

# Service Manual for the *Kodak Point-of-Care CR 120/140 Systems*



## **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.

---

# Point-of-Care CR 120/140 Service Manual

## Publication Number: 6H4866-02

© Carestream Health, Inc. 2008

All rights reserved. No part of this manual may be reproduced or copied in any form by any means -graphic, electronic or mechanical, including photocopying, typing, or information retrieval systems -without written permission of Carestream Health.



## Use of the Guide

The *Kodak* Point-of-Care CR 120/140 System is designed to meet international safety and performance standards. Personnel operating the unit 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 Health representative for clarification.

### Authorized European Representative

Carestream Health France  
LES MERCURIALES  
40, rue Jean Jaures  
93176 BAGNOLET CEDEX  
France

CARESTREAM is a trademark of Carestream Health.

KODAK is a trademark of Kodak used under license.

Carestream Health, Inc.  
150 Verona Street  
Rochester, NY 14608

---

# Table of Contents

Description	Page
<a href="#">Safety and Regulatory Information</a> . . . . .	11
<a href="#">Introduction</a> . . . . .	11
<a href="#">General Safety Guidelines</a> . . . . .	11
<a href="#">Electrical Hazards</a> . . . . .	12
<a href="#">Explosion and Implosion Hazards</a> . . . . .	12
<a href="#">Overheating</a> . . . . .	12
<a href="#">Laser Safety Instructions</a> . . . . .	12
<a href="#">Recycling the Unit</a> . . . . .	12
<a href="#">Labelling Summary</a> . . . . .	13
<a href="#">IEC Symbols Used</a> . . . . .	13
<a href="#">Device-specific Safety Information</a> . . . . .	14
<a href="#">Regulatory Information</a> . . . . .	14
<a href="#">System Description</a> . . . . .	15
<a href="#">Introduction</a> . . . . .	15
<a href="#">Operational Principles</a> . . . . .	15
<a href="#">System Overview</a> . . . . .	15
<a href="#">Component Description</a> . . . . .	20
<a href="#">Service Procedures</a> . . . . .	41
<a href="#">Service Tools</a> . . . . .	41
<a href="#">Removing the Service Panel and Scanner Cover</a> . . . . .	41
<a href="#">Disconnecting the Laser</a> . . . . .	44
<a href="#">Replacing the Fuses</a> . . . . .	45
<a href="#">Power Inlet Module Replacement</a> . . . . .	46
<a href="#">USB Board Replacement</a> . . . . .	48
<a href="#">Motion Board Replacement</a> . . . . .	50
<a href="#">Sensor Board Replacement</a> . . . . .	51
<a href="#">PM Tube and PM Board Replacement</a> . . . . .	52
<a href="#">Laser Board Replacement</a> . . . . .	54
<a href="#">Roller Motor Replacement</a> . . . . .	56
<a href="#">Linear Slide Assembly Replacement</a> . . . . .	59
<a href="#">Loader Stepper Motor Replacement</a> . . . . .	63
<a href="#">Power Supply Assembly Replacement</a> . . . . .	66
<a href="#">Erase Lamps Assembly Replacement</a> . . . . .	70
<a href="#">Erase Lamps Inverters Replacement</a> . . . . .	73
<a href="#">Erase Lamps Sensors Replacement</a> . . . . .	75
<a href="#">Left Limit Sensor Replacement</a> . . . . .	77
<a href="#">Right Limit Sensor Replacement</a> . . . . .	79
<a href="#">Screen Size Sensor Replacement</a> . . . . .	80
<a href="#">Roller Sensor Replacement</a> . . . . .	82
<a href="#">Z0 Sensor Replacement</a> . . . . .	83
<a href="#">W0 Sensors Replacement (Top/Receiver and Bottom/Transmitter)</a> . . . . .	85
<a href="#">Screen Guide Replacement for non Auto-loop systems</a> . . . . .	89
<a href="#">Auto-loop Key Assembly Replacement</a> . . . . .	94
<a href="#">Auto-loop Solenoid Replacement</a> . . . . .	97
<a href="#">Tray Assembly Replacement for non Auto-loop Systems</a> . . . . .	98
<a href="#">Tray Assembly Replacement for Auto-loop Systems</a> . . . . .	103
<a href="#">Calibrations</a> . . . . .	107
<a href="#">Nominal Calibration</a> . . . . .	107
<a href="#">Facility Calibrations for Kodak QC Version 2.1.2/2.4.2 Software</a> . . . . .	115
<a href="#">Gain Tuning Calibration Process for Kodak QC Version 2.5</a> . . . . .	123
<a href="#">Adjustments</a> . . . . .	127
<a href="#">Auto-loop Solenoid Adjustment</a> . . . . .	127
<a href="#">Screen Guide Adjustment (non Auto-loop)</a> . . . . .	129
<a href="#">Loader Pin and Loader Pusher Adjustments</a> . . . . .	132

---

<a href="#">Roller Sensor Adjustment</a> .....	135
<a href="#">Electric Schematic Diagrams</a> .....	137
<a href="#">Preventive Maintenance</a> .....	145
<a href="#">Cleaning the Rollers</a> .....	145
<a href="#">Cleaning the Phosphor Screens</a> .....	149
<a href="#">Publication History</a> .....	155

## List of Figures

<b>Description</b>	<b>Page</b>
<a href="#">Block Diagram of the Point-of-Care CR 120/140</a> .....	17
<a href="#">Scanner Front View</a> .....	18
<a href="#">Scanner Rear View</a> .....	18
<a href="#">Scanner Left View</a> .....	19
<a href="#">Scanner Right View</a> .....	19
<a href="#">USB Board</a> .....	20
<a href="#">Motion Board</a> .....	21
<a href="#">Sensor Board</a> .....	22
<a href="#">PM and PM Board</a> .....	24
<a href="#">Laser Board</a> .....	25
<a href="#">Laser</a> .....	26
<a href="#">Roller Motor</a> .....	27
<a href="#">Roller Motor Connector</a> .....	27
<a href="#">Linear Slide Assembly</a> .....	28
<a href="#">Linear Slide Stepper Motor Connector</a> .....	28
<a href="#">Carriage Stepper Motor</a> .....	29
<a href="#">Carriage Stepper Motor Wiring</a> .....	29
<a href="#">Power Supply Assembly</a> .....	30
<a href="#">Auto-loop Key Assembly and Tray Assembly</a> .....	31
<a href="#">Auto-loop Key Assembly</a> .....	31
<a href="#">Erase Lamps</a> .....	32
<a href="#">Erase Lamp Assembly</a> .....	32
<a href="#">Erase Lamps Inverter Assembly</a> .....	33
<a href="#">Inverter Assembly Connections</a> .....	33
<a href="#">Erase Lamp Sensor</a> .....	34
<a href="#">Erase Lamp Sensor Connectors</a> .....	34
<a href="#">Left Limit Sensor</a> .....	35
<a href="#">Right Limit Sensor</a> .....	35
<a href="#">Screen Size Sensor</a> .....	36
<a href="#">Roller Sensor</a> .....	37

<a href="#">Z0 Sensor</a>	38
<a href="#">Top W0 Sensor</a>	39
<a href="#">Bottom W0 Sensor</a>	39
<a href="#">Service Panel Screws</a>	41
<a href="#">Access to Cover Screws</a>	42
<a href="#">Cover Screws</a>	42
<a href="#">Laser Connector on the Laser Board</a>	44
<a href="#">Location of Fuses</a>	45
<a href="#">Nuts Securing the Module</a>	46
<a href="#">Line Filter Wire Attached to Ground</a>	47
<a href="#">Side View of Power Module Showing Connection Tabs</a>	47
<a href="#">USB Cover</a>	48
<a href="#">USB Board Connectors</a>	48
<a href="#">Motion Board Bracket Screws</a>	50
<a href="#">Motion Board Connectors</a>	50
<a href="#">Sensor Board Connections</a>	51
<a href="#">Sensor Board Screws</a>	51
<a href="#">PM Ground Wire</a>	52
<a href="#">Connector to the PM Board</a>	52
<a href="#">PM Assembly Screw (one side shown)</a>	53
<a href="#">PM Assembly Lower Screw</a>	53
<a href="#">Laser Board Connectors</a>	54
<a href="#">Laser Board Screws</a>	54
<a href="#">Laser Operation</a>	55
<a href="#">Roller Motor Connector</a>	56
<a href="#">Roller Motor Screws</a>	56
<a href="#">Roller Motor Drive retaining screw</a>	57
<a href="#">Roller Motor Drive</a>	57
<a href="#">Drive Adaptor</a>	57
<a href="#">Operating the Roller Motor</a>	58
<a href="#">Connector to USB Board</a>	59
<a href="#">Laser Board Cable and Connectors</a>	59
<a href="#">Stepper Motor and Left Limit Sensor Connectors</a>	60
<a href="#">Right Limit Sensor Connector</a>	60
<a href="#">Screw Attaching the Ground Wire</a>	60
<a href="#">Slide Assembly Attaching Screws</a>	61
<a href="#">Slide Assembly</a>	61
<a href="#">Linear Slide Test</a>	62
<a href="#">Connector J505 on the Connector Board</a>	63

<a href="#">Stepper Motor Cable</a> .....	63
<a href="#">Bottom of Unit</a> .....	64
<a href="#">Pulling the Carriage Down</a> .....	64
<a href="#">Carriage Assembly Attaching Screws</a> .....	64
<a href="#">Loader Assembly with Stepper Motor</a> .....	65
<a href="#">Power Supply Assembly</a> .....	66
<a href="#">Power Supply Screws on Unit Bottom</a> .....	67
<a href="#">Cable Connection to USB Board</a> .....	67
<a href="#">Connectors on the Motion Board</a> .....	68
<a href="#">Ground Wire Screw</a> .....	68
<a href="#">Main Ground Stud</a> .....	69
<a href="#">Fuse Connector</a> .....	69
<a href="#">Erase Lamp Connectors</a> .....	70
<a href="#">Erase Lamp Sensor Connector</a> .....	70
<a href="#">W0 Upper Sensor Cable Connector</a> .....	71
<a href="#">Erase Lamp Assembly Screws</a> .....	71
<a href="#">Erase Lamp Assembly Wiring Harness</a> .....	72
<a href="#">Inverter Cover Screws</a> .....	73
<a href="#">Erase Lamp Connectors</a> .....	73
<a href="#">Inverter Attaching Screws</a> .....	74
<a href="#">Checking the Erase Lamps</a> .....	74
<a href="#">Flex Cable Bracket</a> .....	75
<a href="#">Erase Lamp Sensor</a> .....	75
<a href="#">Erase Lamp Sensor Screws</a> .....	76
<a href="#">Checking the Erase Lamps</a> .....	76
<a href="#">Left Limit Sensor Connector</a> .....	77
<a href="#">Left Limit Sensor Screws</a> .....	77
<a href="#">Linear Motor Section of Diagnostics Screen</a> .....	78
<a href="#">Right Limit Sensor</a> .....	79
<a href="#">Linear Motor Section of Diagnostics Screen</a> .....	79
<a href="#">Screen Size Sensor (1 of 4)</a> .....	80
<a href="#">Screen Guide Passing Under Screen Size Sensor</a> .....	80
<a href="#">Z0 Light</a> .....	81
<a href="#">Screen Guide</a> .....	81
<a href="#">Roller Sensor</a> .....	82
<a href="#">Z0 Sensor</a> .....	83
<a href="#">Z0 Light</a> .....	84
<a href="#">Screen Guide</a> .....	84
<a href="#">Top W0 Sensor in the Drum</a> .....	85

<a href="#">W0 Top Sensor</a> .....	86
<a href="#">Scanner tipped on its back</a> .....	86
<a href="#">W0 Bottom Sensor</a> .....	87
<a href="#">Black Probe Attachment Point</a> .....	88
<a href="#">Disconnect the Flex Cable</a> .....	89
<a href="#">Remove the Silver Bracket</a> .....	89
<a href="#">Remove the L Bracket</a> .....	90
<a href="#">Disconnect the Flex Cable</a> .....	90
<a href="#">Release the Key Assembly screws</a> .....	90
<a href="#">Pull the Key Assembly towards you</a> .....	91
<a href="#">Remove the Allen screws from the Screen Guide Bracket</a> .....	91
<a href="#">Install the New Screen Guide to the Key Assembly</a> .....	92
<a href="#">Stick Adhesive Tape to the Screen Guide</a> .....	92
<a href="#">Rotate the Rollers Manually</a> .....	93
<a href="#">Install the L Bracket</a> .....	93
<a href="#">Disconnect flex cable</a> .....	94
<a href="#">Disconnect the Connectors from the Sensor board and Motion board</a> .....	94
<a href="#">Release the screws securing the Auto-loop Key Assembly</a> .....	95
<a href="#">Pull the Auto-loop Key Assembly towards you</a> .....	95
<a href="#">Pass the cable around to the Motion card (1)</a> .....	96
<a href="#">Pass the cable around to the Motion card (2)</a> .....	96
<a href="#">Pass the cable around to the Motion card (3)</a> .....	96
<a href="#">Auto-loop Solenoid</a> .....	97
<a href="#">Auto-loop adaptation identification</a> .....	98
<a href="#">System Serial Number</a> .....	98
<a href="#">Remove J513 and J514 sensors</a> .....	99
<a href="#">Remove J513 and J514 tie wraps</a> .....	99
<a href="#">Remove the silver bracket</a> .....	99
<a href="#">Remove the two screws retaining the black L-bracket</a> .....	100
<a href="#">Release the flex cable from the connector</a> .....	100
<a href="#">Remove the four screws retaining the Key assembly</a> .....	100
<a href="#">Pull out the Key assembly</a> .....	101
<a href="#">Remove the ground strap</a> .....	101
<a href="#">Remove Tray Assembly screws</a> .....	101
<a href="#">Plate sides mounting screws</a> .....	102
<a href="#">Remove Tray Assembly sensors</a> .....	103
<a href="#">Remove the four screws retaining the Key assembly</a> .....	103
<a href="#">Remove the ground strap</a> .....	104
<a href="#">Remove Tray Assembly screws</a> .....	104

<a href="#">Plate sides mounting screws</a> .....	104
<a href="#">Set Origin on Calibration Tab</a> .....	107
<a href="#">Exposure Settings</a> .....	107
<a href="#">New X and Y Coordinates</a> .....	108
<a href="#">Origin Calibration Field</a> .....	108
<a href="#">Selecting Set Offset</a> .....	108
<a href="#">Insert Cassette Message</a> .....	109
<a href="#">Push Cassette Message</a> .....	109
<a href="#">Offset Calibration Completed</a> .....	109
<a href="#">Position of the Dosimeter</a> .....	111
<a href="#">Placing the Copper and Aluminum sheets</a> .....	111
<a href="#">Calibration Tab</a> .....	112
<a href="#">Find PM Gain</a> .....	113
<a href="#">Calibration Successful Screen</a> .....	114
<a href="#">Calibration Failed</a> .....	114
<a href="#">Setup Tab</a> .....	115
<a href="#">Screen Image in the Image Viewer screen</a> .....	116
<a href="#">Image Viewer Selections</a> .....	117
<a href="#">Centered Histogram</a> .....	118
<a href="#">Histogram Too Much to the Left (Over Exposed)</a> .....	118
<a href="#">Decrease PM Gain Value and Save</a> .....	119
<a href="#">Histogram Too Much to the Right (Under Exposed)</a> .....	119
<a href="#">Increase PM Gain and Save</a> .....	120
<a href="#">Real Organ Image in Image Viewer Screen</a> .....	120
<a href="#">Image Appearing Four Way Split Screen in the Image Viewer</a> .....	121
<a href="#">Choosing Filter Types from the Filter Menu</a> .....	121
<a href="#">Save Cv Filter Setting Screen</a> .....	122
<a href="#">X-ray setup</a> .....	123
<a href="#">Set Image and Diagnostic settings</a> .....	124
<a href="#">Measure Pixel Value in Center of Field</a> .....	124
<a href="#">Change the PM Value</a> .....	124
<a href="#">Save PM settings</a> .....	125
<a href="#">Loop solenoid error message</a> .....	127
<a href="#">Resistance measuring points on Auto-loop assembly</a> .....	127
<a href="#">Plastic gap jigs</a> .....	128
<a href="#">Facilitate final stroke position</a> .....	128
<a href="#">Screen Guide tool</a> .....	129
<a href="#">Diagnostic tab</a> .....	129
<a href="#">Loader Position</a> .....	130

---

<a href="#">Disconnect the Flex Cable</a>	130
<a href="#">Remove the Silver Bracket</a>	130
<a href="#">Loosen the L Bracket screws</a>	131
<a href="#">Direction of Screen Guide movement under L Bracket</a>	131
<a href="#">Tray Gauge</a>	132
<a href="#">Trolley Roller Gauge</a>	132
<a href="#">Diagnostics Screen Loader Control</a>	132
<a href="#">Checking Pin Height (Go)</a>	133
<a href="#">Checking Pin Height (No Go)</a>	133
<a href="#">Diagnostics Screen -activate erase lamps</a>	134
<a href="#">Inserting the Trolley Roller</a>	134
<a href="#">Insert the 0.4 mm Adjustment Screen</a>	135
<a href="#">Screen inserted between the rollers</a>	136
<a href="#">Sensor LED active and inactive</a>	136
<a href="#">Main Schematics</a>	137
<a href="#">USB and Motion Schematics</a>	138
<a href="#">Sensors Schematics</a>	139
<a href="#">PM, Laser Schematics</a>	140
<a href="#">Lamps Board Schematics</a>	141
<a href="#">PS, Lamps Schematics</a>	142
<a href="#">Grounding Schematics</a>	143
<a href="#">User Tab</a>	146
<a href="#">Insert Cleaning Tray Message</a>	146
<a href="#">Removing the Protective Strips</a>	147
<a href="#">Inserting the Cleaning Tray</a>	147
<a href="#">Pull Out Cleaning Plate Message</a>	148
<a href="#">Disconnecting the Cleaning Tray</a>	148
<a href="#">Extraction Tool</a>	149
<a href="#">Installing the Extraction Tool</a>	150
<a href="#">Extracting the Screen</a>	150
<a href="#">Releasing the Extraction Tool</a>	150
<a href="#">Installing the Screen</a>	153



# 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 prior to publication. No patent license is granted by this information.

Carestream Health reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Carestream Health 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 Health's negligence or other fault.



### Caution

Cautions point out procedures that you must follow precisely to avoid damage to the system or any of its components, yourself or others, loss of data or corruption of files in software applications.



### Note

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



### Important

Important highlights critical policy information that affects how you use this guide and this product

## General Safety Guidelines

- This product is designed and manufactured to ensure maximum safety of operation. Operate and maintain it in strict compliance with the safety precautions and operating instructions contained in this guide.
- This product meets all the safety requirements applicable to medical equipment. However, anyone attempting to operate the system must be fully aware of potential safety hazards
- There are no user serviceable parts in this system. The product must be installed, maintained, and serviced by qualified service personnel according to procedures and preventive maintenance schedules in the product service guide. If your product does not operate as expected, contact your Service Representative.
- The product in whole or in part may not be modified in any way without prior written approval from Carestream Health.
- Personnel operating and maintaining this system should receive training and be familiar with all aspects of operation and maintenance.
- To ensure safety, read all user guides carefully before using the system and observe all Cautions, "Importants", and Notes located throughout the guide.
- Keep this guide with the equipment. Reading this guide does not qualify you to operate, test, or calibrate this system.
- Unauthorized personnel are not allowed access to the system.
- If the product does not operate properly or fails to respond to the controls as described in this guide:
  - Follow the safety precautions as specified in this guide.
  - Stop using the system and prevent any changes to it.
  - Immediately contact the service office, report the problem, and await further instructions.
- Use only legally marketed cassettes. Check periodically the quality of the cassettes, and replace if any defects are apparent.
- The images provided by this system are intended as tools for the trained user. They are explicitly not to be regarded as a sole incontrovertible basis for clinical diagnosis.
- Be aware of the product specifications and of system accuracy and stability limitations. Consider these limitations before making a decision based on quantitative values. If you have any doubts, consult the Sales Representative.
- This system is Class I continuous operated stationary equipment without applied parts and has one signal input/output part.

---

## 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.

## Explosion and Implosion Hazards



### Caution

- Do not operate the equipment in the presence of explosive liquids, vapors, or gases.
- Do not plug in or turn on the system if hazardous substances are detected in the environment. If these substances are detected after the system has been turned on, do not attempt to turn off the unit or unplug it. Evacuate and ventilate the area before turning off the system.

## Overheating

Do not block the air circulation around the unit. Always maintain at least 6 inches (15 cm) clearance around the unit to prevent overheating and damage to the system

## Laser Safety Instructions

- During nominal operation, the Scanner is closed and sealed with a protective cover for safety reasons.
- During nominal operation, the cover should not be removed. Removing of the cover shall be done only for service purposes, and by a qualified technician for service operations.
- Service operations that do not require the Laser should be done without activating the Laser unit. Disconnecting the relevant connector on the Laser Board will disconnect the power supply to the Laser, and deactivate the Laser unit for service operations.
- In case the Laser must be operated during service operation, the service technician shall make sure that the optical unit is located within the Scanner Drum, where the laser beam is blocked.



### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Disconnecting the Laser” on Page 44](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times. The required laser safety eye wear must be intended for HeliumNeon/PDT lasers, have an optical density of 4-5 wavelengths of 610-695 nm, and be marked as having CE approval.

## Recycling the Unit



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 Carestream Health representative or refer to [www.kodak.com/go/recycle](http://www.kodak.com/go/recycle) for additional information on the collection and recovery programs available for this product.

## Labelling Summary

	Safety Labels	Consignes de Sécurité
	Laser Laser-emitting product	Laser Appareil émetant de laser
	Class 3B laser product inside Scanner	Rayonnement de laser évitez l'exposition au faisceau laser de la classe 3B. Appareil à laser de classe 3B a l'intérieur du Scanner.
	High voltage	Haut voltage
	Chassis ground stud	Point de mise en terre du chassis
	Attention: consult accompanying documents.	Attention: consulter les documents joints.

## 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.

	Warning, Caution – consult accompanying documents
	Protective ground points
	Power ON
	Power OFF
	Caution – Electrical shock hazard

---

## Device-specific Safety Information

Safety Information	Consignes de Sécurité
 <p data-bbox="376 243 600 268">LIFTING HAZARD</p> <p data-bbox="376 310 783 569">The <i>Kodak</i> Point-of-Care 120/140 Scanner weighs 40 Kg (88lb). Do not try to lift the Scanner by yourself. Always seek assistance from another person. Lifting equipment that is too heavy may result in injury to personnel and/or damage to the Scanner.</p>	<p data-bbox="810 243 1118 268">DANGER POIDS LOURD</p> <p data-bbox="810 310 1406 506">Le Scanner <i>Kodak</i> Point-of-Care 120/140 pèse 40 kg (88lb). N'essayez pas de porter le Scanner par vous-même. Demandez toujours de l'aide d'une autre personne. Porter un équipement trop lourd peut provoquer des dommages physiques et/ou endommager le matériel.</p>
 <p data-bbox="376 581 507 606">WARNING</p> <p data-bbox="376 648 783 737">The <i>Kodak</i> Point-of-Care 120/140 Scanner is a CLASS 1 Laser product.</p> <ul data-bbox="400 743 767 905" style="list-style-type: none"><li>• Do not remove the Scanner cover.</li><li>• Cover removal shall be done only by authorized service personnel!</li></ul>	<p data-bbox="810 581 959 606">ATTENTION</p> <p data-bbox="810 648 1382 709">Le Scanner <i>Kodak</i> Point-of-Care 120/140 est un produit laser de la Classe 1.</p> <ul data-bbox="831 716 1350 821" style="list-style-type: none"><li>• Ne pas retirer le couvercle du Scanner.</li><li>• Le retrait du couvercle doit s'effectuer uniquement par un personnel compétent.</li></ul>

## Regulatory Information

### Introduction

This Product conforms to the following safety standards: IEC 601-1 Medical Electrical Equipment General Requirements for Safety, EN60601-1-2 Medical Electrical Equipment Electro-Magnetic Compatibility Requirements and Tests, IEC 60825-1 Safety of Laser Products.

This device complies with 21CFR 1040.10.

### 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.



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

### USA Regulations

The FDA cleared the system for sale in the USA.



#### Caution

Federal US law restricts this device for sale by or on the order of a physician.

## Section 2: System Description

### Introduction

Throughout this manual the *Kodak* Point-of-Care CR 120/140 Systems will be referred to as the Point-of-Care CR 120/140.

The Point-of-Care CR 120/140 is designed for the reading of phosphor x-ray screens (CR) by medical professionals. The system consists of the Point-of-Care CR 120/140 unit and the software package that includes:

- The *Kodak* QC software that operates the unit.
- An image viewing and archiving software package that supports the DICOM 3.1 standard and was approved by Carestream Health.
- The system features 8 x 10 in.; 10 x 12 in.; 14 x 17 in.; 9.5 x 9.5 in. digital image reading and viewing archive.

### Operational Principles

The Point-of-Care CR 120/140 is a digital imaging system for image acquisition and processing of static projection radiography that uses a phosphor screen with energy storage capability as an x-ray image receptor.

After exposure, a laser beam, which stimulates luminescence proportional to the local x-ray exposure, reads the screen. The luminescence signal is digitized. The data is then subjected to digital image processing.

The Point-of-Care CR 120/140 enables the user to read a screen quickly, and erase it to be ready for the next scan. The unit is compact and easy to use.

Using the Point-of-Care CR 120/140 enables medical professionals to “go digital” without changing their work practices or x-ray equipment.

### System Overview

#### System Components

The Point-of-Care CR 120/140 consists of 17 major assemblies as well as sensors, which may be replaced in the field:

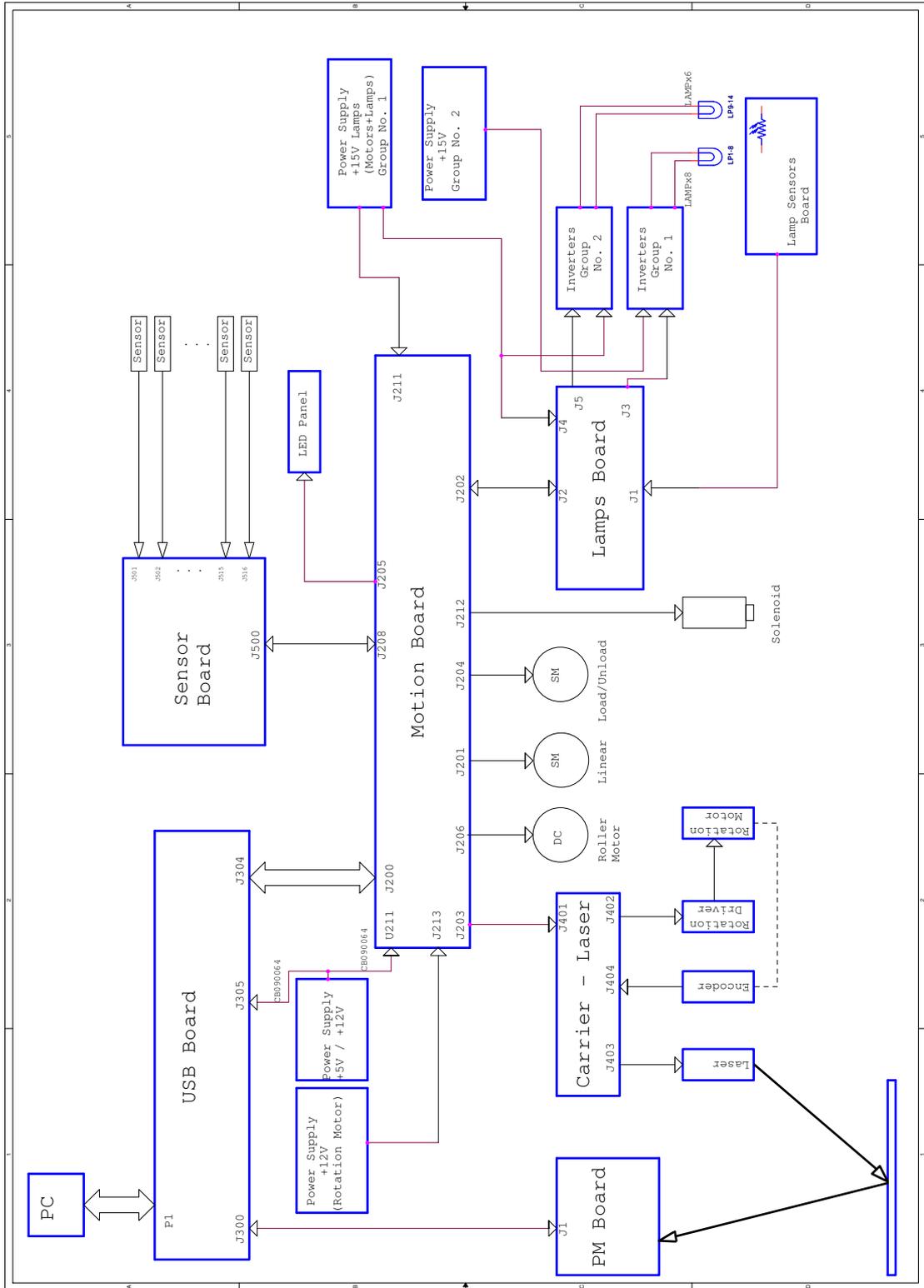
USB Board	Erase Lamps Assembly
Motion Board	Erase Lamps Inverter Assembly
Sensor Board	Sensors:
Photo Multiplier Assembly	W0 Sensor
Optic Head Assembly	Z0 Sensor
Roller Motor Assembly	Rollers Sensor
Linear Slide Assembly	Screen Size Sensors
Loader Stepper Motor Assembly	R-Limit (Home) Sensor
Key Assembly and Tray Assembly	L-Limit Sensor
Power Supply Assembly	Loader Back Sensor
Cassette Lock	Cassette Present
Auto-loop	

## Component Names and Descriptions

Part Name	Description
USB Board	The USB Board receives operational commands from the host PC workstation via the USB port, and sends the commands to the appropriate Scanner component. It also transmits image data from the Scanner to the PC.
Motion Board	The Motion Board controls the Loader and Roller Motors and Erase Lamps. It reads the scanner sensors and passes the information to the USB Board.
Linear Slide Assembly	The Linear Slide Assembly moves the PM and the Optical Head Assemblies back and forth within the Drum.
Optical Head Assembly	The Optical Head Assembly includes the Laser Module and the Rotational Motor that rotates the Laser Tube and a mirror during scanning. The Laser Module's beam illuminates the Phosphor screen and the mirror collects the light reflected from the phosphor screen and directs it to the Photo Multiplier.
Photo Multiplier Tube (PMT)	The Photo Multiplier (PM) Tube collects the photons emitted from the screen.
Key Assembly and Tray Assembly	These complementary assemblies guide the cassette into the scanner and secure it in position for the duration of the scanning process. The Auto-loop mechanism which is attached to the Key Assembly, controls the distance that the screen is returned into the cassette at the end of the process.
Power Supply	The AC/DC power supply provides DC power to the Scanner components.
Loader Stepper Motor Assembly	The Loader Stepper Motor Assembly extracts the phosphor screen from the cassette in preparation for insertion into the drum and assists in inserting the screen into the cassette.
Roller Motor Assembly	The Roller Motor Assembly pulls the phosphor screen from the cassette into the Drum.
Erase Lamps Assembly	The Erase Lamps Assembly brightly illuminates the phosphor screen after scanning, to erase the image so that the screen is ready to be used again.
Erase Lamps Inverters Assembly	The Erase Lamps Inverter Assembly converts the 15 VDC input to high voltage output to power the Erase Lamps.
Sensor Board	The Sensor Board is a through board used to connect the sensors to the Motion Board.
Sensors	
Eraser Lamps Sensor	The Erase Lamp Sensor detects an Erase Lamp failure.
Left and Right Limit Sensors	The Left and Right Limit Sensors indicate the end of travel of the Linear Assembly movement.
Roller Sensor	Detects when the screen enters and exits the Rollers.
W0 Sensors Top and Bottom	The W0 Sensor determines the activation and deactivation of the rollers according to screen presence at the entrance to the Drum.
Z0 Sensor	Detects the presence of the screen in the Drum.
Screen Size Sensors	There are four Screen Size Sensors that determine the size of the CR screen by the location of the screen guide that is positioned by the screen as it is inserted into the drum.
15 x 30 Presence Sensor	Installed in the Key Assembly, this Sensor detects the presence of a 15 x 30 in cassette adapter.

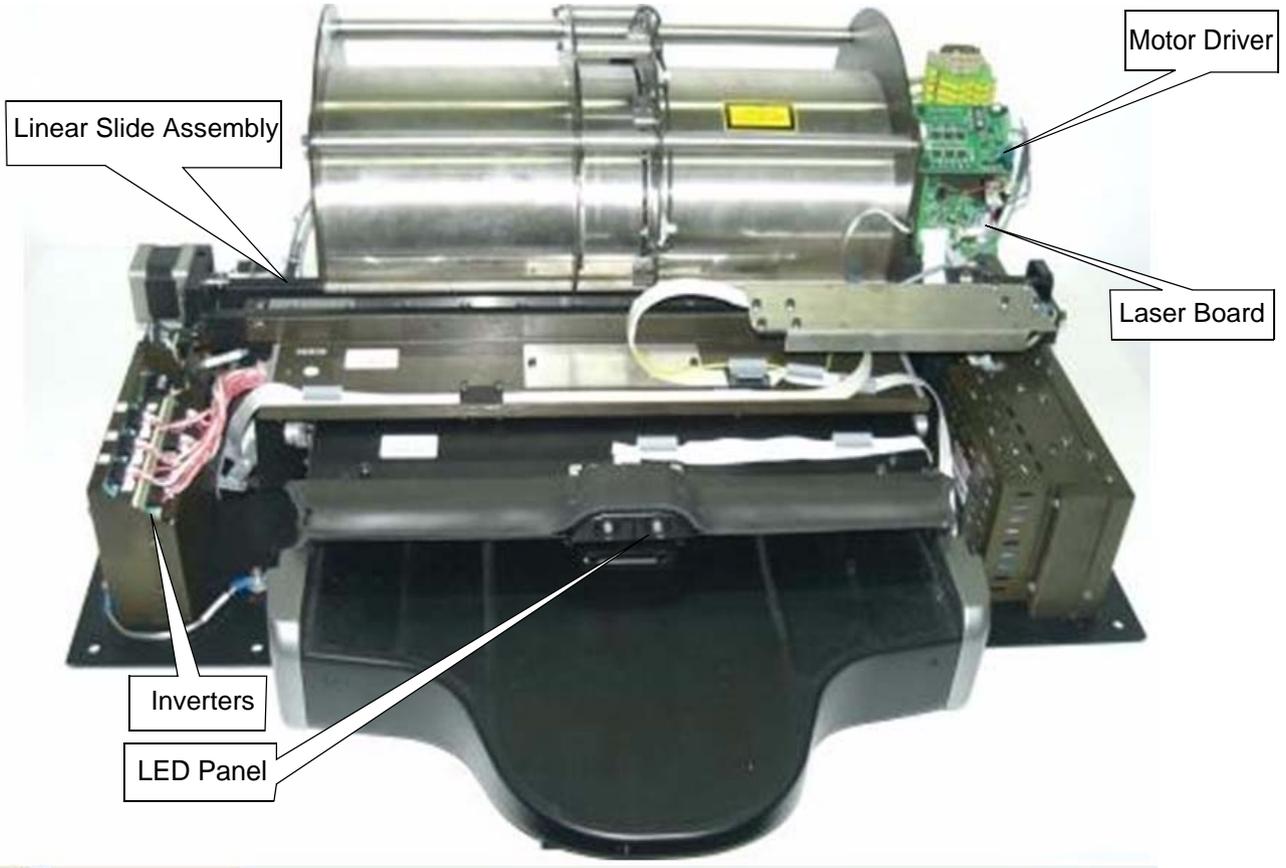
# Block Diagram of PoC 120/140

## Block Diagram of the Point-of-Care CR 120/140

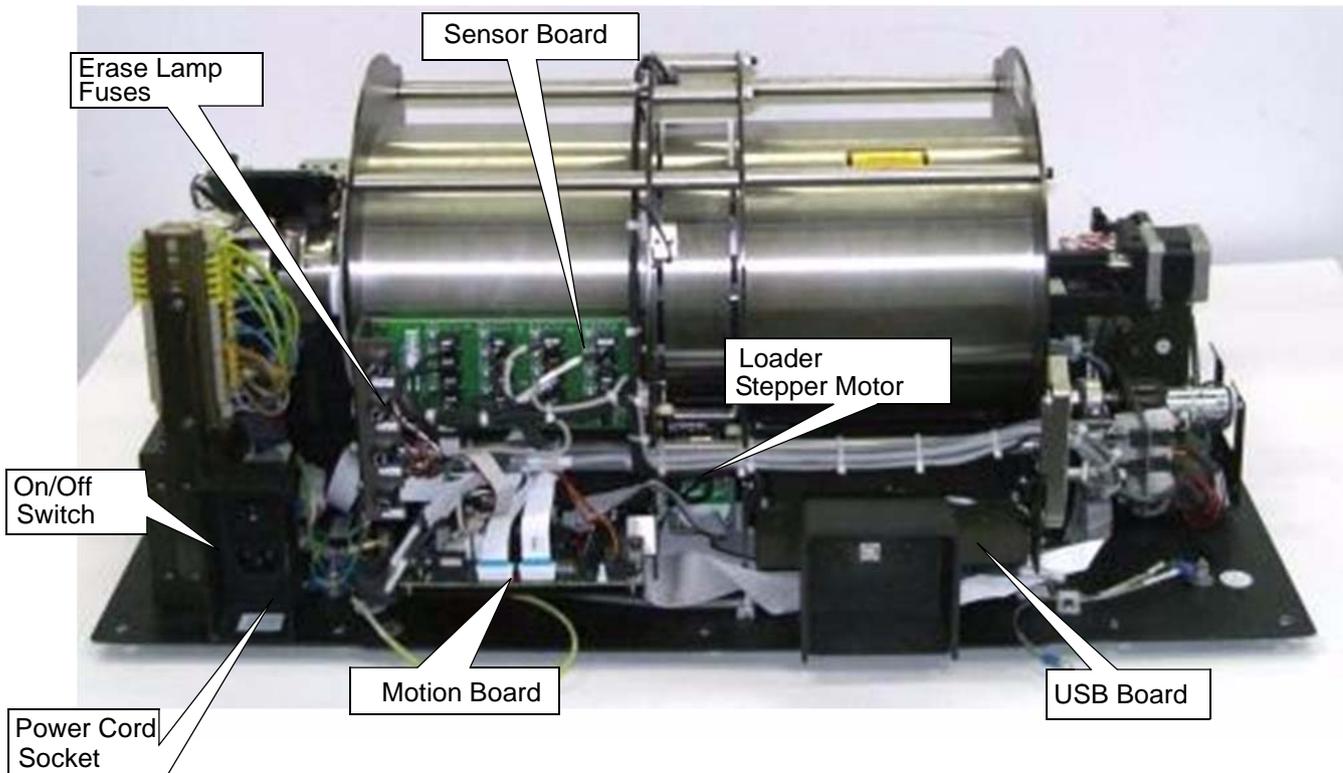


## Views of PoC 120/140

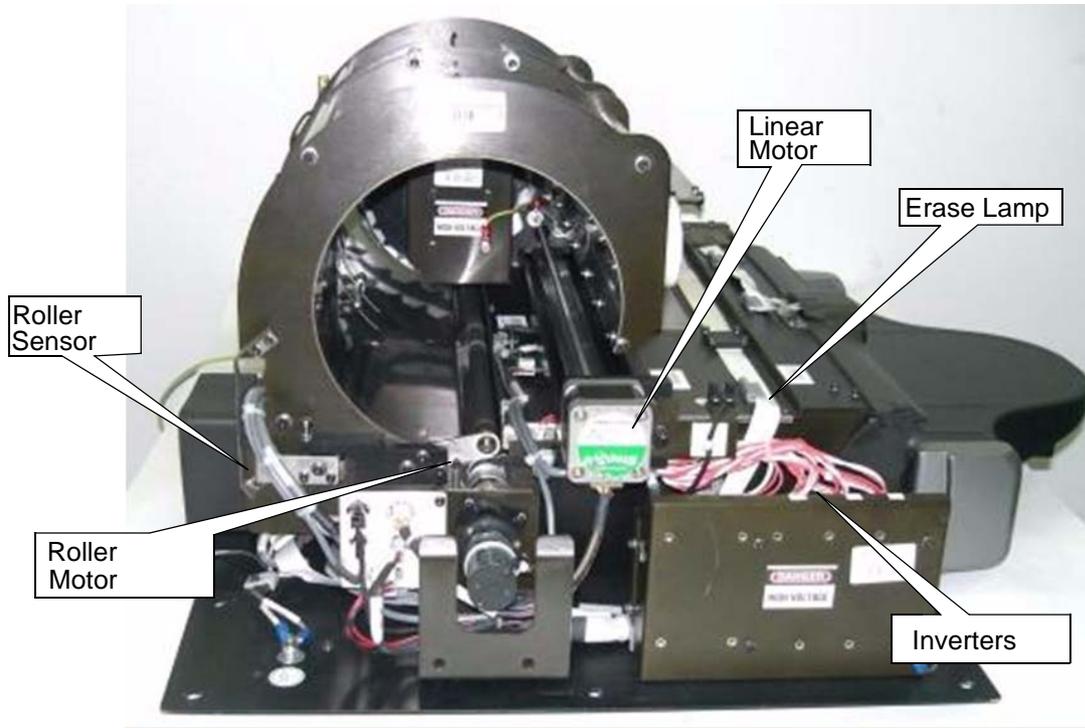
### Scanner Front View



### Scanner Rear View



Scanner Left View



Scanner Right View

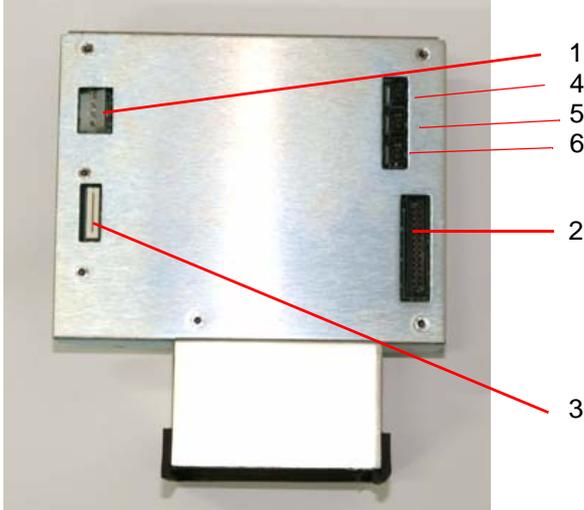


# Component Description

## USB Board

The USB Board receives operational commands from the host PC workstation via the USB port, and sends the commands to the appropriate Unit component. It also transmits image data from the Unit to the PC.

