

FaxCentre F110

SERVICE MANUAL



XEROX®

Fax Centre F110

Service Documentation

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Introduction

Safety Precautions	iii
Laser Radiation Warning Symbol.....	iii
ESD Caution Symbol.....	iv
Health and Safety Incident Reporting.....	v

1. Service Call Procedures

Section Contents	1-1
------------------------	---------------------

2. Repair Analysis Procedures

Section Contents	2-1
------------------------	---------------------

3. Image Quality

Section Contents	3-1
------------------------	---------------------

4. Repairs/Adjustments

Section Contents	4-1
------------------------	---------------------

5. Parts List

Section Contents	5-1
------------------------	---------------------

6. General Procedures/Information

Section Contents	6-1
------------------------	---------------------

7. Wiring Data

Section Contents	7-1
------------------------	---------------------

Also included at the rear of this Service Manual are:

- Service Log Sheet
- Publication Comment Sheet
- Health and Safety Incident Reporting Form

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Introduction

Service Manual Notes

This manual is based on an OEM original. Some part names used do not comply with the standard Xerox part naming convention. Because part names may have been molded on to some plastic components and may also be embedded in the software, the part names have not been changed. To aid part identification, an acronym and abbreviation list [GP 48](#) has been added.

Safety Precautions

IMPORTANT

1. The FaxCentre F110 has been specified as a Class I Unit (earthed/grounded). The Telecom Line potential is isolated from the digital circuitry. To measure on the digital side, the measurement equipment should be connected to the same earth (ground). For measurement on the Telecom side, measurement equipment should be unearthed (ungrounded).
2. After each disassembly of the apparatus the same safety tests as in the production line have to be performed (see [GP 47](#) SAFETY-Test Specification"). These tests include four different steps to guarantee safety of the product according IEC /EN 60950-1:2001

Test procedure:

- a) Earth (Ground)-Continuity Test
- b) Isolation Test
- c) High Voltage Test: Primary/AC Power – Secondary (USB)
- d) High Voltage Test: Primary/AC Power – Telephone line

WARNING

Switch off the electricity to the machine. Disconnect the power cord from the customer supply while performing tasks that do not need electricity. Electricity can cause death or injury. Moving parts can cause injury. Never remove the isolation plate from the PSU.

Laser Radiation Warning Symbol



WARNING

Follow the service procedure exactly as written. Use of controls or adjustments other than those specified in this manual, may result in an exposure to invisible laser radiation. During servicing, the invisible laser radiation can cause eye damage if looked at directly.

ESD Caution Symbol



CAUTION

Certain components in this product are susceptible to damage from electrostatic discharge. Observe all ESD procedures to avoid component damage.

Health and Safety Incident Reporting

I. Summary

This section defines requirements for notification of health and safety incidents involving Xerox products (equipment and materials) at customer locations.

II. Scope

Xerox Corporation and subsidiaries worldwide.

III. Objective

To enable prompt resolution of health and safety incidents involving Xerox products and to ensure Xerox regulatory compliance.

IV. Definitions

Incident:

An event or condition occurring in a customer account that has resulted in injury, illness or property damage. Examples of incidents include machine fires, smoke generation, physical injury to an operator or service representative. Alleged events and product conditions are included in this definition.

V. Requirements

Initial Report:

1. Xerox organisations shall establish a process for individuals to report product incidents to Xerox Environment Health & Safety within 24 hours of becoming aware of the event.
2. The information to be provided at the time of reporting is contained in Appendix A (Health and Safety Incident Report involving a Xerox product).
3. The initial notification may be made by any of the following methods:
 - For incidents in North America and Developing Markets West (Brazil, Mexico, Latin American North and Latin American South):
 - Phone* Xerox EH&S at: 1-800-828-6571.
 - Electronic mail Xerox EH&S at: Doris.Bush@usa.xerox.com.
 - Fax Xerox EH&S at: 1-585-422-6449 [intelnet 8*222 6449].
 - For incidents in Europe and Developing Markets East (Middle East, Africa, India, China and Hong Kong):
 - Phone* Xerox EH&S at: +44 (0) 1707 353434.
 - Electronic mail Xerox EH&S at: Elaine.Grange@GBR.xerox.com.
 - Fax Xerox EH&S at: +44 (0) 1707 353914 [intelnet 8*668 3914].

*Initial notification made by phone must be followed within 24 hours by a completed incident report and sent to the indicated electronic mail address or fax number.

Note: *If sending a fax, please also send the original via internal mail.*

Responsibilities for Resolution:

1. Business Groups/Product Design Teams responsible for the product involved in the incident shall:
 - a. Manage field bulletins, customer correspondence, product recalls, safety retrofits.
 - b. Fund all field retrofits.
1. Field Service Operations shall:
 - a. Preserve the Xerox product involved and the scene of the incident inclusive of any associated equipment located in the vicinity of the incident.
 - b. Return any affected equipment/part(s) to the location designated by Xerox EH&S and/or the Business Division.
 - c. Implement all safety retrofits.
2. Xerox EH&S shall:
 - a. Manage and report all incident investigation activities.
 - b. Review and approve proposed product corrective actions and retrofits, if necessary.
 - c. Manage all communications and correspondence with government agencies.
 - d. Define actions to correct confirmed incidents.

VI. Appendices

The Health and Safety Incident Report involving a Xerox Product (Form # EH&S-700) is available at the end of the manual.

1. Service Call Procedures

SCP 1 Service Call Actions	1-3
SCP 2 Final Actions	1-4

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SCP 1 Service Call Actions

Procedure

WARNING

Switch off the electricity to the machine. Disconnect the power cord from the customer supply while performing tasks that do not need electricity. Electricity can cause death or injury. Moving parts can cause injury.

1. Take note of symptoms or error messages.
2. Ask the operator to describe or demonstrate the problem.
3. Make sure that:
 - The power cord is connected to the wall outlet and to the machine.
 - All cables are connected correctly.
4. If available, check the machine service log book for any previous actions that may be relevant to the call.
5. Review any defective print or copy samples.
6. Use [GP 7](#) Printable Lists to print out an internal list to help differentiate between scanning problems and printing problems.

SCP 2 Final Actions

After the machine has been re-assembled, perform the steps that follow:

1. Perform the High Voltage Test, [GP 47](#).
2. Perform any firmware upgrade, [GP 11](#).
3. If a new main board has been installed, perform the Customization Update, [GP 12](#).
4. If the memory has been erased use a new Plug and Print card to update the Consumable Counter.
5. Clean the CIS and the CIS guide, [PL 2](#), using a micro fibre wiper and lens and mirror cleaner, [PL 12](#).
6. Put the machine into Maintenance Mode [GP 9](#) and set the white reference, (Menu, *W).
7. Perform the Margin Adjustment TBD.
8. Make copies in standard and photo mode.
9. Send and receive a Fax
10. Units with a handset only. Make and receive a call.

2. Status Indicator RAPs

1 Error Codes RAP	2-3
2 No Paper Feed RAP	2-6
3 Check Printer Device 02 RAP	2-9
4 Check Printer Device 04 RAP	2-11
5 Paper Jam 1 RAP	2-12
6 Paper Jam 2 RAP	2-14
7 Document Feed RAP	2-15
8 Document Jam RAP	2-17
9 Document Multifeed RAP	2-18
10 ScanRef Failure RAP	2-19
11 Sensor-Test Failed RAP	2-20
12 Blank Display RAP	2-22
13 Smartcard Reader Faults RAP	2-24
14 Other Faults RAP	2-26

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1 Error Codes RAP

The error codes are divided in three groups:

- Fax functions, refer to [Table 1](#).
- SMS feature (Country dependent), refer to [Table 2](#).
- Printer, refer to [Table 3](#).

Note: If an error occurs during the transmission you will be informed by the error report which is printed out. This list can be printed out separately by pressing Menu, 42 and then the OK button.

Table 1, Fax Error Codes is shown for information only. Most codes are development codes and not all will be used in the error report.

If fax problems persist:

- Check that the customer line is operational. If possible plug in a phone and check for a dial tone. Alternatively use a line test tool, [PL 12](#).
- Install a new Main board, [PL 6](#).

Table 1: Fax Error Codes:

Fax error codes	Description
00	No error.
01	Destination number not answering.
02	Destination number is blocked.
03	User pressed the STOP key.
04	Wrong key pressed.
05	Scanner error.
06	Printer error.
07	Protocol error.
08	Check the document quality.
09	No document on the polled device.
0A	The device was polled but there were no document.
0B	Number of sent pages different from input number.
0C	Received document too long.
0D	Receiving failure.
0E	No file or corrupted file to be sent.
0F	Document coding incompatible with the receiver.
10	Document format incompatible with the receiver.
11	Protected access.
12	Printer resource not available.
13	Memory full.
14	Printing queue full.
15	No mailbox on the receiver.
16	No forwarding group on the receiver side.
17	No base on the distant device.
18	Forwarding unavailable.

Table 1: Fax Error Codes:

19	Transmission stopped by the distant device.
1A	Training rejected by the distant device.
1B	ACEE coding/decoding default.
1C	Distant device is not a fax device.
1D	Telemaintenance not available on distant device.
1E	Telemaintenance rejected by distant user.
1F	Keyboard resource not available.
20	Telemaintenance stopped by user.
58	Distant device is not a fax device.
59	T30 stopped on NoID event.
5A	Paper jam during receiving.
5B	Telephone number is blocked. The fax tries the next one.
5C	Unknown event to T30.
5D	CnxID was received while going on-hook.
5E	Unknown distant device answer.
60	Scanner resource not available.
61	Automatic dialling not available.
62	Unknown software crash.
63	Distant device is busy.
64	Transparent mode handshake failed.

Table 2: Simple Text Messaging (SMS) Error Codes (Country dependent):

Value	Error	Service Action
00	No error	
01 – 09	Server errors (Protocol 2)	Check if the user has subscribed to the service. Check if the SMS destination number type is handled by the SMS provider.
10 – 16	Low level errors	Check the service centre numbers in the device
20 – 30	Protocol errors	Check the service centre numbers in the device
41	Memory full	Check the number of received SMS.
50	Communication error	
60	User stop	
61	Wrong service centre number	Check the service centre numbers in the device
62 – 68	Line errors.	Check if the device is correctly plugged to the telephone network.
70 – 74	Server errors (Protocol 1)	Check if the user has subscribed to the service if required by the provider. Check if the SMS destination number type is handled by the SMS provider.

Table 3: Printer Display Messages

Message on Display	Message Type	Description	Service Action (When the operator action fails)
CLOSE PRINTER COVER	STATUS	CLOSE PRINTER COVER	Check the sensor, refer to GP 10 . Install a new cover, PL 9 or a new main PWB, PL 6 .
PAPER EMPTY REFILL PAPER	STATUS	REFILL PAPER CASSETTE	Check the sensor, refer to GP 10 . Install an actuator, PL 8 or a new PSU, PL 8 .
PAPER JAM REMOVE PAPER	ERROR	PAPER-INPUT JAM	Install a new actuator, PL 8 or a new PSU, PL 8 .
PAPER JAM NB 2 REMOVE PAPER	ERROR	PAPER-CENTER JAM	Install a new actuator, PL 8 or a new PSU, PL 8 .
PAPER JAM NB 3 REMOVE PAPER	ERROR	PAPER-EXIT JAM	Install a new actuator, PL 8 or a new PSU, PL 8 .
PAPER FEED REPLACE PAPER	ERROR	PAPER MISS FEEDING	Install a new actuator, PL 8 or a new PSU, PL 8 .
CHECK PRINTER: 01 RESET DEVICE	ERROR	FUSER TEMPERATURE TOO HIGH	Install a new thermistor, PL 5 or a new fuser, PL 5 .
CHECK PRINTER: 02 RESET DEVICE	ERROR	FUSER TEMPERATURE TOO LOW	Go to 3 Check Printer Device 02 RAP .
CHECK PRINTER: 04 RESET DEVICE	ERROR	POLYGON-MOTOR ERROR	Go to 4 Check printer device 04 RAP .
CHECK PRINTER: 05 RESET DEVICE	ERROR	SYNCRONISATION OF LASERBEAM FAILED	Install a new LSU, PL 3
PAPER SIZE REPLACE PAPER	ERROR	WRONG PAPER SIZE	Install a new actuator, PL 8 or a new PSU, PL 8 .
HEATING PLEASE WAIT	STATUS		Install a new thermistor, PL 5 or a new fuser, PL 5 .
INSERT TONER TONER LOW	STATUS	REPLACE TONER	Install a new print cartridge, GP 3 , PL 12 .

2 No Paper Feed RAP

Problem

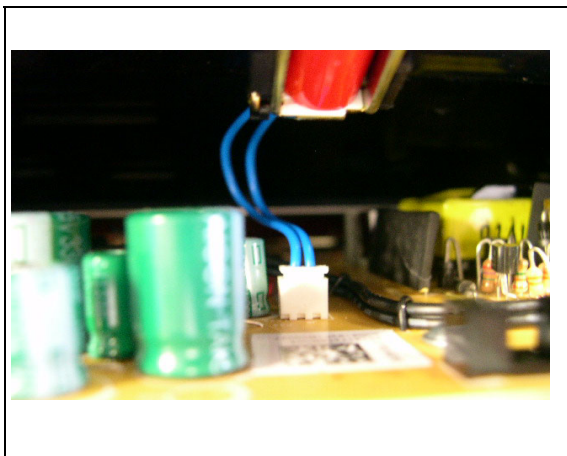
Paper not fed.

Cause 1

Paper Feeder Solenoid not connected to PSU or defective.

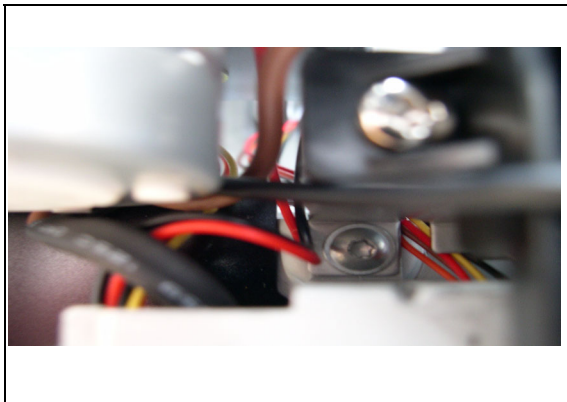
Solution 1

Ensure that the cable is connected or install a new solenoid, [PL 4](#).



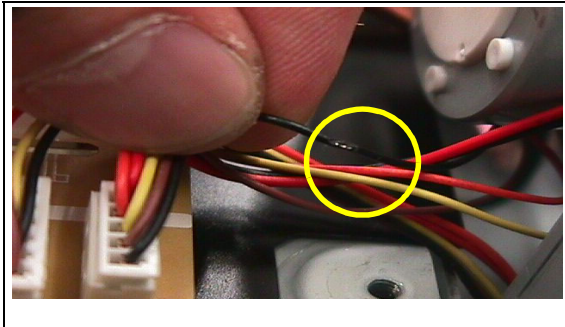
Cause 2

Drive motor failure caused by the cable trapped under the fuser.



Solution 2

Repair the cable or install a new drive module, [PL 7](#).

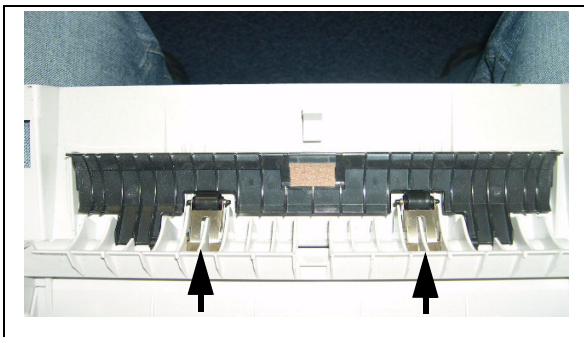


Cause 3

Registration spring is not installed correctly.

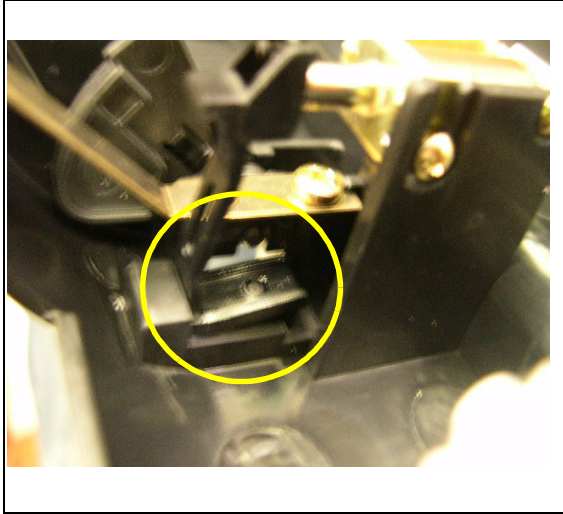
Solution 3

Ensure that the springs are installed correctly.



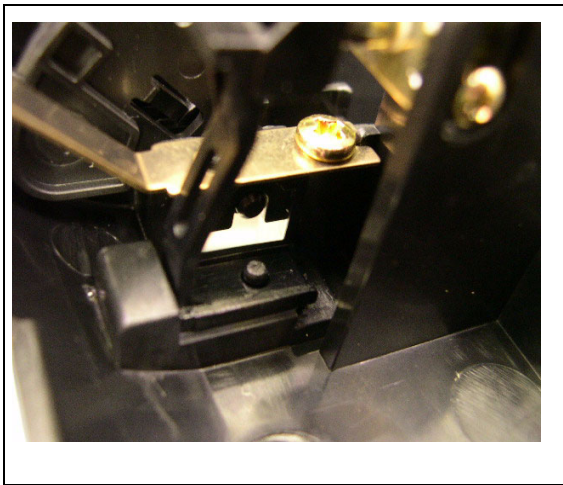
Cause 4

Lever of Paper Feeder is not installed correctly.



Solution 4

Ensure that the lever is installed correctly.



3 Check Printer Device 02 RAP

Problem

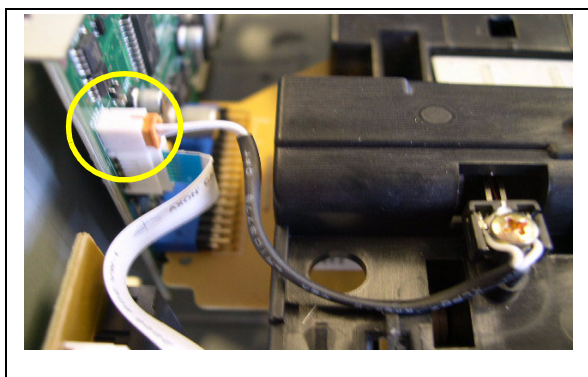
Fault message.

Cause 1

Fusing unit not connected or cable damaged.

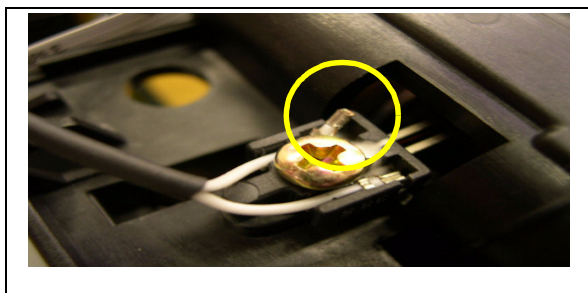
Solution 1

Connect the cable or repair the cable. Install new parts as required, [PL 5](#).



Cause 2

Bad cable connection.



Solution 2

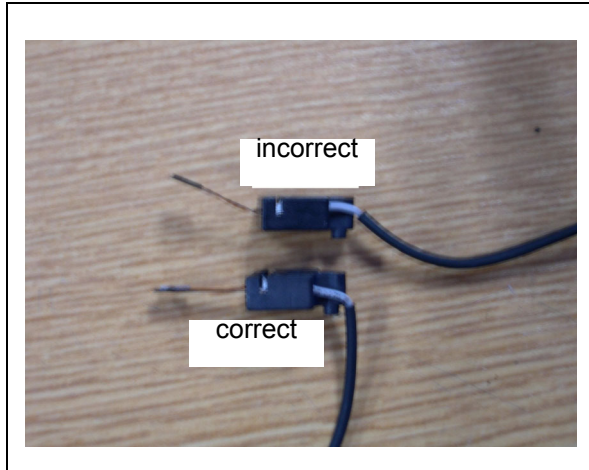
Check the connection.

Cause 3

Bent thermistor.

Solution 3

Straighten the thermistor or install a new thermistor, [PL 2](#).



4 Check Printer Device 04 RAP

Problem

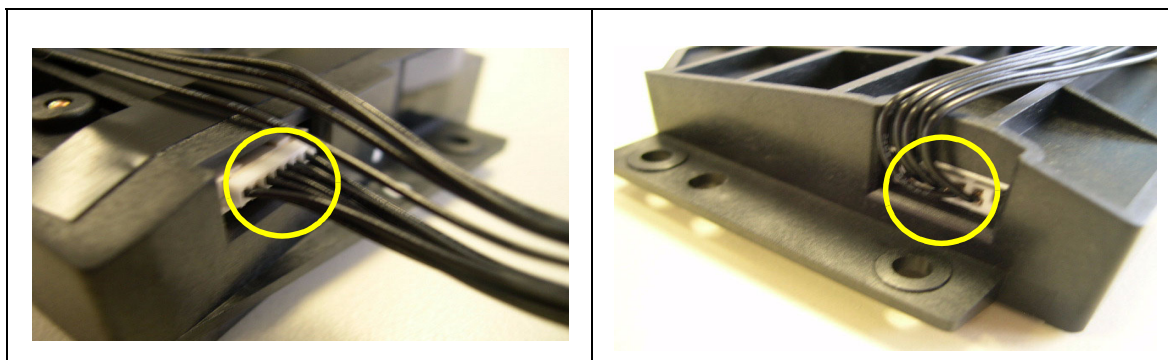
Fault message.

Cause 1

Bad LSU cable.

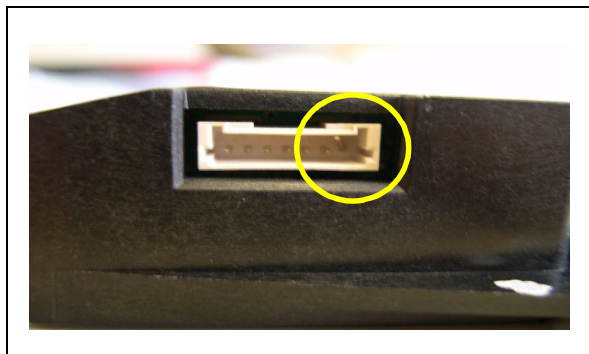
Solution 1

Check the connectors.



Cause 2

Damaged pins on the LSU.



Solution 2

Repair the pins or install a new LSU, [PL 3](#).

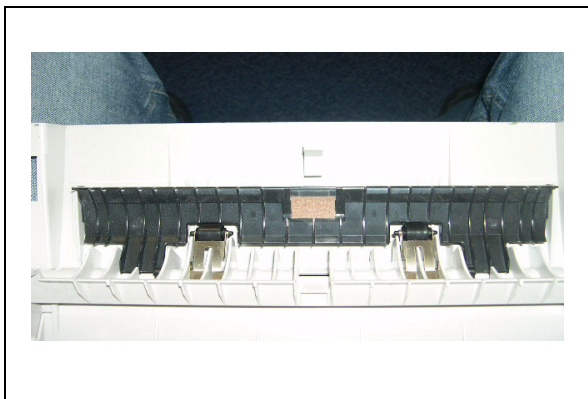
5 Paper Jam 1 RAP

Problem

Paper Jam.

Cause 1

Registration guide out of position.

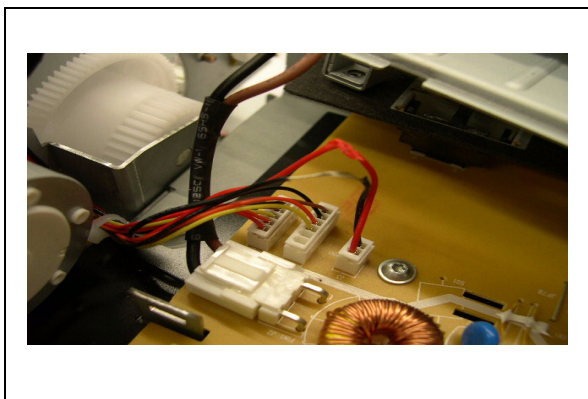


Solution 1

Ensure that the registration guide is correct.

Cause 2

Fan or motor cables trapped under the fuser.



Solution 2

Ensure that the cables are routed correctly.

Cause 3

Paper in sensor jammed or damaged.



Solution 3

Check the Sensor, refer to [GP 10](#).

Release the sensor. If necessary install new parts, [PL 8](#).

