TITLE:	Ax51A Technical Service Guide	
DOC. NO.:	FBA/TSG/001	
PREPARED BY:	FDN/LM	
AUTHORIZED:	JR	
DISTRIBUTION:	Tegningsarkiv, Svendborg	(1)
	DD	(1)
ISSUE REVISION:		1.7
DATE:		090306

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Document Revision Record

DRR

REV.	DATE	CHANGED BY	PAGES AFFECTED	BRIEF DESCRIPTION OF CHANGE
1.0	060215	FDN/LM	All	Original issue of document
1.1	060328	LM	All	Block Diagram added Missing reference to 4.2.5.1 in 4.2.5 added Attempt to clarify formula in 4.2.5.1
1.2	060505	LM	All	Description of placement of scanner added List of error codes updated
1.3	060522	LM	All	Description of LMG added
1.4	060921	LM	All	- Layout for SUD added - More detailed description on replacing Flex Cable - Description of "Lamp and Mirror Carriage Initial Position and Belt Tension Setting" added - Description on replacing CBK board added - Cable routing for newer scanners added - Minor corrections
1.5	070626	LM	All	AB51A added CRB board chapter corrected Minor corrections/updates
1.6	080410	LM	All	AC51A added
1.7	090306	LM	All	Fig. 2-3 updated 4.1.5 and 4.2.6 (Mirror Carriage Adjustment): Re-adjust Scan-Line positioning added after adjustment of upper mirror and before running test 33

Table of Contents

List of Figures

1. Introduction

The purpose of this Technical Service Guide is to supply the information necessary to service the following scanner models:

AA51A AB51A AC51A

Note: Throughout this TSG the abbreviation Ax51A will be used when referring to all of the above listed scanner models

2. General Information

2.1 Screws Secured by Sealing Lacquer

Some screws, nuts or the like are sealed by sealing lacquer. The color of the sealing lacquer signals the following:

	RED Lacquer	Factory adjusted. **DO NOT ALTER**
	WHITE Lacquer	Adjustment which may be altered

2.2 Marking Codes for Circuit Boards

All circuit boards are identified by a 4-letter code, where the *fourth* letter designates a specific variant of the board. The board identification code is followed by a board revision number (functional level) and for newer boards also an extra letter in parenthesis. This extra letter is unimportant in this connection.
The marking of all printed circuit boards may be exemplified by the marking of the SUD Board:

SUDA02(B)

which designates SUD Board, variant **A**, revision **02**. The (B) is of no importance and should be neglected.
The *revision number* is updated only if the functionality of the board has been changed. Updated boards will always be backwards compatible.

2.3 Downloading Scanner Firmware

The scanner firmware is stored in Flash Memory on the SUD-Board.
Firmware is downloaded to the scanner through the USB 2.0 interface, please refer to any *readme.txt* on the firmware disk for download instructions.

The download program is started by double-clicking the self extracting *firmware* file.

It is recommended to disable WIDEsystem before upgrading the firmware to prevent any possible problems caused this program accessing the scanner during the upgrade.

Scanner firmware is available on the support home page.

2.3.1 Erase and Restore Parameter Blocks

When trouble shooting it may be advisable to clear the parameter blocks in the scanner to reset these to default values.
The parameter blocks can be erased from Scanner Maintenance by right-click on the Title Bar and select Erase Parameter Blocks from the pull-down menu.

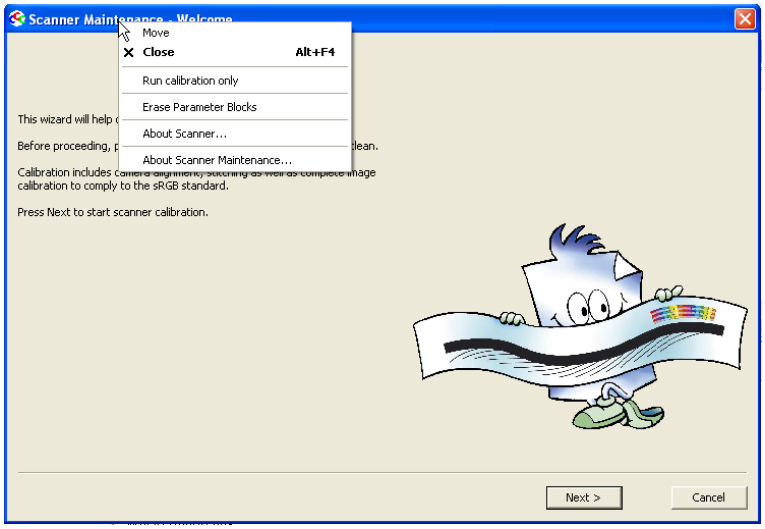


Fig. 2-1, Erase and Restore Parameter Blocks

Note: Always run Scanner Maintenance after Erasing Parameter Blocks.

2.4 Block Diagrams

2.4.1 AA51A Block Diagram

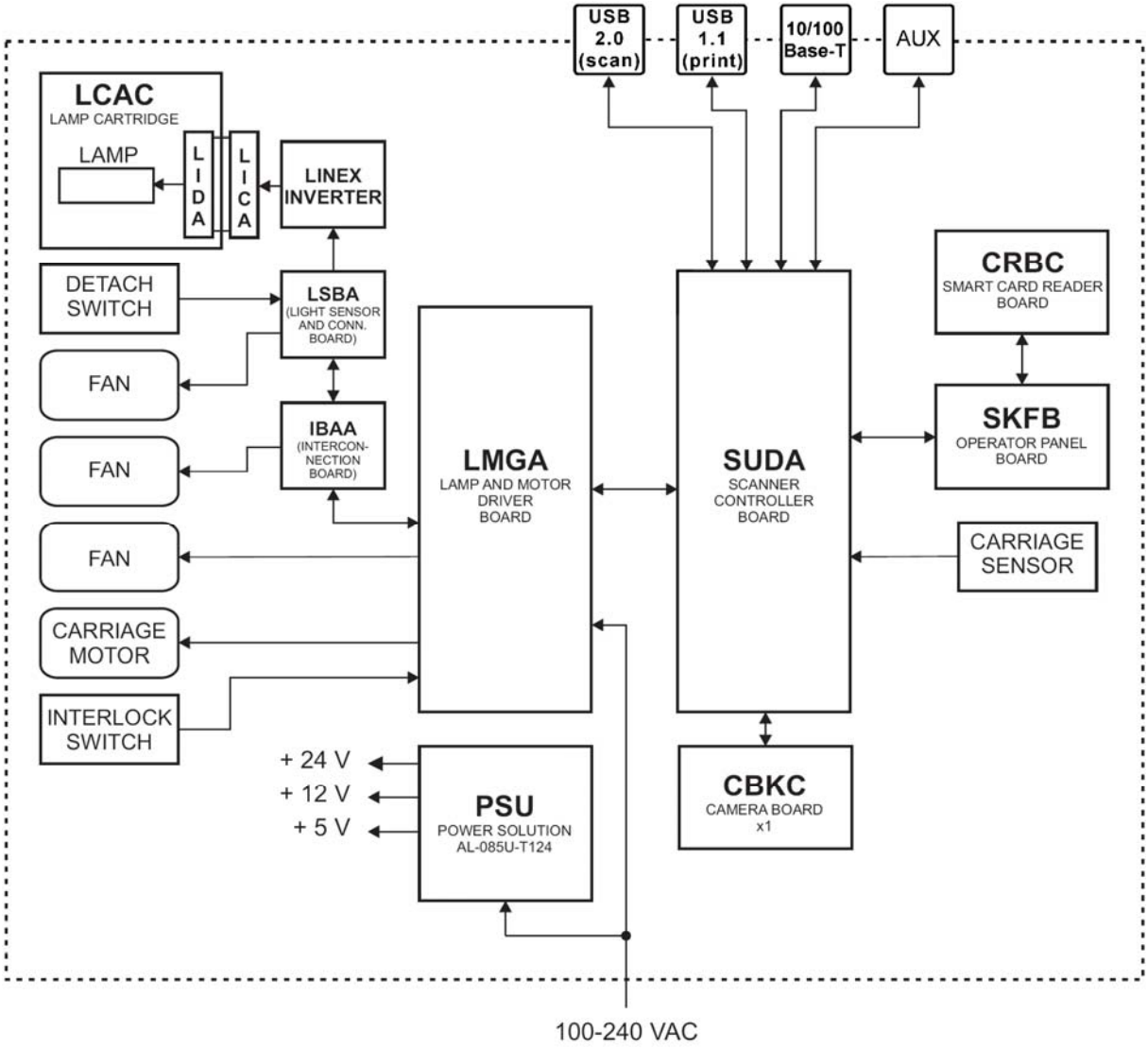


Fig. 2-2, AA51A Block Diagram

2.4.2 AB51A, AC51A Block Diagram

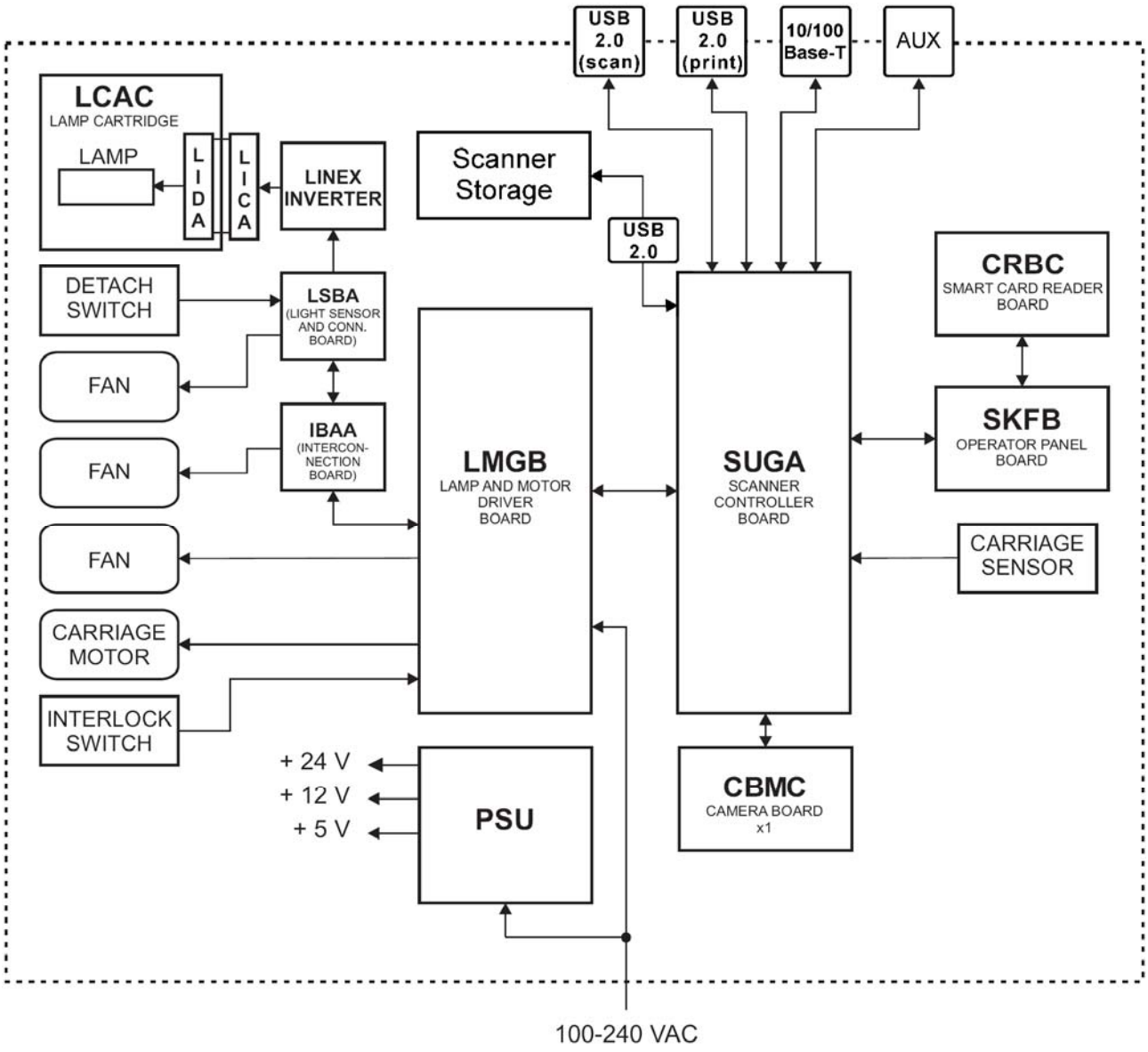


Fig. 2-3, AB51A, AC51A Block Diagram

3. Electrical Check and Adjustments

Required Test Equipment:

Multimeter, R_i > 10 Mohm.

PC with:

- SCANtest installed
- Scanner Maintenance installed
- USB 2.0 interface

SCANtest is described in Chapter 8, page 57.

On the following pages tests of the individual printed circuit boards are described as well as the adjustment of various sensors.

3.1 SMPS, Switch Mode Power Supply (AA51A Only)

3.1.1 AC Voltages

CAUTION: The connector CON1 and the components in the hatched area are connected directly to the mains voltage and constitute a risk of electric shock, or injury to persons

3.1.2 DC Voltages

Ref. on Fig. 3-1	DC Voltage
CON2, pin1	+12 V +1/-0 V
CON2,pin2,3	+5.3 V +0/-0.1 V
CON2, pin4,5,8	GND
CON2, pin6	N.C.
CON2, pin7	+24 V ± 2 V

3.1.3 Adjustments

NOTE: **The output voltages of the SMPS are all factory set and should normally not be adjusted.**

The (5V) output voltage should be no more than 5.3 V measured between GND and CON2, pin 2,3 on the SMPS, and no less than 5.1 V measured between GND and D3, bottom on the CBK-Board, see Fig. 3-4 page 17.

If the voltage is not within these limits, it may be adjusted by potentiometer VR1 on the SMPS, see Fig. 3-1, page 12.

3.1.4 Fuses

Fuse is not replaceable.

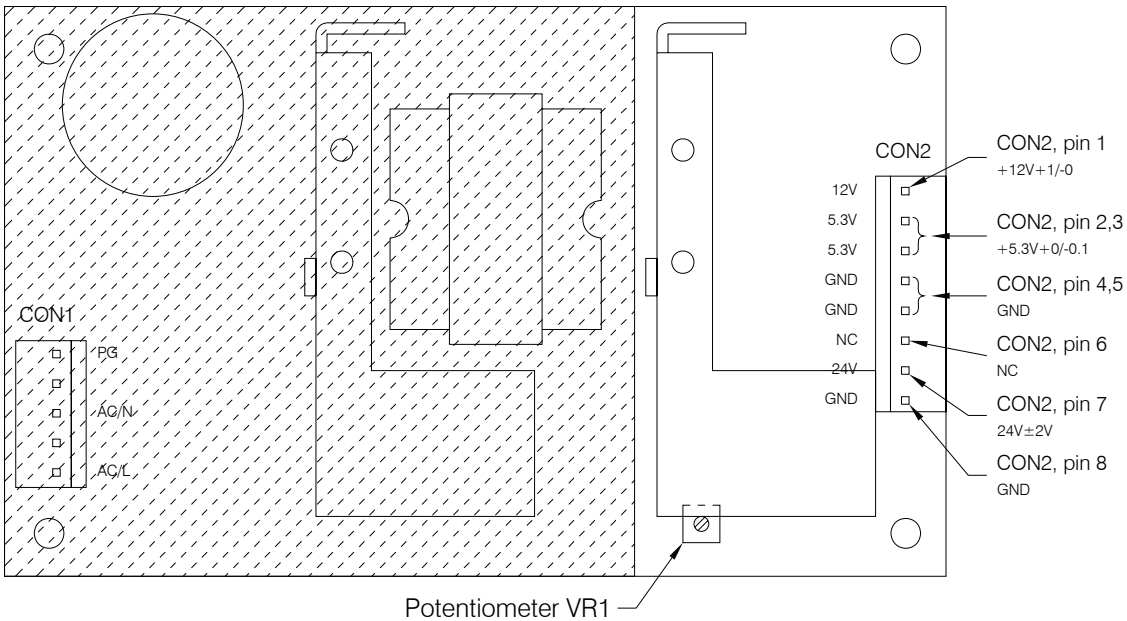


Fig. 3-1, SMPS Test Points

3.2 SMPS, Switch Mode Power Supply (AB51A, AC51A)

3.2.1 AC Voltages

CAUTION: The connector TB1 and the components in the hatched area are connected directly to the mains voltage and constitute a risk of electric shock, or injury to persons

3.2.2 DC Voltages

Ref. on Fig. 3-2	DC Voltage
TB2, pin 1,2	+5.3 V +0/-0.1 V
TB2, pin 3,4,5,6	GND
TB2, pin 7	+12.5 V ± 0.5 V
TB2, pin 8	+24 V ± 1 V

3.2.3 Adjustments

IMPORTANT: The output voltages of the SMPS are all factory set and should normally not be adjusted.

The 5.3V output voltage should be no more than 5.3 V measured between GND and TB2, pin 1,2 (5.3V) on the SMPS, and no less than 5.1 V measured between GND and D3, bottom on the CBK board. If the voltage is not within these limits, it may be adjusted by potentiometer VR1 on the SMPS.

3.2.4 Fuses

No service replaceable fuses

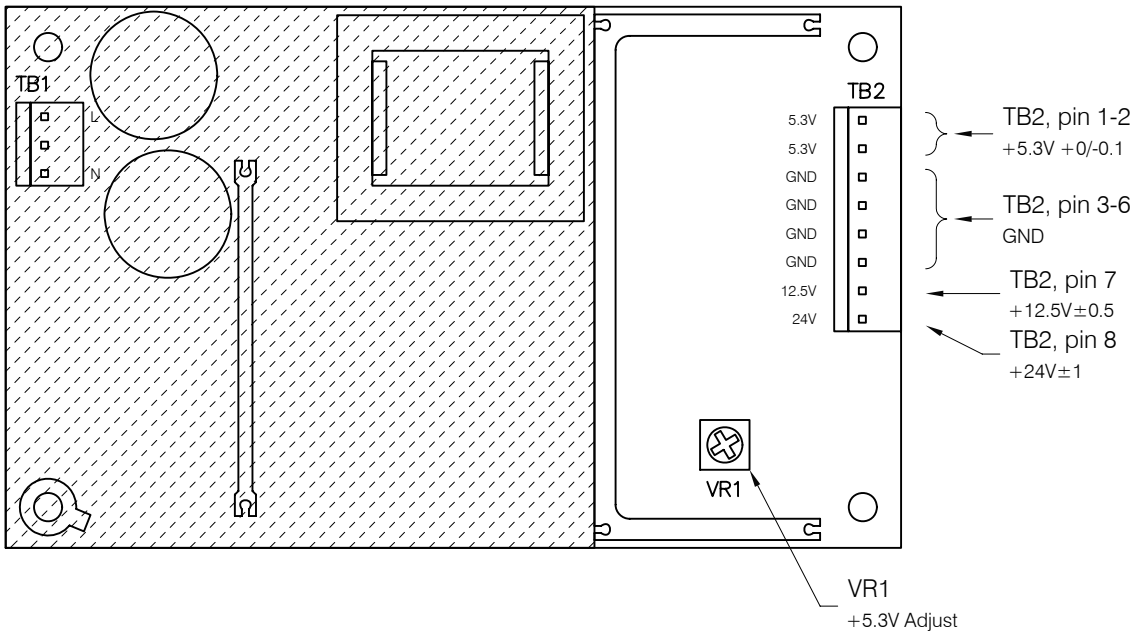


Fig. 3-2, SMPS Component Layout

3.3 LMG, Lamp and Motor Driver Board

All test points referred to are shown in Fig. 3-3 below.
All voltages are measured relative to test point TP4 or TP13 (GND).

3.3.1 DC Voltages

Ref. on Fig. 3-3	DC Voltage	Remarks
TP4	GND	
TP13	GND	
TP8	3.3V±0.1V	
TP9	5.3V	Supplied from SMPS
TP10	12.5V	Supplied from SMPS
TP14	1.8V±0.1V	
TP15	12V±0.3V	
TP16	5V±0.15V	
TP18	24V	Supplied from SMPS
J17-3	19-26V	Lamp Inverter Voltage. See section 3.3.5 for trouble shooting

3.3.2 Functional Test

SCANtest 6: Test 5, Lamp Test
Test 6, Motor Test
Test 31, LMx Communication Test

3.3.3 Fuses

The type and rating of the fuse on the LMFA-Board is:

F1: T2.0AH/250V, type IEC 127- 2/5, UL R/C

CAUTION:
For continued protection against risk of fire, replace only with same type and rating of fuse.

3.3.4 Markings

AA51A	LMGA
AB51A	LMGB
AC51A	LMGB
where dd = board revision number.	

3.3.5 Hints (Lamp On Problems)

JP1: If shorted the lamp is on independent of control signal from the scanner controller board. If shorting JP1 switches on the lamp and the lamp otherwise is off see trouble shooting hints below

J17: If the Safety Interlock Switch is activated (Lamp Door closed) voltages on pins 1 and 3 should be present on pins 2 and 4. Voltage on pin 3 should be 19-26V if the lamp is switched on by the scanner controller board or if JP1 is shorted

IC3: When the Lamp Door is closed the voltage on IC3 pin14 should be 3.3V. When open the voltage should be 0V. *Note that this only apply to newer LMG boards (LMGA-05 or newer).*

IC15: When the lamp is on the voltage on IC15 pin1 should be approx. 0.6V. Otherwise 0V

J6: Using SCANtest to turn the lamp on and off
J6, pin2 = LAMPON signal

Lamp turned ON:	J6, pin2 should be LOW (0-0.5V)
Lamp turned OFF:	J6, pin2 should be HIGH (3-3.3V)

NOTE: The LAMPON signal originates from the SUDA board, if the signal changes from High to Low when the lamp is turned from Off to On then the SUDA is working properly.

NOTE: If you place a jumper on JP1 the lamp should come on no matter the LAMPON signal, i.e. even if the signal is high at J6, pin2.

J8: J8, pin6 = LAMP_DET signal

Lamp Cartridge installed (Lamp Detach Switch closed)	J8, pin6 should be HIGH (3-3.3V)
Lamp Cartridge removed (Lamp Detach Switch open)	J8, pin6 should be LOW (0-0.5V)

NOTE: If the LAMP_DET signal will not go HIGH with the Lamp Cartridge installed then replace the Linux Lamp Inverter Board which includes the micro switch controlling the LAMP_DET signal.

NOTE: Even if the Lamp Detach Switch is OPEN and J8, pin6 is LOW, the lamp will come on if you place a jumper on JP1.

If the lamp will not come on with a jumper on JP1 then the problem may be a defective LMGA, Lamp, Linux Inverter, or associated cabling. Other possibilities might be an open Lamp Door on the back of the scanner or the Safety Interlock Switch not being activated.

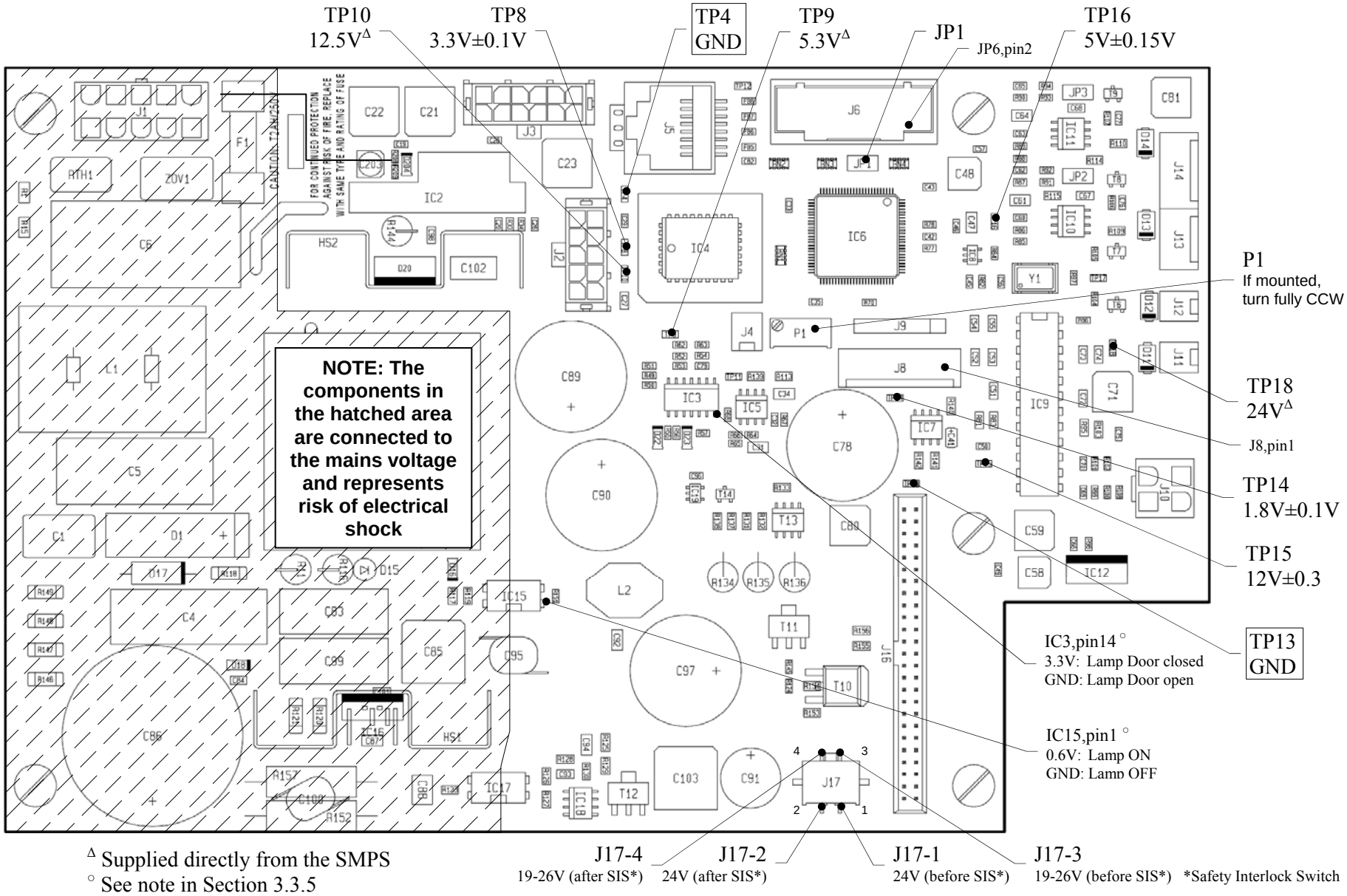


Fig. 3-3, LMG Component Layout

3.4 CBK, Camera Board (AA51A Only)

3.4.1 DC Voltages

All test points referred to are shown in Fig. 3-4 below.
All voltages are measured relative to test point J701, pin3,4 (GND).
Note: The CBK Board is covered by an EMC Cage, and the test points are not accessible without removing the CBK Board EMI Cover.