### USB Board



### USB Board Connections

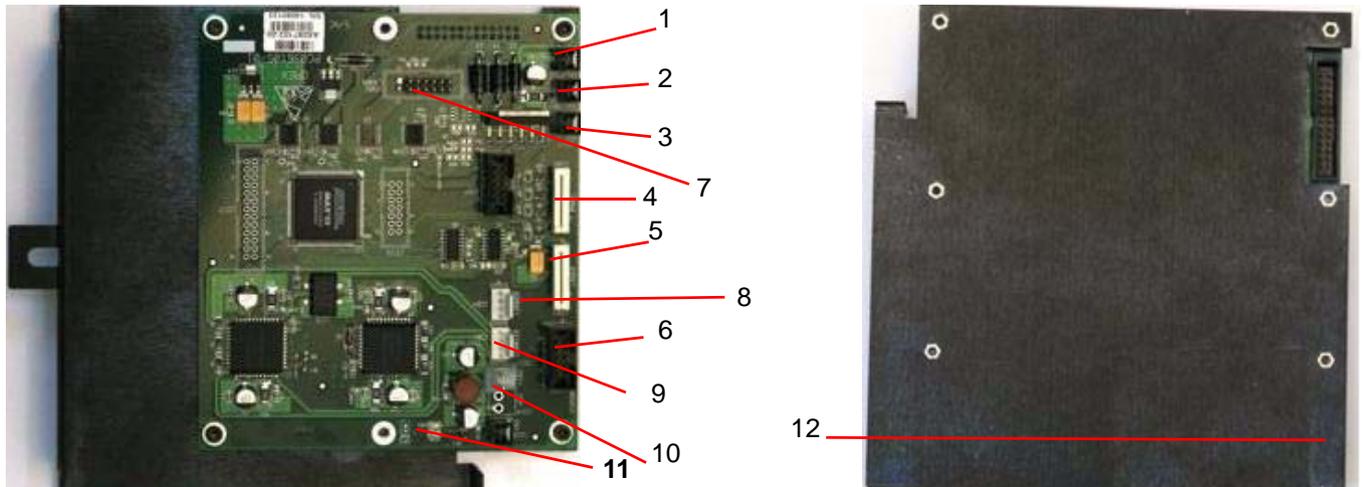
Connector	Destination		
Connector 1 J7	5 V/12 V Power Supply		
	Pin 1	White	5 V
	Pin 2	Brown	GND
	Pin 4	Green	12 V
Connector 2 J3	Flat cable to J1 on PM Board		
Connector 3 J1	Flex cable to J200 on Motion Board		
Connector 4 J11	Barcode Connection		
	Pin 1	Red	5V
	Pin 2	Black	Gnd
Connector 5 J6	Not in use		
Connector 6 J4	Barcode Connection		
	Pin 1	Purple	Signal
	Pin 2	Brown	Signal

## Motion Board

The Motion Board has the following functions:

- Controls the Loader and Roller Motors
- Controls the Erase Lamps
- Reads the Unit sensors and passes the information to the USB Board

### Motion Board



### Motion Board Connections

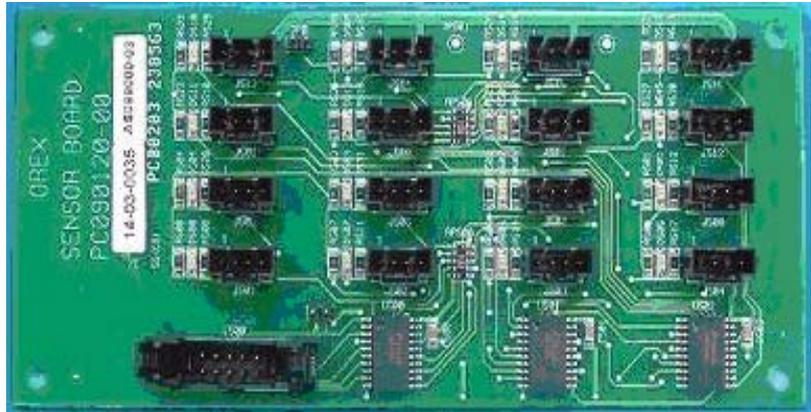
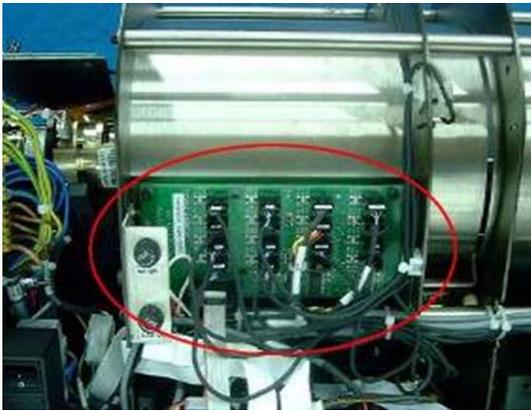
Connector	Destination		
Connector 1 J206	Connectors Panel (Rollers Motor)		
	Pin 1	orange	12 V
	Pin 2	pink	GND
	Rollers forward +12 V Rollers backwards -12 V Rollers stop 0 V		
Connector 2 J212	J212 on the Auto-loop Assembly		
Connector 3 J213	12 V Power Supply		
	Pin 1	red	12 V
Connector 4 J205	J1 on Front Panel LED Board		
Connector 5 J203	J401 on Laser Board		
Connector 6 J208	J500 on Sensor Board		
Connector 7 J202	J2 on Erase Lamps Inverters Assembly		
Connector 8 J204	Loader carrier		
	Orange + blue	130 Hz	load/unload
	Red + yellow	130 Hz	load/unload
Connector 9 J201	Stepper Motor		
	Yellow + green	11 KHz moving left/right; 0 KHz stop	
	Brown+ white	11 KHz moving left/right; 0 KHz stop	
Connector 10 J211	15 V Power Supply		
	Pin 1	black 1	GND
	Pin 2	black 2	15 V
Connector 11 J215	5 V Power Supply		
	Pin 1	brown	GND
	Pin 2	white	5 V
Connector 12	J302 on USB Board		

## Sensor Board

### Sensor Board Connections

The Sensor Board is a through board used to connect the sensors to the Motion Board.

### Sensor Board

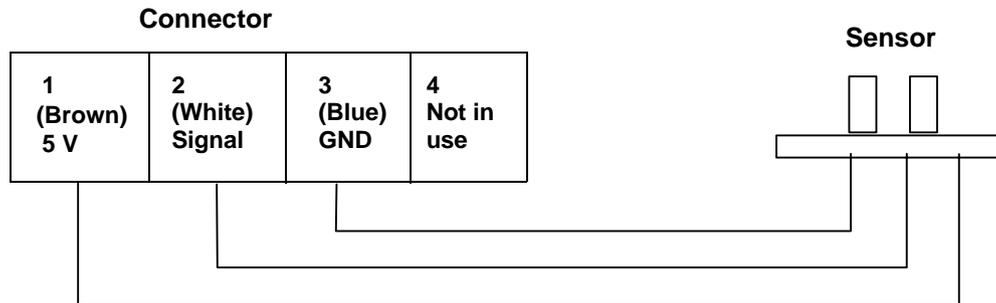


### Sensor Board Connections

J513 Cassette Presence Sensor	J514 Cassette Lock Sensor	J515 Right Limit Sensor	J516 Left Limit Sensor
J509 Roller Sensor	J510	J511 W0 Sensor	J512 15 x 30 Cassette Sensor
J505 Sensor 1 on the Drum	J506 Sensor 2 on the Drum	J507 Sensor 3 on the Drum	J508 Loader Sensor in Back Position
J501 Sensor 4 on the Drum	J502 Sensor 5 on the Drum	J503	J504 Auto-loop Sensor

J500 To J208 on Motion Board
------------------------------------

## Typical Sensor Connections



## Sensor Wiring Colors

Sensor	Wire No.	Wire Color	Signal
Sensor On (Flag in Sensor)	1	Brown	5 V always
	2	White	0 V
	3	Blue	GND always
	4	Not in use	
Sensor Off (Flag not in sensor)	1	Brown	5 V always
	2	White	5 V
	3	Blue	GND always
	4	Not in use	

Measuring voltage:

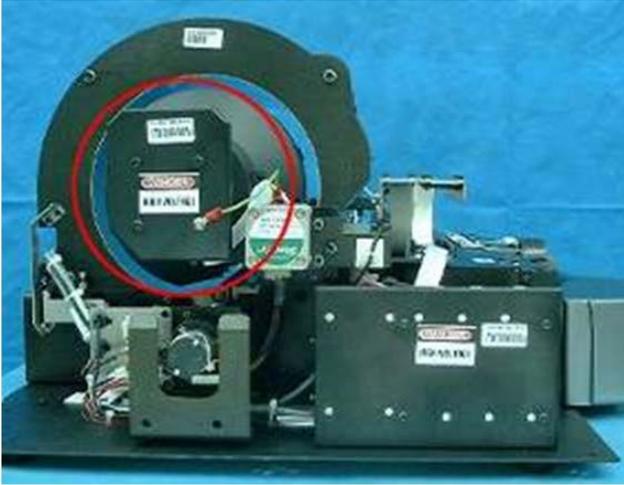
1. All sensors except J511: measure between pin 2 & 3 and insert object between sensors.
2. For J511 only: measure between pin 2 & pin 3 and insert a screen to system. The voltage should be between 4.5 - 5 V.

---

## PM Assembly

The Photo Multiplier (PM) Tube collects the photons emitted from the screen.

### PM and PM Board

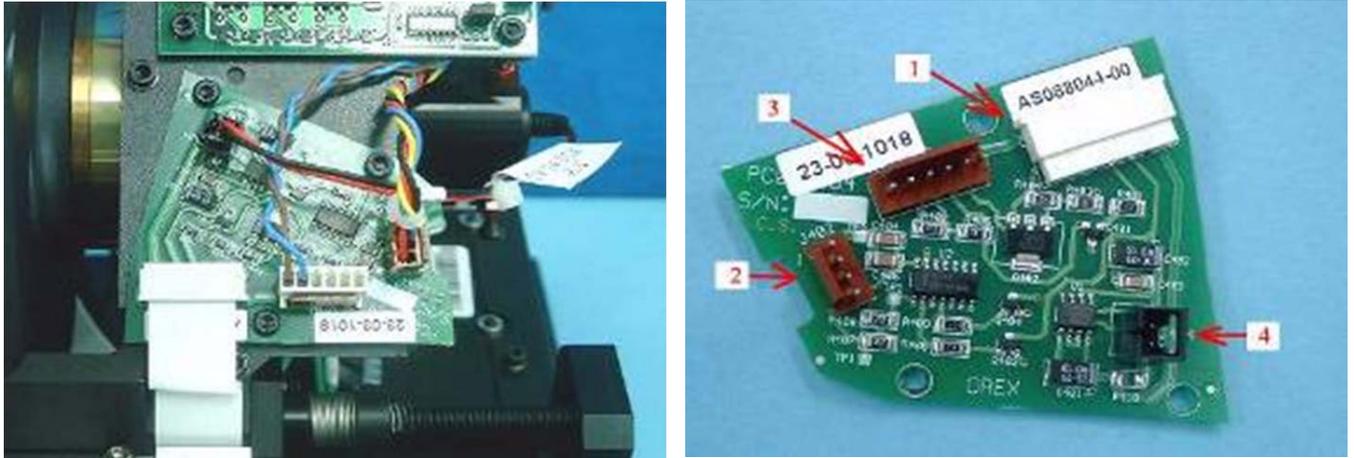


## Optical Head Assembly

The Optical Head Assembly includes the Laser Module and the Rotational Motor that rotates the Laser Tube and a mirror during scanning. The Laser Module's beam illuminates the Phosphor screen and the mirror collects the light reflected from the phosphor screen and directs it to the Photo Multiplier.

### Laser Board

#### Laser Board



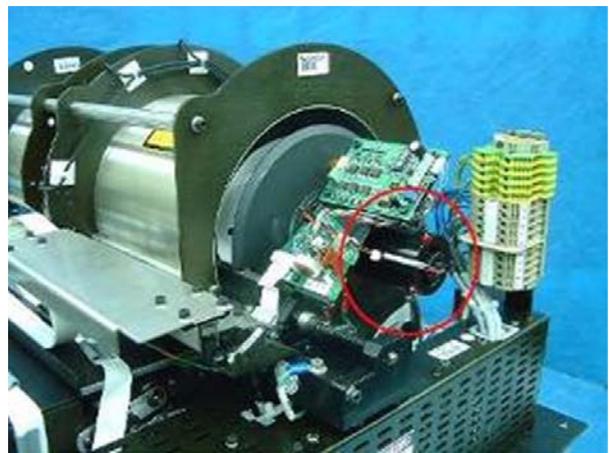
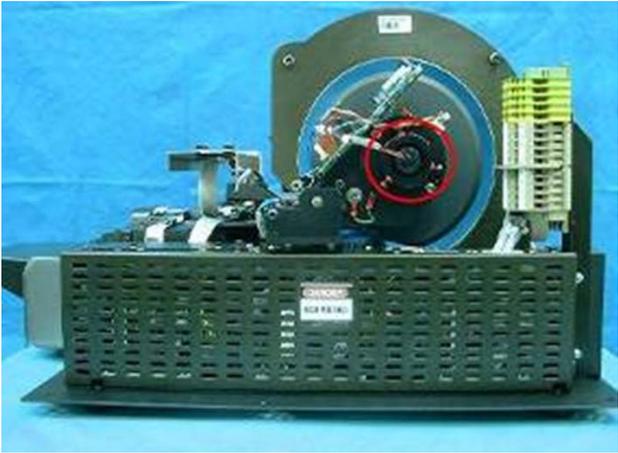
#### Laser Board Connections

Connector	Destination		
1	J401 on Motion Board CB080008		
2	J402 Encoder Reader CB090014		
	Pin 1	Red	GND
	Pin 2	Black	Index 41 ±0.5 Hz
	Pin 3	Blue	Encoder 41 ± 0.5 KHz
3	J403 Rotation Motor Board CB090040		
	Pin 1	Blue	GND
	Pin 2	Brown	12 V Rotation Motor - On
4	J404 Laser Assembly CB090029		
	Pin 1	Red	Laser On 3.3 V
	Pin 2	Black	GND

### Laser Tube

The Laser Tube emits the light to energize the phosphorus screen.

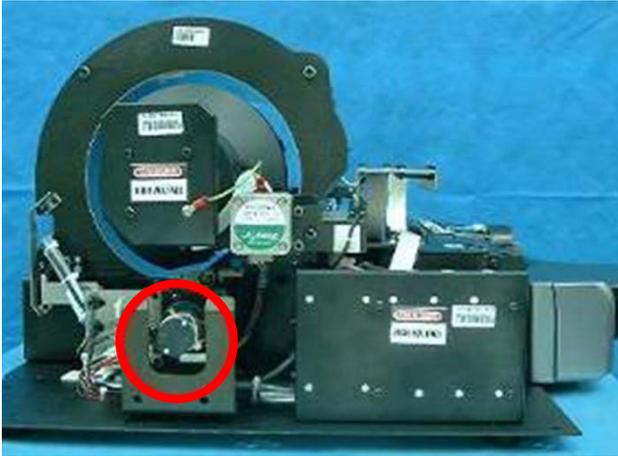
## Laser



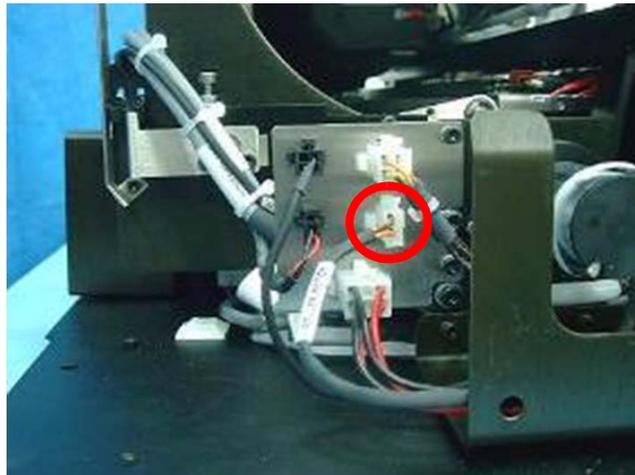
## Roller Motor Assembly

The Roller Motor Assembly pulls the phosphor screen from the Cassette into the Drum.

### Roller Motor



### Roller Motor Connector



### Note

Measure the voltage when the rollers are turning at full speed.

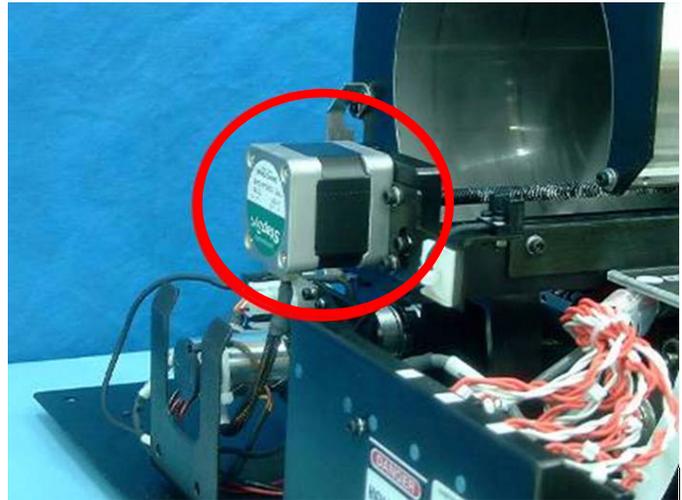
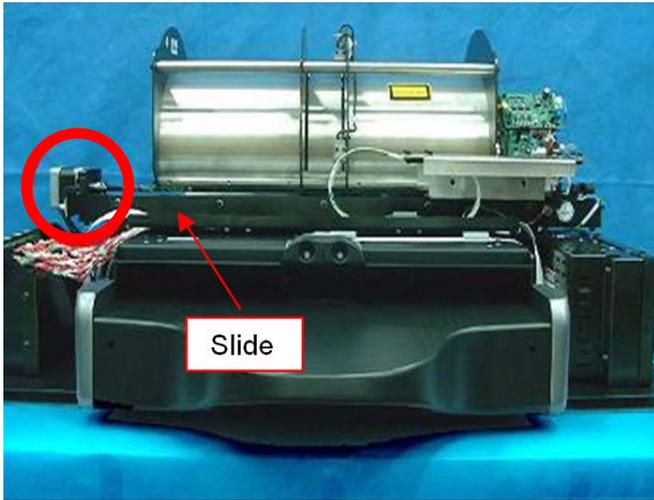
### Roller Motor Connector

Connector Panel to the Roller Motor		
Pin 1	Orange	Rollers forward +15V Rollers backwards -15 V Rollers stop 0 V
Pin 2	Brown	GND

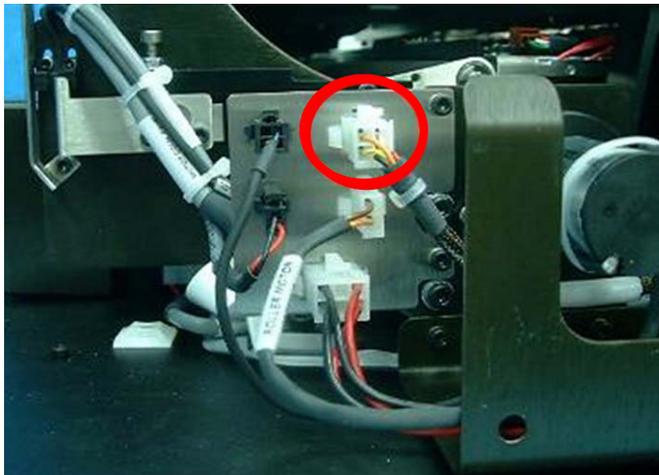
## Linear Slide Assembly

The Linear Slide Assembly moves the PM and the Laser within the Drum to read the Phosphor Screen.

### Linear Slide Assembly



### Linear Slide Stepper Motor Connector



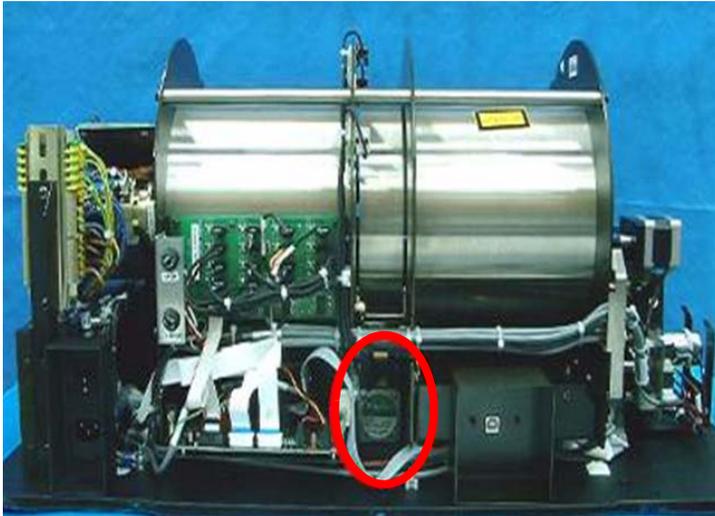
### Slide Stepper Motor Connector

Connector Panel to the Slide Stepper Motor CB 090077		
Pin 1	White	Phase A
Pin 2	Orange	Phase A
Pin 3	Yellow	Phase B
Pin 4	Black	Phase B

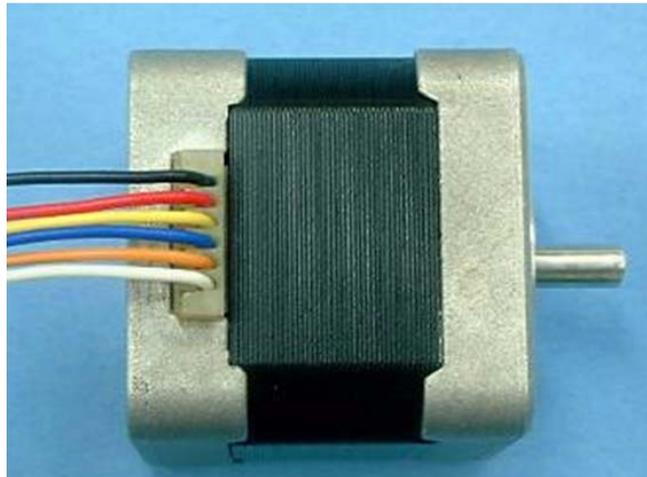
## Loader Stepper Motor Assembly

The Loader Stepper Motor Assembly operates the mechanism which extracts the phosphor screen from the cassette and assists in inserting the screen into the cassette.

### Carriage Stepper Motor



### Carriage Stepper Motor Wiring



### Loader Stepper Motor Wiring

J204 on Motion Board	
Orange + blue	130 Hz load/unload
Red + yellow	130 Hz load/unload
Black + white	not in use

## Power Supply Assembly

The AC/DC Power Supply provides DC power to the components of the unit.

### Power Supply Assembly



### Power Supply Connectors

Pin Number	System Type		Destination	Function
	<b>ACL2/4</b>	<b>PoC120/140</b>		
	Source: AC INPUT POWER			
	CB090065	CB090137	J211 on Motion Board	
Pin 1	Red	Black 1		15 V
Pin 2		Black 2		GND 0 V
	CB090071	CB 090141_a	J213 on Motion Board	
Pin 1		Black 1		12 V
	CB090064	CB090136-a	J215 on Motion Board	
Pin 3	Red	Brown		5 V
Pin 5	Black	White		GND 0 V
	CB090064	CB 090064_b	J305 on USB Board (power input)	
Pin 1	Red	White		12 V
Pin 2	Black	Brown		5 V
Pin 4	White	Green		GND 0 V
	CB090065	CB 090065_b	Fuses Connector	
Pin 1	Red	Black 1		15 V
Pin 2	Black	Black 3		GND
Pin 3	White	Black 2		15 V
Pin 4	Green	Black 4		GND 0 V

## Key Assembly and Tray Assembly

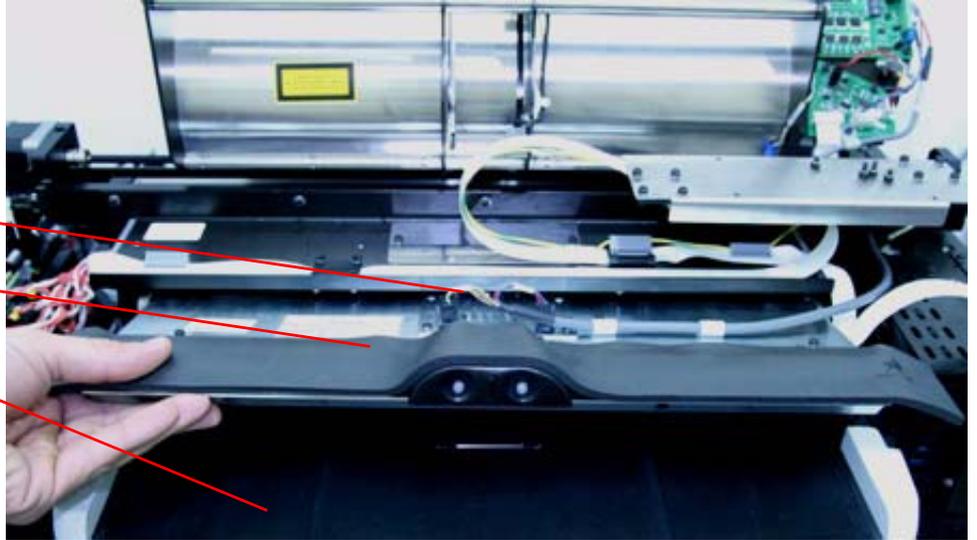
These complementary assemblies guide the cassette into the scanner and secure it in position for the duration of the scanning process. The Auto-loop mechanism which is attached to the Key Assembly, controls the distance that the screen is returned into the cassette at the end of the process.

### Auto-loop Key Assembly and Tray Assembly

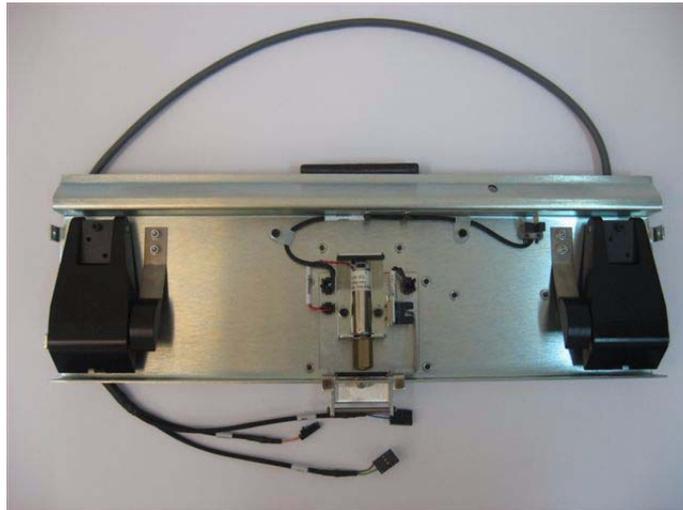
Auto-loop Solenoid

Key Assembly

Tray Assembly



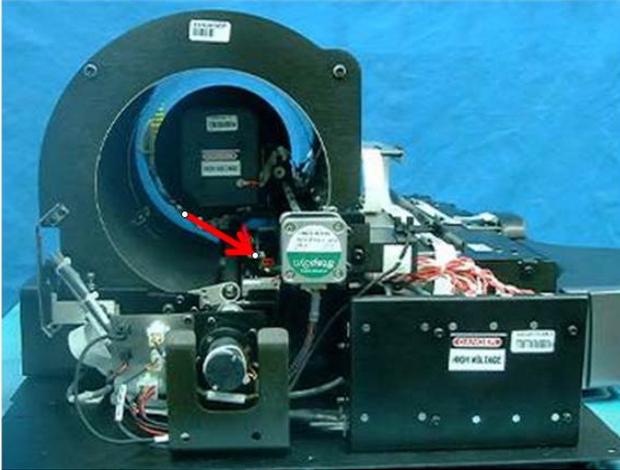
### Auto-loop Key Assembly



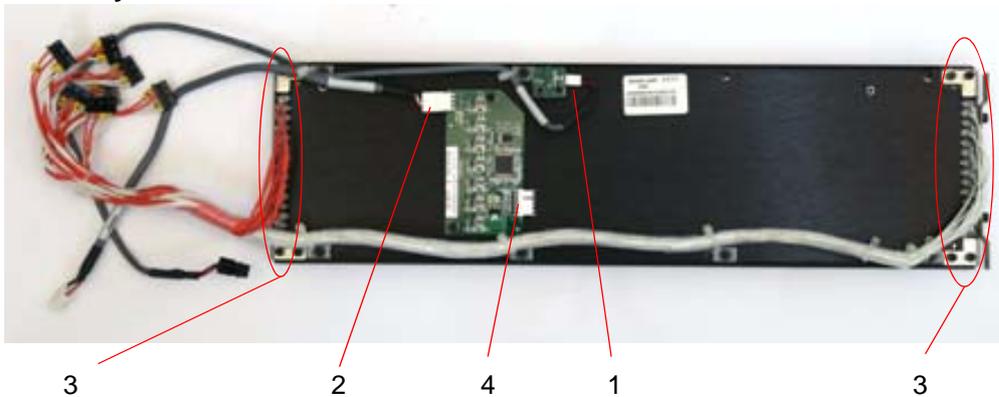
## Erase Lamps Assembly

The Erase Lamps brightly illuminate the phosphor screen to erase the image so that the screen is ready to be used again.

### Erase Lamps



### Erase Lamp Assembly



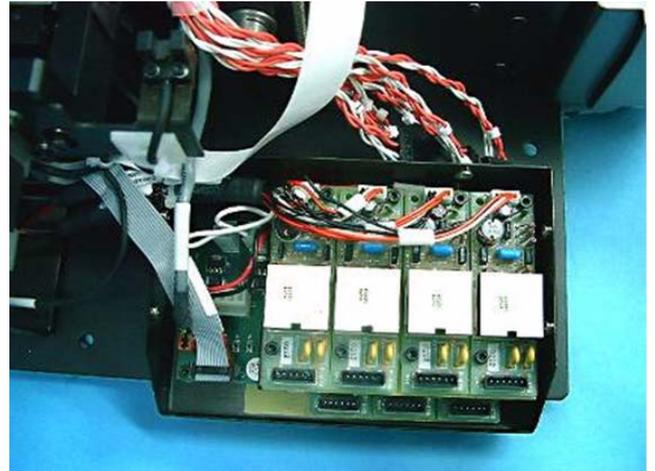
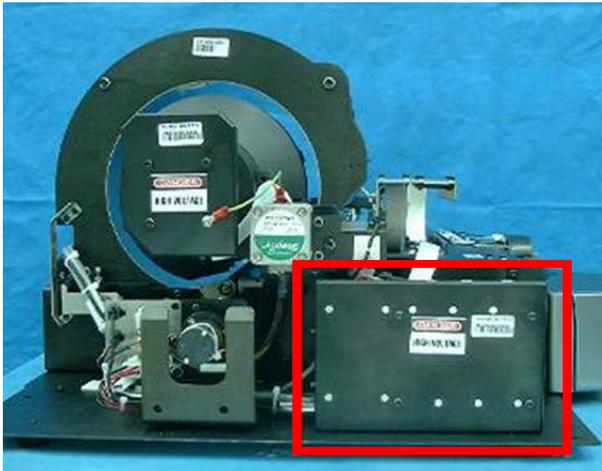
### Erase Lamp Voltages

Connector	Destination		
1	W0 Top to Connectors panel CB 090138		
	Pin 1	Brown	5 V
	Pin 2	White	GND 0 V
2	J1 CB 090140 Destination: Inverters		
	Pin 1	White	5 V
	Pin 2	Brown	Lamp on 0 V Lamp off 2.5-5 V
	Pin 3	Green	Lamp on 0 V Lamp off 2.5-5 V
	Pin 4	Yellow	GND
3	Inverters		
	AC high voltage		
4	Not in use		

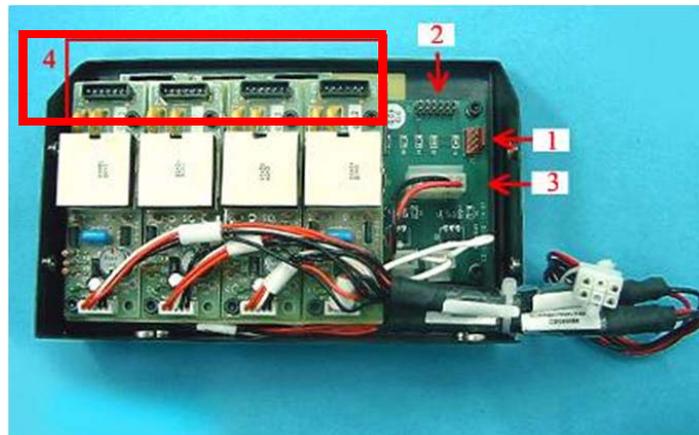
## Erase Lamps Inverter Assembly

The Inverter Assembly converts the 15 VDC input to a high voltage output to power the Erase Lamps.

### Erase Lamps Inverter Assembly



### Inverter Assembly Connections



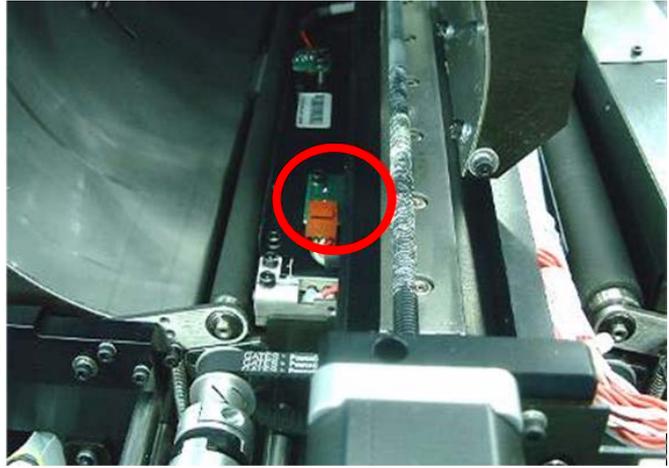
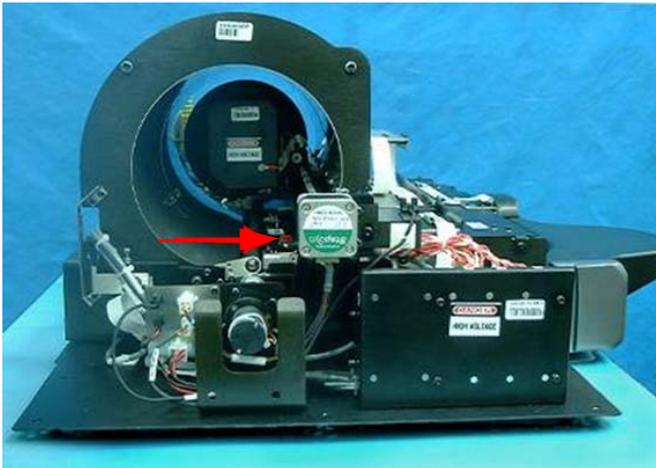
### Inverter Assembly Voltages

Connector	Destination		
1	J1 ON Lamp Sensor Board		
	Pin 1	White	5 V
	Pin 2	Brown	Lamp on 0 V Lamp off 2.5 - 5 V
	Pin 3	Green	Lamp on 0 V Lamp off 2.5 - 5 V
	Pin 4	Yellow	GND
2	J2 to J202 on Motion Board		
3	P2 on 15 V power supply		
	Pin 1	Red	15 V
	Pin 2	Black	GND
4	AC - High voltage to Erase Lamps		

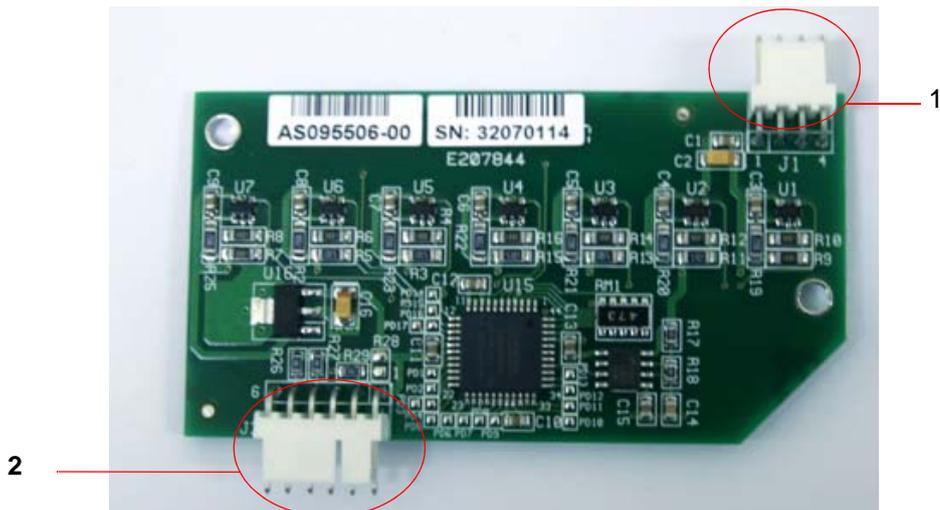
## Erase Lamp Sensor

The Erase Lamp Sensor detects an Erase Lamp failure.

### Erase Lamp Sensor



### Erase Lamp Sensor Connectors



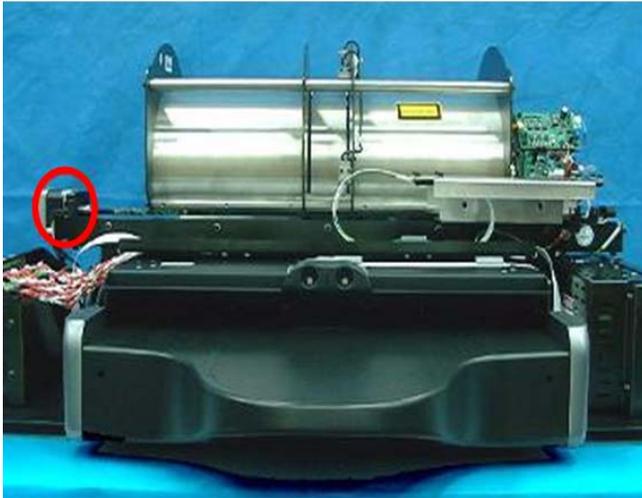
### Erase Lamp Sensor Voltages

1	Connected to Erase Lamp Board on the Inverter Assembly		
	Pin 1	White	5 V
	Pin 2	Brown	Sensor 1 Lamp on 0 V Lamp off 2.5 - 5 V
	Pin 3	Green	Sensor 2 Lamp on 0 V Lamp off 2.5 - 5 V
	Pin 4	Yellow	Ground
2	Not in use		

## Left Limit Sensor and Right Limit Sensor

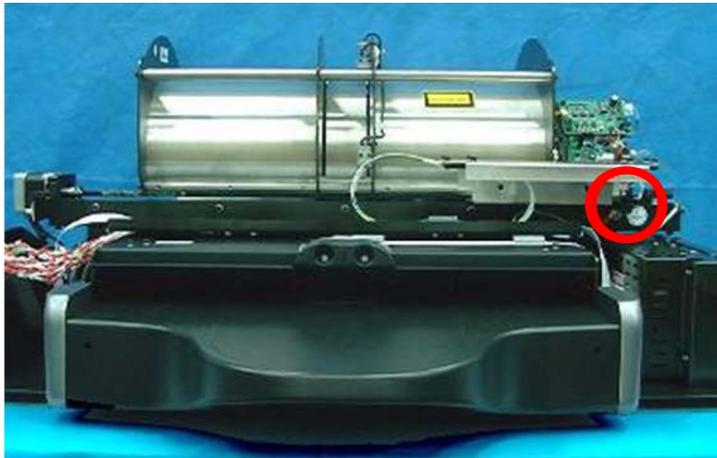
Refer to [“Sensor Board Connections” on Page 22](#) for information on wiring connections.

### Left Limit Sensor



Refer to [“Sensor Board Connections” on Page 22](#) for information on wiring connections.

### Right Limit Sensor

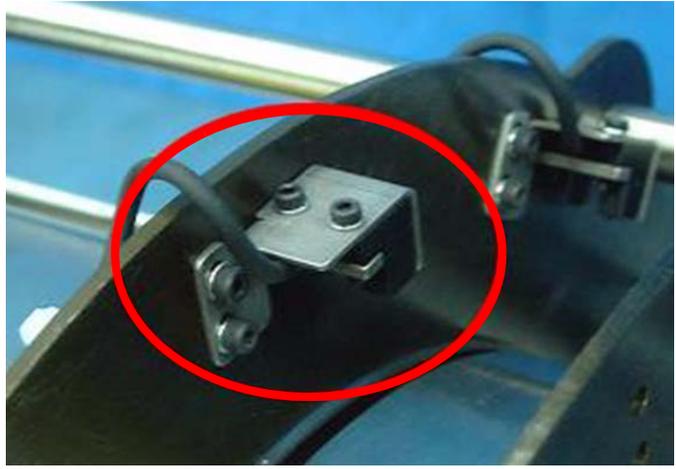
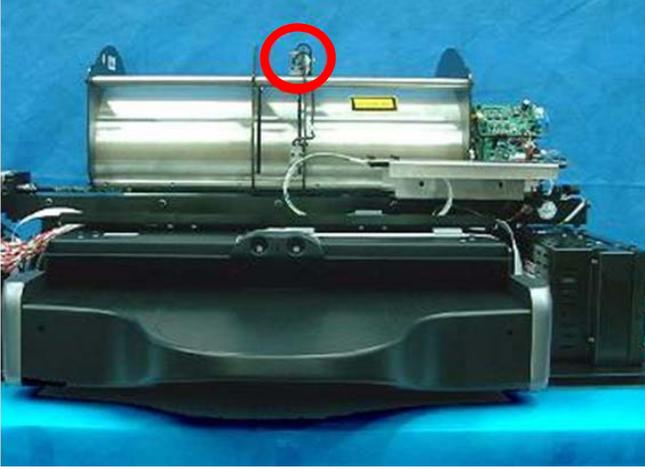


---

## Screen Size Sensor

There are four Screen Size Sensors that determine the size of the CR screen by the location of the screen guide that is positioned by the screen as it is inserted into the drum.

### Screen Size Sensor

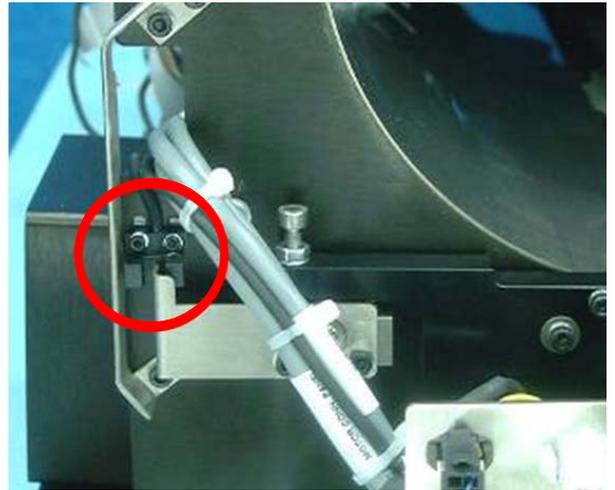
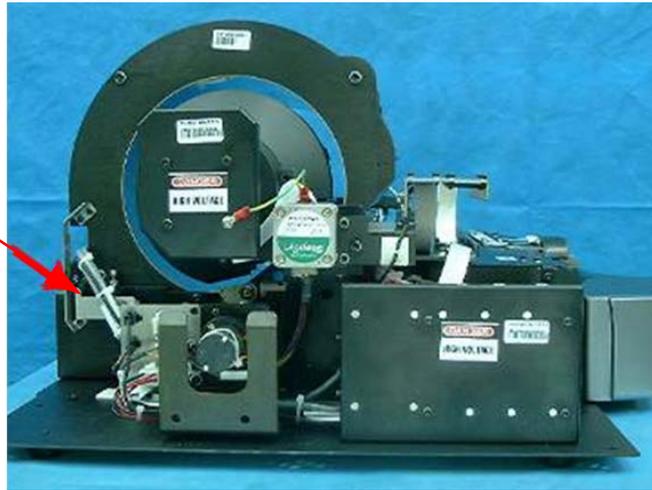


Refer to [“Sensor Board Connections” on Page 22](#) for information on wiring connections.

## Roller Sensor

The Roller Sensor detects when the screen enters and exits the rollers.

### Roller Sensor



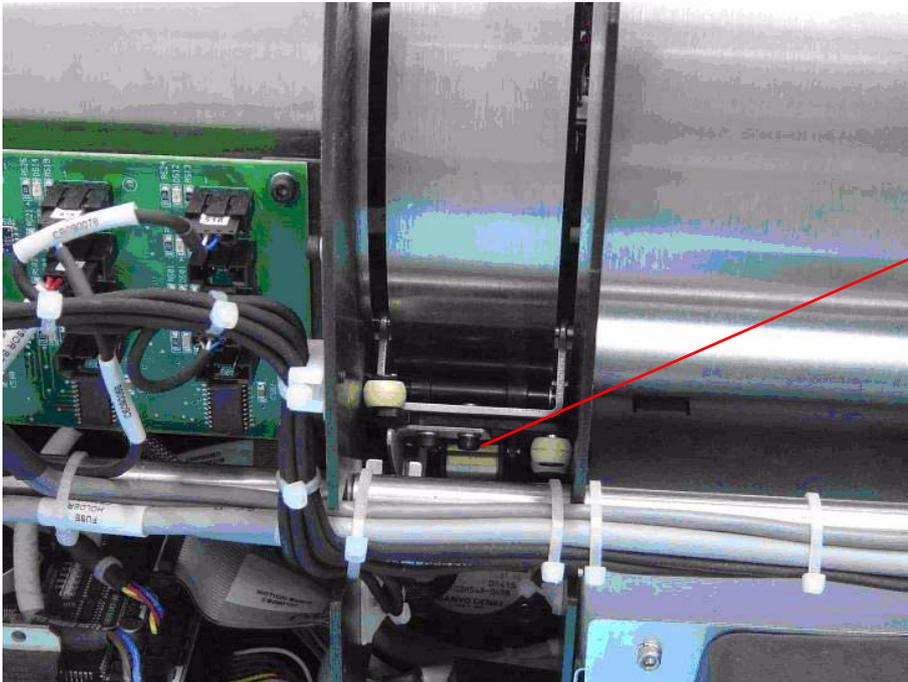
---

## Z0 Sensor

The Z0 Sensor detects the presence of the screen in the Drum.

Refer to [“Sensor Board” on Page 22](#) for information on wiring connections.

### Z0 Sensor



Z0 Sensor

## WO Sensor

The WO Sensor determines the activation and deactivation of the rollers according to screen presence at the entrance to the Drum. The sensor has two parts, the Transmitter below the screen path which is accessible from the bottom Service Panel; and the Receiver above the screen path which is inside the Drum.

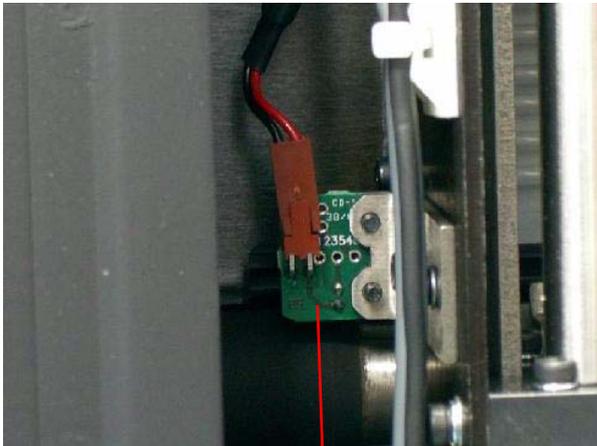
Refer to [“Sensor Board” on Page 22](#) for information on wiring connections.