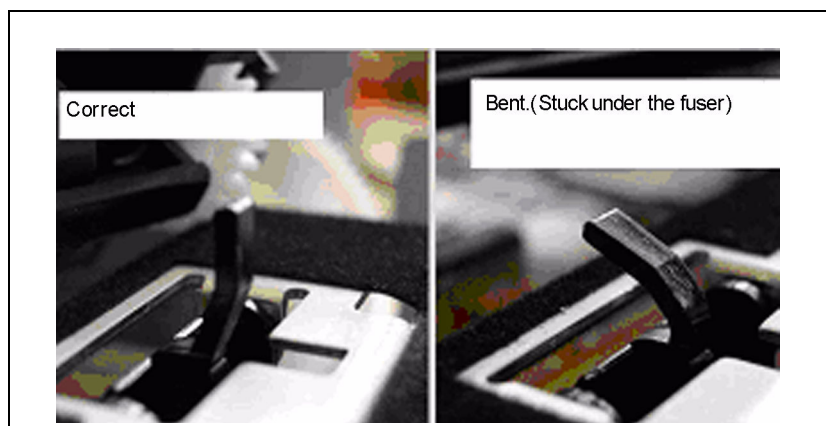
6 Paper Jam 2 RAP

Problem

Paper Jam.

Cause 1

Paper exit sensor damaged or missing.

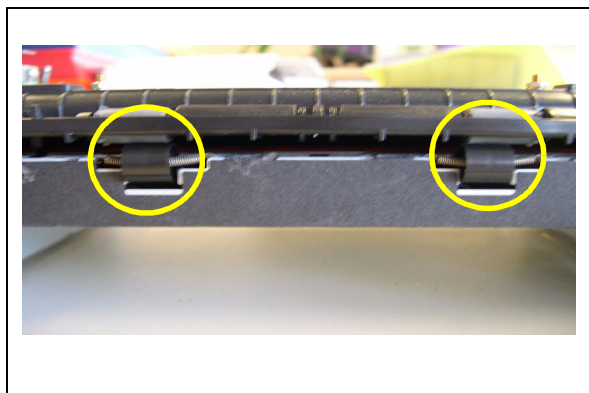


Solution 1

Check the paper exit sensor, refer to [GP 10](#). If necessary install new parts, [PL 8](#).

Cause 2

Exit backup rolls out of position.



Solution 2

Check the exit backup rolls. If necessary install new parts, [PL 5](#).

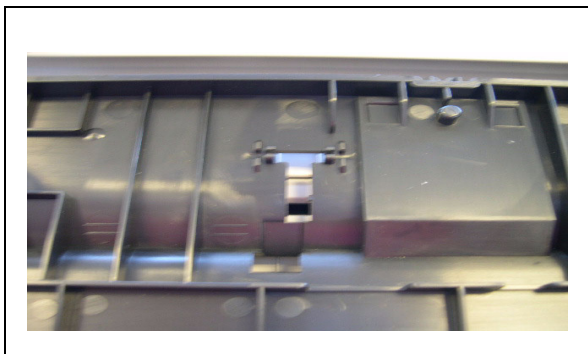
7 Document Feed RAP

Problem

Document not fed.

Cause 1

Document sensor jammed or missing.

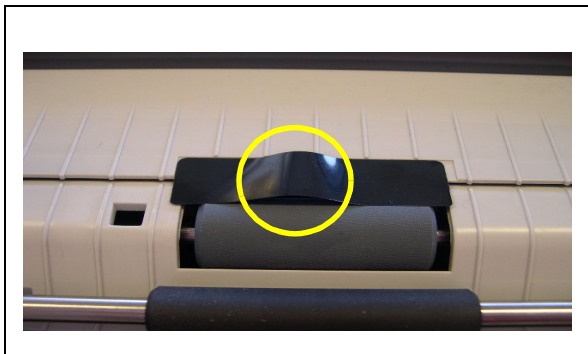


Solution 1

Check the document sensor, refer to [GP 10](#). If necessary install new parts, [PL 1, PL 2](#).

Cause 2

LSU cover guide out of position.



Solution 2

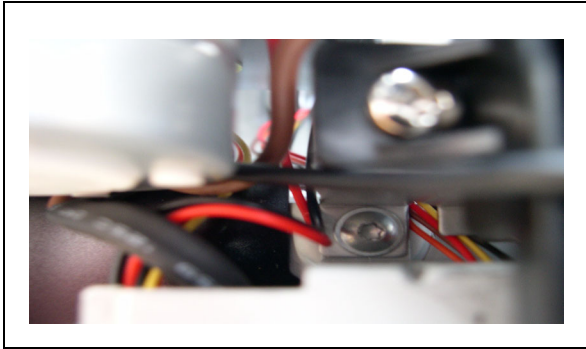
Ensure that the LSU cover guide is installed correctly.

Cause 3

Poor scanner cable connection.

Solution 3.

Ensure that the cable is connected correctly.



8 Document Jam RAP

Problem

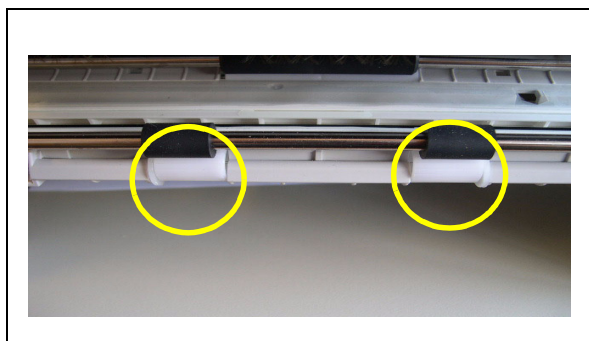
Document jam.

Cause 1

Exit pinch rolls out of position.

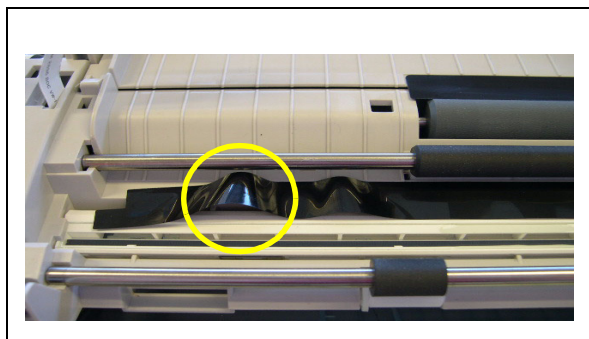
Solution 1

Check the rolls, If necessary install new parts, [PL 8](#).



Cause 2

CIS guide out of position.



Solution 2

Ensure that the CIS guide is installed correctly.

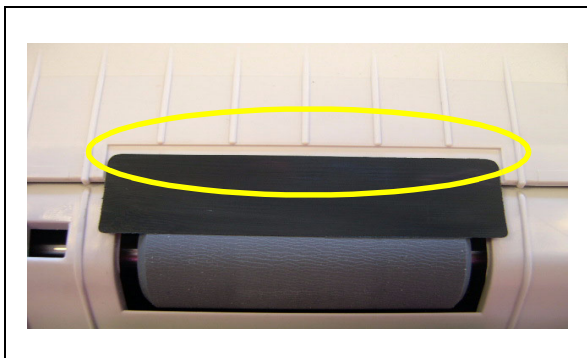
9 Document Multifeed RAP

Problem

Document multifeed.

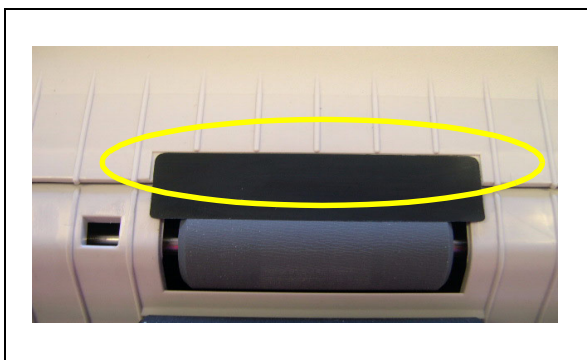
Cause

Incorrect position of guide on the LSU cover.



Solution

Ensure that the guide is installed correctly.



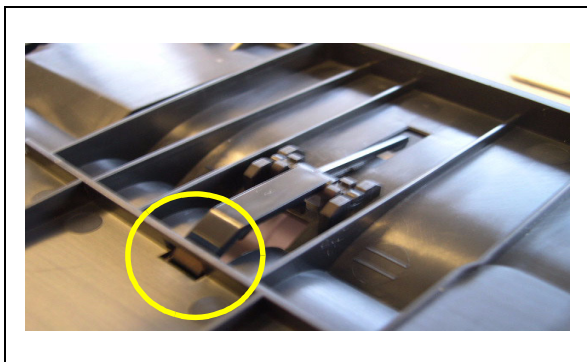
10 ScanRef Failure RAP

Problem

Fault message.

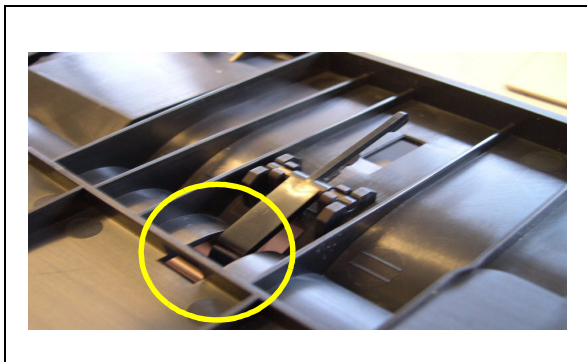
Cause

Document sensor 2 blocked.



Solution

Check the sensor, refer to [GP 10](#). Ensure that document sensor 2 is installed correctly. If necessary, install new parts, [PL 2](#).



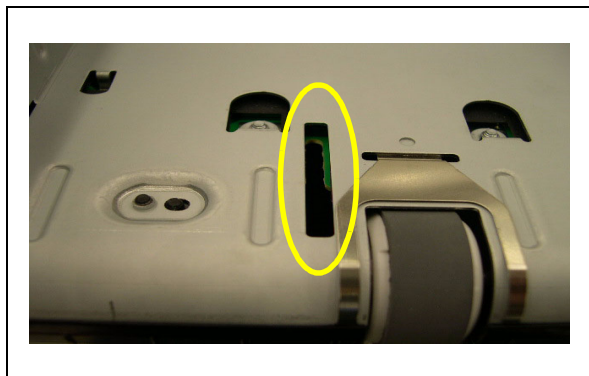
11 Sensor-Test Failed RAP

Problem

Failed sensor test.

Cause 1

Paper stock sensor damaged or missing.

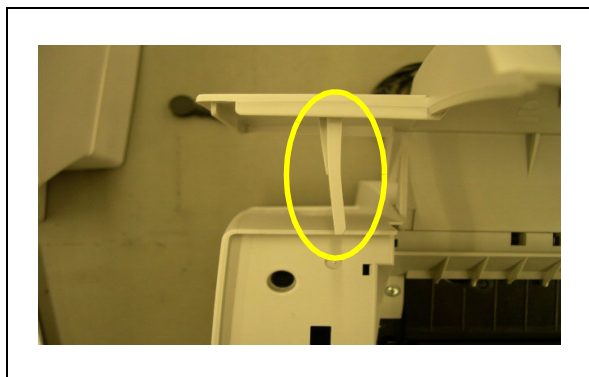


Solution 1

Check the sensor, refer to [GP 10](#). Ensure that the paper stock sensor is installed correctly. If necessary, install new parts, [PL 4](#).

Cause 2

Rear cover lever bent or broken.



Solution 2

Ensure that the rear cover lever is installed correctly. If necessary, install new parts, [PL 9](#).

Cause 3

Paper input sensor jammed or damaged.



Solution 3

Check the sensor, refer to [GP 10](#). Release the sensor. If necessary install new parts, [PL 8](#).

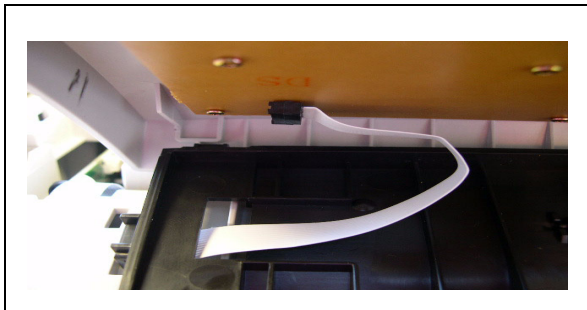
12 Blank Display RAP

Problem

Blank display.

Cause 1

OPU cable disconnected on the OPU.

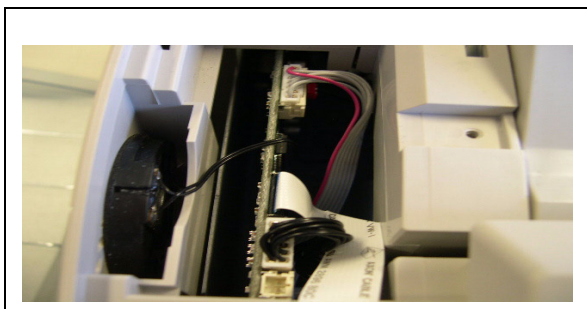


Solution 1

Connect the OPU Cable.

Cause 2

OPU cable disconnected on the main PWB.

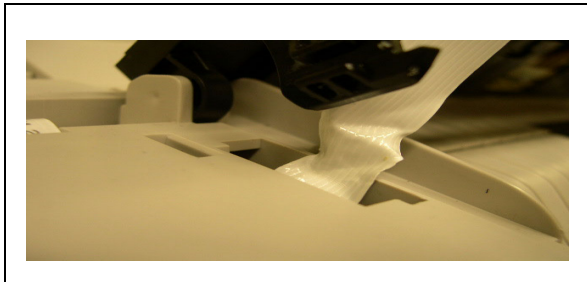


Solution 2

Connect the OPU Cable.

Cause 3

OPU cable damaged.

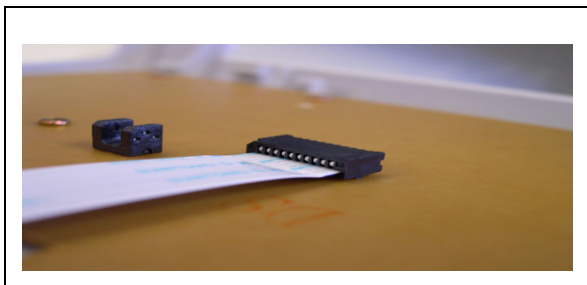


Solution 3

Install a new OPU, [PL 1](#).

Cause 4

LCD cable disconnected.

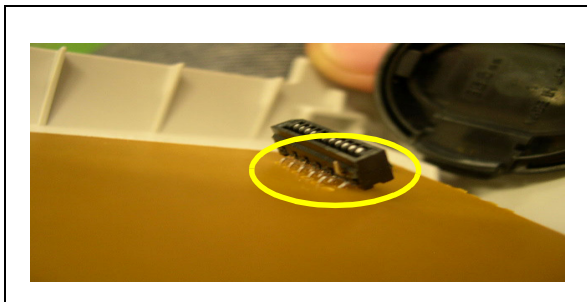


Solution 4

Connect the LCD cable.

Cause 5

OPU connector damaged at sockets.



Solution 5

Install a new OPU PCB, [PL 1](#).

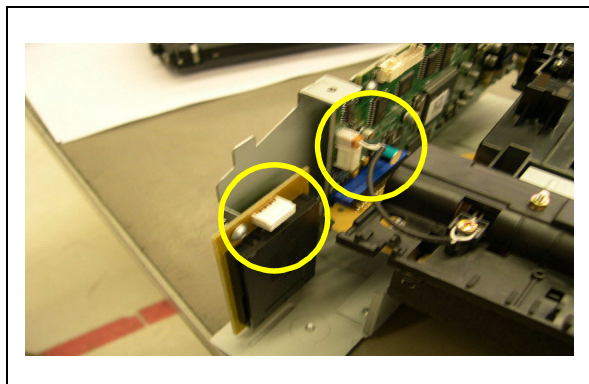
13 Smartcard Reader Faults RAP

Problem

SmartCard reader failure.

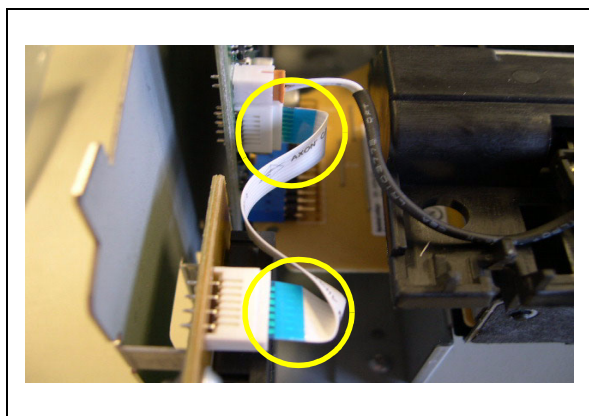
Cause 1

Smartcard Reader not connected.



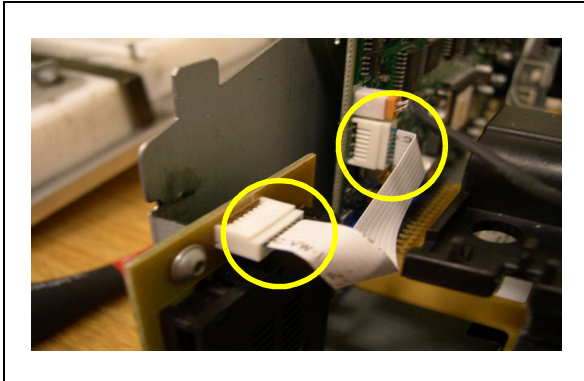
Solution 1

Correctly connect the Smartcard reader.



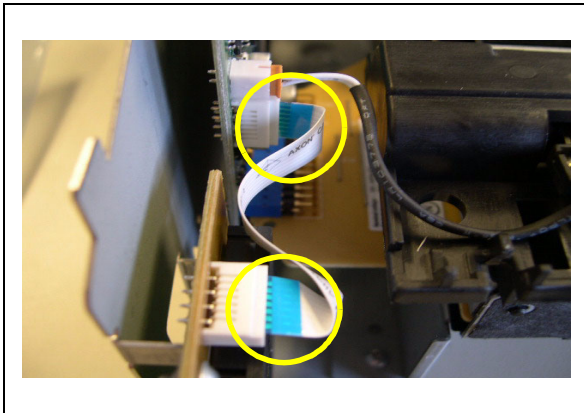
Cause 2

Smartcard reader incorrectly connected.



Solution 2

Correctly connect the Smartcard reader.



14 Other Faults RAP

Problem 1

Software Lock Up

Cause 1

The 'handset' version of the software has been loaded onto a non-handset F110. The software is constantly looking for the handset.

Solution 1

- Disconnect the machine.
- Press "Start" "9" .
- Reconnect the machine and keep "Start" "9" pressed until the end of reboot.
- The message "Bootloader " "L2 xxx Ready" will appear on the display
- Update the firmware, [GP 11](#).

Problem 2

The message 'Card Error' is displayed after replacing the print cartridge.

Cause 2

The F110 detects that the wrong toner cartridge has been installed.

Solution 2

Ensure that the correct customer file is installed. Refer to [GP 12](#).

3. Image Quality

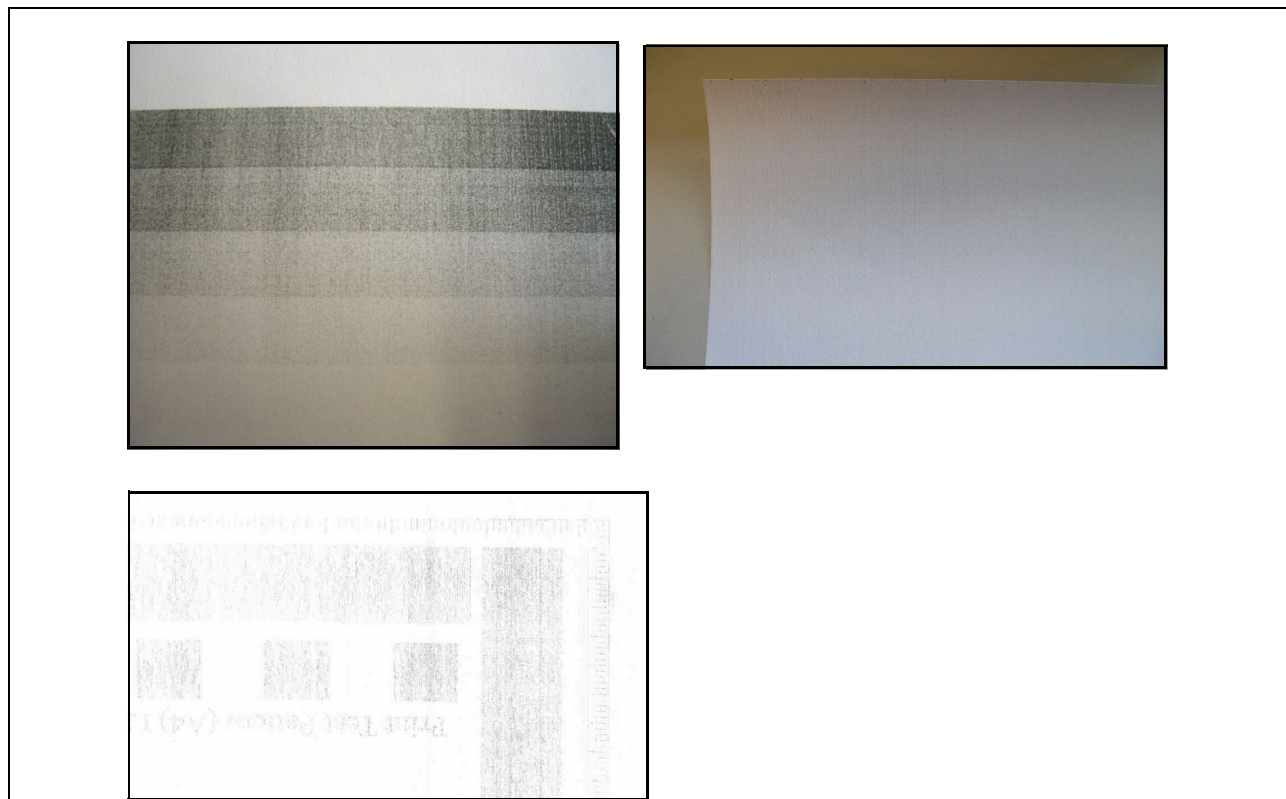
IQ 1 Faint or Blank Prints or Copies RAP	3-3
IQ 2 White Lines RAP	3-5
IQ 3 Grey Shadows, Ghosting RAP	3-6
IQ 4 Black Prints or Copy RAP	3-7
IQ 5 Smudges	3-9
IQ 6 Vertical Lines (Photo Mode) RAP	3-10
IQ 7 Skew	3-14

Page intentionally blank

IQ 1 Faint or Blank Prints or Copies RAP

Problem

Faint or Blank Prints or Copies.



Cause 1

Print cartridge is empty.

Solution 1

Install a new print cartridge, [GP 3](#), [PL 12](#).

Cause 2

Poor or dirty earth (ground) contact to the cartridge.

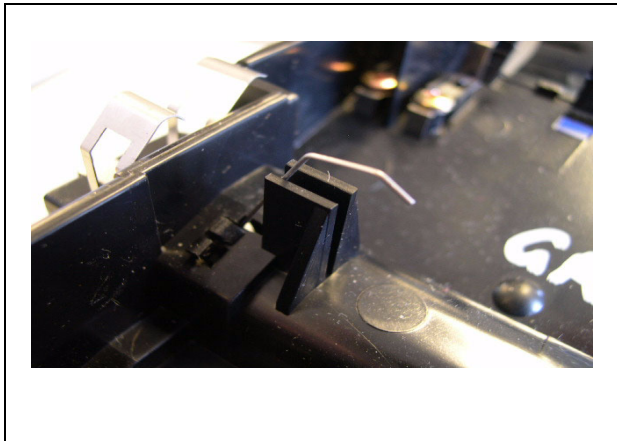


Solution 2

Check and clean the earth (ground) contact for the cartridge.

Cause 3

Poor contact between the transfer roll and the PSU.



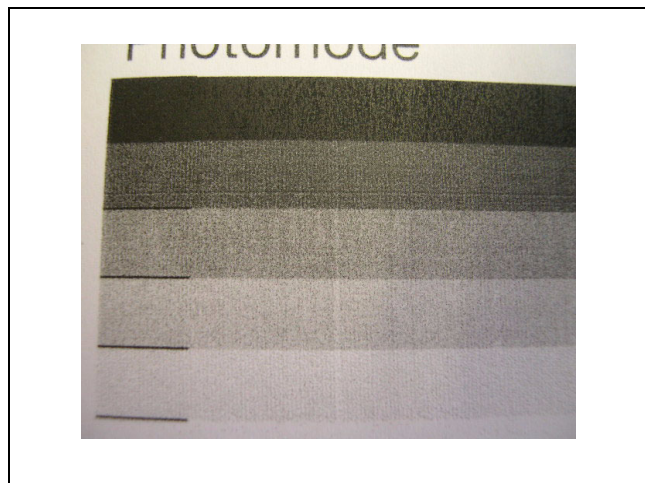
Solution 3

Check and clean the contact between the transfer roll and the PSU.