Ref. on Fig. 3-4	DC Voltage	Remarks
J701, pin3,4	GND	
D3, bottom	+5.3 V +0/-0.2 V	From SUC / SMPS
D3, top	+5.0 V ± 0.15 V	Derived from +5.3V
D2, top	+5.0 V ± 0.15 V	Derived from +5.3V
D4, bottom	+12.0 V +1/-0 V	From SUC / SMPS, used for CCD
D4, top	+11.6 V ± 0.6 V	Derived from +12V
C301, bottom	+3.3 V ± 0.1 V	From SUC / LMG
D308, bottom	+1.8 V ± 0.1 V	Derived from +3.3V

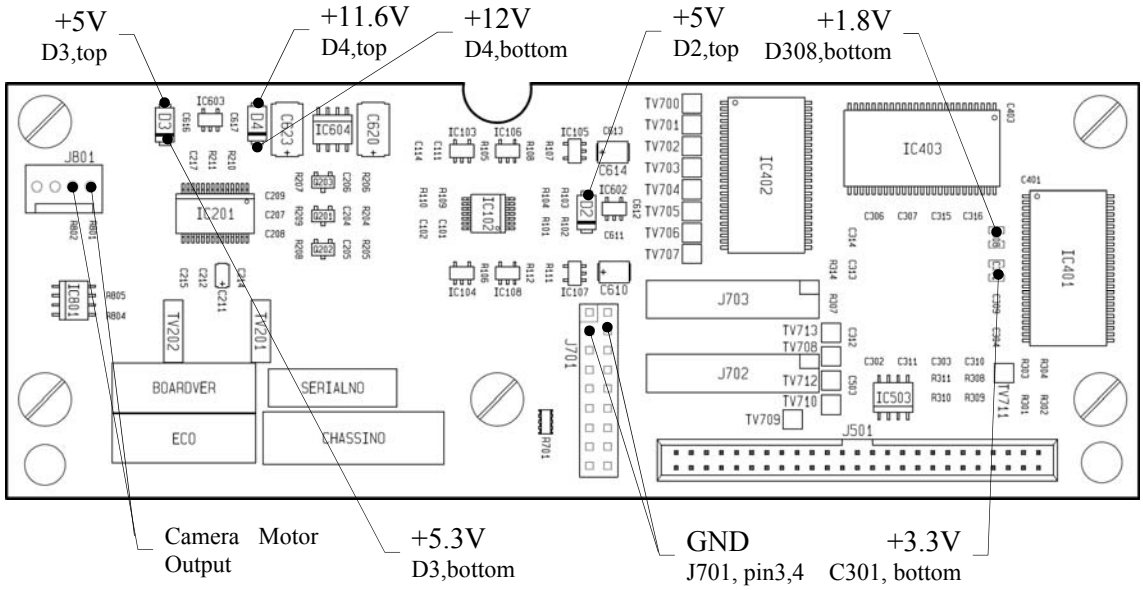


Fig. 3-4, CBK Component Layout

3.4.2 Functional Test

SCANtest: Test 7, Complete Hardware Test.
Test 9, Camera Adjustment

3.4.3 Markings

AA51A	CBKCdd
where dd = board revision number.	

3.4.4 Hints

CCD

The lines of pixels on the CCD are arranged as follows:

Upper line on the CCD:	Red
2nd line on the CCD:	Green
3rd line on the CCD:	Blue
Lower line on the CCD:	B/W

As the image is mirrored an even number of times (mirror chassis and lens), the Red line remains upper line when referred to the original.

After replacement of CBK-Board, do (refer to chapter 4 page 31):

- Check Scan-Width. If it is within the limits given in 4.2.3, Focus will also be OK
- CCD-Centering (4.2.3 page 36)
- Scan-Line Positioning (Vertical Positioning) (4.2.4 page 37)
- Mirror Carriage Adjustment (4.2.6 page 41)
- Run Scanner Maintenance

These adjustments can be made without loosening the Camera Fixing Screws and without loosening the Focus Lock Screw.

3.5 CBM, Camera Board (AB51A, AC51A)

3.5.1 DC Voltages

All test points referred to are shown in Fig. 3-5, page 19.
All voltages are measured relative to test point GND.
Note: The CBK Board is covered by an EMC Cage, and the test points are not accessible without removing the CBK Board EMI Cover.

Ref. on Fig. 3-5	DC Voltage	Remarks
J701, pin3,4	GND	
D3, bottom	+5.3 V +0/-0.2 V	From SUC / SMPS
D3, top	+5.0 V ± 0.2 V	Derived from +5.3V
D2, top	+5.0 V ± 0.2 V	Derived from +5.3V
D4, bottom	+12.0 V +1/-0 V	From SUC / SMPS, used for CCD
D4, top	+11.6 V ± 0.6 V	Derived from +12V
C301, bottom	+3.3 V ± 0.1 V	From SUC / LMF
D308, bottom	+1.8 V ± 0.1 V	Derived from +3.3V

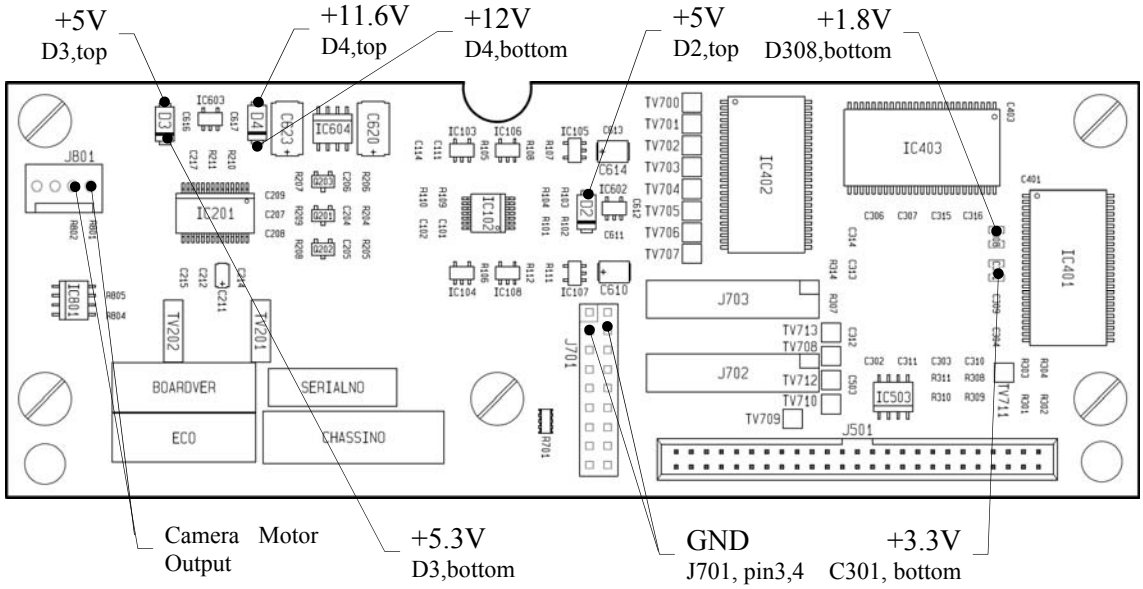


Fig. 3-5 CBM Component Layout

3.5.2 Functional Test

SCANtest: Test 7, Complete Hardware Test
Test 9, Camera Adjustment

3.5.3 Markings

AB51A	CBMCdd
AC51A	CBMCdd
where dd = board revision number	

3.5.4 Hints

+3.3 V is supplied from the LMF via the SUx-Board.
+5.3 V and +12 V is supplied from the SMPS via the SUC-Board.

CCD
The lines of pixels on the CCD are arranged as follows:

Upper line on the CCD:	Red
2nd line on the CCD:	Green
3rd line on the CCD:	Blue
Lower line on the CCD:	B/W

As the image is mirrored an even number of times (mirror chassis and lens), the Red line remains upper line when referred to the original.

After replacement of CBM Board, do:

- Check Scan-Width. If it is within the limits given in 4.2.3, Focus will also be OK
- CCD-Centering (4.2.3 page 36)
- Scan-Line Positioning (Vertical Positioning) (4.2.4 page 37)
- Mirror Carriage Adjustment (4.2.6 page 41)
- Run Scanner Maintenance

These adjustments can be made without loosening the Camera Fixing Screws and without loosening the Focus Lock Ring / Lock Screw.

3.6 SUD, Scanner Controller Board (AA51A Only)

All test points referred to below are shown in Fig. 3-6, page 22.
All voltages are measured relative to test point TP_GND6.

3.6.1 DC Voltages

Ref. on Fig. 3-6	DC Voltage	Remarks
TP+12V_CAM1	+12 V + 1/-0V	Supply for Camera Board
TP+5V_CAM1	+5.3 V +0/-0.2 V	Supply for Camera Board
TP+1V5_D	+1.5 V ± 0.1 V	
TP+5V0_D1	+5.1 V +0.1/-0.2 V	Derived from 5.3V
C168+ C184+ C901+ C197+	+1.25V ± 0.1 V	
TP+1V8D	+1.8 V ± 0.05 V	

3.6.2 Adjustments

No adjustments.

3.6.3 Functional Test

SCANtest: Test 1 Scanner Information
Test 7, Complete Hardware Test

3.6.4 Markings

Note: SUD variant depends on scanner model.

AA51A	SUDAdd
where dd = board revision number.	

3.6.5 Signal LEDs on the SUD Board

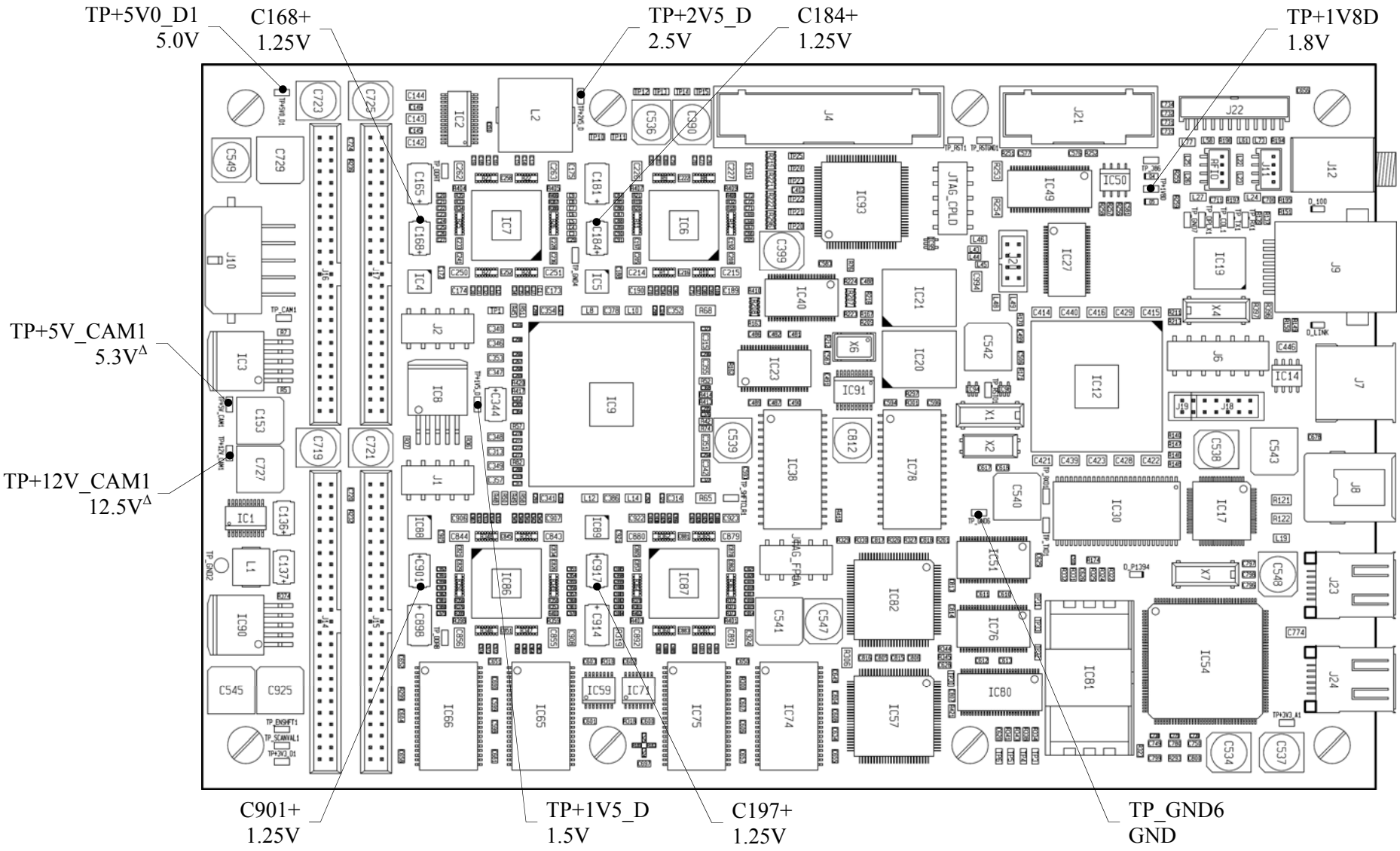
The three signal LEDs on the SUD board are for debugging purposes only. The ON/OFF pattern displayed by these LEDs is not intended for general troubleshooting.

3.6.6 Replacing the SUD Board

When installing a new SUD board the scanner serial number is read from the smart card.
IMPORTANT: You must confirm to use the read number within 30 seconds by pressing the "Enter" key on the operators panel, otherwise the scanner will display an error (100-50303, No serialnumber). In this case either reboot the scanner or use SCANtest to enter the serial number found on the marking label on back of the scanner.

A spare SUD board may not contain the correct firmware. Install the correct firmware from the CD which comes with the board.

After replacement of SUD-Board run Scanner Maintenance.



∆ Supplied directly from the SMPS

Fig. 3-6, SUD Component Layout

3.7 SUG, Scanner Controller Board (AB51A, AC51A)

All test points referred to below are shown in Fig. 3-7, page 24.
All voltages are measured relative to test point TP_GND6.

3.7.1 DC Voltages

Ref. on Fig. 3-7	DC Voltage	Remarks
TP+12V_CAM1	+12 V + 1/-0V	Supply for Camera Board
TP+5V_CAM1	+5.3 V +0/-0.2 V	Supply for Camera Board
TP+1V5_D	+1.5 V ± 0.1 V	
TP+5V0_D1	+5.1 V +0.1/-0.2 V	Derived from 5.3V
C168+ C184+ C901+ C197+	+1.25V ± 0.1 V	
TP+1V8D	+1.8 V ± 0.1 V	
TP+2V5_D	+2.5 V ± 0.1 V	

3.7.2 Adjustments

No adjustments.

3.7.3 Functional Test

SCANtest: Test 1 Scanner Information
Test 7, Complete Hardware Test

3.7.4 Markings

Note: SUG variant depends on scanner model.

AB51A	SUGAdd
AC51A	SUGAdd
where dd = board revision number.	

3.7.5 Signal LEDs on the SUG Board

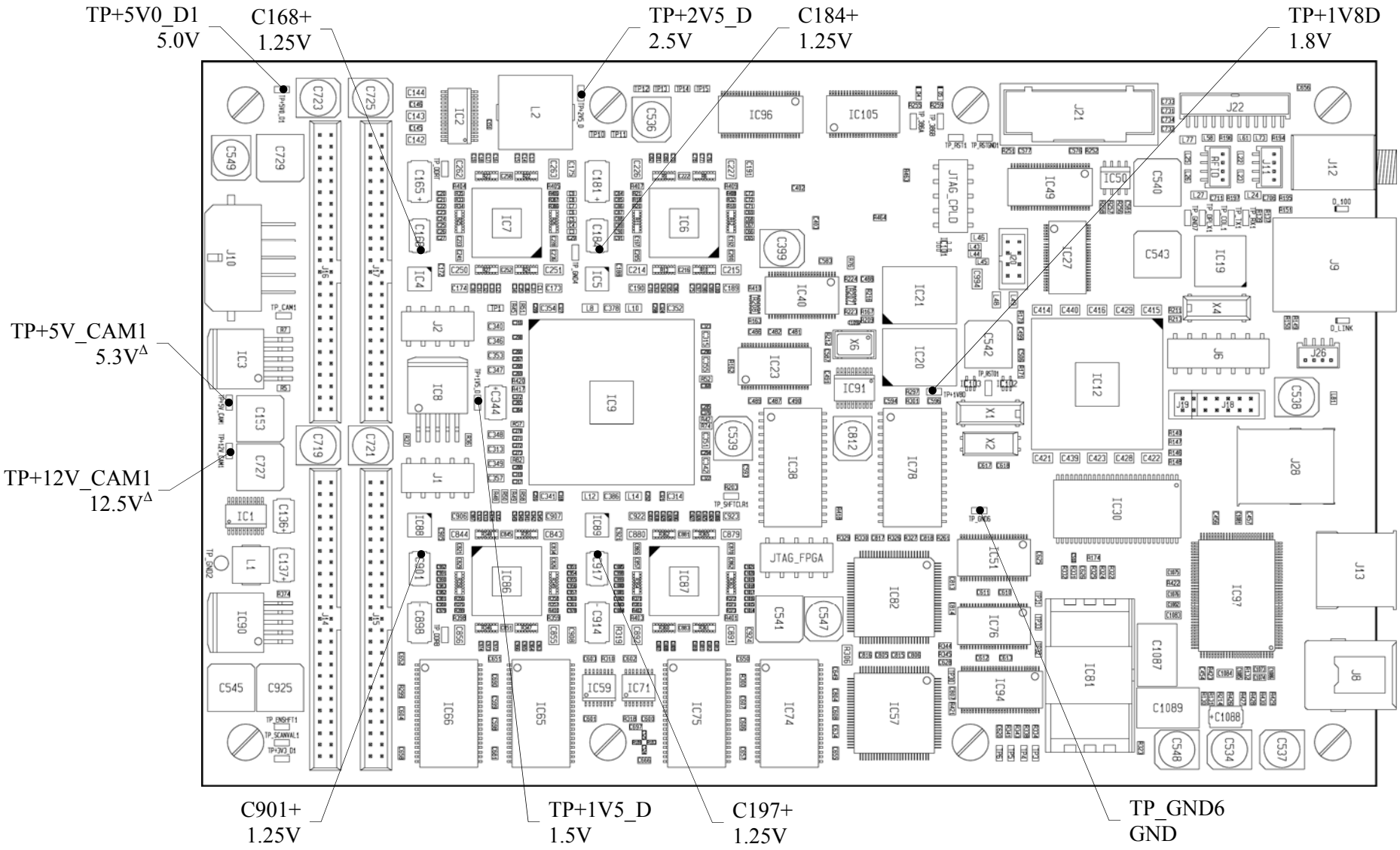
The three signal LEDs on the SUD board are for debugging purposes only. The ON/OFF pattern displayed by these LEDs is not intended for general troubleshooting.

3.7.6 Replacing the SUG Board

When installing a new SUG board the scanner serial number is read from the smart card.
IMPORTANT: You must confirm to use the read number within 30 seconds by pressing the "Enter" key on the operators panel, otherwise the scanner will display an error (100-50303, No serialnumber). In this case either reboot the scanner or use SCANtest to enter the serial number found on the marking label on back of the scanner.

A spare SUG board may not contain the correct firmware. Install the correct firmware from the CD which comes with the board.

After replacement of SUG Board run Scanner Maintenance.



∆ Supplied directly from the SMPS

Fig. 3-7, SUG Component Layout

3.8 SKF, Operator Panel

3.8.1 DC Voltages

All test points referred to are shown in Fig. 3-8 page 25
All voltages are measured relative to TP1 (GND)

Ref. on Fig. 3-8	DC Voltage	Remarks
TP6	+3.3V ± 0.1V	Generated from +5.3V
TP4	+5.0V ± 0.15V	Generated from +5.3V
C32+	+5.0V ± 0.15V	Generated from +5.3V
TP5	+5.3V	Supplied from SMPS via SUD

.

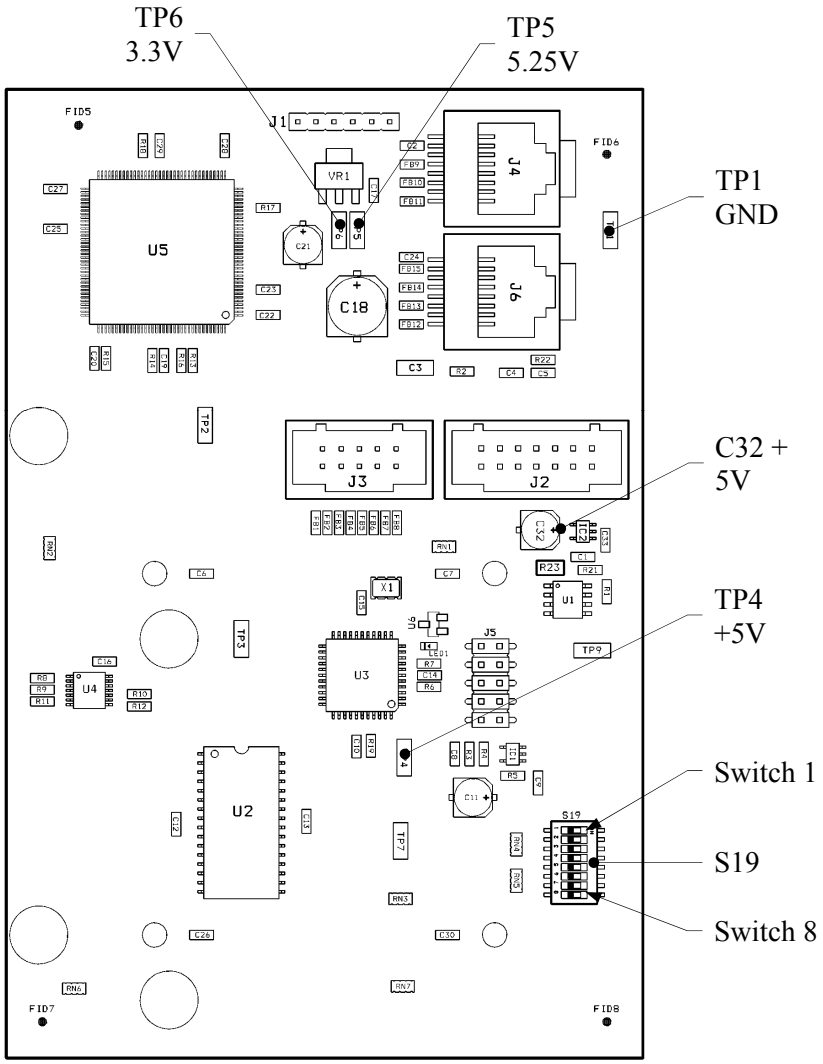


Fig. 3-8, SKF Component Layout

3.8.2 Functional Test

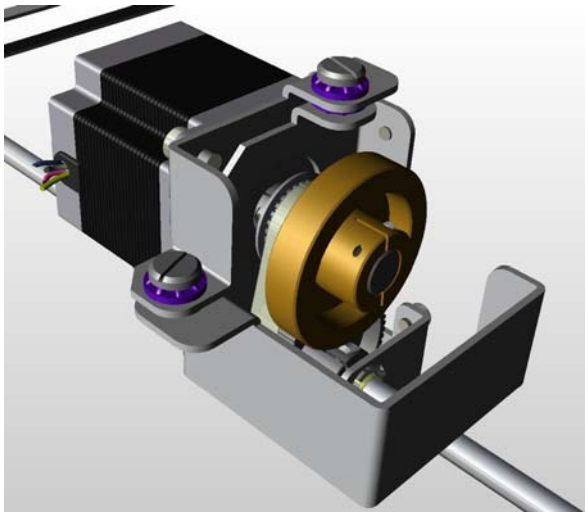
SCANtest: Test 1, Scanner ID Switch
Test 2, LED test
Test 3, Key test

3.8.3 Scanner ID Switch

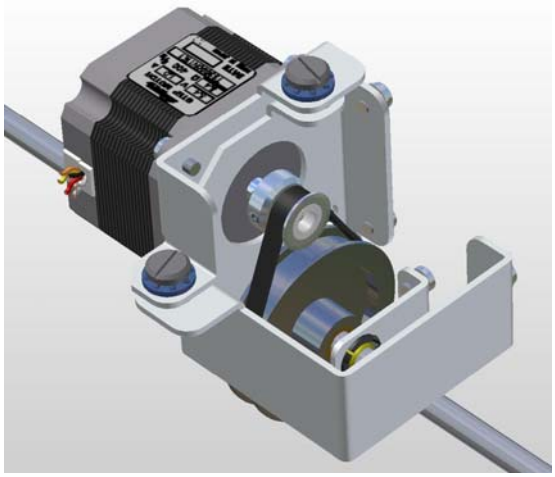
SKF, DIP Switch settings (S19, see Fig. 3-9):

Switch No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**HEX**
AA51A	OFF	OFF	OFF	OFF	OFF	OFF	**ON**	OFF	0x02
AB51A Transmission type 1*****	OFF	OFF	OFF	OFF	OFF	**ON**	**ON**	OFF	0x06
AB51A Transmission type 2*****	OFF	OFF	OFF	OFF	**ON**	**ON**	**ON**	OFF	0x0E
AC51A	OFF	**ON**	OFF	**ON**	**ON**	**ON**	OFF	OFF	0x5C

* For AB51A the switch setting depends on the transmission type, see images below. Please also refer to CRB switch settings in section 3.9.1.



Transmission type 1 (AB51A)



Transmission type 2 (AB51A)

An undefined switch setting may cause the 'Invalid Scanner ID' Error Code to be displayed on the Operator Panel.

CAUTION:
The Scanner ID Switch setting is stored in the Flash Memory on the SUx-Board. Every time the scanner is switched ON, it reads the switch setting and if it is different from the stored value, the new setting will be stored and all other stored scanner parameters (including Basic Calibration and Color Calibration) will be cleared to default values.
This means that the scanner must be calibrated using Scanner Maintenance afterwards to restore the actual values.

3.8.4 Markings

AA51A	SKFB
AB51A	SKFB
AC51A	SKFB
where dd = board revision number.	