### Top WO Sensor

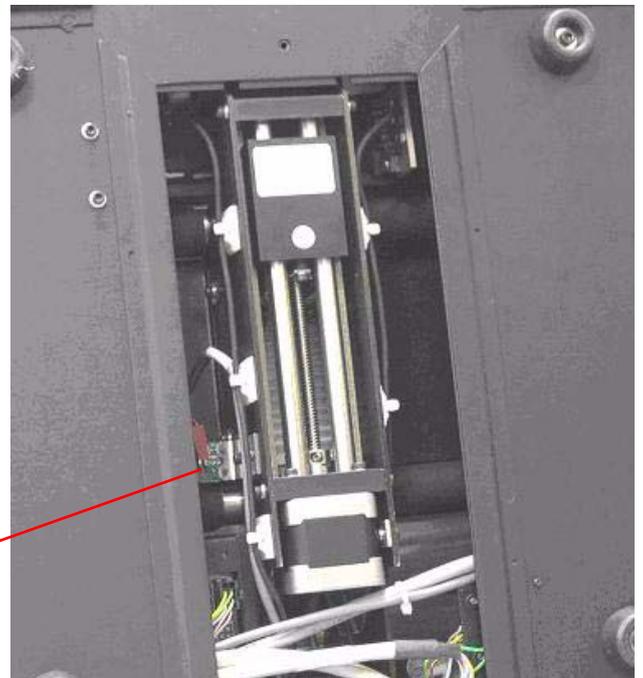
Top WO Sensor  
(receiver)



### Bottom WO Sensor



Bottom WO Sensor  
(transmitter)





---

## Section 3: Service Procedures

---

### Service Tools

The following is a list of tools required for service operations:

- *Phillips* (cross) screwdriver (medium)
- Allen wrenches (metric): 1.5, 2, 2.5, 3, 4
- Cutters
- Long-nose pliers
- Digital voltmeter (DVM)
- ROM Chip (flash) extractor

### Removing the Service Panel and Scanner Cover

---

#### Tools Required

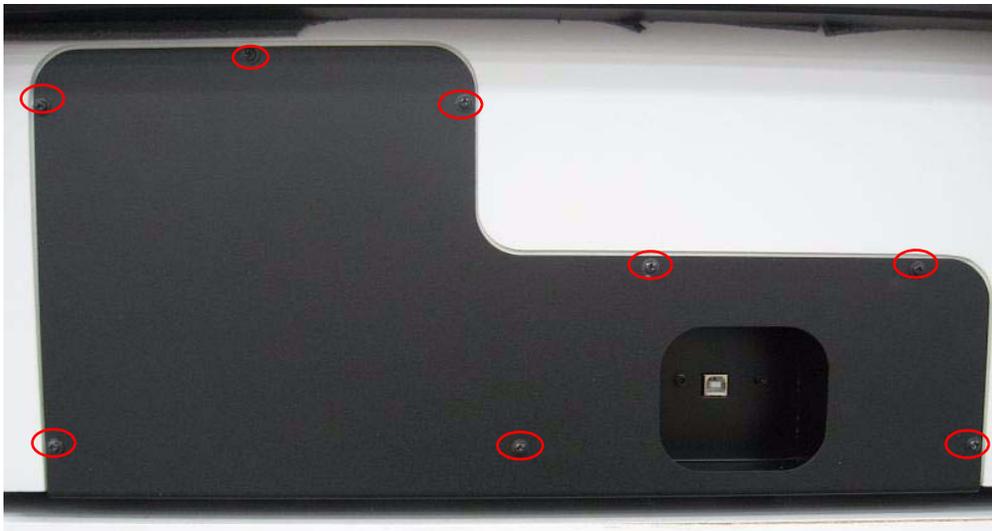
*Phillips* screwdriver (medium)

---

#### Removing the Service Panel

- [1] Switch OFF the Unit.
- [2] Remove the power cord from the Main Socket.
- [3] Detach the Power Cord from the back of the Unit.
- [4] Detach the USB cable.

#### Service Panel Screws



- [5] Remove the screws securing the Service Panel on the rear of the unit, and remove the Service Panel.

---

## Removing the Scanner Cover



### Laser Warning

Do not operate the unit while the laser is connected without proper eye protection. Safety glasses, (see [“Laser Safety Instructions” on Page 12](#)) must be worn by all personnel in the area of the unit! Authorized personnel only may remove the cover. Before operating the unit without the cover, disconnect the laser. (See [“Disconnecting the Laser” on Page 44.](#))

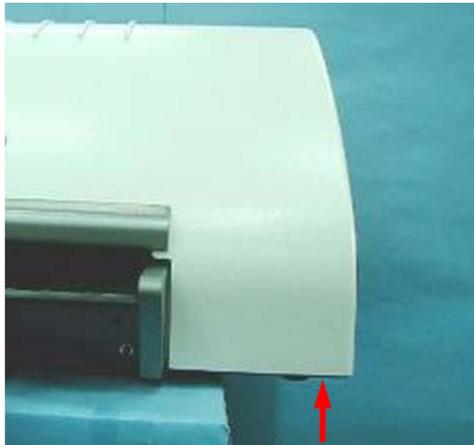
- [1] Pull the scanner to the edge of the table so that one side is extended over the table edge to gain access to the cover screws on that side and remove them.
- [2] Pull the scanner to another side of the table, and remove the screws on that side; and so on, until all fourteen screws are removed.



### Caution

To remove screws from the bottom of the unit, do not turn it on its back. Move the unit to the edge of the worktable to gain access from below.

### Access to Cover Screws



### Cover Screws



- [3] Lift the cover off.

## Reinstalling the Scanner Cover and Service Panel

- [1] Reverse the above steps to reinstall the cover.

---

## Disconnecting the Laser

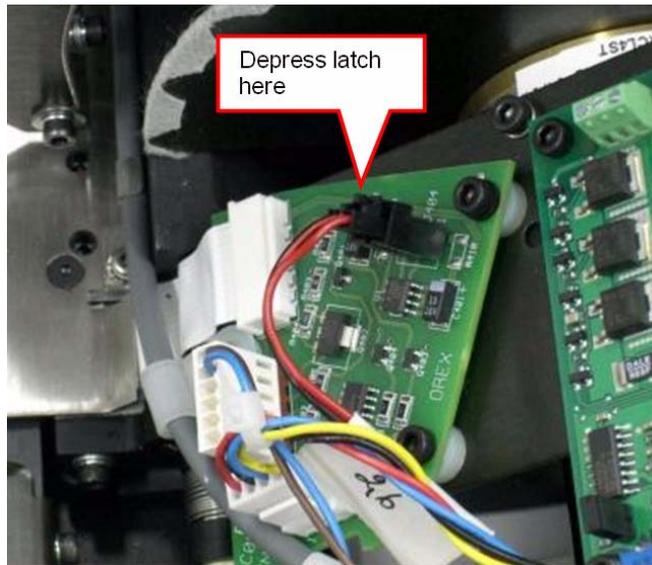


### Important

The Laser must be disconnected before performing any procedures that do not demand a functioning laser during servicing.

[1] Remove the Main Cover, (see [See "Removing the Service Panel and Scanner Cover" on Page 41.](#)).

### Laser Connector on the Laser Board



[2] Disconnect the Laser Connector from the Laser Board. Depress the latch of the connector firmly to release it.

[3] Reconnect the Laser only after all repairs are complete.

[4] Reinstall the Main Cover.

## Replacing the Fuses

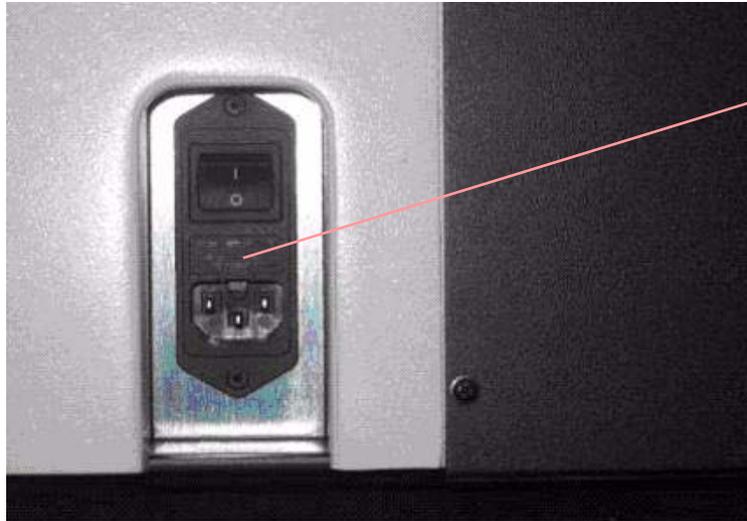
### Tools Required

- Flat screwdriver
- Replacement fuse

### Procedure

- [1] Switch OFF the power and remove the power connector from the system.
- [2] Locate the Fuse Drawer on the power inlet module.

### Location of Fuses



Pry out gently from this plastic tab.

- [3] Open the drawer using flat screw driver, prying gently from the plastic tab.
- [4] Remove the blown fuse and replace it with a new one.
- [5] Close the Fuse Drawer.
- [6] Turn on the system and verify that it functions properly.

---

# Power Inlet Module Replacement

---

## Tools Required

- 5.5 mm Socket wrench
- 7.0 mm Socket wrench
- 2.5 x 75 mm flat screwdriver

---

## Procedure



### Laser Warning

To avoid possible eye damage, before performing this procedure disconnect the Laser as described in [“Laser Board Replacement” on Page 54](#). For additional laser precautions see [“Disconnecting the Laser” on Page 44](#).



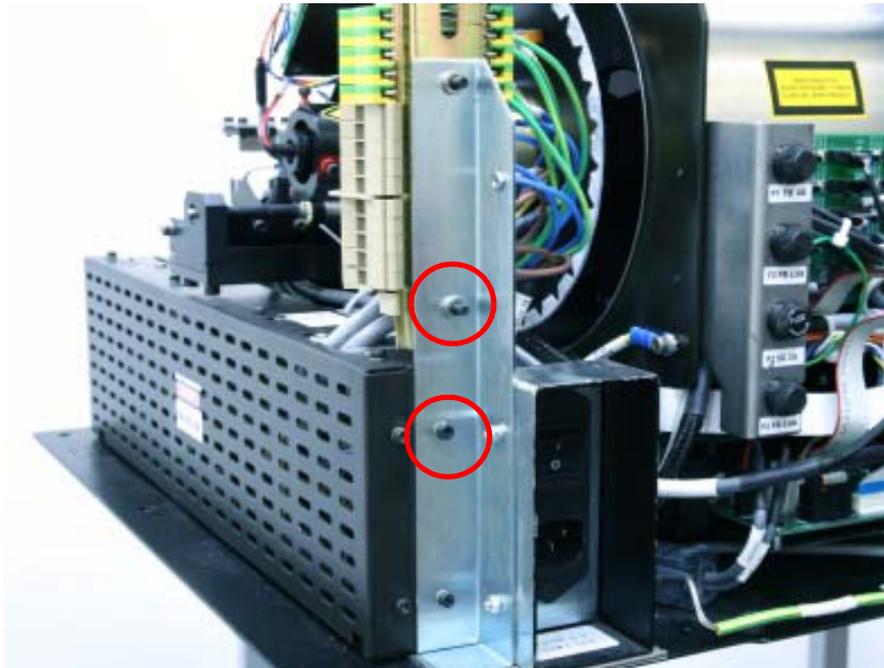
### Important

Before performing this procedure:

- Switch off the Scanner.
- Remove the power cord from the main socket.
- Detach the Power Cord from the back of the Scanner.

[1] Remove the Back Panel and the Main Cover (See [“Removing the Service Panel and Scanner Cover” on Page 41](#).)

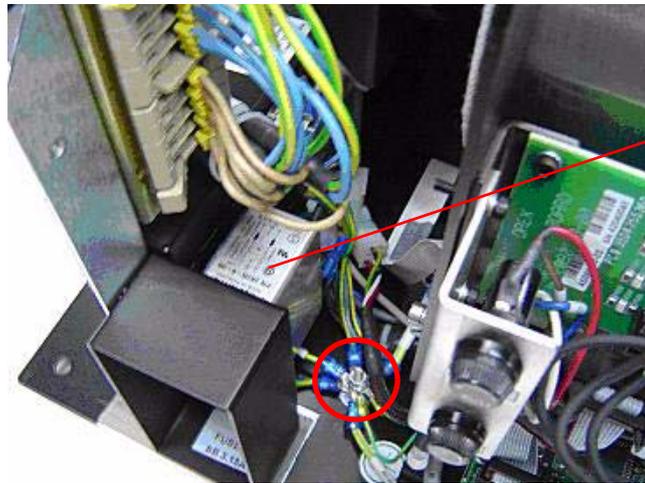
## Nuts Securing the Module



[2] Open:

- Nuts on the side of the module
- Nut on the ground stud and remove the Line Filter Wire from the stud. Do not try to detach it from the Power Module. (See Figure [“Nuts Securing the Module” on Page 46](#).)

### Line Filter Wire Attached to Ground

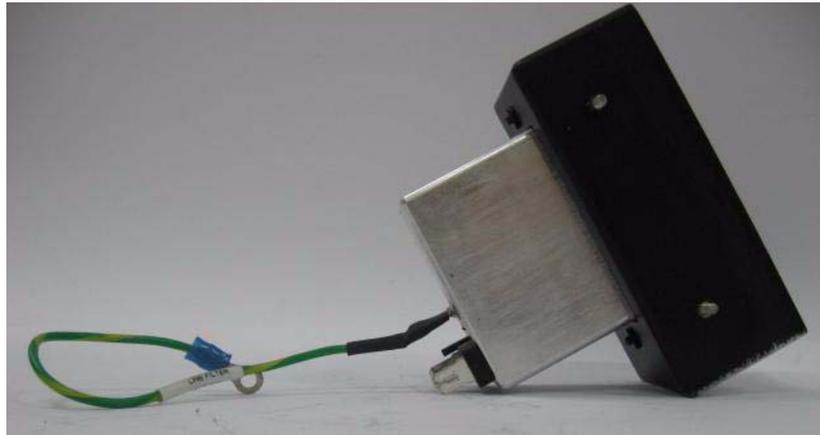


Power Inlet  
Module

[3] Disconnect the black numbered wires from the line filter on the input module.

[4] Remove the module and install the new one.

### Side View of Power Module Showing Connection Tabs



[5] Connect:

- Black numbered wires to the connection tabs of the new module.
- Yellow ground wire to the ground stud and tighten the nut

[6] Secure the input module to its location with the two nuts.

[7] Close the covers.

[8] Connect the system to the main power and confirm that the system is operating properly.

---

## USB Board Replacement

---

### Tools Required

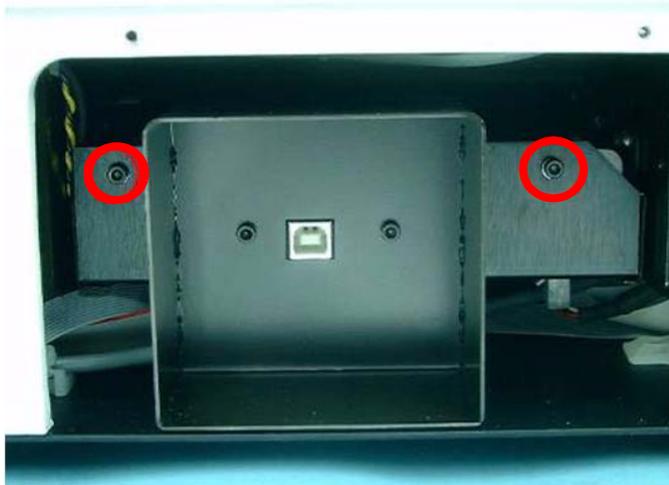
2.0 mm Allen wrench

---

### Removing the USB Board

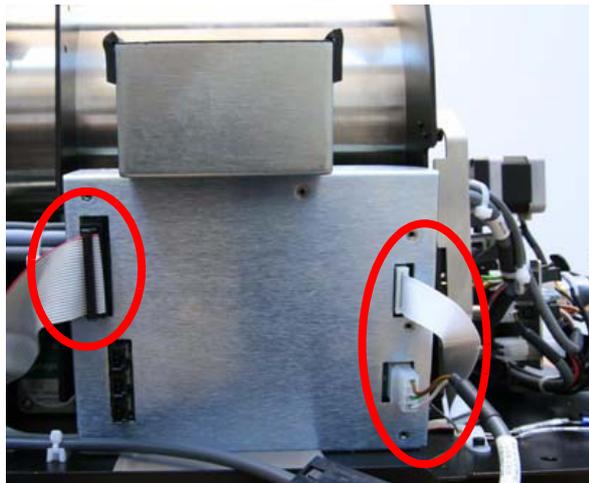
- [1] Disconnect the Scanner from the main power.
- [2] Remove the Service Panel (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### USB Cover



- [3] Remove the 2 USB cover screws.

#### USB Board Connectors



- [4] Pull the USB Board out and disconnect the cables from the bottom of the board.
- [5] Slide the USB Board out of the scanner.

---

### Replacing the USB Board

- [1] Slide the USB Board into the scanner.
- [2] Reconnect the connectors.
- [3] Insert the USB cover and fasten the USB cover screws.
- [4] Perform the test procedures in the section below before assembling the Scanner Cover.

- [5] Assemble the Service Panel.
- [6] Perform calibration as outlined in [“Calibrations” on Page 107](#).

---

## Test Procedure



### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

- [1] Confirm that the USB Board functions by performing the following test:
  - (a) Make sure that the computer recognizes that a USB device has been connected. The USB device icon should appear in the system tray in the lower right corner of the screen.
  - (b) Perform:
    - Scan without the cover in place. The preview image should be black.
    - Scan with the cover in place, without tightening the screws. The preview image should be white.
  - (c) Tighten the screws.
  - (d) Perform a scan with an actual image and check image quality and position.
  - (e) Open the “About” screen in Setup, and check that the version number of the hardware and software are correct.

---

## Motion Board Replacement

---

### Tools Required

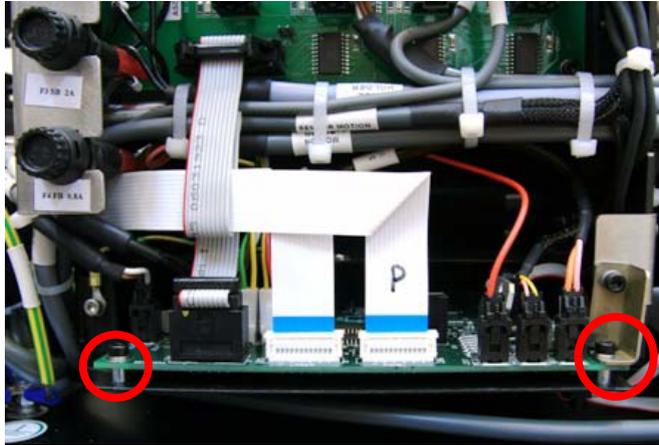
2.0 mm Allen wrench

---

### Removing the Motion Board

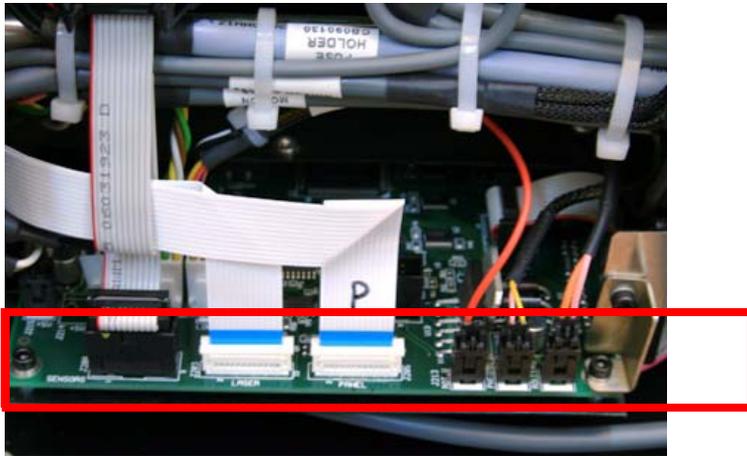
- [1] Disconnect the Scanner from the main power.
- [2] Remove the service panel (see [See “Removing the Service Panel and Scanner Cover” on Page 41.](#)).

#### Motion Board Bracket Screws



- [3] Remove the two 2.5 mm *Allen* screws securing the Motion Board bracket and pull the Motion Board forward

#### Motion Board Connectors



- [4] Disconnect the cables from the Motion Board.

---

### Replacing the Motion Board

- [1] Slide the Motion Board into the scanner housing.
  - [2] Reconnect the connectors to the Motion Board.
  - [3] Insert the two Motion Board retaining screws.
  - [4] Assemble the Service Cover.
- 

### Test Procedure

- [1] Verify that the Motion Board functions properly by operating the system.

## Sensor Board Replacement

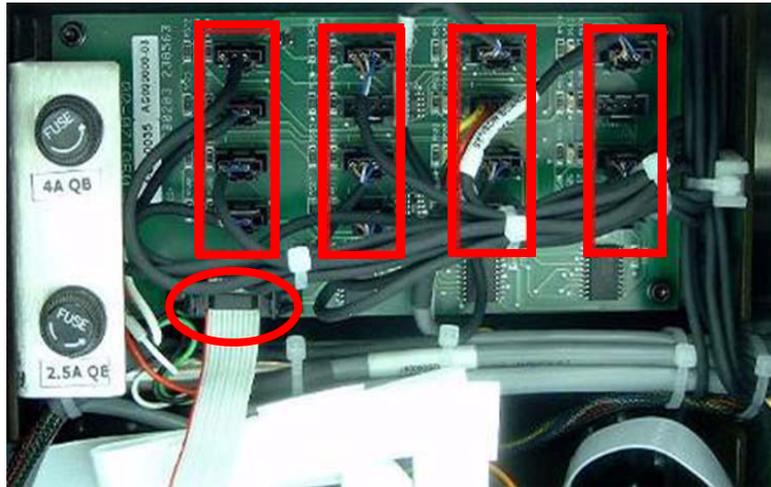
### Tools Required

2 mm Allen wrench

### Removing the Sensor Board

[1] Remove the Service Panel (see [See "Removing the Service Panel and Scanner Cover" on Page 41.](#)).

#### Sensor Board Connections



[2] Remove the electrical connectors from the Sensor Board.

#### Sensor Board Screws



[3] Remove the four 2.5 mm Allen screws securing the Sensor Board.

### Replacing the Sensor Board

[1] Insert the four Sensor Board retaining screws.

[2] Insert the connectors to the Sensor Board.

#### Note

Each connector is marked with a number to indicate its location.

[3] Assemble the Service Cover.

### Test Procedure

[1] Verify that the Motion Board functions properly by operating the system.

---

## PM Tube and PM Board Replacement

---

### Tools Required

3.5 mm Allen wrench

---

### Removing the PM Tube



#### Laser Warning

To avoid possible eye damage, before operating the unit without the cover, disconnect the laser (see [“Disconnecting the Laser” on Page 44](#)). For additional laser precautions see [“Laser Safety Instructions” on Page 12](#). Only authorized personnel may remove the cover.

[1] In the **Diagnostic** tab and move the optical head to the left position.

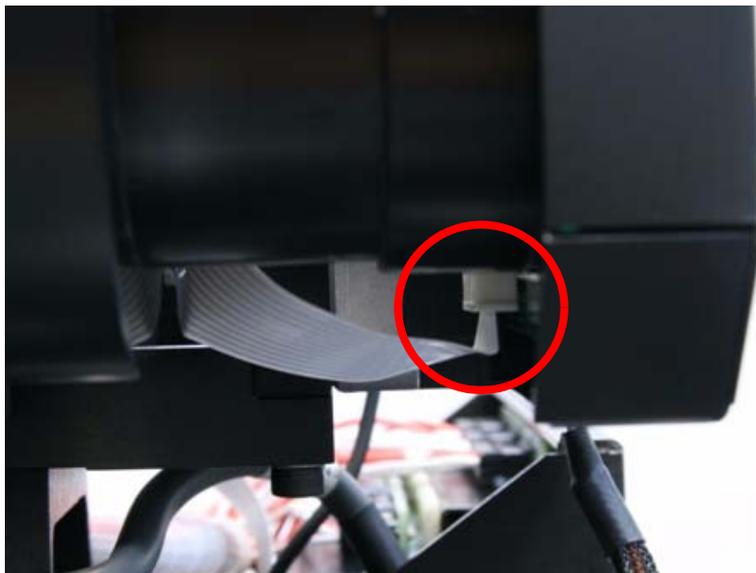
[2] Remove the scanner Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### PM Ground Wire



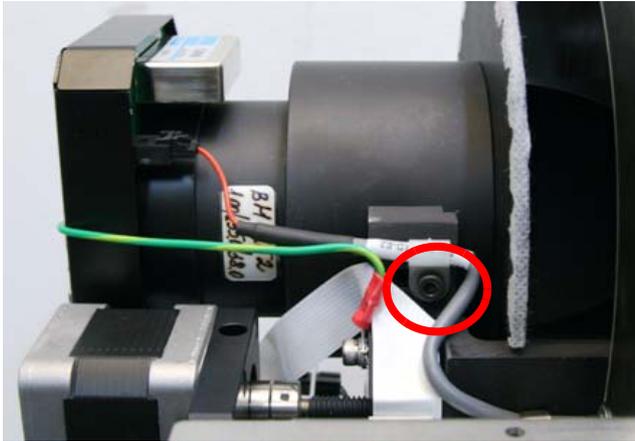
[3] Disconnect the 3.0 mm Ground wire connector to the Slide body from the PM Tube.

#### Connector to the PM Board



[4] Disconnect the flex cable from its connector at the bottom of the PM Board.

PM Assembly Screw (one side shown)



PM Assembly Lower Screw



- [5] Remove the 4.0 mm retaining screws securing the PM Assembly to the bracket.
- [6] Remove the PM Tube.

## Replacing the PM Tube

### Note

Bracket retaining screws: There are two sizes of screw; the right-side screw is long, and the bottom screw is short.

- [1] Insert the short 4.0 mm Bottom Bracket retaining screw, but do not tighten it yet.
- [2] Insert and leave loose the long 4.0 mm right-side bracket retaining screw.
- [3] Push the PM Tube forward towards the Drum until the screws line up with the holes, and tighten the retaining screws.
- [4] Reconnect the Blue Ribbon USB Connector to the bottom of the PM Tube.
- [5] Insert the Blue Ribbon USB Cable into the plastic clip on the PM Tube.
- [6] Reconnect the 3.0 mm ground wire connector to the Slide body.
- [7] Test Procedure (1): perform a scan, and make sure that the image is completely black with the cover off.
- [8] Assemble:
  - Scanner Cover
  - Service Panel
- [9] Test Procedure(2): perform a scan, and make sure that the image is completely white with the cover in place.
- [10] Test Procedure (3): perform an Offset Calibration as outlined in ["Nominal Calibration" on Page 107](#) and make sure you get a "Calibration successfully completed" message.

---

# Laser Board Replacement

---

## Tools Required

2.5 mm Allen wrench



### Laser Warning

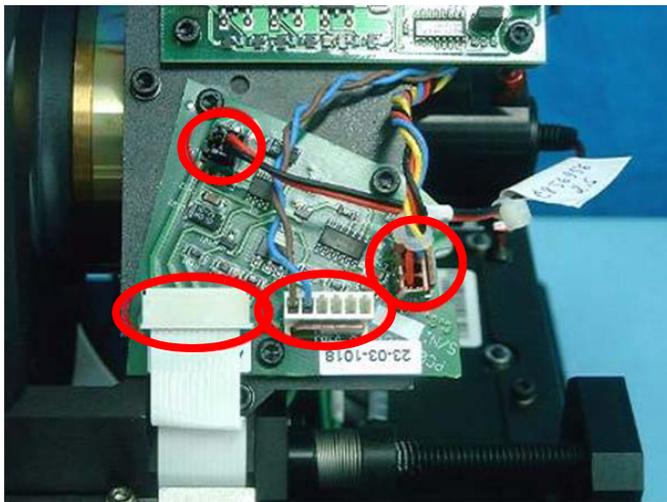
To avoid possible eye damage, before operating the unit without the cover, disconnect the laser (see [“Disconnecting the Laser” on Page 44](#)). For additional laser precautions see [“Laser Safety Instructions” on Page 12](#). Only authorized personnel may remove the cover.

---

## Removing the Laser Board

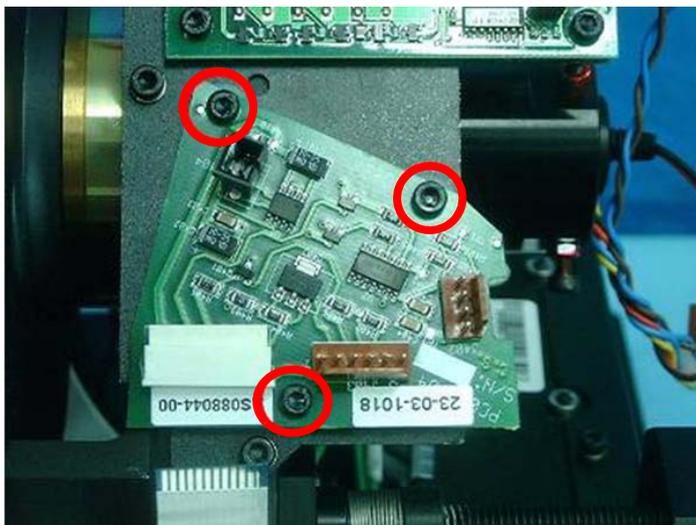
- [1] Disconnect the Scanner from the main power.
- [2] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

### Laser Board Connectors



- [3] Disconnect the cables from the Laser Board.

### Laser Board Screws



- [4] Remove the three 3.0 mm Allen screws securing the Laser Board, and remove the board.

## Replacing the Laser Board

- [1] Insert the three 3.0 mm retaining screws.
- [2] Reconnect the cables to the Laser Board.
- [3] Perform the test procedures in the section below, before replacing the Scanner Cover.
- [4] Assemble:
  - Scanner Cover
  - Service Panel

## Test Procedure

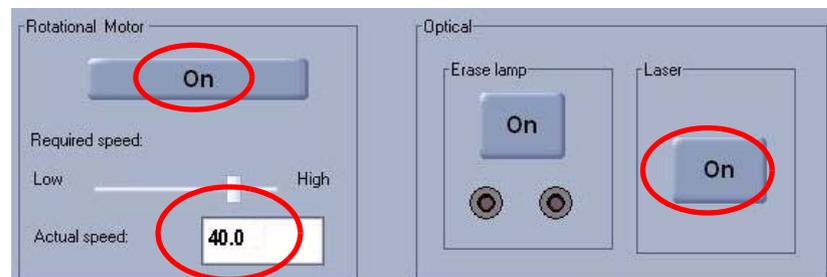


### Laser Warning

If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

- [1] Confirm that the Laser tube functions by the following test:
  - (a) Check that the red line on the tube is in line with the red sign on the Rotation Motor Bracket
  - (b) Log in to Technician mode.
  - (c) Click the “Diagnostics” tab in “Setup.”
  - (d) Perform a scan with the Cover open. Make sure that the Laser unit is functioning properly and that a steady beam is produced.
- [2] Perform the following test to confirm that the board is functioning properly.
  - (a) Login in Technician mode.
  - (b) Click the “Diagnostics” tab in Setup.

### Laser Operation



- (c) Activate:
  - Laser unit by clicking [On] (See Figure [“Laser Operation” on Page 55.](#))
  - Rotational motor by clicking [On]
- (d) Make sure that the value  $40 \pm 0.5$  appears in the speed window.

---

## Roller Motor Replacement

---

### Tools Required

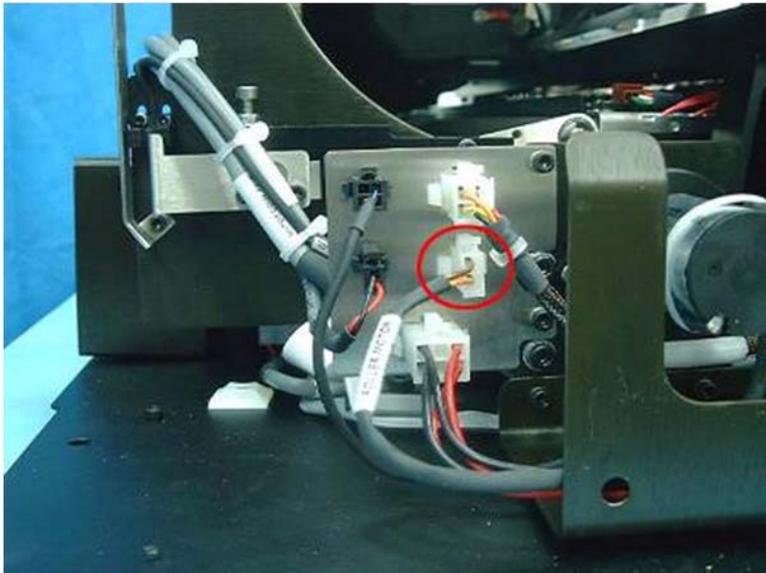
- 1.5 mm Allen wrench
- 2.5 mm Allen wrench
- Cutter
- 2.5 mm x 100 mm plastic ties

---

### Removing the Roller Motor

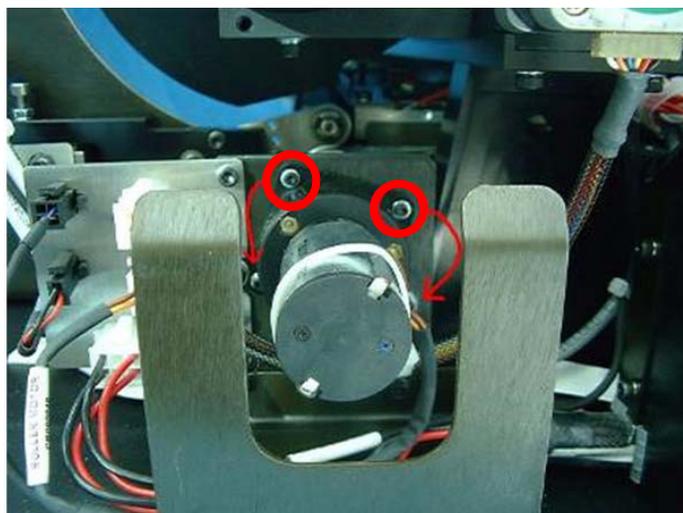
- [1] Disconnect the Scanner from the main power.
- [2] Remove the Service Panel and Scanner Cover. (see ["Removing the Service Panel and Scanner Cover" on Page 41](#)).
- [3] Cut the plastic cable ties tying the Roller Motor cable.
- [4] Disconnect the white Roller Motor Connector from the Connector Panel.

### Roller Motor Connector



- [5] Remove the four 2 mm screws from the base of the Roller Motor and pull back the Roller Motor.

### Roller Motor Screws



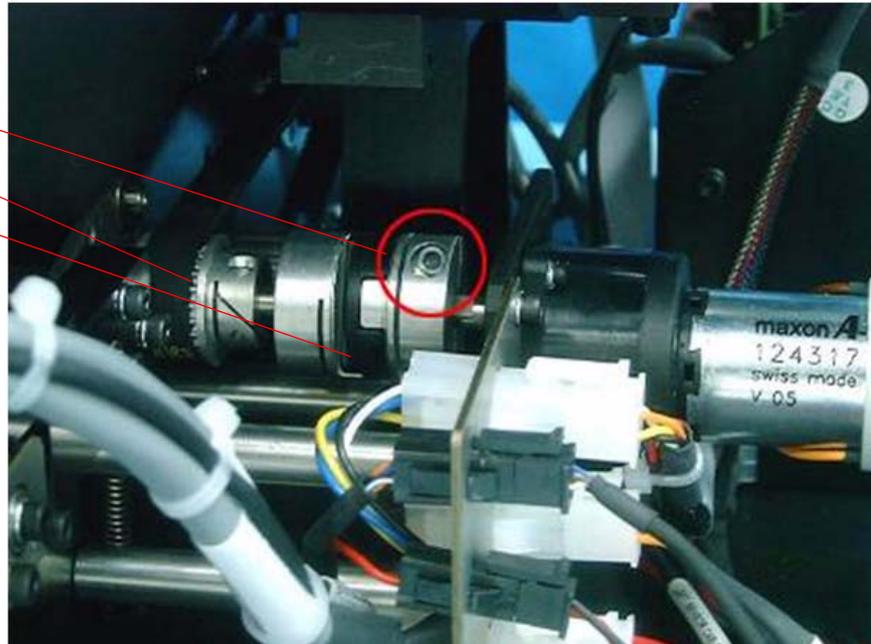
[6] Remove the Drive Adaptor from between the Motor Drive and the Roller Drive.

### Roller Motor Drive retaining screw

Motor Drive Retaining  
Screw

Roller Driver

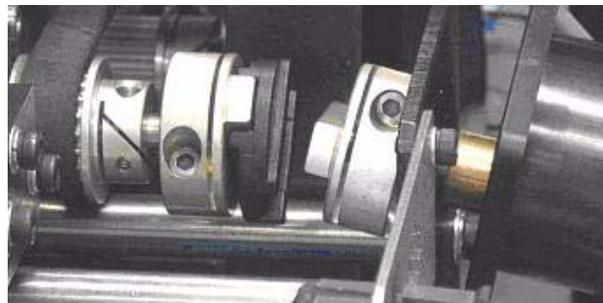
Drive Adaptor



[7] Loosen the 3.0 mm retaining screw on the Motor Drive, and pull the Roller Motor out from the Motor Drive.

## Replacing the Roller Motor

### Roller Motor Drive



[1] Insert:

- Roller Motor into the Motor Bracket
- Motor Drive into the Roller Motor completely, and tighten the 3.0 mm retaining screw

### Drive Adaptor



alignment  
channel

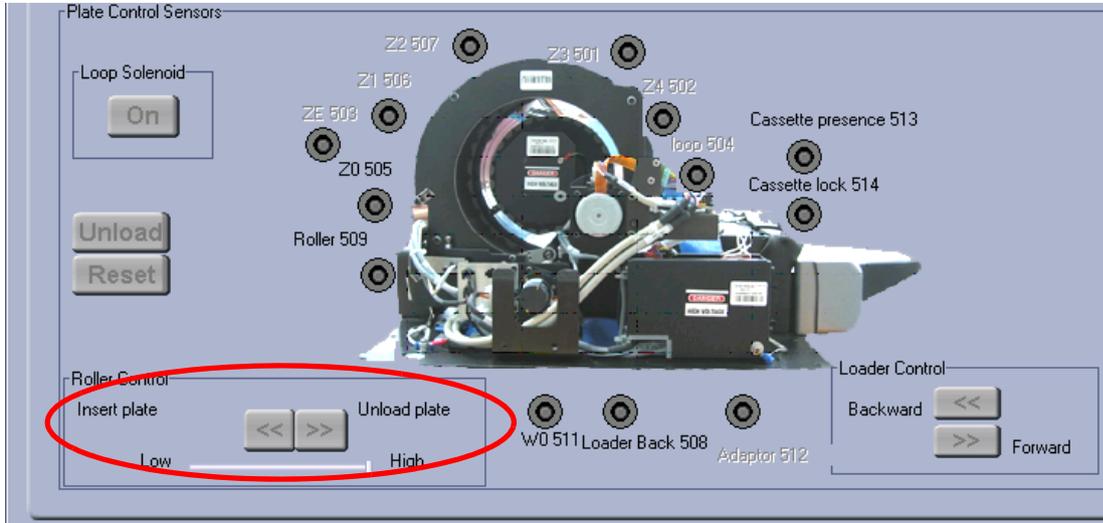
[2] Place the Drive Adaptor on to the Roller Drive.

[3] Align the Roller Drive, the Adaptor, and the Motor Drive, by turning the Roller Drive.

- [4] Attach the top 2.00 mm Roller Motor retaining screw in to the top of the bracket.
- [5] Realign the Roller Drive, and insert the remaining three 2.00 mm Motor retaining screws and tighten them into place.
- [6] Reconnect the Roller Motor Cable to the Connector Panel, and fasten the cable ties.
- [7] Perform the test procedure in the section before replacing the Scanner Cover.
- [8] Assemble:
  - Scanner Cover
  - Service Panel

## Test Procedure

### Operating the Roller Motor



- [1] Confirm that the Roller Motor functions by the following test:
  - (a) Go to the *Kodak QC* diagnostic screen and operate the rollers forward and backward.
  - (b) Load a Cassette into the Scanner and check that the Scanner loads and unloads the screen correctly.

## Linear Slide Assembly Replacement

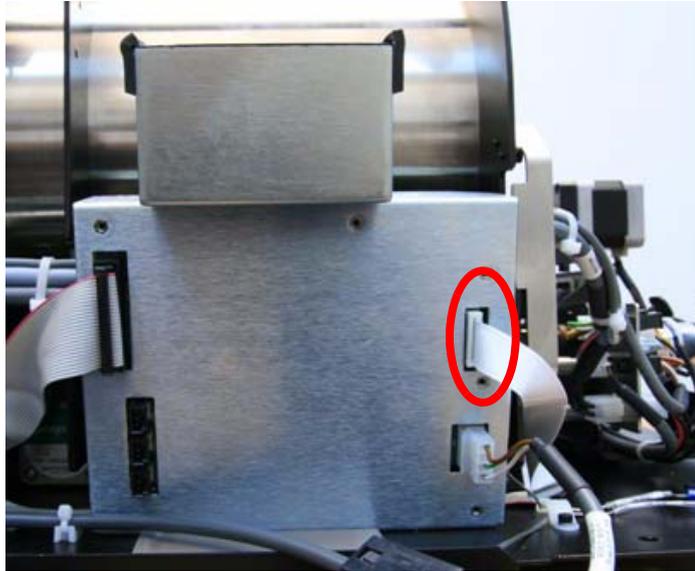
### Tools Required

Allen wrench

### Removing the Linear Slide Assembly

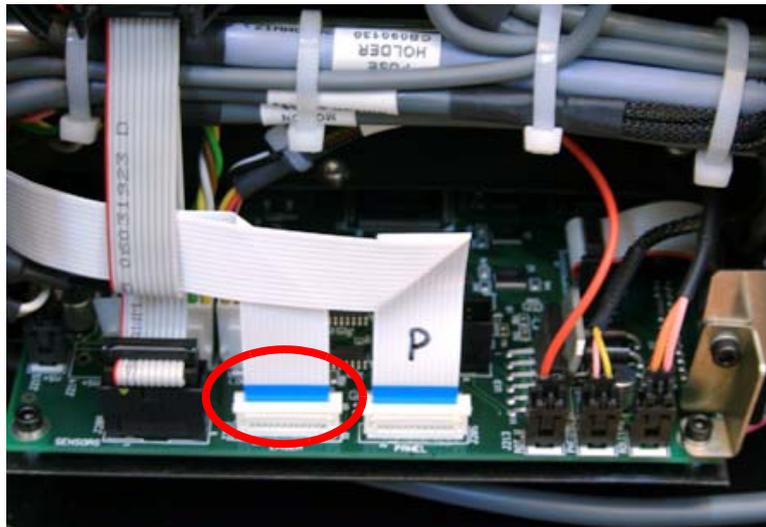
- [1] Using the user interface **Diagnostic** tab, move the Optical Head to the middle of the drum.
- [2] Remove the main cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Connector to USB Board



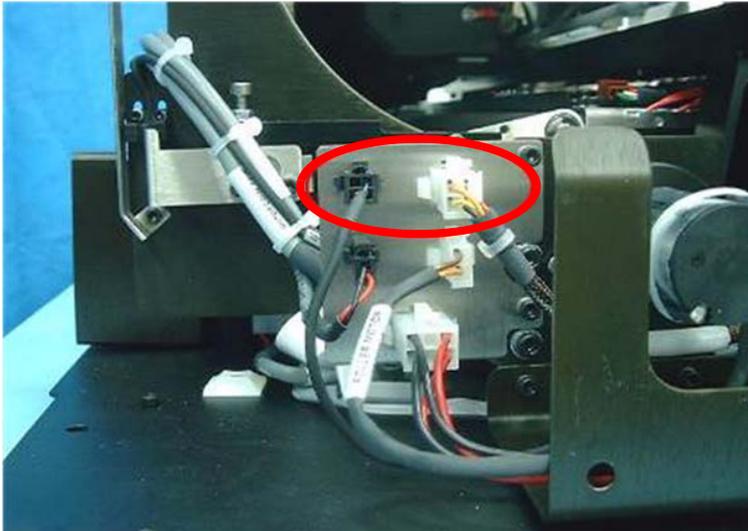
- [3] Disconnect the flex cable from the USB Board.

#### Laser Board Cable and Connectors



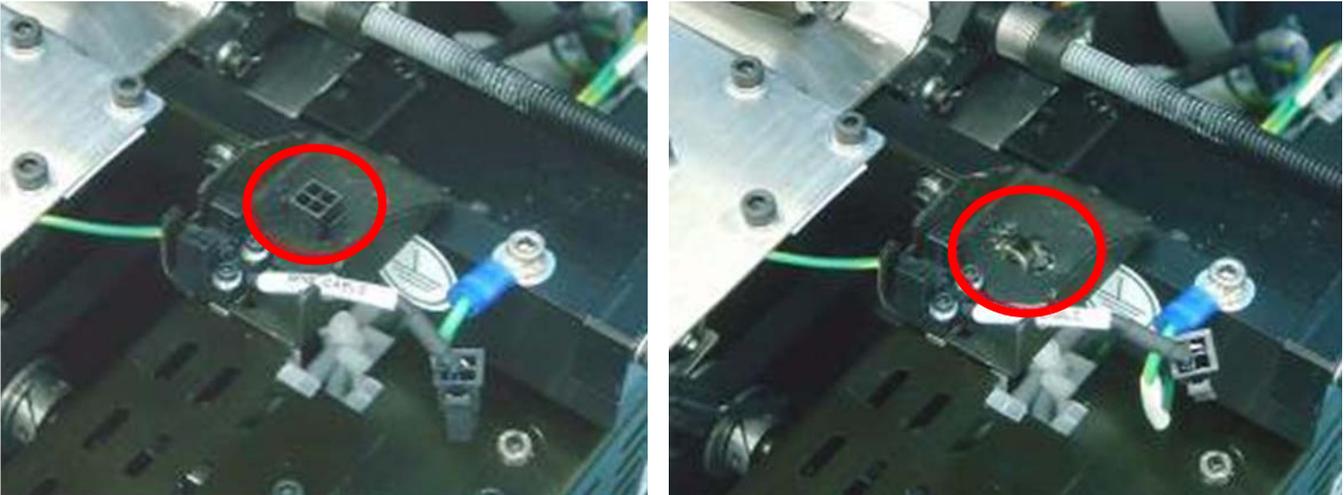
- [4] Disconnect the Laser Board flex cable from the Motion Board.
- [5] Release the two flex cables, until they can be taken out freely along with the Slide Assembly.

