply cover.

Power Supply Cover



[2] Remove the relevant PS:

Remove the PS Card



(a) Unscrew the four screws retaining the PS card.

(b) Disconnect the cables.

[3] Insert the new PS:

(a) Connect the cables.

(b) Insert the screws.

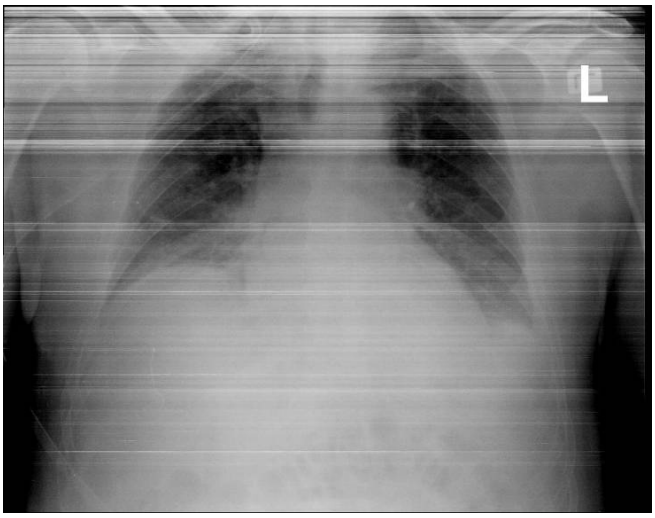
[4] Turn ON the CR Reader.

[5] Repeat Step 4 “Check the Power Supply voltage:” on Page 33.

Section 6: Image Artifacts

White lines across image

White Lines Across Image Artifact Examples



Cause of Artifact

The Linear Slide gets stuck in the middle of a scanning procedure.

There might be a mechanical noise while scanning.

Note

When the *Kodak* Image Processing option is functioning this artifact is more severe.

Fix

Tighten the tension of the Slide Screw nut. This will also reduce the mechanical noise that accompanies scanning.

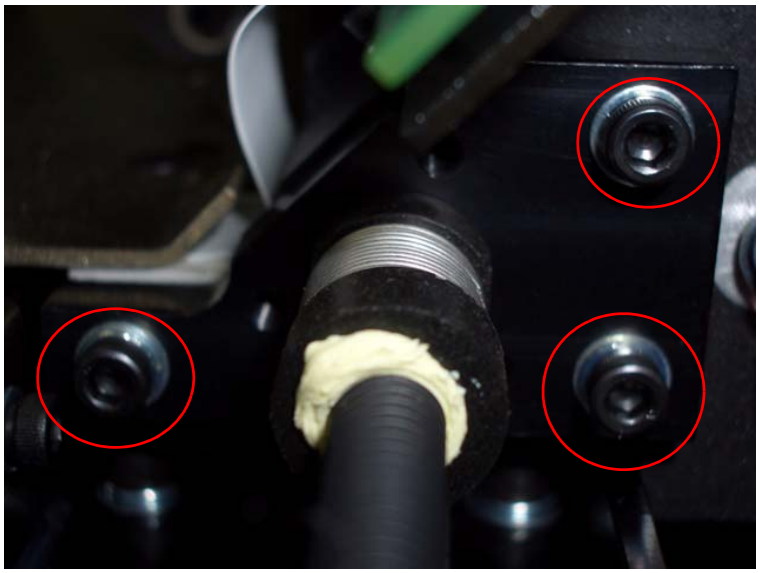
Required Tool:

- 12 mm wrench

- 2.5 mm Allen tool

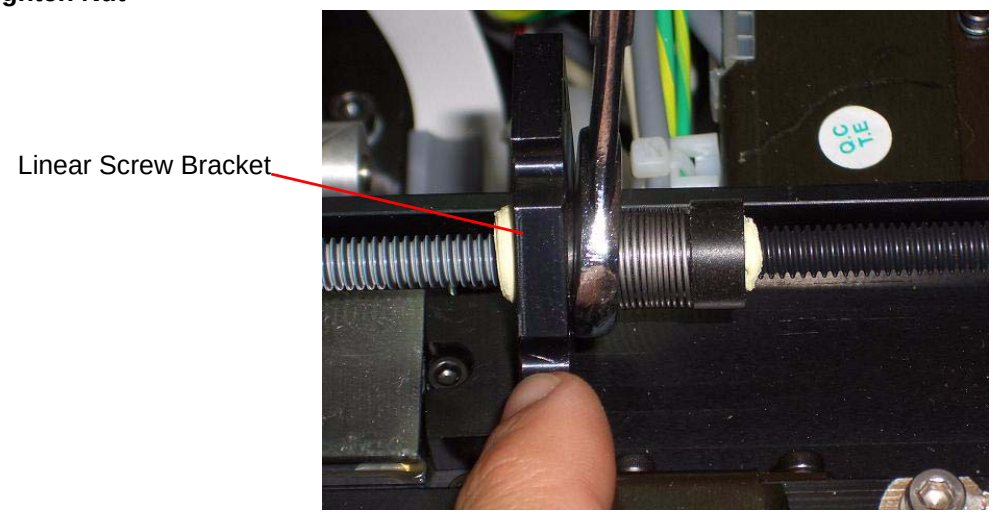
[1] Remove the three screws that fasten the Linear Screw bracket to the Optical Assembly.