IQ 2 White Lines RAP

Problem

White lines.



Cause

Bad cartridge.

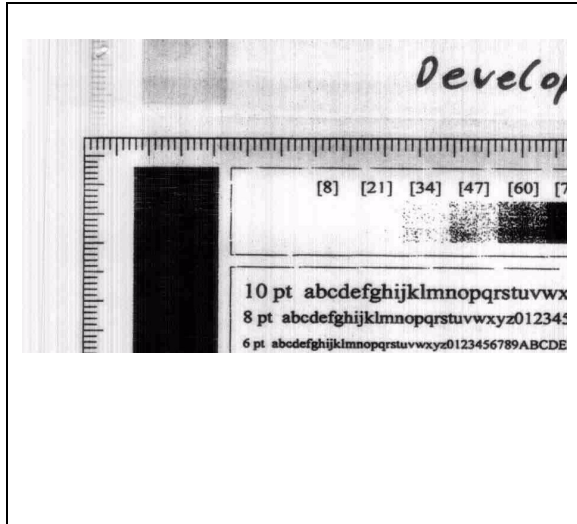
Solution

Install a new print cartridge, [GP 3](#), [PL 12](#).

IQ 3 Grey Shadows, Ghosting RAP

Problem

Grey shadows or ghosting.



Cause

Poor or dirty side contacts between the print cartridge and the PSU.



Solution

Check and clean the contacts between the print cartridge and the PSU.

IQ 4 Black Prints or Copy RAP

Problem

Black prints or copies.



Cause 1

Poor or dirty front contacts between the print cartridge and the PSU.



Solution 1

Check and clean the contacts between the print cartridge and the PSU.

Cause 2

Poor connection to the CIS.

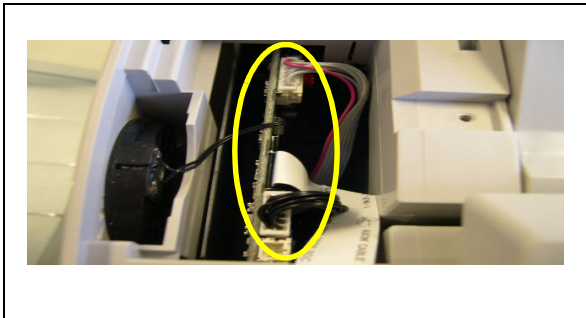


Solution 2

Check the connection to the CIS.

Cause 3

Poor connection to the main board.



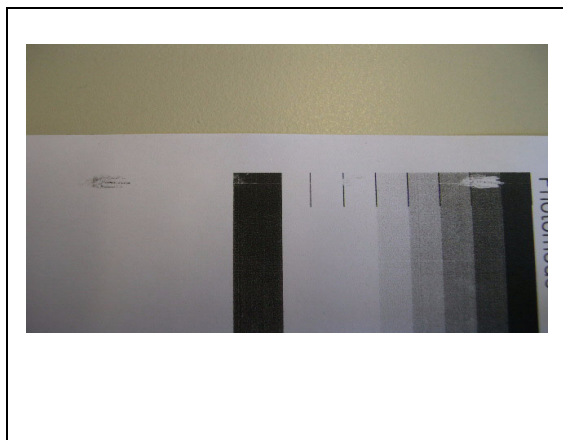
Solution 3

Check the connection to main board.

IQ 5 Smudges

Problem

Smudges.



Cause

Grease on the transfer roll.



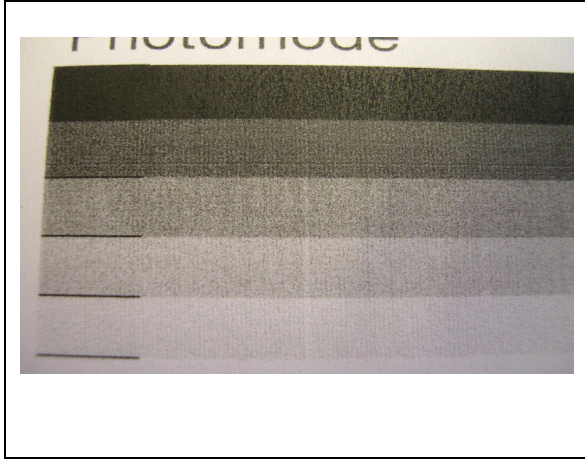
Solution

Locate and repair the cause of grease on the transfer roll.
Install a new transfer roll, [PL 4](#).

IQ 6 Vertical Lines (Photo Mode) RAP

Problem 1

Vertical lines.



Cause 1

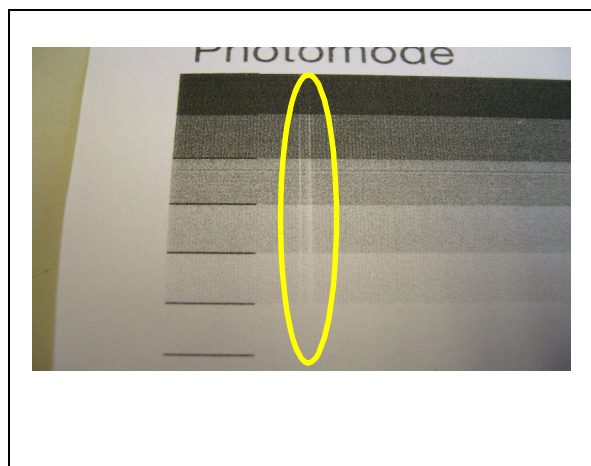
Bad print cartridge.

Solution 1

Install a new print cartridge, [GP 3](#), [PL 12](#).

Problem 2

Vertical lines.



Cause 2

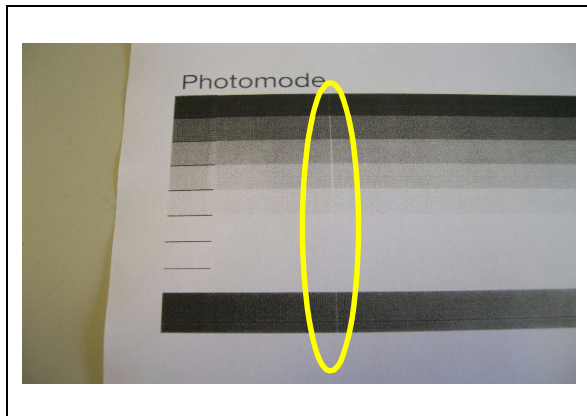
Bad white reference.

Solution 2

Make a new white reference, [GP 9](#).

Problem 3

Vertical lines.



Cause 3

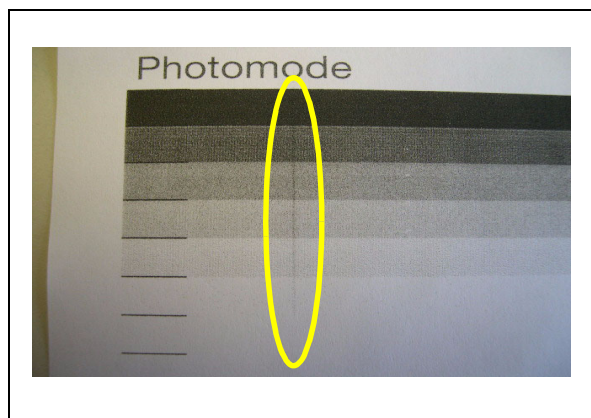
Dirt on the mirrors.

Solution 3

Clean the mirrors, [PL 3](#), using a micro fibre wiper and lens and mirror cleaner, [PL 12](#).

Problem 4

Vertical lines.



Cause 4

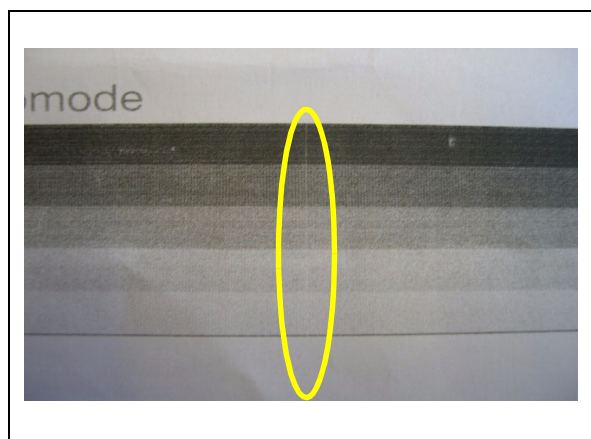
Dirt on the CIS.

Solution 4

Clean the CIS using a micro fibre wiper and lens and mirror cleaner, [PL 12](#).

Problem 5

Vertical lines.



Cause 5

Damaged CIS.

Solution 5

Replace the CIS. [PL 3](#).

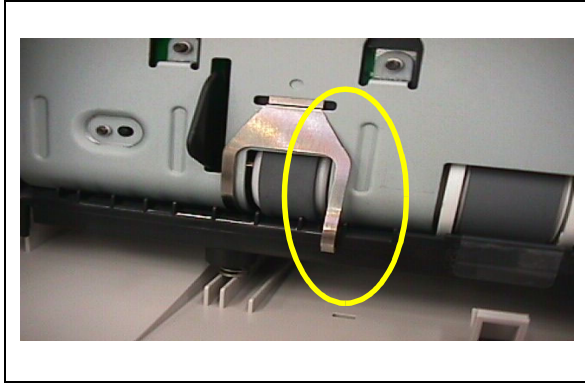
IQ 7 Skew

Problem

Skewed copies or prints.

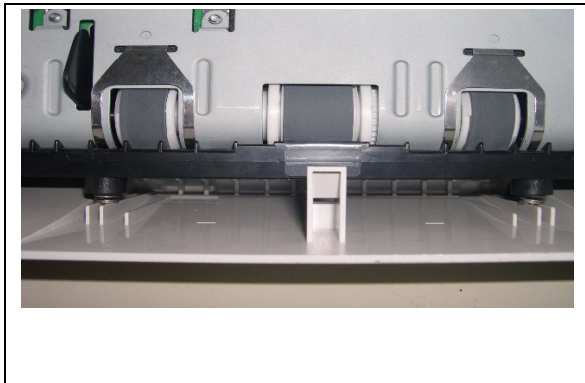
Cause 1

Plate registration guide not in the correct position.



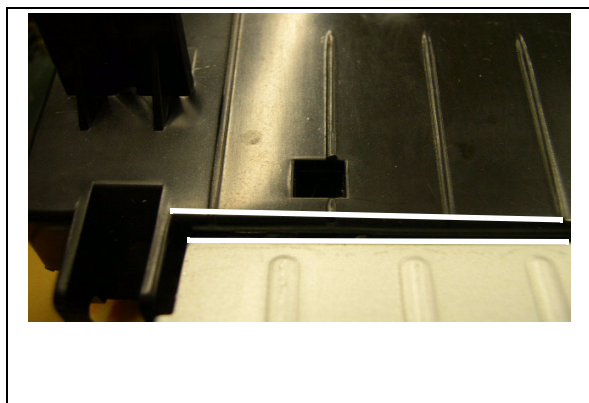
Solution 1

Ensure that the plate registration guides are installed correctly.



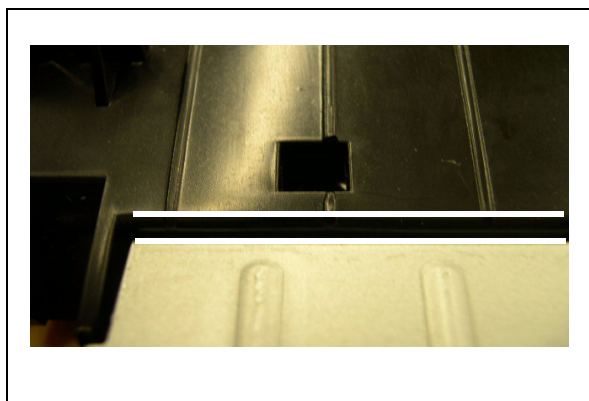
Cause 2

The gap between the Paper Feeder and the fuser module is incorrect.



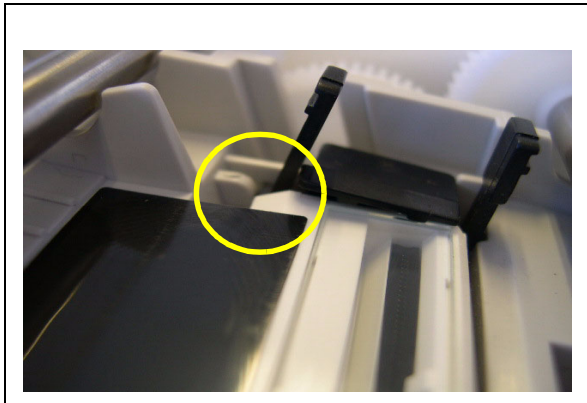
Solution 2

Ensure that the Paper Feeder is installed correctly.



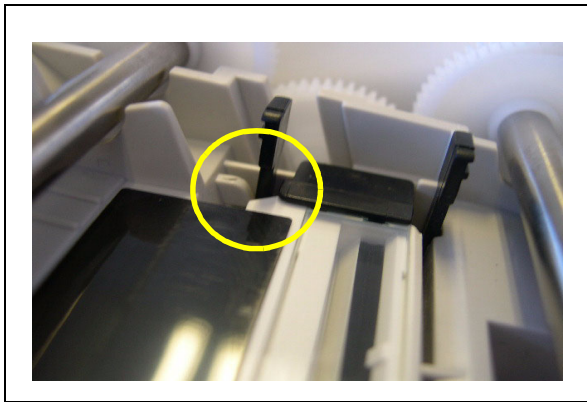
Cause 3

The CIS holder is not installed correctly.



Solution 3

Ensure that the CIS holder is installed correctly.



Cause 4

Paper guide set incorrectly.

Solution 4

Check that the side guide is set to 8.5 x 11 or A4 as necessary.

4. Repairs/Adjustments

REP 1 Disassembly Procedure Chart	4-3
REP 2 Operation Panel Removal	4-4
REP 3 Upper Guide Assembly Removal	4-5
REP 4 Scanner CIS Removal	4-6
REP 5 Main Cover Removal	4-7
REP 6 Main Controller PCB Removal	4-11
REP 7 Paper Feeder and Feed Roll Assembly Removal	4-13
REP 8 Fuser Unit Removal	4-14
REP 9 Remove Drive Module	4-16
REP 10 Power Supply Removal.....	4-17

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REP 1 Disassembly Procedure Chart

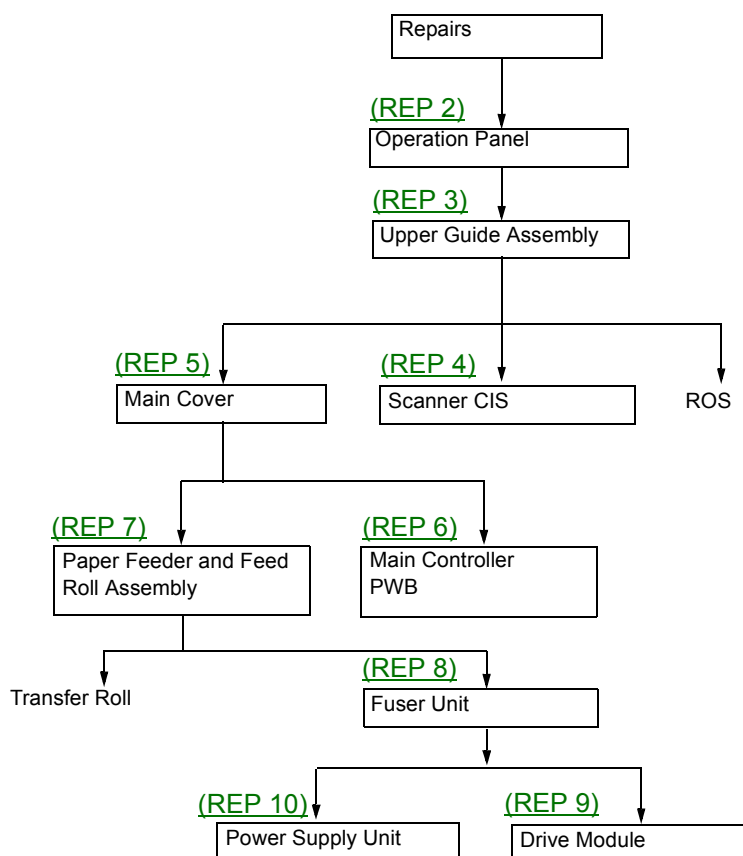
WARNING

Switch off the electricity to the machine. Disconnect the power cord from the customer supply while performing tasks that do not need electricity. Electricity can cause death or injury. Moving parts can cause injury.

Tools

- Phillips screwdriver
- Flat screwdriver (medium size)
- Torx No. 9.
- Torx No. 20.

1. Remove the document trays and the paper cassette.



REP 2 Operation Panel Removal

Parts List on [PL 1](#)

1. Refer to [REP 1](#).
2. Open the panel.



Figure 1

3. Pull the 3 snaps forward on the front underside of the panel.

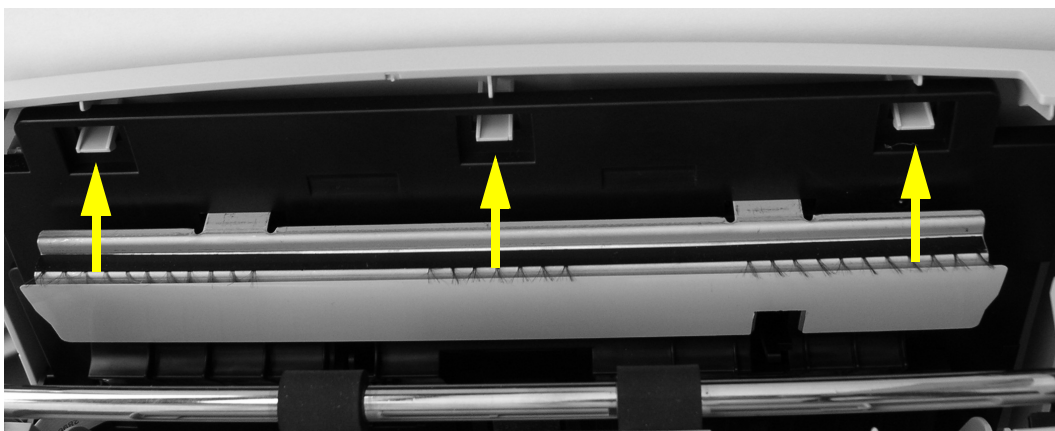


Figure 2

4. Push the panel rearward to unclip the rear securing tabs.
5. Remove the OPU cable.

REP 3 Upper Guide Assembly Removal

Parts List on [PL 2](#)

1. Perform [REP 2](#).
2. Press the left guide.
3. Lift up the left side of the Upper Guide Assy, to unclip the left hinge.
4. Move the part to the left to unclip the right hinge.



Figure 1

REP 4 Scanner CIS Removal

Parts List on [PL 3](#)

1. Perform [REP 3](#).
2. Press and remove the scanner clip.

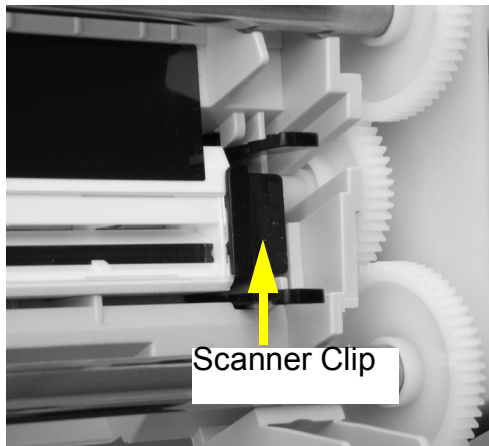


Figure 1

3. Lift the CIS carefully.
4. Disconnect the CIS cable.

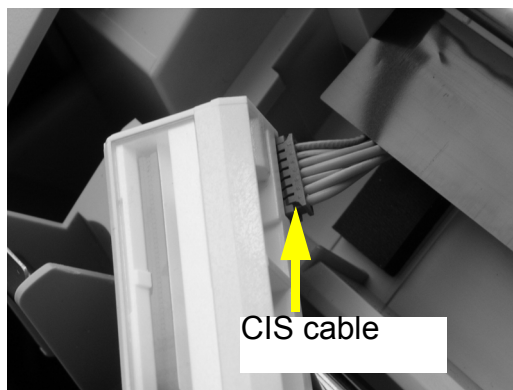


Figure 2

5. Check the CIS guide.

REP 5 Main Cover Removal

Parts List on [PL 3](#)

Remove Handset Cover and Right Cover

1. Perform [REP 3](#).
2. Remove 2 screws of the Right Cover and the Handset Cover (220V) or Left Cover and pull up while moving it towards the centre of the machine to release the left side securing tabs.

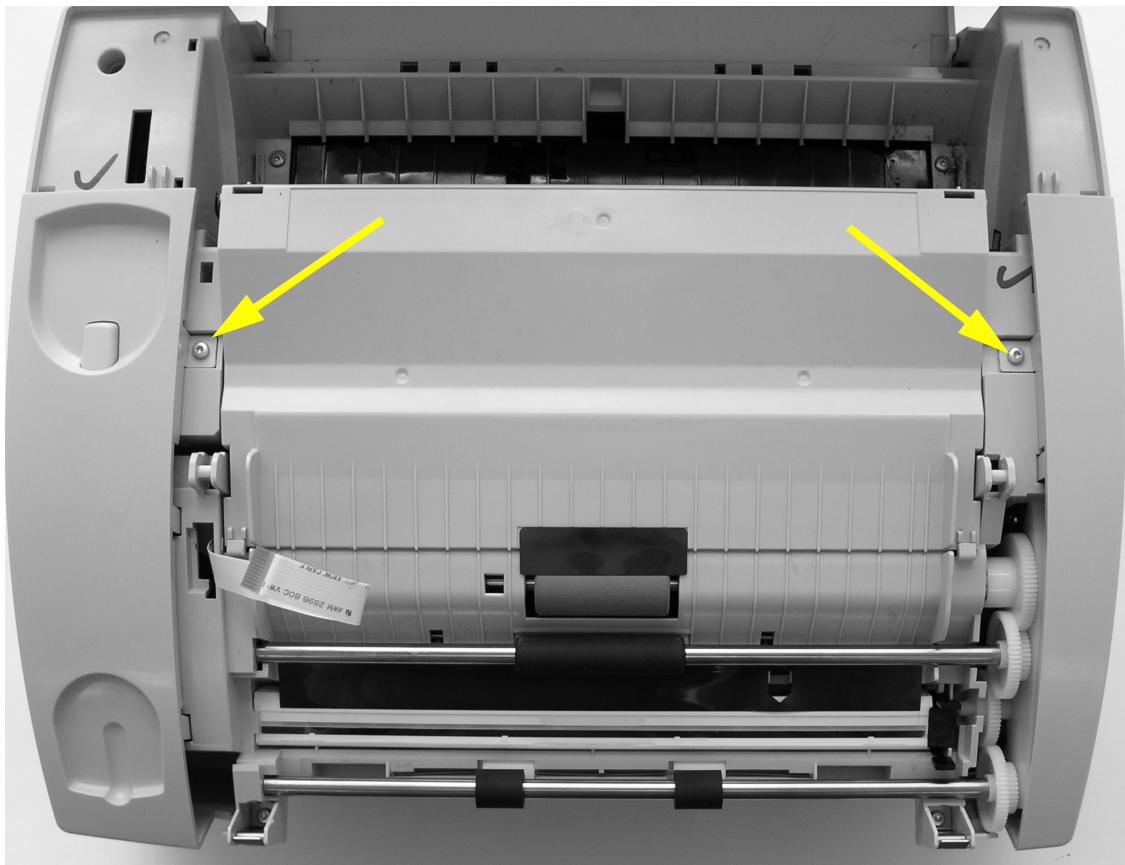


Figure 1

3. To remove the Handset Cover (220V only) or Left Cover, press the 2 snaps.



Figure 2

4. (220V only) Disconnect the hook switch cable from the main board and pull up while moving it towards the centre of the machine to release the right side securing tabs.
5. To remove the Right Cover, press the 2 snaps.



Figure 3

Replacement

1. Replacement is the reverse of the removal procedure.
2. When re-assembling the left and right covers, slide the front tab in place first, then push the covers down to lock the securing tabs.

Remove Top Cover Main Housing

CAUTION

Do not remove the LSU. The LSU is factory set and can only be installed as part of the Main Cover.