## Stepper Motor and Left Limit Sensor Connectors



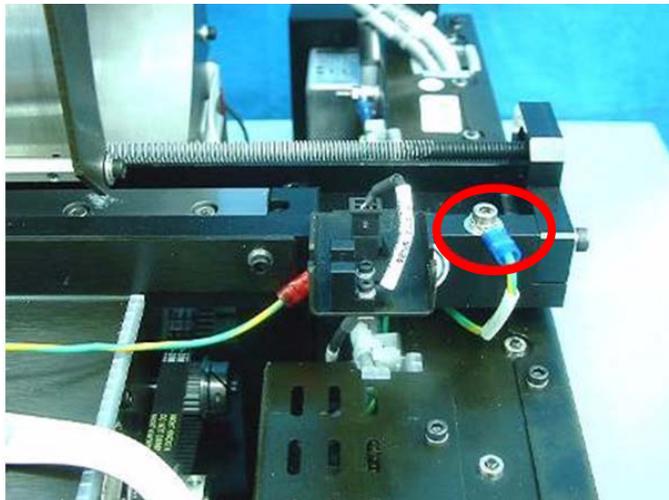
[6] Disconnect the Slide Stepper Motor Cable and the Left Limit Sensor Cable from the Connector Panel.

## Right Limit Sensor Connector



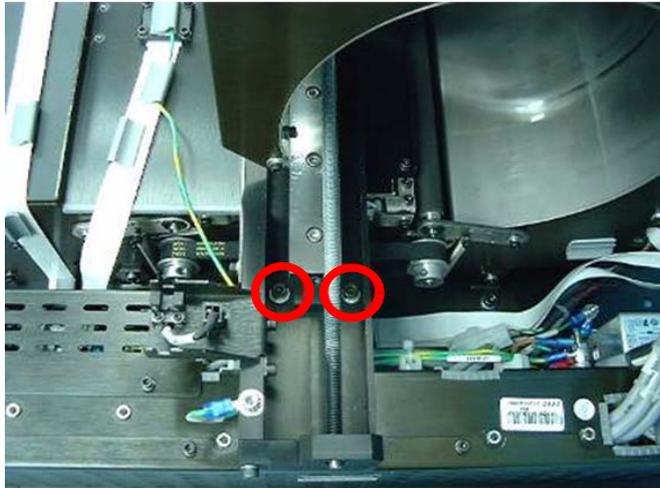
[7] Disconnect the Right Limit Sensor Cable from its connector and remove the connector from its bracket

## Screw Attaching the Ground Wire



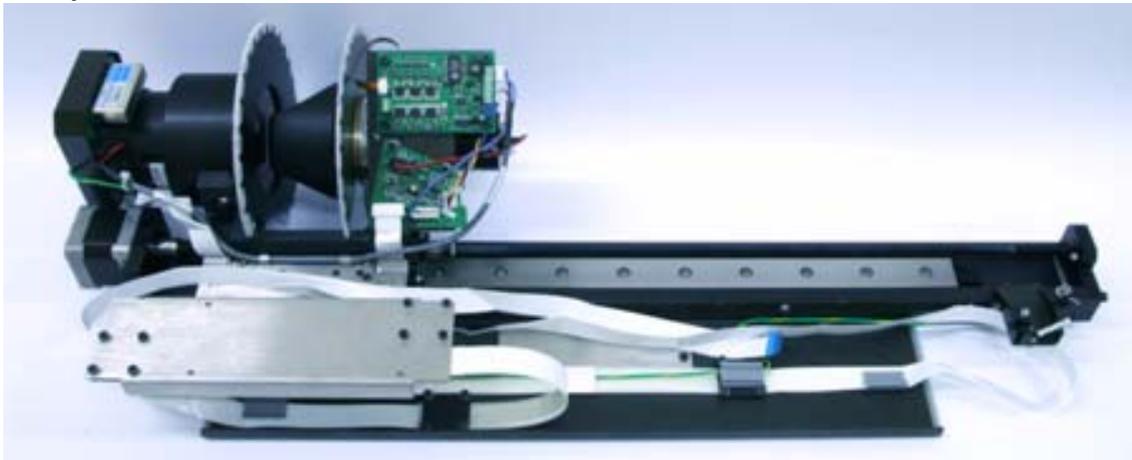
- [8] Disconnect the ground wire from the slide, by removing the screw; then, removing the ground wire.

### Slide Assembly Attaching Screws



- [9] Remove the four screws holding the Slide Assembly to the system (two on each side).
- [10] Remove the Slide Assembly from the system by pulling it to the left, until it is out of the drum. While pulling it out, pay attention to the location of the flex cables.

### Slide Assembly



### Replacing the Slide Assembly

- [1] Insert the new Slide Assembly into the drum from the left.
- [2] Install the four screws that hold the Slide Assembly to the system.
- [3] Attach the ground wire to the Slide.
- [4] Attach:
- Right Limit Sensor
  - Left Limit Sensor
  - Slide Stepper Motor cable
  - Laser Board flex cable
  - USB board flex cable
- [5] Insert the flex cables into their holder brackets.
- [6] Perform the following test procedure before replacing the Scanner Cover.
- (a) Go to the "Diagnostics" tab.

## Linear Slide Test



(b) Click the left and right arrows to move the slide from side to side.

(c) Check that the optical head moves smoothly and that the wires are not stuck during movement.

[7] Assemble the Scanner Cover and Service Panel.

## Loader Stepper Motor Replacement

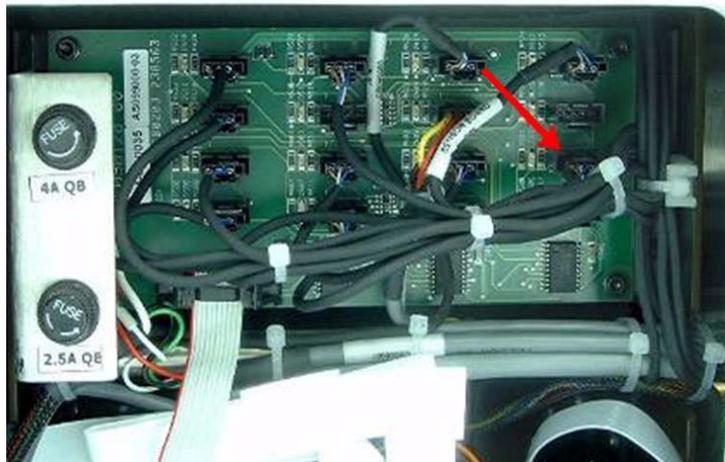
### Tools Required

- 3.0 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

### Removing the Loader Stepper Motor Carriage

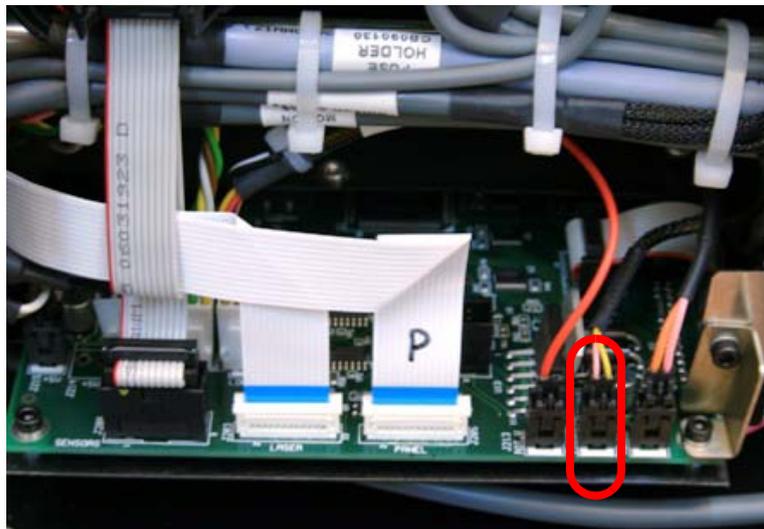
- [1] Using the user interface “Diagnostic” screen, move the Optical Head to the middle of the drum.
- [2] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Connector J505 on the Connector Board



- [3] Disconnect connector J505 on the Sensors Board; making sure that the wire is free.

#### Stepper Motor Cable



- [4] Disconnect the Stepper Motor Cable from the Motion Board J204 (Loader) connector.

---

## Bottom of Unit



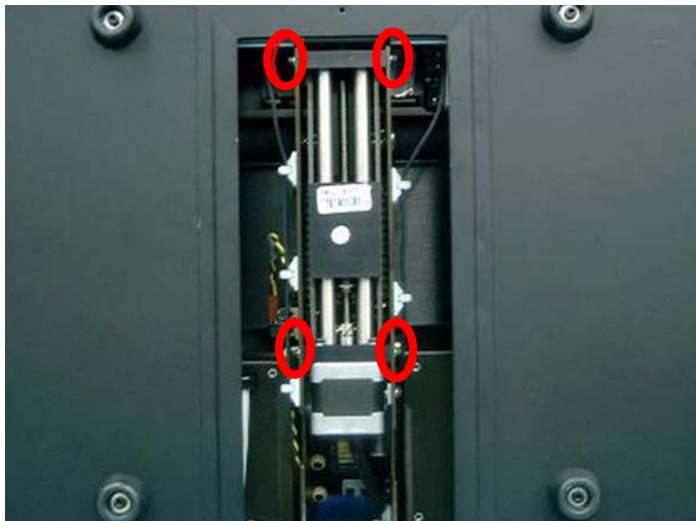
[5] Place the unit on its back, and open the door on the bottom.

## Pulling the Carriage Down



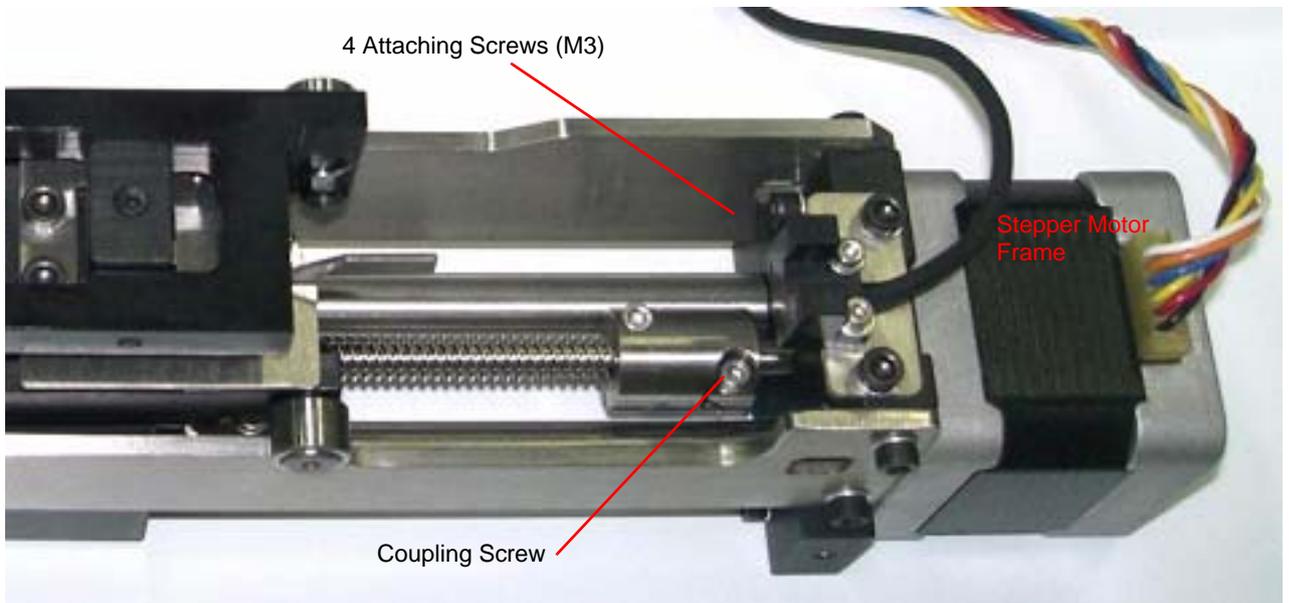
[6] Pull the Carriage down.

## Carriage Assembly Attaching Screws



[7] Remove the four screws attaching the Carriage Assembly to the system, and pull the Carriage Assembly out.

## Loader Assembly with Stepper Motor



- [8] Loosen the coupling screw closest to the motor.
- [9] Remove the four screws that attach the motor to the loader assembly.
- [10] Carefully remove the motor from the assembly.

## Replacing the Stepper Motor

- [1] Attach the Stepper Motor to the Carriage, connect the 4 M3 attaching screws and the coupling screw.
- [2] Attach:
  - Stepper Motor unit into the Motor Frame
  - Four 3.0 mm screws
  - Sensor Cable
  - Motion Board Cable
- [3] Close the Bottom Service Access Panel and return the Scanner on to its base.
- [4] Reconnect the Sensor Cable to the Sensor Board and the Motion Cable to the Motion Board and fasten the cable ties.
- [5] Perform the test procedures in ["Loader Pin and Loader Pusher Adjustments" on Page 132](#) before replacing the Scanner Cover.
- [6] Attach:
  - Scanner Cover
  - Service Panel

---

# Power Supply Assembly Replacement

---

## Introduction

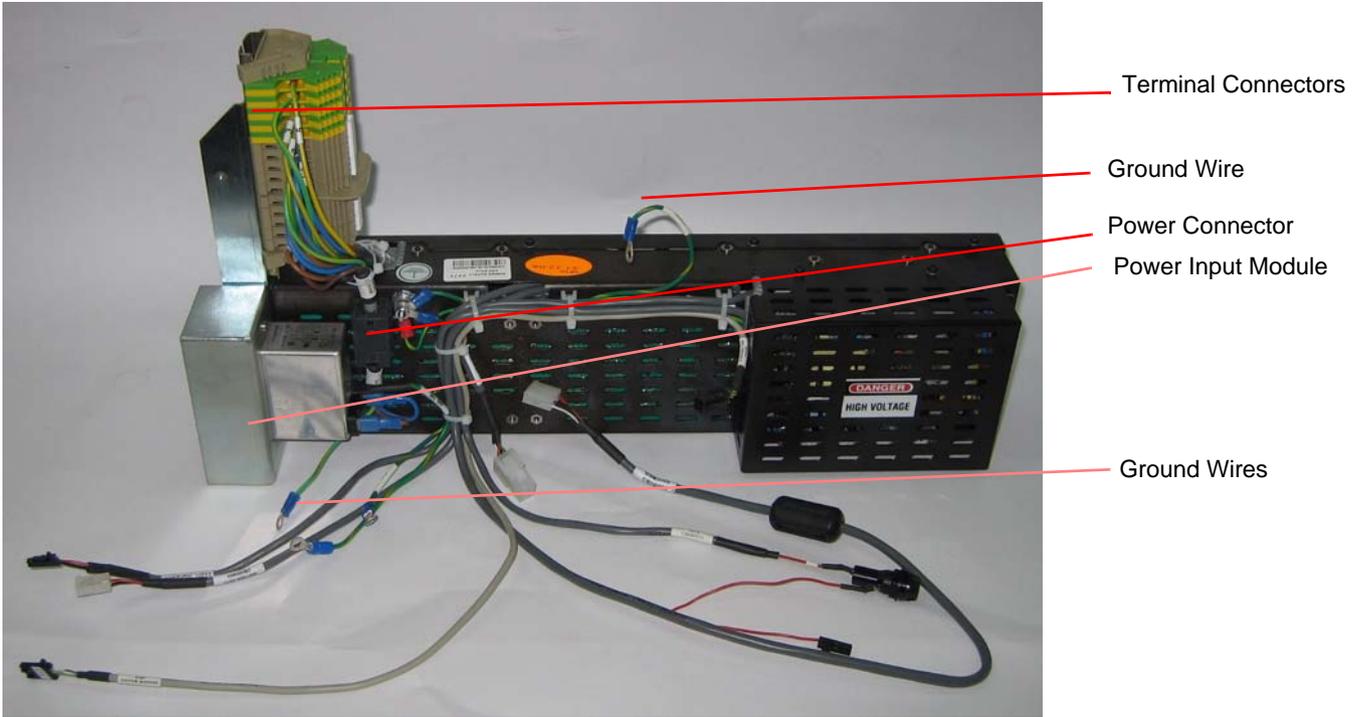


### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

The Power Supply Assembly distributes and converts main electricity to the Scanner.

## Power Supply Assembly



---

## Tools Required

- Replacement Power Supply Assembly
- 3.0 mm Allen wrench
- 7 mm spanner
- 2.5 x 100 mm cable ties
- Cutter

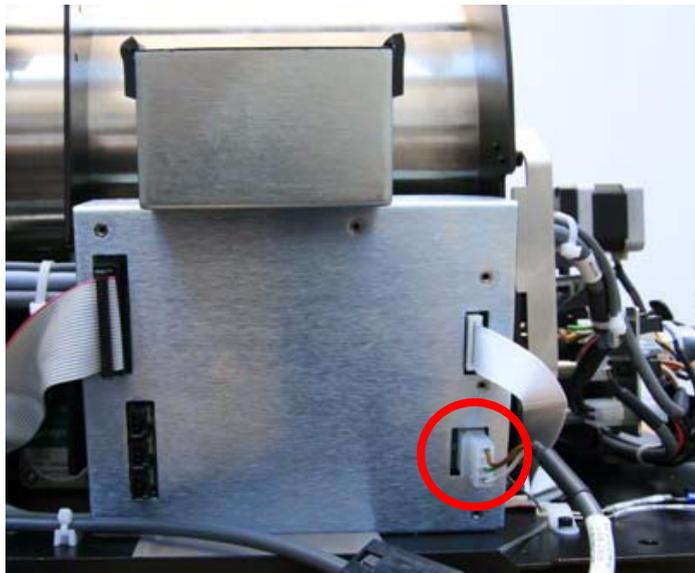
---

## Removing the Power Supply Unit

- [1] Disconnect the Scanner from the main power.
- [2] Disconnect the main supply cable from the Power Supply.
- [3] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

**Power Supply Screws on Unit Bottom**

- [4]** Pull the system to the edge of the table, and open the six screws that attach the Power Supply assembly to the base of the unit.

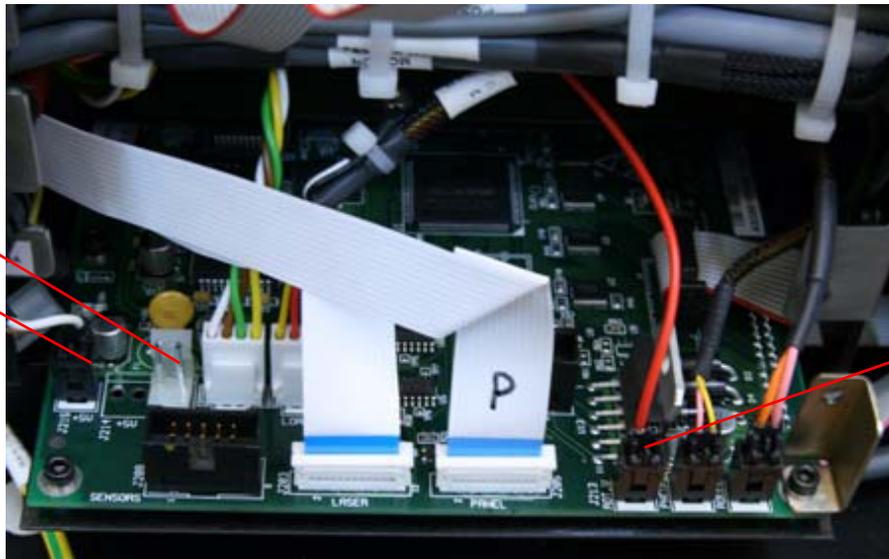
**Cable Connection to USB Board**

- [5]** Disconnect the power cable from the USB Board.

## Connectors on the Motion Board

J211

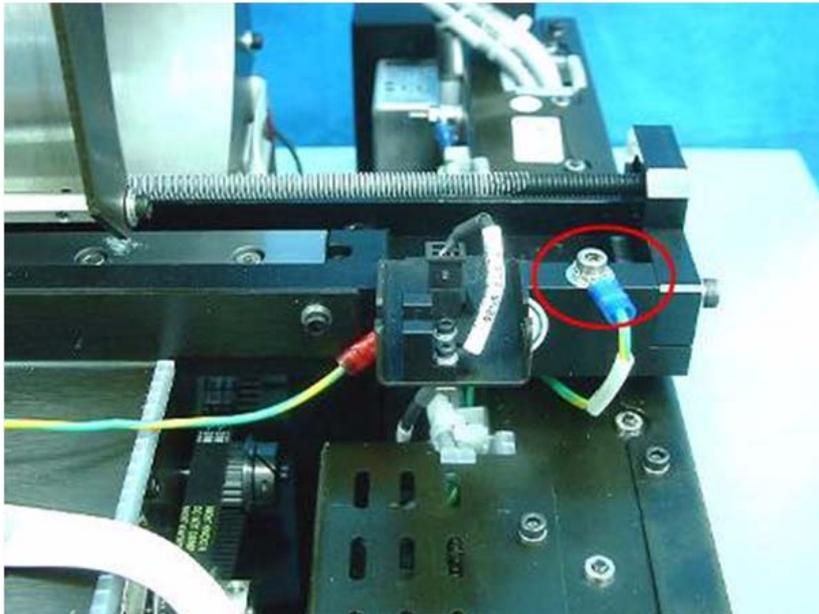
J215



J213

[6] Disconnect connectors J211, J213 and J215 from the Motion Board.

## Ground Wire Screw



[7] Remove the 3.5 mm screw which attaches the ground wire to the slide.

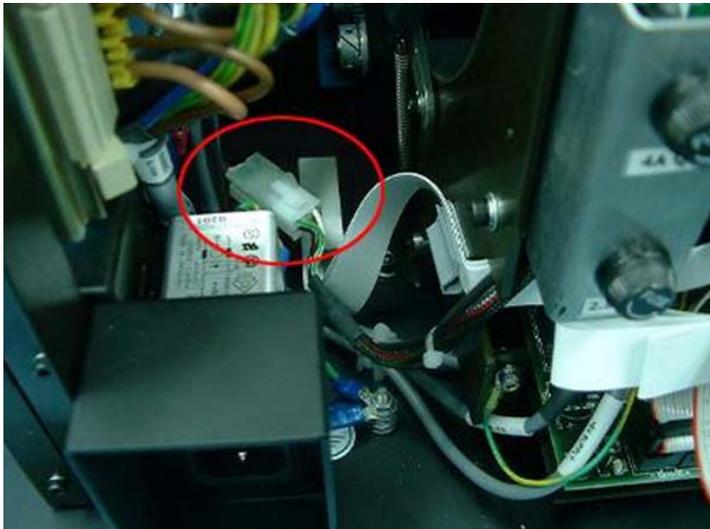
## Main Ground Stud



**[8]** Remove from the stud:

- 7 mm nut
- main ground wires

## Fuse Connector



**[9]** Disconnect the fuse connector.

**[10]** Remove the power supply assembly.

## Replacing the Power Supply Assembly

**[1]** Connect the fuse connector to the new Power Supply assembly.

**[2]** Install the Power Supply assembly and insert the six screws that attach the Power Supply assembly to the base of the unit.

**[3]** Install the main ground wires and the 7 mm nut onto the stud.

**[4]** Install the 3.5 mm Allen screw attaching the ground wire to the slide.

**[5]** Connect connectors J213, J211 and U211 to the Motion Board.

**[6]** Disconnect the power cable from the USB Board.

**[7]** Perform this Test Procedure: Connect the system to the main power and confirm that the system is operating properly.

**[8]** Close the Scanner Cover.

## Erase Lamps Assembly Replacement



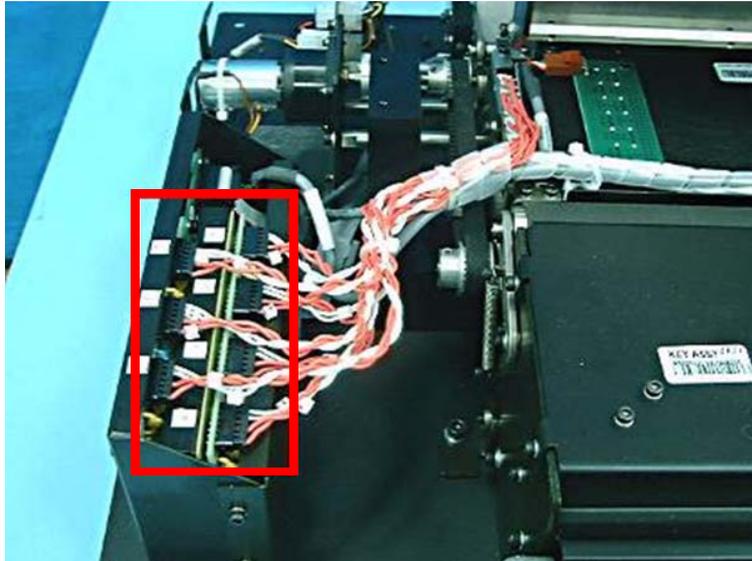
### Laser Warning

To avoid possible eye damage, before operating the unit without the cover, disconnect the laser (see [“Disconnecting the Laser” on Page 44](#)). For additional laser precautions see [“Laser Safety Instructions” on Page 12](#). Only authorized personnel may remove the cover.

[1] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

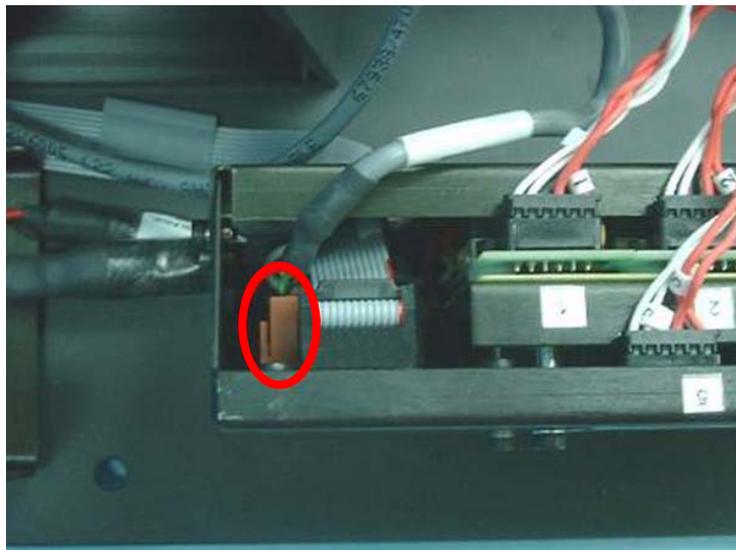
[2] Remove the Slide (see [“Linear Slide Assembly Replacement” on Page 59](#)).

### Erase Lamp Connectors

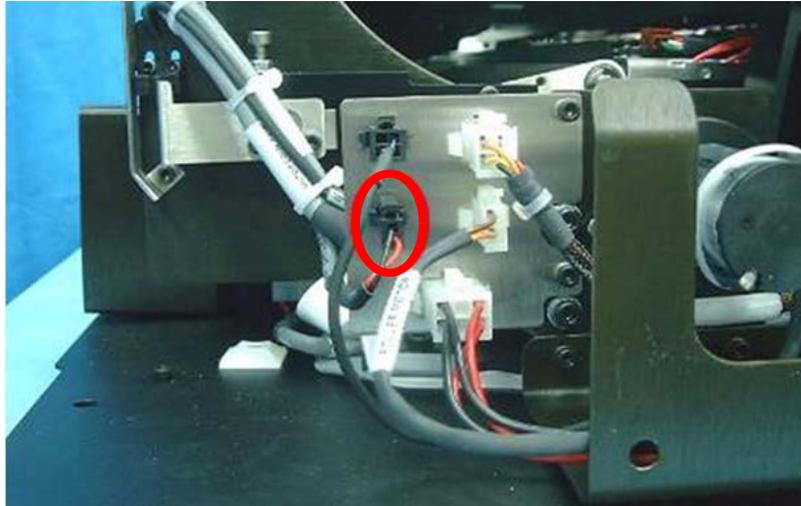


[3] Disconnect the Lamp Cables from the Inverters.

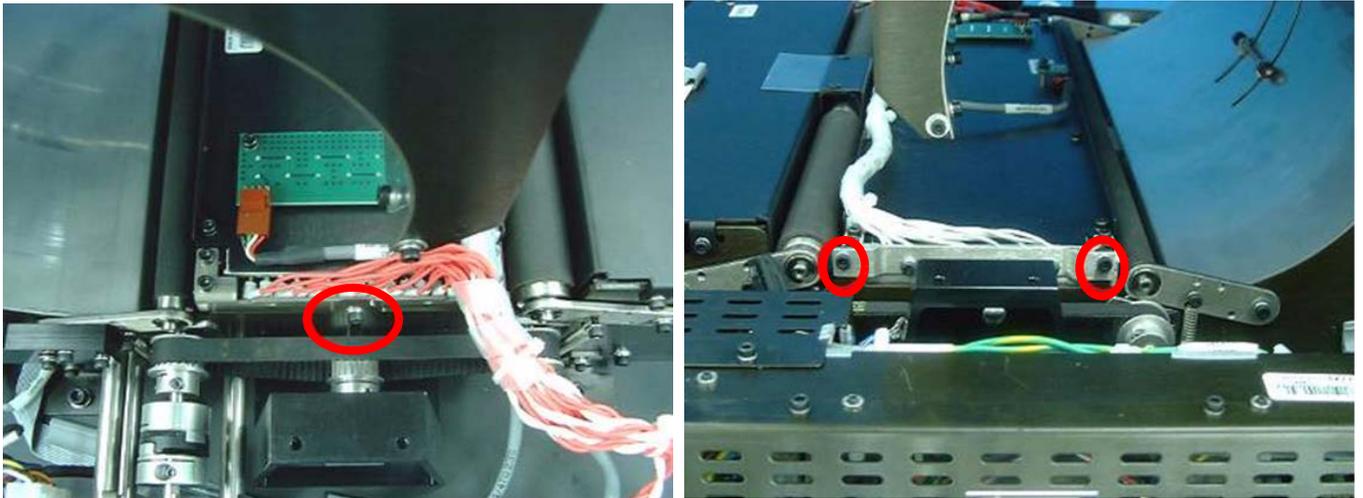
### Erase Lamp Sensor Connector



[4] Disconnect the Erase Lamp Sensor Cable from the Inverter Assembly.

**W0 Upper Sensor Cable Connector**

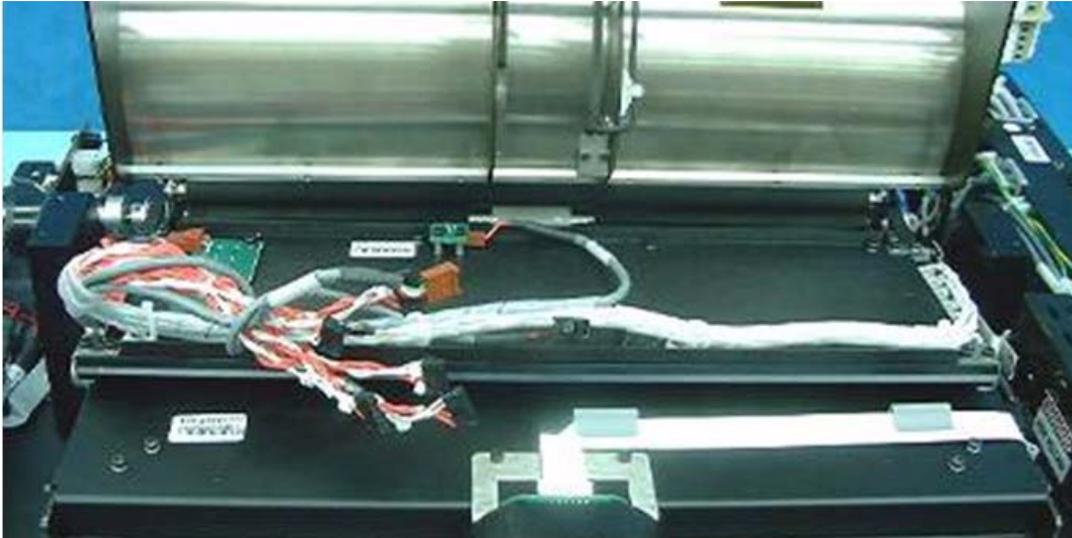
**[5]** Disconnect the W0 Upper Sensor Cable from the Connector Panel, and remove the connector from the panel.

**Erase Lamp Assembly Screws**

**[6]** Remove the three screws that attach the Erase Lamp Assembly, two on the left side, one on the right side.

---

## Erase Lamp Assembly Wiring Harness



- [7] Remove the Erase Lamps Assembly through the drum front opening. The Erase Lamp Assembly includes all the wiring, as shown in the image above.
- [8] Reverse the above steps to install the Erase Lamp Assembly.

## Erase Lamps Inverters Replacement

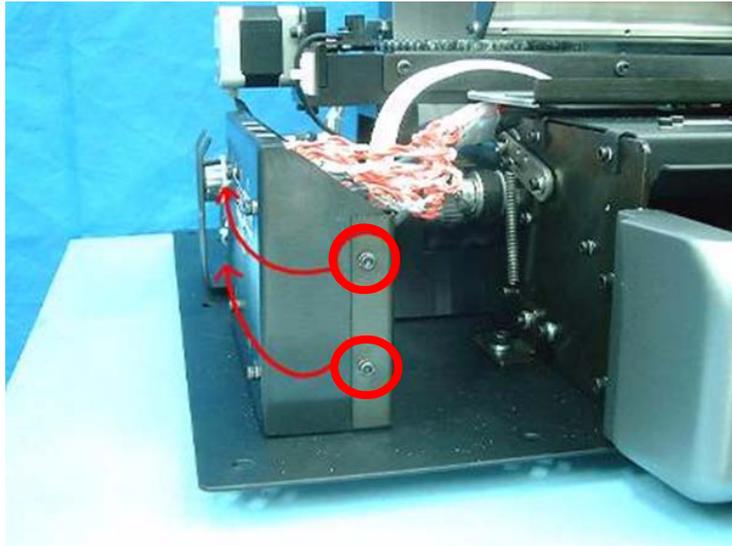
### Tools Required

Allen wrench

### Removing the Erase Lamps Inverters

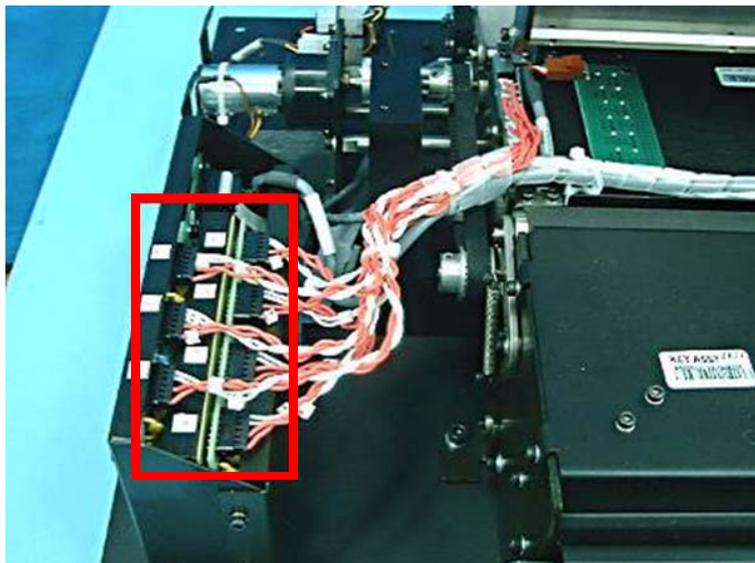
[1] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Inverter Cover Screws



[2] Remove the four screws securing the Inverter Cover.

#### Erase Lamp Connectors



[3] Disconnect the Erase Lamps Connectors from the Inverters.

[4] Disconnect the cables from the Erase Lamp Board.

---

## Inverter Attaching Screws



- [5] On the bottom of the unit, remove the screws that attach to the Inverter Assembly.
- [6] Remove the Inverter Assembly.

---

## Replacing the Erase Lamps Inverters Assembly

- [1] Insert the Erase Lamps Inverter Assembly.
- [2] On the bottom of the unit, insert the screws that attach the Inverter Assembly.
- [3] Connect the cables to the Erase Lamp board.
- [4] Connect the Erase Lamp Connectors to the Inverters.
- [5] Install the Inverter Cover and insert the four retaining screws.



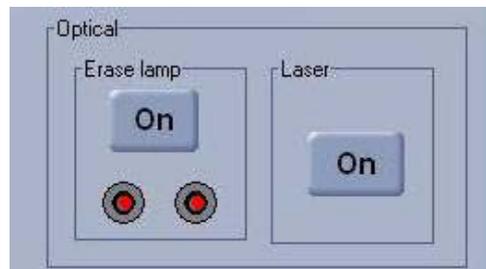
### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

- [6] Perform the following Test Procedure:

Log in as technician and in the Diagnostic screen check that the Erase Lamps are on and that the Indicator Lamps are on.

## Checking the Erase Lamps



- [7] Close the Scanner Cover.

## Erase Lamps Sensors Replacement

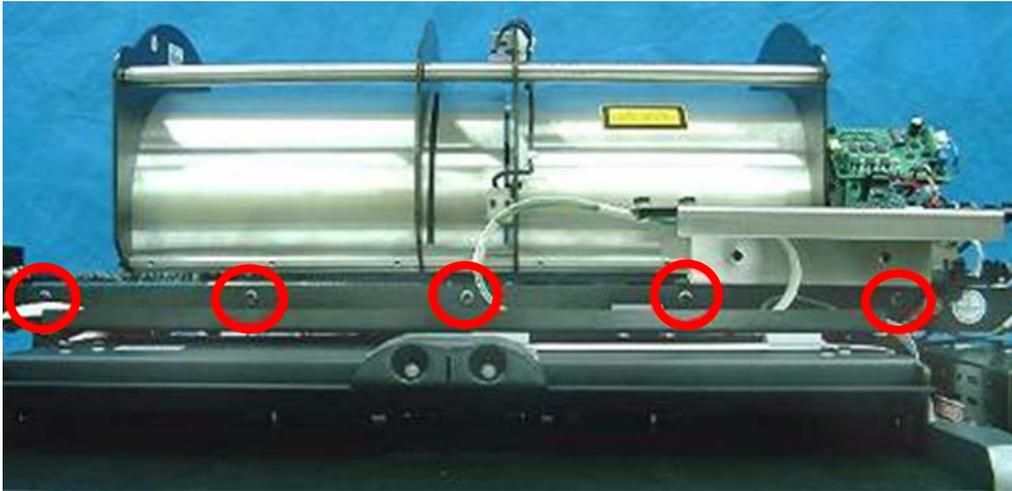
### Tools Required

Allen wrench

### Removing the Erase Lamps Sensors

[1] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Flex Cable Bracket



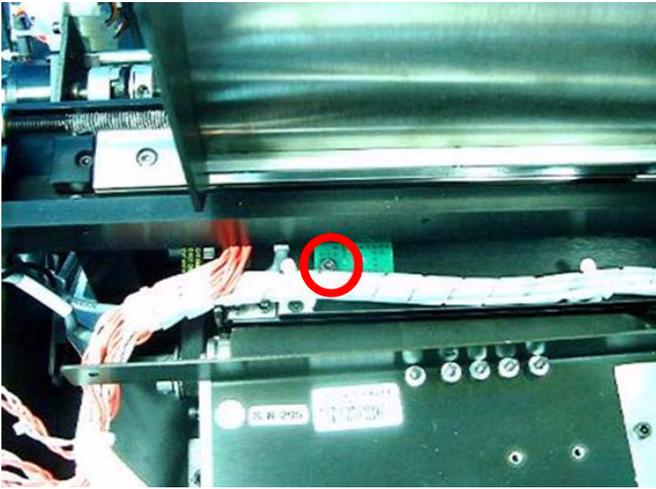
[2] Open the five screws that attach the Flex Cable Bracket to the system.

#### Erase Lamp Sensor



[3] Disconnect the cable from the Erase Lamp Sensor.

## Erase Lamp Sensor Screws



- [4] Remove the two screws securing each of the sensors, and remove the sensor(s).

## Replacing the Erase Lamps Sensors

- [1] Insert the sensors and the screws securing the sensors.
- [2] Connect the cable from the Erase Lamp Sensor.
- [3] Insert the five screws that attach the Flex Cable Bracket to the system.



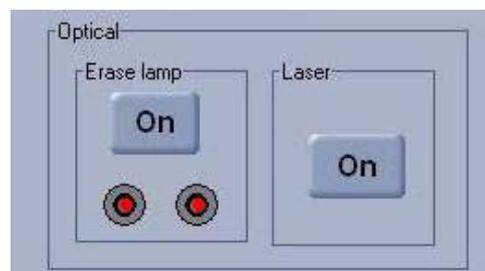
### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

- [4] Perform the following Test Procedure:

Log in as technician and in the Diagnostic screen check that the Erase Lamps are on and that the Indicator Lamps are on.

## Checking the Erase Lamps



- [5] Close the Scanner Cover.

---

## Left Limit Sensor Replacement

---

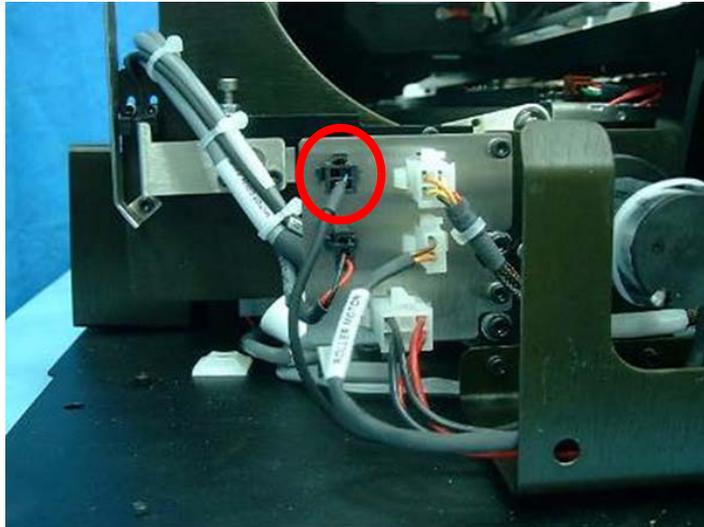
### Tools Required

- 3.0 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

### Removing the Left Limit Sensor

- [1] Disconnect the Scanner from the main power.
- [2] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Left Limit Sensor Connector



- [3] Disconnect the Sensor Cable from the Connector Panel.
- [4] Mark the location of the sensor.

#### Left Limit Sensor Screws



- [5] Remove the two screws attaching the sensor to the sensor bracket, and remove the sensor.

---

### Replacing the Left Limit Sensor

- [1] Position the sensor bracket according to the marked location and insert the two screws.
- [2] Connect the Sensor Cable to the Connector Panel.

**[3]** Confirm that the Left Limit Sensor functions by performing the following test:

- (a) Enter the Diagnostic screen in the *Kodak QC PoC 140*.
- (b) In the Linear Motor section, click the right or left arrow according to the limit switch you wish to test.
- (c) The Carrier begins to move, and should enter the sensor area causing the indicator light to illuminate.

**Linear Motor Section of Diagnostics Screen**



**[4]** Assemble the scanner cover.

## Right Limit Sensor Replacement

### Tools Required

- 3.0 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

### Removing the Right Limit Sensor

- [1] Disconnect the system from the main power.
- [2] Remove the Main Cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).
- [3] Move the Optical Head a few centimeters to the left.

### Right Limit Sensor



- [4] Mark the position of the sensor on the sensor bracket.
- [5] Disconnect the cable from the connector on the sensor bracket, open two 2.0 mm *Allen* screws, and remove the sensor.

### Replacing the Right Limit Sensor

- [1] Position the sensor bracket according to the marked location and insert the two screws.
- [2] Connect the Sensor Cable to the Connector Panel.
- [3] Confirm that the Right Limit Sensor functions by performing the following test:
  - (a) Enter the Diagnostic screen in the *Kodak QC PoC 140*.
  - (b) In the Linear Motor section, click the right or left arrow according to the limit switch you wish to test.
  - (c) The Carrier begins to move, and should enter the sensor area causing the indicator light to illuminate.

### Linear Motor Section of Diagnostics Screen



- [4] Assemble the scanner cover.

---

## Screen Size Sensor Replacement

---

### Tools Required

- 3.0 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

---

### Removing the Screen Size Sensor

- [1] Disconnect the Scanner from the main power.
- [2] Remove the main cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

#### Screen Size Sensor (1 of 4)



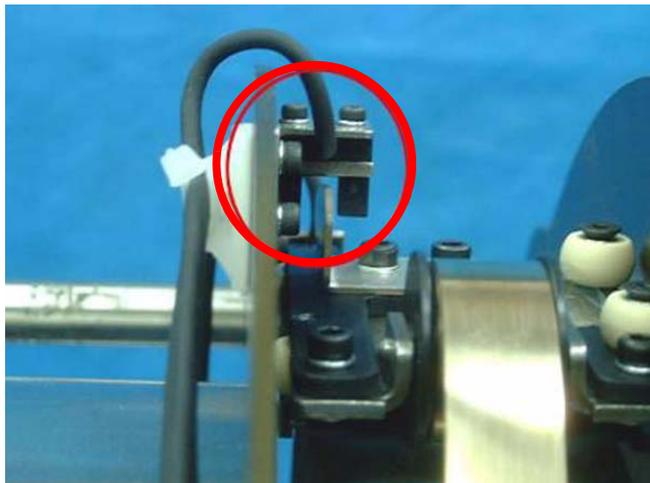
- [3] Locate the Sensor and remove the two *Allen* screws.
- [4] Cut the wire ties holding the sensor cable, and follow the cable up to the sensor board.
- [5] Disconnect the cable from the Sensor board.