3.8.5 Operator Panel Layout

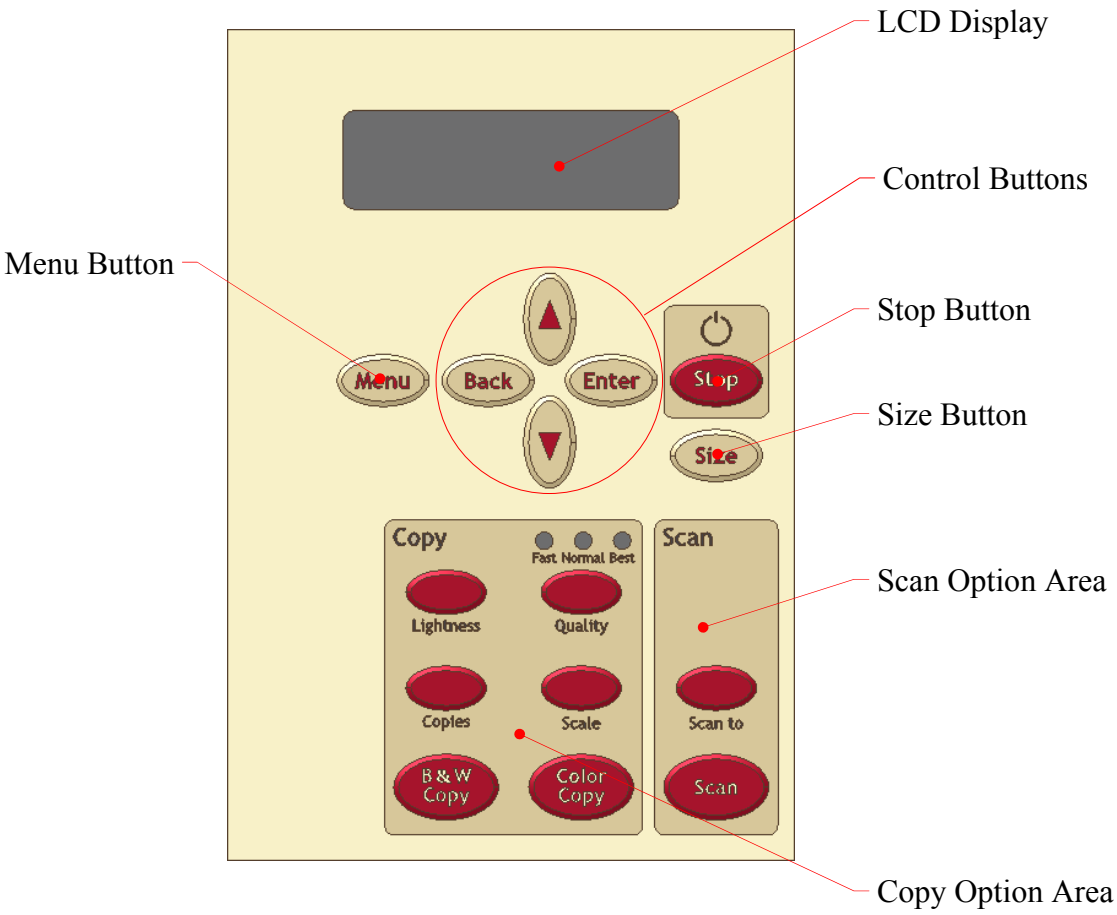


Fig. 3-9, Operator Panel Layout

- The LCD Display contains the current selections as you make them and useful messages from the scanner regarding maintenance and operation.
- Forward/Reverse Buttons can be used to feed paper. When the scanner is in Automatic Thickness Adjustment Control (ATAC) mode the paper forward and paper reverse keys become “Pressure-Platen Up” and “Pressure-Platen Down” buttons
- The Menu Button leads to a options for copy settings and an advanced submenu for configuration settings.
- The Control Buttons Arrow Up, Arrow Down, Back and Enter are for navigating the menus and for selecting menu options.
- The Stop Button is for interrupting a copy or scan process.
- The Size Button is for setting the original’s size (input size) for both copy and scan jobs.
- Below the control and menu buttons, are a Copy Option Area and a Scan Option Area, each with its own set of quick option buttons.

For a detailed description of the individual buttons and functions please refer to the scanners operators guide

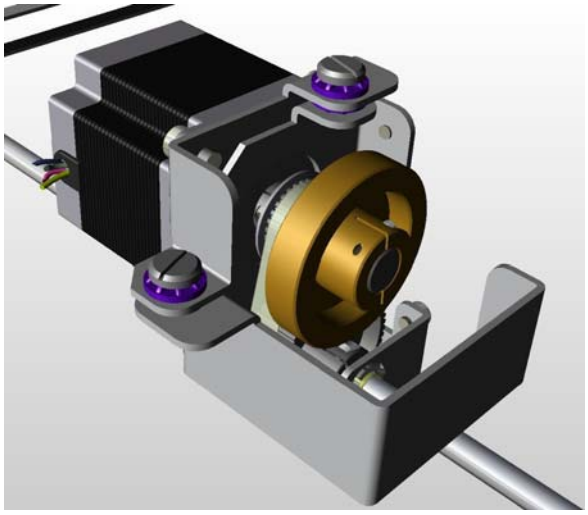
3.9 CRB, Smart Card Reader

3.9.1 CRB Switch

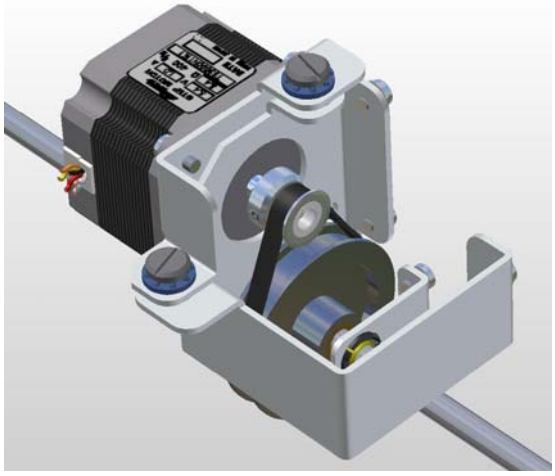
Default Switch Setting:

Switch No:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
AA51A	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
AB51A Transmission type 1*****	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
AB51A Transmission type 2*****	OFF	OFF	OFF	OFF	**ON**	**ON**	OFF	OFF
AC51A	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

* For AB51A the switch setting depends on the transmission type, see images below. Please also refer to SKF switch settings in section 3.8.3.



Transmission type 1 (AB51A)



Transmission type 2 (AB51A)

3.9.2 Markings

AA51A	CRBCdd
AB51A	CRBCdd
AC51A	CRBCdd
where dd = board revision number.	

3.9.3 Signal LED on the CRB Board

The signal LED (LED1) on the CRB Board turns ON when a Smart Card is inserted. It only signals, that a Smart Card has been inserted, it does not show whether the card is valid or not.

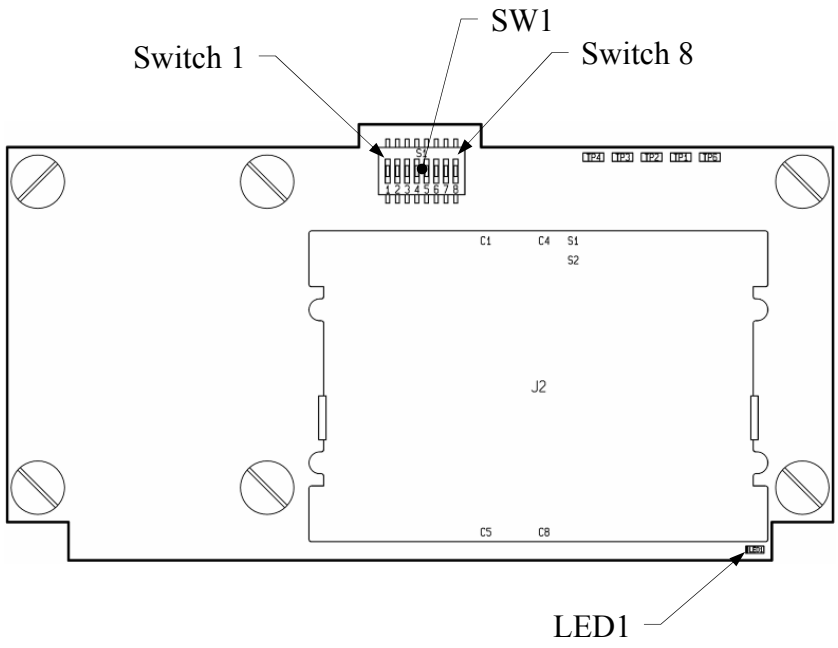


Fig. 3-10, CRB Component Layout

3.10 SSU, Scanner Storage Unit (AB51A, AC51A only)

The Scanner Storage Unit is used as temporary storage when making multiple copies or when making WEB scans. When the scanner boots the temporary storage area is reformatted and all files deleted.
Settings made using the iJET Panel are saved on a different area of the Scanner Storage Unit. These settings are permanent.

3.10.1 Functional Test

The Scanner Storage Unit is tested as a part of the SUx board (Test 7, Complete Hardware Test)

3.10.2 Markings

No marking

3.10.3 Replacing the Scanner Storage Unit

When replacing the Scanner Storage Unit configuration and setup made using the iJET Panel will be lost.

4. Camera and Mirror Carriage Adjustment

Fig. 4-1 shows the light path in Ax51A. The CCD-Camera is stationary while the Lamp Carriage and the Mirror Carriage are moving. In order to keep the optical distance constant the Mirror Carriage moves with half the speed of the Lamp Carriage.

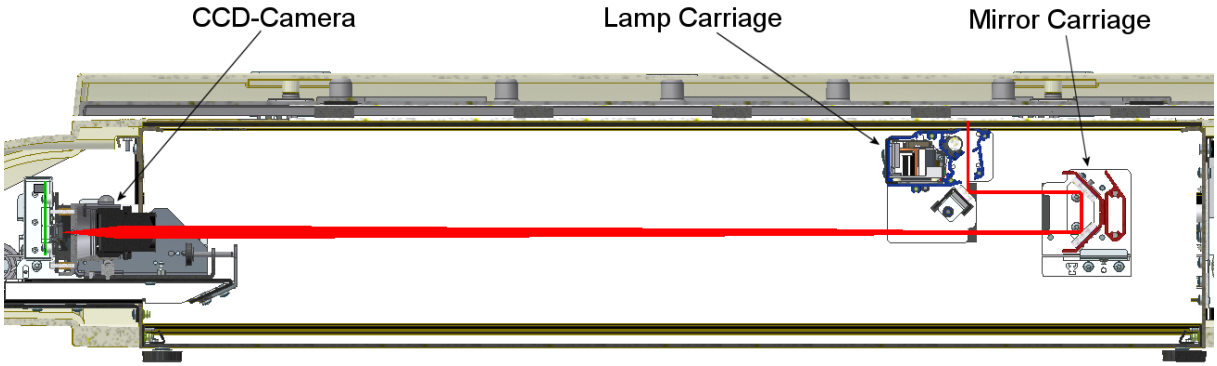


Fig. 4-1, Light Path

An overview of the Camera and Mirror Carriage adjustments is given in chapter 4.1 and a detailed description of each adjustment in chapter 4.2.

The Camera and Mirror Carriage adjustments are OK if:

- Focus signal looks OK is OK (Test 9)
- Scan Width and CCD-Centering is OK (Test 9)
- Test 33 is OK.

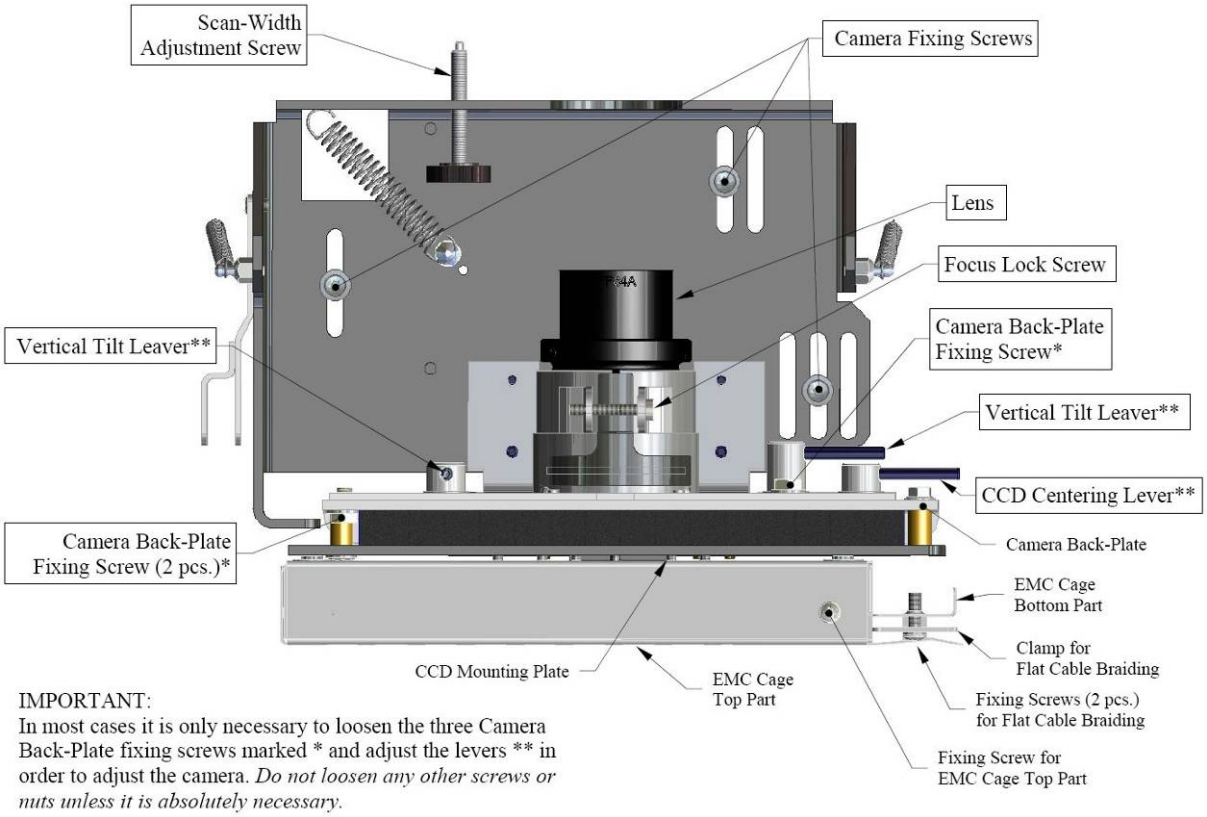


Fig. 4-2, CCD-Camera

4.1 Overview of Camera and Mirror Carriage Adjustment

IMPORTANT: After replacement of the Camera Board (CBx), do:

- Check Scan-Width. If it is within the limits given in 4.2.3, Focus will also be OK
- CCD-Centering (4.2.3 page 36)
- Scan-Line Positioning (Vertical Positioning) (4.2.4 page 37)
- Mirror Carriage Adjustment (4.2.6 page 41)
- Run Scanner Maintenance

These adjustments can be made without loosening the Camera Fixing Screws and without loosening the Focus Lock Ring / Lock Screw.

4.1.1 Light Profile

For a detailed description please refer to 4.2.1 on page 34.

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Goto White
6. Adjust the position of the Camera Back Plate to get undisturbed light profiles for R, G and B.

4.1.2 Focus

For a detailed description please refer to 4.1.2 on page 35.

Only make a focus adjustment if absolutely necessary.

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Adjust. Pat
6. Adjust to get an as uniform Focus signal as possible

4.1.3 Scan Width and CCD-Centering

For a detailed description please refer to 4.1.3 on page 36.

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Detail View: Scan Width
6. Select Adjust. Pat.
7. Adjust to get the correct Scan-Width and CCD-Centering
8. Check Focus. If Focus is readjusted repeat 1 to 7.

4.1.4 Scan-Line Positioning (Vertical Positioning)

For a detailed description please refer to 4.2.4 on page 37.

1. Start SCANtest
2. Select Test 32
3. Adjust the position of the Camera Back Plate until the check-mark to the left of the x-axis will shows that the adjustment is OK (**X** = Not OK, ✓= OK).
4. Check CCD-Centering and if necessary readjust. If readjusted repeat 1-4.

4.1.5 Mirror Carriage Adjustment

For a detailed description please refer to 4.2.6 page 41.

1. Run Test 33 A check-mark to the left of the x-axis will show if the adjustment is OK (**X** = Not OK, ✓= OK)
2. If the test fails, determine the required correction (0.8x slope)
3. Start Test 32
4. Adjust the upper mirror in the mirror carriage using the found correction and slope:
   - Positive Slope: Turn adjustment screws CCW (adjust Scan-Lines upwards)
   - Negative Slope: Turn adjustment screws CW (adjust Scan-Lines downwards)
5. Re-adjust Scan-Line positioning, see 4.1.4 page 33
6. Run Test 33
7. If the test fails repeat 3 to 6 until it is OK

4.2 Detailed Description of Camera and Mirror Carriage Adjustment

IMPORTANT: After replacement of the Camera Board (CBx), do:

- Check Scan-Width. If it is within the limits given in 4.2.3, Focus will also be OK
- CCD-Centering (4.2.3 page 36)
- Scan-Line Positioning (Vertical Positioning) (4.2.4 page 37)
- Mirror Carriage Adjustment (4.2.6 page 41)
- Run Scanner Maintenance

These adjustments can be made without loosening the Camera Fixing Screws and without loosening the Focus Lock Ring / Lock Screw.

4.2.1 Light Profile

The aim of this adjustment is to get undisturbed light profiles so that the following camera adjustments can be carried out.

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Goto White (moves the Lamp Carriage so that the Scan-Line is facing the white background)
6. Loosen the Camera Back Plate Fixing Screws just enough to allow the camera back plate to be moved
7. Using the Vertical Tilt Leavers adjust the position of the camera board so that you get an undisturbed light profile, see figure below.
8. Check the light profiles for Red and Blue and readjust if necessary
9. Tighten the Back-Plate fixing screws

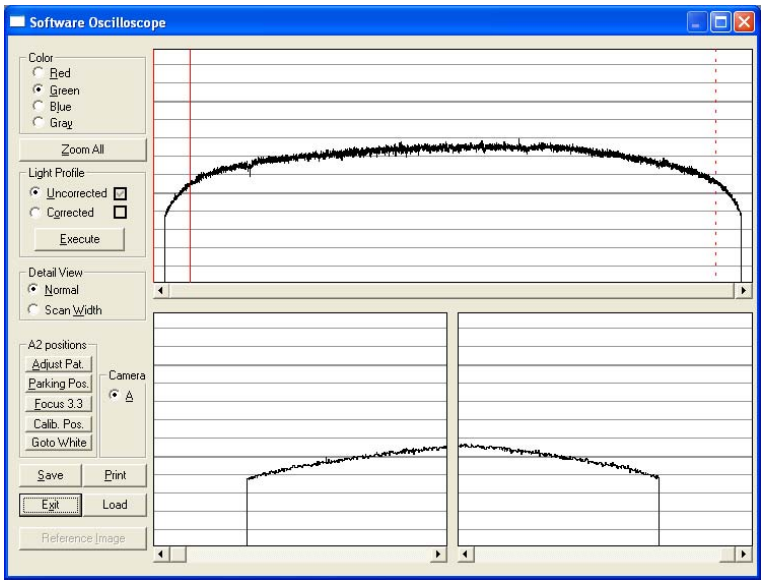


Fig. 4-3, Light Profile

4.2.2 Focus

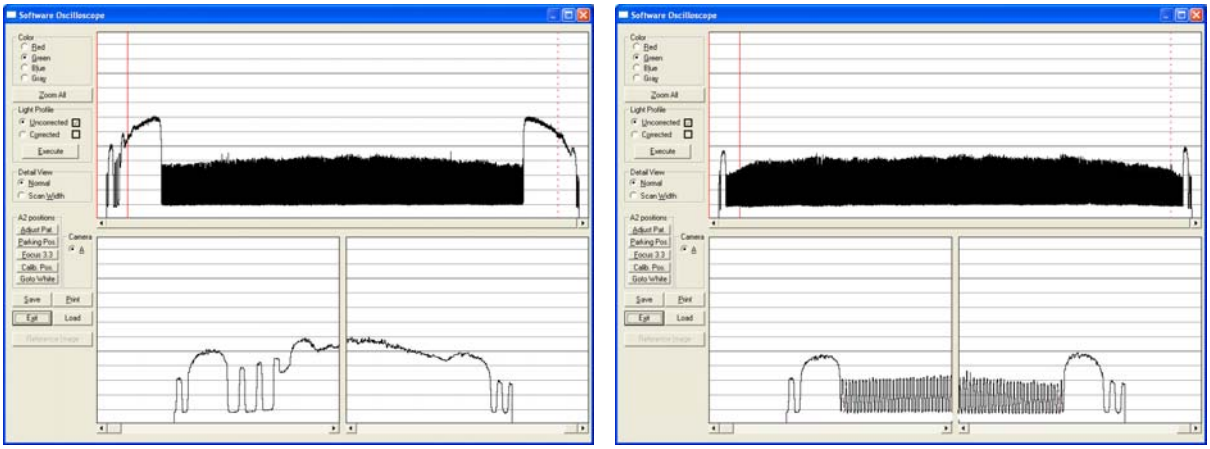
The aim of this adjustment is to focus the Scan-Line on the surface of the glass plate

IMPORTANT:

- *The focus adjustment is factory optimized for all three colors (Red, Green and Blue) Only change the focus adjustment if it is absolutely necessary, i.e. if the Scan-Width is not within the limits given in* 4.1.3.
- *After replacement of the Camera Board (CBx) check the Scan-Width. It is ONLY necessary to adjust the focus if the Scan-Width is not within the limits given in* 4.1.3
- *The construction of the camera ensures that the optical axis of the lens is perpendicular to the scanning area and hence no alignment of the camera housing is necessary.*
- *Always perform the Focus adjustment before adjusting the Scan-Width, see "Interaction" below.*

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Adjust. Pat. (moves the Lamp Carriage so that the Scan-Line is facing the build-in adjustment pattern)
6. Loosen the Focus Lock Screw just enough to allow the Lens to be turned
7. Turn the Lens Adapter to get an as uniform Focus signal as possible
8. Tighten the Focus Lock Screw

Interaction:
The Focus adjustment has a big influence on the Scan-Width adjustment. Therefore the Scan-Width must be checked and readjusted if necessary when the Focus adjustment has been changed. On the other hand, the Focus adjustment is relative tolerant to changes in the Scan-Width adjustment and as a rule of thumb, the Scan-Width adjustment can be changed ±1 SWU without the need for re-focusing.



Early Models Newer Models

Fig. 4-4, Focus Signal

4.2.3 Scan Width and CCD-Centering

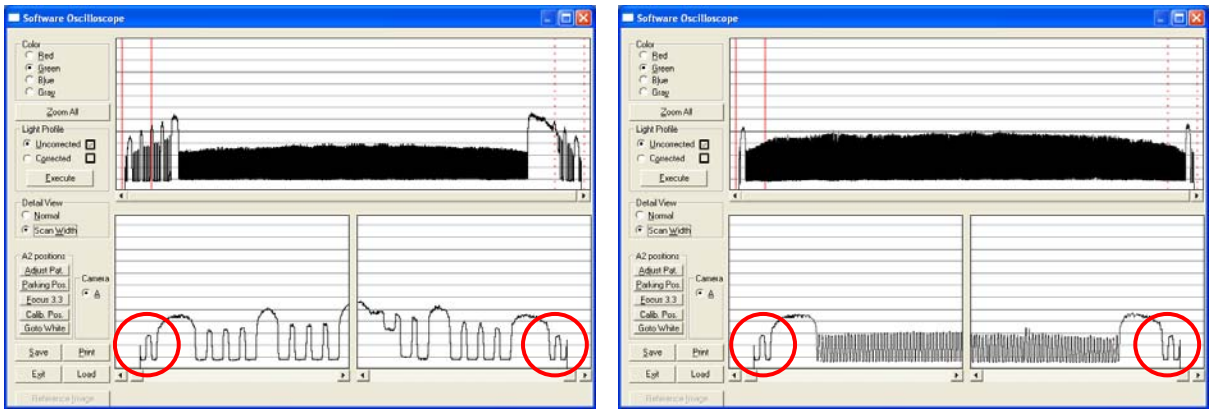
The aim of this adjustment is to set the correct magnification, i.e. to make sure that the scanned image has the correct size in the "x-direction" and to place the Scan-Line start correct in relation to the marking on the Alignment Guide Bar.
IMPORTANT: Always do the Focus adjustment before adjusting the Scan-Width, see "Interaction" above.

1. Start SCANtest
2. Select Test 9
3. Select Color: Green (default)
4. Select Light Profile: Uncorrected (default)
5. Select Detail View: Scan Width
6. Select Adjust. Pat. Moves the Lamp Carriage so that the Scan-Line is facing the build-in adjustment pattern)
7. Loosen the three Camera fixing screws and the three Camera Back-Plate fixing screws. The screws should be loosened just enough to allow the Camera and the Camera Back-Plate to be moved.
8. Adjust the Scan-Width by turning the Scan-Width Adjustment Screw (which moves the Camera back and forth) to get the correct total sum of Scan-Width Units, see the table below, while at the same time adjusting the horizontal position of the Camera Back-Plate by means of the CCD Centering Lever to get the same number of Scan-Width Units at the start and at the end of the scanline.

9. Tighten the Camera and the Back-Plate fixing screws. Make sure that the Camera is kept aligned by pushing it forward and to the left before tightening the Camera fixing screws.

Interaction
Check Focus and readjust if necessary.

Model	Total Sum of Scan-Width Units	Tolerance Scan-Width Units	No of Scan-Width Units, Start	No of Scan-Width Units, End	Tolerance
AA51A	6.0	+/- 0.5	3	3	± 1 SWU



Early Models Newer Models

Fig. 4-5, Scan-Width

4.2.4 Scan-Line Positioning (Vertical Positioning)

The aim of this adjustment is to place the Scan-Line in the center of the aperture of the Lamp Carriage and to make it (the Scan-Line) perpendicular to "feed direction" (the movement of the Lamp Carriage).

1. Start SCANtest
2. Select Test 32
3. Loosen the Camera Back Plate Fixing Screws just enough to allow the camera back plate to be moved
4. Using the Vertical Tilt Leavers adjust the position of the Camera Back Plate until the blue line on the screen is within the limits given below. A check-mark to the left of the x-axis will show when the adjustment is OK (**X** = Not OK, ✓= OK).
5. Tighten the Back-Plate fixing screws.