Linear Screw Bracket



[2] Holding the Linear Screw bracket firmly, tighten the locknut clockwise by 2 mm

Tighten Nut

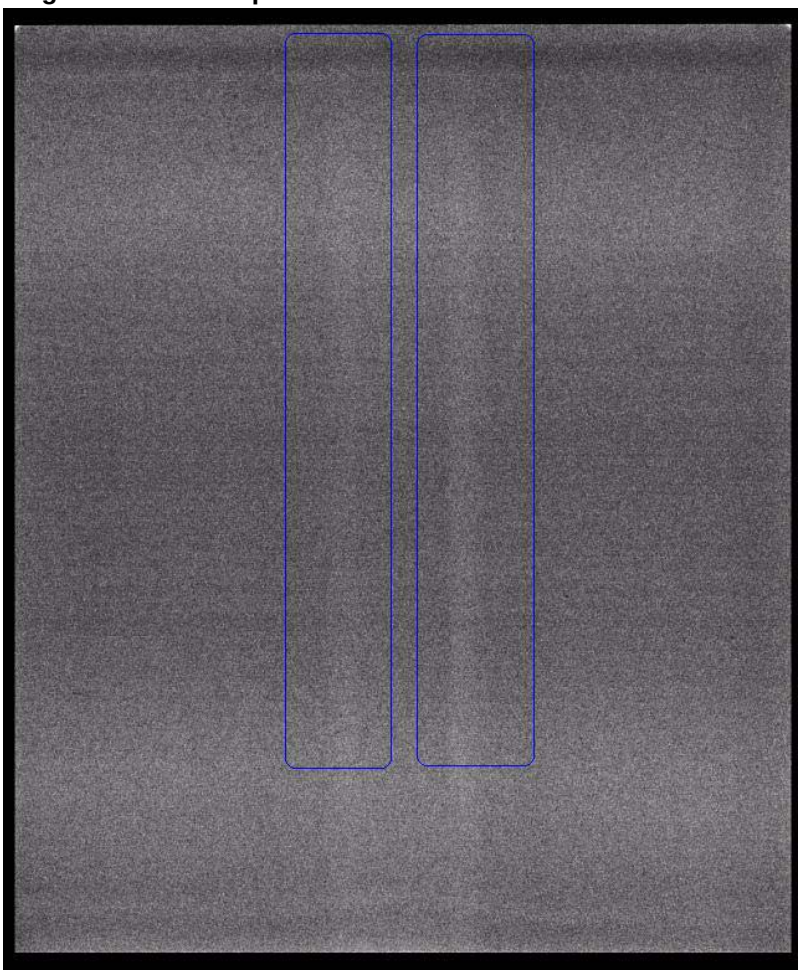


[3] Replace the three Linear Screw bracket screws.

[4] Perform a scanning procedure. If there is still a mechanical noise while scanning, or the artifact still appears, repeat this procedure

Two Parallel Lines Across Image Center

Parallel Lines across Image Artifact Example



Cause

Two parallel lines - like scratches - appear in the center of the screen. They are caused by the Screen Guide (Plate Guide) loop,

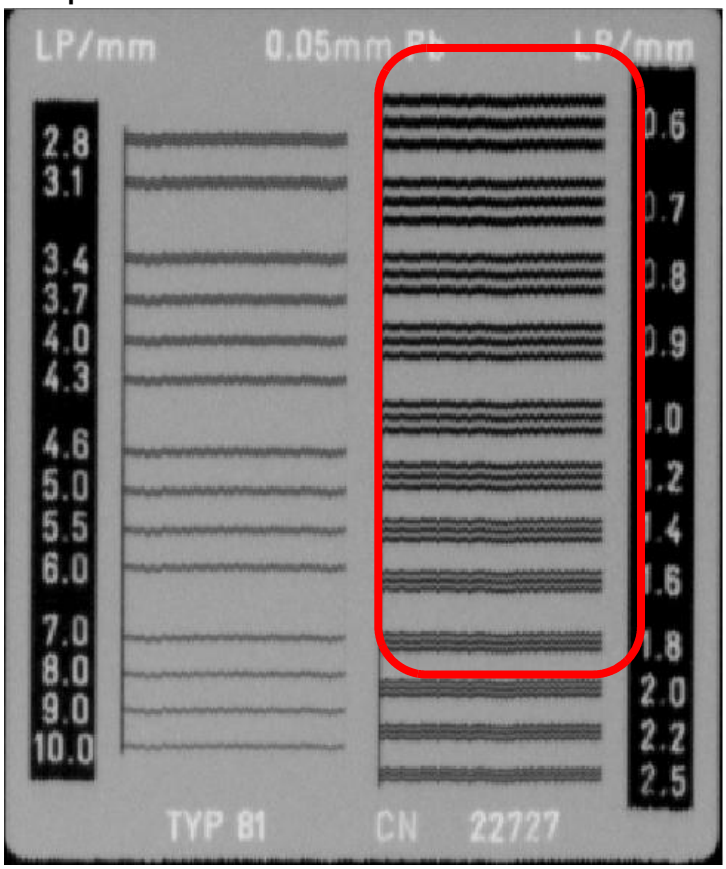
Fix

[1] Replace the Screen Guide Loop and adjust the height. See “Screen Guide Replacement” and “Screen Guide Loop Adjustment” in the Service Manual.

[2] Upgrade CR Reader hardware from Screen Guide to Autoloop. (SK000037) Consult your marketing agent for more details.

Distorted Image

Distorted Image Artifact Example



Cause

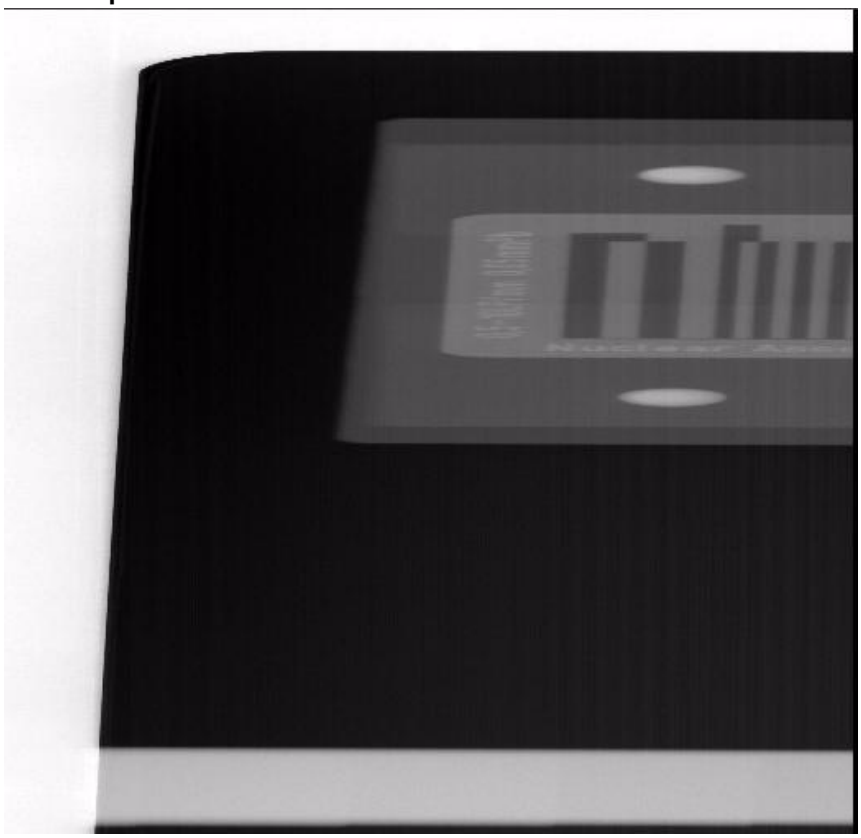
Image is distorted when performing a high resolution image.