1. Remove the 4 screws (see Figure 4), and 2 screws inside the machine (under the print cartridge).

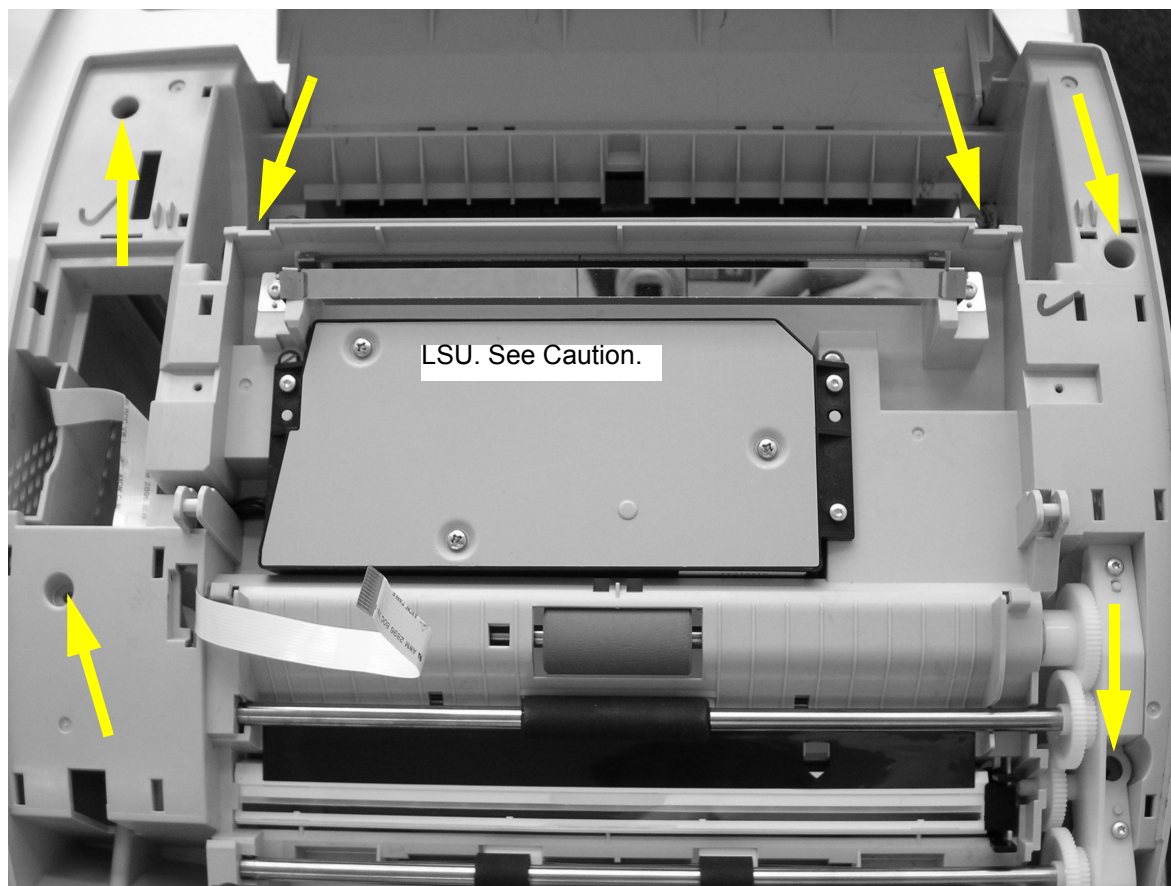


Figure 4

2. Lift the Loudspeaker and put it on the side of the Main board.

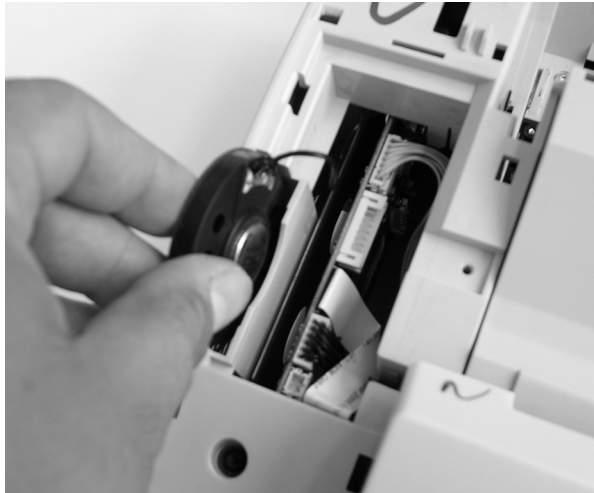


Figure 5

3. Disconnect the cables from the top of the main board.
4. Lift up the Main housing.



Figure 6

REP 6 Main Controller PWB Removal

Parts List on [PL 6](#)

1. Perform [REP 5](#).
2. Disconnect the thermistor cable and hook switch cable.

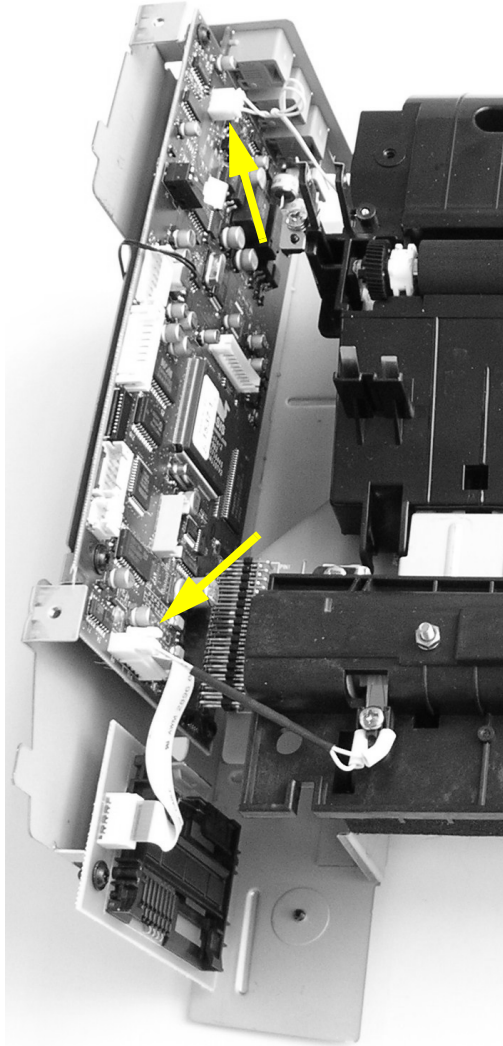


Figure 1

3. Remove the 2 screws from the bottom of the main controller bracket.

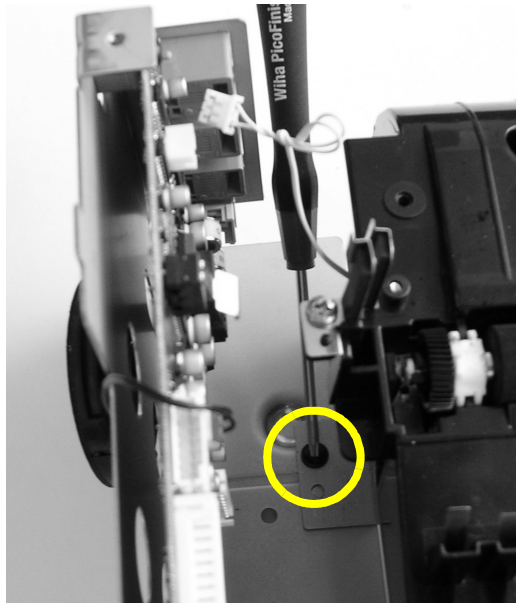


Figure 2

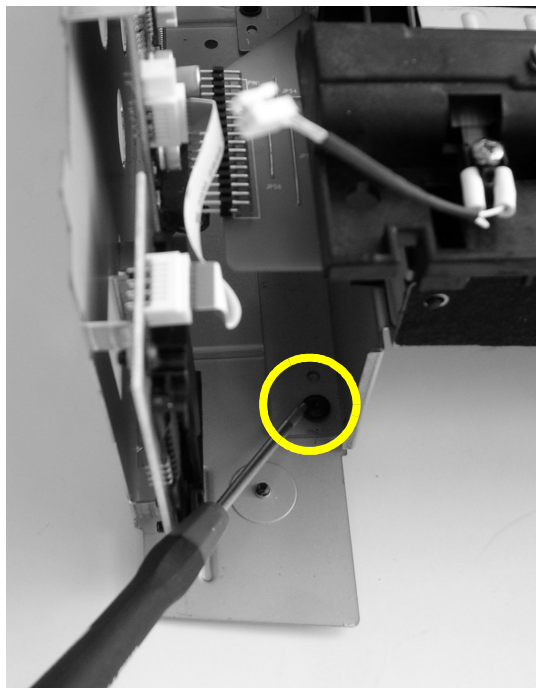


Figure 3

Replacement

1. If a new main board has been installed, perform a customization update, [GP 12](#).

REP 7 Paper Feeder and Feed Roll Assembly Removal

Parts List on [PL 4](#)

1. Perform [REP 5](#).
2. Remove 2 screws and 2 snaps.

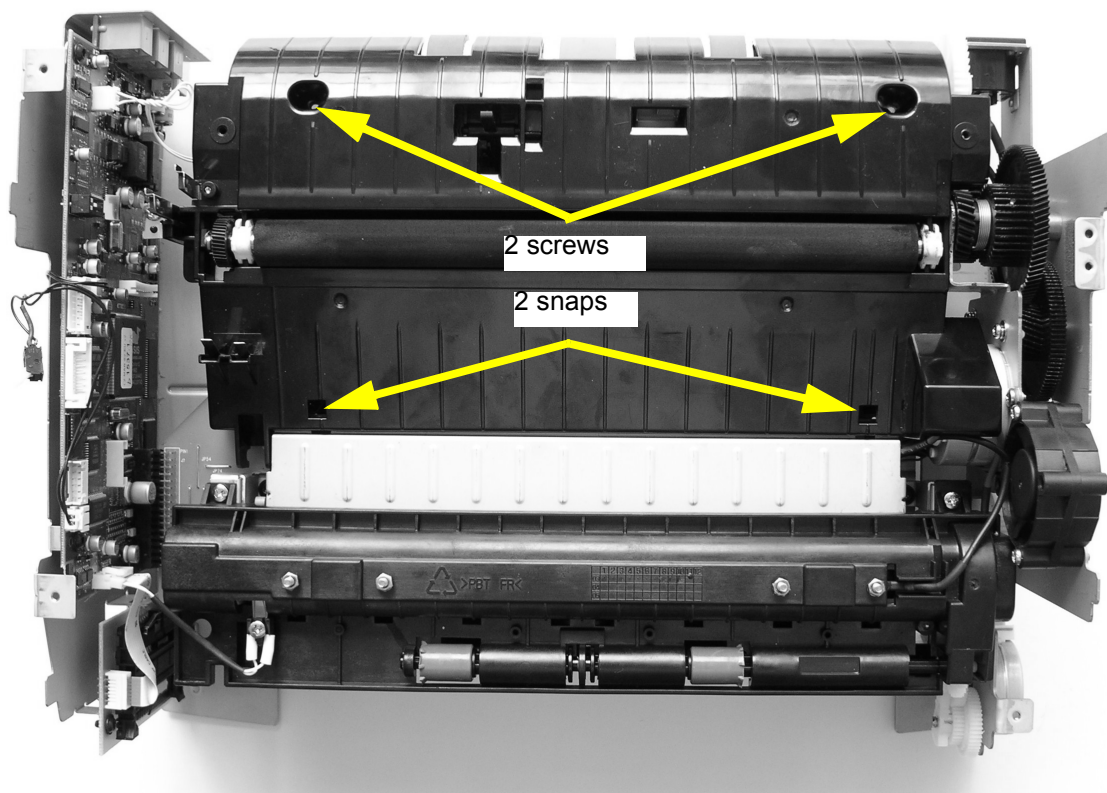


Figure 1

3. Lift the paper feeder carefully.
4. Disconnect the solenoid cable to the PSU.

Replacement

1. Replacement is the reverse of the removal procedure.
2. Once the Paper Feeder has been removed, the Feed Roll Assembly is removed by rotating up its bushings' handles.
3. When re-assembling the Paper Feeder make sure the 2 plastic guide pins are aligned in the bottom of the chassis as well as the pin that aligns to the drive module.

REP 8 Fuser Unit Removal

Parts List on [PL 5](#)

1. Perform [REP 7](#).
2. Remove 2 screws.

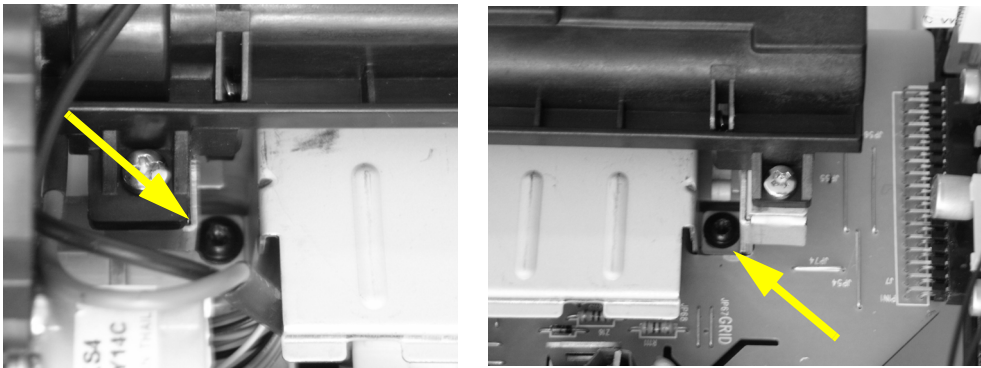


Figure 1

3. Carefully lift the Fuser from the backside to release the hinge at the front.

4. Disconnect the Fuser connector to the PSU.

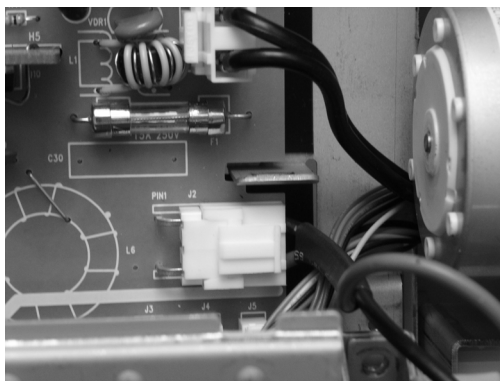


Figure 2

Replacement

1. Replacement is the reverse of the removal procedure.
2. When re-assembling the Fuser unit, be careful not to catch wires under the fuser bracket.
3. When re-assembling the Fuser unit, ensure that all 4 aligning pins are properly positioned in the chassis. There are 2 pins on the front of the Fuser and 2 pins on the bottom of the Fuser bracket.

REP 9 Drive Module Removal

Parts List on [PL 7](#)

1. Perform [REP 8](#).
2. Disconnect 4 cables to the PSU.

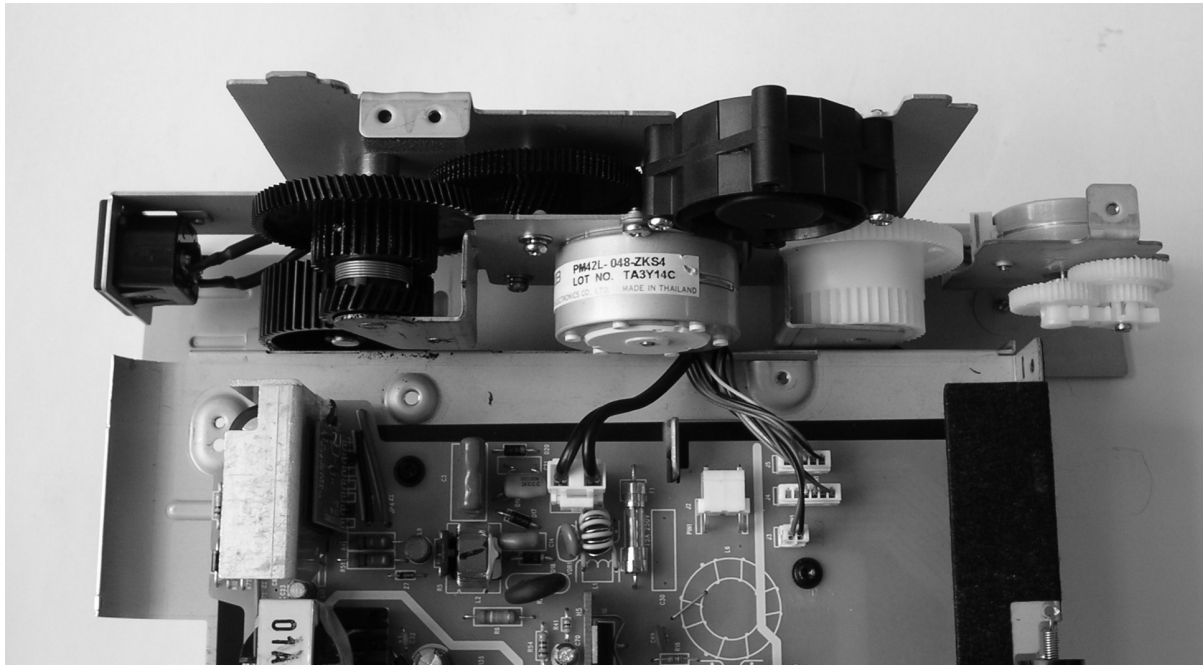


Figure 1

3. Remove 2 screws on the bottom of the Driving Module Bracket.
4. Remove the earth (ground) screw.

REP 10 Power Supply Removal

Parts List on [PL 8](#).

1. Perform [REP 8](#).
2. Disconnect 4 cables from the Drive Module to the PSU.
3. Remove both exit sensor flags.
4. Remove 6 screws.

Note: *During re-assembly, make sure the front end of the PSU is properly positioned in the three board guides on the printer chassis.*

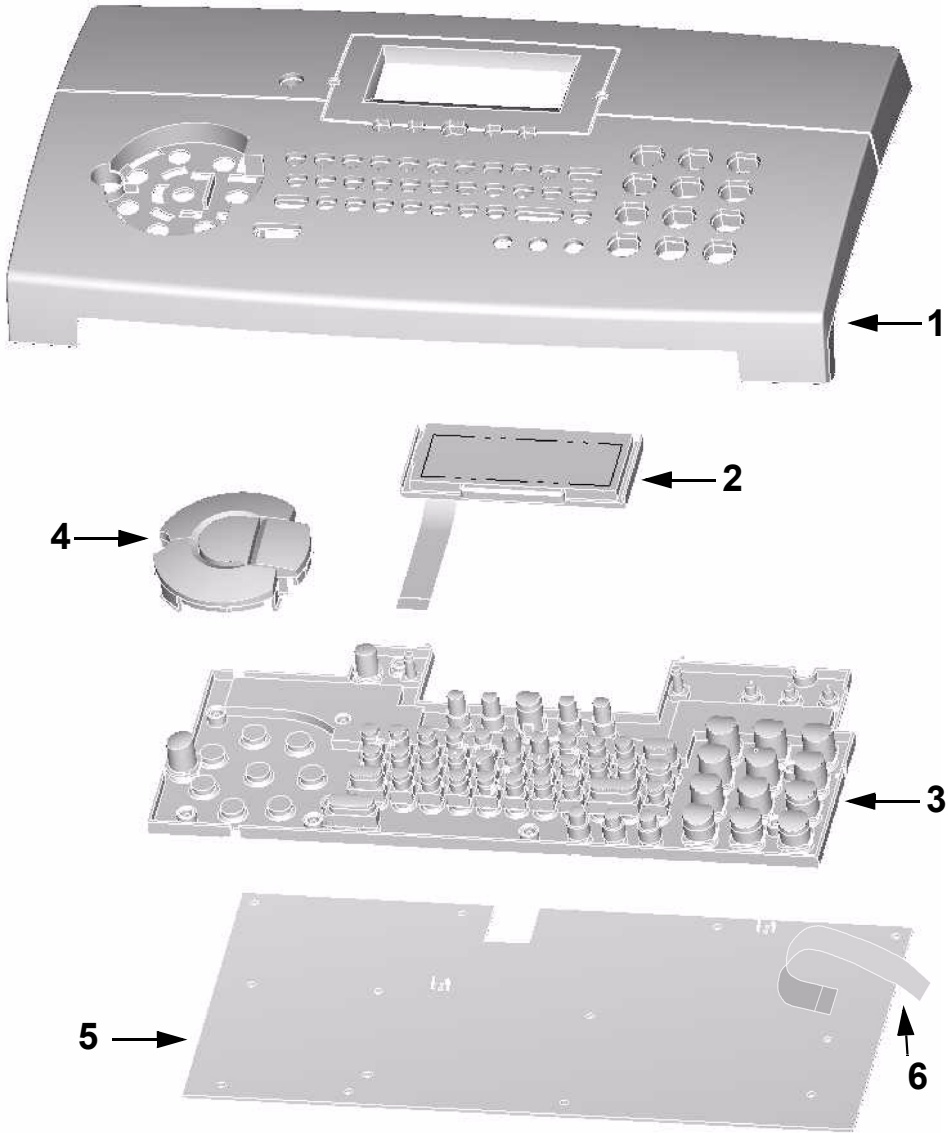
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5. Spare Parts List

PL 1 Operation Panel Unit (OPU)	5-3
PL 2 Upper Guide Assembly	5-4
PL 3 Housing and Scanner	5-5
PL 4 Paper Feeder Assembly	5-6
PL 5 Fuser Assembly	5-7
PL 6 Main Board Assembly	5-8
PL 7 Drive Module	5-9
PL 8 Bracket Assembly	5-10
PL 9 Rear Cover Assembly	5-11
PL 10 Paper Cassette Assembly	5-12
PL 11 Cradle and Handset (220V Only)	5-13
PL 12 Consumables and Tools	5-14

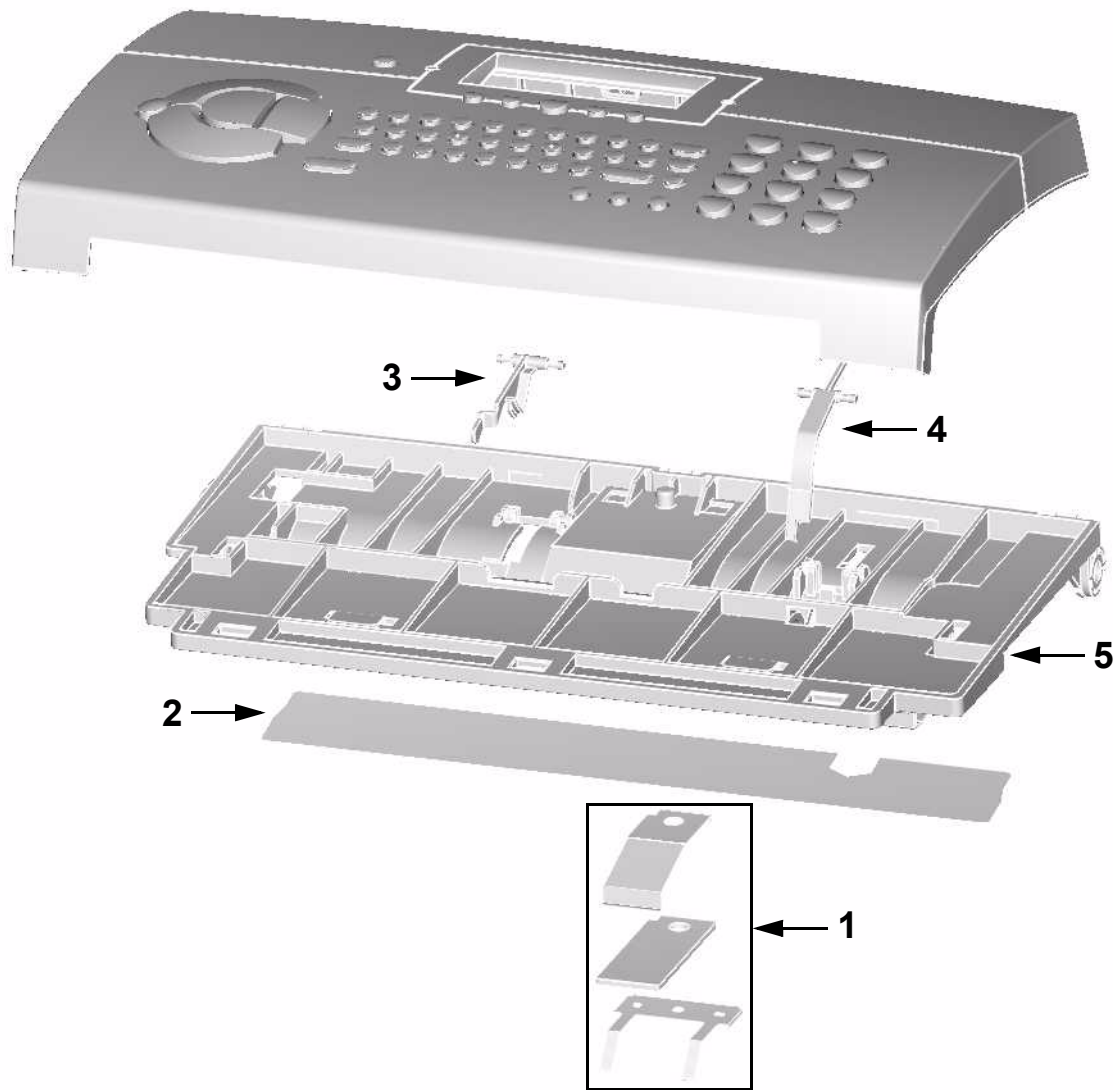
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PL 1 Operation Panel Unit (OPU)