---

### Installing the Screen Guide Sensor

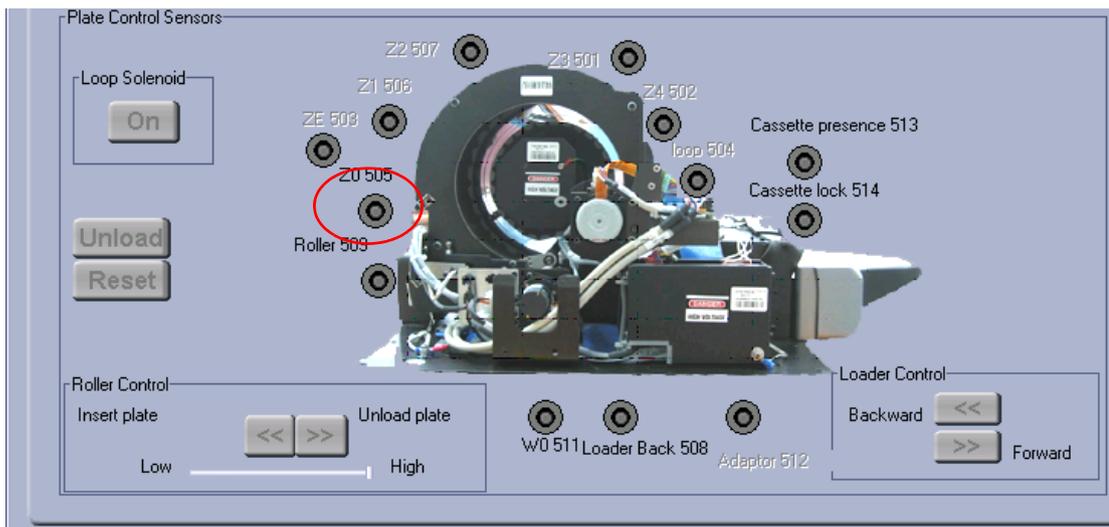
- [1] Connect the Screen Guide Sensor to the Sensor board.
- [2] Install the Sensor cable using new cable ties.
- [3] Install the Sensor to the Sensor bracket using the two Allen screws.
- [4] Perform the following two tests:.

#### Screen Guide Passing Under Screen Size Sensor

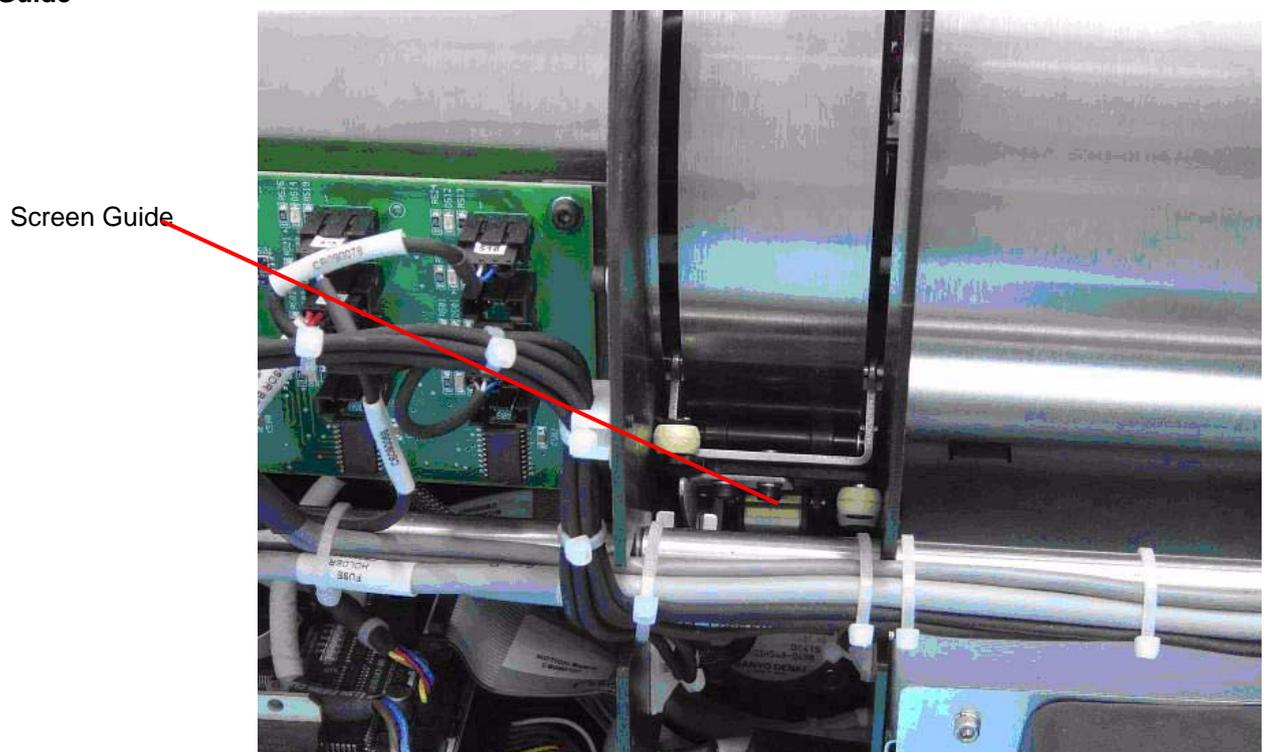


- (a) Make sure that the Screen Guide passes under the sensor without interference.
- (b) Open the “Diagnostics” screen in the *Kodak QC*. Move the Screen Guide up and down and check that the Z0 light in the “Diagnostics” screen turns on and off.

### Z0 Light



### Screen Guide



#### [5] Assemble:

- Scanner Cover
- Service Panel

---

# Roller Sensor Replacement

---

## Introduction

The Roller Sensor senses when the screen is between the rollers.

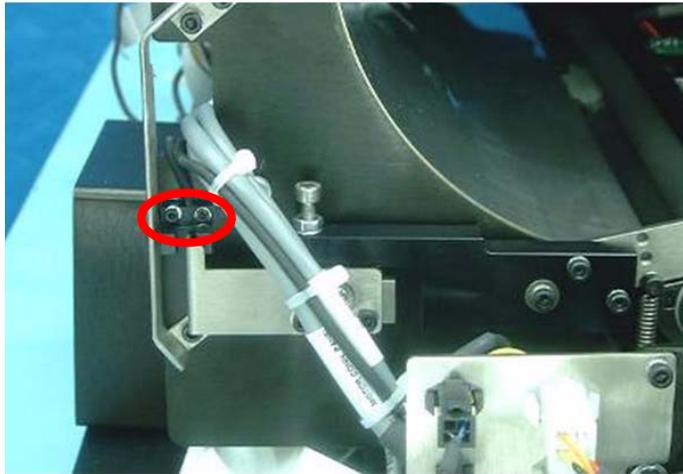
- Replacement Sensors
- 1.5 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

---

## Removing the Roller Sensor

- [1] Disconnect the Scanner from the main power.
- [2] Remove the main cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

### Roller Sensor



- [3] Mark the position of the sensor.
- [4] Remove the two screws securing the sensor, and remove the sensor.
- [5] Disconnect the sensor cable J509 from the Sensor board.

---

## Replacing the Roller Sensor

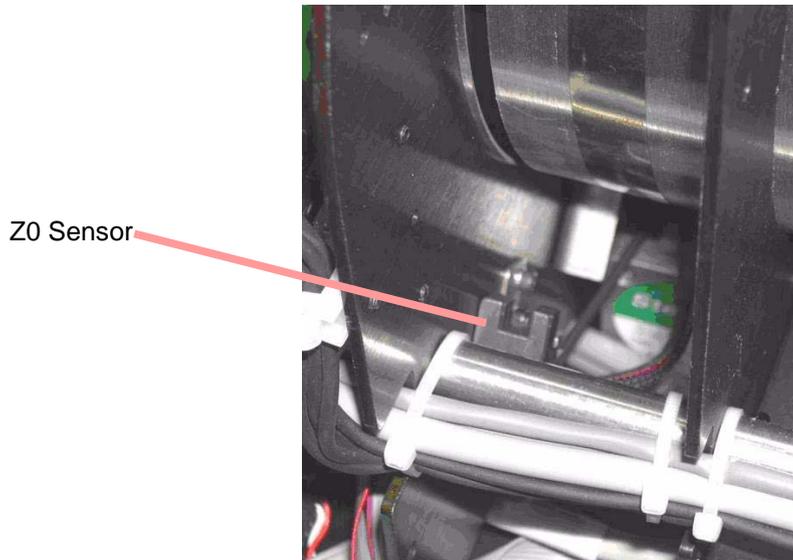
- [1] Install the roller sensor, using the marked location of the previous sensor, and insert the two retaining screws.
- [2] Connect the sensor cable J509 to the Sensor board.
- [3] Continue to [“Roller Sensor Adjustment” on Page 135](#) to verify correct positioning of the Roller Sensor.
- [4] Install the Scanner Main Cover.

## Z0 Sensor Replacement

### Procedure

- [1] Disconnect the Scanner from the main power.
- [2] Remove the Service Panel and Scanner Cover. (See [“Removing the Service Panel and Scanner Cover” on Page 41.](#))

### Z0 Sensor



- [3] Reveal the Z0 Sensor on the back of the Drum.
- [4] Disconnect the cable from the Sensors Board (J505).
- [5] Remove the two 2.0 mm retaining screws from the sensor, and remove the Sensor from the Slide.
- [6] Attach the Z0 Sensor on the back of the Drum, and loosely insert the two 2.0 mm retaining screws.
- [7] Slide the Sensor up or down till the screen is in the middle of the bracket.
- [8] Reconnect the Sensor Connector to J505 on the Sensor Board.
- [9] Perform the test procedures in the section below, before replacing the Scanner Cover.
- [10] Assemble:
  - Scanner Cover
  - Service Panel

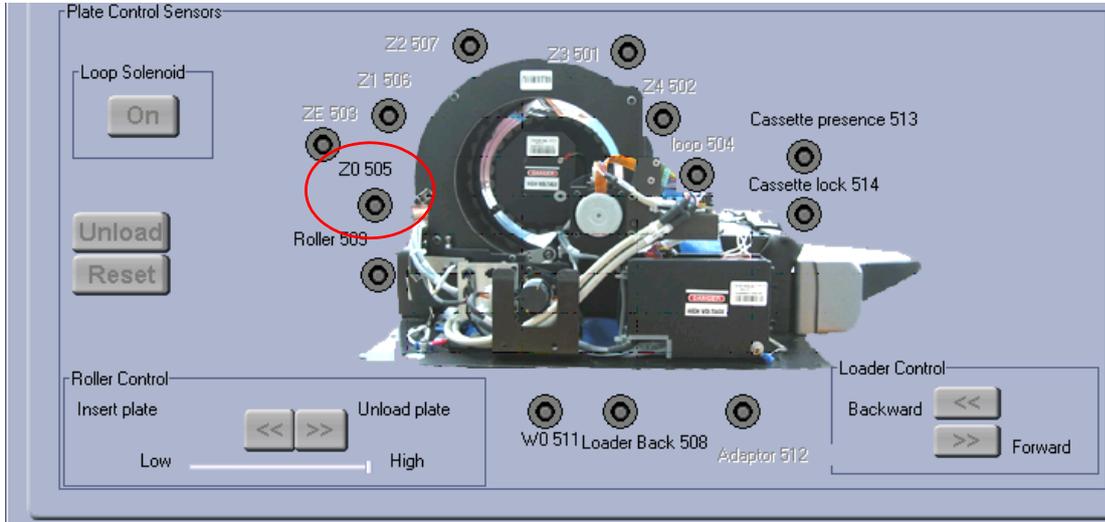
## Test Procedure



### Laser Warning

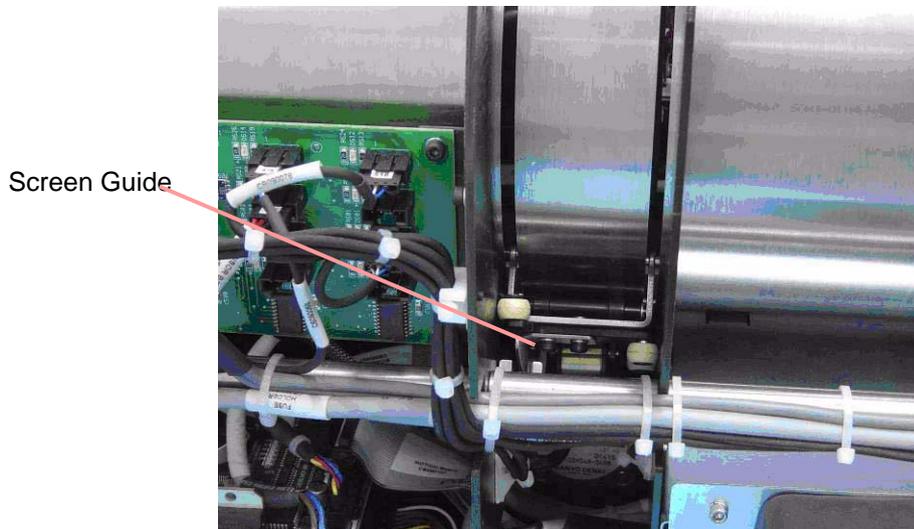
When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

### Z0 Light



[1] Open the “Diagnostics” screen in the **Kodak QC**.

### Screen Guide



[2] Move the Screen Guide up and down and check that the Z0 light in the “Diagnostics” screen turns on and off.

## W0 Sensors Replacement (Top/Receiver and Bottom/Transmitter)

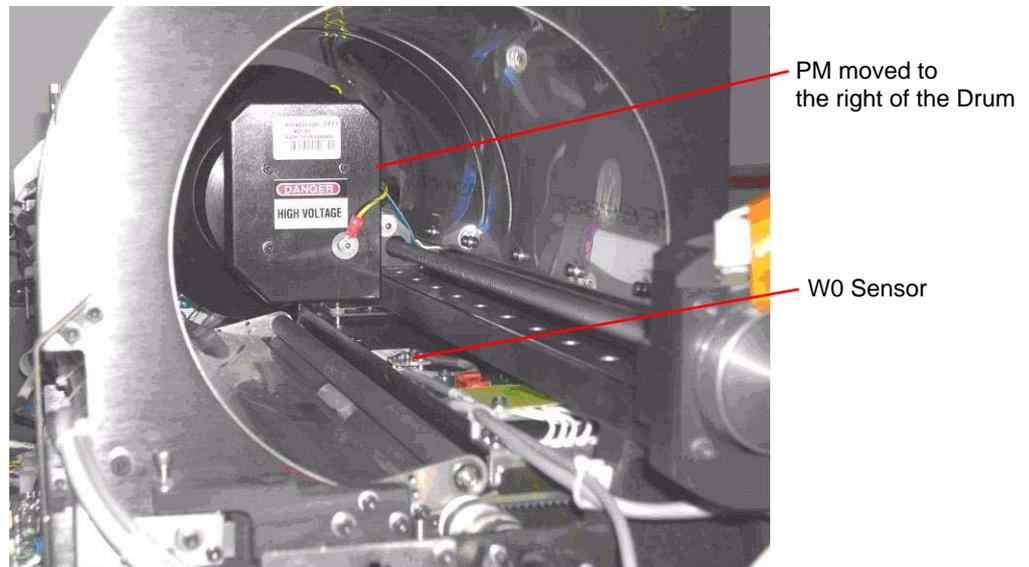
### Introduction



#### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

### Top W0 Sensor in the Drum



The W0 Sensor:

- is divided into two parts: the Receiver on top and the Transmitter below.
- identifies when a Screen is inserted or ejected from the system

### Tools Required

- Replacement top receiver W0 Sensor
- Replacement bottom transmitter W0 Sensor
- 2.5 mm Allen wrench
- 2.5 x 100 mm cable ties
- Cutter

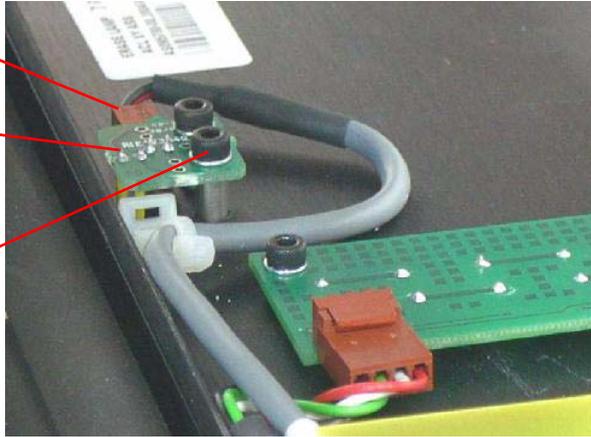
### Removing the Top W0 Sensor

- [1] Disconnect the Scanner from the main power.
- [2] Remove the Service Panel and Scanner Cover. (See [“Removing the Service Panel and Scanner Cover” on Page 41.](#))
- [3] Reveal the W0 Sensor in the Drum by moving the PM assembly to the right using the back of the Linear Motor.

---

## W0 Top Sensor

- Sensor Connector
- W0 Top Sensor
- 3.0 mm Sensor retaining screws



- [4] From the inside of the Drum, disconnect the cable from the W0 Sensor.
- [5] Disconnect the two 3.0 mm retaining screws from the Sensor, and remove the Sensor.

---

## Replacing the Top W0 Sensor

- [1] Attach:
  - top W0 Sensor on the Lamp Unit
  - two 3.0 mm retaining screws
- [2] Reconnect the Sensor Connector.
- [3] Perform the test procedure below before replacing the Scanner Cover.
- [4] Assemble:
  - Scanner Cover
  - Service Panel

---

## Removing the Bottom W0 Sensor

- [1] Disconnect the Scanner from the main power.
- [2] Remove the Service Panel and Scanner Cover. (See [“Removing the Service Panel and Scanner Cover” on Page 41.](#))

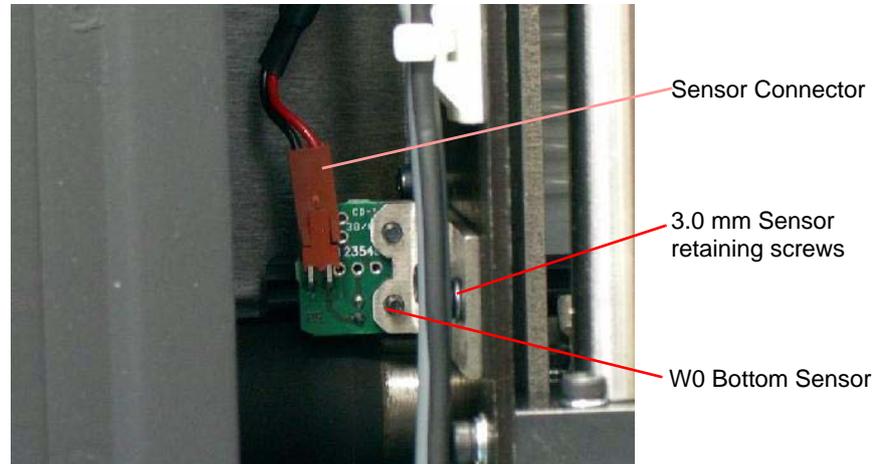
### Scanner tipped on its back



Bottom Service Access Panel

- [3] Turn the Scanner on its back, and slide out the Bottom Service Access Panel.

## W0 Bottom Sensor



- [4] From the left side of the Stepper Motor Assembly, disconnect the cable from the W0 Sensor. (See Figure [“W0 Bottom Sensor” on Page 87](#))
- [5] Disconnect the 3.0 mm retaining screws from the Sensor on the Stepper Motor Carriage, and remove the Sensor.

---

## Replacing the Bottom W0 Sensor

- [1] Attach:
  - bottom W0 Sensor on the Stepper Motor Assembly
  - 3.0 mm retaining screws
- [2] Reconnect the Sensor Connector.
- [3] Close the Access Panel and return the Scanner on to its base.
- [4] Perform the test procedures in the section below, before replacing the Scanner Cover.
- [5] Assemble:
  - Scanner Cover
  - Service Panel

---

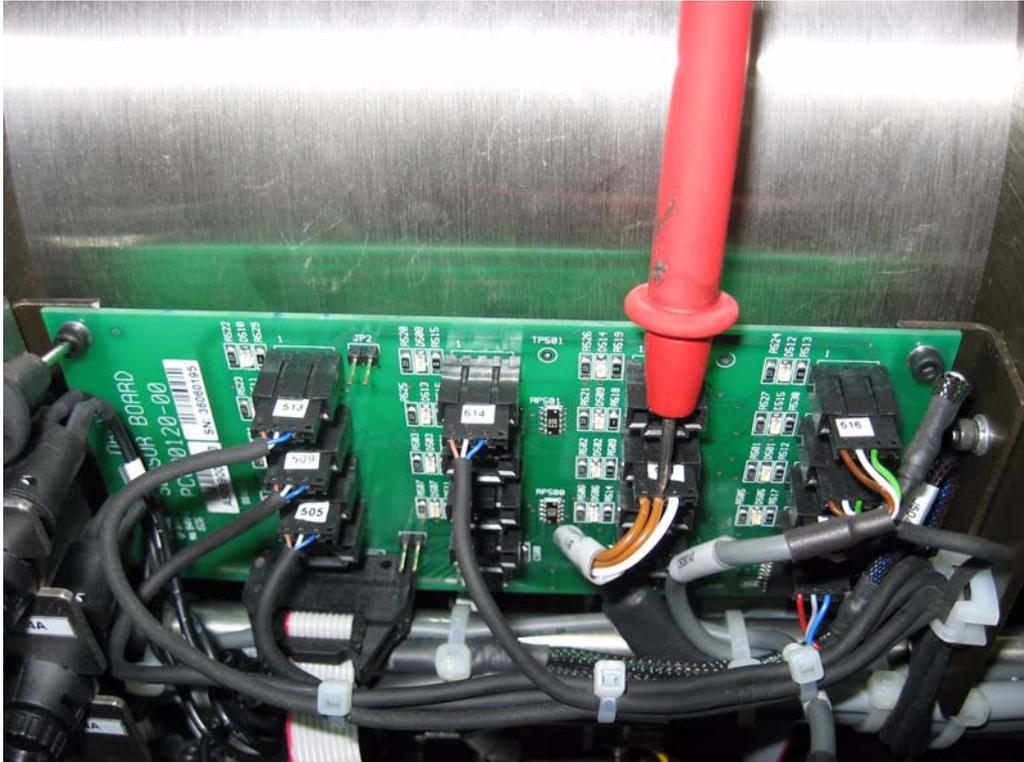
## Test Procedure



### Laser Warning

When a service operation is taking place with the cover removed, disconnect the Laser according to the procedure in [“Laser Board Replacement” on Page 54](#). If the Laser must be activated during the service procedure, wear protective safety glasses at all times.

### Black Probe Attachment Point



[1] Confirm that the Top W0 Sensor functions by the following test:

(a) Connect a DVM as follows:

- Red Probe-Connect to middle pin of the 511 connector on the Sensor Board.
- Black Probe-Attach to yellow wire ground (See Figure above)

(b) Check that the initial voltage must be zero and not exceed 0.5V.

(c) With the DVM still attached, insert a Cassette into the Scanner.

(d) When the Screen is between the two parts of the W0 Sensor, the voltage should be 4.5-5.0V.

## Screen Guide Replacement for non Auto-loop systems

Some scanners have undergone hardware upgrades of the Key Assembly to assemblies with Auto-loop solenoids. Validate whether this section or [“Auto-loop Key Assembly Replacement” on Page 94](#) is relevant for your scanner.

### Equipment Required

Screen Guide (SK25008)

Screen Guide Testing Tool (PGTL) (TO09252)

### Tools Required

Phillips Screwdriver

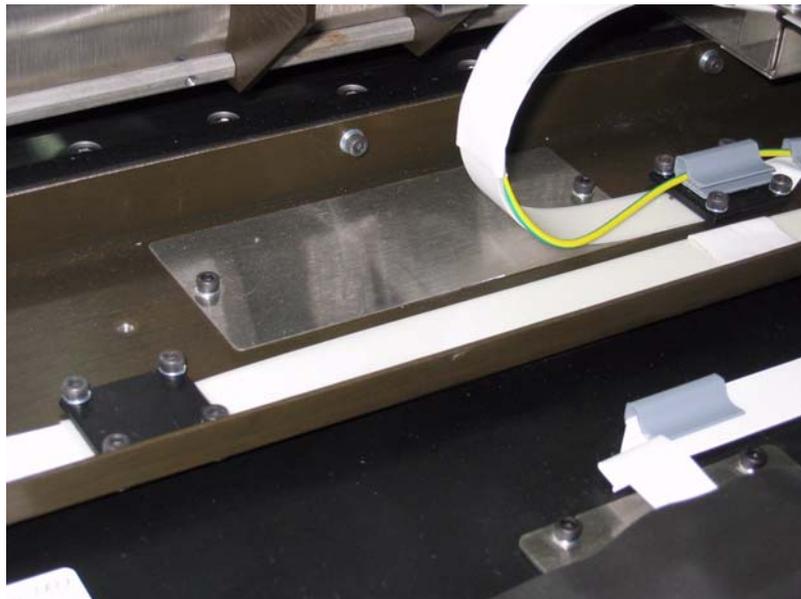
Allen 2.5 mm wrench

### Removing the Screen Guide

[1] Remove the main cover (see [“Removing the Service Panel and Scanner Cover” on Page 41](#)).

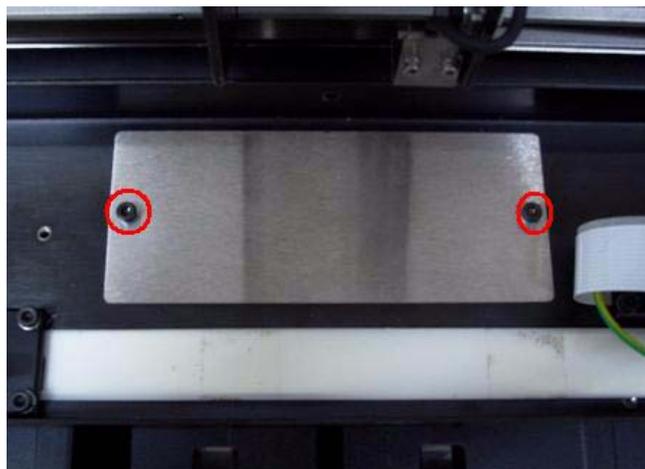
[2] Disconnect the flex cable from the Key Assembly and move it aside to prevent damage.

#### Disconnect the Flex Cable



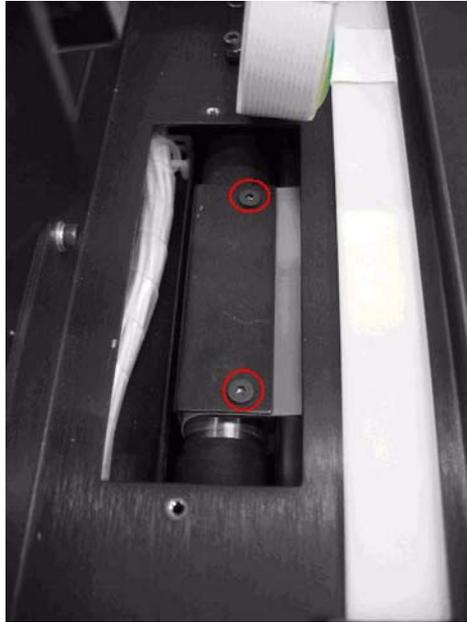
[3] Release the two Allen screws attaching the silver bracket.

#### Remove the Silver Bracket



[4] Release the two Allen screws attaching the L Bracket and holding the Screen Guide.

**Remove the L Bracket**



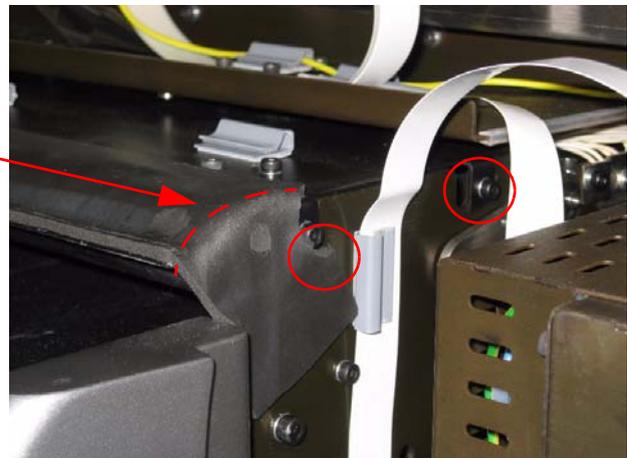
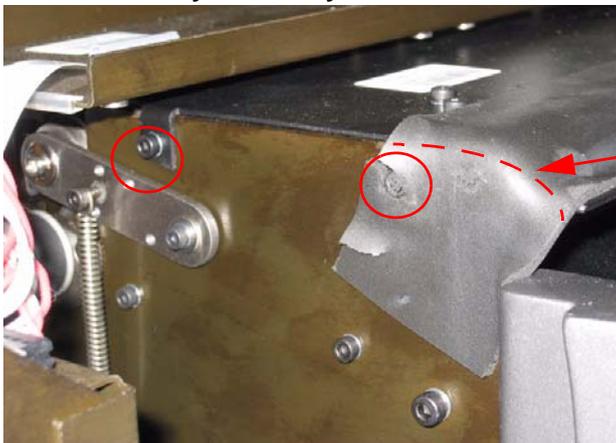
[5] Disconnect the flex cable connected to the LED panel.

**Disconnect the Flex Cable**



[6] Release the two Allen screws holding the Key Assembly from the left and the two Allen screws holding the Key assembly from the right and cut the protective sponge strip.

**Release the Key Assembly screws**



Cut protective sponge strip

[7] Pull the Key Assembly out of its location.



**Caution**

The Screen Guide is situated between the rollers. Pull carefully towards you!

**Pull the Key Assembly towards you**



[8] Remove the two Allen screws attaching the Screen Guide bracket to the Key Assembly, releasing the old Screen Guide.

**Remove the Allen screws from the Screen Guide Bracket**



---

## Replacing the Screen Guide

[1] Install the new Screen guide to the Key Assembly.

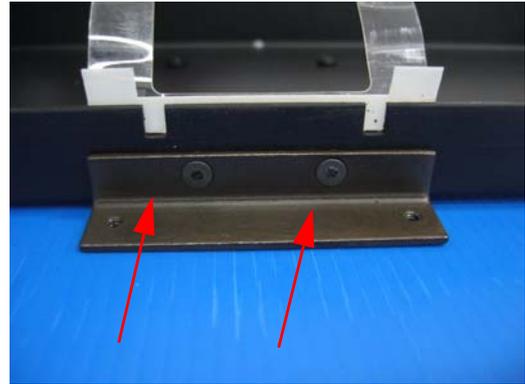
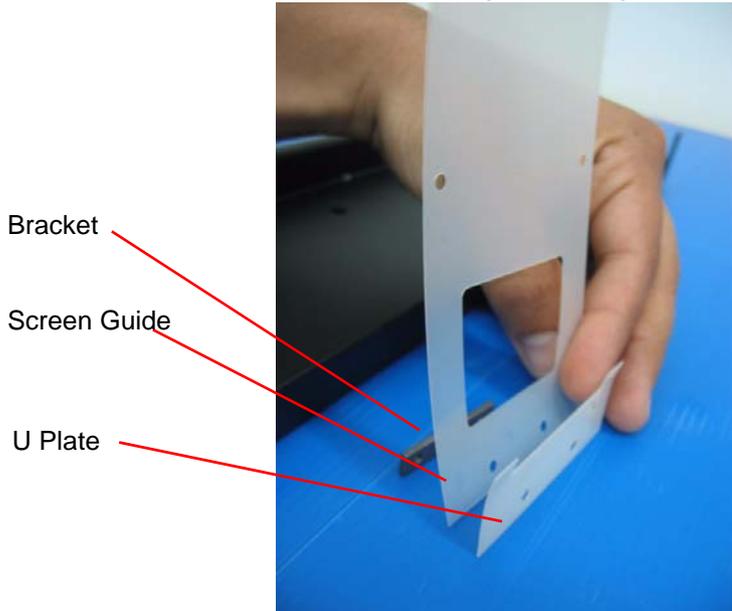


### Important

The Screen Guide is slightly bent when you remove it from the envelope; install it without reversing it.

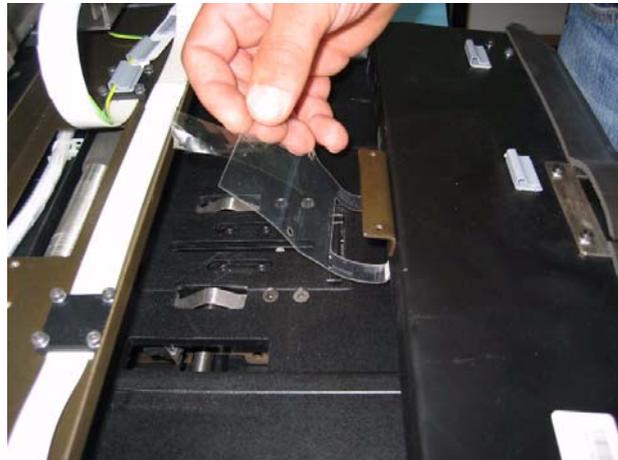
Reassemble in the correct order: Key Assembly, U-plate, Screen Guide, Bracket.ff

### Install the New Screen Guide to the Key Assembly

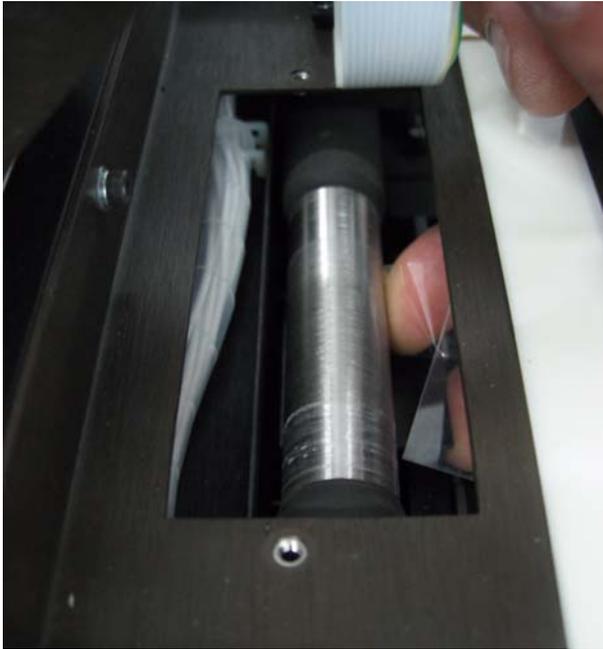


[2] Stick a piece of adhesive tape to the end of the Screen Guide and install the Key Assembly while fastening the adhesive tape to the Roller.

### Stick Adhesive Tape to the Screen Guide



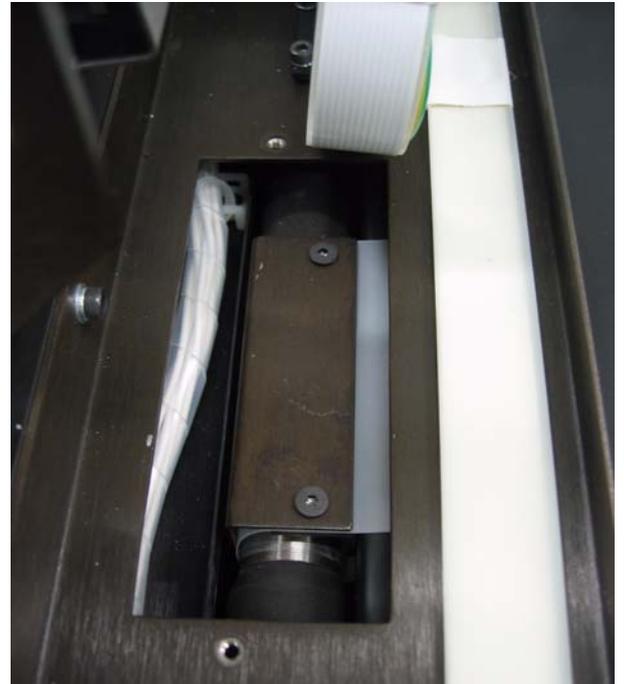
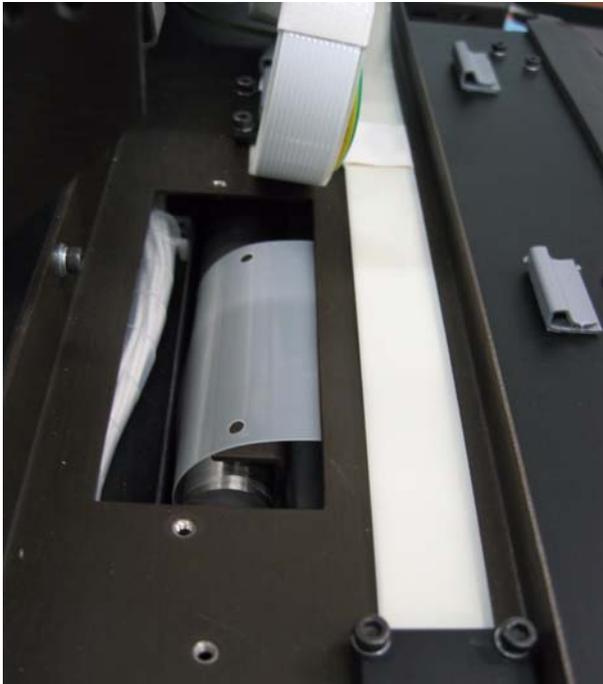
[3] Rotate the Rollers manually so that the Screen Guide is pulled underneath the Rollers until it is visible from the upper hole.

**Rotate the Rollers Manually**

- [4]** Place the Screen Guide in its location under the black bracket and install the L Bracket and the L Bracket screws, positioning the Screen Guide.

 **Note**

There are two oval holes on the Screen Guide, do not tighten the screws before performing the Adjustment Procedure that follows.

**Install the L Bracket**

- [5]** Perform the Screen Guide Adjustment Procedure ([See "Screen Guide Adjustment \(non Auto-loop\)" on Page 129.](#))
- [6]** Insert the Silver bracket and fasten the two Allen screws.
- [7]** Insert the two Allen screws on the left and the two Allen screws on the right of the Key Assembly.
- [8]** Connect the white flex cable back to the LED Panel connector.
- [9]** Assemble the scanner cover.

---

## Auto-loop Key Assembly Replacement

Some scanners have undergone hardware upgrades of the Key Assembly to assemblies with Auto-loop solenoids. Validate whether this section or [“Screen Guide Replacement for non Auto-loop systems” on Page 89](#) is relevant for your scanner.

---

### Tools Required

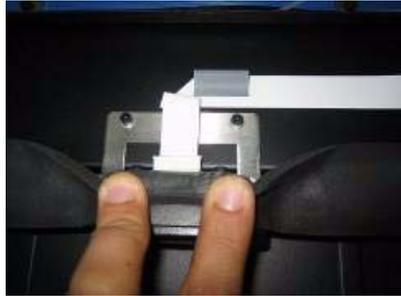
- Allen Keys
- Wire cutter

---

### Removing the Auto-loop Key Assembly

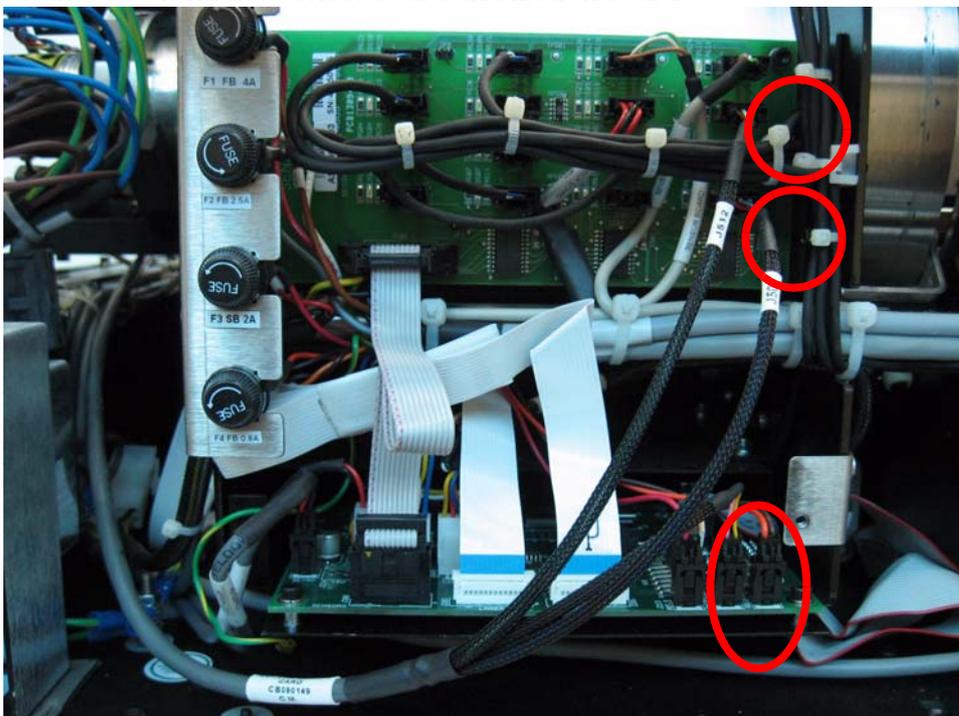
- [1] Remove the Service Panel and Scanner Cover. (See [“Removing the Service Panel and Scanner Cover” on Page 41.](#))
- [2] Go to Technician>Setup>Diagnostics and move the Linear assembly to the left side.
- [3] Disconnect the scanner from the main power.
- [4] Carefully remove the flex cable from the connector and move it aside.

#### Disconnect flex cable



- [5] Disconnect:
  - (a) Two 4-pin connectors (J512 and J504) from the Sensor board.
  - (b) the 2-pin connector (J212) from the Motion board.

#### Disconnect the Connectors from the Sensor board and Motion board



- [6] Cut the plastic ties securing the 3-grouped cable leading from the Auto-loop Key Assembly to the right of the scanner to the Motion board, and release the cable.
- [7] Release the four screws securing the Auto-loop Key Assembly and release the flex cable that is secured to the Auto-loop Assembly.

#### Release the screws securing the Auto-loop Key Assembly



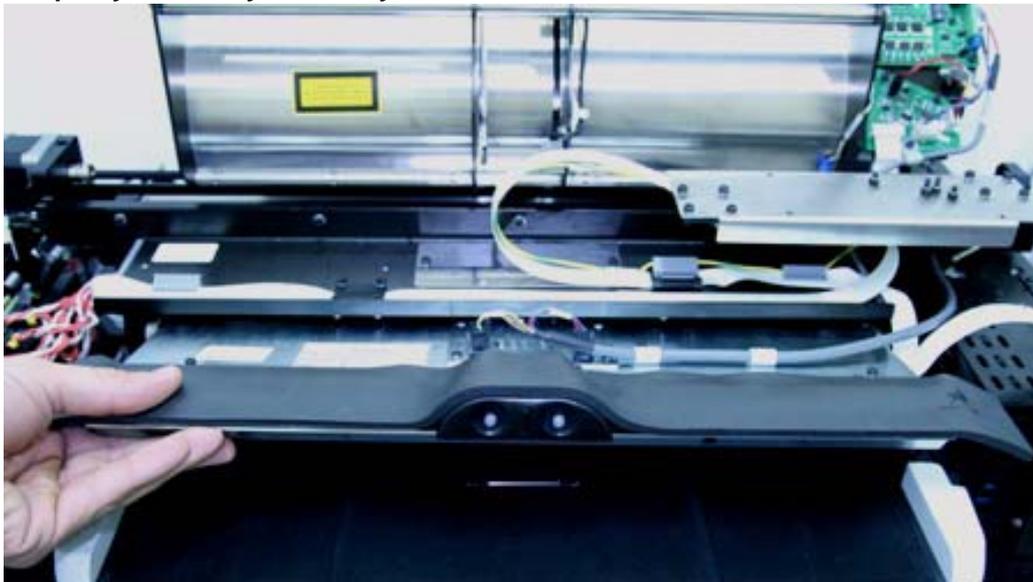
- [8] Pull the Auto-loop Key Assembly straight towards you.



#### Caution

Do not attempt to lift the Auto-loop Key Assembly. Pull it straight.

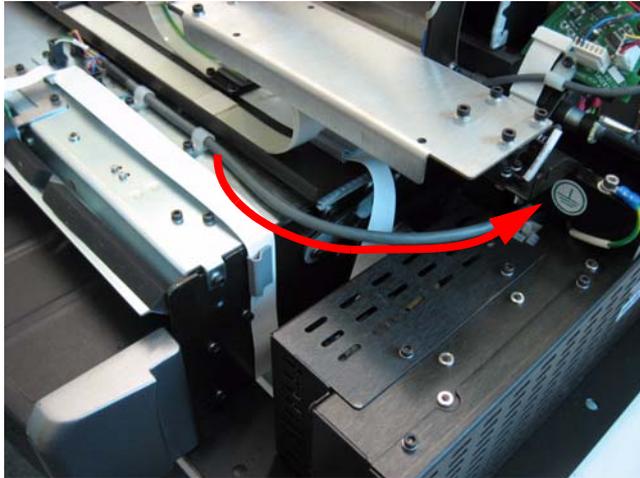
#### Pull the Auto-loop Key Assembly towards you



#### Installing the Auto-loop Key Assembly

- [1] Lift the Assembly bracket and install the new Auto-loop Key Assembly.
- [2] Insert a 14" x 17" cassette into the cassette pickup position, then install the four screws that hold the Auto-loop assembly to the scanner.
- [3] Remove the cassette using the manual cassette release knob and check that it moves back and forward smoothly.
- [4] Carefully insert the flex cable with the blue side down.
- [5] Pass the 3-grouped cable from the new Auto-loop Key Assembly to the right of the scanner and all the way round to the motion board.