Fix

Replace USB board

Curved Image

Curved Image Artifact Example



Cause

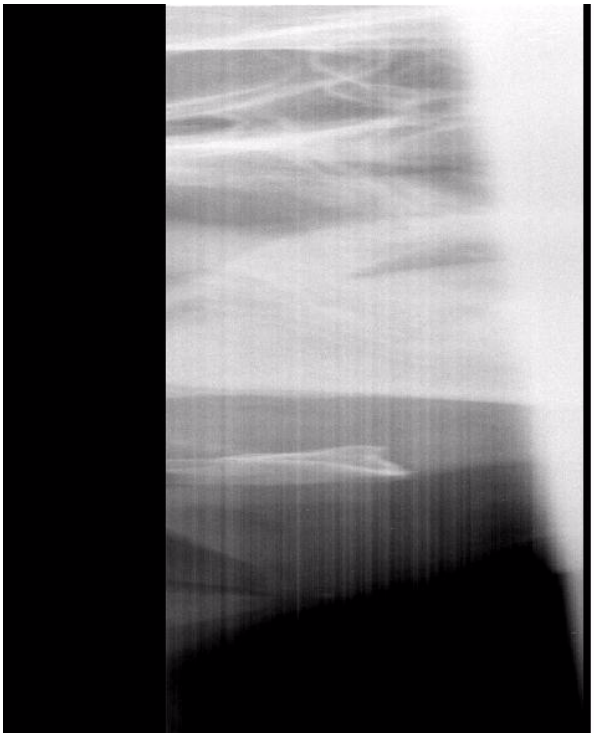
The Linear Slide doesn’t move smoothly during scanning procedure.

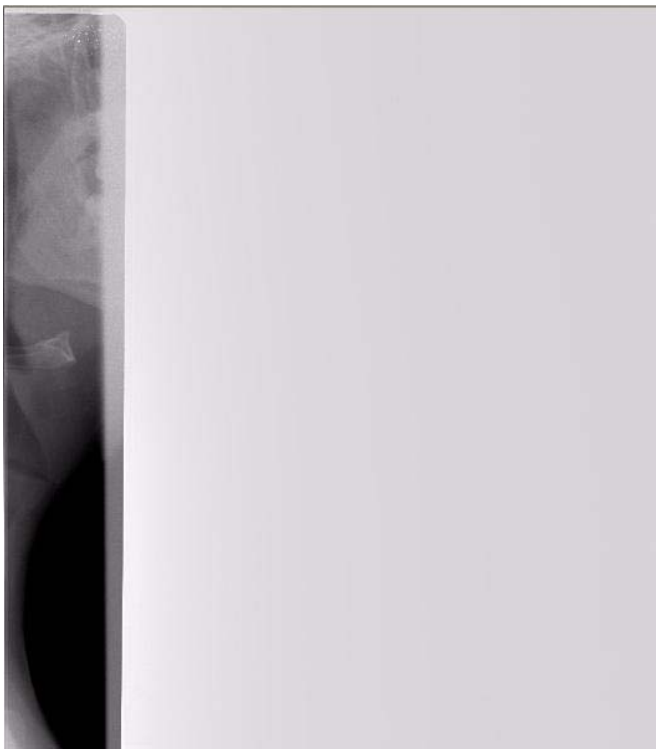
Fix

Adjust the tension of the Slide Screw Nut. See Fix in “White lines across image” on Page 35

Only Part of Image is Scanned

Partial Image Artifact Examples





Cause

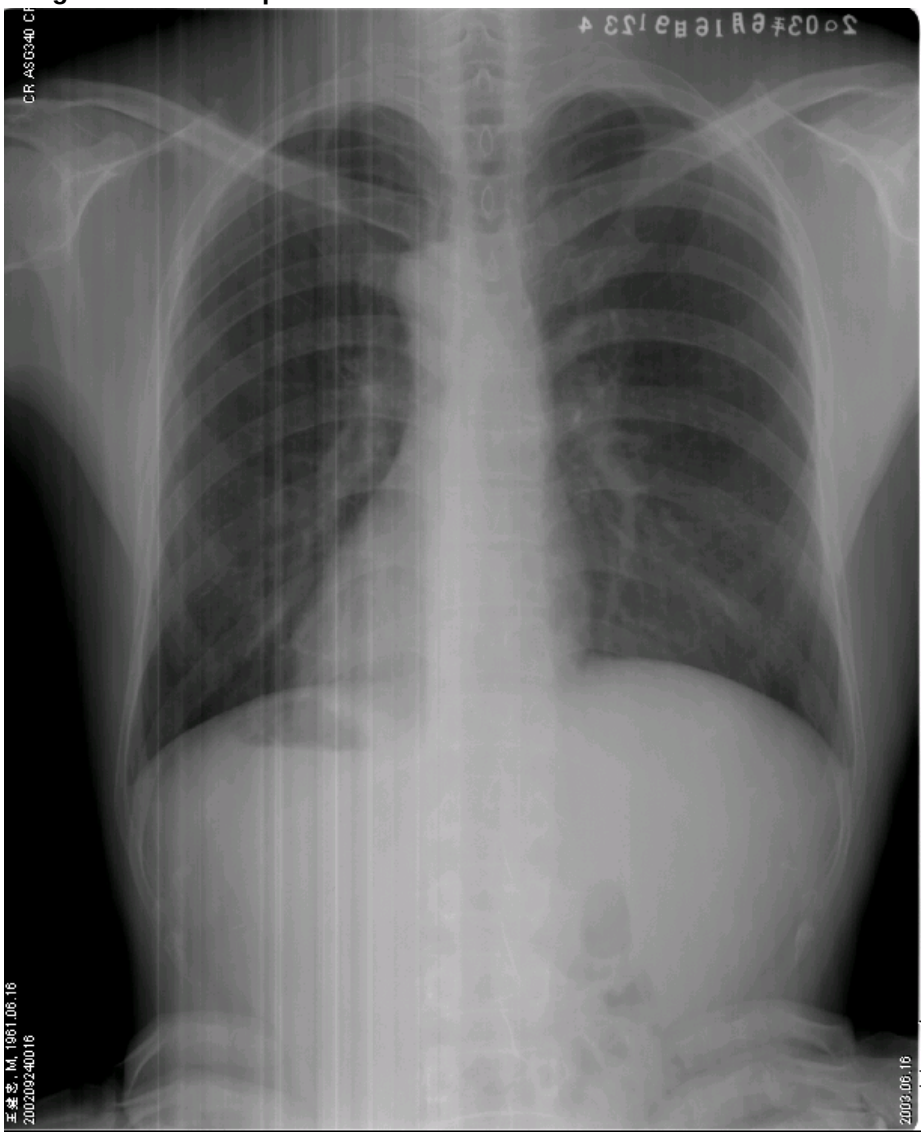
Part of image scanned. USB board is not functioning properly.