Model	Left Hand Side	Right Hand Side	Tolerance
AA51A	0	0	± 10

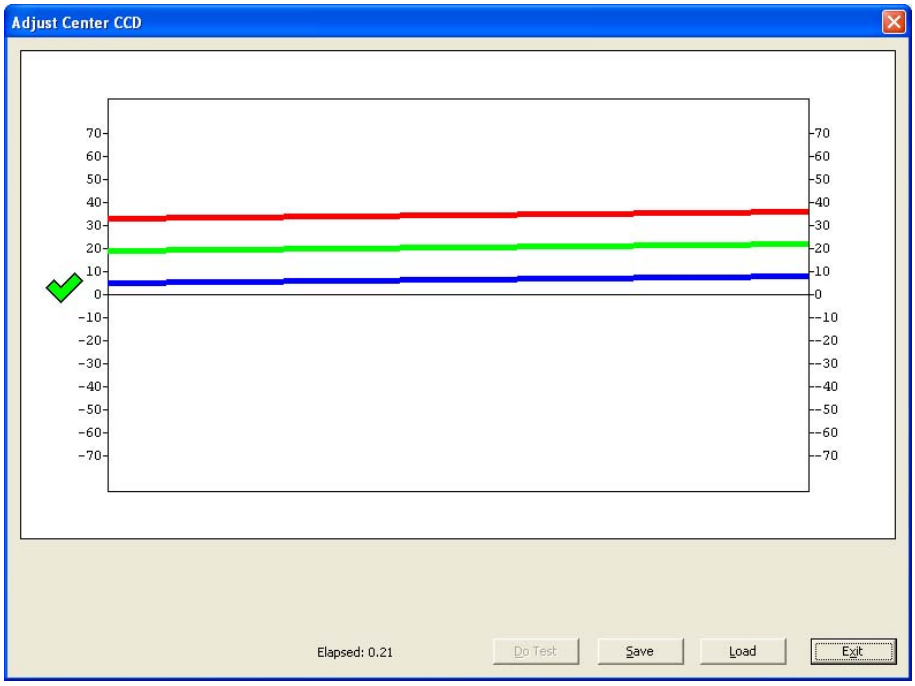


Fig. 4-6, Test 32 OK (Scan-Line Positioning)

4.2.5 Lamp and Mirror Carriage Initial Position and Belt Tension Setting

The aim of this adjustment is to make sure that the Lamp and Mirror Carriages are:

- Mutual parallel
- Their mutual distance is correct
- They are perpendicular to the feed direction

- Switch off the scanner and disconnect the power cord
- Remove the End Covers
- Remove the Glass Plate
  - Slide the glass plate to the left until it is free of the scanner. Make sure to keep the glass plate horizontal while sliding. Be careful not to touch the underside of the glass plate or to damage the rulers along the sides.

4.2.5.1 Initial Position for Lamp and Mirror Carriages

- Move the carriages fully to the RHS (operator panel side) by turning either the front LHS drive wheel or by using a tool on the hexagon drive-shaft end (1/4" socket or a standard bit holder), see Fig. 4-7. On early models the hexagon is missing and it is not possible to use a tool!

UNDER - NO - CIRCUMSTANCES - DO - NOT - PULL - THE - CARRIAGES

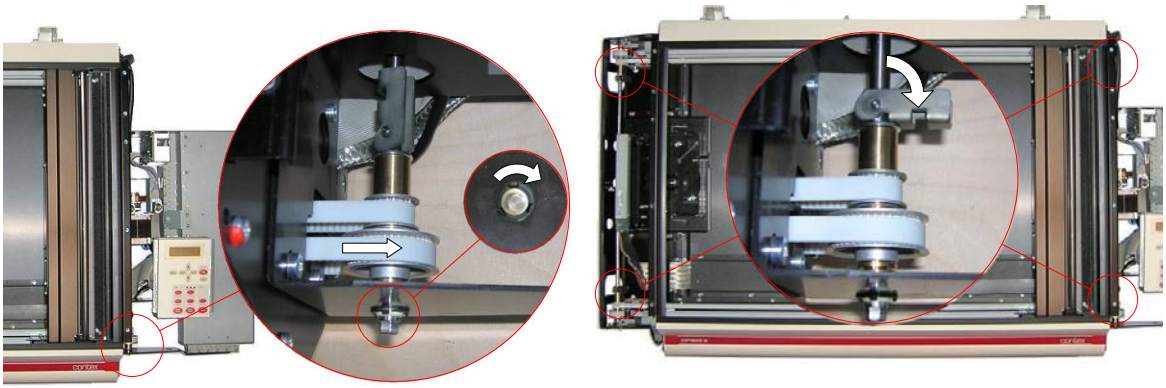


Fig. 4-7, Drive Wheels

- Pull all 4 drive wheel lock handles to unlocked position, see Fig. 4-7
- Using the lock handles, turn the drive shafts several turns CW (as seen from the front) until the drive wheel friction locks are fully disengaged.
- Move the carriages to their initial position by pressing by both hands like shown in Fig. 4-8 (at this point where the drive wheels are disengaged the carriages must be moved by hand).

Fig. 4-8, Initial Position for Carriages

4.2.5.2 Setting Belt Tension

- Loosen the Drive Belt Tighteners. Requires a T20 L-Key (p/n 0008V354) or similar.
  - Inner most belts, screws marked (1a)(1b). Both front and rear.
  - Outer most belts, screws marked (2a)(2b). Both front and rear.

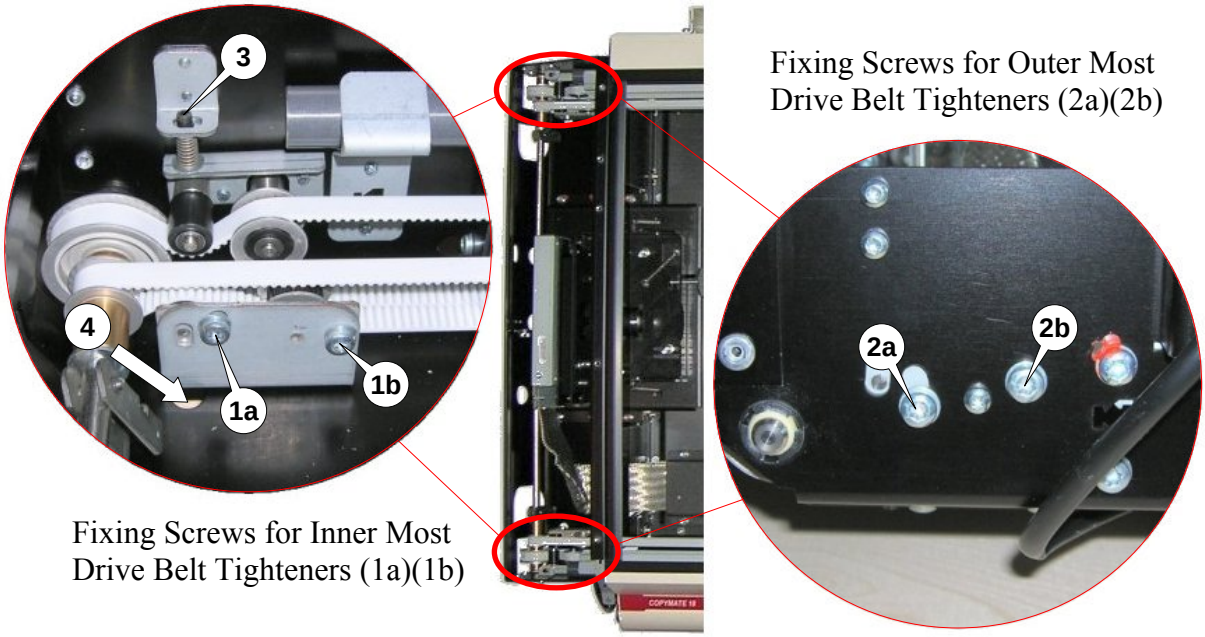


Fig. 4-9, Drive Belt Tighteners

- Exercise the Drive Belt Tighteners up and down to make sure that they move freely. The ones for the outer most belts are accessed by the set screw (3) while the inner most ones are accessed from the bottom through holes in the bottom plate (4).
- When the Tighteners move freely:
  - Outer Belts: Press the Drive Belt Tightener down and observe that it moves a little upwards when released. The belt tension is then OK.
  - Inner Belts: Press the Drive Belt Tightener upwards and observe that it moves a little downwards when released. The belt tension is then OK.
- Thighten the Drive Belt Tighteners fixing screws. First tighten the screws marked (1b) and (2b). When tightening (1a) and (2a) be careful not to move the position of the Drive Belt Tightener.
- As exercising the Drive Belt Tighteners may have moved the carriages a little make sure they are still fully to the right by once again pressing by both hands like shown in Fig. 4-8.
- Close all 4 drive wheel lock handles in the following way (refer to Fig. 4-10 page 40):
  - Close the RHS (1) lock handles while turning* these a little CW
  - Close the LHS (2) lock handles while turning* these a little CW

  * Turning the handles CW while closing these will remove any slack and prevent introducing new and assure the best possible alignment of the carriages

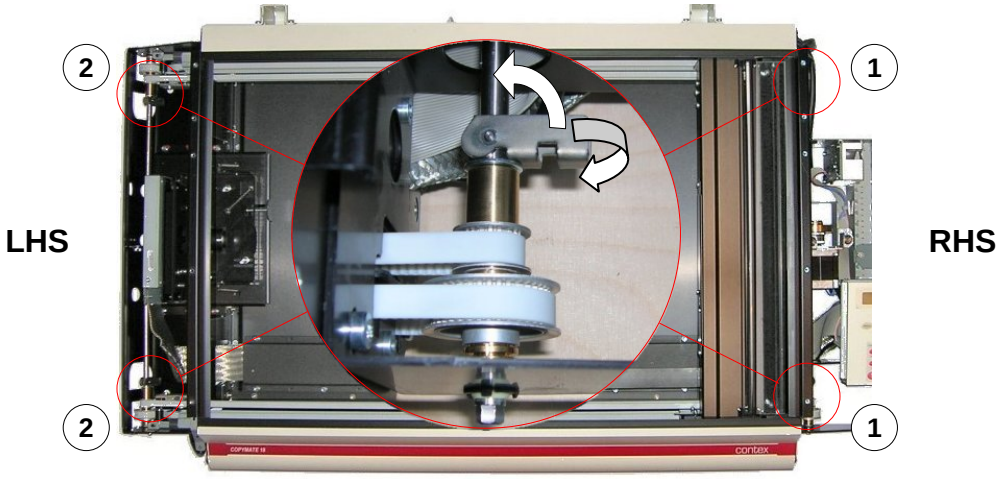


Fig. 4-10, Closing Lock Handles

- Replace the Glass Plate. Be careful not to touch the underside or to damage the rulers along the sides. If necessary clean the underside before replacing.
  - Clean using a micro-fiber cloth and a mild, streak-free anti-static glass cleaner. Apply the cleaner to the cloth, and not directly to the glass.
  - Dry completely using a clean micro-fiber cloth.

- Check and if necessary readjust:

  Scan Width and CCD-Centering (4.1.3 page 32)
  Scan-Line Positioning (Vertical Positioning) (4.1.4 page 33)
  Mirror Carriage Adjustment (4.1.5 page 33)

- Replace all covers

4.2.6 Mirror Carriage Adjustment

The aim of this adjustment is to make sure that the Scan-Line has the exact same relative position in the aperture of the Lamp Carriage when the carriage is moved from start to end.

1. Start SCANtest
2. Run Test 33 * (A check-mark to the left of the x-axis will show if the adjustment is OK (**X** = Not OK, ✓= OK)
3. If the test fails, determine the required correction (0.8x slope, see 4.2.6.1 below)
4. Start Test 32
5. Adjust the upper mirror in the mirror carriage using the found correction and slope:
   - Positive Slope: Turn the adjustment screws CCW (adjust Scan-Lines upwards)
   - Negative Slope: Turn the adjustment screws CW (adjust Scan-Lines downwards)
6. Re-adjust Scan-Line positioning, see 4.1.4 page 33
7. Run Test 33
8. If the test fails repeat 3 to 6 until it is OK

* If the curves are not continuous but contain spikes or the like, change the PC speed to Middle or Slow and run the test again

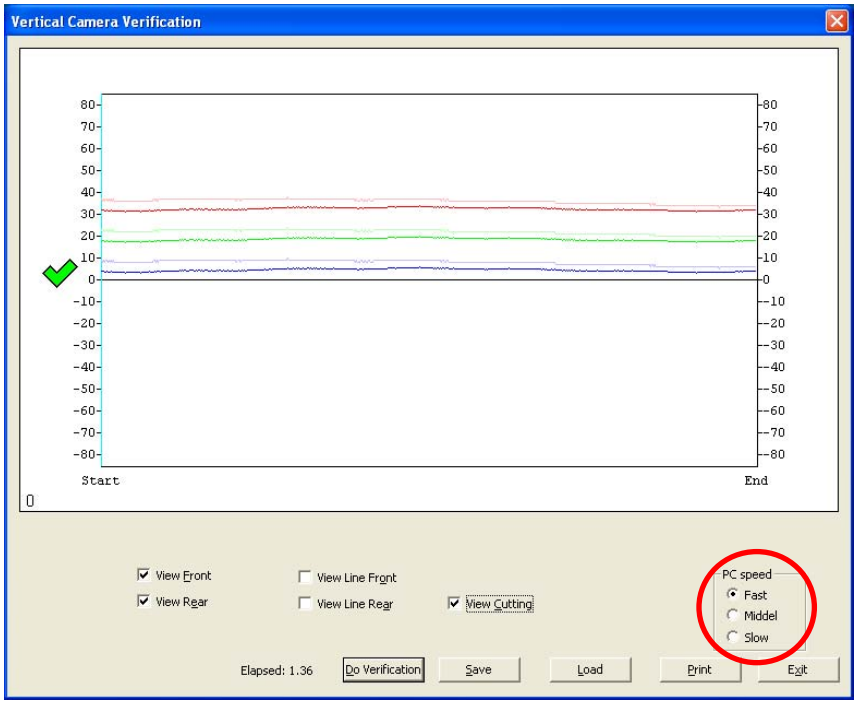


Fig. 4-11, Test 33 OK (Mirror Carriage Adjustment)

Fig. 4-12, Mirror Carriage Adjustment Screws

4.2.6.1 Determining Correction for Mirror Carriage Adjustment

The figure below shows an example of a failed Test 32. To determine the correction to the Scan-Line position calculate the slope of the blue curve below (use interpolation between Front and Rear curves) :

Slope of Blue Curve = **End** – Start = 0 – (–14) = 14

Multiply the slope value with 0.8 will give the required Scan-Line position correction value. In the example below this gives a value of 0.8x14 = 11.

A table with correction values is given in Fig. 4-14 below.

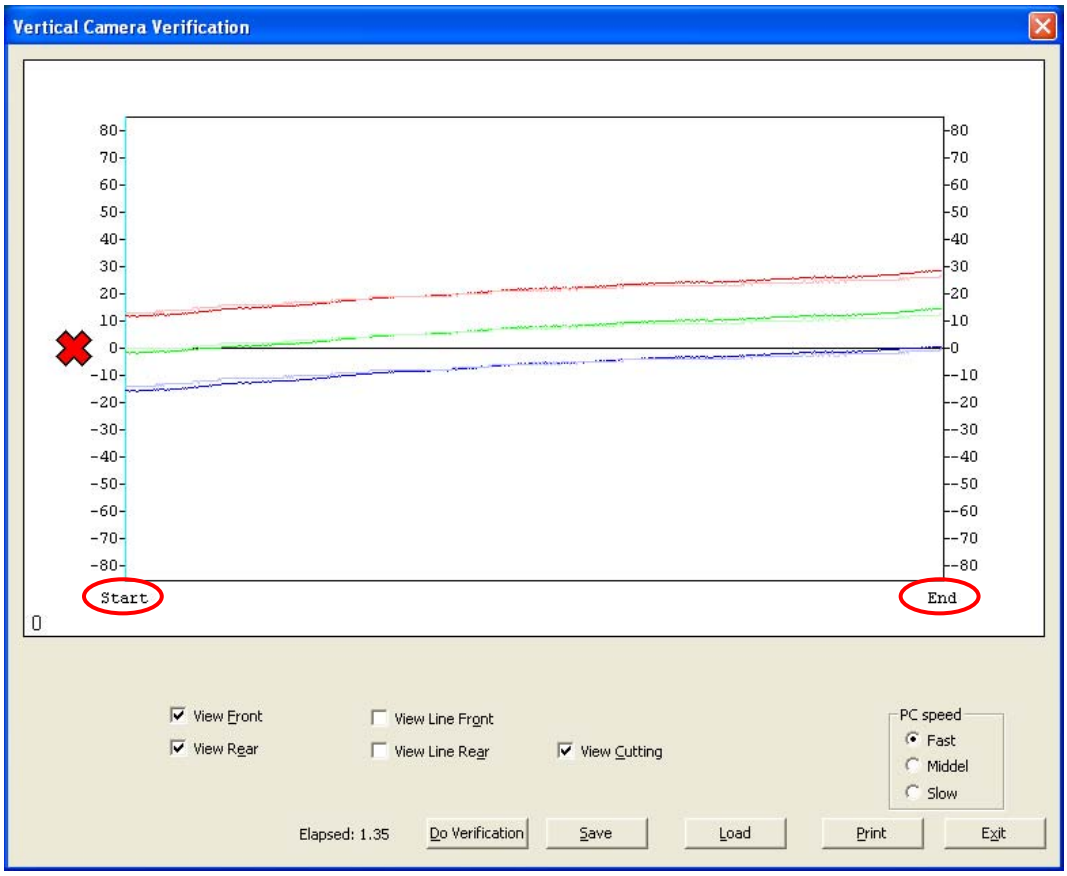


Fig. 4-13, Test 33 Failed

Measured Value	Correction Value	Measured value	Correction Value
100	80	50	40
99	79	49	39
98	78	48	38
97	78	47	38
96	77	46	37
95	76	45	36
94	75	44	35
93	74	43	34
92	74	42	34
91	73	41	33
90	72	40	32
89	71	39	31
88	70	38	30
87	70	37	30
86	69	36	29
85	68	35	28
84	67	34	27
83	66	33	26
82	66	32	26
81	65	31	25
80	64	30	24
79	63	29	23
78	62	28	22
77	62	27	22
76	61	26	21
75	60	25	20
74	59	24	19
73	58	23	18
72	58	22	18
71	57	21	17
70	56	20	16
69	55	19	15
68	54	18	14
67	54	17	14
66	53	16	13
65	52	15	12
64	51	14	11
63	50	13	10
62	50	12	10
61	49	11	9
60	48	10	8
59	47	9	7
58	46	8	6
57	46	7	6
56	45	6	5
55	44	5	4
54	43	4	3
53	42	3	2
52	42	2	2
51	41	1	1

Fig. 4-14, Scan-Line Position Correction Values

5. Disassembly and Assembly

Note: All screws are Torx. The following sizes are used in the scanner: T6, T7, T9, T10, T20, T30.

IMPORTANT:
DO - NOT - LOOSEN - ANY – SCREWS
MARKED - WITH - RED - SEALING - LACQUER

The following parts are NOT replaceable as they are part of the supporting structure. Trying to replace any of these may change the alignment of the chassis and influence negatively on the scanning quality of the scanner:

- **Front Profile**
- **Rear Profile**

IMPORTANT:
Before removing any covers, turn the power switch OFF and disconnect the power cord

5.1 RHS End Cover, Front

- 3 screws from top (remove caps)
- 4 screws along lower edge
- Remove the Keyboard Foil before removing the cover. The foil is magnetic and can easily be removed simply by lifting it.

5.2 LHS End Cover, Front

- 3 screws from top (remove caps)
- 4 screws along lower edge

5.3 RHS End Cover, Rear

- 2 screws from top (remove caps)

5.4 LHS End Cover, Rear

- 2 screws along lower edge

5.5 Glass Plate

- Remove all end covers
- Slide the glass plate to the left until it is free of the scanner. Make sure to keep the glass plate horizontal while sliding.

5.6 Positive Pressure Fan

- Remove all end covers
- Remove glass plate
- Remove EMI shield on bottom plate (8 nuts and 2 screws)

5.7 Flex Cable

Please refer to the following sections:

IBA (Bottom Plate) End section 5.8, IBA Board and Flex Cable page 44
LSB (Lamp Carriage) End section 5.12, LSB Board and Flex Cable page 46

5.8 IBA Board and Flex Cable

Numbers in () refer to Fig. 5-1 and Fig. 5-2 below.

- Remove all end covers
- Remove Glass Plate
- Remove the IBA EMI Shield (1)
- Remove the PVC flex cable guide strip fixing screws (2) at the IBA end
- Pull out the folded part of the flex cable from the EMI tunnel to the right (3)
- Remove Flex Cable EMI Bracket (4)

- Open the lock of the flex cable connector (5) by gently pulling at both ends
- Pull out the Flex Cable
- Remove the fixing nuts for the Flat Cable Fixing Bracket (6)
- Detach the cable for the Positive Pressure Fan
- Remove the IBA Board fixing nuts
- While lifting the IBA Board gently remove the flat cable

When replacing observe the following:

- That the flex cable is fully inserted in the connector before the lock is engaged
- That the flex cable EMI bracket is in fully contact with the blank exposed part (7) of the flex cable foil shielding (the shielding should just be visible to the left of the bracket)
- That the flex cable is properly aligned (8) and in full contact with the PVC guide strip
- That the EMI Bar under the flat cable (9) is in place when placing the fixing bracket

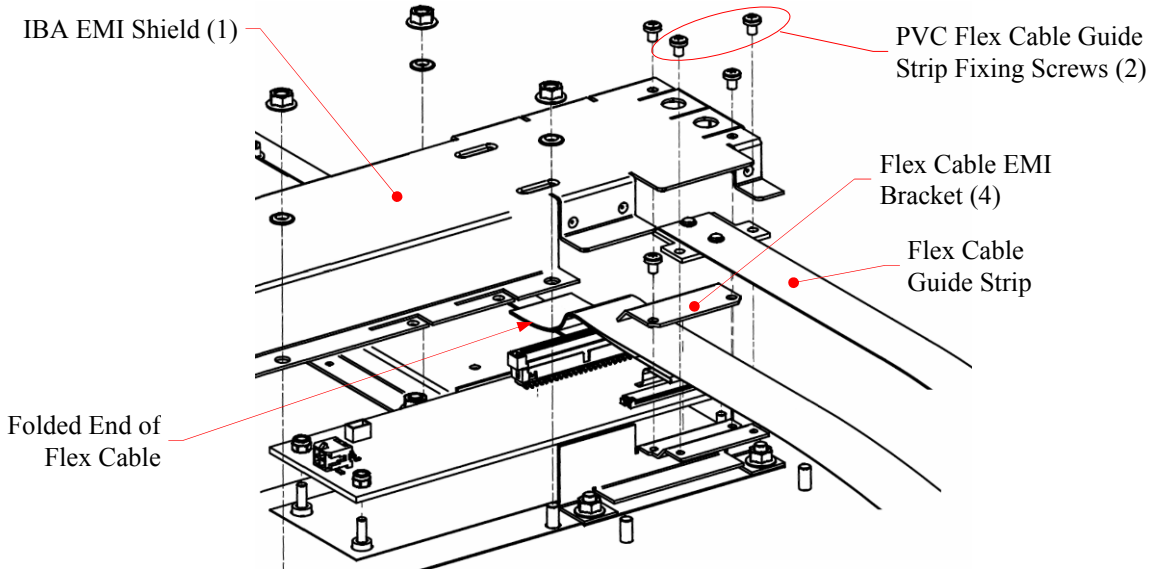


Fig. 5-1, IBA Board and Flex Cable (1)

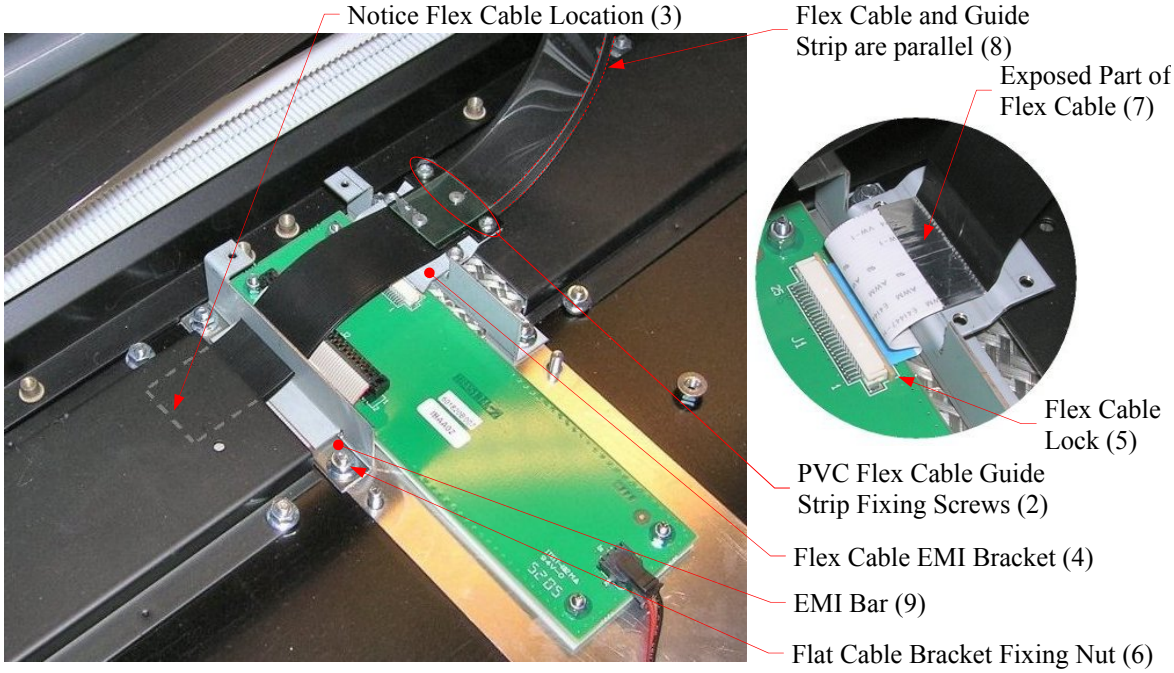


Fig. 5-2, IBA Board and Flex Cable (2)

5.9 Lamp Carriage Fan

- Remove all end covers
- Remove Glass Plate
- The fan is placed on the cover for the service hatch on the side of the carriage

5.10 Lamp

- Move the carriage to the center of the scanner facing the lamp door: Either use the user interface from the keyboard or by turning the LHS drive shaft

UNDER - NO - CIRCUMSTANCES - DO - NOT - PULL - THE - CARRIAGE

5.11 Lamp Inverter

- Remove all end covers
- Remove glass plate
- Remove the lamp
- Remove the service hatch cover
- Remove the 3 fixing screws for the Lamp Inverter
- Gently pull at the end of the heat-sink (blank alu bracket just visible at the LHS of service hatch) **Do - Not - Pull - The - Wires !!!!**
- Slide the Lamp Inverter to the right until it can be taken out through the service hatch
- Disconnect cables. Use a set of pliers or a small screw driver to remove the snap-on's on the micro switch. **Do - Not - Pull - The - Wires !!!!**

5.12 LSB Board and Flex Cable

Numbers in () refer to Fig. 5-3, Fig. 5-4 and Fig. 5-5 below.