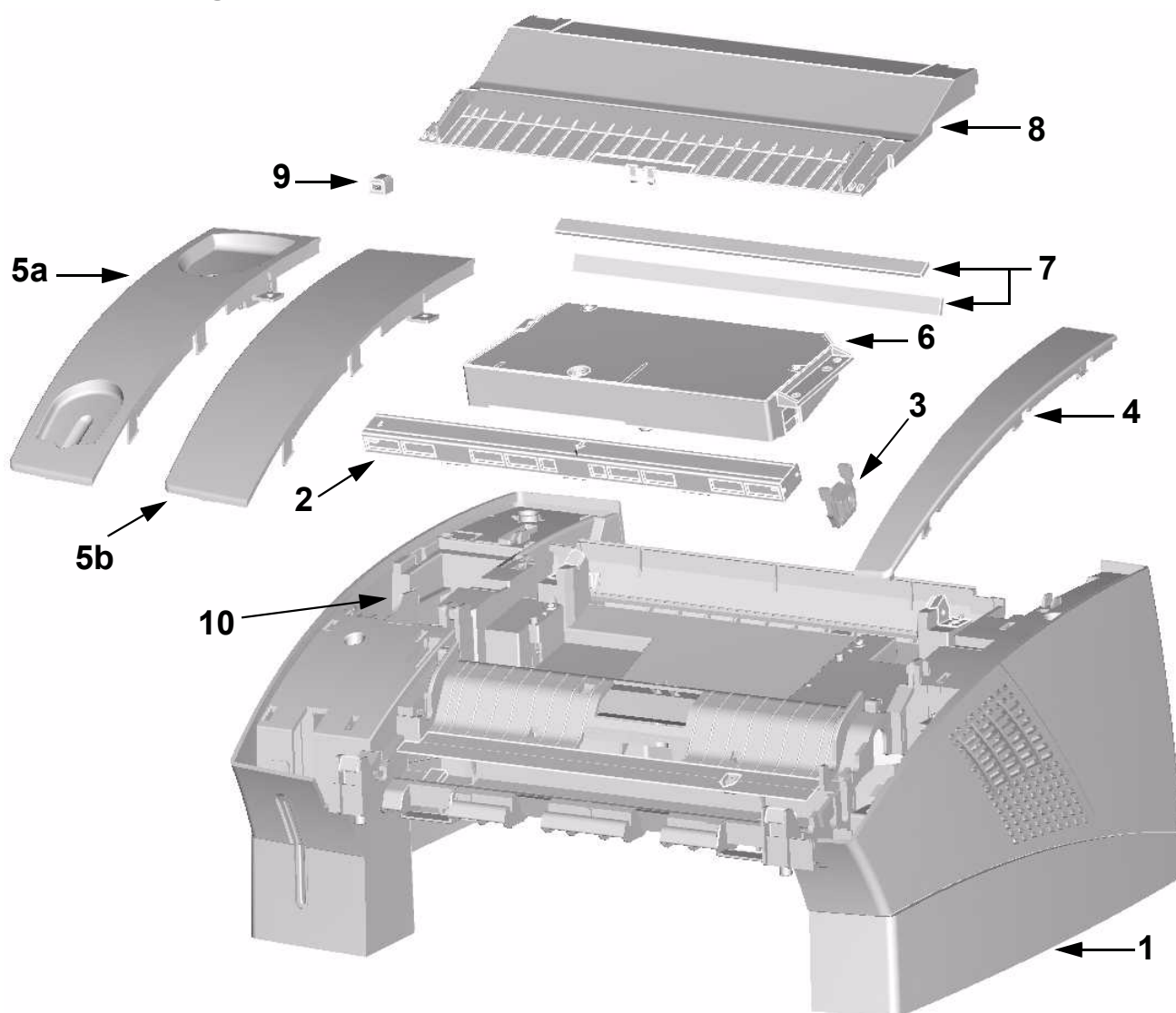
INDEX	PART NO	COMMENT	DESCRIPTION
1-5	002N02358	REP 2	PANEL XEROX F110, COMPLETE
1	002N02359		PANEL XEROX F110, PRINTED
2	123N00236		LCD MODUL/SMS PRODUCTS
3	019N00814		SMS-KEYPAD ASSY. LASERFAX
4	110N01378		CENTRE KEYS SILVER
5	140N62956		PCBa L2-OPU v2
6	TBD	REFER TO REP 2	OPU CABLE

PL 2 Upper Guide Assembly



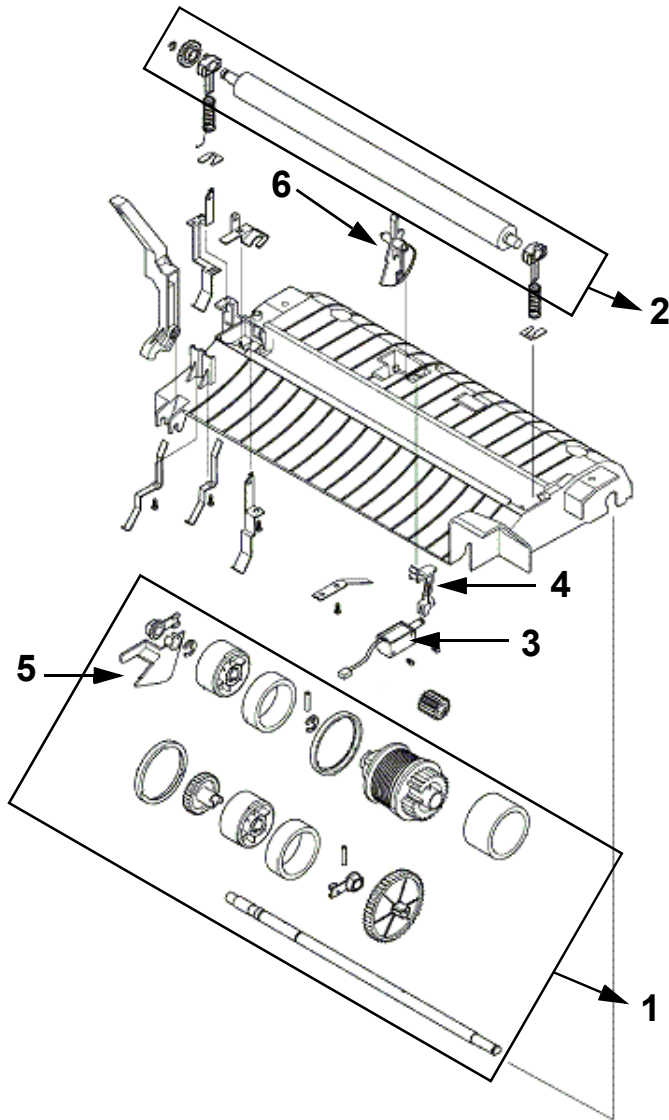
INDEX	PART NO	COMMENT	DESCRIPTION
1,2,5	032N00424	<u>REP 3</u>	RETARD PAD ASSEMBLY
1	019N00815		ADF PAD
2	025N00093		SHEET - READING BAR
3	120N00455		ACTUATOR ADF
4	120N00456		ACTUATOR RP

PL 3 Housing and Scanner



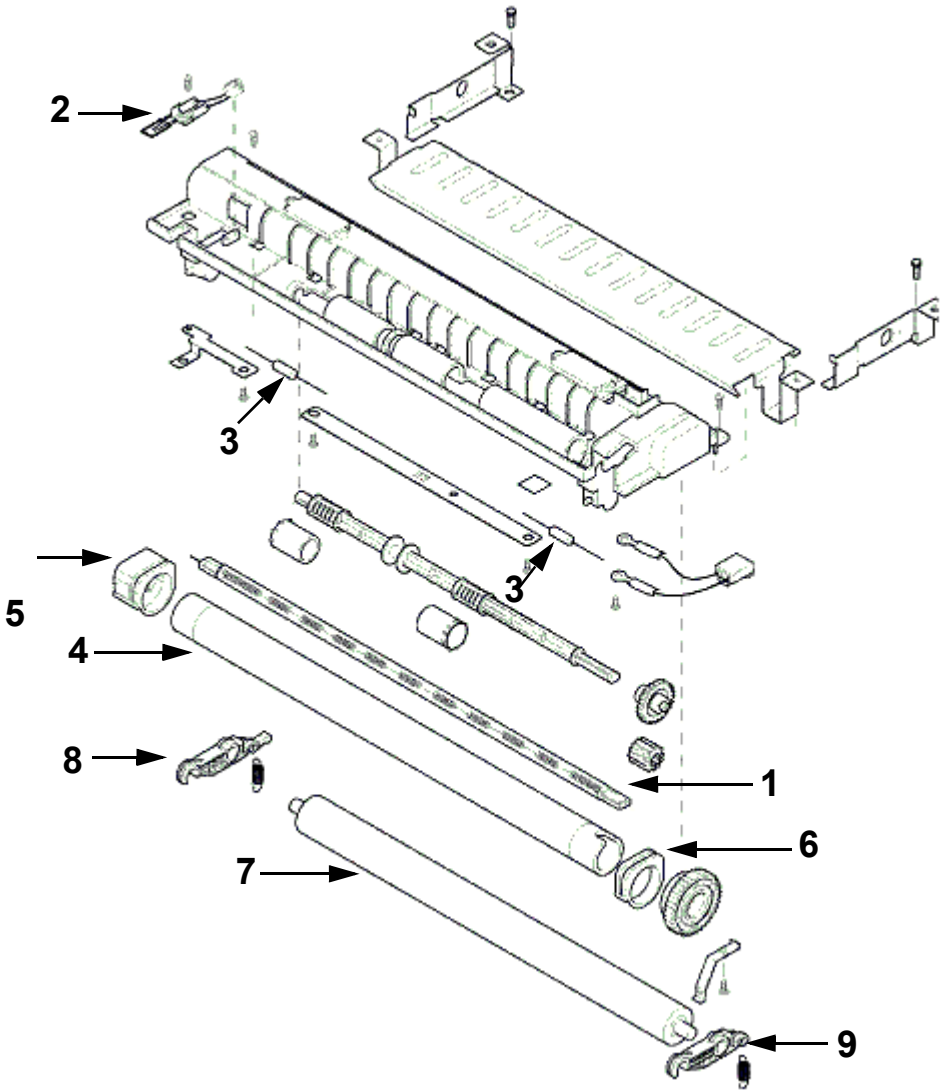
INDEX	PART NO	COMMENT	DESCRIPTION
1,6	002N02361	REP 5	MAIN HOUSING WITH LSU, ASSY
2	062N00255	REP 4	CIS 300DPI
3	019N00817		CIS - HOLDER
4	002N02362		COVER - RIGHT
5a	002N02370		HANDSET COVER PS WHITE (220V)
5b	002N02363		COVER LEFT WITHOUT HANDSETFORM (110V)
6		Part of item 1	LASER SCANNER UNIT
7	062N00256		MIRROR - LSU BV2
8	002N02364		COVER - LSU
9	002N02365		USB COVER
10	130N01374	NOT SHOWN	LOUDSPEAKER 50MM / L100

PL 4 Paper Feeder Assembly



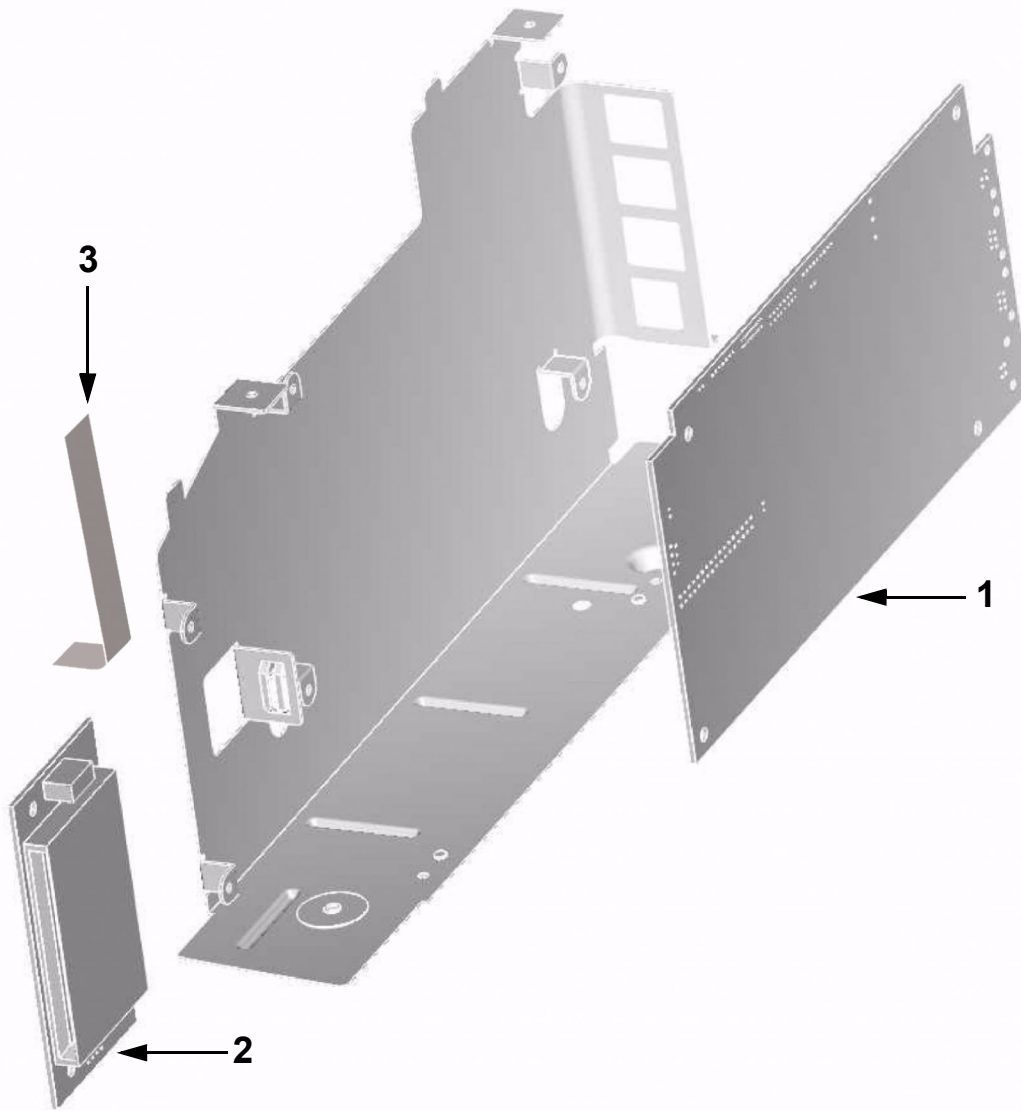
INDEX	PART NO	COMMENT	DESCRIPTION
1-6	130N01370	REP 7	PAPER FEEDER COMPLETE
1	022N02106	REP 7	FEED ROLL ASSY
2	022N02107		TRANSFER ROLL ASSY
3	121N01083		SOLENOID ASSY
4	011N00494		PICKUP HOOK LEVER
5	130N01371		ACTUATOR PAPER SENSOR
6	130N01372		ACTUATOR INPUT SENSOR

PL 5 Fuser Assembly



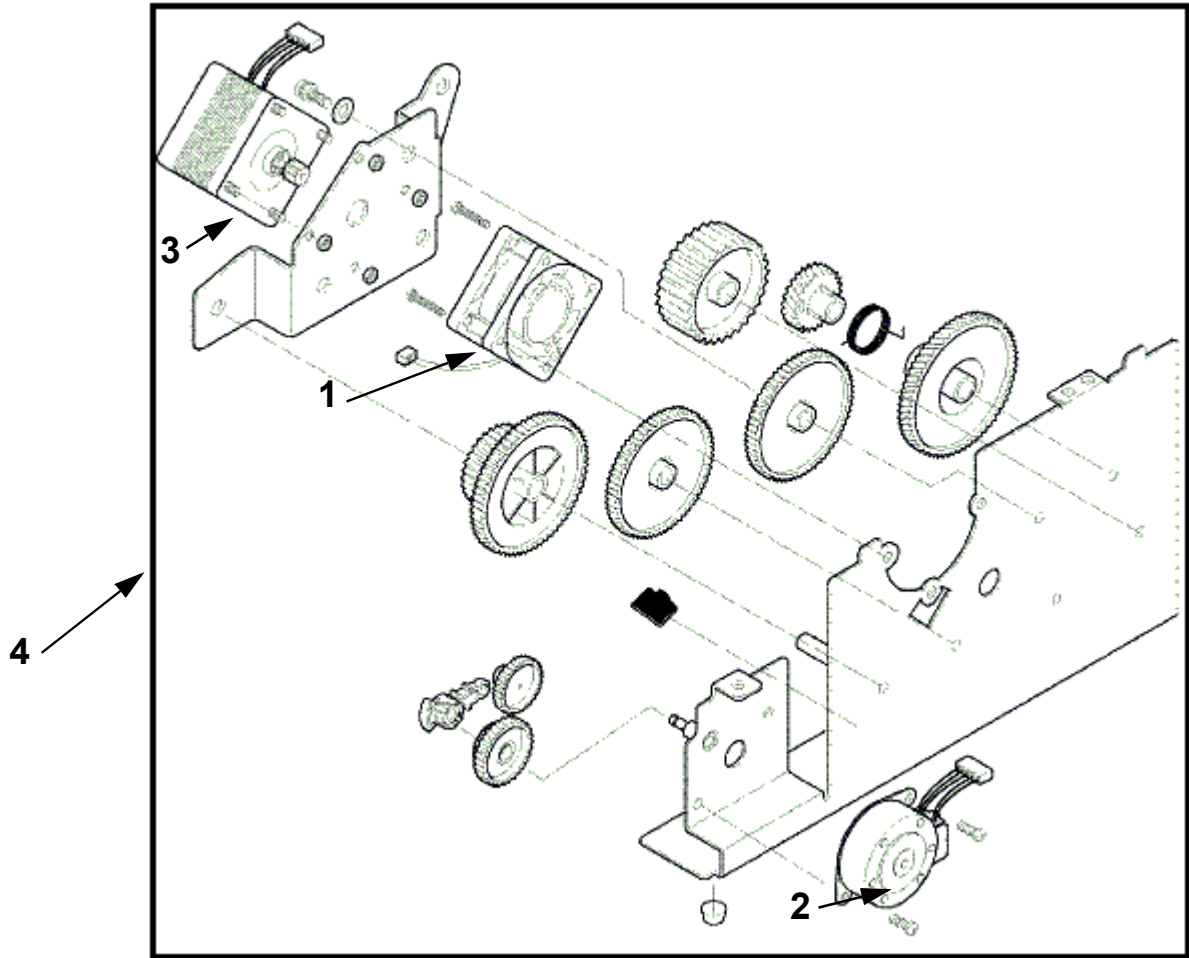
INDEX	PART NO	COMMENT	DESCRIPTION
	126N00235	REP 8	FUSING UNIT COMPLETE (110V)
	126N00236	REP 8	FUSING UNIT COMPLETE (220V)
1	122N00236		HALOGEN LAMP L2 (110V)
-	122N00237		HALOGEN LAMP L2 (220V)
2	130N01373		THERMISTOR L2
3	108N00532		FUSE UCHIHASHI (110V)
-	108N00533		FUSE UCHIHASHI (220V)
4	022N02108		HEAT ROLL
5	022N02109		BUSH HEAT ROLL LH
6	022N02110		BUSH HEAT ROLL RH
7	022N02111		PRESSURE ROLL
8	022N02112		BUSH PRESSURE ROLL LH
9	022N02113		BUSH PRESSURE ROLL RH

PL 6 Main Board Assembly



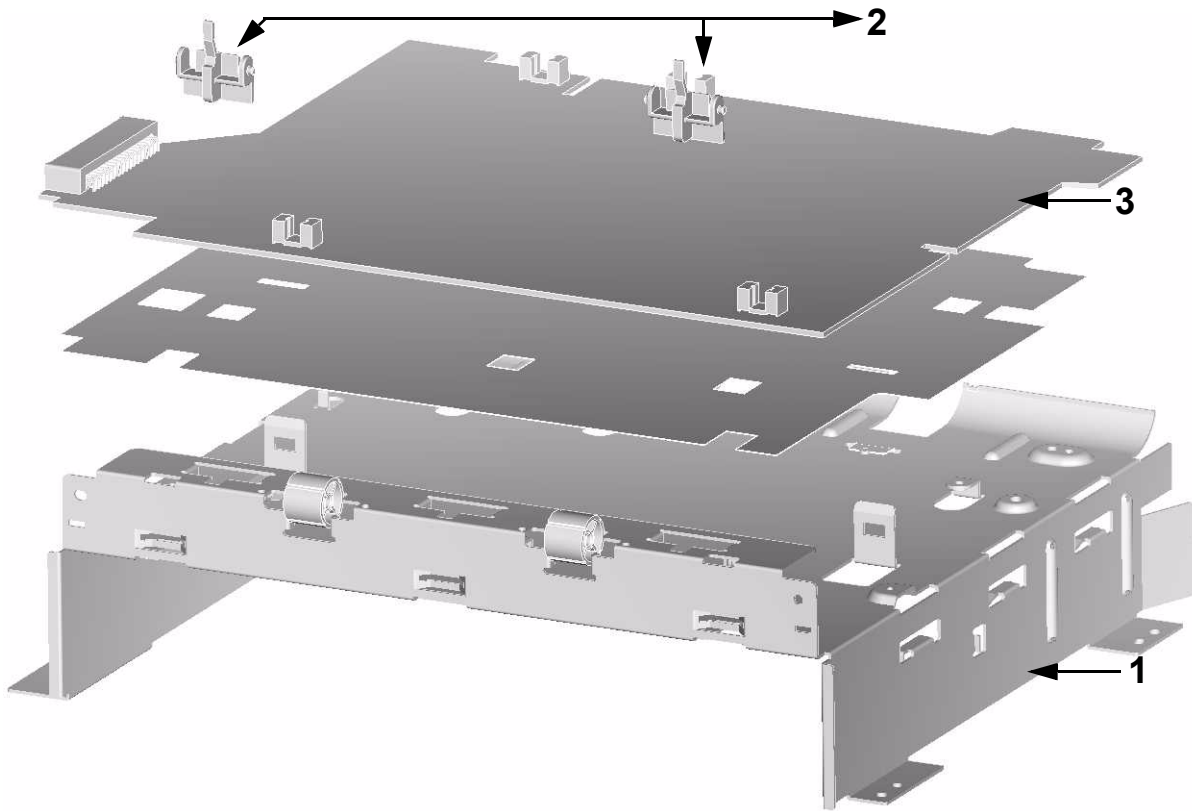
INDEX	PART NO	COMMENT	DESCRIPTION
1	140N62957	REP 6	PCBa L2-MAB-S2-US v4 (110V)
-	140N62963	REP 6	PCBa L2-MAB-S2-EU v4 (220V)
2	140N62958		PCBa L2-SCB v1 (smartcard)
3	117N01671		FFC-CABLE 7P 65MM (SCB-MAB)

PL 7 Drive Module



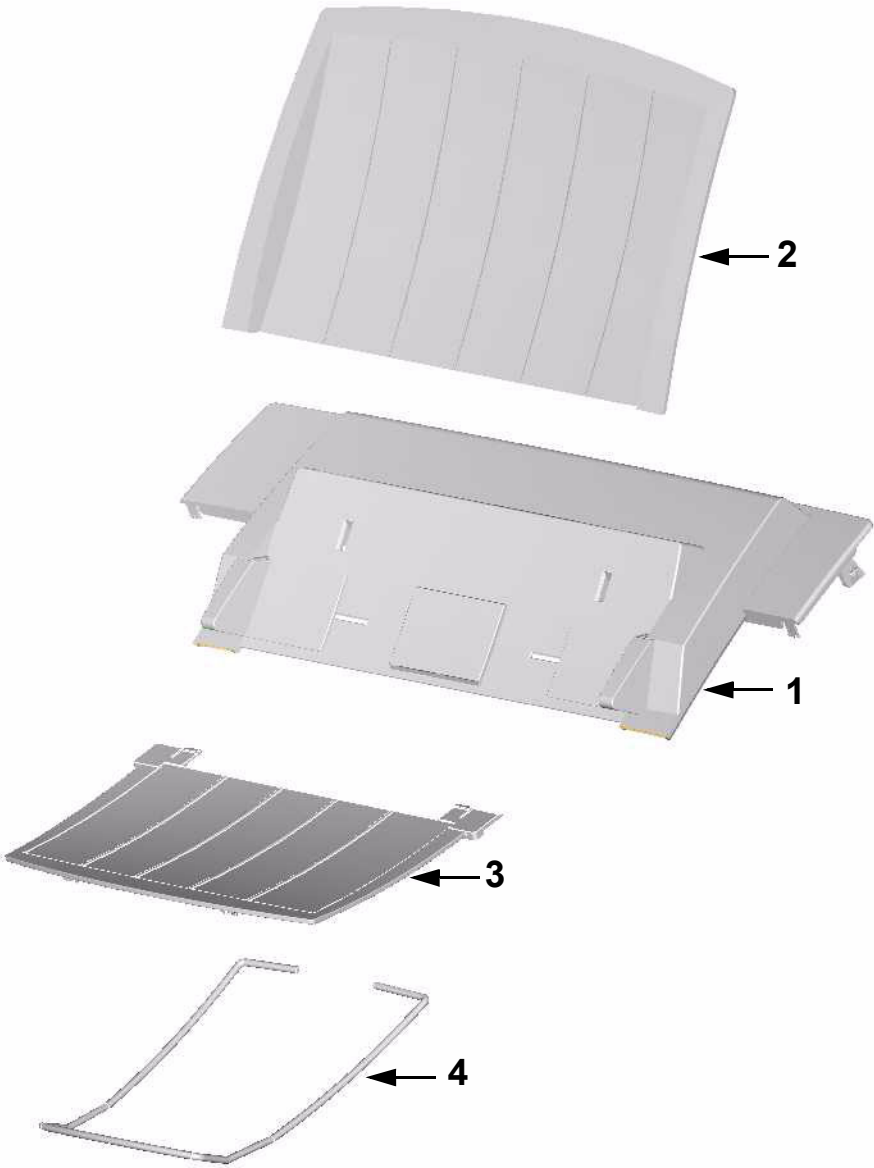
INDEX	PART NO	COMMENT	DESCRIPTION
1	127N07336		FAN
2	127N07337		MOTOR FAX PM35S
3	127N07338		MOTOR RECORD PART 16PU
4	007N01280 TBD	REP 9 REP 9	GEARBOX WITH POWER-CABLE ASSY (110V) GEARBOX WITH POWER-CABLE ASSY (220V)