Fix

Replace USB board.

Vertical Lines on Image

Vertical Lines on Image Artifact Example



Cause

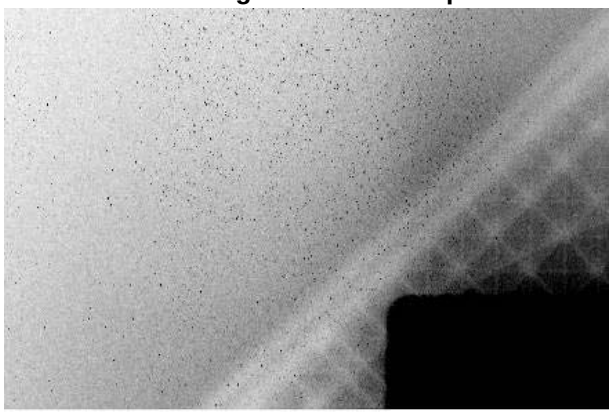
Lines on the image. Image is not uniform. Caused by electronic issues of the USB board.

Fix

Replace USB board.

Black Dots on Image

Black Dots on Image Artifact Example



Cause

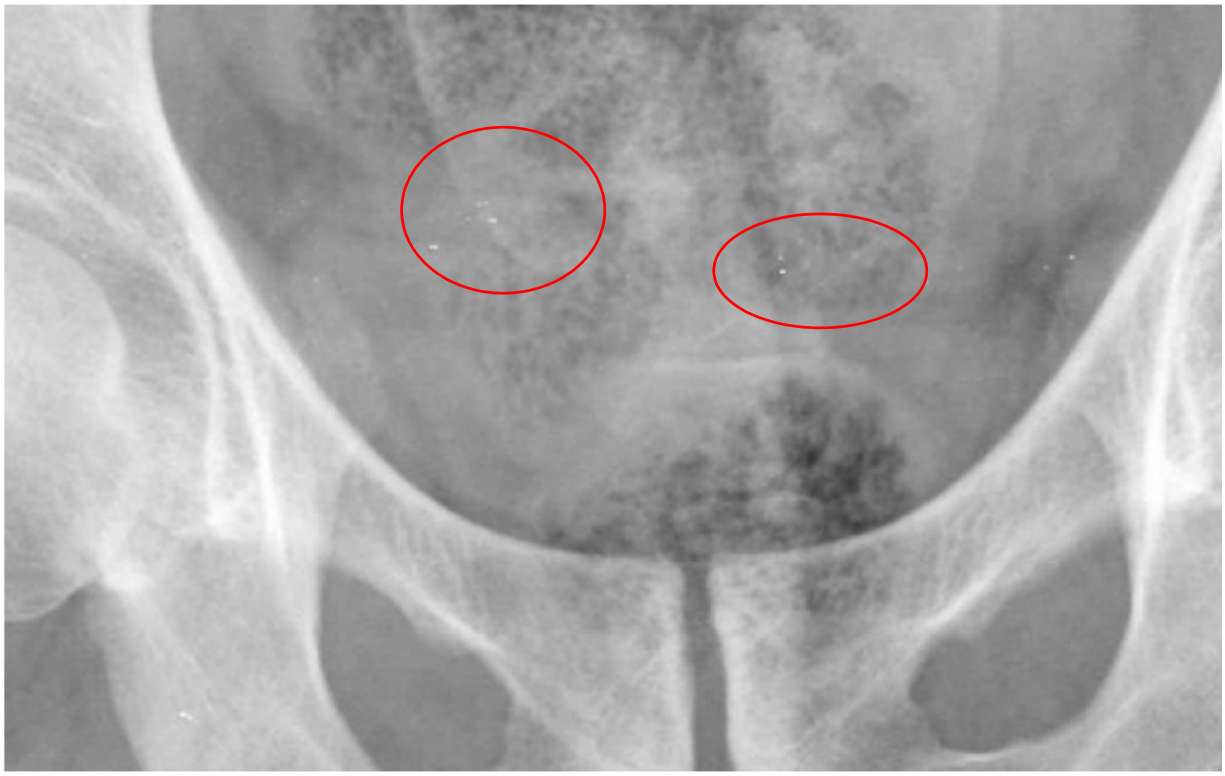
Black dots on image. These dots (streaks) are caused by an Electrostatic Discharge (ESD). These ESD dots generate very short sharp and high light sparks that are coupled into the Photo multiplier through the blue filter. The ESD effect is induced by several factors, mainly environmental conditions such as dry air and low humidity, and rubbing of the screen by the mechanical CR Reader (rollers).

Fix

Clean the screen with screen solution that contains anti-static agent. See the User Guide and/or Service Manual for cleaning instructions.