- Remove all end covers
- Remove Glass Plate
- Remove the Lamp
- Remove the Service Hatch Cover (5)

Remove the 2 LSB Board Bracket Fixing Screws (6) placed on the bottom side of the carriage (on each side of the flex cable). This requires a T20 L-Key (p/n 0008V354) or similar.

- Push gently upwards on the bracket using the finger tips while sliding the LSB board to the center of the carriage (note the cut-out in the lower track)
- Swing out the lower edge of the LSB board (1) and move the board downwards (2) until it rests on the bottom of the carriage, see figure below
- Tilt the upper edge a little forward (3) (note that the cables might try to resist this) and pull out the LSB board (4), see figure below

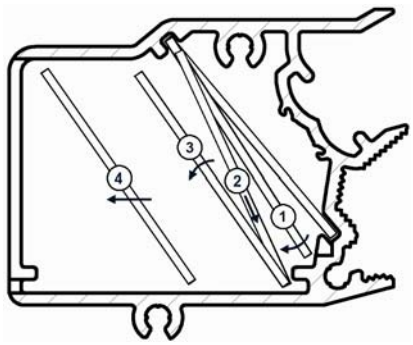


Fig. 5-3, Removing LSB Board

When replacing perform (1) to (4) in reverse order. Observe the following:

- Make sure the LSB board bracket is placed correctly with its taps in the holes in the board
- Before tightening the bracket fixing screws make sure that the flex cable guide strip is fully inserted between the flex cable and the bottom of the carriage (rests against the stop on the bracket) and that cable and guide strip are aligned

- Make sure to place the Anti Squeeze Plate between cable and guide strip. Note that this plate is not installed in early models.
- When replacing the fixing screws guide the bracket by hand through the service hatch. It may be of help to use a small Allen Key or the like to align the holes in the carriage with the ones on the LSB Board Bracket.

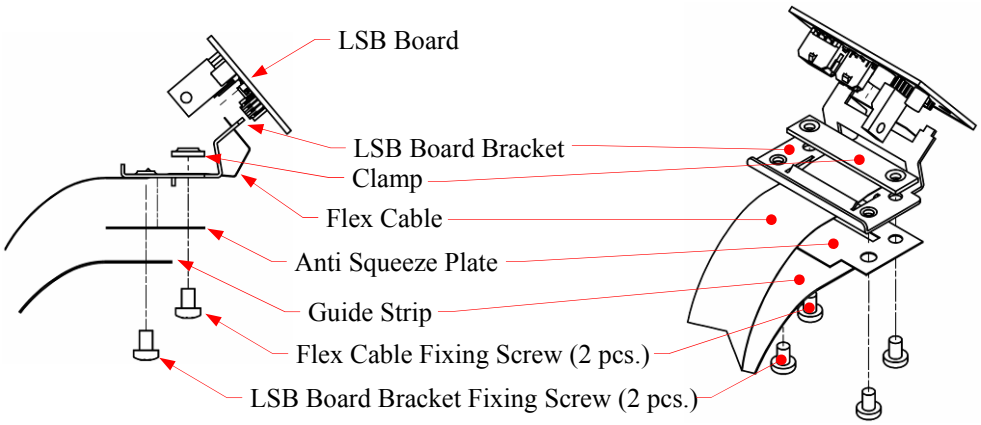


Fig. 5-4, LSB Board and Flex Cable (Light Carriage End)

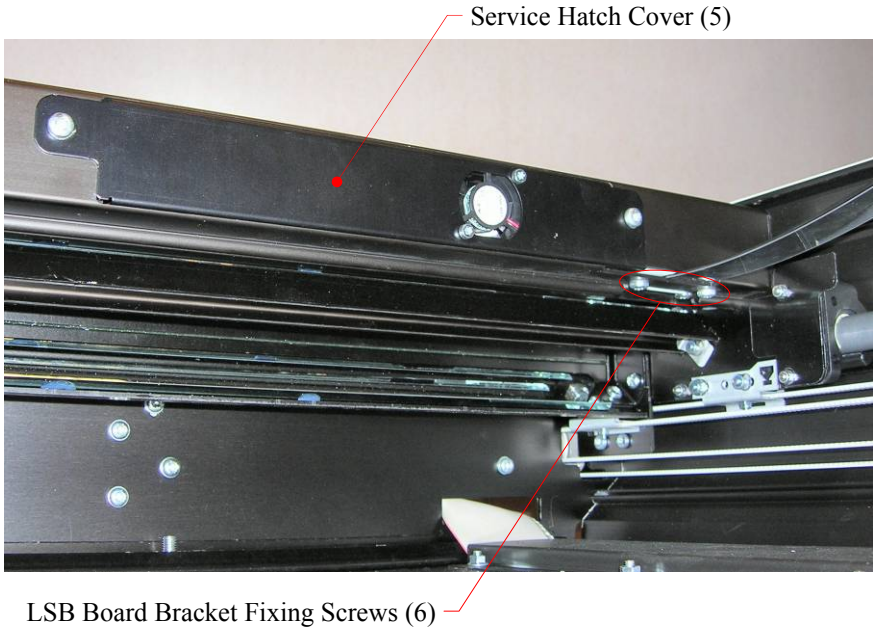


Fig. 5-5, Lamp Carriage Bottom View

5.13 Stepper Motor

- Remove all end covers
- Remove glass plate
- Loosen the 3 motor bracket fixing screws (accessed from the “inside”)
- Press the motor downwards and slide the drive belt of of the lower (and bigger) tooth wheel
- Remove the fixing screws and lift up the motor. Observe the belt tension spring

Replacing Stepper Motor:

- Make sure that the belt tension spring guide pin is inserted into the hole in the lower bracket
- Insert the 3 motor bracket fixing screws but do not tighten
- Press the motor fully downwards and tighten one of the fixing screws

- Place the drive belt on the motor tooth wheel and gently guide it unto the lower wheel (turning the wheel by hand eases the process)
- When the belt is in place loosen motor bracket fixing screws
- Check that the motor bracket can moved “freely” up and down
- Turn the drive shaft by hand several full turns in both directions to adjust and distribute the belt tension
- Tighten the 3 motor bracket fixing screws

5.14 Safety Interlock Switch (SIS)

- Remove all end covers
- Remove glass plate
- Open the lamp door
- Remove the SIS cover plate (one screw). Requires a T20 L-Key (p/n 0008V354) or similar.
- Remove the 2 SIS fixing screws (accessed from the “inside”)
- Grab the switch by the actuator using a pair of pliers and gently pull the switch out. If necessary feed a little cable form the other end. Observe the bracket with the threaded rods for fixing.
- Use a set of pliers or a small screw driver to remove the snap-on’s on the switch.
  Do - Not - Pull - The - Wires !!!!

Note the position of the wires:
- BLUE on the outer tabs
- LILAC or RED on the inner tabs

5.15 CRB Board

- Remove RHS end covers
- Disconnect the flat cable
- Remove the 4 fixing screws. This requires the T10 L-Key (p/n 0008V356) or similar.

When replacing the board check the switch setting of the DIP switch, see section 3.9, page 28

5.16 CBK Board

Numbers in () refer to Fig. 5-6 below.

- Remove LHS end covers
- Remove CBK Board EMI Cover (1). This is done by removing the fixing screw and then gently slide the cover to the left (as indicated by the arrow)
- Remove the EMI Clamp (2) for the flat cable braiding
- Disconnect the Flat Cable. Be careful not to damage it!
- In the following it may be easier to remove the complete camera from the scanner, but experienced technicians may proceed without doing so. If removing the camera be careful to place it in exact the same position (use a pen or the like to mark the position). Doing so will make the final camera adjustment easier. Be careful not to turn the Scan-Width Adjustment Screw (3)
  - Remove the Alignment Spring (4)
  - Remove the 2 Pull Down/Forward Springs (5)
  - Remove the 4 Camera Fixing Screws (6)
  - Lift out the Camera
- Remove the 2 fixing nuts Nut 1 and Nut 2
- Loosen (and only loosen) Nut 3. As this nut is hard to access a special key is needed (5175A228). Be careful not to damage components on the CBK board.
- Remove the CBK Board by lifting the RHS end while shifting the board a little to the right to get free of Nut 3.

Install the new CBK Board by performing the above in reverse order.

Be careful not to touch the surface of the CCD. It may be cleaned using a micro-fiber cloth and a mild, streak-free anti-static glass cleaner. Apply the cleaner to the cloth, and not directly to the CDD. Dry completely using a clean micro-fiber cloth.

When placing the camera be sure to push it forward and to the left (as seen from the back of the camera) to reestablish the alignment.
After replacing the CBK board the following adjustments should be checked/made:

- Check Scan-Width. If it is within the limits given in 4.2.3, Focus will also be OK
- CCD-Centering (4.2.3 page 36)
- Scan-Line Positioning (Vertical Positioning) (4.2.4 page 37)
- Mirror Carriage Adjustment (0 page 41)
- Run Scanner Maintenance

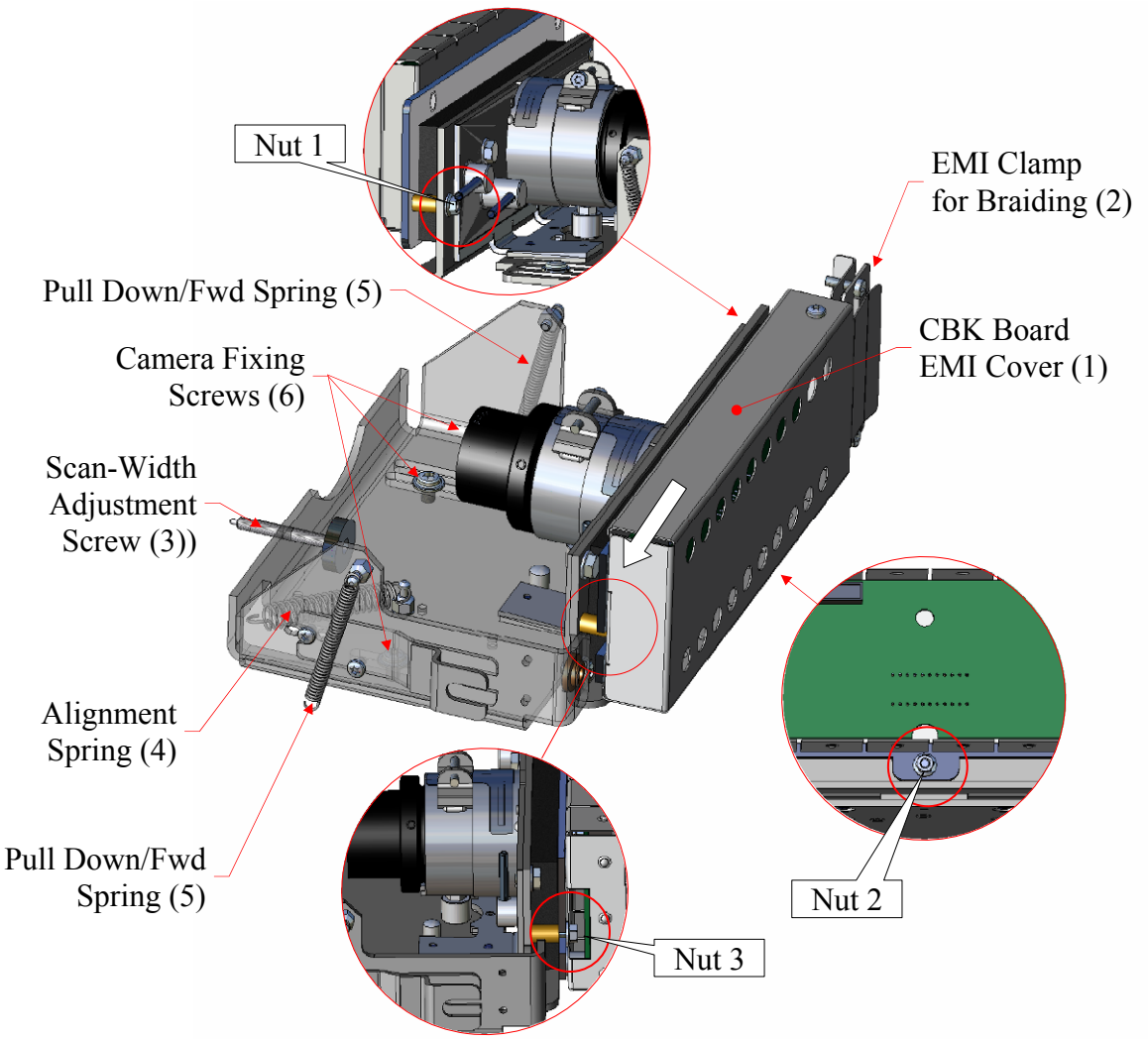


Fig. 5-6, Replacing CBK Board

5.17 LMG Board, SMPS (PSU), RFI Filter, and Fan (Electronics Box)

The LMG Board, SMPS (PSU), RFI Filter, and Fan are located in the lower part of the Electronics Box, see Fig. 2-2, page 52.

- Remove RHS end covers
- Loosen the T10 lock screw located in the lock bracket on the left side of the electronics box
- Open up the electronics box. Pay attention to the cables!
- Remove the one fixing screw for the bottom cover plate
- Remove the 2 fixing screws for the flat cable fixing bracket. Note that the front most of these screws also holds an EMI ferrite!
- Remove the flat cable fixing bracket

Note the routing of the cables for later re-installation, see Fig. 10-1*, page 61.*

- If necessary pull cables out of cable clips
- Gently remove the bottom cover plate

SMPS: *When disconnecting the cables, use a small screwdriver to help open the lock-ramp lock on the board connectors. Do not pull too strongly in the wires!*

Note: When closing the Electronics Box, be careful to arrange all cables correctly (see *Fig. 10-1*, page 61*) and make sure that no cables get jammed.*

5.18 SUD Board

The SUD Board is located in the upper part of the Electronics Box, se Fig. 5-8 page 52.

- Remove RHS end covers
- Loosen the T10 lock screw located in the lock bracket on the left side of the electronics box
- Open up the electronics box. Pay attention to the cables!

Note the routing of the cables for later re-installation, see Fig. 10-1*, page 61.*

- Pull cables out of cable clips and disconnect
- Remove the upper cover plate (6 fixing screws)
- Remove the EMI contact fingers for the shielded connector housings (rear end, 2 fixing screws)
- Remove the 8 fixing stays
- Lift out the SUD board

Note: When closing the Electronics Box, be careful to arrange all cables correctly (see see Fig. 10-1*, page 61) and make sure that no cables get jammed.*

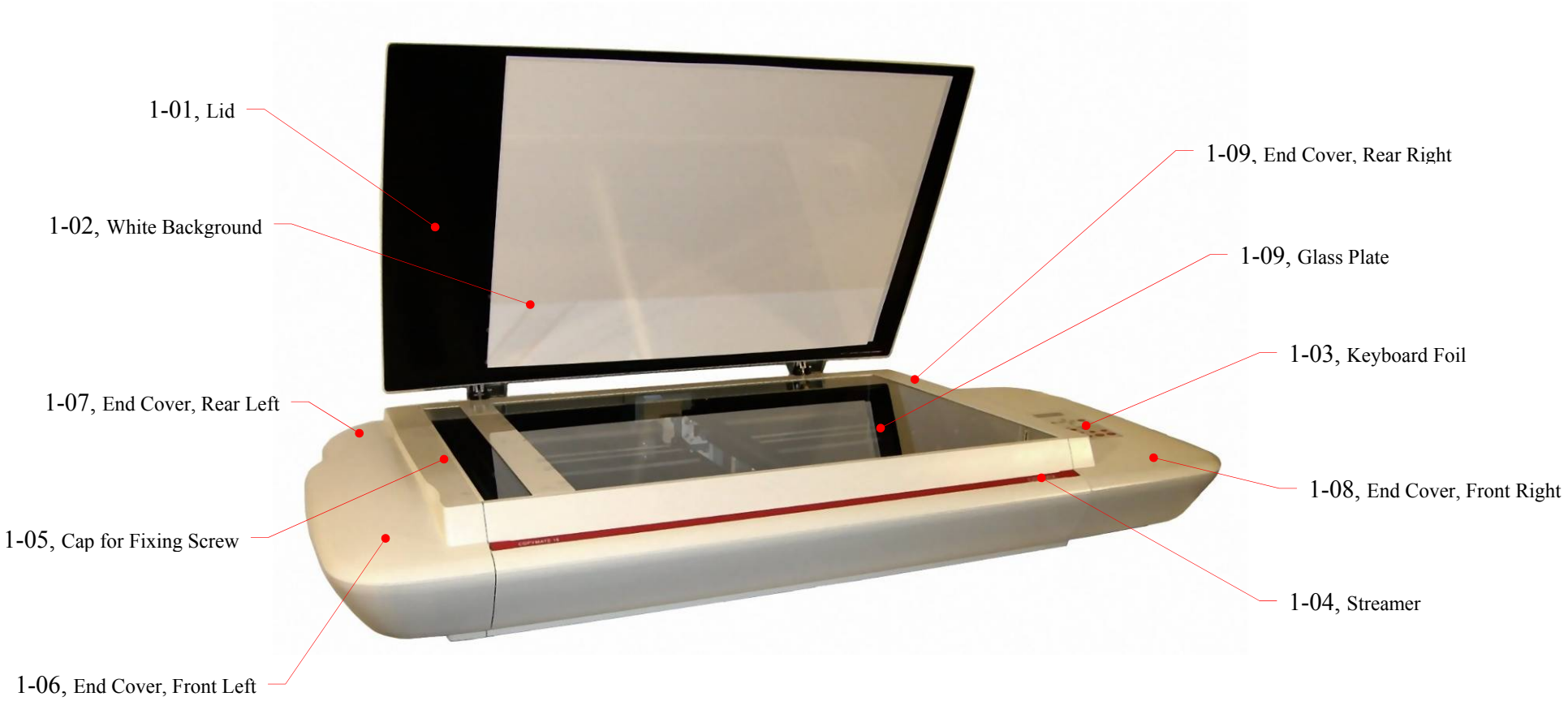
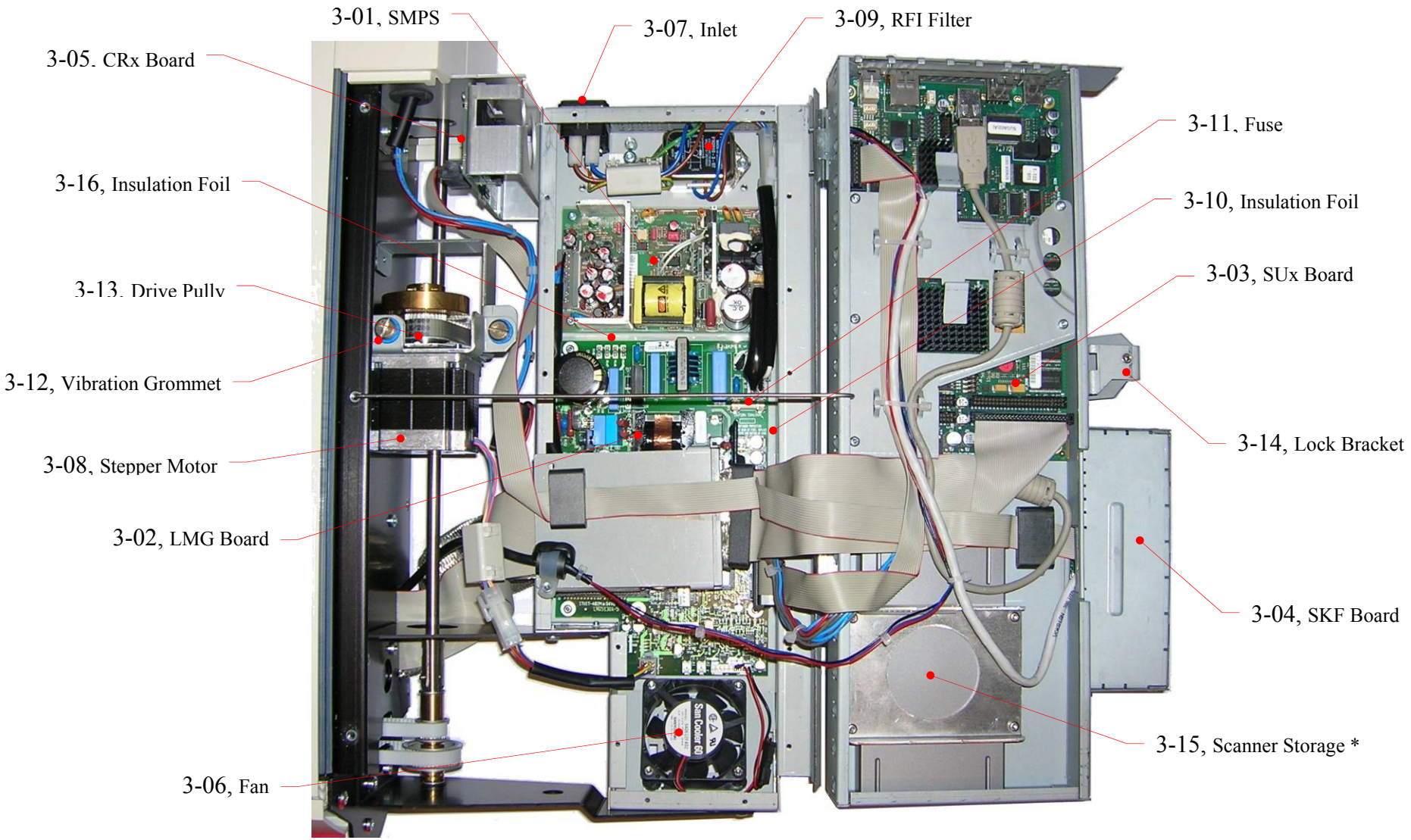


Fig. 5-7, Exterior Look



Note that the above image shows AB51A and that AA51A deviates slightly

* AB51A Only

Fig. 5-8, Parts in Electronics Box

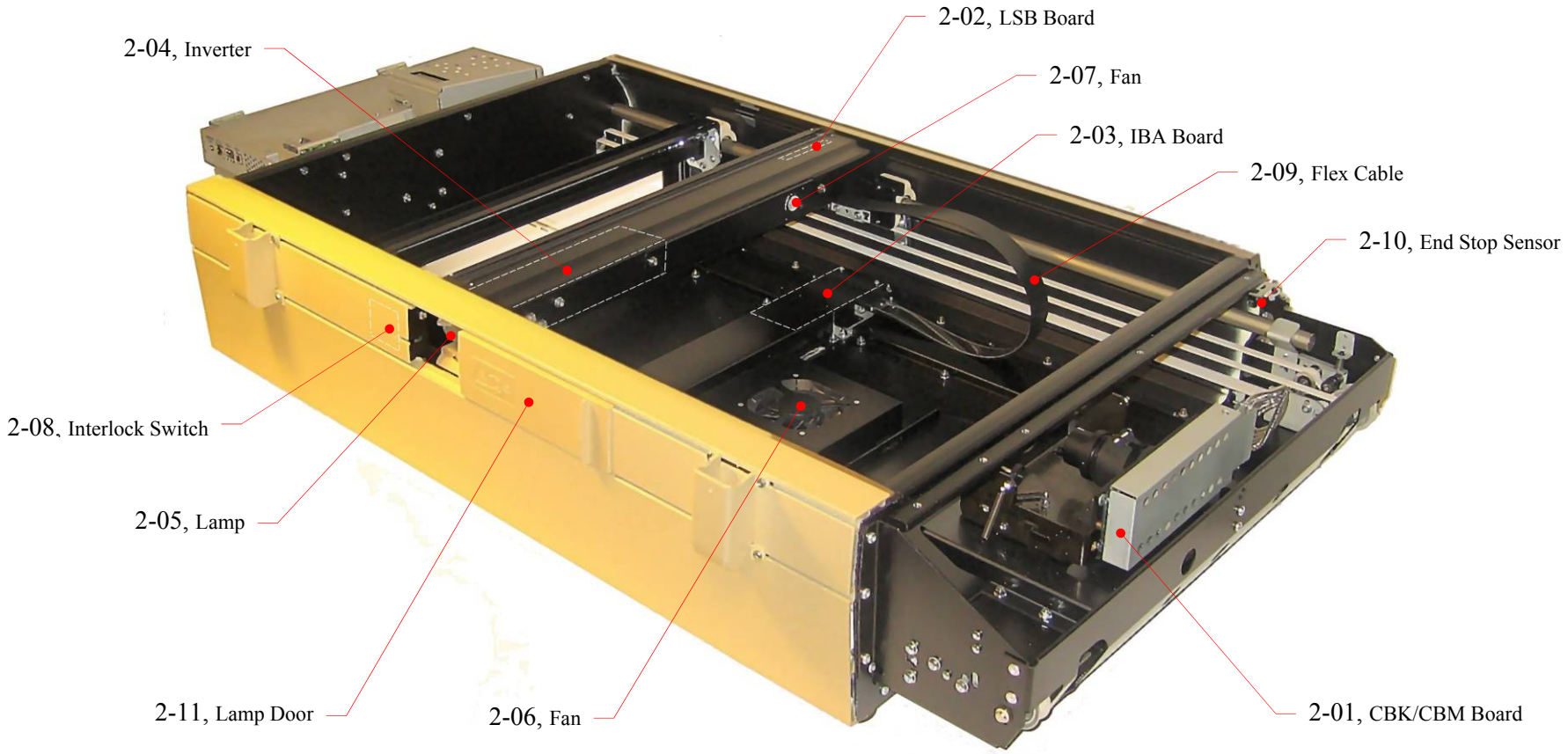


Fig. 5-9, Interior Look (Rear View)

6. User Replaceable Parts

6.1 White Background

The white background is fixed to the scanner top by Velcro. Gently remove the plate starting in the upper right corner. Do not pull in the White Background itself but in the lower thinner plate.