PL 8 Bracket Assembly



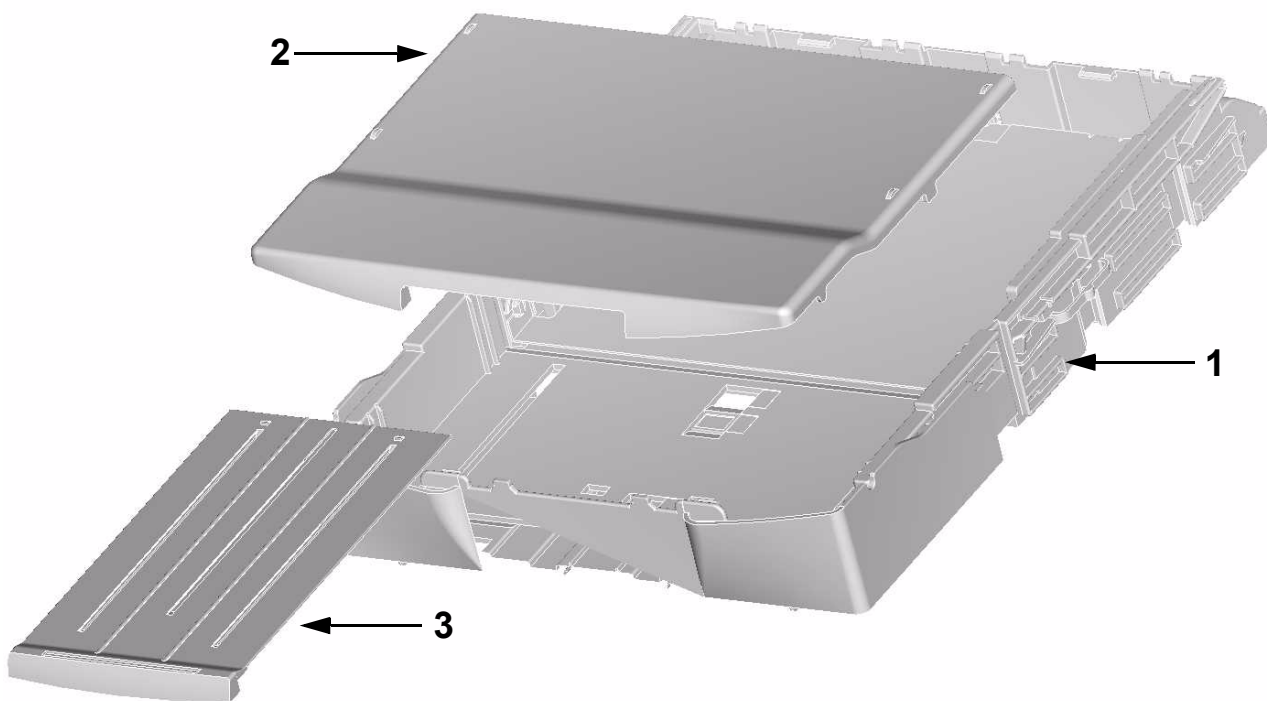
INDEX	PART NO	COMMENT	DESCRIPTION
1	030N00703		BRACKET; ASSY
2	120N00457		ACTUATOR - EXIT
3	140N62960	REP 10	L2 PSU (110V)
-	140N62966	REP 10	L2 PSU (220V)

PL 9 Rear Cover Assembly



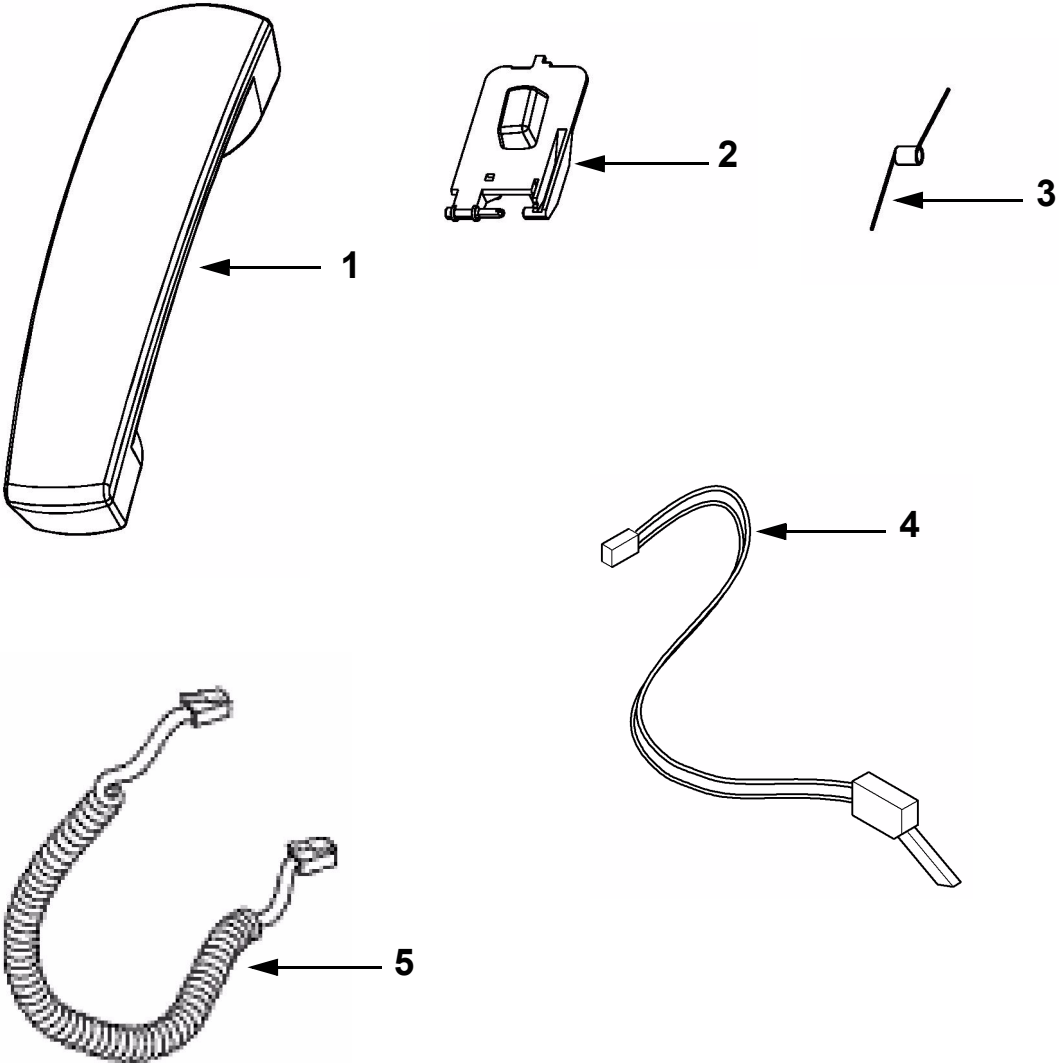
INDEX	PART NO	COMMENT	DESCRIPTION
1	002N02366		REARCOVER ASSY
2	050N00453		DOCUMENT TRAY FOR DOC.-IN
3	050N00454		DOCUMENT TRAY FOR DOC.-OUT
4	050N00458		DOCUMENT EXTENSION FOR DOC.-OUT

PL 10 Paper Cassette Assembly



INDEX	PART NO	COMMENT	DESCRIPTION
1, 2, 3	050N00455		PAPERCASSETTE 250 PAGES
2	050N00456		EXIT PRINT TRAY
3	050N00457		EXIT PRINT TRAY EXTENSION

PL 11 Cradle and Handset (220V Only)



INDEX	PART NO	COMMENT	DESCRIPTION
1	TBD		HANDSET, ASSY
2	011N00495		HOOKSWITCH LEVER
3	009N01494		HOOKSWITCH SPRING
4	117N01670		SWITCH+CABLE 2P 130MM (HOOKSW.-MAB)
5	TBD		HANDSET CABLE

PL 12 Consumables and Tools

INDEX	PART NO	COMMENT	DESCRIPTION
1	043P00081	WARNING Wear protective gloves when using solvents and cleaning agents.	LENS AND MIRROR CLEANER
2	099P03037		DISPOSABLE GLOVES (Qty 100)
3	035E56460		MICRO FIBRE WIPER (Qty 5)
4	600T02133		LINE TEST TOOL
5	13R00605 13R00599		PRINT CARTRIDGE (EUROPE/DMO) PRINT CARTRIDGE (NASG/XCL)

6. General Procedures/Information

GP 1 Features	6-3
GP 2 Basic Functions	6-5
GP 3 New Print Cartridge	6-7
GP 4 Basic Operations	6-10
GP 5A Operation Elements (110V)	6-11
GP 5B Operation Elements (220V)	6-12
GP 6A Control Panel and LCD Display (110V)	6-13
GP 6B Control Panel and LCD Display (220V)	6-14
GP 7 Printable Lists	6-15
GP 8 Service Functions	6-19
GP 9 Maintenance Functions	6-25
GP 10 Test Function	6-27
GP 11 Firmware Upgrading with PC Kit V1.1 (Windows 2000 / XP)	6-38
GP 12 Customisation of the F110 FaxCentre Machine	6-41
GP 13 Hardware Architecture	6-45
GP 14 Power Supply	6-48
GP 15 Installation Requirement	6-49
GP 16 Easy Install	6-50
GP 17, 18 Not Used	6-51
GP 19 Printer Interface	6-52
GP 20 USB Device	6-53
GP 21 LSU	6-54
GP 22 Operation Panel Unit Interface	6-56
GP 23 Motor Control	6-57
GP 24 Sensor / Actuator	6-58
GP 25 Heat Control	6-59
GP 26 Power Supply Interface	6-60
GP 27 ADC for Temperature and High Voltage Control	6-61
GP 28 Fuser Interface	6-63
GP 29 Scanner Interface	6-64
GP 30 LED Management	6-65
GP 31 AFE	6-66
GP 32 Motor Control	6-67
GP 33 SENSOR	6-68
GP 34 MODEM & Line Interface	6-69
GP 35 INTLOOP Signal	6-78
GP 36 EXTLOOP Signal	6-81
GP 37 RING	6-84
GP 38 LIU_HOOK	6-87
GP 39 Pulse Dial	6-89
GP 40 CURMOD	6-91
GP 41 CIDIMP	6-93
GP 42 MUTE	6-94
GP 43 OFF_HOOK	6-95

GP 44 Connection of the Codec to DC2 [6-96](#)
GP 45 Audio [6-97](#)
GP 46 Technical Data [6-98](#)
GP 47 Safety - Test Specification [6-101](#)
GP 48 Acronyms and Abbreviations [6-103](#)

GP 1 Features

List of Features

Fax

- Laser printer on ordinary paper
- Modem: Super G3 33k6 Modem
- Fax memory: 120 pages
- Fax switch: Automatic · Manual · Fax/Answering machine · Fax
- Polling of fax transmissions
- Automatic document feeder for 20 documents
- Broadcast function
- Time stamp

Telephone

- Private branch exchange (PABX) possible
- Telephone book with up to 199 entries
- Ten groups with up to 199 entries
- Additional functions possible (toggling calls, call waiting, etc.)

Paper

- Paper tray for up to 250 sheets
- Paper formats: A4 · letter · legal
- Ordinary typewriter and photocopier paper 60 to 90 gsm (16lb-24lb)

Copier

- 64 grey tones
- Speed: 10 pages per minute
- Automatic document feeder for 20 documents
- Resolution: Fast · Quality · Photo
- Zoom: 25 to 400 percent
- Up to 99 copies from one document

Printing

- Black and white laser printer
- Resolution 600 dpi
- 10 pages per minute

Lists and Reports

- Functions list
- Journal (fax transmissions and telephone calls)
- Entries and groups in the telephone book
- Overview of the machine settings
- List of the pending transmissions
- Transmission report

Scanner

- Resolution: 256 grey tones
- Speed: Six seconds for one A4 (Letter 8.5 x 11 inch) page
- Automatic document feeder for 20 documents

Computer-Connection

- For PC
- Microsoft Windows® 98 SE · 2000 · ME · XP
- USB connection (1.1 as well as 2.0 full speed)
- Installation CD with automatic installation
- Printer Driver
- Twain Scanner Driver
- PaperPort 8.0 SE including OCR
- Acrobat Reader 6.0
- Companion Suite V1.0
- Printing from the computer (ten pages per minute)
- Add and edit telephone book entries

GP 2 Basic Functions

HELP Function

When needed, the FaxCentre F110 can print out lists containing the most important functions and settings of the machine. Press the key **i** on the FaxCentre F110. Select with the Arrows whether you would like to print out the help page 1: functions list or the help page 5: setup. Confirm with **OK**.

1. You can also print out the function list by pressing **MENU/OK**, choose function number 41 and press **OK**.
2. List of settings will be printed out by pressing **MENU/OK**, 44 and **OK**.

- * To return to the previous menu step, by pressing **C** key.
- * Move the cursor on the display with the Arrow keys
- * Delete single numbers and letters with **C** or **ß**.
- * To interrupt an operation in progress and return to the root menu without saving, press **STOP**.

Setting the Country

Use function 11 to select the specific country in which you will be operating the FaxCentre F110. It is essential to select the country because otherwise the FaxCentre F110 will not have the correct settings for the local telephone network.

1. Press **MENU/OK**, 11 and **OK**.
2. Select the country by pressing the arrow keys
3. Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Setting the Language

1. Press **MENU/OK**, 12 and **OK** to set the language on the display.
2. Select the desired language by pressing the arrows.
3. Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Setting the Date and Time

1. To set the date and time on the display, press **MENU/OK**, 13 and **OK**.
2. Enter the date and time in the following manner: 08 08 05 14 00 for August 8th, 2005, 2:00 pm.
3. Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Entering Your Telephone Number and Name

Your number and name, entered using function 14, will appear in the page header of every fax you send and as the sender identification of your SMS messages. In each case, up to 20 different characters are available to you.

1. Press **MENU/OK**, 14 and **OK**.
2. Enter your fax number with the number keys, for example, 00 44 123 45... To enter a plus sign, simultaneously press the blue key and **Q**. You may add a space by pressing the space key. Confirm your entry by pressing **OK**.
3. Enter your name using the letter keyboard. To enter capital letters, press Shift and the desired key simultaneously. The symbols are displayed directly above the letter keys. To enter symbols, press the blue key and the corresponding letter key simultaneously. It is not possible to insert a symbol as the first character of your name.
4. Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Page Header

Your name and number appear in the page header of each fax transmission. If you do not wish to send out your information, you can turn off this function.

1. Press **MENU/OK**, 16 and **OK**.
2. Select TX HEADER with / and confirm with **OK**.
3. With / , select whether or not the page header should appear on every fax transmission.
4. Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

GP 3 New Print Cartridge

Before you can receive documents, make copies, or print, a print cartridge must be inserted into the FaxCentre F110. For this reason, a starter cartridge is supplied with the machine (this cartridge has a capacity of approximately 1,000 pages). The toner level memory for this starter cartridge was set at the factory. The starter cartridge need not be updated with a Plug'n'Print card. For each additional print cartridge that you insert into the FaxCentre F110, you must update the toner level memory with the Plug'n'Print card provided.

Note: *In order to guarantee a good print quality, use only original print cartridges. Other print cartridges can cause damage to the FaxCentre F110. Use of other print cartridges can also void the warranty.*

1. Open the cover by taking hold of **both** document guides and tipping the cover backward.

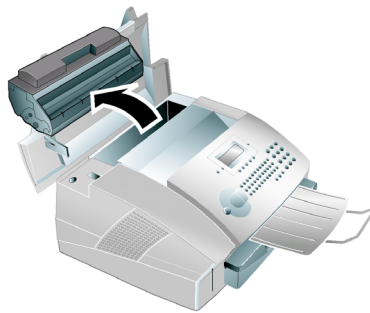


Figure 1

2. Remove the old print cartridge, by gripping it at the recess in the middle and pulling it upward.
3. Take the new print cartridge from the package.
4. Shake the new print cartridge back and forth several times in order to distribute the toner evenly, thereby improving the print quality.

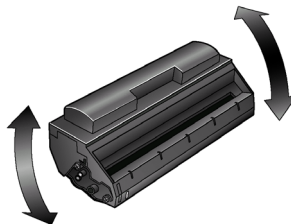


Figure 2

5. Completely pull off the protection strip located on the left side of the cartridge.

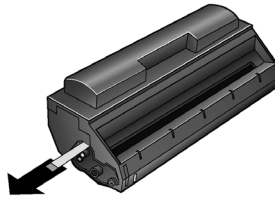


Figure 3

WARNING

Once you have removed the protection strip, do not shake the print cartridge any more. It is possible that toner dust will be released into the air.

6. Place the print cartridge into the FaxCentre F110. The cartridge should snap securely into position.

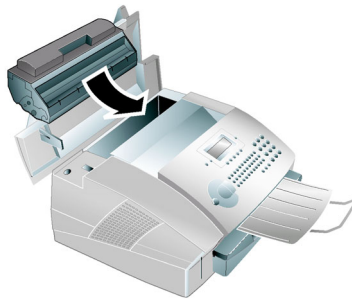


Figure 4

7. Close the cover. Make sure that the cover snaps securely into position on both sides.
8. NEW CARTRIDGE? appears on the display. Confirm with **OK**.
9. Wait until INSERT CARD appears on the display. Push the Plug 'n' Print card of the new print cartridge into the opening on the left side next to the paper tray, with the contacts facing to the left. (Only the starter cartridge can be used without inserting a Plug 'n' Print card).



Figure 5

Note: Should the error message *Cannot read card* appear on the display, you may have inserted the Plug 'n' Print card incorrectly. The contacts must face to the left as you insert the card into the machine

10. It may take a moment to update the cartridge. When the process is completed, the following appears on the display: ACTION COMPLETED / REMOVE CARD
11. Pull the Plug'n'Print card out of the FaxCentre F110. You can interrupt the recharging process at any time by simply pressing **STOP**. However, the toner level memory must be updated for each new print cartridge. If you have pressed the **STOP** key by mistake, you can restart the recharging process as follows:

- 1 Press **MENU/OK**, 62 and **OK**

- 2 Select new black with the arrows, and confirm with **OK**. Select yes with arrows and confirm again. After a short time, the FaxCentre F110 will ask you to insert the Plug'n'Print card.

Note: If the toner level of your cartridge is low, each time you open and close the cover, the following question will appear on the display: *black=new?* If you have not installed a new cartridge, press **STOP**. If you have installed a new cartridge, press **OK** and follow the steps above.

GP 4 Basic Operations

Communication

Page Header

TTI and page numbers are printed on each fax that is transmitted. It is possible to turn off the page header.

Transmit Terminal Identification (TTI)

Identifies the user's fax unit by including the name and fax number that has been programmed into the fax unit on the top of every page. This allows the receiving parties to easily identify the source of all documents being sent to them. FCC regulations also require that transmitted documents identify the sender's name, phone number, transmission date and time.

TSI / CSI

TSI: Identification (Tel. Number) of the transmitting machine

CSI: Identification (Tel. Number) of the receiving machine

Compression Methods

Modified Hoffman: method to reduce the data transferred via the telephone line. All G3 machines offer M.H. – coding.

Modified read: efficient coding system that increases speed by about 15%. M.R. is not available in some G3 machines.

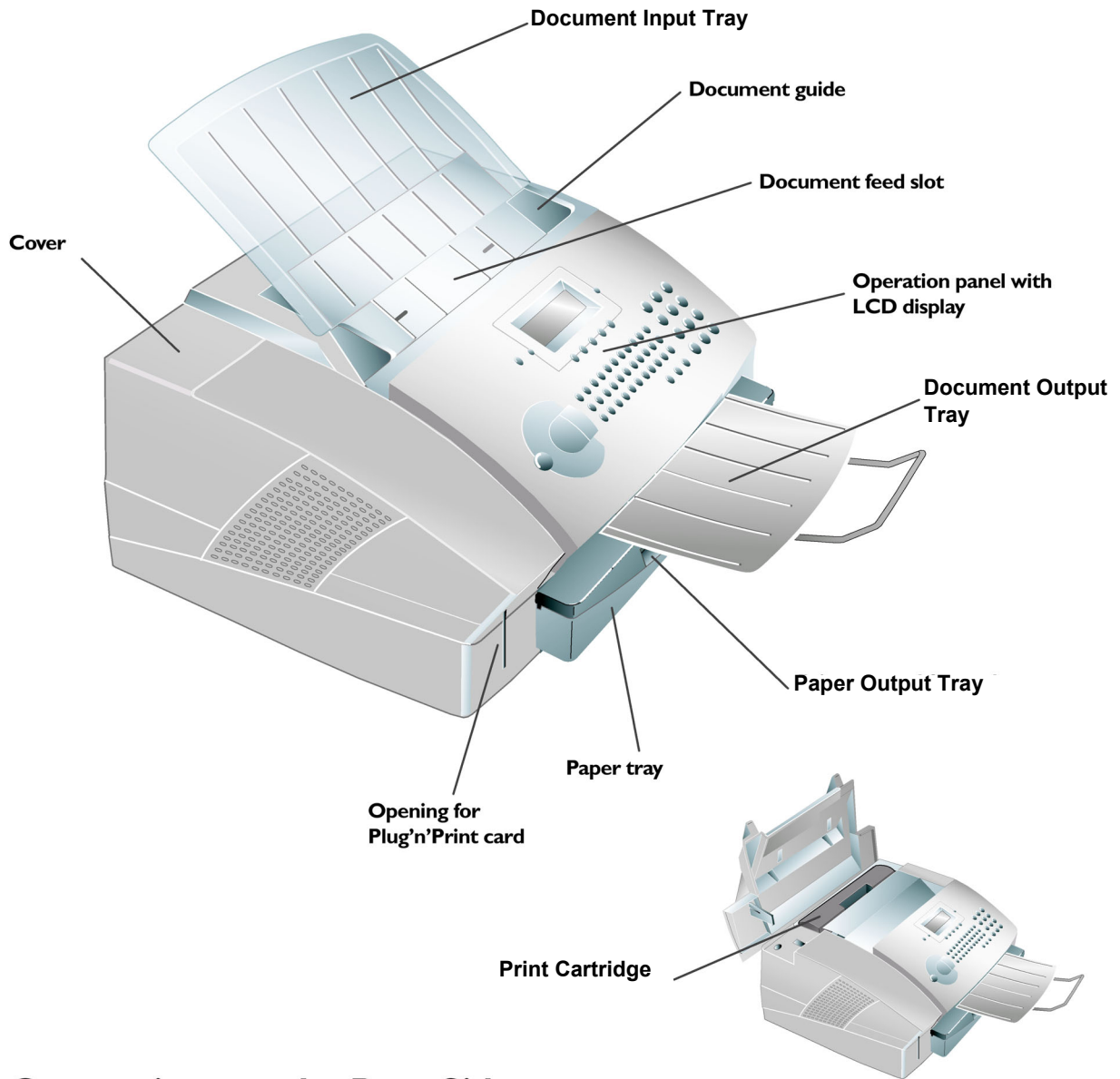
Automatic Background Control

The background control (=intensity difference between the text and the background) is adjusted automatically.

Time Date Stamp

The FaxCentre F110 will automatically record the date and time of every recorded message. If you play back a message, you will see data on display.