White Dots on Image

White Dots on Image Artifact Example



Cause

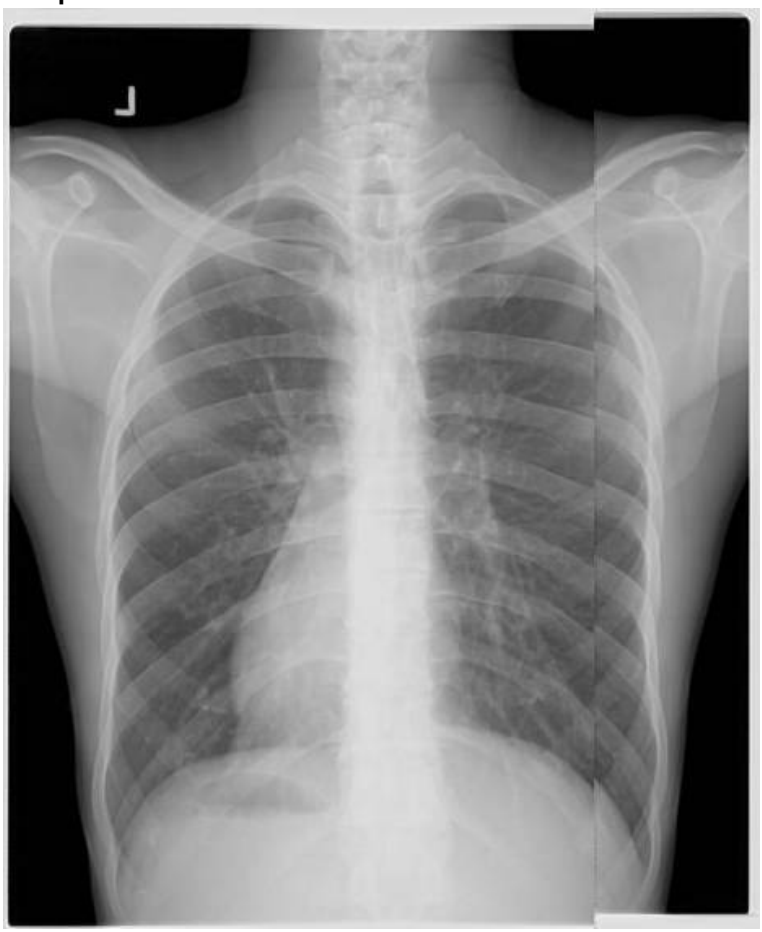
White dots appear on the scanned image resulting from accumulated dust.

Fix

Clean the screen according to the “Screen Cleaning Instructions” in the Service Manual.

Shifted Image

Shifted Image Artifact Example



Cause

Lines and/or distorted image because of incorrect computer specifications.

Fix

[1] Check that the PC USB Chipset is the Intel model.

[2] Reinstall PC USB Chipset driver. It can be downloaded from the PC model website.

[3] Verify that the issue is with the PC by activating the CR Reader via another PC.

[4] Replace the USB board.

Note

If one of the steps solves the problem, there is no need to continue to the following steps.

Black Surround Artifact

Black Surround Image Artifact Example

Cause

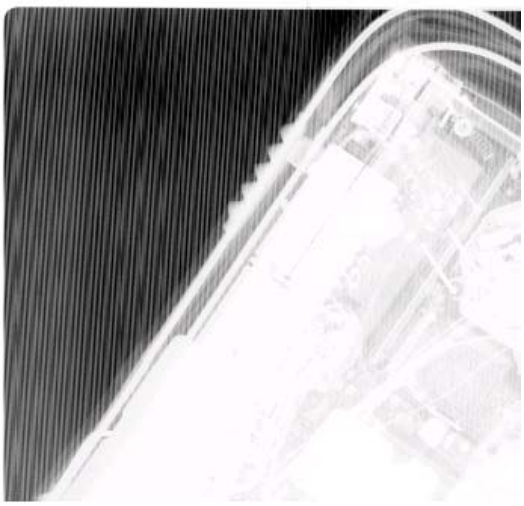
When activating Black Surround the image should be cropped according to the exposure limits set by the collimator. In CR Point-of-Care 120/140 models with less than Version 2.5 software, the feature does not always function accurately.

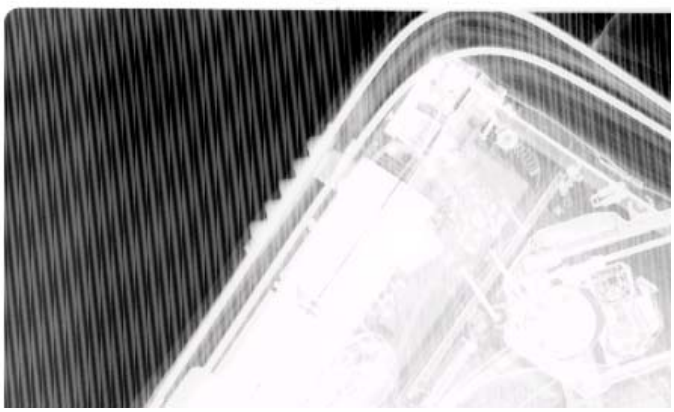
Fix

The Black Surround feature of software Version 2.5 is built upon a different, more successful algorithm. To upgrade to Version 2.5 contact your Marketing representative.

Grid Lines on the Image

Grid Lines on Image Artifact Example





Note

The size of the grid lines varies with the magnification.

Cause

Grid lines on the image.