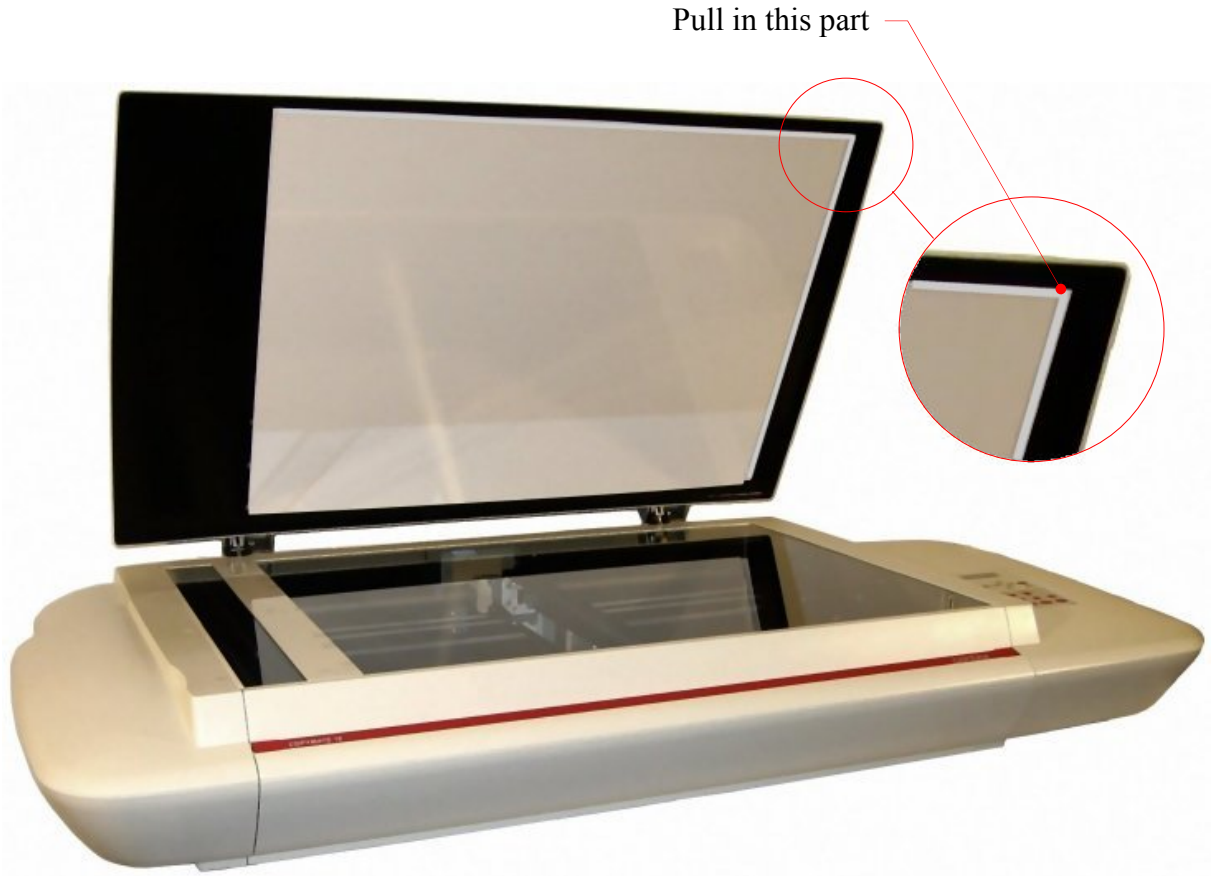


Fig. 6-1, Replacing White Background

When replacing the White Background:

- Open the Lid
- Place the White Background on the glass plate and make sure there is some space along all edges
- Gently close the Lid and press it firmly against the White Background
- Open the Lid and press firmly on the White Background to make sure the Velcro is properly in contact in all places

6.2 Lamp

On the Operators Panel:

- Select the *Menu* button.
- Use the *Arrow* button up or down until the display window shows *Advanced* and confirm with the *Enter* button .
- Use the *Arrow* buttons up or down until the display shows *Service* and confirm with *Enter* button
- The option Replace Lamp appears. Press *Enter* to move the ">" marker down to its value so you can change it.
- Press the *Arrow* down to change the option to *YES* and press *Enter* to accept. The Lamp Carriage will move into position so you can pull the lamp out of the scanner.
- Turn the scanner power off and disconnect the power plug.
- Slide the Lamp Door (placed on the backside of the scanner) to the right to open it.
- Grasp the edge of the Lamp-Unit and carefully pull it out of the scanner.
- Reinsert the new Lamp-Unit. Rest the power-connector side on the slider and carefully push the Lamp-Unit into the scanner.
- Insert the Lamp-Unit all the way so the internal power connections engage with the connections on the lamp-unit.
- Close the Lamp Door and make sure it CLICKS shut.
- Test the replacement by turning power on to see if the lamp lights.
- Reset the Part Replacement Counter that triggers the warning flag:
  - Press the *Arrow Down* button to reach *Reset Lamp Cnt*.
  - Press *Enter* and use the *Arrow Down* to select *Yes*. Confirm with *Enter*.

7. General Maintenance

General Maintenance consists of the following steps:

- Cleaning the Scanning Area
- Checking the CCD-Camera and Mirror Carriage Adjustments
- Running Scanner Maintenance

7.1 Step by Step Procedure for General Maintenance

7.1.1 Clean the Scanning Area

Turn the scanner power OFF and disconnect the power plug.

Open the Lid and clean the White Background Plate using a micro-fiber cloth and a mild, streak-free anti-static glass cleaner. Apply the cleaner to the cloth, and not directly to the Background Plate.

Clean the top of the glass plate using a micro-fiber cloth and a mild, streak-free anti-static glass cleaner. Apply the cleaner to the cloth, and not directly to the glass.
Dry the glass plate completely using a clean micro-fiber cloth.
If slight dust or smoke film can be seen underneath the scanner glass this should not be an issue. The underneath side of the glass is outside of the focal point and may not impede the output of the scanned information.
If the scanning is being affected by dust or smoke film underneath the glass plate it need cleaning and should be cleaned as described for the top of the glass plate.

Slight dust or smoke film on the mirrors should not be an issue. The mirror surfaces are outside of the focal point and may not affect the scanning.
But if is belived that the dust or smoke film is a problem, clean the mirrors a described for the glass plate.

DO NOT APPLY ANY UNNECESSARY FORCE TO THE MIRRORS

Doing so may affect the adjustment of the Mirror Carriage.
The location of the mirrors is shown in Fig. 4-1, page 31.

7.1.2 Check CCD-Camera and Mirror Carriage Adjustment

Procedure for Check and Adjustment, see chapter 4, page 31.
If necessary re-adjust the CCD-Camera and/or Mirror Carriage.

7.1.3 Run Scanner Maintenance.

To ensure a optimum calibration the scanning area must be clean and the CCD-Camera and Mirror Carriage adjustments within limits

Procedure:
Place the SM Calibration Sheet
Start Scanner Maintenance
Follow the instructions given on the screen

8. SCANtest

The purpose of the scanner test program, SCANtest, is to support troubleshooting and adjustment.

When SCANtest 6 has been started, the scanner is switched into Test Mode, and the Diagnostic LED Indicator on the Operator Panel is turned ON.

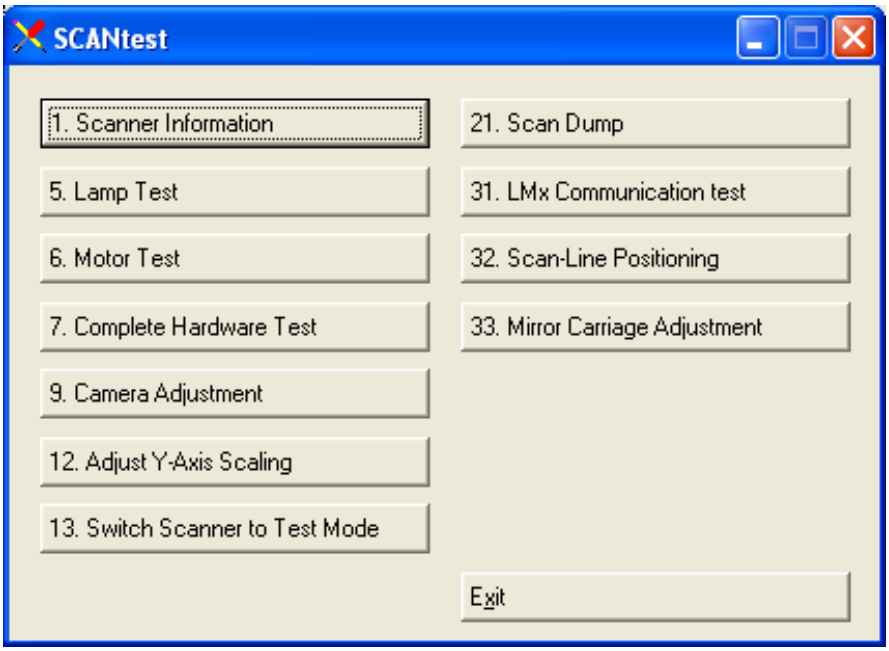


Fig. 8-1, Scanner Test Program Menu

Test 1:	Scanner Information
Test 5:	Lamp Test
Test 6:	Motor Test
Test 7:	Complete Hardware Test
Test 9:	Camera Adjustment
Test 12:	Adjust Y-Axis Scaling
Test 13:	Switch Scanner to Test Mode
Test 21:	Scan Dump
Test 31:	LMx Communication Test
Test 32:	Scan-Line Positioning
Test 33:	Mirror Carriage Adjustment

If SCANtest is started when the scanner is in Error Mode, the Error Code Number and a short description of the error will be displayed on the screen.

8.1 Test 1, Scanner Information

Purpose: This test displays various scanner data and allows for changing one or more of the following:

Change Serial Number
Reset Lamp Counter
Setting OEM *

* Password for reset of counter is “xetnoc”

8.2 Test 5, Lamp Test

Purpose: To test the Lamp and associated electronics.
Description: A message on the screen will inform whether the **Lamp** is turned ON or OFF (Lamp power is turned ON/OFF) and whether the **Light** is ON/OFF (Light is detected or not).
The Lamp is delayed approx. 2 seconds when switched ON.

8.3 Test 6, Motor Test

Purpose: To test the Stepper Motor and associated electronics.
Description: From the menu the motor speed and the direction of rotation can be selected.

8.4 Test 7, Complete Hardware Test

Purpose: To test various functions on the SUC and CBK -Boards.

8.5 Test 9, Camera Adjustment

Purpose: To support CCD-Camera evaluation and adjustments.
Description: Test 9 contains a “Software Oscilloscope” for check and adjustment of the cameras.
The contents of Detail Views is marked on the upper overview window by red vertical lines. The continuous lines refer to the left Detail View and the dashed lines to the right Detail View.

8.6 Test 12, Adjustment of Y-Axis Scaling

Purpose: To adjust the Y-Axis Scaling.
Description: The scaling (dpi) in the mechanical scan direction (Y-Axis) depends on the speed of the stepper motor relative to the scanline Exposure Time. The default motor speed can be changed ± 1%, either from Test 12 or by using the ‘*Scanner Setup/Correction factor …*’ option of WIDEimage.
The correction factor is stored in the Flash Memory on the SUx-Board.

8.7 Test 13, Switch Scanner to Test Mode

Purpose: To switch the scanner back to Test Mode. Useful if the scanner gets out of Test Mode, e.g. if it has to be turned OFF/ON during troubleshooting.

8.8 Test 21, SCANdump

Purpose: To create a file, SCANdump.con, which contains Light Profiles and other scanner data for diagnostics purposes.
Description: The file SCANdump.con will be placed in the directory pointed to by the SET TEMP environment variable.
The files contained in SCANdump.con may be unpacked by SCANview by double clicking on SCANdump.con.
The unpacked Light Profiles may be viewed by SCANview. If other files are included use an appropriate reader or viewer.

8.9 Test 31, LMx Communication Test

Purpose: To test the communication between the controller board (SUx) and the lamp and motor driver board (LMx).

8.10 Test 32, Scan-Line Positioning

Purpose: To support CCD-Camera adjustments.
Description: Test 32 shows a screen image used to place the Scan-Line in the center of the aperture of the Lamp Carriage and to make it (the Scan-Line) perpendicular to "feed direction" (the movement of the Lamp Carriage).

8.11 Test 33, Mirror Carriage Adjustment

Purpose: To support Mirror Carriage adjustment.
Description: Test 33 shows a screen image used to evaluate the relative position of the Scan-Line in the aperture of the Lamp Carriage when the carriage is moved from start to end. From the test results a correction value can be calculated which is subsequent used with Test 32.

9. Special Service Tools

Adjustment Patterns and Tools	**Part Number**
SM Calibration Sheet packed, 18”	5199A101
T20 Key Special for Camera Adjustment (5 pcs.)	0008V354R01
T10 Special L-Key (5 pcs.)	0008V356R01
Key for Camera	5175A228R01

10. Cable Routing and Wiring Diagram

* The cable routing for AA51A has developed over time and exists in three versions. Type 3 which is the latest requires a special folding of the flat cable going to J16 on the LMG board as well as a different EMC Division Plate for the EMC box. The folding of the flat cable is described on page 64. Placing the EMC Division Plate is in this case a little tricky as one should be careful not to lift the connector partly or fully out of J16. In fig. 5 on page 64 it is described how to insert the flat cable edgewise in the slot in the division plate.

10.1 AA51A Cable Routing, Type 1

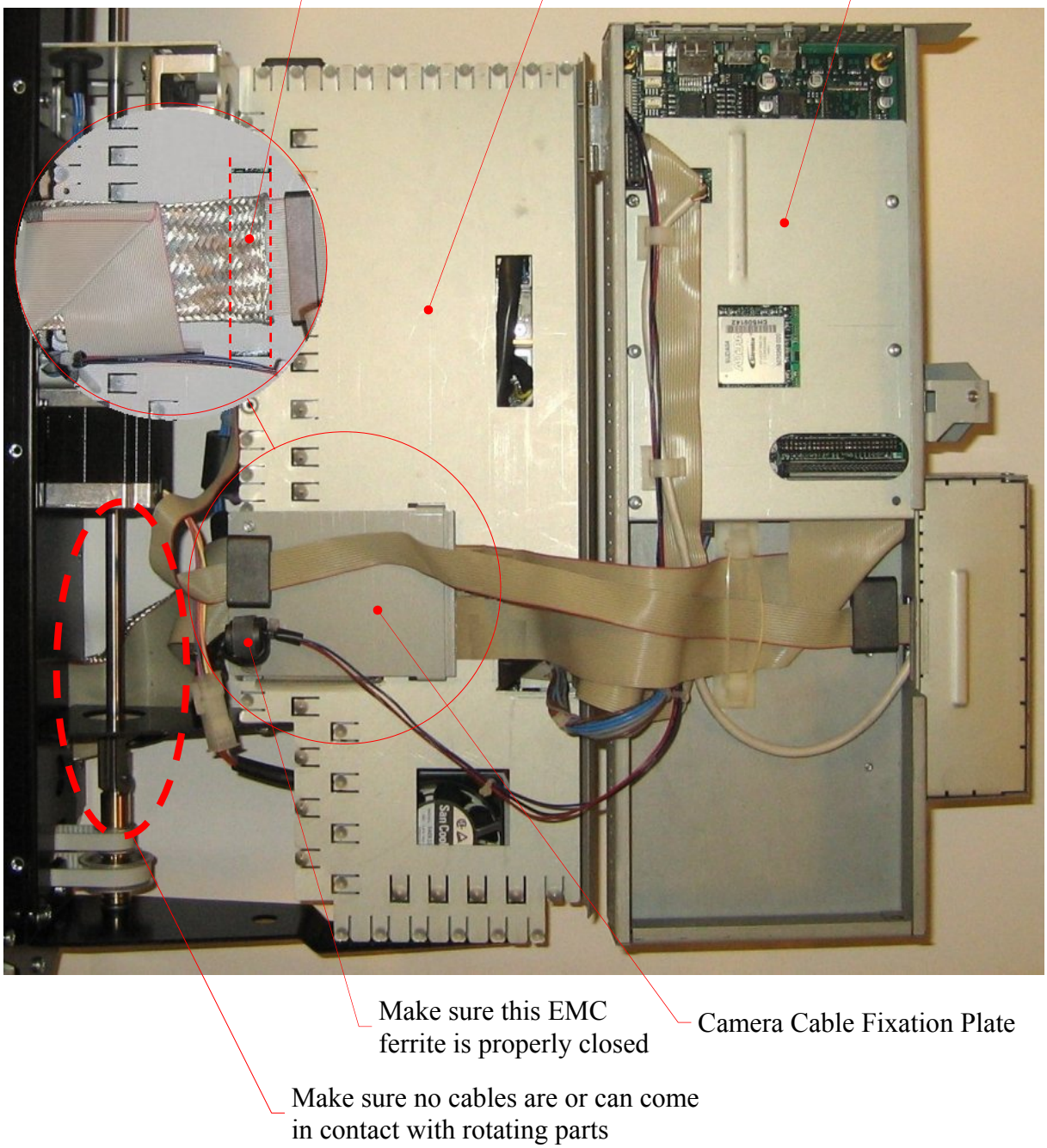


Fig. 10-1, AA51A Cable Routing, Type 1

10.2 AA51A Cable Routing, Type 2

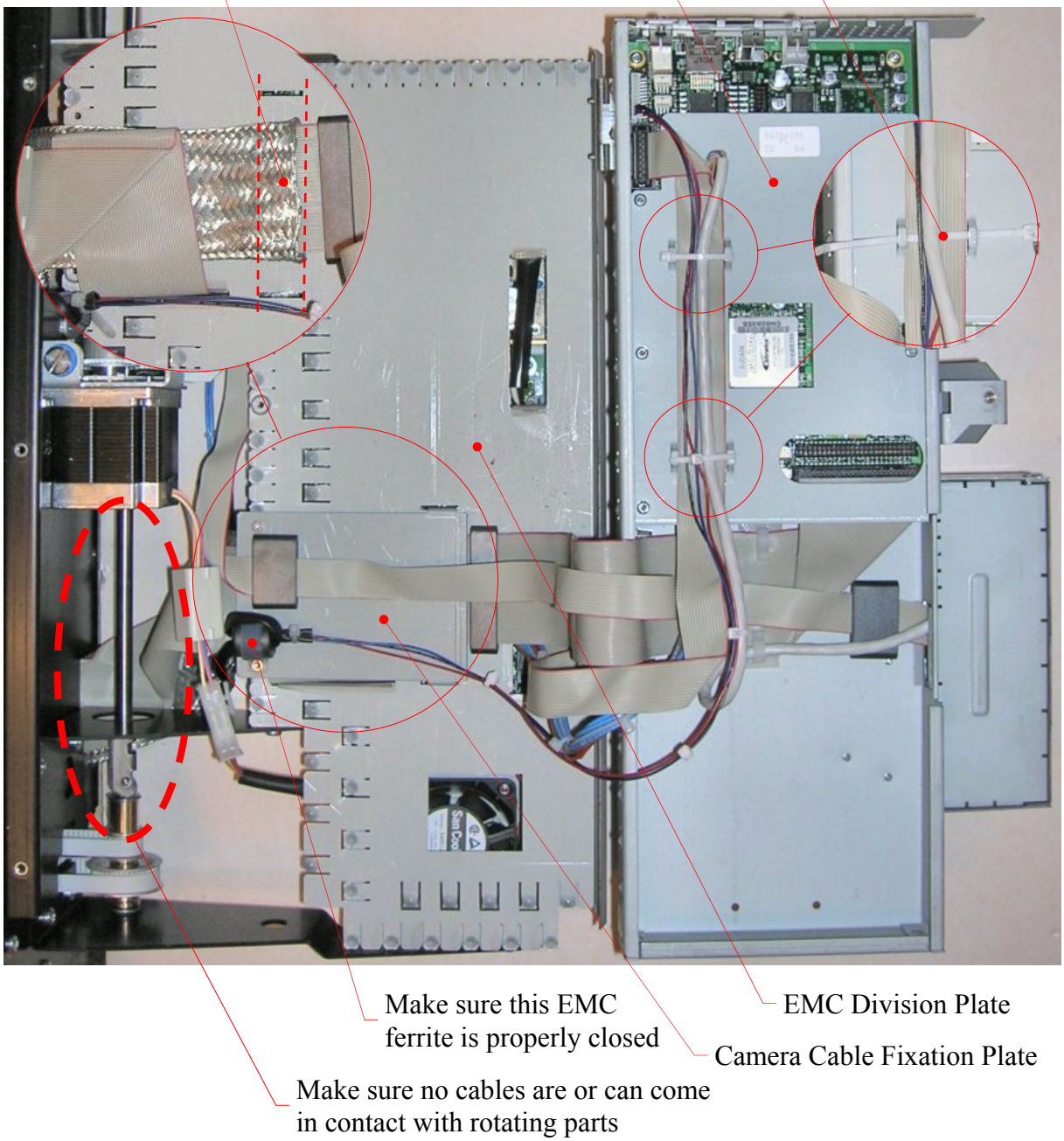


Fig. 10-2, AA51A Cable Routing, Type 2

10.3 AA51A Cable Routing, Type 3

Please refer to next page for instructions on how to fold flat cable and place EMC division plate

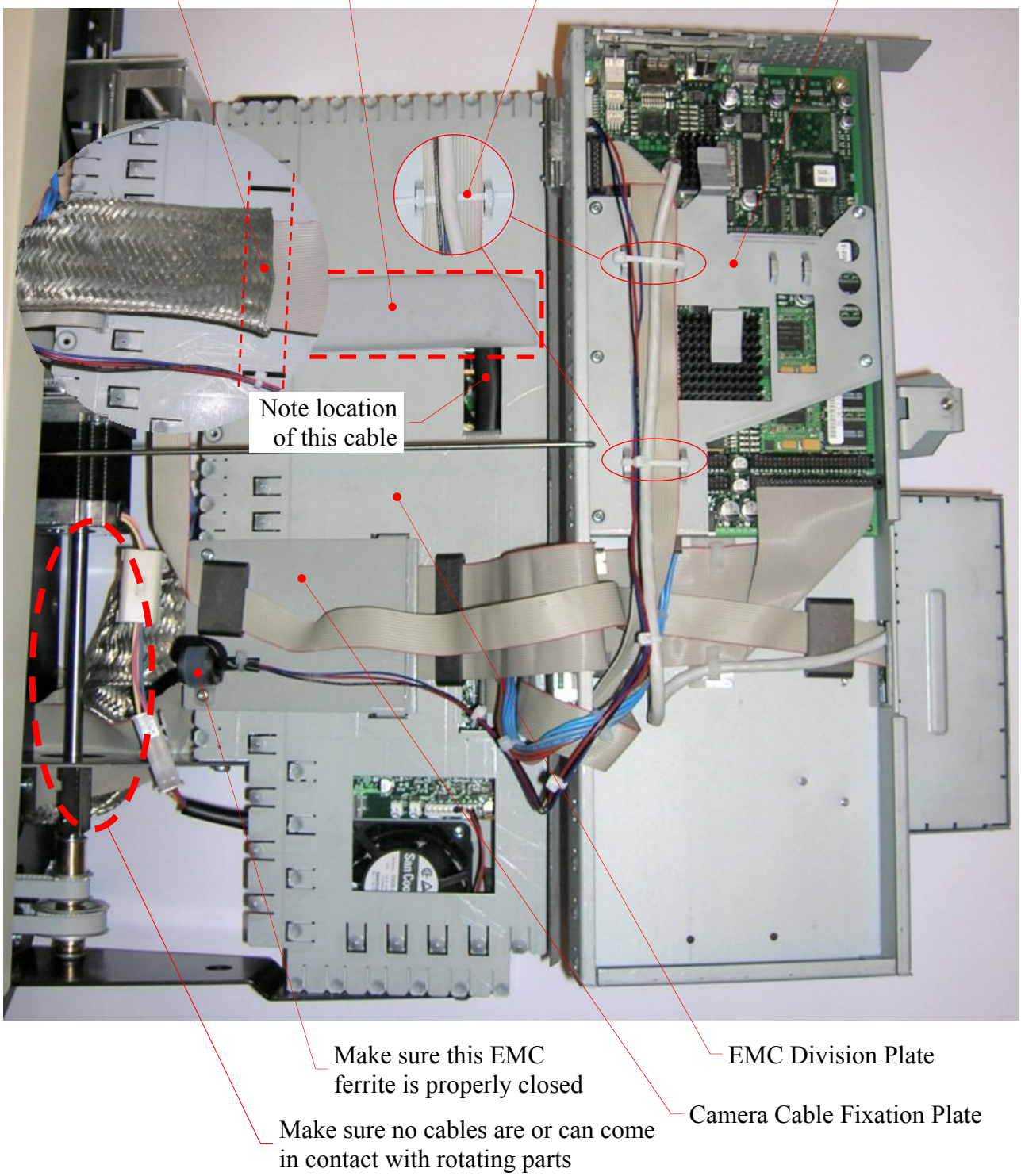
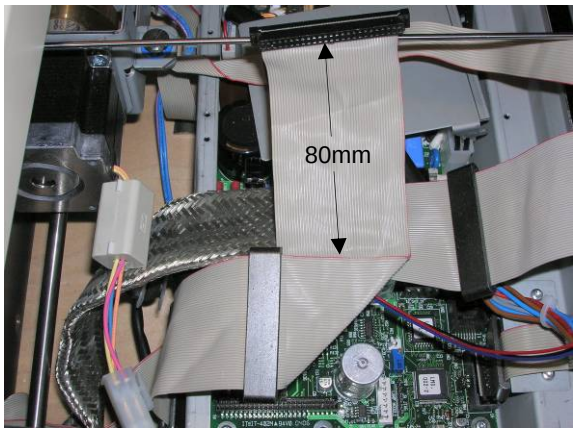


Fig. 10-3, AA51A Cable Routing, Type 3

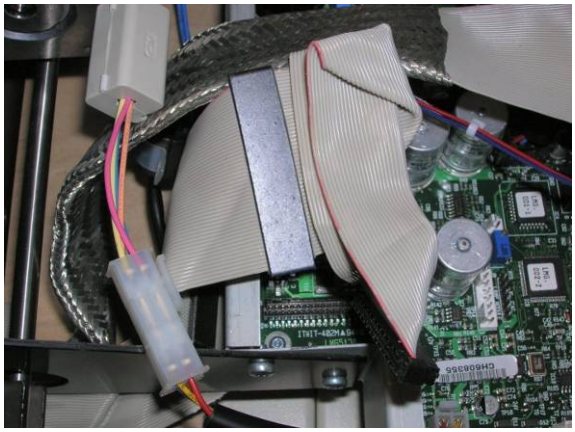
10.3.1 AA51A, Folding Flat Cable and Placing EMC Division Plate

The instructions below only refer to AA51A scanners with cable routing type 3. Type 3 cable routing can be identified by the Foam Block placed on top of the EMC Division Plate, see Fig. 10-3 page 63.