GP 5A Operation Elements (110V)



Connections on the Rear Side

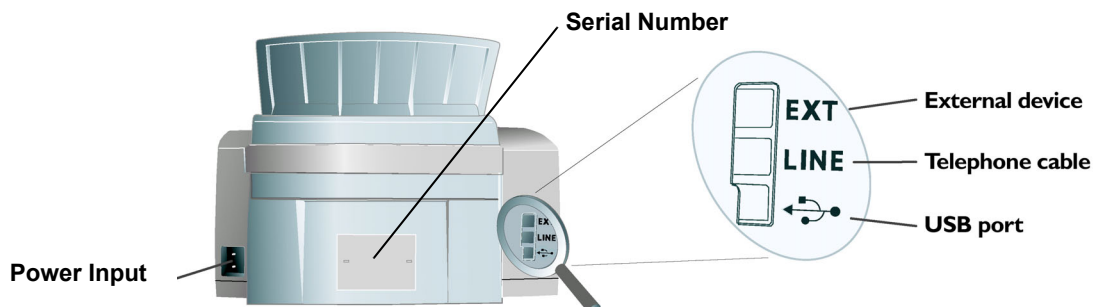
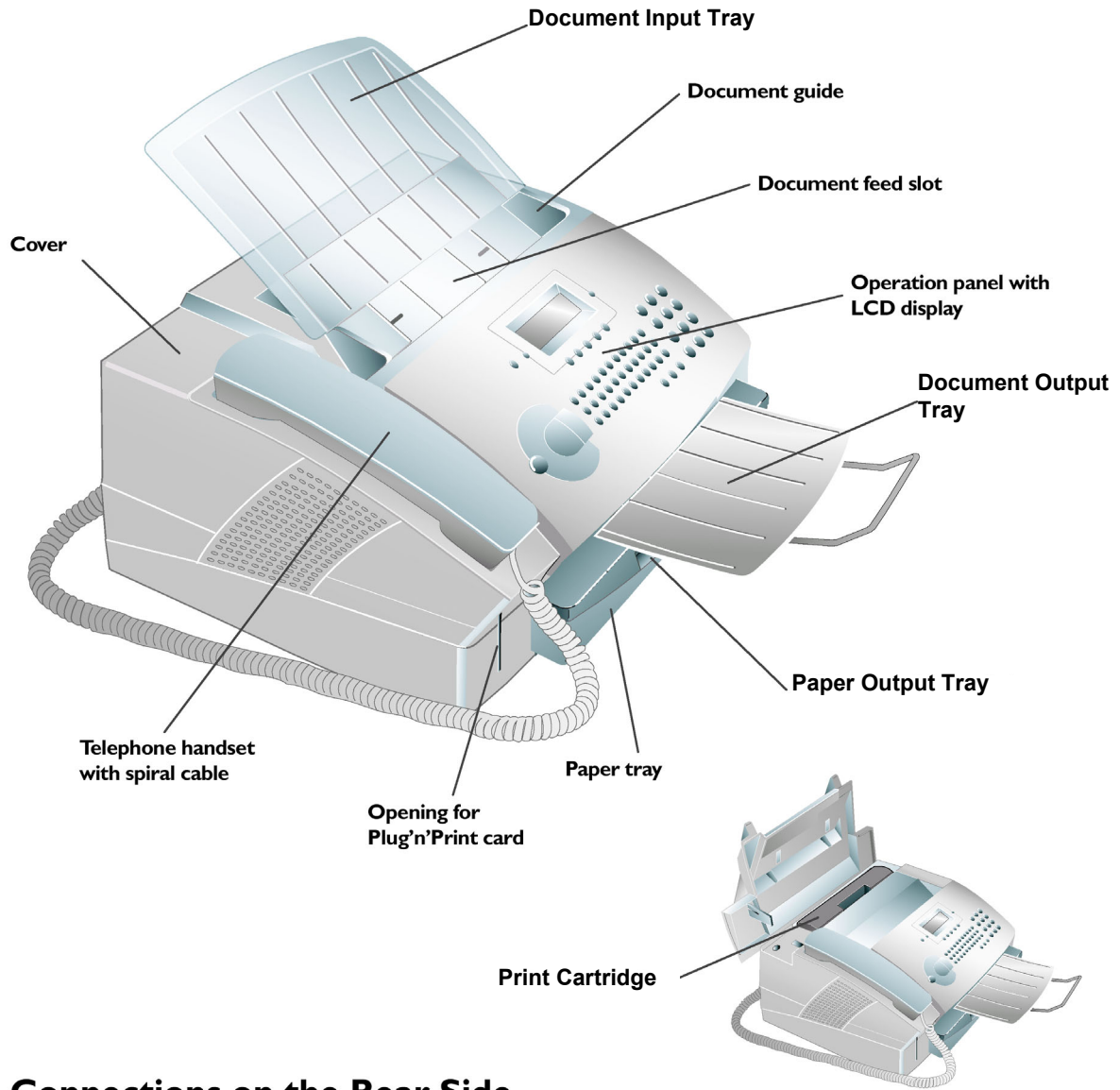


Figure 1

GP 5B Operation Elements (220V)



Connections on the Rear Side

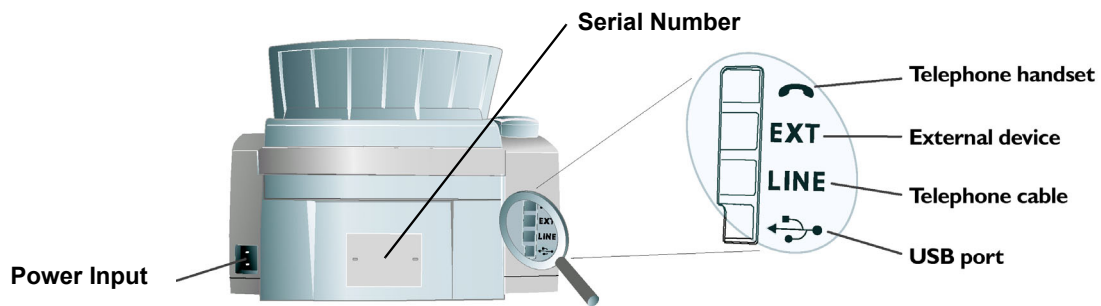
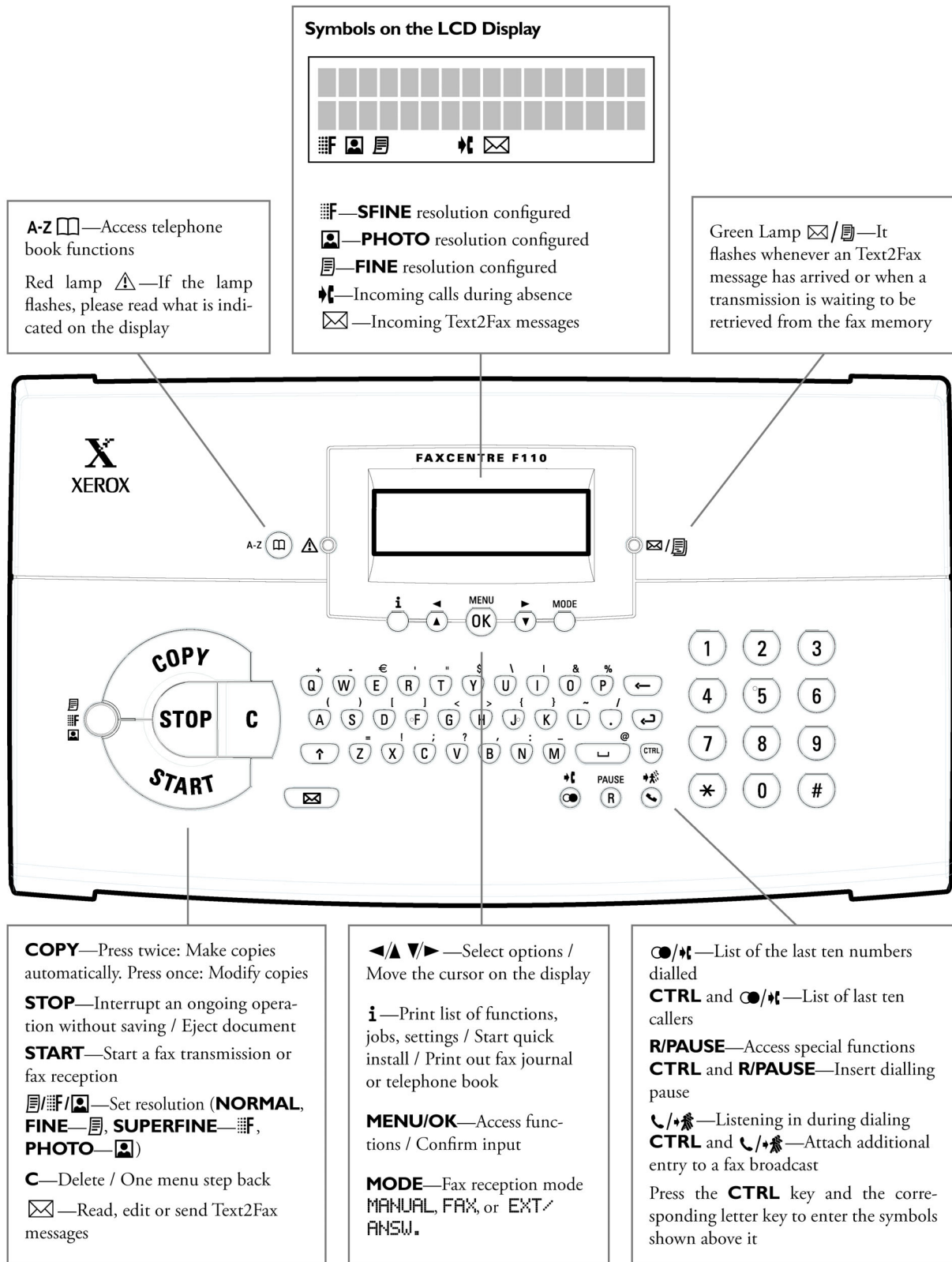


Figure 1

GP 6A Control Panel and LCD Display (110V)



GP 6B Control Panel and LCD Display (220V)

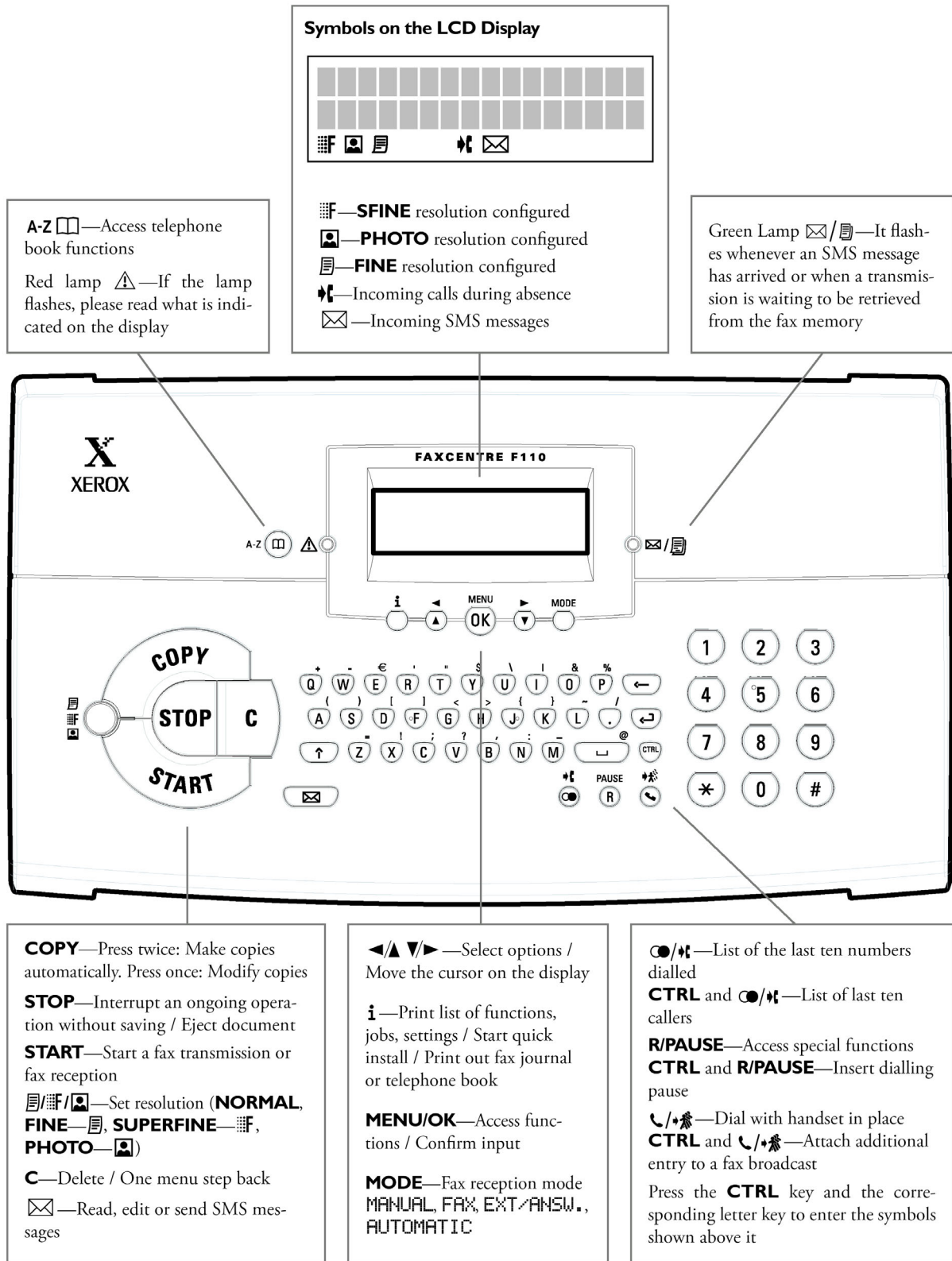


Figure 1

GP 7 Printable Lists

Go to the relevant list:

- Function list
- Parameter List
- List of Logs
- Directory List

Function List

To print the function list press Menu, 41 then OK, the function list is a summary of all user functions includes additional current settings.

Example of the list:

Table 1: Installation

11	COUNTRY	Choice of Country
12	LANGUAGE	Choice of Language
13	DATE/TIME	Date / Time setting
14	NUMBER/NAME	Enter your name and your number
15	LINE TYPE	
16	TECHNICALS	Technical parameter
17	RING COUNT	
18	RINGER VOLUME	

Table 2: FAX

21	TX SPEED	Reduce transmission speed
22	POLLING RX	Polling (receiving) a document
23	POLLING TX	Document to be polled (sending)
24	SEND LATER	Single or Broadcast in a certain time
25	SEND REPORT	Printing type of Send Report
26	TIME STAMP	
27	FAX ANSW.	Received fax printing Authorization
28	RECEPTION	Setting number of fax Copies and sorting

Table 3: Print

41	FUNCTIONS LIST	Function list printing
42	LOGS	Print TX and RX logs
43	DIRECTORY	Print the directories
44	SETUP	User parameters printing
45	COMMANDS	Printing of commands list

Table 4: Commands

51	PERFORM	Perform a command
52	MODIFY	Update of commands
53	CANCEL	Delete a command
54	PRINT	Printing of a document in wait queue
55	PRINT LIST	Printing of the commands list

Table 5: Others

61	LOCK	Activate a lock code to limit access
62	PRINT. CARTR.	Set new cartridge and toner status
63	SAVE/LOAD	Save/load directory on microcard

Keys:

- Redial : Redial the last 10 numbers dialed (see Note)
- Blue key + redial : Caller list
- R/Pause : Special functions (Call waiting, toggling)
- Blue key + R/Pause : Insert dialling pause
- Handset key : Onhook dialling
- Blue key + handset key : Broadcast sending
- I key : Print out function list, setting list

Note: Press redial once and the machine will redial the last number. Press redial twice and the machine will redial the second from last number. Press redial three times for the third from last number etc.

Parameter List

The current settings on your machine can be seen on your list of parameters. Press Menu, 44 and then the OK button to obtain this list.

Example of the list:

SID: Service Number: 1234567 Date: 16-08-05 16:34

Table 1:

11	COUNTRY	Oesterreich
12	LANGUAGE	English
13	DATE / TIME	16-08-2005 16:34

Table 2: Tel. Network

151	NETWORK TYPE	PABX
-----	--------------	------

Table 3: Send Report

25	SEND REPORT	WITH
----	-------------	------

Table 4: Reception

25	NBR OF COPIES	1
28	SORTED PRINT	WITH

Table 5: Cart Capacity

	BLACK	53%
--	-------	-----

List of Logs

A list of all **TRANSMITTED** and **RECEIVED** faxes. If an error occurs during the transmission you will be informed by the error report which is printed out. This list is accessed by pressing Menu, 42 and then the OK button.

Example of the list:

SID: Service Number: 1234567 Date: 16-08-05 16:34

Table 1: Transmission

Date/Time	Subscriber	Mode	Pages	Durat.	Status	Note
12-08 8:19	06763006777	NORMAL	1	0'27"	Correct	
12-08 14:35	06641648901	NORMAL	1	0'17"	Correct	
12-08 14:44	06763006777	NORMAL	1	0'26"	Correct	
12-08 14:49	06763006777	NORMAL	1	0'27"	Correct	

Table 2: Reception

Date/Time	Subscriber	Mode	Pages	Durat.	Status	Note
12-08 17:18			0	0'04"	Code 03	User break
12-08 17:20	+43 1 60101 4875	Normal	1	0'34"	Correct	
12-08 17:40			0	0'06"	Code 03	User break
19-08 13:54			0	0'06"	Code 03	User break

Directory list

This list provides a list of the numbers stored in your machine. This list is accessed by pressing Menu, 43 and then the OK button.

Example of the list:

SID: Service

Number: 1234567

Date: 16-08-05 16:34

Table 1:

Name	Number	Directory
Mom	06641234567	0
Dad	06647654321	1
John Peterson	00431661554567	2
Sandra Douglas	06763006777	3

GP 8 Service Functions

The FaxCentre F110 is equipped with a set of logic blocks referred to as SOS (SOFT Switch) numbered 1 to 30. Each block consists of 8 bits called bit 1 to 8. Each bit can take a value of either 0 or 1. On the display, a block (from bit 1 to 8) is read from right to left. When a configuration is first selected, the blinking cursor is always placed on bit 8 (the bit at the left)

When the display shows the date and time, you can access the configuration bytes by means of the key sequence:

Menu * #

The description of these parameters can be found below. They are modified in the same manner as all others parameters.

Table 1: SOFT-Switch 1: Ringing and Automatic Printing

Bit	8	7	6	5	4	3	2	1
Use	SOS-IMPTRA: Trace printing/ PC download enable	SOS-IMPT30: Automatic Printing of T30 trace after comm. error	SOS-IMPAUTO: Automatic log printing	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes	0: no 1: yes	0: no 1: yes					

Table 2: SOFT-Switch 2: Scanner / Printer Configuration

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	SOS-BEEP: Keyboard beep on/off but not STOP key	Reserved	Reserved
Values						0: beep on 1: no beep		

Table 3: SOFT-Switch 3: Line Configuration

Bit	8	7	6	5	4	3	2	1
Use	SOS-ECHO: Echo cancelling	SOS-EPTV29: Use Echo Protect Tone with V29	Reserved	SOS SEUIL-REC: Reception threshold	SOS-NIVEMI: Transmission level			
Values	0: no 1: yes	0: no 1: yes		0: -43dBm 1: -47dBm	00 = 0dBm 01 = -1dBm 02 = -2dBm ↓ 0E = -14dBm 0F = -15dBm			

Table 4: SOFT-Switch 4: Fax Protocol Configuration

Bit	8	7	6	5	4	3	2	1
Use	SOS-ECM: Restricted ECM	SOS-LGINF: Maximum length of scan, printing, communication	SOS-DISINF: Unlimited DIS length	SOS-RTN: Page accept criterion		SOS-TCF: TCF accept criterion	SOS-DIS-COURT: Restricted DIS size	SOS-MODPRIV: Communicat. In private mode
Values	0: no 1: yes	0: 1 meter 1: 3 meter	0: no 1: yes	0: 10% max 1: 15% max 2: 20% max 3: no check		0: normal 1: special	0: long DIS 1: short DIS	0: no 1: yes

Table 5: SOFT-Switch 5: Loudspeaker Configuration

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	SOS-HP: Line monitoring during fax comm.	Reserved	Reserved	Reserved	Reserved
Values				0: no 1: yes				

Table 6: SOFT-Switch 6: Line Tests

Bit	8	7	6	5	4	3	2	1
Use	SOS-TSTDCOM: Driver test functions	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes							

SOFT-Switch 7, 8: Reserved

Table 7: SOFT-Switch 9: Approval + Communication Applications

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-LIGNE5S: Lines of 5sec. During reception	Reserved	SOS- NOTREMIS : Printing of first page on transmis- sion report	Reserved	Reserved	Reserved	Reserved
Values		0: Length of lines not limited to 5sec./lines 1: Maximum length of a line 5sec.		0: no 1: yes				

Table 8: SOFT-Switch 10: Communications (Locks / Miscellaneous)

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-SON- REA: Access to redialling parame- ters	Reserved	Reserved	Reserved	Reserved	SOS- BTYPNUM: Access to impulse / DTMF dialling parameter	SOS-AFFVIT: Comm. Rate display
Values		0: no access 1: access					0: yes 1: no	0: no (the page number is displayed) 1: yes (the comm.Rate is displayed)

SOFT-Switch 11,12: Reserved**SOFT-Switch 13,14,15,16: Internet Functions (Not Used)****Table 9: SOFT-Switch 17: Communication**

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	SOS-NO-TRT- FCERROR: retry after modem high data detect. Problem	Reserved	Reserved	Reserved	Reserved
Values				0: yes 1: no				

Table 10: SOFT-Switch 18: Coding / Communication Rate

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	SOS-CODCOM: COM negotiated encoding type		SPS-CODMEM: Stored document encoding type	
Values					01: MH encoding 10: MR encoding 11: MMR encod.		00: RL encoding 01: MH encoding 10: MR encoding 11: MMR encod.	

Table 11: SOFT-Switch 19: Miscellaneous Software Function

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS- ONETOUCH: Enable <one touch> functions	SOS- MENUCLAVER: Hide keyboard menus and force QWERTY key- board	SOS- REIMP: Reprint- ing of received docu- ments	SOS- REGULREC: T30 reception control inhib- ited	Reserved	Reserved	Reserved
Values		0: no 1: yes	0: no 1: yes	0: no 1: yes	0: no 1: yes			

SOFT-Switch 20: Reserved

Table 12: SOFT-Switch 21: T4-T6 Decoder / Debug

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS- DETECT OCCUP: Inhibition of engaged tone detect	Reserved	SOS-GAR- CAGE-FLASH: flash memory garbage collec- tion method	Reserved	Reserved	Reserved	SOS- TRAITLIGERR: T4 decoding line copying mode
Values		0: no 1: yes		0: garbage collection when application terminates 1: garbage collection as background task ATTENTION: taken into account only after reboot of CPU				0: for each line with an error 1: only once, then destroy

Table 13: SOFT-Switch 22: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SOS-DUREE-2100 V34: Transmission time of the 2100 modified for V34 reception	Reserved
Values							00: 5sec. 01: 4,5sec. 10: 4sec. 11: 3,5sec.	

Table 14: SOFT-Switch 23: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-SORTSEND: Sorted sending via ADF	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes							

Table 15: SOFT-Switch 24: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-SMSV23: SMS function type	SOS-SMSRECV23: Reception SMS function	Reserved	Reserved	Reserved	SMS-PROTOCOLE: Used protocol for SMS	Reserved	Reserved
Values	0: SMS via V23 1: Text2Fax	0: no 1: yes				0: country dep. 1: opposite		

Table 16: SOFT-Switch 25: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-DBL_ALT: Photocoupler Type for ring detection	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: single alternance 1: double alternance							

Table 17: SOFT-Switch 26: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Activation of Carrier loss in ECM mode for DTS label	Activation of fax modification for DTS label	Menu page counter present / not present	SMS service centre number menus present / not present	Reserved	Reserved	Reserved	Reserved
Values	0: not active 1: active	0: not active 1: active	0: not present 1: present	0: present 1: not present				

Table 18: SOFT-Switch 27: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Chip select restore (ESD problems)	Reserved	Reserved	Reserved	Reserved	Number of busy tones	CLIP time update delta	Time update via CLIP
Values	0: no 1: yes					0:3 busy tones 1:2 busy tones	0: always 1: < 90min.	0: yes 1: no

Table 19: SOFT-Switch 28: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Chip card clock selection	
Values							00: 1 MHz 01: 1,277 MHz 10: 1,7 MHz 11: unused (1MHz)	

Table 20: SOFT-Switch 29: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	User function paper format	User function contrast
Values							0: disabled 1: enable	0: disabled 1: enable

SOFT-Switch 30: Reserved

GP 9 Maintenance Functions

In order to use the maintenance functions, the SOS_IMPTRA switch (SOS1-Bit8) has to be set to 1. Refer to [GP 8](#).