Fix

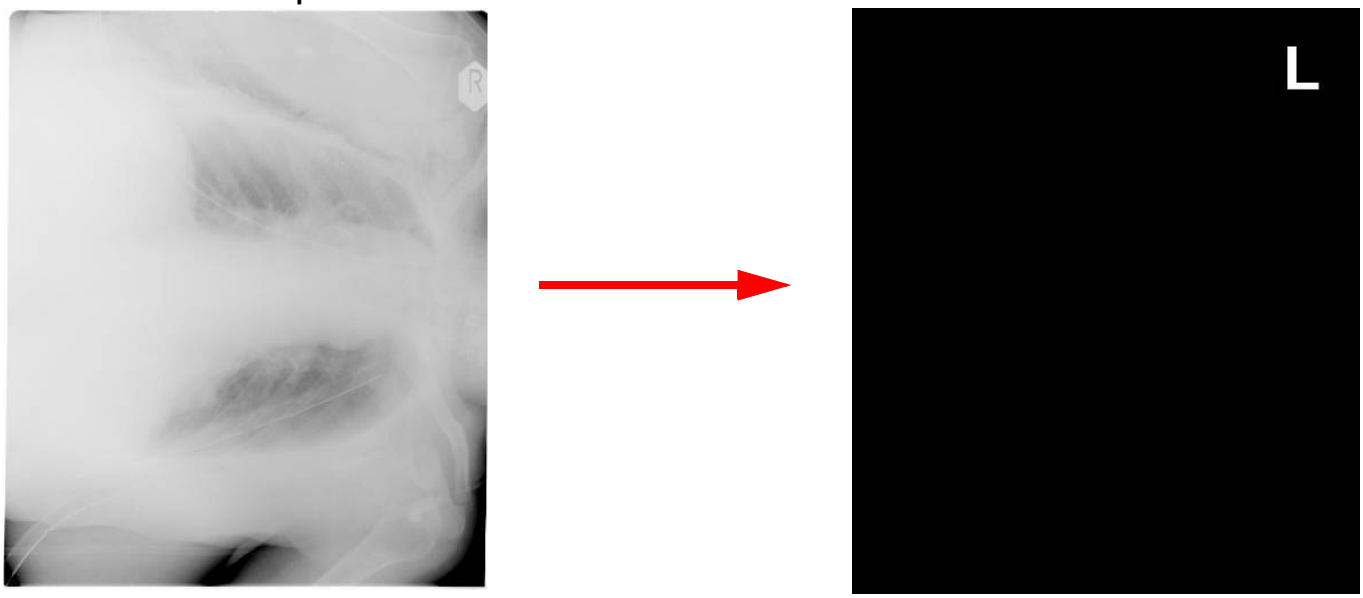
[1] Go to **Technician>Settings>Setup** screen.

[2] Check that **Grid** Suppression Filter is checked.

In Version 2.5 the grid suppression within Eclipse -*Kodak* Image Processing works best with 103 lp/inch grid. You should avoid grids of 152 lp/inch. The algorithm does not suppress with frequency higher than 152 lp/inch.

Software Issues

Software Artifact Example



Cause

When adding L/R signs and annotations on the image in specific window level values, the image turns black on the scan screen.

Fix

The issue is solved by applying a Service Pack. Check the following Service Bulletins according to the Software version:

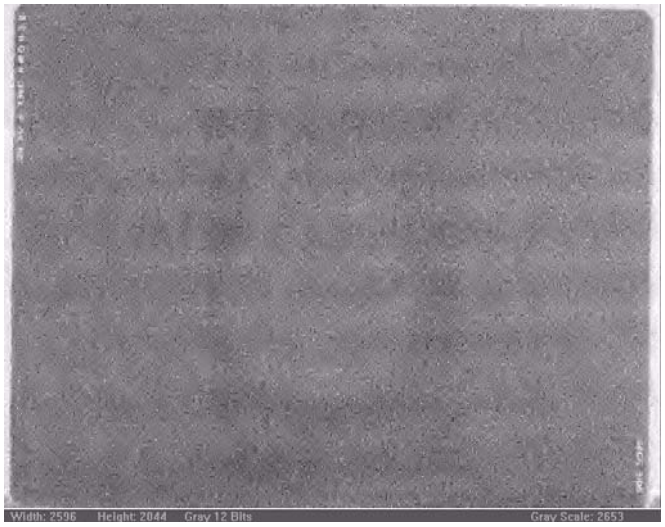
- V2.1.2/2.2.1 -- SB000046 - K-QC POC120_140 SP2
- V2.4.2 -- SB000048 - K-QC POC120_140_260 SP3

Until the SP is installed, follow the work around solution according to:

SB000013 - Black Images on K QC Scan Screen.

Inverted Screen

Inverted Screen Artifact



Cause

The screen was inserted the wrong way round in the cassette.

Fix

With the Screen Extraction Tool, (SK250056) remove the screen from the cassette and re-insert it the right side up.

Vertical White Lines

Note

The lines are vertical to the scan. In the example on the right, the image was rotated.

Vertical White Lines Artifact Example

Cause

The USB Chipset on the computer Mother board is faulty.

Fix

[1] Check that the PC USB Chipset is the Intel model.

[2] Reinstall PC USB Chipset driver. It can be downloaded from the PC model website.

[3] Verify that the issue is with the PC by activating the CR Reader via another PC.

Note

If one of the steps solves the problem, there is no need to continue to the following steps.

Image Partially Scanned

Partially Scanned Image Artifact Example

Cause

A W0 Sensor error message appears on screen during the scanning procedure. The Operator clicks [OK] to the message and then the CR Reader immediately ejects the screen. Only part of the image has been scanned.