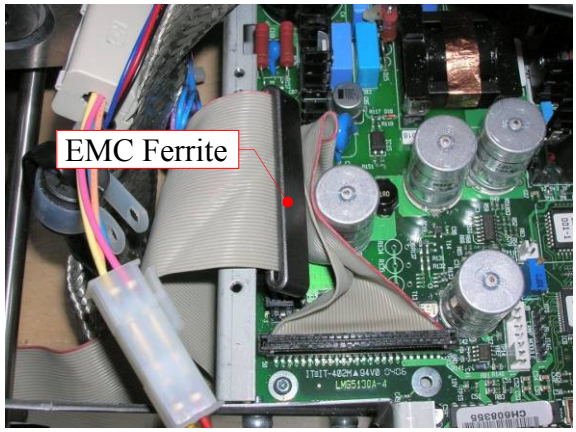


1. Fold the flat cable in a 90 degree angle with 80mm sticking out

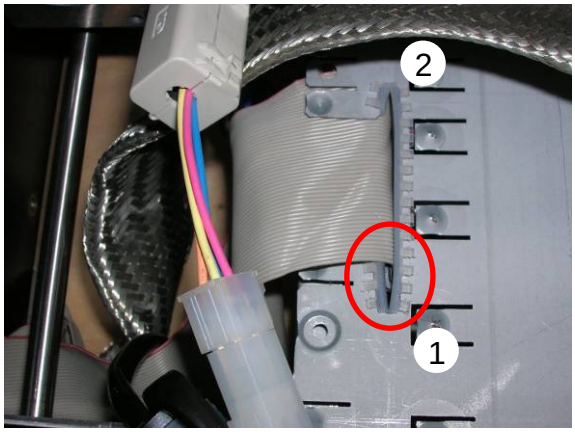
2. Fold the cable across itself ……



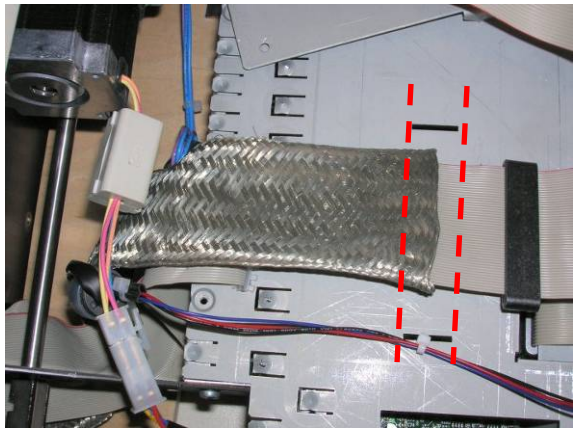
3. … and lengthwise



4. Connect the cable to J16 and place the fold between C97 and the wall of the box. Note the location of the EMC ferrite.



5. When placing the new EMC division plate for the electronics box, first insert the flat cable into the long slot and then gently fold the cable a little to guide the other edge into the other slot.



6. Be careful not to lift the connector partly or fully out of J16 when placing the division plate. Place the shielded camera cable with the end of the shielding within the two cut-outs in the division plate.

Fig. 10-4, AA51A, Folding Flat Cable and Placing EMC Division Plate

10.4 AB51A, AC51A Cable Routing

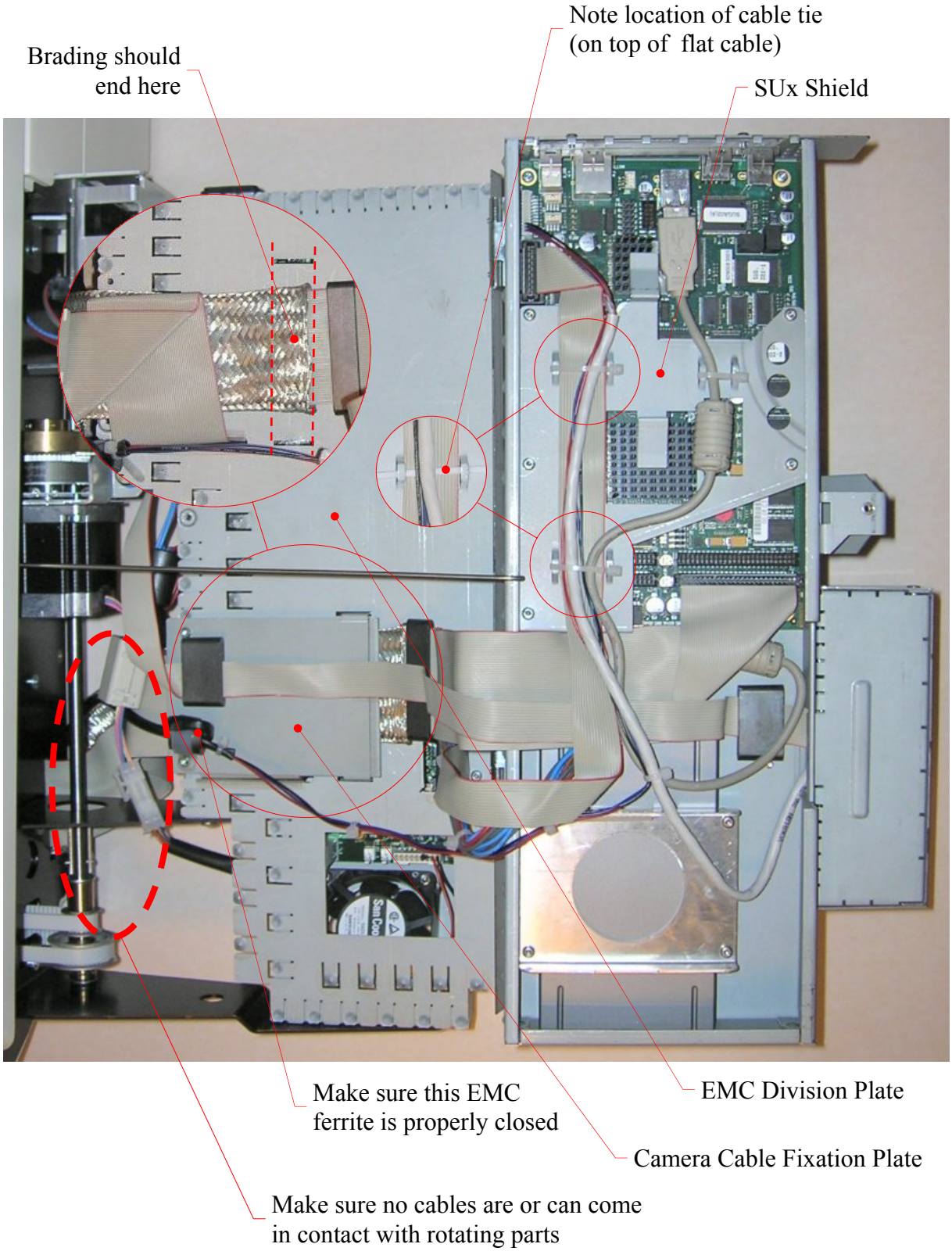


Fig. 10-5, AB51A, AC51A Cable Routing

10.5 AA51A Wiring Diagram

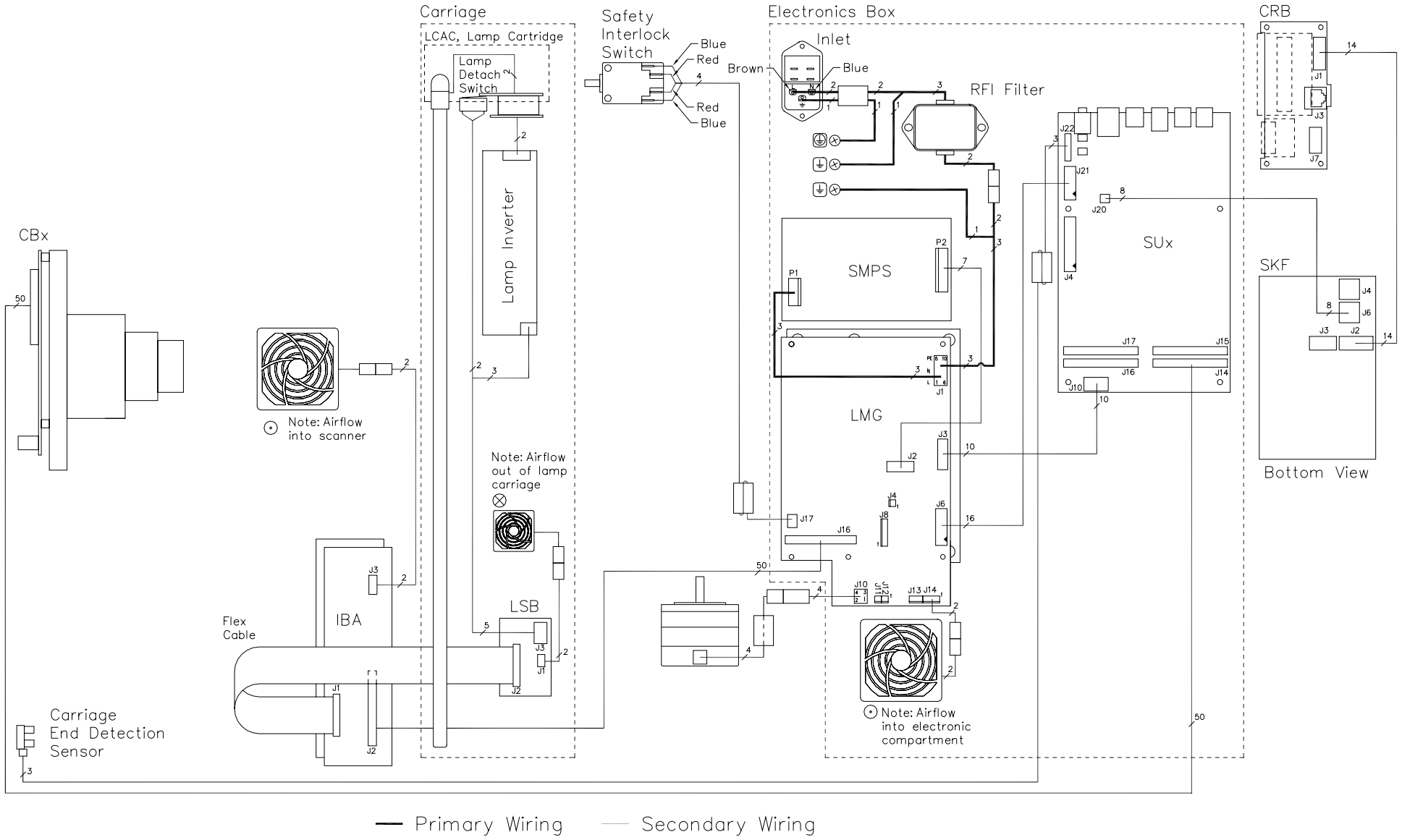


Fig. 10-6, AA51A Wiring Diagram

10.6 AB51A, AC51A Wiring Diagram

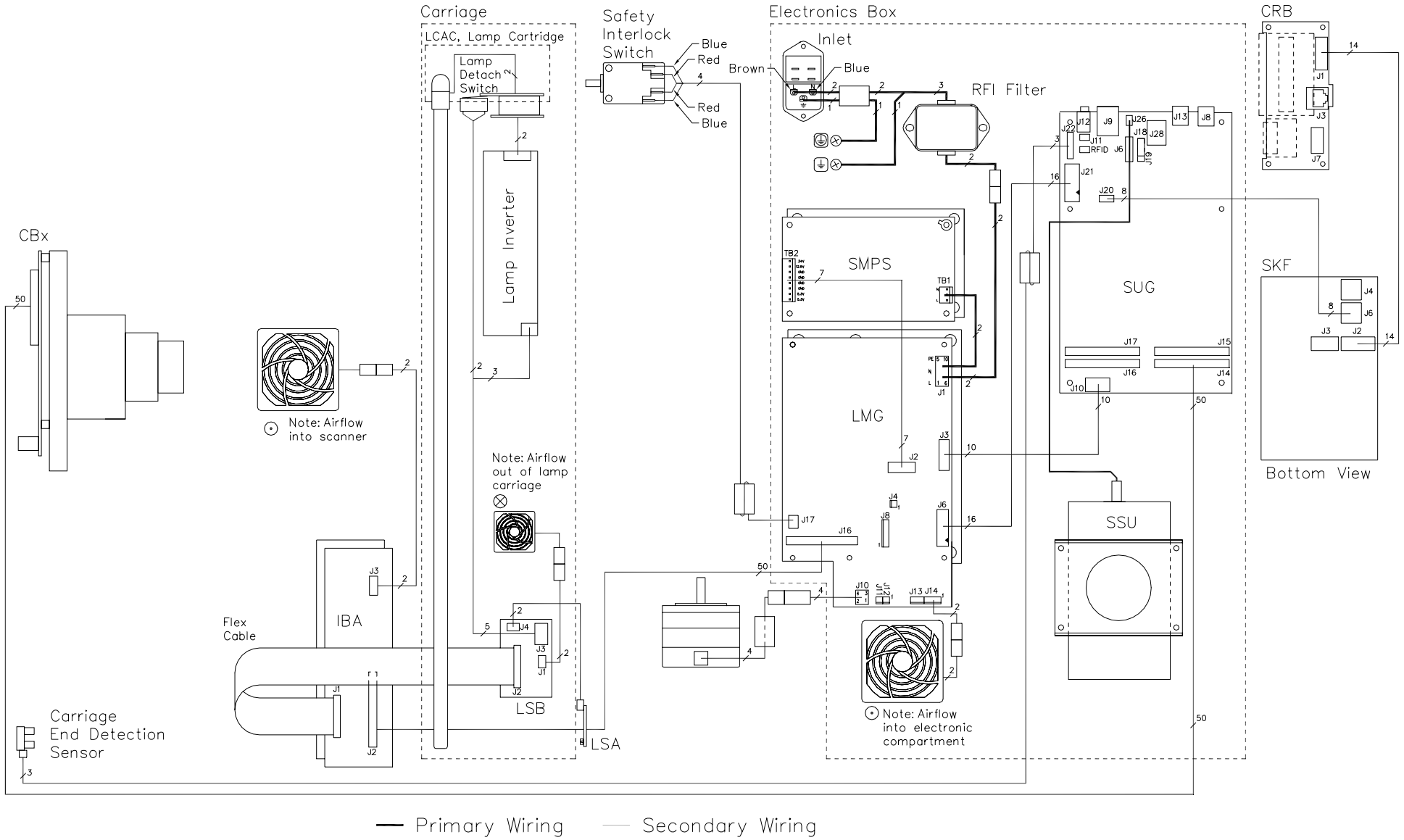


Fig. 10-7, AB51A, AC51A Wiring Diagram

11. Appendix A: Physical Placement of the Scanner

Please follow the guidelines below for optimal safety, scanner functionality, and scanning results.

Physical Placement of the Scanner:

Your wide format flatbed scanner should be placed on a stabile, level and completely flat (plane) surface such as a sturdy table. If convenient, you can place the backend of the scanner against a wall. The lid will not open all the way back and stops at an approximate 650 angle.

It is very important to follow the instructions below to ensure the scanner is setup with optimal stability and without tension on the scanner's frame. Failure to do so can produce poor scanning results and cause damage to the scanner device over time.

The scanner rests on feet placed at the bottom of the scanner. Some flatbed scanner models have 4 adjustable feet while later flatbed models have 3 fixed feet and 2 adjustable feet (a total of 5 feet). See the instructions below for each type of feet-configuration.

4 Feet Models:

1. These scanners are more sensitive to uneven surfaces and it is best to ensure that you have a completely plane surface.
2. Position (tighten) all four feet all the way up so they all have an equal height.
3. Place the scanner on the flat surface aligned in its optimal position for usage.
4. You can make slight adjustments to the feet if necessary. Use a long object to get in under the scanner and rotate the feet to lengthen them. Only very slight adjustments are acceptable. If major adjustments are required, you should find another table with a flatter surface.

5 Feet Models:

1. The two outer feet closest to the operator's panel side are adjustable. The middle foot on the same side and the two feet on the other side are fixed. See the illustration below.
2. The 2 adjustable feet should be positioned (tightened) all the way up when setting up the scanner on its new surface. They are delivered in that position from the manufacturer.
3. The 2 adjustable feet (in their original position as described in step 2) are slightly shorter than the 3 fixed feet. Therefore the scanner will at first rest only on the 3 fixed feet (1 on the operator panel side and 2 on the opposite side).
4. Use a screwdriver or an alternative long slim object to access and rotate the 2 adjustable feet until they touch the surface so all 5 feet are in contact with it.
5. If the scanner is moved, the 2 adjustable feet must be retightened to their original (shortest) position and the steps above must be repeated.

Fig. 11-1, Physical Placement of the Scanner

12. Appendix B: Replacing Drive Belts

If for some reason it should be necessary to replace a drive belt it is important to replace all 4 belts at the same time. There are two lengths:

Short Belts:	Used for the Mirror Carriage (innermost belts)
Long Belts:	Used for the Lamp Carriage (outermost belts)

Removing Belts:

- Remove the two nuts (A) which fix the individual belt to the carriage
- Divide the belt by removing the nut (B).

Installing Belts:

- Place the individual belt around the appropriate rollers and join the ends by means of the Belt Joining Bracket. Initially all "holes" in the Joining Brackets should be used, but if after tightening the belts the "pins" (C) are close to either end of the oblong holes the belt must either be shortened or lengthened a little.
- Adjust the belt tension and synchronize the carriages as described in section 4.2.5.

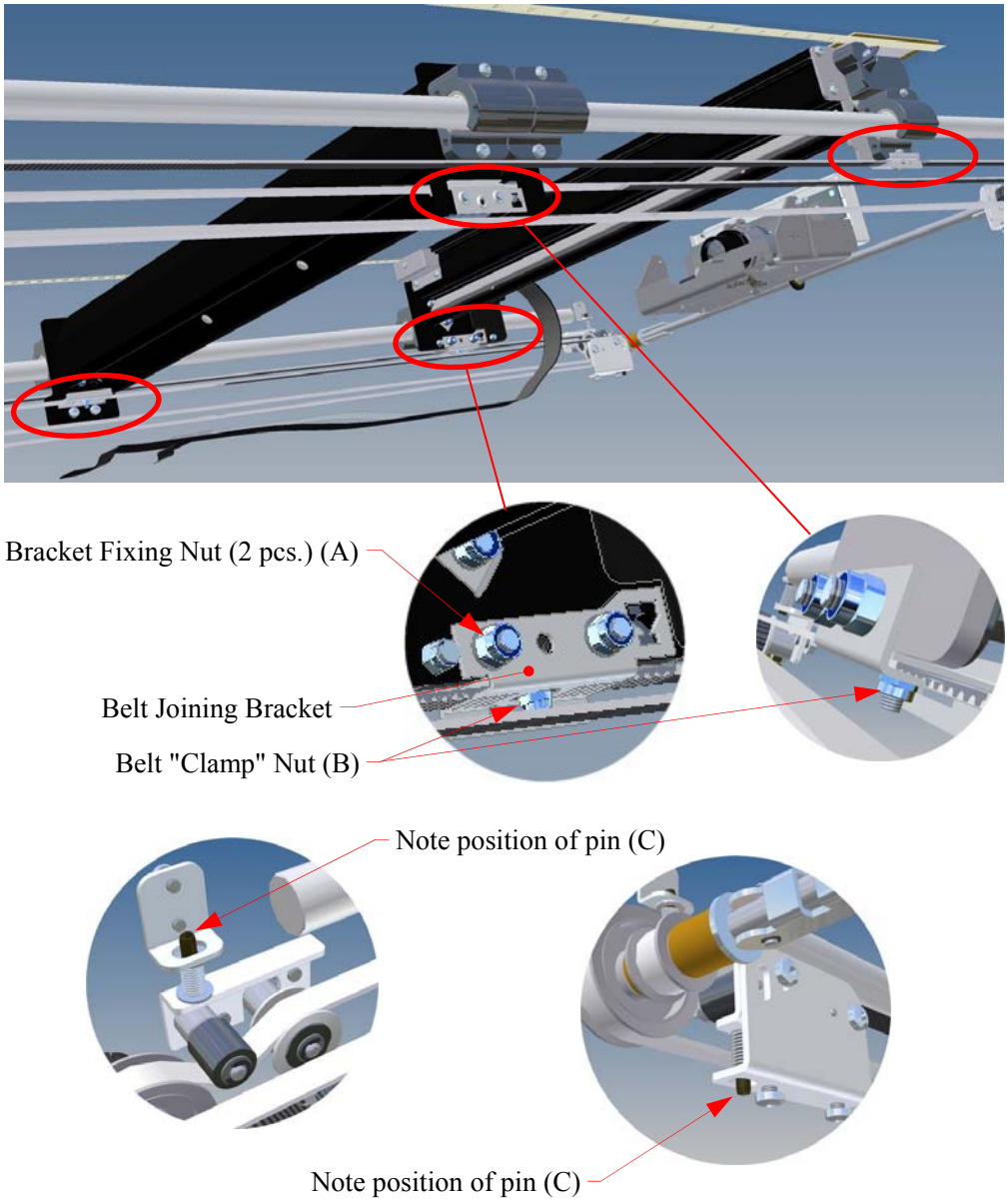


Fig. 12-1, Replacing Drive Belts

13. Appendix C: Error Codes

As we continuously try to improve the error system, error codes and/or corrective actions may differ from the list below. You can get the latest error list by typing **WS /errorlist** from a command prompt in the WIDEsystem install folder (C:\Program Files\Contex\WIDEsystem) or find the latest error lists on the support home page.

Please note that not all errors may apply to the actual scanner.

Error List
WIDEsystemApplication 3.4.5, Build 11561.
Mon Dec 11 11:28:55 2006

Legend
(U) = UserCorrectable
(S) = Support Correctable
(R) = R&D Correctable
(W) = Warnings

Error Code	Corrective Action	Description
Scanner API (ctx_scan_2000)		
51-1	(U)	Incorrect scanner status. Please check the paper path and reload the media.
51-2	(R)	Check Sense Info
51-3	(R)	Unknown ASPI error
51-4	(R)	Unexpected number of byte received from scanner
51-5	(R)	ASPI call never completed
51-6	(R)	WaitForObject failed
51-7	(R)	ASPI abandoned
51-8	(R)	It was not possible to allocate a sync object
51-9	(R)	It was not possible to get/set the timeout inside the ASPI driver
51-10	(R)	Parameter error in CTX_SCAN call
51-11	(R)	CTX_SCAN could not find a SCSI interface board
51-12	(U)	The driver for the scanner can not be found. Please reinstall the software to correct the issue.
51-13	(R)	A SCSI protocol error was detected
51-14	(R)	An operating system error was detected
51-15	(R)	The IO command has not yet completed
51-16	(R)	An internal CTX_xxx driver error occured
51-17	(R)	The driver specified was to old
51-18	(U)	No supported scanner was found. Please verify that your scanner is properly connected, and then retry the operation.
51-19	(U)	The driver for the scanner can not be found. Please reinstall the software to correct the issue.
51-20	(R)	It was not possible to close the library, because a scanner is not closed
51-21	(R)	The calling program tried to open an already open scanner
51-22	(R)	The calling program tried to do I/O on a closed scanner
51-23	(R)	The calling program tried to close an already closed scanner
51-24	(R)	The calling program tried to open an unknown handle
51-25	(R)	The STI thread failed to return within 30 secs
51-26	(U)	Internal command error in driver. Please restart application or system.
51-27	(U)	Windows failed to lock STI/WIA device. Please reboot your system.
51-28	(U)	Windows failed to unlock STI/WIA device. Please reboot your system.
51-29	(U)	The connection to the scanner have been lost. Please restart the application.
51-30	(U)	Unable to find scanner. Please check cabling between scanner and PC and restart the application. Alternatively restart your system.
51-31	(U)	The scanner is currently reserved by another application or user. Please wait for the reservation to expire.
51-32	(U)	The operation was aborted due to an internal Windows Error. Please restart the application.

Error Code	Corrective Action	Description
WIDEsystem (WS)		
57-1	(U)	Unable to read the timer settings in the scanner. Please remove any loaded media from the scanner, and switch back and forth between this tab and another tab.
57-2	(R)	Cannot read timer settings.
57-3	(U)	The current timer values stored in the scanner are invalid. Please select new values and press the Apply button.
57-4	(U)	The On time must be before the Off time. Please make a new selection.
57-5	(R)	Scanner timer write operation failed.
57-6	(R)	Scanner timer read operation failed.
57-7	(R)	Scanner timer write operation failed.
57-8	(R)	The scanner does not support software controlled powering up/down.
57-9	(U)	Unable to read the time from the scanner. Please remove any loaded media from the scanner.
57-10	(U)	Unable to write the time to the scanner. Please remove any loaded media from the scanner.
57-11	(U)	ASPI must be installed for %s to work on NT
57-12	(U)	The driver for the scanner can not be found. Please reinstall the software to correct the issue.
57-13	(W)	The language file is not the correct version. Please reinstall the software to correct the issue.
Scanner		
100-118	(U)	Unable to communcate with the scanner. Please check the connection to the scanner.
		Troubleshooting sequence:
		1. User interaction.
		2. PC (cable, PC hardware/software etc.)
		3. Interface board (IMx).
100-119	(R)	Invalid SCSI command
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-120	(R)	Invalid value in SCSI CDB
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-121	(R)	Invalid SCSI parameter list length
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-122	(R)	Invalid SCSI parameter field
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-123	(R)	Unsupported SCSI parameter
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-124	(R)	Invalid SCSI parameter value
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-125	(U)	Incorrect scanner status. Please check the paper path and reload the media.
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-126	(R)	SCSI time-out
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-127	(U)	The scanner keyboard was used during communication with the scanner.