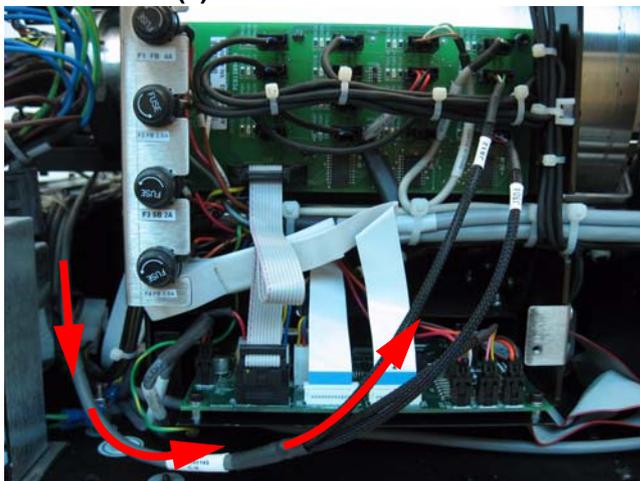
Pass the cable around to the Motion card (1)



Pass the cable around to the Motion card (2)



Pass the cable around to the Motion card (3)



[6] Connect:

(a) the 2-pin connector (J212) from the Motion board.

(b) Two 4-pin connectors (J512 and J504) from the Sensor board.

[7] Secure the cable where possible with tie wraps.

[8] Fasten the protective sponge strip onto the top of the Auto-loop Key Assembly.

[9] Install the Scanner Cover and Service Door.

## Auto-loop Solenoid Replacement

This procedure describes how to replace the Auto-loop Solenoid without replacing the whole Auto-loop Key Assembly.

### Tools Required

- 2.5 mm Allen wrench
- 2.5 x 75 mm flat screwdriver
- Long nosed plier

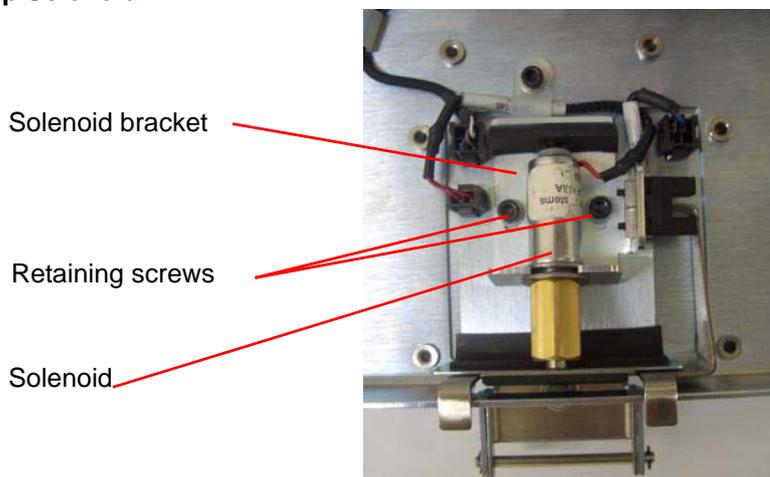
### Removing the Auto-loop Solenoid

- [1] Remove the Auto-loop Key Assembly from the scanner. (See [“Removing the Auto-loop Key Assembly” on Page 94](#))
- [2] Release the connectors J212 and J504 from the top side of the Auto-loop Assembly using long-nosed pliers.
- [3] Remove the two M3 retaining screws from the Solenoid bracket and remove the Auto-loop Solenoid bracket together with the attached sensor.

### Installing the Auto-loop Solenoid

- [1] Insert the new Auto-loop Solenoid (SK000107) and attach the two M3 screws.

#### Auto-loop Solenoid



- [2] Attach connectors J212 and J504.
- [3] Install the Auto-loop Solenoid to the system. (See [“Installing the Auto-loop Key Assembly” on Page 95](#))
- [4] Perform the procedure described in [“Auto-loop Solenoid Adjustment” on Page 127](#).

---

## Tray Assembly Replacement for non Auto-loop Systems

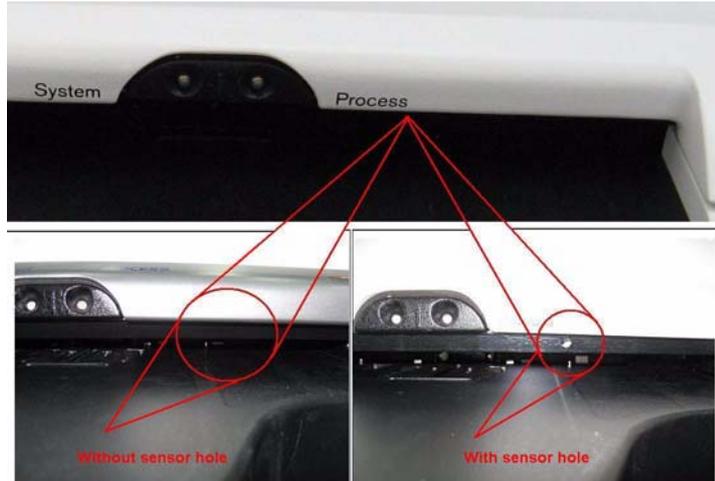
This procedure describes how to replace the Tray Assembly on systems that don't have Auto-loop mechanisms.

---

### How to Identify Auto-loop vs. non Auto-loop Systems

Point-of-Care 120/140 Systems that have been adapted for Auto-loop can be identified by the sensor hole to the right of the flange at the top of the Key Assembly as shown in the figure below.

#### Auto-loop adaptation identification



If you are not sure what configuration your scanner has, send the serial number of the scanner in subject to Carestream service to verify. The system's serial number appears on the back of the cover.

#### System Serial Number



---

### Tools Required

- *Phillips* screwdriver
- *Allen* metric tools: 2.5, 3.0, 4.0
- Flat screwdriver 2.5 x 75 mm
- Small cutter
- Tie wraps 2.5 x 100 mm

## Removing the Tray Assembly

- [1] Remove the Service Panel and Scanner Cover. ([See “Removing the Service Panel and Scanner Cover” on Page 41.](#))
- [2] Disconnect the J513 and J514 sensors from the sensor board which is inside of the rear service panel and release the sensor cables from the tie wraps.

### Remove J513 and J514 sensors

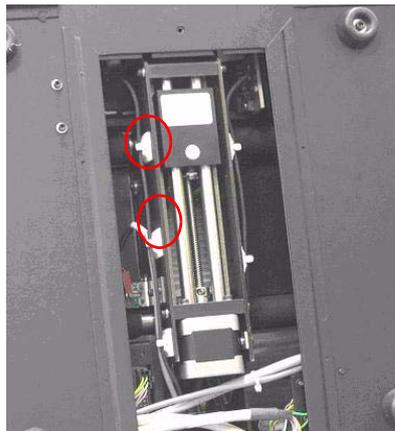
J514 sensor

J513 sensor



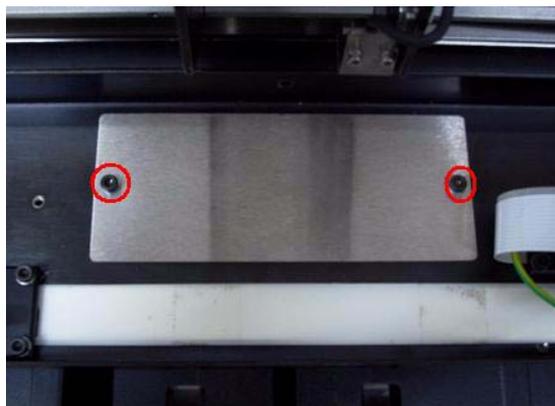
- [3] Turn the system on its back and cut the tie wraps that hold the sensor cable.

### Remove J513 and J514 tie wraps



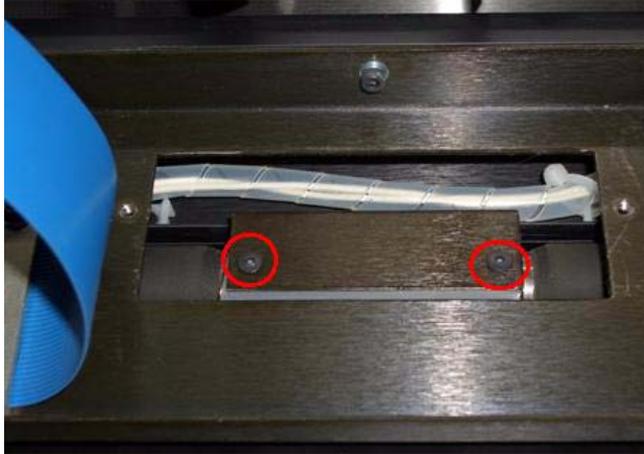
- [4] Remove the two M3 screws retaining the silver bracket.

### Remove the silver bracket.



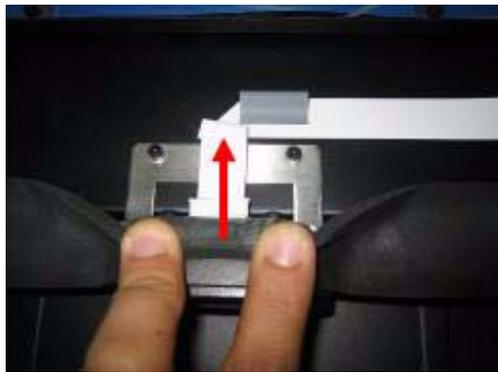
[5] Remove the two M3 screws attached to the black L-bracket securing the Mylar strip and remove the bracket.

**Remove the two screws retaining the black L-bracket**



[6] Release the flex cable from the Key Assembly connector.

**Release the flex cable from the connector**



[7] Remove all four M3 screws retaining the Key assembly; two on the left side and two on the right side.

**Remove the four screws retaining the Key assembly.**



Left side      Right side



[8] Pull the Key assembly towards you out of its location.

**Pull out the Key assembly**



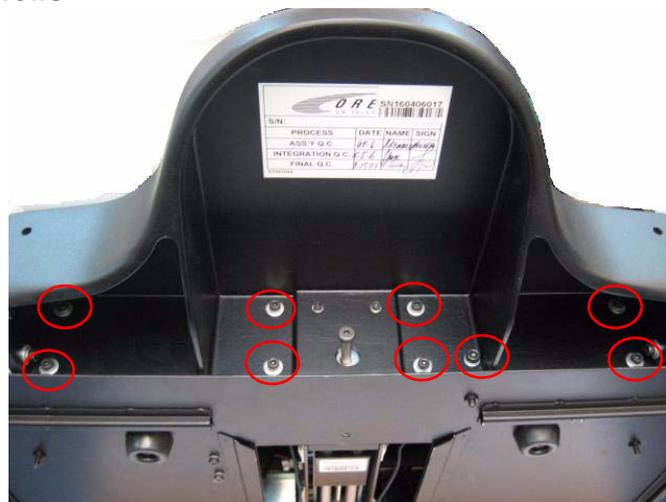
[9] Release the ground strap from the stud and keep the washers in order.

**Remove the ground strap.**



[10] Remove the nine M4 screws that retain the Tray Assembly.

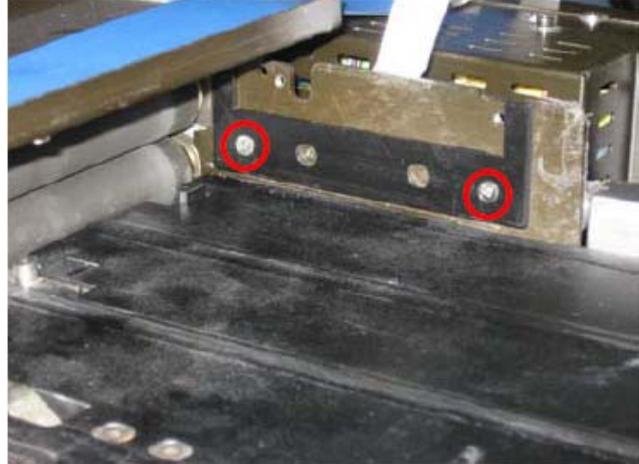
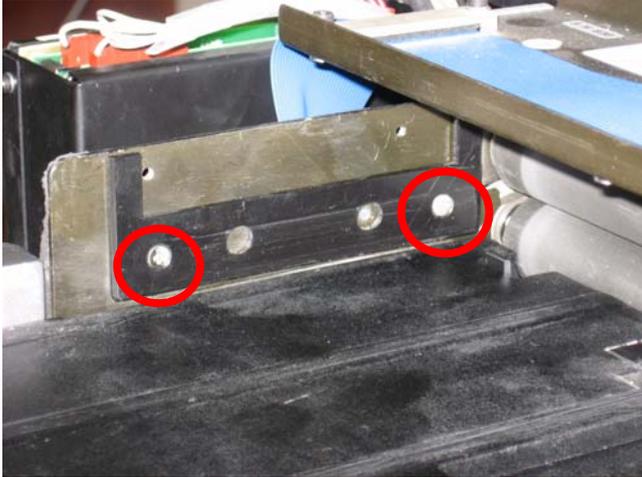
**Remove Tray Assembly screws**



---

[11] Remove four M3 screws holding the plate sides (two on the left side and two on the right) and remove them.

#### Plate sides mounting screws



[12] Gently pull out the Tray assembly.

---

### Installing the Tray Assembly

- [1] Gently insert the Tray assembly.
- [2] Attach the ground strap to the stud, keeping the washers in order.
- [3] Insert the four M3 screws that hold the Tray assembly plate sides (two on the left side and two on the right).
- [4] Insert the nine M4 screws that retain the Tray assembly.
- [5] Insert the Key assembly into its location.
- [6] Insert four screws retaining the Key assembly.
- [7] Attach the flex cable to the Key assembly connector.
- [8] Return the black L-bracket securing the Mylar strip and insert the two M3 screws.
- [9] Insert the screws securing the silver bracket.
- [10] Turn the system on its back and attach new tie wraps to hold the sensor cable.
- [11] Connect J513 and J514 to the sensor board.
- [12] Perform [“Loader Pin and Loader Pusher Adjustments” on Page 132.](#)
- [13] Perform the Test Procedures described below.
- [14] Replace the scanner cover and insert the eleven *Phillips* cover screws.
- [15] Replace the rear service panel and insert the eight *Phillips* retaining screws.

---

### Test Procedures after replacing Tray Assembly for non Auto-loop systems

- [1] Go to **Settings>Diagnostic** tab.
- [2] Verify that both LEDS illuminate after turning ON the system.
- [3] Perform load/unload cassette five times using a 14 x 17 in. cassette and five times using a 8 x 10 in. cassette to validate smooth cassette and accurate sensor operation.
  - “Cassette presence” sensor J513 should light red in Diagnostic screen after the cassette is inserted.
  - Verify that “Cassette hold” sensor J514 is ON briefly during cassette unload process.
  - Verify that the screen is completely inserted into the cassette in each “Cassette unload” process.

## Tray Assembly Replacement for Auto-loop Systems

This procedure describes how to replace the Tray Assembly on systems that have Auto-loop mechanisms.

### How to Identify Auto-loop vs. non Auto-loop Systems

See [“How to Identify Auto-loop vs. non Auto-loop Systems” on Page 98](#)

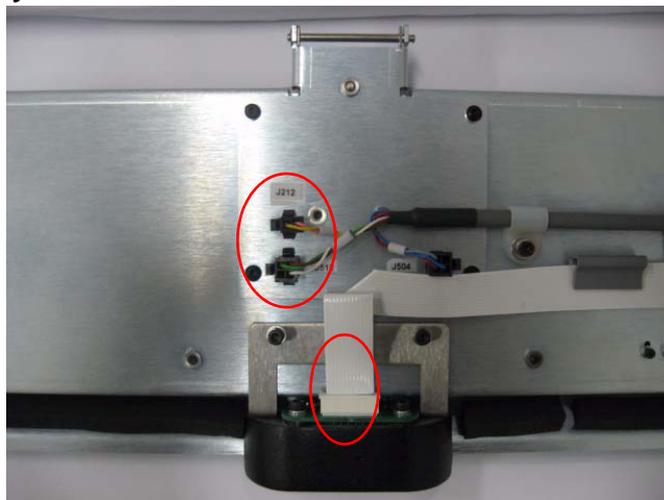
### Tools Required

- *Phillips* screwdriver
- *Allen* metric tools: 2.5, 3.0, 4.0
- Flat screwdriver 2.5 x 75 mm
- Small cutter
- Tie wraps 2.5 x 100 mm

### Removing the Tray Assembly

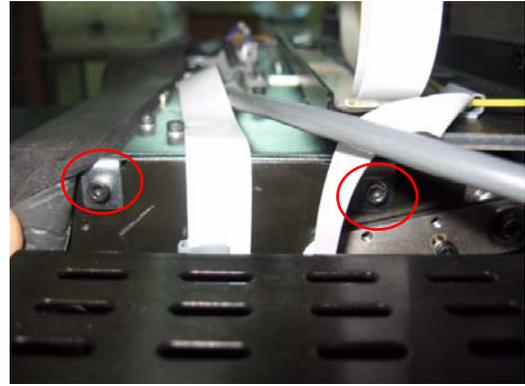
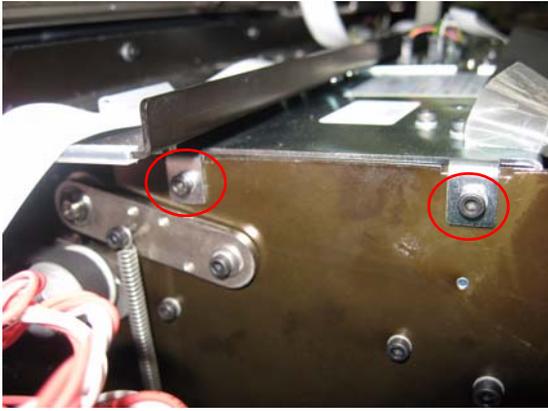
- [1] Remove the Service Panel and Scanner Cover. ([See “Removing the Service Panel and Scanner Cover” on Page 41.](#))
- [2] Disconnect all connectors - J212, J512 J504 and LED flex cable - located on the top of the Tray Assembly and release the sensor cables from the tie wraps.

#### Remove Tray Assembly sensors



- [3] Release the cable from the cable clamps and leave it beside the machine.
- [4] Remove all four M3 screws retaining the Key Assembly to the system frame; two on the left side and two on the right side.

**Remove the four screws retaining the Key assembly.**



**[5]** Pull the Key Assembly towards you out of its location.

**[6]** Release the ground strap from the stud and keep the washers in order.

**Remove the ground strap.**



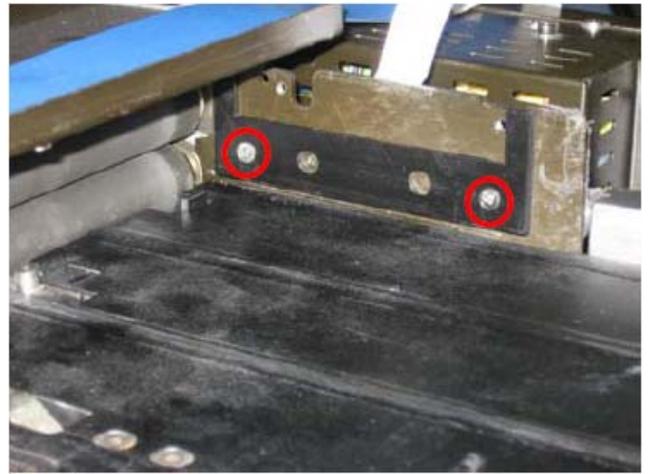
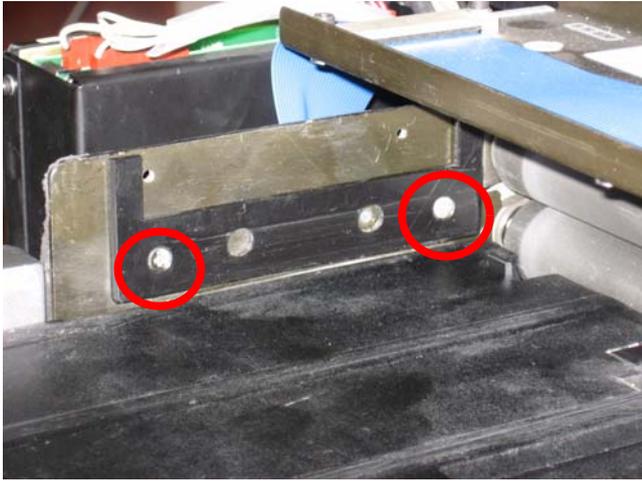
**[7]** Remove the nine M4 screws that retain the Tray Assembly.

**Remove Tray Assembly screws**



**[8]** Remove four M3 screws holding the plate sides (two on the left side and two on the right) and remove them.

### Plate sides mounting screws



- [9] Gently pull out the Tray Assembly.

### Installing the Tray Assembly

- [1] Gently insert the Tray Assembly.
- [2] Attach the ground strap to the stud, keeping the washers in order.
- [3] Insert the four M3 screws that hold the Tray Assembly plate sides.
- [4] Insert the nine M4 screws that retain the Tray Assembly.
- [5] Insert the Key assembly into its location.
- [6] Insert four screws retaining the Key Assembly.
- [7] Connect all connectors located on the top of the Key Assembly (J212, J512, J504 and the LED flex cable).
- [8] Perform [“Loader Pin and Loader Pusher Adjustments” on Page 132.](#)
- [9] Turn the Scanner on its back and attach new tie wraps to secure the Sensor cable.
- [10] Perform the Test Procedures described below.
- [11] Replace the scanner cover and insert the eleven *Phillips* cover screws.
- [12] Replace the rear service panel and insert the eight *Phillips* retaining screws.

### Test Procedures after replacing Tray assembly for Auto-loop systems

- [1] Go to **Settings>Diagnostic** tab.
- [2] Verify that both LEDs illuminate after turning ON the system.
- [3] Verify that Auto-loop solenoid is functioning: Click the Loop Solenoid button; you should hear the “click” of the solenoid movement. Repeat this action three times to validate.
- [4] Perform load/unload cassette five times using a 14 x 17 in. cassette and five times using a 8 x 10 in. cassette to validate smooth cassette and accurate sensor operation.
  - “Cassette presence” sensor J513 should light red in Diagnostic screen after the cassette is inserted.
  - Verify that “Cassette Hold” sensor J514 is ON briefly during cassette unload process.
  - Verify that the screen is completely inserted into the cassette in each “Cassette unload” process.



## Section 4: Calibrations

### Nominal Calibration

The Nominal Calibration procedure is identical for *Kodak QC* software versions 2.1.2, 2.4.2 and 2.5. The GUI is different from one version to another. In this section we show the GUI of software version 2.5. Even though the screenshots for the other software versions look different, they contain exactly the same information and instructions.

### Origin Calibration



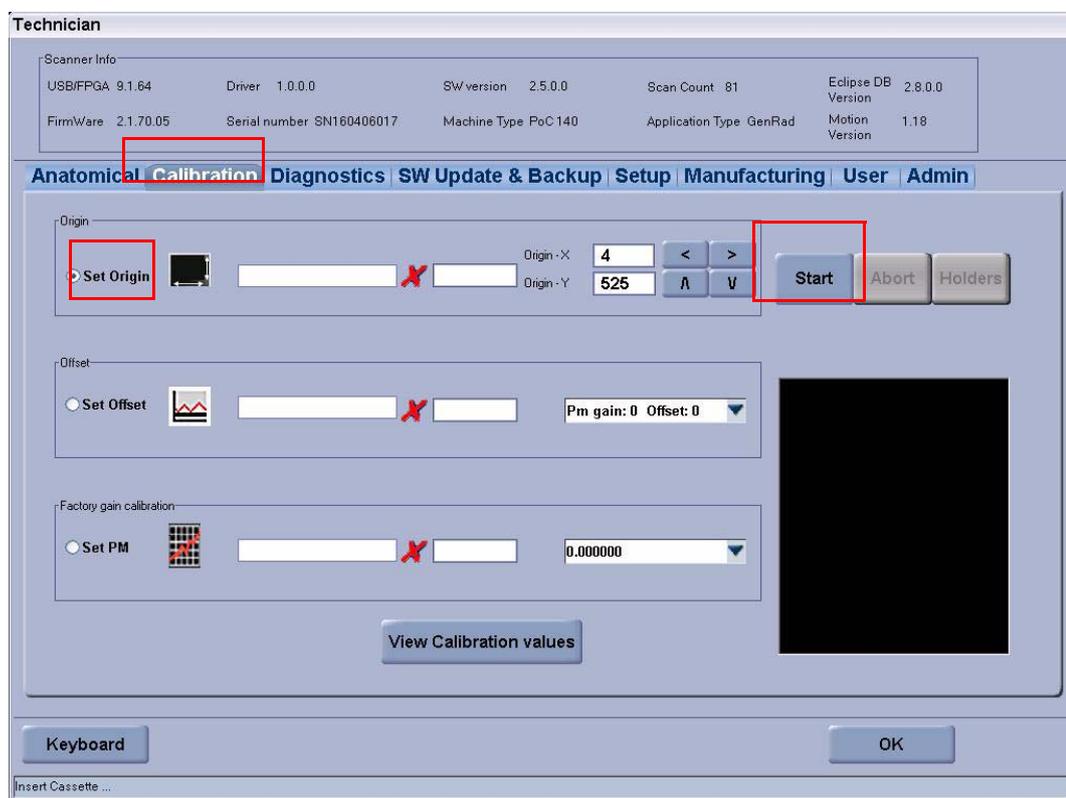
#### Important

The machine is calibrated at the factory before it is shipped. Sometimes it is necessary to re calibrate after a parts replacement procedure.

[1] Enter the *Kodak QC* configuration screen.

[2] Click on the **Calibration** tab.

#### Set Origin on Calibration Tab



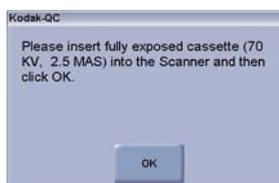
[3] Select the **Set Origin** option and then click **Start**.



#### Note

A message with the exposure setting for the origin calibration will appear.

#### Exposure Settings



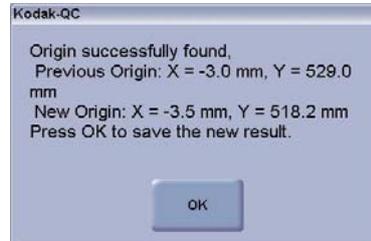
[4] Click **OK**.

[5] Expose the Cassette with the correct settings and insert it into the Scanner.

**Note**

At the end of the scanning process a message with the new X and Y coordinates will appear.

**New X and Y Coordinates**

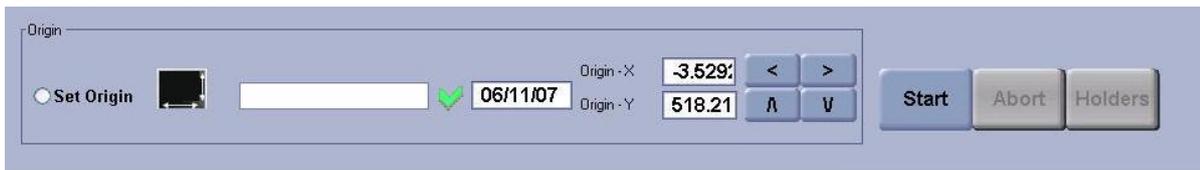


[6] Click **OK** to accept the new values.

**Note**

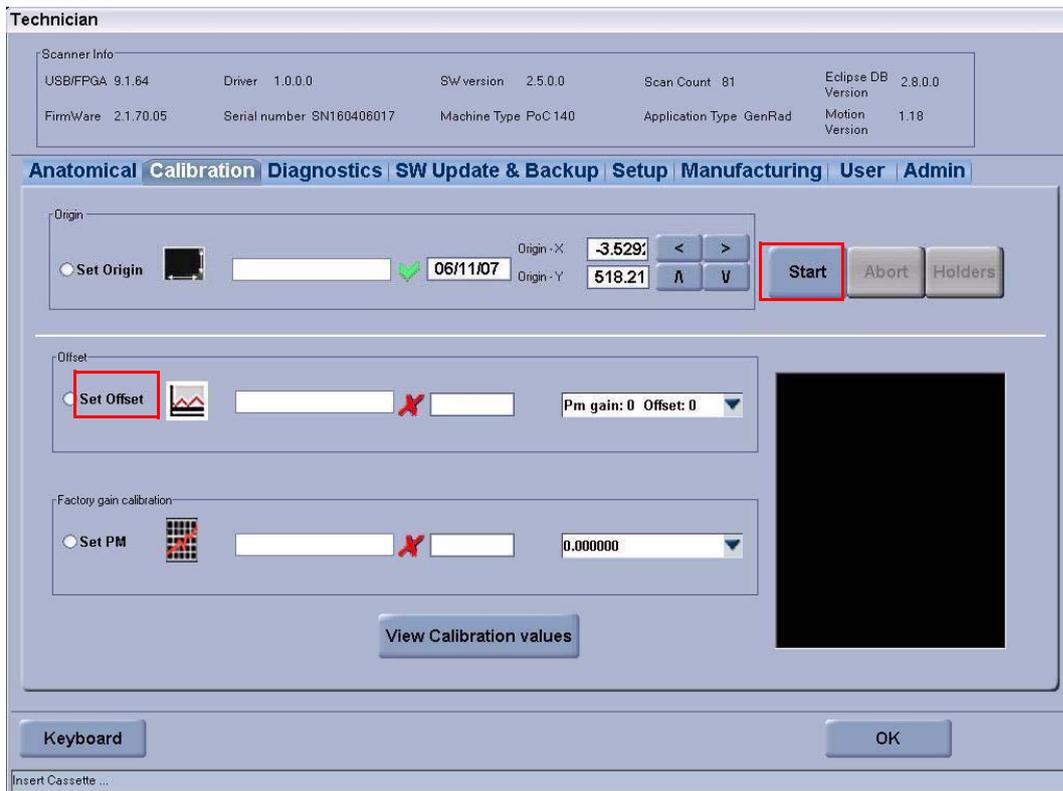
The calibration process ends and a green check mark should appear next to the Origin calibration field.

**Origin Calibration Field**



**Offset Calibration**

**Selecting Set Offset**

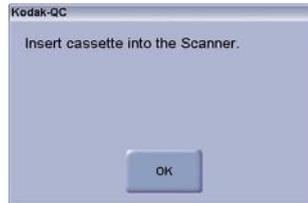


[1] Select the **Set Offset** option and click **Start**.

**Note**

A message appears instructing you to insert a Cassette.

**Insert Cassette Message**

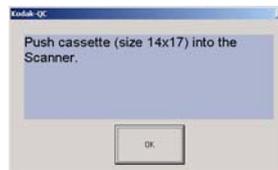


[2] After inserting a Cassette, click **OK**.

**Note**

The Cassette will be erased. At the end of the erase process a message appears instructing you to push the Cassette again.

**Push Cassette Message**



[3] Push the Cassette and click **OK**.

**Offset Calibration Completed**



[4] The offset calibration ends. A green check mark should appear next to the offset calibration field.

## PM Nominal Calibration

### Parts Needed:

	Description	Quantity	Photo	Catalog Number
1	0.5 mm Copper sheet	1		
2	1 mm Aluminum sheet	1		
2	Calibrated Dosimeter	1		
3	CR 14"x17" Cassette	1		

### Preliminary X-Ray Requirements

The "14x17" exposed area must be verified for a uniform lateral exposure level of 15% at the following dose: 1.4-1.6 $\mu$ Gy.

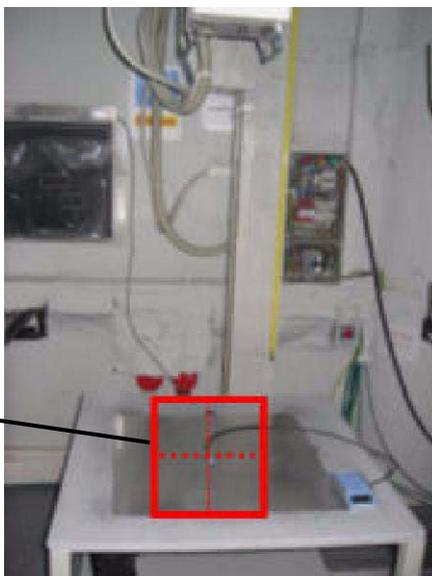
### Pre-Calibration X-Ray Setup - X-Ray Dose Adjustment

- [1] Using the X-Ray machine setup panel, verify on the X-Ray monitor screen, the following parameters:  
**Large** focal spot, SID=2.00m, 80kVp, and mAs as follows:

KV	mAs
80	1.5 (150 mA, 10 ms)

## Position of the Dosimeter

The red frame indicates the focal point of the beam. The dosimeter should be in the beam center (cross).



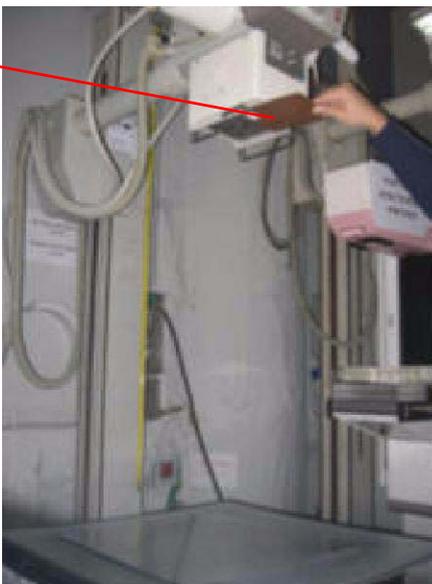
[2] Slide the X-Ray source head to a SID 2.00 m.

[3] Move the table aside and clear the path for the X-Ray beam from the source down to the floor to achieve the required SID.

[4] Place the dosimeter on the floor, at the beam center.

## Placing the Copper and Aluminum sheets

Blocking the X-Ray beam with the Copper and Aluminum sheets.



[5] Place the Copper and Aluminum sheets at the X-Ray collimator window. For RT calibration no filtration is used.

[6] Execute exposure and read the dosimeter readout. The value should be in the range of 1.4-1.6  $\mu\text{g}$ .

[7] If the dosimeter readout is out of the required range slide the X-Ray head slightly above or below the nominal SID to achieve the required dose.

[8] Remove the dosimeter detector when the dose requirement has been applied.

## Pre-Calibration X-Ray Setup - CR Screen Exposure and Calibration

- [1] Slide the Copper and Aluminum sheets out of the collimator window.
- [2] Place the Cassette, loaded with well-erased CR screen, on the floor, with its center located at the X-Ray beam center.
- [3] Slide back the Copper and Aluminum sheets to cover the collimator window.

### Note

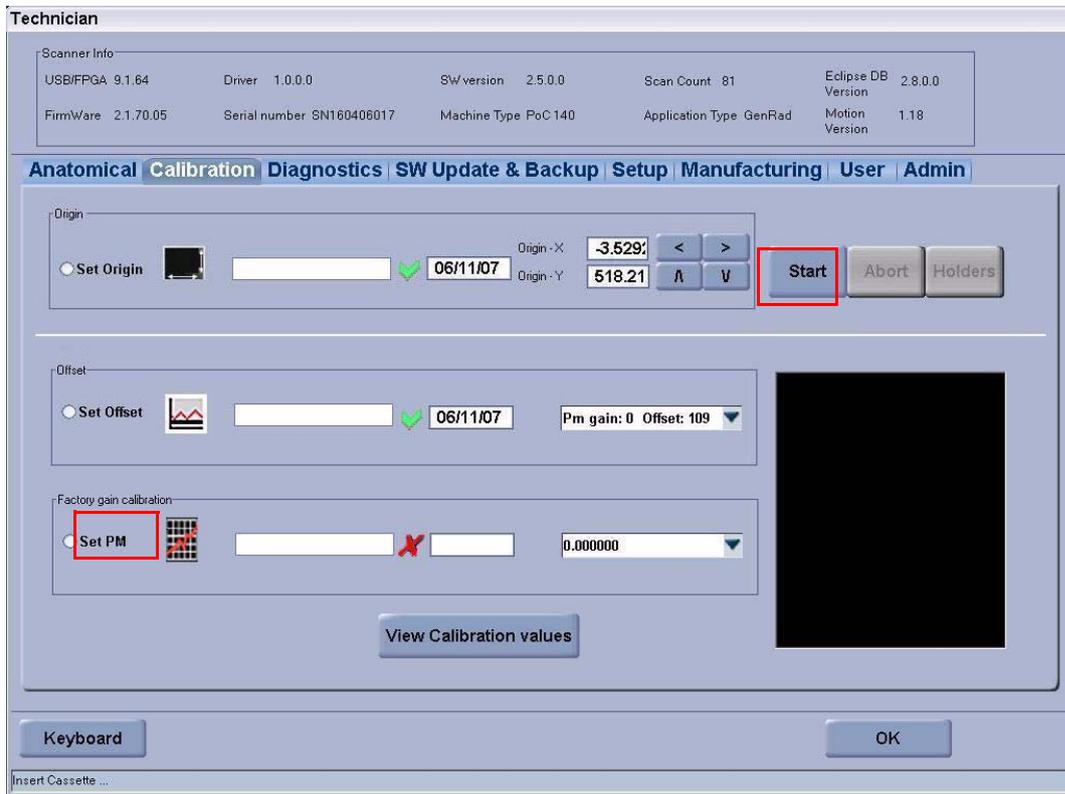
The Aluminum sheet must be facing down with the Copper sheet above it, facing the X-Ray tube.

### Note

Origin-find and Offset-find calibrations must have been performed previously as described in [“Nominal Calibration” on Page 107](#).

- [4] Expose the Cassette setup to X-Ray radiation.
- [5] Enter the *Kodak QC* setup configuration screen.
- [6] Select the **Calibration** tab.
- [7] Select the **Set PM** check box.

## Calibration Tab



Scanner Info					
USB/FPGA	9.1.64	Driver	1.0.0.0	SW version	2.5.0.0
Scan Count	81	Eclipse DB Version	2.8.0.0		
FirmWare	2.1.70.05	Serial number	SN160406017	Machine Type	PoC140
Application Type	GenRad		Motion Version	1.18	

**Anatomical Calibration Diagnostics SW Update & Backup Setup Manufacturing User Admin**

**Origin**

Set Origin    06/11/07 Origin-X: -3.529 Origin-Y: 518.21

**Offset**

Set Offset    06/11/07 Pm gain: 0 Offset: 109

**Factory gain calibration**

Set PM     0.000000

Insert Cassette ...

- [8] Click **Start**.

### Note

A new screen message box appears with the X-Ray dose settings:

## Find PM Gain

**Technician**

Scanner Info

USB/FPGA 9.1.64	Driver 1.0.0.0	SW version 2.5.0.0	Scan Count 81	Eclipse DB Version 2.8.0.0
FirmWare 2.1.70.05	Serial number SN160406017	Machine Type PoC 140	Application Type GenRad	Motion Version 1.18

**Anatomical Calibration Diagnostics SW Update & Backup Setup Manufacturing User Admin**

Origin

Set Origin    06/11/07 Origin -X: -3.529; Origin -Y: 518.21

Offset

Set Offset    06/11/07 Pm gain: 0 Offset: 109

Factory gain calibration

Set PM 

**Kodak-QC**

Please note that the following x-ray setting is used: 80KVp, 1.5mAs (150mA, 10ms), SID=2m Filtration: 0.5mm-Copper + 1mm-Aluminum plates at tube exit. Exposure on the plate should be within the range of 1.4 - 1.6 micro-Gy.

OK

Keyboard

Insert Cassette ...

[9] Click **OK** and insert the Cassette which has been exposed with the required dose into the Scanner.

 **Note**

When the calibration process has been completed successfully, a green check mark appears next to the PM nominal calibration field along with the date of the calibration procedure.

## Calibration Successful Screen

Technician

Scanner Info

USB/FPGA 9.1.64	Driver 1.0.0.0	SW version 2.5.0.0	Scan Count 81	Eclipse DB Version 2.8.0.0
FirmWare 2.1.70.05	Serial number SN160406017	Machine Type PoC140	Application Type GenRad	Motion Version 1.18

Anatomical Calibration Diagnostics SW Update & Backup Setup Manufacturing User Admin

Origin

Set Origin

Origin-X: -3.529

Origin-Y: 518.21

Start Abort Holders

Offset

Set Offset

Offset: 06/11/07

Pm gain: 0 Offset: 109

Factory gain calibration

Set PM

06/11/07

0.000000

247.000000

333.000000

432.000000

561.000000

View Calibration values

Keyboard OK

Insert Cassette ...

### Note

If the calibration was not successful, a red X appears next to the calibration field.

### Calibration Failed

Factory gain calibration

Set PM

06/11/07

0.000000

[10] Make sure the Scanner is not located near a window or other strong light source and repeat the calibration process.

[11] If the calibration still fails, contact Carestream Health service support.

## Facility Calibrations for *Kodak QC* Version 2.1.2/2.4.2 Software

This section describes how to calibrate the Point-of-Care CR 120/140 System with *Kodak QC* 2.1.2 or 2.4.2 software versions to the X-ray machine used to achieve optimum image quality in the scanned images. The PoC scanners undergo tuning process before leaving the factory, but should be finely tuned during installation in order to set the unit to the nominal point of operation.

### Introduction

The unit parameter that controls the calibration of the image is called PM Gain.

The PM Gain value is usually similar for all organs when a specific X-ray technique (e.g., 200/400 ASA) is used. However, the gain can be set separately for each sub-organ in order to achieve optimum image quality.

The calibration process consists of several steps:

- Gain tuning: Finding a gain value for a specific x-ray technique (200-400 ASA) that can be used for thick and thin anatomy at the specific clinic's settings.
- Fine tuning during clinical work: Tuning the gain value of a specific image type in order to obtain optimal image quality.
- Image enhancement: Fine tuning of the *Context Vision* filters to obtain optimal image processing.

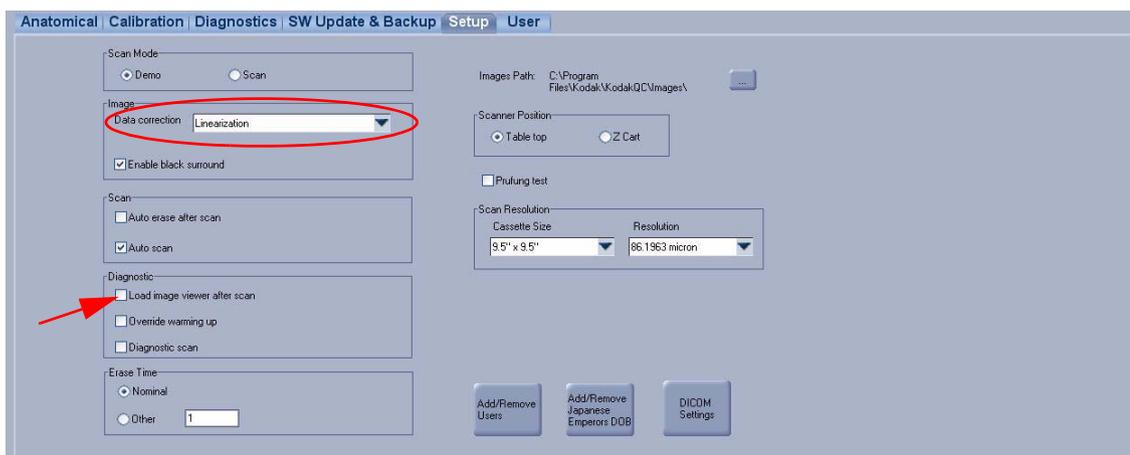
### Required Equipment

- Software: *Kodak QC* 2.1 or later
- General purpose cassette, size 14 x 17 in.
- Filters: 0.5 mm copper and 1.0 mm aluminum
- Lead sheet for dose measurement

### Setup

- [1] In the *Kodak QC* window, click **Setup**.
- [2] Select the **Anatomical** tab.
- [3] In the **organ** box, select an organ.
- [4] In the **Global PM Setting** text box, type "100" and click **Set**.

### Setup Tab



- [5] Select the **Setup** tab.
- [6] In the **Image** area, verify that the **Data correction** box is set to **Linearization**.
- [7] In the **Diagnostic** area, select the **Load image viewer after scan** check box.
- [8] To exit the **Setup** tab, click [Apply] and then [OK].

## Gain Tuning Procedure

The procedure below applies to 200 ASA and 400 ASA. Only the X-ray settings in Steps 1 and 2 vary.

### 200 and 400 ASA X-Ray Settings

[1] Using the x-ray machine control panel, set the following X-ray settings for 200 or 400 ASA:

(a) 200 ASA

- 100 kVp 4 mAs (200 mA, 20 ms), SID=1.8 m, Large Focal Spot
- Avoid the use of grid in this procedure.
- Add 0.5 mm copper and 1.0 mm aluminum plates at the tube exit with the copper closest to the tube.
- Measure the exposure using a dosimeter placed on top of the lead sheet or apron.
- Adjust the SID to obtain the required value of  $8.7\mu\text{Gy} \pm 0.5 \mu\text{Gy}$  ( $1.0 \text{ mR} \pm 0.05 \text{ mR}$ ).