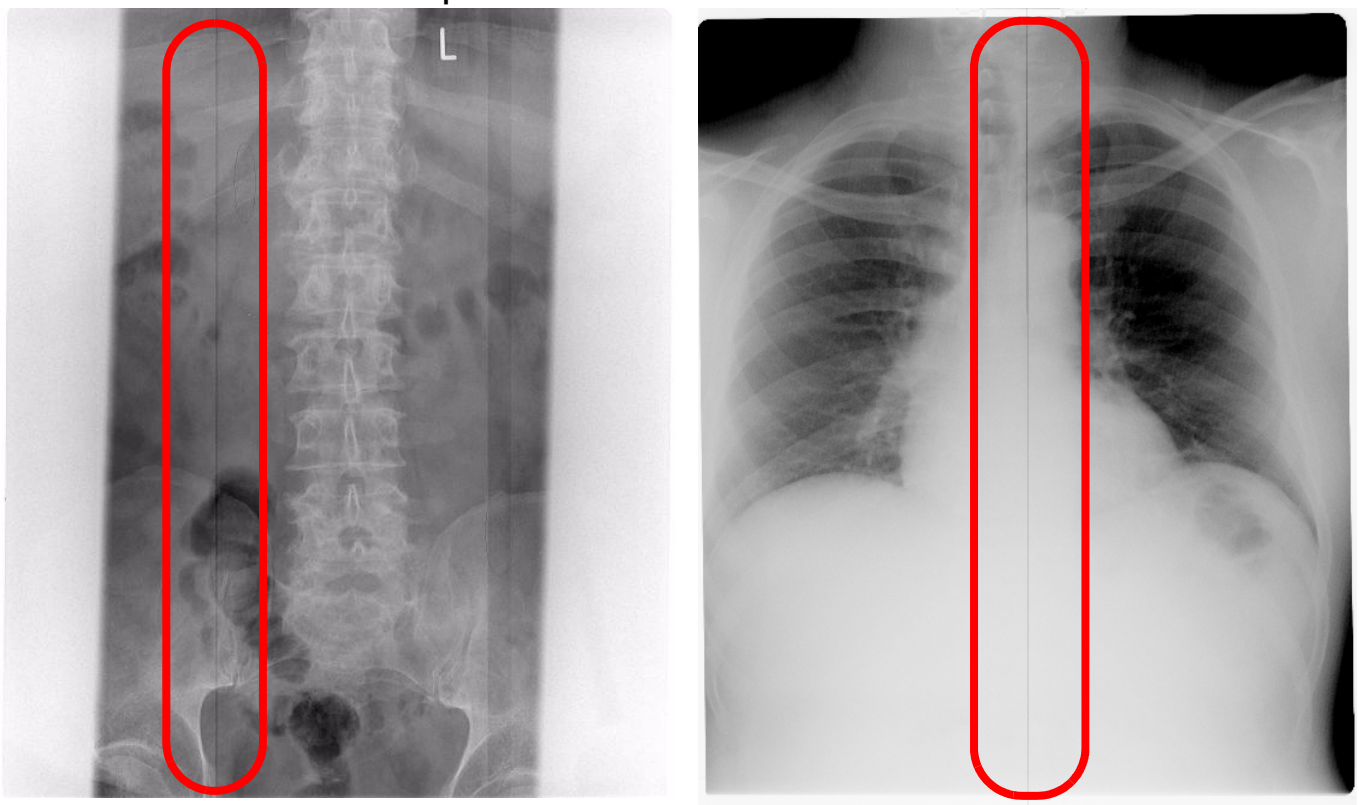
Fix

Workaround: Do not click [OK} before the CR Reader finishes scanning the screen.

Fix: Check the functionality of the W0 Sensor. (See “Sensors Tests” on Page 53) To fix the W0 Sensor go to ““Plate Didn’t Reach W0 Sensor”” on Page 15 and ““W0 Sensor at Wrong State”” on Page 16.

Random Black Lines on Image

Random Black Lines Artifact Example



Cause

The random black lines appear because of a software bug in the USB board.

Fix

The issue is solved by applying a Service Pack. Check the following Service Bulletins according to the Software version:

- V2.1.2/2.2.1 -- SB000046 - K-QC POC120_140 SP2
- V2.4.2 -- SB000048 - K-QC POC120_140_260 SP3
- V2.5 -- SB000053 - K-QC POC120_140_260 SP2

Section 7: Appendix 1: Tests

Sensors Tests

Introduction

Perform this test procedure in order to check if a sensor is functioning.

This test is valid for all sensors.

When the Jumper is connected and a Sensor is activated - a flag prevents the sensor's transmitted signal from being received on it's other side - the LED light to the left of the sensor connector on the Sensor board, will light green.

Tools Required

Shortcut Jumper

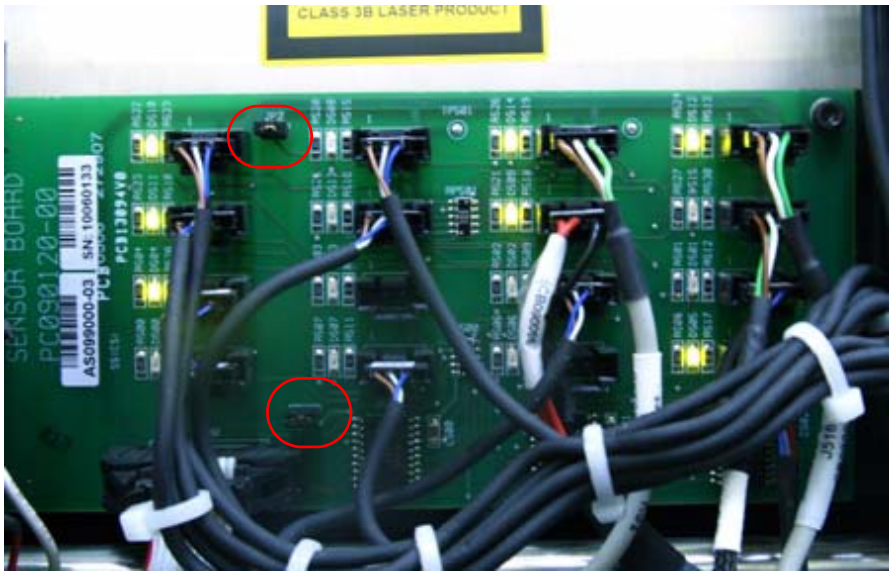
Procedure

[1] Remove the CR Reader cover.

[2] Switch ON the CR Reader.

[3] Connect the Shortcut Jumper to the two pins on the Sensor Board to the connector shown in the illustration below.