Error Code	Corrective Action	Description
		Troubleshooting sequence:
		1. User interaction.
100-128	(U)	The scanner has paper jam. Please reload the media.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Lamp and Motor driver board (LMx)
		4. Switch Mode Power Supply (SMPS)
		5. Main controller board (SUx).
100-129	(U)	The scanner does not support this test command in normal mode. Please restart test program.
		Troubleshooting sequence:
		1. User interaction.
100-130	(U)	The scanner does not support this command in test mode. Please turn off the scanner, and turn it on again.
		Troubleshooting sequence:
		1. User interaction.
100-131	(U)	The scanner is initializing. Please retry the operation when the scanner has finished initializing.
		Troubleshooting sequence:
		1. User interaction.
100-132	(U)	The scanner is warming up. Please retry the operation when the scanner has finished warming up.
		Troubleshooting sequence:
		1. User interaction.
100-133	(U)	The scanner cannot reverse the media while the paper guide is in extended position. Please reload the media manually.
		Troubleshooting sequence:
		1. User interaction.
100-134	(U)	The scanner is calibrating. Please retry the operation when the scanner has finished calibrating.
		Troubleshooting sequence:
		1. User interaction.
100-135	(R)	Invalid firmware CRC
		Troubleshooting sequence:
		1. User interaction.
		2. Main controller board (SUx).
100-136	(U)	The scanner is on standby. Please turn on the scanner and retry the operation when the scanner is ready.
		Troubleshooting sequence:
		1. User interaction.
100-137	(R)	Invalid identify message
		Troubleshooting sequence:
		1. Firmware.
100-138	(R)	Logical unit not supported
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-139	(R)	PROCESSOR EXCEPTION 0, divide by zero
		Troubleshooting sequence:
		1. Firmware.
100-140	(R)	PROCESSOR EXCEPTION 1, debug
		Troubleshooting sequence:
		1. Firmware.
100-141	(R)	PROCESSOR EXCEPTION 2, non-maskable interrupt
		Troubleshooting sequence:
		1. Firmware.

Error Code	Corrective Action	Description
100-142	(R)	PROCESSOR EXCEPTION 3, break point
		Troubleshooting sequence:
		1. Firmware.
100-143	(R)	PROCESSOR EXCEPTION 4, overflow
		Troubleshooting sequence:
		1. Firmware.
100-144	(R)	PROCESSOR EXCEPTION 5, bound
		Troubleshooting sequence:
		1. Firmware.
100-145	(R)	PROCESSOR EXCEPTION 6, invalid opcode
		Troubleshooting sequence:
		1. Firmware.
100-146	(R)	PROCESSOR EXCEPTION 7, device not available
		Troubleshooting sequence:
		1. Firmware.
100-147	(R)	PROCESSOR EXCEPTION 8, double fault
		Troubleshooting sequence:
		1. Firmware.
100-148	(R)	PROCESSOR EXCEPTION 9, coprocessor segment overrun
		Troubleshooting sequence:
		1. Firmware.
100-149	(R)	PROCESSOR EXCEPTION 10, invalid TSS
		Troubleshooting sequence:
		1. Firmware.
100-150	(R)	PROCESSOR EXCEPTION 11, segment not present
		Troubleshooting sequence:
		1. Firmware.
100-151	(R)	PROCESSOR EXCEPTION 12, stack fault
		Troubleshooting sequence:
		1. Firmware.
100-152	(R)	PROCESSOR EXCEPTION 13, protection fault
		Troubleshooting sequence:
		1. Firmware.
100-153	(R)	PROCESSOR EXCEPTION 14, page fault
		Troubleshooting sequence:
		1. Firmware.
100-214	(U)	The scanner's smart card is either invalid or missing. Check that the smart card has been correctly inserted into the card slot, and that it is a valid type for the scanner.
		Troubleshooting sequence:
		1. User interaction.
		2. Smart Card Reader board (CRx).
		3. Main controller board (SUx).
		4. Related cabling.
100-1000	(R)	No sense information
100-1001	(U)	Please insert media in the scanner.
		Troubleshooting sequence:
		1. User interaction.
100-1002	(U)	Please reload the media.
		Troubleshooting sequence:
		1. User interaction.
100-1003	(U)	The scanner operation was interrupted by a user.
		Troubleshooting sequence:
		1. User interaction.
100-1004	(U)	Media is currently being loaded by the scanner. Please retry the operation when the media has been loaded.
		Troubleshooting sequence:
		1. User interaction.

Error Code	Corrective Action	Description
100-1005	(U)	Media is currently being positioned by the scanner. Please retry the operation when the media has been positioned.
		Troubleshooting sequence:
		1. User interaction.
100-1006	(U)	The scanner has paper jam. Please reload the media.
		Troubleshooting sequence:
		1. User interaction.
100-1007	(U)	The scanner cannot reverse the media while the paper guide is in extended position. Please reload the media manually.
		Troubleshooting sequence:
		1. User interaction.
100-1008	(U)	The scanner is calibrating. Please retry the operation when the scanner has finished calibrating.
		Troubleshooting sequence:
		1. User interaction.
100-1009	(U)	The scanner's reject bin is either full or closed. Please inspect it before retrying the operation.
		Troubleshooting sequence:
		1. User interaction.
100-1010	(R)	Read past end of medium
		Troubleshooting sequence:
		1. User interaction.
100-1011	(R)	Read past beginning of medium
		Troubleshooting sequence:
		1. User interaction.
100-2000	(U)	The scanner is powering up. Please wait until the scanner is ready and retry the operation.
		Troubleshooting sequence:
		1. User interaction.
100-2001	(U)	Incorrect scanner status. Please check the paper path and reload the media.
		Troubleshooting sequence:
		1. User interaction.
100-2002	(U)	The scanner does not support this test command in normal mode. Please restart test program.
		Troubleshooting sequence:
		1. User interaction.
100-2003	(U)	The scanner does not support this command in test mode. Please turn off the scanner, and turn it on again.
		Troubleshooting sequence:
		1. User interaction.
100-2004	(R)	Read past end of tile
100-2005	(R)	Time-out on request
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-2006	(R)	SOEM time-out
100-2007	(R)	No active PCEPC mode
100-2008	(R)	Error in PCEPC communication
100-2009	(R)	Fatal error in OS
		Troubleshooting sequence:
		1. Firmware.
100-2010	(R)	Fatal error in SCSI-system
100-2011	(R)	Fatal Error in firmware
		Troubleshooting sequence:
		1. Firmware.
100-2012	(U)	The scanner's smart card is either invalid or missing. Check that the smart card has been correctly inserted into the card slot, and that it is a valid type for the scanner.
		Troubleshooting sequence:
		1. User interaction.

Error Code	Corrective Action	Description
100-2013	(U)	The scanner's smart card is not a valid type for this scanner. Please replace it with a valid card.
		Troubleshooting sequence:
		1. User interaction.
100-2014	(U)	The scanner is on standby. Please turn on the scanner and retry the operation when the scanner is ready.
		Troubleshooting sequence:
		1. User interaction.
100-2015	(U)	The scanner did not find any Hollerith data on the aperture card. Please check that the card is valid and correctly inserted.
		Troubleshooting sequence:
		1. User interaction.
100-2016	(U)	The scanner cover is open. Close it before retrying the operation.
		Troubleshooting sequence:
		1. User interaction.
100-3000	(U)	The firmware was not downloaded properly. Please try to download the firmware again.
		Troubleshooting sequence:
		1. User interaction.
		2. Main controller board (SUx).
100-3001	(U)	Unknown firmware error
		Troubleshooting sequence:
		1. User interaction.
100-3002	(U)	Unable to adjust camera A up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3003	(U)	Unable to adjust camera B up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3004	(U)	Unable to adjust camera C up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3005	(U)	Unable to adjust camera D up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3006	(U)	Unable to adjust camera E up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3007	(U)	Unable to adjust camera F up. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3008	(U)	Unable to adjust camera A down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3009	(U)	Unable to adjust camera B down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3010	(U)	Unable to adjust camera C down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.

Error Code	Corrective Action	Description
100-3011	(U)	Unable to adjust camera D down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3012	(U)	Unable to adjust camera E down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3013	(U)	Unable to adjust camera F down. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3014	(U)	Unable to stitch cameras A and B. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3015	(U)	Unable to stitch cameras B and C. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3016	(U)	Unable to stitch cameras C and D. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3017	(U)	Unable to stitch cameras D and E. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3018	(U)	Unable to stitch cameras E and F. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3019	(U)	Error calibrating. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3020	(U)	Error calibrating camera A, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3021	(U)	Error calibrating camera A, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3022	(U)	Error calibrating camera A, blue. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3023	(U)	Error calibrating camera B, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3024	(U)	Error calibrating camera B, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3025	(U)	Error calibrating camera B, blue. Please clean the white background and the glass plate. Then run your maintenance software.

Error Code	Corrective Action	Description
		Troubleshooting sequence:
		1. User interaction.
100-3026	(U)	Error calibrating camera C, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3027	(U)	Error calibrating camera C, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3028	(U)	Error calibrating camera C, blue. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3029	(U)	Error calibrating camera D, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3030	(U)	Error calibrating camera D, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3031	(U)	Error calibrating camera D, blue. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3032	(U)	Error calibrating camera E, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3033	(U)	Error calibrating camera E, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3034	(U)	Error calibrating camera E, blue. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3035	(U)	Error calibrating camera F, red. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3036	(U)	Error calibrating camera F, green. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3037	(U)	Error calibrating camera F, blue. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
100-3038	(R)	Error programming multiplier FLASH
100-3039	(R)	Controller error: Dither RAM R/W error
100-3040	(R)	Controller error: Amp. RAM R/W error
100-3041	(R)	Controller error: Unexpected external int
100-3042	(R)	Controller error: Unexpected serial port int
100-3043	(R)	Controller error: Unexpected software timer int
100-3044	(R)	Controller error: Unexpected HSO int
100-3045	(R)	Controller error: Unexpected HSI DATA int

Error Code	Corrective Action	Description
100-3046	(R)	Controller error: Unexpected ad int
100-3047	(R)	Controller error: Unexpected timer overflow int
100-3048	(R)	Controller error: Unexpected shftfull int
100-3049	(R)	Controller error: Program terminated
100-3050	(R)	Controller error: In main state machine
100-3051	(S)	The scanner's ID switch has been set to an invalid value. Please change switch setting.
		Troubleshooting sequence:
		1. Smart Card Reader board (CRx).
		2. Main controller board (SUx).
		3. Related cabling.
100-3052	(S)	SCB board error
100-3053	(S)	CCB/CCE board error
100-3054	(S)	Unable to write to EEPROM/FLASH
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-3055	(S)	Flash error: Vpp low
100-3056	(S)	Flash error: Unable to erase
100-3057	(S)	Flash error: Unable to program
100-3058	(S)	SCU board error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-3059	(S)	CBx board error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-3060	(S)	PPU board error
100-3061	(S)	IMx board error
		Troubleshooting sequence:
		1. Interface board (IMx).
100-3062	(U)	Fan error
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Lamp and Motor driver board (LMx)
100-3063	(U)	The scanner's replacable lamp cartridge is detached. Check that it is intact and correctly inserted.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
100-3064	(R)	LMx board error
		Troubleshooting sequence:
		1. Lamp and Motor driver board (LMx)
		2. Main controller board (SUx).
		3. Related cabling.
100-3065	(R)	Unable to communicate with MDx board.
		Troubleshooting sequence:
		1. ATAC controller board (MDx).
		2. Main controller board (SUx).
		3. Related cabling.
100-3066	(R)	Unable to use DSP
100-3067	(R)	DSP hardware error
100-3068	(S)	SKx, SKx board error
		Troubleshooting sequence:
		1. Operator Panel board (SKx).
100-3069	(U)	The scanner lamp cover is open. Please close it and retry the operation.
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. User interaction.
100-4001	(U)	No supported scanner could be found. Check that the scanner is turned on and connected.
		Troubleshooting sequence:
		1. User interaction.
100-4002	(R)	Parameter list length error
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-4003	(R)	Invalid command operation code
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-4004	(R)	Logical unit not supported
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
100-4005	(R)	Invalid value in CDB
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
100-4006	(R)	An invalid field in the parameter list was set to a value
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
100-4007	(R)	An unsupported field in the parameter list was set to a value
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
100-4008	(R)	A field in the parameter list was set to an invalid value
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
100-4009	(R)	Invalid bits in identify message
		Troubleshooting sequence:
		1. Firmware.
100-5000	(R)	Command phase error
		Troubleshooting sequence:
		1. Firmware.
		2. PC (cable, PC hardware/software etc.)
		3. Interface board (IMx).
100-5001	(R)	Overlapped commands attempted
		Troubleshooting sequence:
		1. Firmware.
		2. PC (cable, PC hardware/software etc.)
		3. Interface board (IMx).
100-5002	(U)	The scanner operation was interrupted by a user.
		Troubleshooting sequence:
		1. User interaction.
100-8147	(U)	The scanner's ID switch has been set to an invalid value. Please change switch setting.
		Troubleshooting sequence:
		1. Smart Card Reader board (CRx).
		2. Main controller board (SUx).
		3. Related cabling.
100-8149	(U)	The scanner's smart card is not a valid type for this scanner. Please replace it with a valid card.
		Troubleshooting sequence:
		1. User interaction.
100-8208	(U)	Keyboard check failed.
		Troubleshooting sequence:
		1. User interaction.
100-8220	(U)	The scanner's replacable lamp cartridge is detached. Check that it is intact and correctly inserted.

Error Code	Corrective Action	Description
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
100-8223	(U)	The scanner lamp cover is open. Please close it and retry the operation.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
100-20086	(S)	Unable to communicate with MDx board.
		Troubleshooting sequence:
		1. ATAC controller board (MDx).
		2. Main controller board (SUx).
		3. Related cabling.
100-20087	(U)	Unable to perform paper guide movement (ATAC). Please turn scanner off and on.
		Troubleshooting sequence:
		1. User interaction.
		2. ATAC controller board (MDx).
		3. Main controller board (SUx).
100-20219	(S)	Fan error.
		Troubleshooting sequence:
		1. Related mechanical parts.
		2. Lamp and Motor driver board (LMx)
100-20221	(S)	LMx, board error.
		Troubleshooting sequence:
		1. Lamp and Motor driver board (LMx)
		2. Main controller board (SUx).
		3. Related cabling.
100-30140	(U)	Correction of Camera A failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30141	(U)	Correction of Camera B failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30142	(U)	Correction of Camera C failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30143	(U)	Correction of Camera D failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30222	(U)	The scanner lamp needs replacement.
		Troubleshooting sequence:
		1. User interaction.

Error Code	Corrective Action	Description
		2. Related mechanical parts.
100-30240	(U)	Correction of Camera A failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30241	(U)	Correction of Camera B failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30242	(U)	Correction of Camera C failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-30243	(U)	Correction of Camera D failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-32144	(U)	Stitching between Camera A and B failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-32145	(U)	Stitching between Camera B and C failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-32146	(U)	Stitching between Camera C and D failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-32244	(U)	Stitching between Camera A and B failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).

Error Code	Corrective Action	Description
100-32245	(U)	Stitching between Camera B and C failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-32246	(U)	Stitching between Camera C and D failed. Please clean the white background and the glass plate. Then run your maintenance software.
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-40035	(S)	CBx, Camera A not found
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40036	(S)	CBx, Camera B not found
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40037	(S)	CBx, Camera C not found
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40038	(S)	CBx, Camera D not found
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40039	(S)	CBx, Camera A AMP RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40040	(S)	CBx, Camera B AMP RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40041	(S)	CBx, Camera C AMP RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40042	(S)	CBx, Camera D AMP RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40043	(S)	CBx, Camera A EVEN LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).

Error Code	Corrective Action	Description
		2. Main controller board (SUx).
		3. Related cabling.
100-40044	(S)	CBx, Camera B EVEN LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40045	(S)	CBx, Camera C EVEN LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40046	(S)	CBx, Camera D EVEN LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40047	(S)	CBx, Camera A ODD LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40048	(S)	CBx, Camera B ODD LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40049	(S)	CBx, Camera C ODD LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40050	(S)	CBx, Camera D ODD LINE RAM error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40075	(S)	CBx, FPGA CB status error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40076	(S)	CBx, FPGA CB done error
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40084	(S)	CBx, Camera cables misplaced
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
100-40134	(S)	Unable to basic calibrate
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).

Error Code	Corrective Action	Description
		4. Related cabling.
100-40135	(S)	Unable to calibrate analog offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40136	(S)	Unable to calibrate analog gain
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40137	(S)	Unable to calibrate pixel offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40138	(S)	Timed-out on calibrating analog part
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40139	(S)	An IT8 white patch was 0
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40170	(S)	Camera A, Unable to calibrate analog offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40171	(S)	Camera B, Unable to calibrate analog offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40172	(S)	Camera C, Unable to calibrate analog offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40173	(S)	Camera D, Unable to calibrate analog offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40174	(S)	Camera A, Unable to calibrate analog gain
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40175	(S)	Camera B, Unable to calibrate analog gain
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40176	(S)	Camera C, Unable to calibrate analog gain
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40177	(S)	Camera D, Unable to calibrate analog gain
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40178	(S)	Camera A, Unable to calibrate pixel offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40179	(S)	Camera B, Unable to calibrate pixel offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40180	(S)	Camera C, Unable to calibrate pixel offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40181	(S)	Camera D, Unable to calibrate pixel offset
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40182	(S)	Camera A, Timed-out, calibrating analog part
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40183	(S)	Camera B, Timed-out, calibrating analog part
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).

Error Code	Corrective Action	Description
		4. Related cabling.
100-40184	(S)	Camera C, Timed-out, calibrating analog part
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40185	(S)	Camera D, Timed-out, calibrating analog part
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40186	(S)	Camera A, Unable to calibrate ext. DAC
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40187	(S)	Camera B, Unable to calibrate ext. DAC
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40188	(S)	Camera C, Unable to calibrate ext. DAC
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-40189	(S)	Camera D, Unable to calibrate ext. DAC
		Troubleshooting sequence:
		1. Switch Mode Power Supply (SMPS)
		2. Camera board (CBx).
		3. Main controller board (SUx).
		4. Related cabling.
100-50017	(S)	SUx, Register 1 error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50018	(S)	SUx, Register 2 error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50019	(S)	SUx, Register 3 error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50020	(S)	SUx, Register 6 error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50021	(S)	SUx, Register 8 error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50022	(S)	SUx, FPGA01 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50023	(S)	SUx, FPGA03 register error
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Main controller board (SUx).
100-50024	(S)	SUx, FPGA04 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50025	(S)	SUx, FPGA05 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50026	(S)	SUx, FPGA06 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50027	(S)	SUx, FPGA07 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50028	(S)	SUx, FPGA08 register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50051	(S)	SUx, DB 0 reset error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50052	(S)	SUx, DB 0 count error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50053	(S)	SUx, DB 0 data error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50054	(S)	SUx, DB 1 reset error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50055	(S)	SUx, DB 1 count error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50056	(S)	SUx, DB 1 data error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50057	(S)	SUx, CNTL RAM error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50058	(S)	SUx, LIN RAM error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50059	(S)	SUx, GAMMA RAM error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50060	(S)	SUx, INDEX RAM error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50061	(S)	SUx, LUT ATBS error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50062	(S)	SUx, LUT A error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50063	(S)	SUx, LUT B error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50064	(S)	SUx, LUT C error
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Main controller board (SUx).
100-50065	(S)	SUx, Color space converter data error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50066	(S)	SUx, Color space converter coefficient error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50067	(S)	SUx, Position counter reset error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50068	(S)	SUx, Position counter count error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50069	(S)	SUx, Data path error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50070	(S)	SUx, Data path length error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50071	(S)	SUx, FPGA 8k status error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50072	(S)	SUx, FPGA 8k done error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50073	(S)	SUx, FPGA 10k status error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50074	(S)	SUx, FPGA 10k done error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50077	(S)	SUx, FPGA 6k status error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50078	(S)	SUx, FPGA 6k done error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50079	(S)	SUx, FPGA 20k status error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50080	(S)	SUx, FPGA 20k done error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50081	(S)	SUx, FPGA03 function error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50088	(S)	Hardware identification error.
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50089	(U)	Invalid firmware for this type of scanner. Please download new firmware
		Troubleshooting sequence:
		1. User interaction.
100-50090	(S)	SUx, Sector in writeable area of FLASH locked
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50091	(S)	SUx, Parameter block erasure failed
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Main controller board (SUx).
100-50092	(S)	SUx, Parameter block write failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50093	(S)	SUx, Profile block erasure failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50094	(S)	SUx, Profile block write failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50095	(S)	SUx, Flash block erasure failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50096	(S)	SUx, Flash block write failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50099	(S)	SUx, Unknown flash device type
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50100	(R)	pad task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50101	(R)	pcd task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50102	(R)	pbl task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50103	(R)	err task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50104	(R)	pio task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50105	(R)	pop task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50106	(R)	psn task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50107	(R)	psc task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50108	(R)	psi task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50109	(R)	psp task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50110	(R)	pts task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50111	(R)	pto task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50112	(R)	mbPad creation failed
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Firmware.
100-50113	(R)	mbPbl creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50114	(R)	mbPcd creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50115	(R)	mbPio creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50116	(R)	mbPsi creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50117	(R)	mbPsp creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50118	(R)	mbPts creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50119	(R)	mbPio pending
		Troubleshooting sequence:
		1. Firmware.
100-50120	(R)	hmm out of memory
		Troubleshooting sequence:
		1. Firmware.
100-50121	(R)	hmm un-allocated memory block
		Troubleshooting sequence:
		1. Firmware.
100-50122	(R)	pop request failed, position unknown
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-50123	(R)	pop request failed, invalid command
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-50124	(R)	pio event
		Troubleshooting sequence:
		1. Firmware.
		2. Related mechanical parts.
100-50125	(R)	psi event
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
		3. Interface board (IMx).
100-50126	(R)	pcd event
		Troubleshooting sequence:
		1. Firmware.
100-50127	(R)	psc event
		Troubleshooting sequence:
		1. Firmware.
100-50128	(R)	psi message event
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
		3. Interface board (IMx).
100-50130	(R)	semPsp posted more than once

Error Code	Corrective Action	Description
		Troubleshooting sequence:
		1. Firmware.
100-50131	(R)	psp received unknown mail
		Troubleshooting sequence:
		1. Firmware.
100-50132	(R)	mrsErrorTbl missing entry
		Troubleshooting sequence:
		1. Firmware.
100-50133	(R)	unknown reboot command
		Troubleshooting sequence:
		1. Firmware.
100-50190	(R)	pbl received invalid mail
		Troubleshooting sequence:
		1. Firmware.
100-50191	(R)	mbPss creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50192	(R)	pss task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50193	(R)	mbPss pending
		Troubleshooting sequence:
		1. Firmware.
100-50194	(R)	pss event
		Troubleshooting sequence:
		1. Firmware.
100-50195	(R)	stitch write failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50196	(R)	pmb validation failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50197	(R)	pointer out of range
		Troubleshooting sequence:
		1. Firmware.
100-50198	(R)	Incorrect camera board. Please check all camera board types.
		Troubleshooting sequence:
		1. Firmware.
100-50199	(S)	Incorrect SUx/CBx combination. Please validate the combination for this scanner.
		Troubleshooting sequence:
		1. Camera board (CBx).
		2. Main controller board (SUx).
		3. Related cabling.
		4. Firmware.
100-50200	(R)	invalid timeout task
		Troubleshooting sequence:
		1. Firmware.
100-50201	(R)	invalid data length
		Troubleshooting sequence:
		1. PC (cable, PC hardware/software etc.)
		2. Firmware.
100-50202	(R)	semPsp already owned by this SCSI unit
		Troubleshooting sequence:
		1. Firmware.
100-50203	(R)	semPsp not released
		Troubleshooting sequence:
		1. Firmware.

Error Code	Corrective Action	Description
100-50204	(R)	new failed, out of memory
		Troubleshooting sequence:
		1. Firmware.
100-50206	(R)	Light profile flash space overrun
		Troubleshooting sequence:
		1. Firmware.
100-50207	(R)	pkb task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50209	(R)	ppw task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50210	(R)	mbPpw creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50211	(R)	pus task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50212	(R)	mbPus creation failed
		Troubleshooting sequence:
		1. User interaction.
		2. PC (cable, PC hardware/software etc.)
		3. Firmware.
		4. Interface board (IMx).
100-50213	(R)	pus event
		Troubleshooting sequence:
		1. Firmware.
100-50214	(R)	psp task delete failed
		Troubleshooting sequence:
		1. Firmware.
100-50215	(R)	pfi task creation failed
		Troubleshooting sequence:
		1. Firmware.
100-50216	(R)	mbPfi creation failed
		Troubleshooting sequence:
		1. User interaction.
		2. PC (cable, PC hardware/software etc.)
		3. Firmware.
		4. Interface board (IMx).
100-50217	(R)	pfi event
		Troubleshooting sequence:
		1. User interaction.
		2. Related mechanical parts.
		3. Camera board (CBx).
		4. Main controller board (SUx).
100-50300	(R)	Unable to set scanner model
		Troubleshooting sequence:
		1. Firmware.
100-50301	(R)	Unable to set lost pixels
		Troubleshooting sequence:
		1. Firmware.
100-50302	(U)	Invalid FRAM contents. Try downloading new firmware.
		Troubleshooting sequence:
		1. User interaction.
100-50303	(U)	Scanner has no serial number.
		Troubleshooting sequence:
		1. User interaction.

Error Code	Corrective Action	Description
100-50500	(S)	SUx, 386 CPU error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50501	(S)	SUx, CPU FIFO error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50502	(S)	SUx, Ethernet PHY chip error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50503	(S)	SUx, USB2 chip error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50504	(S)	SKx, SKx board error
		Troubleshooting sequence:
		1. Operator Panel board (SKx).
100-50505	(S)	SUx. FRAM Error. Try downloading new firmware.
		Troubleshooting sequence:
		1. User interaction.
		2. Main controller board (SUx).
100-50506	(S)	SUx, DoubleBuffer DMA Error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50507	(S)	SUx, Main FPGA load failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50508	(S)	SUx, Camera FPGA load failed
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50509	(S)	SUx, Main FPGA register error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50510	(S)	SUx, Invalid Ethernet MAC address
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50511	(S)	SUx, Ethernet PHY connector error or missing loopback plug
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50512	(S)	SUx, Ethernet MAC-PHY interface error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-50513	(S)	SUx. RTC chip error
		Troubleshooting sequence:
		1. Main controller board (SUx).
100-60029	(S)	IMx, SCSI 0 reset error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60030	(S)	IMx, SCSI 0 register error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60031	(S)	IMx, SCSI 0 FIFO error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60032	(S)	IMx, SCSI 1 reset error
		Troubleshooting sequence:

Error Code	Corrective Action	Description
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60033	(S)	IMx, SCSI 1 register error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60034	(S)	IMx, SCSI 1 FIFO error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60082	(S)	IMx, USB chip error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60083	(S)	IMx, wrong board version installed
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).
100-60085	(S)	IMx, 1394 chip error
		Troubleshooting sequence:
		1. Interface board (IMx).
		2. Main controller board (SUx).