(b) 400 ASA

- 80 kVp 4 mAs (200 mA, 20 ms), SID=1.8 m, Large Focal Spot
- Avoid the use of grid in this procedure.
- Add 0.5 mm copper and 1.0 mm aluminum plates at the tube exit with the copper closest to the tube.
- Measure the exposure using a dosimeter placed on top of the lead sheet or apron.
- Adjust the SID to obtain the required value of  $4.3\mu\text{Gy} \pm 0.5 \mu\text{Gy}$  ( $\sim 0.5 \text{ mR} \pm 0.05 \text{ mR}$ ).

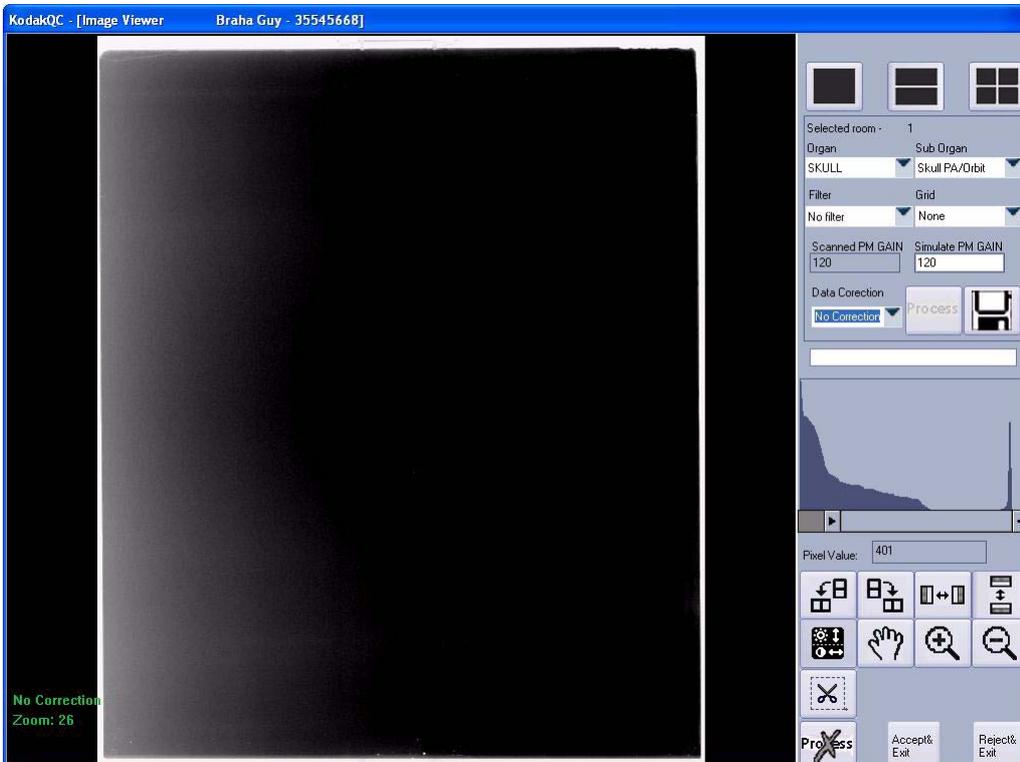
[2] Place a 14 x 17 in. cassette in the center of the field.

[3] Make an x-ray exposure.

[4] Wait 2 minutes after exposing the cassette.

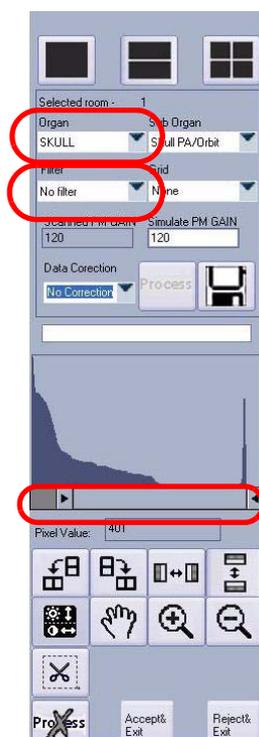
[5] Load the cassette into the Point-of-Care CR 120/140 System and click **Scan**.

### Screen Image in the Image Viewer screen



[6] When the scan is completed, the image is displayed in the Image Viewer screen.

## Image Viewer Selections



- [7] Select:
- **Chest** in the **Organ** box
  - **Chest AP** in the **Sub-Organ** box
- [8] Verify:
- **No Filter** is selected in the **Filter** box
  - **Linearization** is selected in the **Data Correction** box
- [9] Measure the pixel value on the center of the field.
- [10] Use the Simulate PM Gain field to change the panel pixel value on the center of the image to  $2300 \pm 100$ .
- To increase the pixel value, type a lower PM gain value in the **Simulate PM GAIN** text box.
  - To decrease the pixel value, type a higher PM gain value in the **Simulate PM GAIN** text box.
- [11] Click **Process** and measure the pixel value on the center of the image.
- [12] Continue changing the gain value in [Step 9](#) to [Step 11](#) until a pixel value of  $2300 \pm 100$  is measured.
- [13] Click the Floppy Disk icon to save.
- [14] In the popup box, check **save PM** and **save to all organs**.
- [15] Click **Reject and Exit**.
- [16] Perform an additional exposure and verify that the target pixel value of  $2300 \pm 100$  is measured.
- If the pixel value is correct, click **Reject & Exit** to exit the viewer.
  - If the pixel value is not correct, repeat the tuning procedure, [Step 7](#) to [Step 15](#).
- [17] Enter Setup and select the **Setup** tab.
- In the Image frame, verify that the **Data Correction** box is set to **Linearization**.
  - In the **Diagnostic** area, uncheck the **Load image viewer after scan** box.
- [18] To exit the **Setup** tab, click [Apply] and then [OK].

 **Note**

If you have more than one X-ray, the calibration procedure should be done for each X-ray using the same method but under a different room. Four rooms are available.

## On-site Fine Tuning

This step should be performed during actual clinical work with real images. The purpose is to fine-tune the images according to the preferences of the on-site individual radiologist/X-ray technician using the system.

- [1] Scan an image obtained using the clinic's standard settings and techniques.
- [2] Open a Histogram screen.

### Note

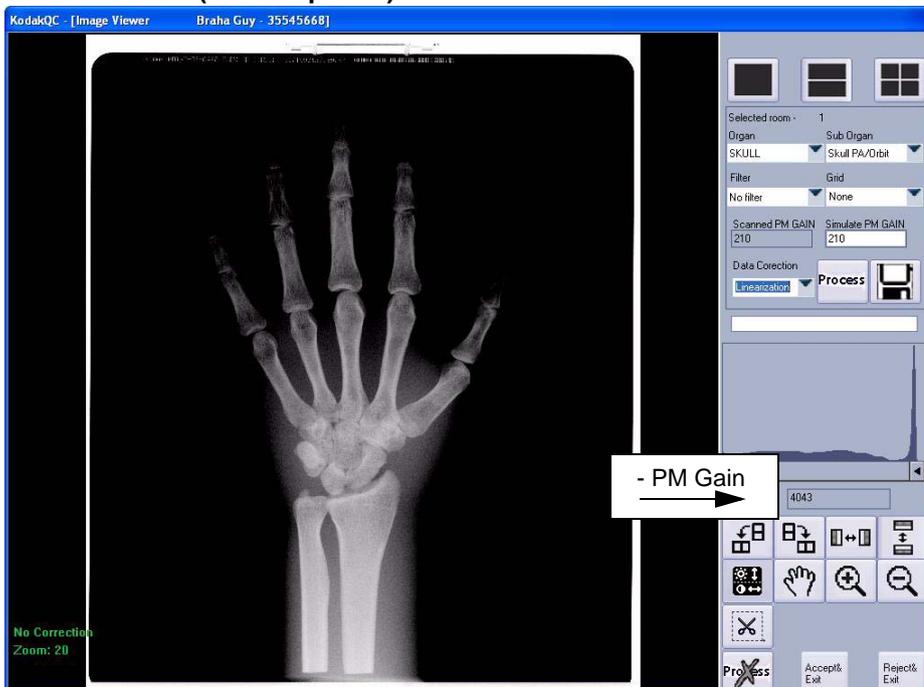
Note that the appearance of the Histogram window may vary depending on the software.

### Centered Histogram



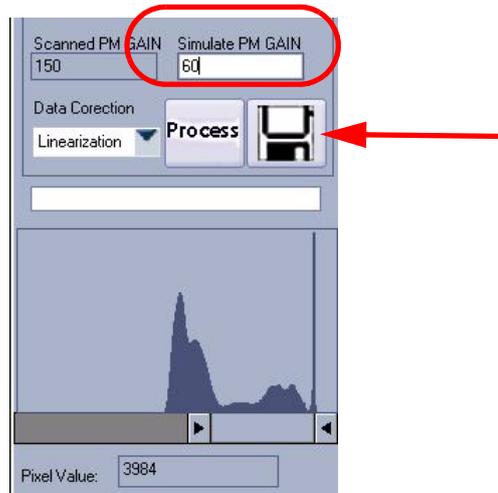
- [3] No fine tuning is necessary if the histogram is approximately centered. (See Figure ["Centered Histogram"](#) on [Page 118](#).)

### Histogram Too Much to the Left (Over Exposed)



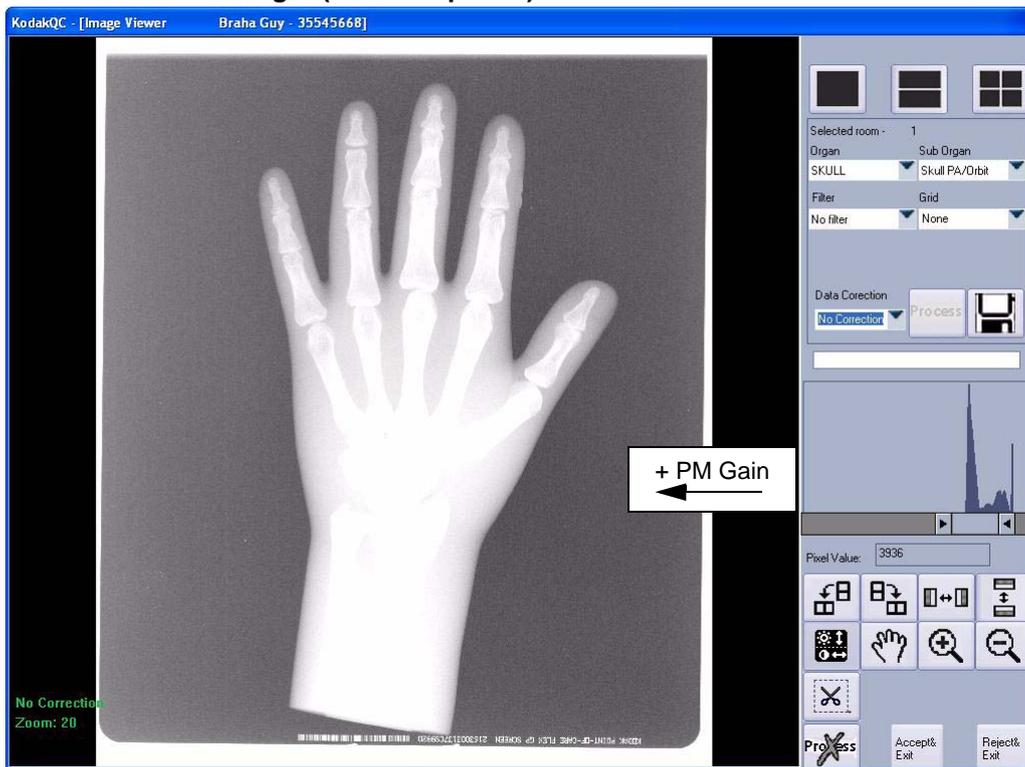
- [4] Decrease the Gain value if the histogram is too much to the left. (See Figure [“Histogram Too Much to the Left \(Over Exposed\)”](#) on Page 118.)

**Decrease PM Gain Value and Save**



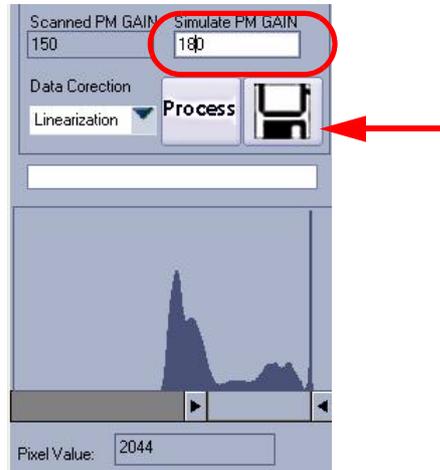
- [5] Change the **Simulate PM Gain** value (decrease PM gain by  $\pm 10$ ) and then click **Process** until the histogram appears in the middle, then click the Floppy Disk icon to save the new PM gain value directly to the sub-organ or to all organs. (See figure [“Decrease PM Gain Value and Save”](#) on Page 119.)
- [6] Save the PM setting as described in [Step 10](#) to [Step 13](#) of [“Gain Tuning Procedure”](#) on Page 116.

**Histogram Too Much to the Right (Under Exposed)**



- [7] Increase the Gain value if the histogram is too much to the right. (See Figure [“Histogram Too Much to the Right \(Under Exposed\)”](#) on Page 119.)

## Increase PM Gain and Save



[8] Change the **Simulate PM Gain** value (increase PM gain by  $\pm 10$ ) and then click **Process** until the histogram appears in the middle, then click the Floppy Disk icon to save the new PM gain value directly to the sub-organ or to all organs. (See Figure [“Increase PM Gain and Save”](#) on Page 120.)

[9] Save the PM setting as described in [Step 10](#) to [Step 13](#) of [“Gain Tuning Procedure”](#) on Page 116.

## Image Enhancement with *Context Vision* Filters

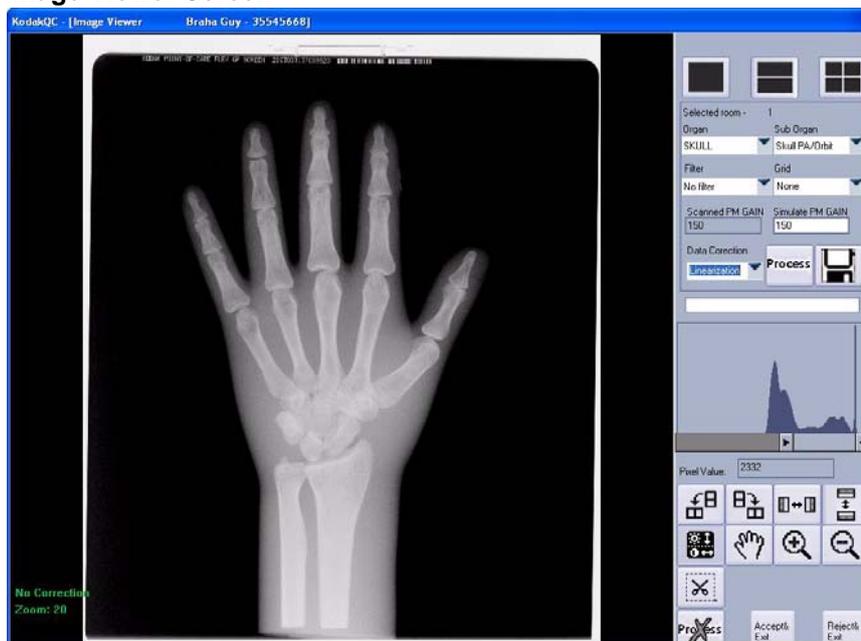
Fine tuning of the image is done by using filters. The *ContextVision* filter has three main filters for each organ:

- Light filter.
- Medium filter.
- Sharp filter.

To choose which filter is the best follow these steps:

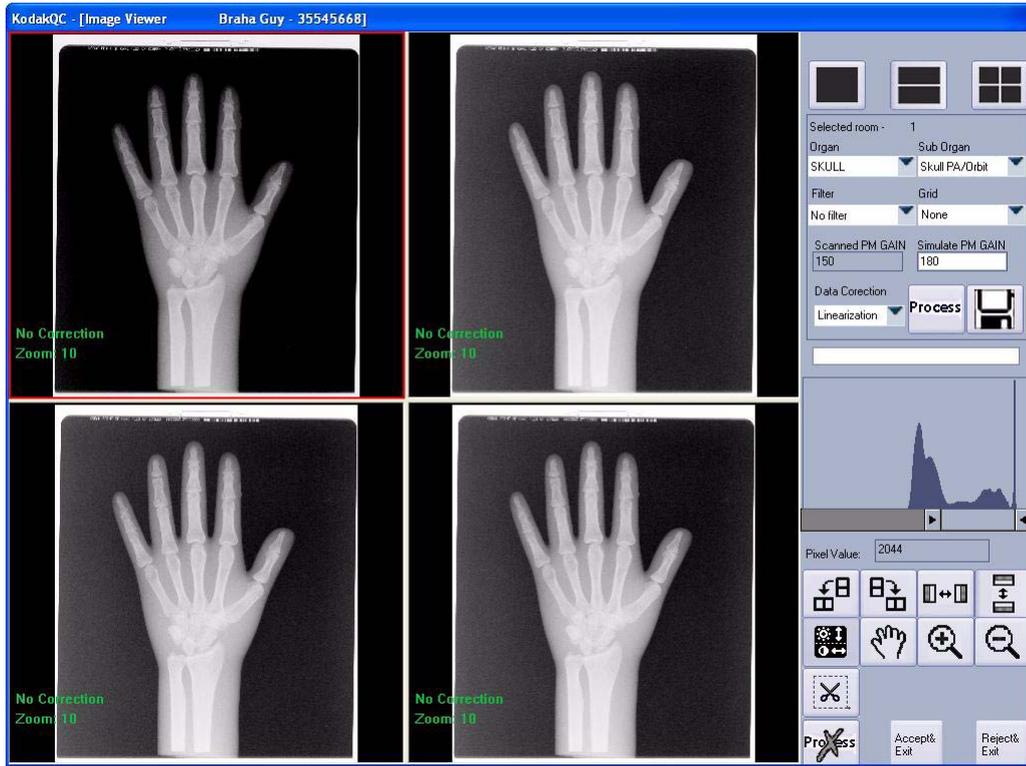
- [1] Go to the *Kodak QC* configuration screen. The code is 1331.
- [2] Select the **Setup** tab and select the **Load image viewer after scan** box.
- [3] Click [Apply] and then [OK].
- [4] Scan a real organ image.

## Real Organ Image in Image Viewer Screen



[5] The image will appear in the Image Viewer screen. (See Figure [“Real Organ Image in Image Viewer Screen” on Page 120.](#))

**Image Appearing Four Way Split Screen in the Image Viewer**



[6] Click on the “four way split screen” icon, to divide the screen into four identical images, in order to apply different filters to the each image and compare the results side by side.

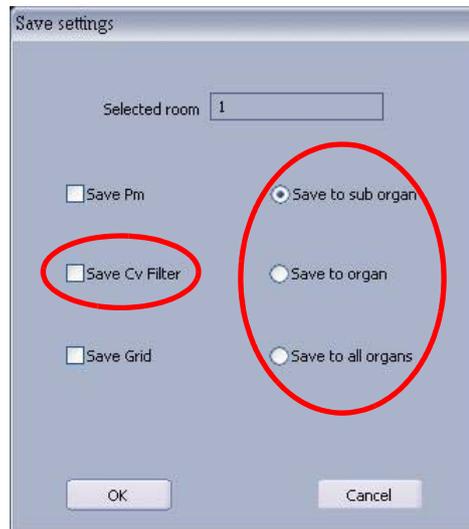
[7] Select an image (a red frame will appear around it) and choose the desired filter from the **Filter** list.

**Choosing Filter Types from the Filter Menu**



- [8] Click Process to apply the filter to the image.
- [9] Apply a different filter (three options for each organ: light, medium and sharp) to each image.
- [10] When you decide which filter gives the best results, select the image which has that filter applied to it.
- [11] Click the Floppy Disk icon to save.

**Save Cv Filter Setting Screen**



- [12] The Save settings screen will pop up. Select the Save Cv Filter option and a destination:

<b>Save to sub organ</b>	The filter chosen is saved only under the specific sub organ scanned.
<b>Save to organ</b>	The filter chosen is saved for all sub organs under the organ scanned.
<b>Save to all organs</b>	The filter chosen is saved globally to all organs and sub organs.

- [13] Click **OK** to save changes.
- [14] Repeat this procedure for all organs to achieve the best image quality with the most suitable filter.

## Gain Tuning Calibration Process for *Kodak QC Version 2.5*

### Introduction

This section describes how to calibrate the Point-of-Care CR 120/140 System with *Kodak QC 2.5* software versions to the X-ray machine used to achieve optimum image quality in the scanned images.

The PoC scanners undergo tuning process before leaving the factory, but should be finely tuned during installation in order to set the unit to the nominal point of operation.

The unit is gain tuned using a 14" x 17" flat field 2mR exposure.

### Equipment Required

General purpose 14" x 17" cassette

0.5 mm Copper Plate

1.0 mm Aluminum Plate

Dosimeter

### Gain Tuning Procedure

[1] Set the X-Ray machine as follows:

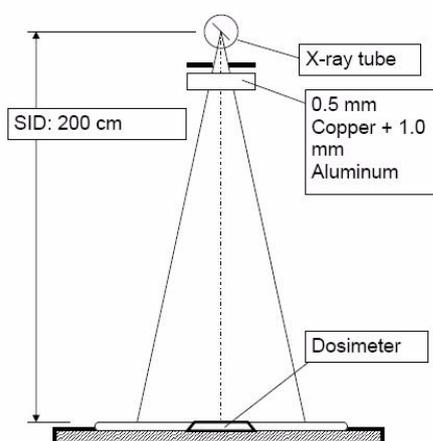
80 kVp, 10 mAs, SID = 2.0m

Large focal spot

Add 0.5 mm Copper plate (above) and 1.0 mm Aluminum plate (below) at the tube exit.

Position the Dosimeter in the exposure field.

#### X-ray setup



[2] Adjust the SID to get a value of **2mR ±0.1mR (17.4 μGy ±0.4 μGy)**.

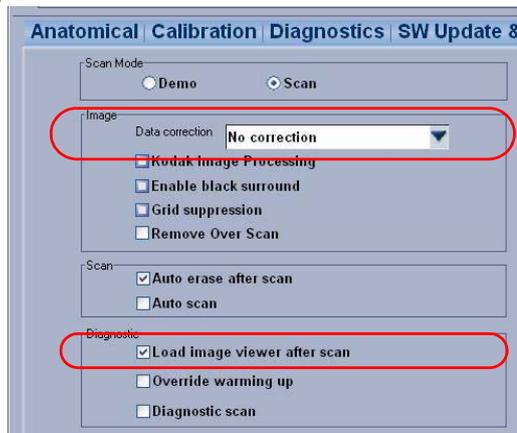
[3] Place 14" x 17" cassette in the center of the field.

[4] Make an X-ray exposure.

[5] Wait 5 minutes after exposing the cassette.

[6] In **Settings>Setup** tab, select **No correction** and check **Load image viewer after scan**.

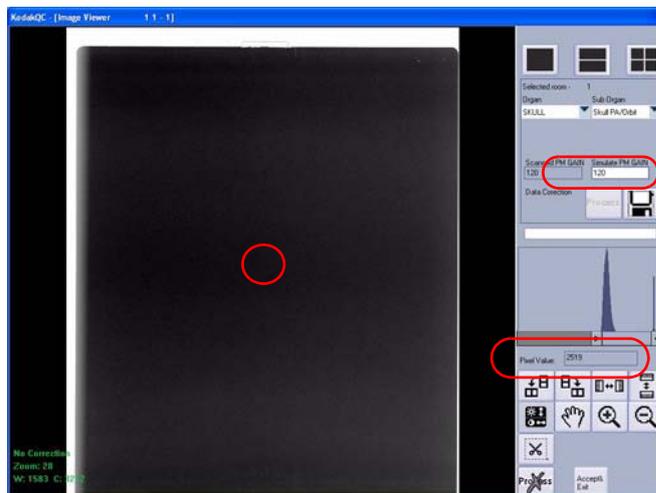
## Set Image and Diagnostic settings



[7] Load the cassette and scan using the existing PM Gain value.

[8] Measure the pixel value in the center of the field.

## Measure Pixel Value in Center of Field

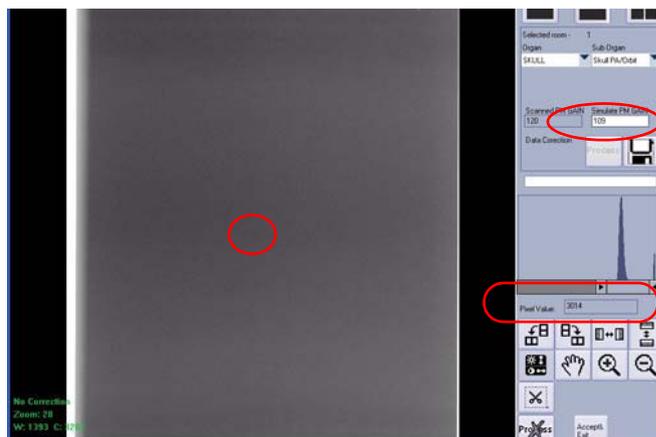


[9] Change the PM Gain to get a pixel value (APV) of  $3200 \pm 50$ .

To increase the Pixel Value, decrease the PM Gain.

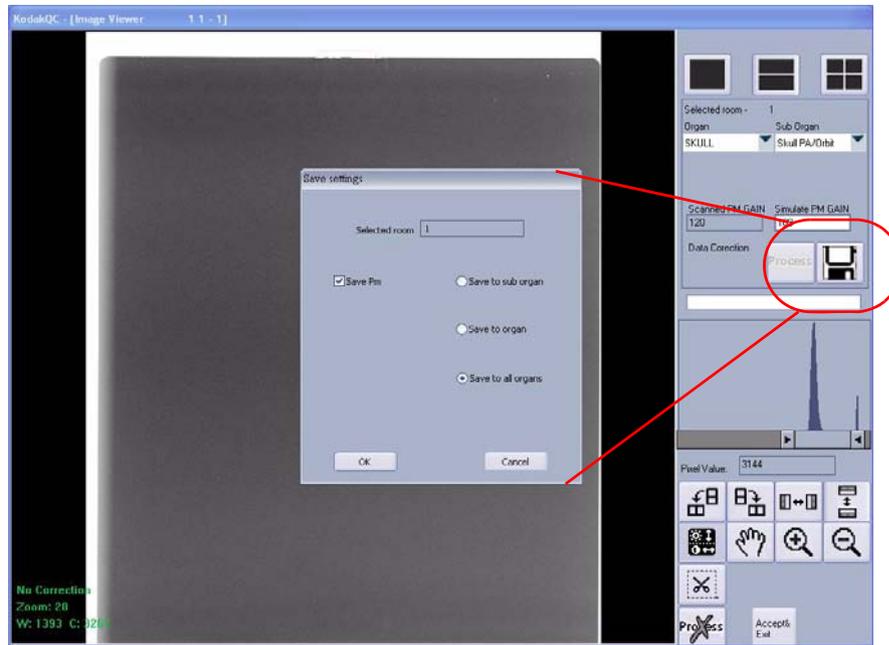
To decrease the Pixel Value, increase the PM Gain.

## Change the PM Value



[10] Click on icon to open the **Save Settings** dialog; check **Save PM** and **Save to all organs**, then click **[OK]**.

### Save PM settings



[11] Go to **Settings>Anatomical** tab, check that the PM values are set to the value that you saved in the above step; if the PM Value is not updated, type the value in to **Global PM Settings** and click **[Set]**.



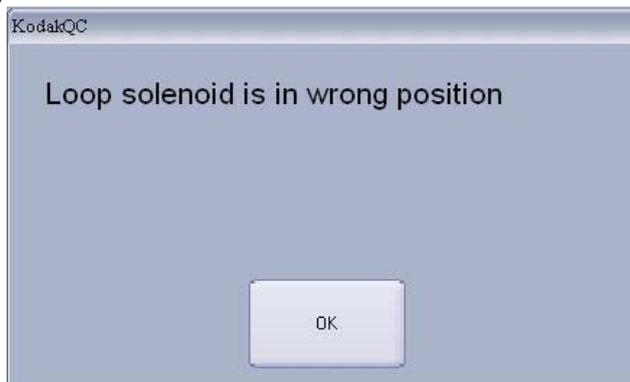
## Section 5: Adjustments

### Auto-loop Solenoid Adjustment

#### Introduction

If an Auto-loop solenoid has been installed in the system, it might require adjustment. The following error message appears if the mechanism is in need of adjustment.

#### Loop solenoid error message



The adjustment procedure is comprised of two sub-procedures which are intended to attain the correct functioning of the solenoid during its action:

- Electrical test (coil resistance) of the solenoid connector terminals. If this test fails, replace the solenoid on the key assembly. If the test succeeds, proceed to the solenoid adjustment procedure.
- Solenoid adjustment procedure.

#### Required Equipment

Digital Voltmeter

Two 50 x 21 x 0.4 mm plastic gap jigs

#### Adjustment Procedure

##### Electrical Test

- [1] Remove the scanner cover in order to reach the auto-loop connectors.
- [2] Using the DVM check the solenoid resistance on J212. The resistance value between the terminals should be 5.8 - 5.9  $\pm$ 10% ohm.

##### Resistance measuring points on Auto-loop assembly



If the resistance values are incorrect, replace the solenoid.

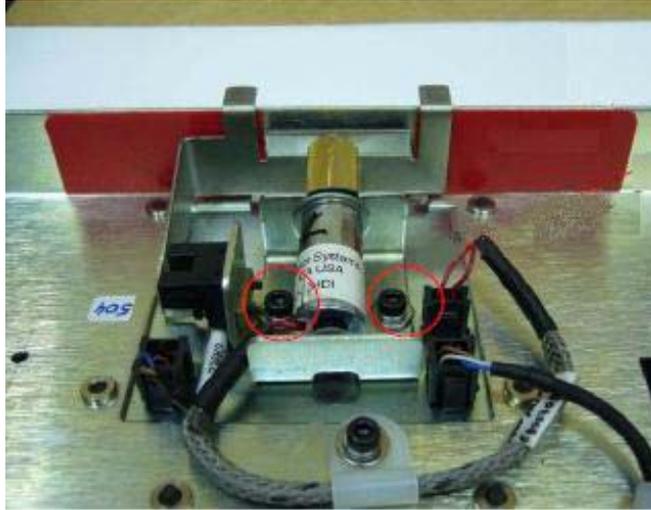
If the values are correct and the solenoid is still not operating, perform the following check:

- 
- [3] Go to **Technician>Settings>Diagnostics** mode and measure the voltage peak during operation. The voltage should peak to 15VDC for approximately 1.5 seconds.

### Mechanical Adjustment Procedure

- [1] Loosen the solenoid holder screws on the Key Assembly.
- [2] Insert two (50 x 21 x 0.4 mm) plastic jigs between the pressure lever and the assembly wall as shown in the figure below.

### Plastic gap jigs



- [3] Press the solenoid pin with a screwdriver so that it reaches its final stroke position.

### Facilitate final stroke position



- [4] Adjust the position of the solenoid by moving the solenoid holder back and forth so that the pin presses the lever against the plastic gap jigs.
- [5] In that position, tighten the two M3 screws.
- [6] Remove the plastic gap jigs and verify the free movement of the pressure lever.

## Screen Guide Adjustment (non Auto-loop)

This procedure is performed to adjust the screen guide position in order to facilitate the screen insertion into the system. It is intended for systems which have not undergone Auto-loop solenoid upgrade.

### Tools Required

Screen Guide Testing Tool (PGTL) (SK000017)

### Screen Guide tool



### Adjustment Procedure

- [1] Remove the main cover (see [“Removing the Service Panel and Scanner Cover”](#) on Page 41).
- [2] Turn ON the system.
- [3] Go to **Settings>Diagnostics tab**; activate the **Erase Lamps** and move the Loader Control **Backwards** << all the way.

### Diagnostic tab

**Technician**

Scanner Info

USB/FPGA 9.1.61	Driver 1.0.0.0	SW version 2.5.0.0	Scan Count 0	Eclipse DB Version 2.8.0.0
FirmWare 2.1.69.07	Serial number SN160406017	Machine Type PoC140	Application Type GenRad	Motion Version 1.19

**Anatomical Calibration Diagnostics SW Update & Backup Setup Manufacturing User Admin**

Linear Motor: 516 515 << >>

Rotational Motor: On Required speed: 0 Set Low High Actual speed: 0

Optical: Erase lamp On Laser On

Plate Control Sensors: Loop Solenoid On Unload Reset

Roller Control: Insert plate << >> Unload plate Low High W0 511 Loader Back 508 Adaptor 512

Loader Control: Backward << Forward >>

Barcode data: Cassette ID: Width: 0 Height: 0 Plate Type: 0 Organ: View position Get Barcode Data

Keyboard OK

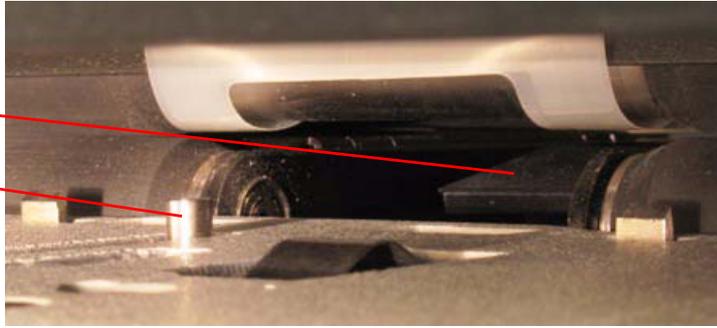
Insert Cassette ...

[4] Check that the Screen Pusher is in backward position and that the Loader Pin is up.

**Loader Position**

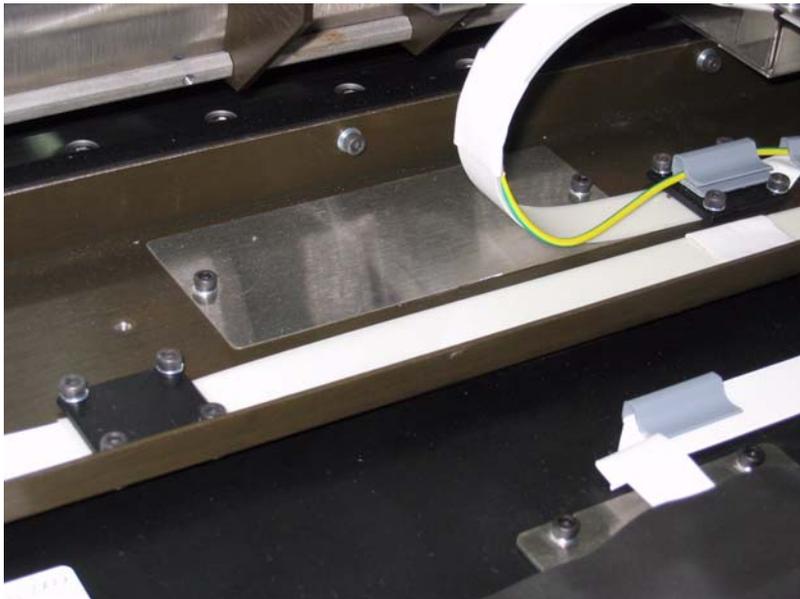
Screen Pusher  
in backward position

Loader Pin up



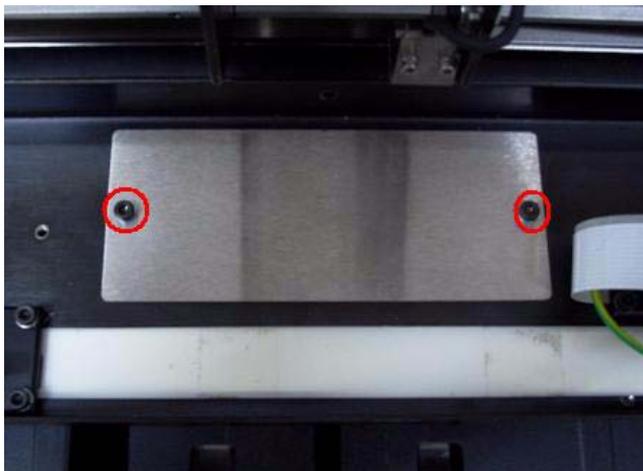
[5] Disconnect the flex cable from the Key assembly and move it aside to prevent damage.

**Disconnect the Flex Cable**



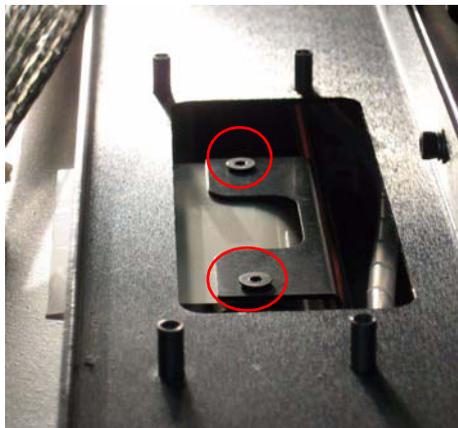
[6] Release the two Allen screws attaching the silver bracket.

**Remove the Silver Bracket**



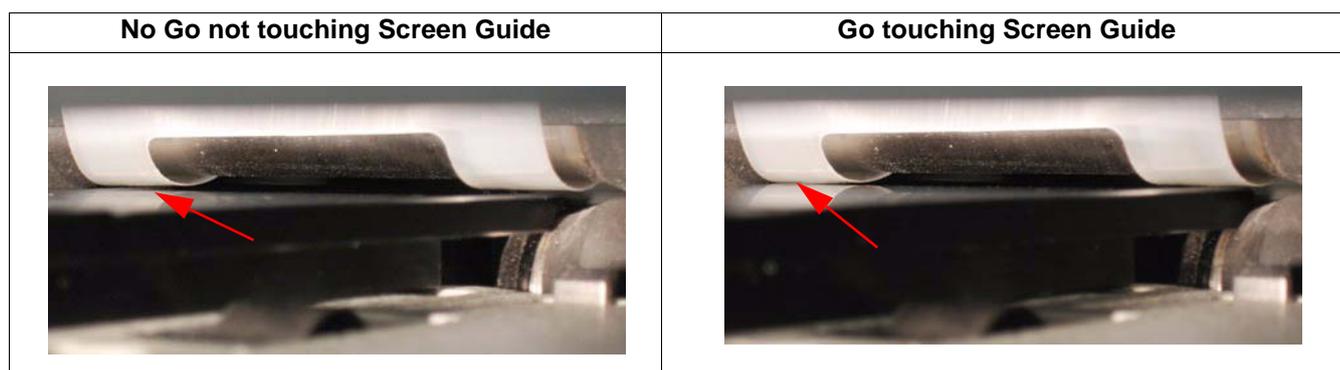
[7] Loosen the two Allen screws attaching the L Bracket and holding the Screen Guide. Do not remove the screws.

#### Loosen the L Bracket screws



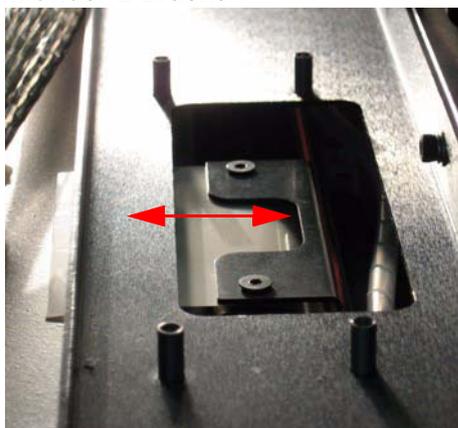
[8] Insert each side of the PGTL between the tray and the Screen Guide.

The correct position of the Screen Guide is when the **GO** side of the PGTL **touches** the Screen Guide, and the **NO GO** side **does not touch** the Screen Guide when inserted.



[9] If the Screen Guide is higher/lower than the height needed, move the screen guide under the L Bracket to adjust the Screen Guide height in relation to the PGTL and then tighten the two L Bracket Allen screws.

#### Direction of Screen Guide movement under L Bracket



[10] Insert the Silver bracket and fasten the two Allen screws.

[11] Install the scanner cover.

# Loader Pin and Loader Pusher Adjustments

## Tools Required

- Trolley Roller Gauge (SK000024)
- Tray Gauge Go - No Go (SK000016)
- 2.5 mm Allen wrench

### Tray Gauge



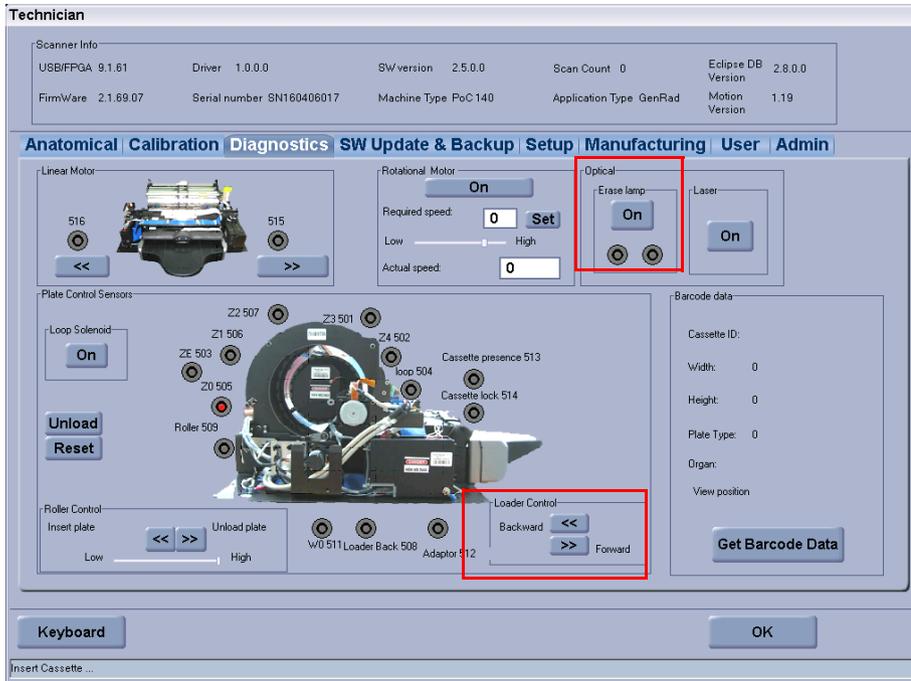
### Trolley Roller Gauge



## Loader Pin Adjustment

- [1] Turn ON the scanner.
- [2] Go to **Settings>Diagnostics** tab.

### Diagnostics Screen Loader Control



- [3] Click **Backward <<** to move the loader back to the end of its travel and the **Loader Back** indicator lights.
- [4] Click on the Erase Lamps to light the Erase Lamps.

- [5] Insert the Tray Gauge into the tray entrance and position the **Go** slot around the loader pin. The gauge should pass smoothly over the loader pin. This determines that the pin is not too high.

#### Checking Pin Height (Go)



- [6] Insert the Tray Gauge into the tray entrance and position the **No Go** slot next to loader pin. The gauge should not pass over the loader pin. This determines that the pin is not too low.

#### Checking Pin Height (No Go)

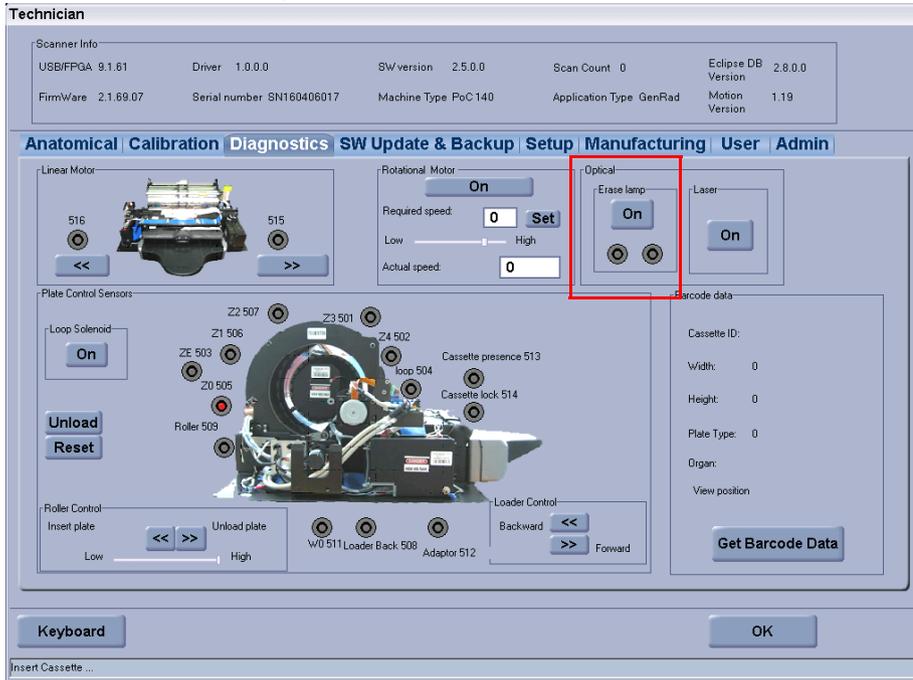


- [7] If the pin height is incorrect, remove the bottom access cover, loosen the motor frame retaining screws and adjust the frame position as necessary. (see [“Replacing the Stepper Motor” on Page 65](#))
- [8] Check Steps 5 and 6 again.

## Loader Pusher Adjustment

- [1] Remain in Settings>Diagnostics tab.
- [2] Click on the Erase Lamps to light the Erase Lamps.

### Diagnostics Screen -activate erase lamps



- [3] Insert the Trolley Roller Gauge into the tray entrance so that it will be between the pusher and the top roller. The Go side (0.3mm) should pass through smoothly, the No Go side (0.4 mm) should not pass through.