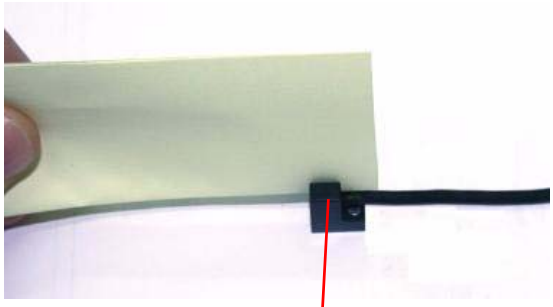
Shortcut Jumper



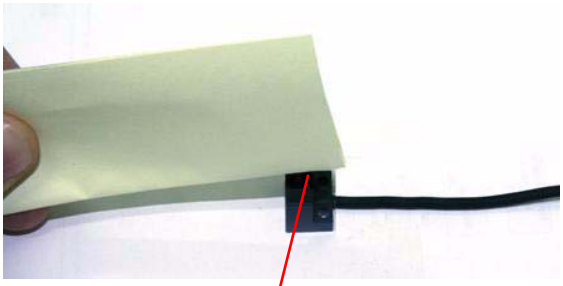
[4] Insert a piece of paper into the sensor where the flag passes during procedure.This blocks the sensor signal. The green LED to the left of that sensor connector on the sensor board lights up is the sensor is functioning properly. If the LED does not light, the sensor is not functioning properly.

Unblock the sensor by removing the piece of paper; the green LED should turn off.

Block the sensor signal



Sensor blocked



Sensor unblocked

[5] If the sensor is not functioning properly, replace the sensor and repeat the test.

Note

To perform this test on J511 -W0 sensor: The sensor is divided into two parts; the Top is the Transmitter and the Bottom is the Receiver. Insert a screen into the drum and check J511 sensor LED position change. During the screen upload the LED should go from green to OFF.

Rollers Motor Test

[1] Remove the CR Reader cover.

[2] Turn the CR Reader ON.

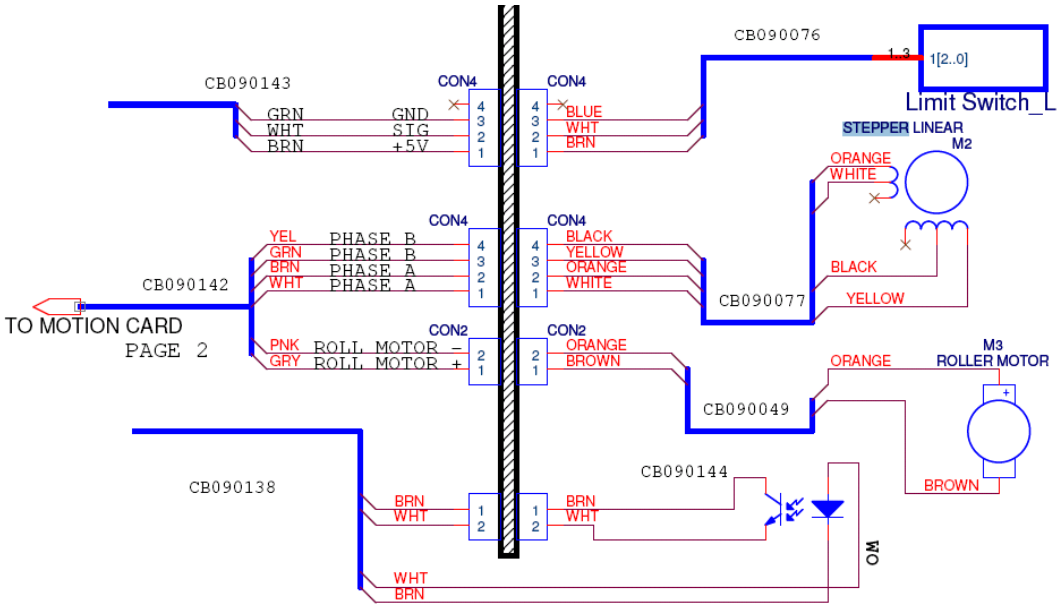
[3] In *Kodak* QC software go to the Diagnostic screen.

[4] Click on **<<->> to operate the Roller Motor control.**

[5] Check visually that the rollers are spinning in the correct direction.

[6] Measure the voltage in the Roller Motor connector referring to the Roller Motor Sensor chart in the Point-of-Care Service Manual.

Roller Motor Sensor Electrical connectors



[7] Check F2 on the Fuse Panel in the rear of the CR Reader.

USB Fuses Test

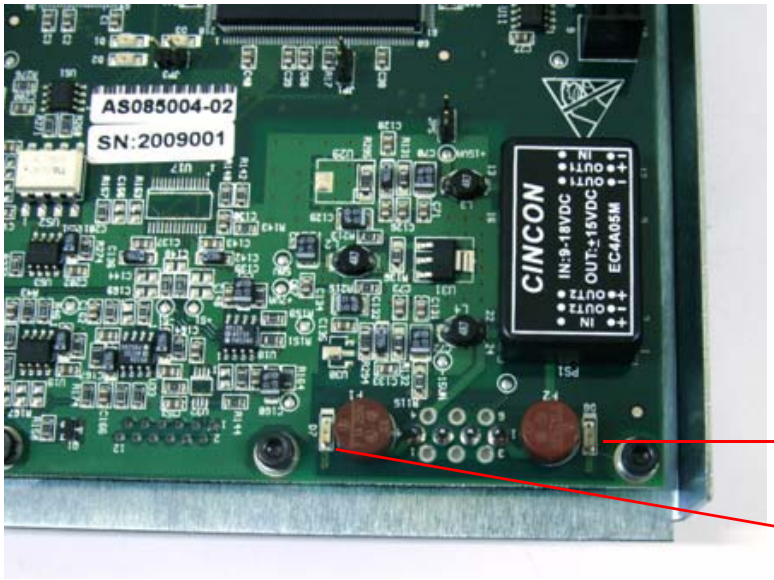
The USB has fuses protecting it from high voltage and to prevent short circuits from occurring.

F1 — Supplies 5 V from the Power Supply to the USB.

F2 — Supplies 12 V from the Power Supply to the USB.

The LED Diode D7 and D8 correspond to F1 and F2. If a fuse is burned, the LED diode will light red. If one of the LEDs id red, then replace the corresponding fuse.

USB Board LEDs



Section 8: Publication History

Publication Date	Publication No.	ECO No.	Changed Pages	File Name	Notes
February 08	AT000115	ECO 322		AT000115_KodakQC_V2.5_Point-of-Care_ 120-140_Troubleshooting_Guide	New Publication
June 08	AT000115-02	ECO 475	misc. pages	AT000115-02_KodakQC_V2.5_Point-of-Care_ 120-140_Troubleshooting_Guide	Updates to Hardware Error Messages and General Operation Failures

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