### Inserting the Trolley Roller



- [4] If the pusher height is incorrect, remove the bottom access cover, loosen the motor frame retaining screws and adjust the frame position as necessary. (See [“Replacing the Stepper Motor” on Page 65](#))

### Note

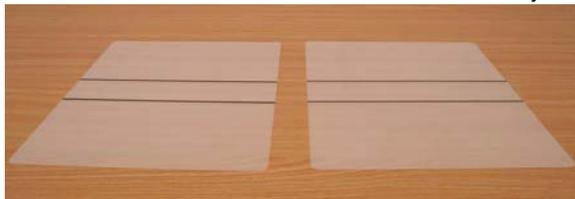
The adjustment can be performed with or without the Tray Assembly installed.

- [5] Repeat Step 3 to verify adjustment.

## Roller Sensor Adjustment

### Tools Required

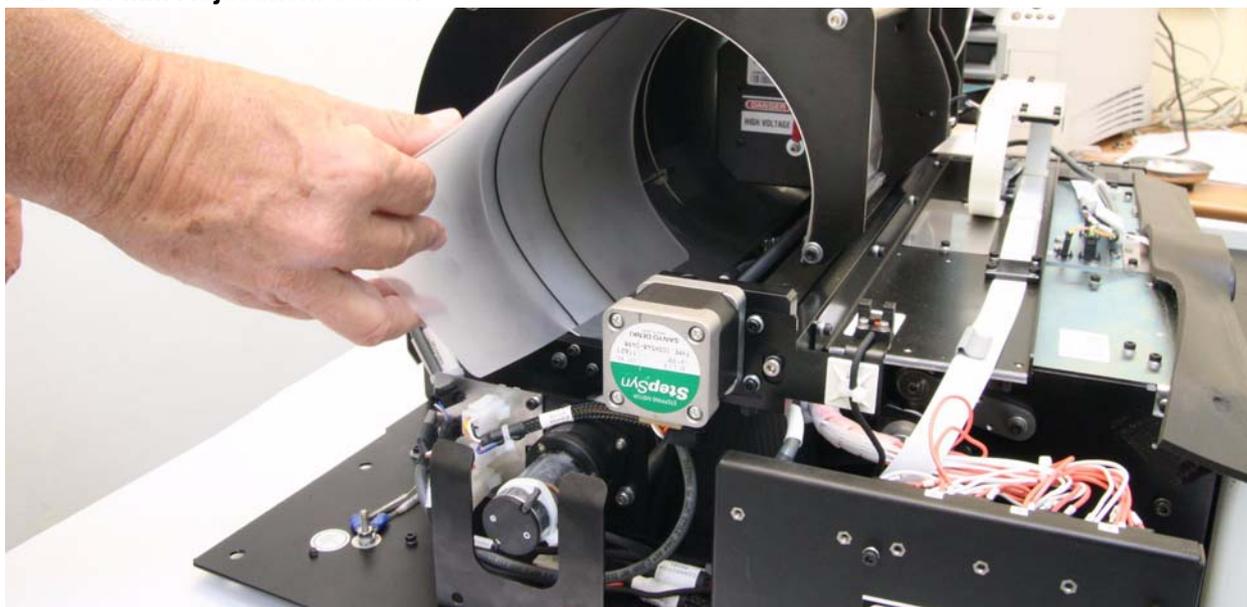
0.25 mm and 0.40 mm Roller Sensor Adjustment Screens (SK000041)



### Adjustment Procedure

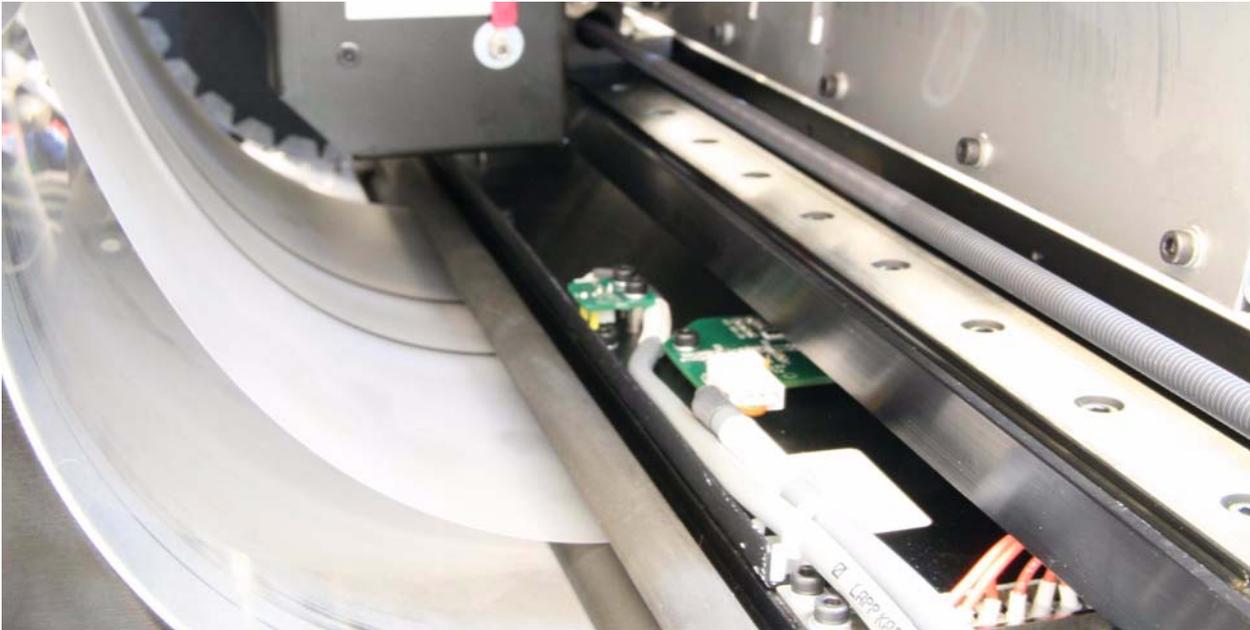
- [1] Switch ON the system and wait for it to complete initialization.
- [2] Insert the 0.4 mm Roller Sensor Adjustment Screen into the drum. (The center of the screen must be at the center of the Screen Guide.)

#### Insert the 0.4 mm Adjustment Screen



- [3] Turn the rollers manually at least 360 degrees so that the screen roles between the rollers and check that Sensor 509 is activated. The Sensor must remain active while the rollers turn 360 degrees.

**Screen inserted between the rollers**



- [4] Loosen the Adjusting screw's locking bolt, and adjust the screw so that J509 sensor LED becomes inactive, then turn the screw in the opposite direction until the sensor LED lights up (is inactive).

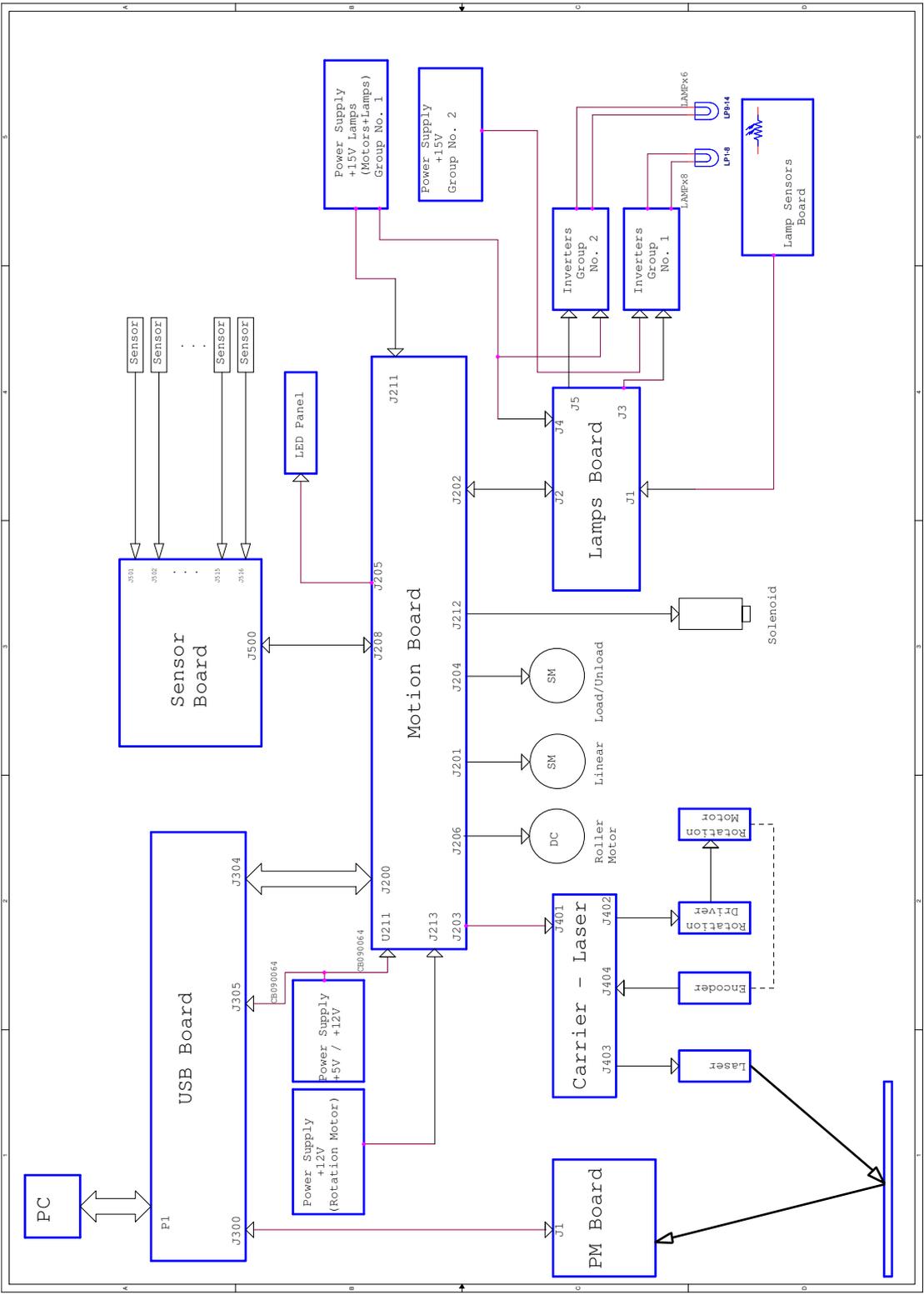
**Sensor LED active and inactive**



- [5] Remove the 0.4 mm Roller Sensor Adjustment Screen.  
[6] Insert the 0.25 mm Roller Sensor Adjustment Screen.  
[7] Turn the rollers manually at least 360 degrees so that the screen roles between the rollers and check that Sensor 509 remains inactive. The Sensor must remain inactive while the rollers turn 360 degrees.  
[8] Lock the Adjusting Screw.  
[9] Check again that when the rollers turn 360 degrees the Sensor remains inactive, and then remove the 0.25 mm Roller Sensor Adjustment Screen.  
[10] Insert the 0.4 mm Roller Sensor Adjustment Screen into the drum and check again that when the rollers turn 360 degrees the sensor lights up. Remove the screen.  
[11] Assemble the scanner cover and service door.  
[12] Connect the scanner to the PC.  
[13] Load and unload 14 x 17 and 8 x 10 cassettes a number of times and check that no error message is received.

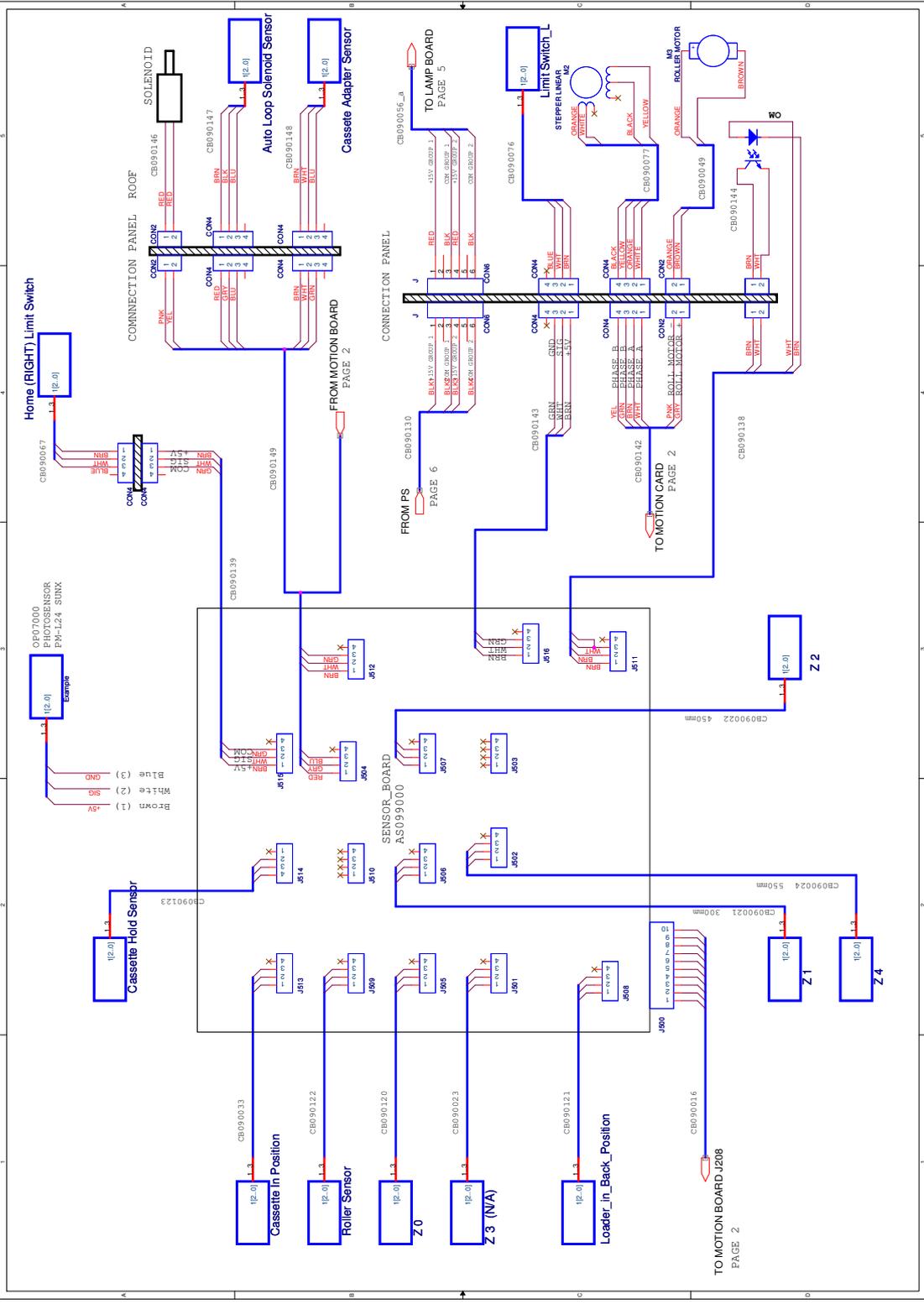
# Section 6: Electric Schematic Diagrams

## Main Schematics



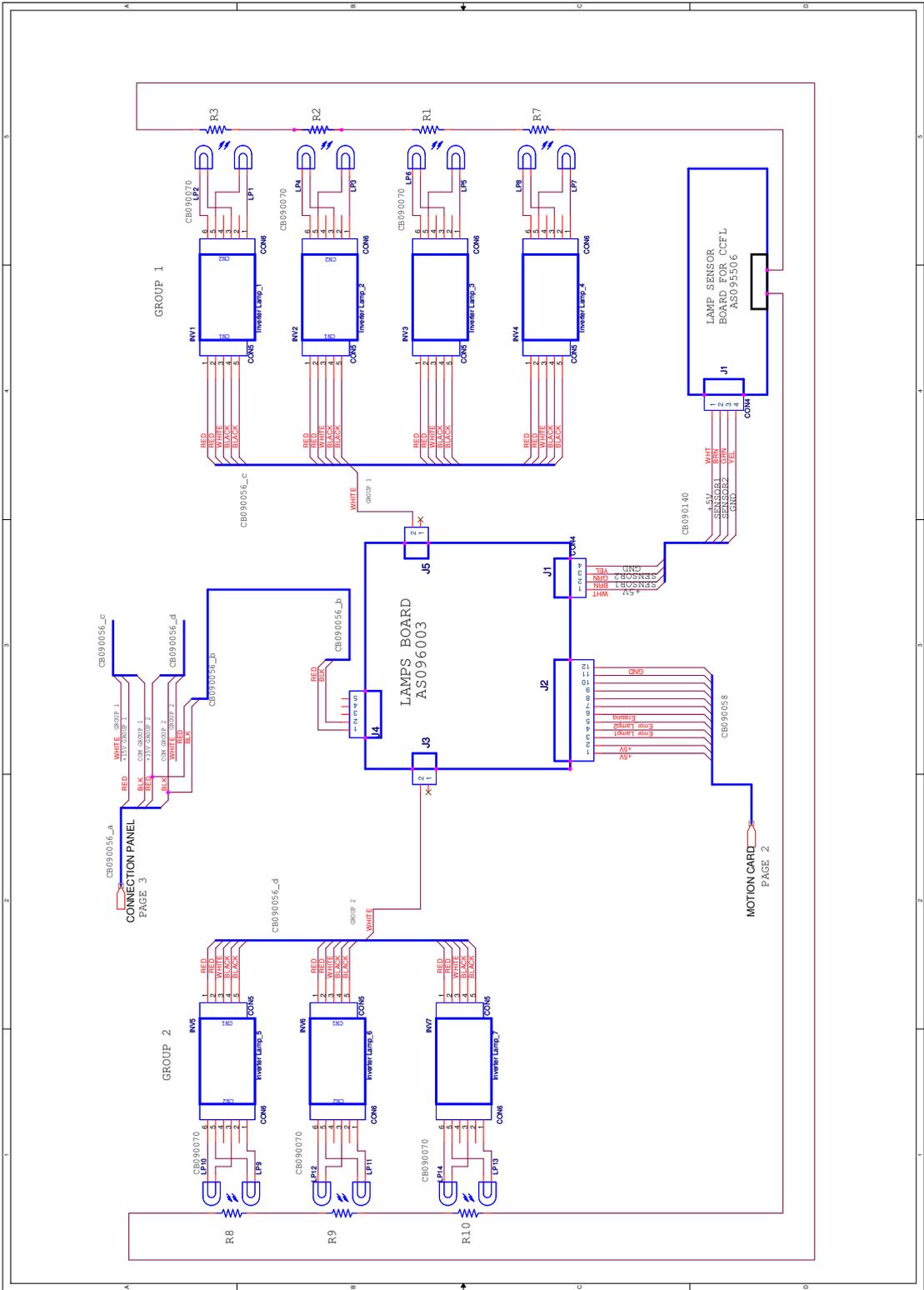


Sensors Schematics

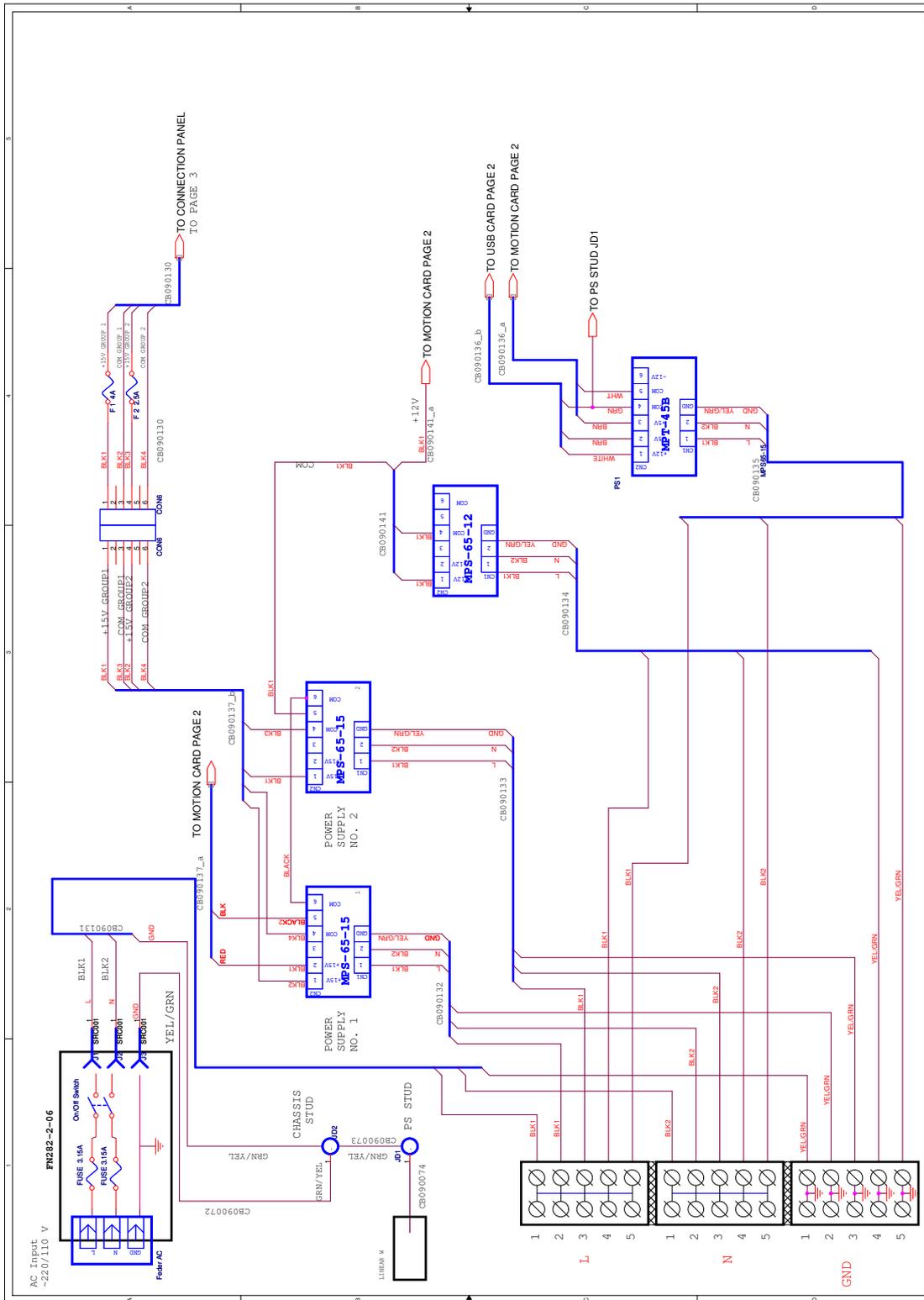




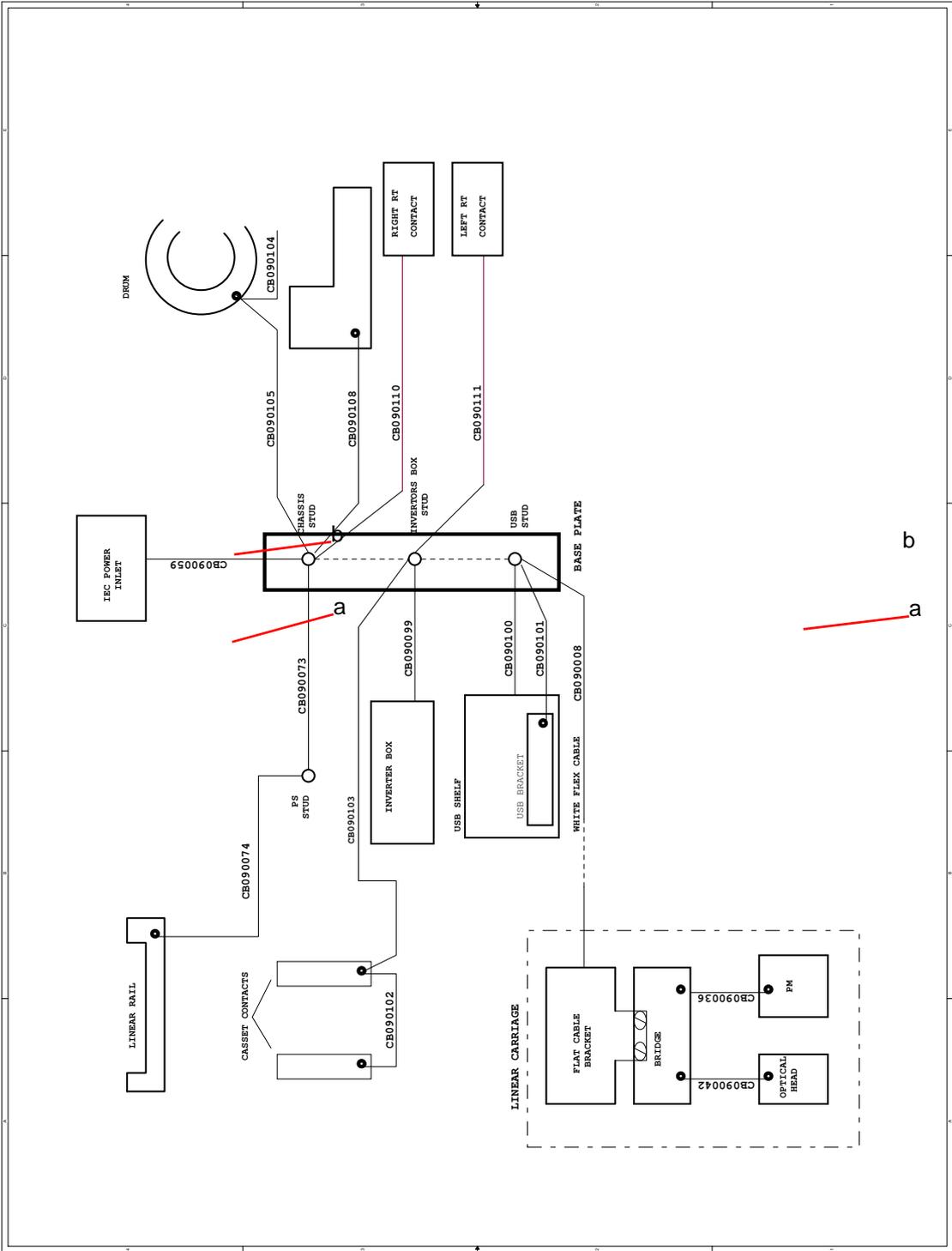
Lamps Board Schematics



# PS, Lamps Schematics



Grounding Schematics





## Section 7: Preventive Maintenance

### Cleaning the Rollers

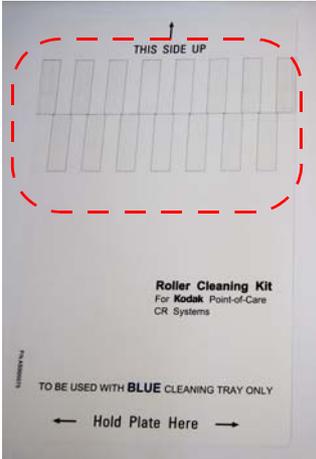
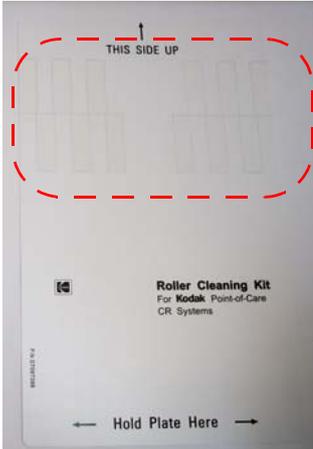
#### Introduction

Clean the rollers periodically to remove dust and small particles. The roller-cleaning device enables you to clean the rollers that feed the screen from the cassette into the unit.

The cleaning device includes the following items:

- Cleaning tray
- Cleaning plate with adhesive strips covered with protective paper/a protective envelope.

The cleaning mechanism is affected by the Auto-loop mechanism. After upgrading a system to Auto-loop you cannot use the old type of cleaning tray and cleaning plate. Use only the new set supplied with the upgrade kit.

	New - compatible to Auto-loop	Old- not compatible to Auto-loop
Cleaning Tray		
Cleaning Plate		

#### Note

The area marked in red is different in the two cleaning plates. It is critical to work with the correct cleaning plate and tray.

## Using the Cleaning Plate to Clean the Rollers

- [1] Remove any cassettes and screens from the unit.
- [2] Open the *Kodak QC* software.
- [3] In the User Interface, click **Setup**.
- [4] Click **Login**  
The **User** tab opens.

### User Tab

The screenshot shows the 'User' tab in the Kodak QC software. At the top, there is a 'Technician' section with 'Scanner Info' including fields for USB/FPGA, Driver, SW version, Scan Count, FirmWare, Serial number, Machine Type, and Application Type. Below this is a navigation bar with tabs for Anatomical, Calibration, Diagnostics, SW Update & Backup, Setup, User (selected), and Admin. The main area is divided into several sections: 'Maintenance' with a 'Roller Cleaning' section containing a 'Prepare' button; 'Birth date format' with radio buttons for DD-MM-YYYY, MM-DD-YYYY, YYYY-MM-DD, and YYYY-DD-MM; 'Default patient screen' with radio buttons for MWL and Manual; a checkbox for 'Delete patient from manual list after scan'; and a checked checkbox for 'Display cassette size button'. The 'Patient details' section is split into 'Optional' and 'Mandatory' fields, with arrows for moving items between them. The 'Display tags' section contains checkboxes for Patient name, Patient ID, Patient birthdate, Hospital name, Image number, W/L (checked), Exposure parameters: kV, mAs, Exposure date and time, Exposure index value (Q number), DAP, and Comment. At the bottom, there are buttons for Keyboard, Cancel, Apply, and OK, and a status bar that says 'Insert Cassette...'.

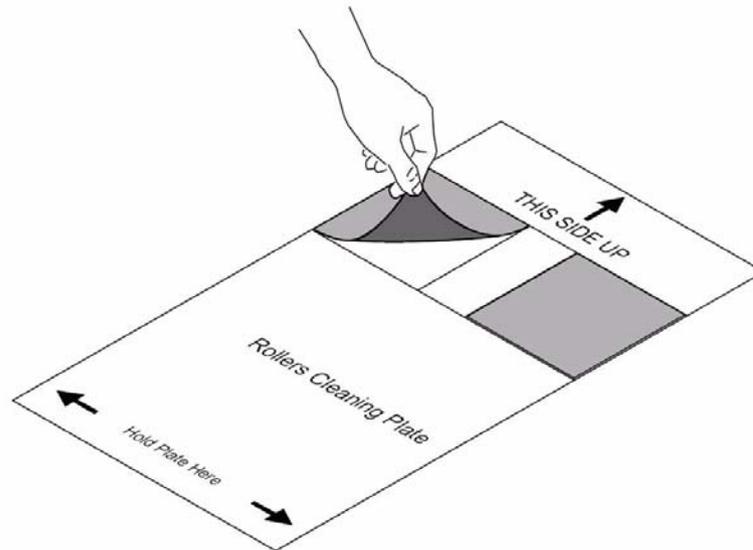
- [5] In the **User** tab, click **Prepare**.  
The following message appears:

### Insert Cleaning Tray Message



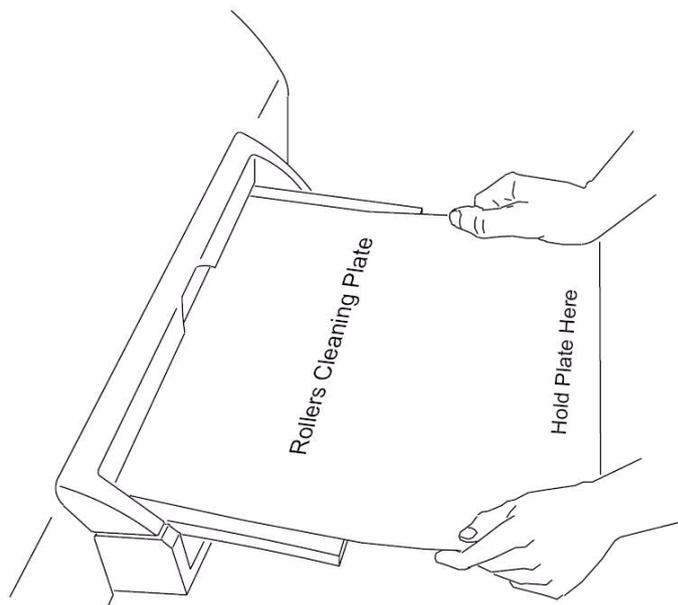
- [6] Insert the Cleaning Tray, making sure that it locks in place.
- [7] Click **OK**.  
The rollers begin to turn.

## Removing the Protective Strips



**[8]** Remove the protective paper from the cleaning plate to expose the adhesive.

## Inserting the Cleaning Tray



**[9]** Place the Cleaning Plate on the tray. Make sure the Cleaning Plate is placed in the correct direction, as specified on the plate.

**[10]** While holding onto the plate, push the plate slightly into the unit. It should go in almost entirely, with approximately a quarter of the screen remaining outside.

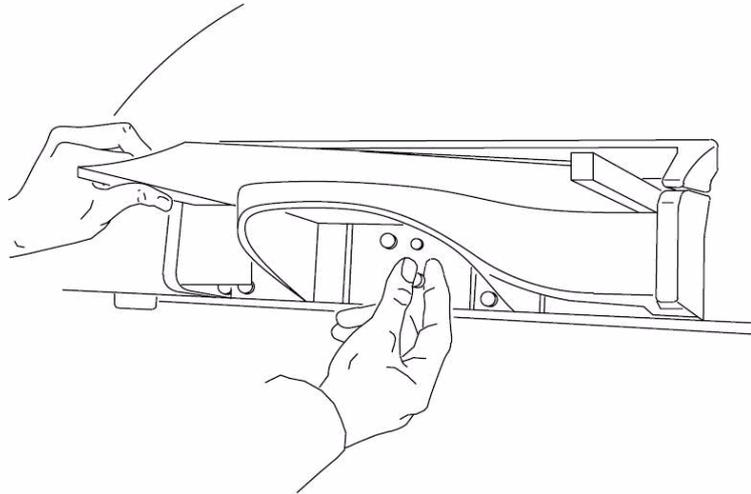
The following message appears:

## Pull Out Cleaning Plate Message



[11] Click **OK** and remove the plate.

## Disconnecting the Cleaning Tray



[12] Disconnect the cleaning tray by completely pulling out the knob underneath the front tray until it comes to a stop.  
The unit performs a reset (homing cycle).

### **Note**

If the homing is not performed, turn the unit off and then back on.

[13] Repeat the cleaning process two more times.

---

## Cleaning the Phosphor Screens

---

### General

Failure to routinely clean the screens with a recommended solution may create the following result:

- The screen may not move smoothly from the cassette into the reader, causing an error message.
- The screen may not fully return to the cassette at the end of the cycle, preventing the cassette from latching; no error message appears.
- Artifacts on radiographs.

---

### General Cautions



#### Caution

Screen damage can result from contact with certain materials used in facilities performing radiography. Contact with Isopropyl alcohol, hydrogen peroxide and other peroxides, citrus based cleaners, hand lotions and water-less hand sanitizers, as well as surfactants and lubricants may cause visible or hidden damage to the screen and could result in immediate or future image artifacts.

AVOID CONTACT BETWEEN THESE MATERIALS AND KODAK POINT-OF-CARE PHOSPHOR SCREENS.



#### Caution

Cleaning materials other than those recommended can contain chemicals that cause visible or hidden damage to the screen and could result in immediate or future image artifacts. Never use Isopropyl alcohol (isopropanol, rubbing alcohol to clean screens or cassettes.

---

### Cleaning Materials and Tools Required

#### Cleaning material for *Agfa* screens

ADC Screen Cleaner

Use one of the following liquid cleaners to remove other dirt:

- Screen Cleaner and Antistatic Solution
- Screen Cleaner
- Screen Cleaner Wipes

#### Tools Required

Extraction Tool (SK250056)

Clean, soft, lint-free fabric gloves

Non-abrasive, lint free cloth

Mild soap-and-water solution

Low level disinfectant (see [“Disinfecting the screen or equipment” on Page 152](#))

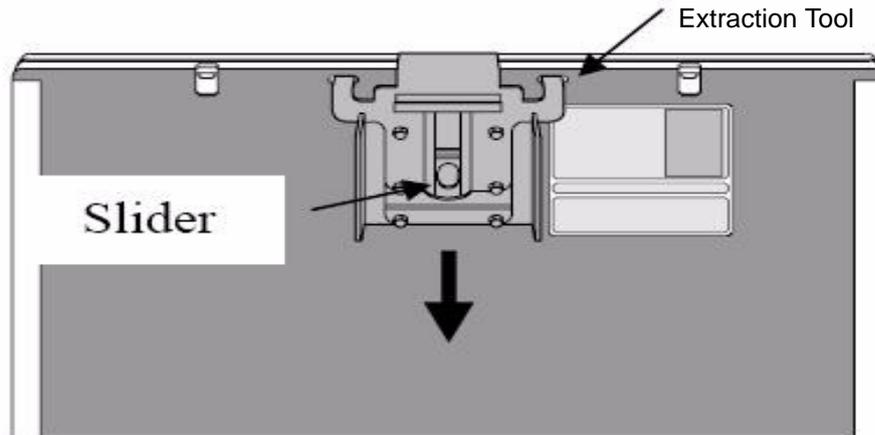
---

## Removing the screen

- [1] Slide the edge of the Extraction Tool (provided) over the back edge of the cassette. Pull the tool down until it enters the square slots in the back of the cassette.

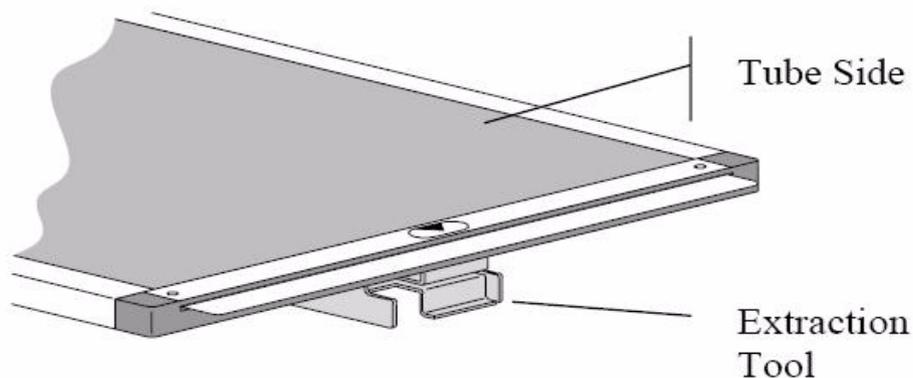


Extraction Tool



## Installing the Extraction Tool

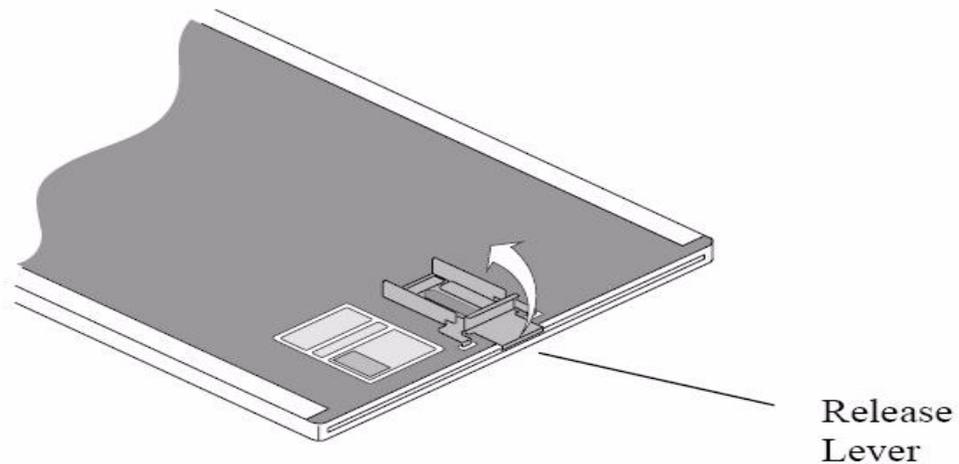
- [2] Hold the cassette horizontally. Push the slider in the middle of the Extraction Tool towards the open edge of the cassette until the screen is visible.



## Extracting the Screen

- [3] Carefully pull the screen out.

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



### Releasing the Extraction Tool

### Handling and maintaining the screen



#### Caution

Handle flexible phosphor screens with care. Hold screens by the edges and by the back side. Avoid contact with the screen's white (phosphor) side. Make sure hands are clean and dry. For best results, wear clean, soft, lint-free fabric gloves.

Under normal use conditions, flexible phosphor screens will eventually show wear. Screen wear can result in artifacts on radiographs. This wear may occur from abrasion of the protective overcoat or inadvertent physical damage to the surface.

Read and follow instructions in Material Safety Data Sheets (MSDS) for Screen Cleaner and Antistatic Solution, Screen Cleaner, and Screen Cleaner Wipes.

### Cleaning method

Wear soft, lint-free gloves. Do not touch the white (phosphor) side with bare hands.

1. Fold a non-abrasive, lint-free cloth and dampen with a small amount of the solution. **DO NOT POUR THE SOLUTION DIRECTLY ONTO THE SCREEN.** (Excessive amounts of the screen cleaner may damage the screen.)
2. Wipe the screen thoroughly, one section at a time. Fold the cloth to expose a fresh area for each section of the screen.
3. If necessary for the removal of persistent dirt, apply pressure while cleaning.
4. After cleaning, set the screen aside and allow it to completely dry.



#### Caution

Never insert a storage phosphor screen into a cassette unless it is thoroughly dry.

### Cleaning the Cassette



#### Caution

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

### Cleaning materials

- 
- A soft cloth moistened with.
  - A mild soap-and-water solution or *Kodak* Screen Cleaner.

Read and follow instructions in the Material Safety Data Sheet (MSDS) for the Screen Cleaner being used. When cleaning the cassette, avoid contaminating the inside of the cassette with the cleaning solution

## Disinfecting the screen or equipment

### **Note**

If the cassette is visibly contaminated with blood or body fluids, remove the blood and/or body fluids and disinfect (at an intermediate-level) before using.

### **Caution**

Dilute bleach solutions may cause eye irritation and dry skin. Wash hands with soap and water following use. Consult manufacturer's material safety data sheet (MSDS) prior to use.

1. Wipe with a soft, lint-free cloth thoroughly dampened with a 1:10 dilution of 6% sodium hypochlorite (household bleach).
2. Remove the bleach residue with a soft, lint-free cloth dampened with water.
3. Wipe dry with a soft, lint-free cloth. Allow screens to air-dry.

#### **Disinfection materials:**

- Dilute bleach solution (Dilute on part of 5.25% sodium hypochlorite with ten parts water).
- A commercially prepared equivalent solution of dilute bleach that does not contain any materials listed above that can cause screen damage.

#### **Disinfection Method for dilute bleach solution**

1. Wipe with a soft, lint-free cloth thoroughly dampened (but not dripping) with dilute bleach. Contact the contaminated surface for up to 15 minutes for adequate disinfection.
2. Wipe the bleach residue with a soft, lint free cloth dampened with water to remove.
3. Wipe dry with a soft, lint-free cloth. Allow screen to dry thoroughly.

#### **Disinfection Method for commercially prepared equivalent**

If a commercially prepared equivalent solution of dilute bleach is selected, it should be used in accordance with the manufacturer's instructions.

### **Caution**

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

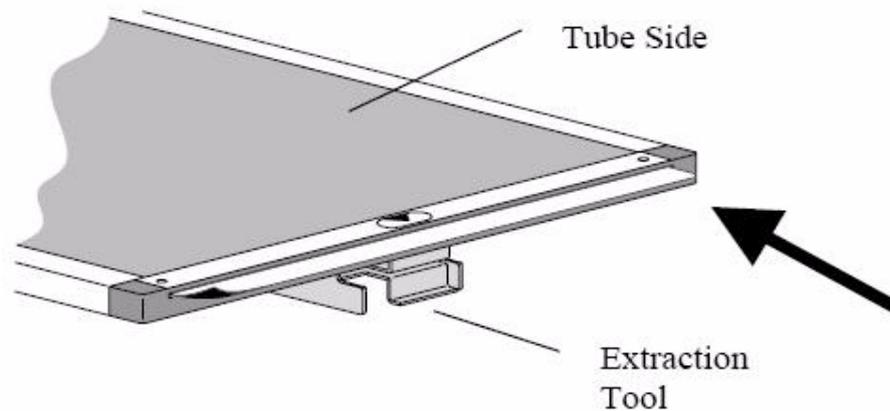
## Installing the screen



### Important

Use the screen only with *Kodak Point-of-Care CR Cassettes*. Make sure to match the size of screen to the size of cassette before inserting the screen

- [1] With the Extraction Tool in place, hold the screen with the white (phosphor) side up. Insert the screen into the cassette so that the back side (dark side) is facing the back of the cassette (the side with the cassette product label).



## Installing the Screen

- [2] Hold the cassette vertically and make sure that the screen is fully inserted into the cassette.
- [3] Remove the Extraction Tool.



### Note

If you insert the screen incorrectly, calibration and functional failures may result:

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

## Disposing of the screen

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



## Section 8: Publication History

Pub. Date	Pub. No.	ECO No.	Changed Pages	File Name	Notes
February-06	6H4866	-	All	PoC_120_140_Service_30 mar2006	New Publication
January-08	6H4866	C00301	All	PoC_120_140_Service_10 Jan2008	<ul style="list-style-type: none"> <li>• Added new HW information</li> <li>• Added calibration processes</li> <li>• Added Adjustment processes</li> <li>• Revised all current data</li> </ul>
June-08	6H4866-02	ECO 475	98-105 149-153 misc. pages	6H4866 02_PoC_120_140 _Service-Manual_June_08	<ul style="list-style-type: none"> <li>• Added Tray assembly replacement</li> <li>• Screen cleaning instructions update</li> <li>• Updates to Service procedures</li> <li>• Updates to Adjustment procedures</li> </ul>