Go to:

- [Table 1](#) Initialization Functions
- [Table 2](#) Other Functions

Table 1: Initialization Functions

ITEM	ACTION
Menu # 0	Default user parameters configuration (factory status) ‡ Restart with Easy Install, GP 16 . Directory is preserved Pages counters are preserved Consumables counters are preserved Communication log is preserved
Menu # 1	Clear directory
Menu # 2	Clear communication log
Menu # 3	Clear pages counters (If page counter SOS26 / 6 is switched ON)
Menu # 4	Clear consumables counters (Attention: after clear, Chip Card is needed)
Menu # 5	Complete "hardware" reset : functions 0 + 1 + 2 + 3 + 8 ‡ Restart with Easy Install GP 16 . This command sequence is taken into account only if printer cover is open
Menu # 6	Same as Menu # 7 but without Easy Install GP 16 .
Menu # 7	Functions 0 + 2 + 8 ‡ Restart with Easy Install GP 16 . Directory is preserved Pages counters are preserved Consumables counters are preserved
Menu # 8	Clear document memory (received documents, documents to be sent) Clear Sending command list Clear Printing command list Directory is preserved Pages counters are preserved Consumables counters are preserved Communication log is preserved User parameters are preserved
Menu # 9	Same as Menu # 7

Table 2: Other Functions

ITEM	ACTION
*	Internal system status printing (identification + T30 protocol traces + modem traces)
Menu * 1	Parameters printing (user parameters + technical parameters)
Menu * 2	Clear communication logs
Menu * 3	Not used
Menu * 4	Wait for firmware download via USB
Menu * 5	Save users parameters and directory on I2C chip card
Menu * 6	Not used
Menu * 7	Not used
Menu * 8	Not used
Menu * 9	Restore users parameters and directory from I2C chip card
Menu * E Menu * e	Display internal firmware status (applications and drivers)
Menu * M Menu * m	Display modem chip type
Menu * R Menu * r	Software reset
Menu * V Menu * v	Display firmware version and checksum on LCD
Menu * W Menu * w	White Reference
Menu * Y Menu * y	- If consumer counter value is higher than near end (6%), set counter value to 6%. - If consumer counter value is lower than near end (6%), set counter value to 1%

GP 10 Test Function

The test mode is a software interface that listen for test commands received on Fax Keypad. The machine interprets these codes and initialize the corresponding action.

Go to :

- Enter Test Mode
- Display
- Keys used on Fax Keypad in Test Mode
- Abort Test
- Description of Test for Service

Enter Test Mode

First you have to set the FaxCentre F110 into maintenance mode.
(SOS1-Bit8 has to be set to one)

To enter in the Test Mode press the Key combination below on the keypad:

Menu # * 0

You will enter into the Test Mode and the following messages will appear on the displays:

				T	E	S	T	M	O	D	E			

ATTENTION: After you have entered in the Test Mode the first Test you have to carry out, is the Test 100 Param. 00 (INIT Test Mode).

Display

The content of the display has following format:

Y	Y	Y		T	E	S	T	M	O	D	E			X	X

YYY ... Shows Running Test or last test

XX ... Shows Result of last test

Keys used on Fax Keypad in Test Mode

- **START** Test Ok or Test start
- **STOP** Test failed or Test abort
- **KEY 0-9, * ,#** Input Test number

Abort Test

Use the STOP key to abort all tests.

General Description of a Test-Step

All test flows are described in the form outlined. The field *Step* is for orientation in case of Jumps, *Status* is for decisions, *Operator* describes the actions of the Operator, *UUT* describes the actions for the FaxCentre F110, *Display* shows the Text during a Test, and *Remarks* is for added Information.

Table 1:

Step	Status	Operator	UUT	Display	Remarks
1	OK		Wait	XXXXXXXXXX XXXXXXXXXX	
2	NOK	Do			Info
3	Repeat		Do		
4					

A short Test-description and Pass-criteria is also included in a Test-step.

Short Overview of Tests for Service

Table 2:

Test number	Test name	Parameter	Remark
100	INIT Test mode	YES	Save Consumer counter
103	Cradle	No	
108	Speaker	No	
109	Keys	No	
110	LCD/Icons	No	
111	LED	No	
112	Sensors	No	
120	Fan Test	No	
136	End Test mode	No	End test, restore Consumer counter, delete doc's, start USERMODE

Description of Test for Service

INIT Testmode (Test-Code 100)

This function is for initializing the TEST MODE if the FaxCentre F110 was in USERMODE. Input Code **100** and then the parameter **00**.

Flow

Table 1:

Step	Status	Operator	UUT	Display	Remarks
1			Is in TEST MODE	TESTMODE	
2		Enter Command			Keypad: 100
3			Receive Command, clears all buffers, initialized all relevant drivers and variables, set all test to FF (means tests not done)	ENTER TEST 100	
4	OK		Set Resultbyte to 00	100 TESTMODE 00	
5	NOK		Set Resultbyte to XX	100 TESTMODE XX	XX...Errorcode

Pass:

No errors occurred during Init Testmode

Resultbyte:

00 ... Test done and OK

FF ... Test not done

80 ... Operator pressed <STOP>

XX ... Error code

Remark:

Initialize Toner counter to 20% for making printing tests.

Speaker (Test-Code 108)

To test the right connection of speaker or buzzer, the UUT sends a tone. This tone works with the highest volume.

Flow:

Table 1:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and waits for command	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter command			Keypad: 108
3			UUT waits for <START>	SPK TST	
4		Press <START>	UUT plays a tone		
5		Check the tone			
6	OK	Press <START>	Set Resultbyte to 00	108 TESTMODE XX	XX = 00 and no anomaly occurred
7	NOK	Press <STOP>	Set Resultbyte to XX	108 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

The sounds are clear to hear and the operator pressed <START>.

Resultbyte:

00 ... Test done and OK

FF ...Test not done

80 ... Operator pressed <STOP>

Keys (Test-Code 109)

The Technician presses the buttons in the order shown under the following Key Sequence. The display will show the next key to be pressed and automatically steps to the next one as each one is pressed. It ignores all keys except the one requested. According to the result the technician presses the standard buttons for OK/NOK.

Flow:**Table 1:**

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad: 109
3			UUT shows the Key for checking and wait for pressing	OPU KEY: xxx	xxx... next Key to be pressed
4		Press shown Key	Shows and wait for the next key - Go to Step 3 or next step if a error occurred or the last key was shown		
5		Press <START>	Set Resultbyte to XX	109 TESTMODE XX	XX = 00 and no anomaly occurred XX <> 00 or anomaly occurred

Pass:

All Keys possible to press, no anomalies occurred

Resultbytes:

00 ... Test ok

FF ... Test not done

All other bit combinations means error (anomaly occurred).

Key Sequence:

<A-Z>, <i>, <<->, <OK>, <->>, <Fax Mode>

<q>, <w>, <e>, <r>, <t>, <y>, <u>, <i>, <o>, <p>, <←>
<a>, <s>, <d>, <f>, <g>, <h>, <j>, <k>, <l>, <. >, <Enter>
SHIFT+<Z>, <x>, <c>, <v>, , <n>, <m>, < >, CTRL+<@>

<SMS>, <Redial>, <R>, <Dial>

<1>, <2>, <3>, <4>, <5>, <6>, <7>, <8>, <9>, <*>, <0>, <#>

<Res.>, <Copy>, <Clear>, <Stop>, <Start>

LCD / Icons (Test-Code 110)

The assessment of the LCD is visually made by the Operator. According to the assessment the Technician presses the standard buttons after every test step for good/bad. The input is possible only after a time of 0.5s. The cursor is turned off at all tests.

Black Dots

I.e. on all readable characters it is written to 0 xFF all points are displayed with the exception of the icons.

Blank display

I.e. on all readable characters it is written to 0 x20 all points are turned off.

CG RAM/icons

The LCD is represented a sign with a matrix of 5 columns and 7 lines. 8 signs can be generated in the CG RAM.

Describing CG RAM

The signs must be generated in the CG RAM first:

- 1st sign (1): only the 5 points of the undermost line (7th lines) are displayed,
- 2nd sign (2): only the points of the 6th line are displayed,
- 3rd sign (3): only the points of the 5th line are displayed,
- 4th sign (4): only the points of the 4th line are displayed,
- 5th sign (5): only the points of the 3rd line are displayed,
- 6th sign (6): only the points of the 2nd line are displayed,
- 7th sign (7): only the points of the 1st line are displayed,
- 8th sign (8): only the points of the 7th line are displayed.

Distributing CG RAM

The signs become the distributed CG RAM in the following order at the display:

- The line 1 LCD: Signs 1, 2, 3, 4, 5 6 7 7 7 7 6 5 4 3 2 1,
- Line 2: 7, 6, 5, 4, 3, 2, 1, 8, 1, 8, 2, 3, 4, 5, 6, 7.

Icons

All icons with the exception of the 5th icon (filling level advertisement print cartridge) are displayed. For the time being only the frame is represented at the 6th icon (ink point marking film advertisement) (0 x5F). A point of the icon is then represented at the 6th icon in addition to the frame. The waiting time between every change is 0.3 s. From this the cycle gives up for the 6th icon: 0 x5F, 0 x2E, 0 x79, 0 x42.

Sign

(0 x48) are written to, X, on all readable characters.

Controller check

(0 x8A) are written to, o, on all readable characters.

Flow:**Table 1:**

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad: 110
3			Wait for <START>	LCD TST	
4		Press <START>			
5			Show Black Dots and wait for input		
6	OK	Press <START>			
7	NOK	Press <STOP>			
8			Show blank display and wait for input		
9	OK	Press <START>			
10	NOK	Press <STOP>			
11			Write Chars in CG-RAM		
12			Show chars from CG-RAM and wait for input		
13	OK	Press <START>			
14	NOK	Press <STOP>			
15			Show icons and wait for input		
16	OK	Press <START>			
17	NOK	Press <STOP>			
18			Show all X and wait for input	XXXXXXXXXXXXX	
19	OK	Press <START>			
21	NOK	Press <STOP>			
22			Show all <u>o</u> and wait for input	oooooooooooooooo o	
23	OK	Press <START>		110 TESTMODE XX	XX = 00 and no anomaly occurred
24	NOK	Press <STOP>		110 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

All Tests ok, no anomaly occurred.

Resultbytes:

Test ... ok

FF ... Test not done

All other bit combinations means error (anomaly occurred).

LED (Test-Code 111)

The LED's are switched on and off in cycles of 0,5sec.

The assessment of the LED is visually made by the Technician. According to the assessment the Technician presses the standard buttons for OK/NOK. The input is possible only after a time of 0.5 sec.

Flow:

Table 1:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad: 111
3			Set/clear LED after each other	LED TEST	
4	OK	Press <START>	Set Resultbyte to 00	111 TESTMODE XX	XX = 00 and no anomaly occurred
5	NOK	Press <STOP>	Set Resultbyte to XX	111 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

All Tests ok, no anomaly occurred.

Resultbytes:

00 ... Test ok

FF ... Test not done

80 ... Operator pressed <STOP>

Sensors (Test-Code 112)

Checks the Cover Sensor and the Paper-Cassette sensor.

Flow:**Table 1:**

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMOD XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad: 112
3				SEN TST	
4			Checks Paper Cassette sensor	REMOVE PAP CASS	
		Remove Paper Cassette		INSERT PAP CASS	
5		Insert Paper Cassette	Checks Paper Cassette sensor	OPEN PRT COVER	
6		Open Printer Cover	Checks Cover sensor	CLOSE PRT COVER	
7		Close Printer Cover	Checks Cover sensor	WAIT PRT READY	
9	OK		Set Resultbyte to 00	112 TESTMODE XX	XX = 00 and no anomaly occurred
10	NOK		Set Resultbyte to XX	112 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:**Resultbytes:**

00 ... Test ok

FF ... Test not done

All other bit combinations means error (anomaly occurred).

Fan (Test-Code 120)

Checks the function of the fan

Flow:

Table 1:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad: 120
4		Open and close printer cover	Switch fan on and wait for input	FAN TST	
5		Check function of fan by hand			.
7	OK	Press <START>	Set Resultbyte to 00	120 TESTMODE 00	XX = 00 and no anomaly occurred
8	NOK	Press <STOP>	Set Resultbyte to XX	120 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

All Tests ok, no anomaly occurred

Resultbytes:

00 Test ok
 FF Test not done
 80 ... Operator pressed <STOP>

EXIT Testmode (Test-Code 136)

This function exit's the TEST MODE if the FaxCentre F110 is in TEST MODE. After exit the Fax-Centre F110 is in USERMODE.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in TESTMODE	YYY TESTMODE XX	YYY...last Testcode XX...Errorcode or 00
2		Enter Command			Keypad_ 136
3			Receive Command, clears all buffers, initialized all relevant drivers and variables for Usermode	END TEST	
4			Restart of machine in Usermode		

Pass:

No errors occurred during Exit Testmode.

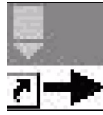
All variables set for User.

No garbage in Memory.

GP 11 Firmware Upgrading with PC Kit V1.1 (Windows 2000 / XP)

To launch the utility:

- Command line : TelUSB2 [Full path of the binary file to upload]



- Double click on the TelUSB2.exe icon
- Double click on the binary file to upload (.bin files need to previously be associated with TelUSB2.exe in Windows Explorer).

TelUSB2 always gives the current state of the device. The utility is registered to the system to be notified when the device is plugged or unplugged or when the mode of the device changes. You do not need to restart the utility after plugging or after switching mode.

States:

- No USB MFL/C5 device detected
Device is not switched on or USB cable is not plugged in.
- MFL/C5 in standard mode. Switch to upload mode.
Device is in normal mode. You need to switch for upload mode before proceed.
- MFL/C5 ready for upload.
Device is ready to proceed.

If TelUSB2 is launched by specifying a file name as command line parameter or by double clicking on a binary file, the utility will automatically try to upload the file. Then, if the file is successfully uploaded, the utility will be automatically closed. If upload failed (device not plugged or not ready) you can retry by clicking the upload button.

To select a binary file to be uploaded:

- You can specify its full path in command line parameter (automatic upload mode).
- You can double-click on a binary file (.bin file needs to be previously associated with TelUSB2.exe in Windows Explorer) (automatic upload mode).
- You can drag and drop a file from the Explorer to the TelUSB2 utility.
- You can use the "Browse" button.
- You can directly write the full path of the file in the edit field.

10.3 To start upload:

1. Copy the Software for Firmware update (Teleloader) on your PC to the local drive.
2. Activate the service function as follow, press on your machine Menu * #.

Display show:



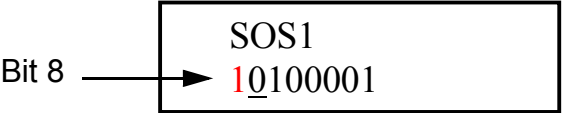
```
1> SOS1
2  SOS2
```

3. Confirm with OK and the display show:



```
1> SOS1
2  SOS2
```

4. Press the key 1 to change the Bit 8 from 0 to 1, to activate the service function.



```
SOS1
10100001
```

5. Confirm with OK and then press STOP to exit.
 6. Press MENU * 4 to activate the TELELOADING function.
- Display show:



```
TELELOADING
IN PROGRESS
```

7. Start the program TelUSB2.exe for example with double click on the Teleloader icon. 

8. Following windows can appear on the PC screen (see Figure 1 and Figure 2).

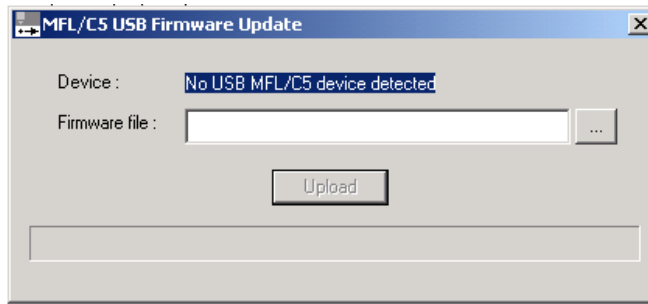


Figure 1

No “*USB MFL/C5 device detected*”, means device not connected to PC or connected but without power or.

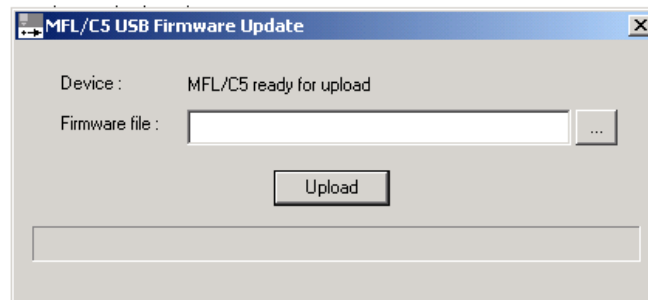


Figure 2

“*MFL/C5 ready for upload*” means the device is ready for firmware upgrade


9. Press the Browse Button  to select the location of the Firmware Binary file
10. Press the Upload Button and the upload will start.



Figure 3

You will get the message above in case of a successfully upload (see figure 3). After a while the device will continue with a reboot and starts with the easy install procedure, [GP 16](#).

11. Go through the easy install procedure, [GP 16](#), to finish the update process.
12. Make a “ White Reference (Menu * W) “ adjustment.

GP 12 Customization of the F110 FaxCentre Machine

Introduction

This chapter describes the procedure of setting the customization on a machine. It provides information about working with customizations and further information about them. All the following operations are done in an active Shell/Prompt like the MS-DOS-Prompt which is used under Windows 98. The commands have to be typed and executed in the *Commflag* directory to work properly. The customization must be also done if you swap a mainboard with a new one in case of a repair.

Commflag

For uploading the customization to the machine, the software *Commflag* is needed.

Communicating with the Machine

The communication with the machine is done via an USB cable (as usual). The difference is the used program *Commflag*.

To make the machine ready for the process, it has to be entered in the test mode. Activating the Bit switch SOS1 Bit 8 does this. To enter in the test mode press the key combination **Menu # * 0**. To prevent a toner counter reset, Test Code 100 with Parameter 00 must be inserted before uploading a new customization file. Now the machine is ready for communication.

- Press <OK>, <*>, <#> to enter the SOS menu
 - Select SOS1
 - Change the bit on the left to 1: 1xxxxxx
 - Press <OK>, then <C> to come back to the standby display.
 - Press <OK>, <#>, <*>, <0> to enter test mode.
 - Start the "Command_prompt", a DOS window should appear.

Reading the customization of a Machine

For reading the customization use the following command:

```
commfl #10112
```

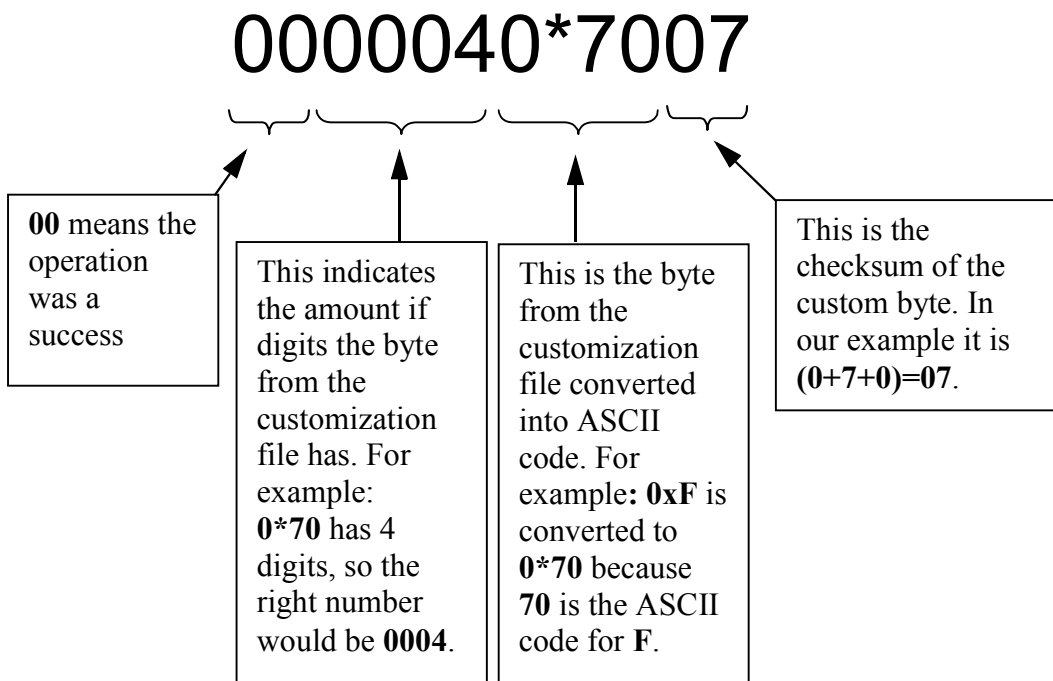


This command means reading

Then the output should be like this:

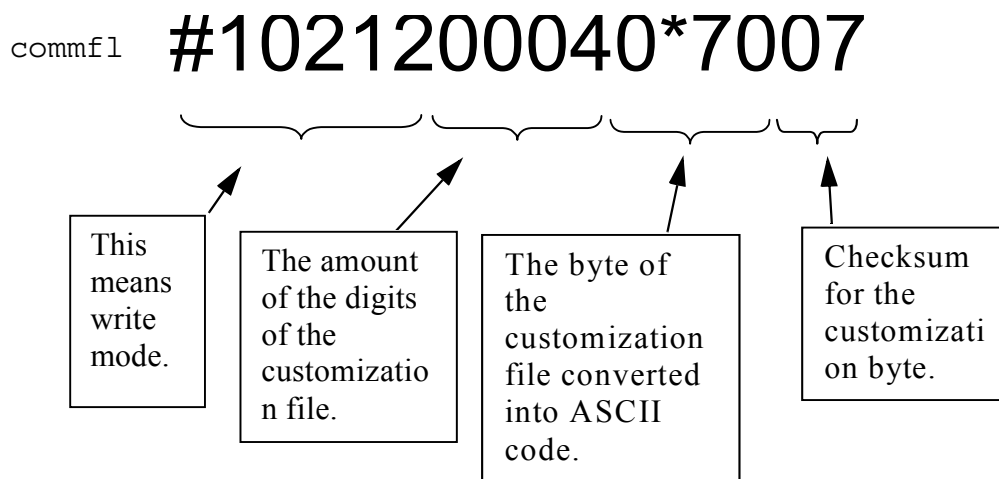
```
Sending #10112 ...
#10112 sent.
Reading ...
Returned: 0000040*7007
```

The return value is interpreted in the following sequence:



Uploading the customization to a Machine

The upload is done with *Commflag* too. The command is very similar to reading:



Then there will be an output like this:

```
#1021200040*7007 ...
#1021200040*7007 sent.
End of mission
Reading ...
Returned: 00 - (00 Means the operation was successful)
```

Table 1 shows all the different customizations that currently exist. The most interesting values are there the ASCII code (for the value to be transmitted) and the shortcut (for the automatic upload program).

Table 1: Customization sets

File	Hex code	ASCII code	Shortcut	Calculated code
L2_Xerox_d.bin	0xC	0*67	xed	00040*6713
L2_Xerox_e.bin	0xE	0*69	xee	00040*6915
L2_Xerox_f.bin	0xF	0*70	xef	00040*7007

- Type:
- "commflag upload xed" to set the machine to Xerox Europe Wave1 (UK, FR, DE, SP, NL, IT)
- or
- "commflag upload xee" to set the machine to Xerox Europe Wave2 (East Europe, BE, PT)+
- or
- "commflag upload xef" to set the machine to Xerox USA

Leaving the test mode

To exit the test mode, enter 136 on the machine. The machine will reboot and prompt with the country selection.

Commflag Batch File

There exists an addition to *Commflag* that automates parts of the process. To use this batch file it has to be present in the *Commflag* directory. To work with this batch file the L2 has to be in test mode.

Checking the current customization

The command:

```
commflag check
```

shows the active customization. The output is very similar to the output described in "Reading the customization of a Machine". To decide if the current customization is correct, refer to Table 1 and compare with the column "Calculated code".

Activating a new customization

The syntax for activating a customization is:

```
commflag upload <shortcut>
```

The new customization will be uploaded. The required shortcut can be found in Table 1.

Leaving the test mode via the batch file

There exists two ways to exit the test mode. The simple ones are these:

```
commflag quit
```

or

```
commflag -x
```

The more advanced way is a combination with the upload and check command. Only attach a -x at the end of the command. These are two examples:

```
commflag check -x
```

or

```
commflag upload <shortcut> -x
```

GP 13 Hardware Architecture

Objective

This document is the specification for Mainboard FaxCentre F110.

Functional Description

General Purpose

This document describes the hardware architecture for FaxCentre F110. The core is based on Digicolor2 ARM9 & video processor.

Four equipment of the same PCB are planned:

- L2 High end: 33,4k hard modem
- L2 High end: 33,4k hard modem, corded handset

Block diagram

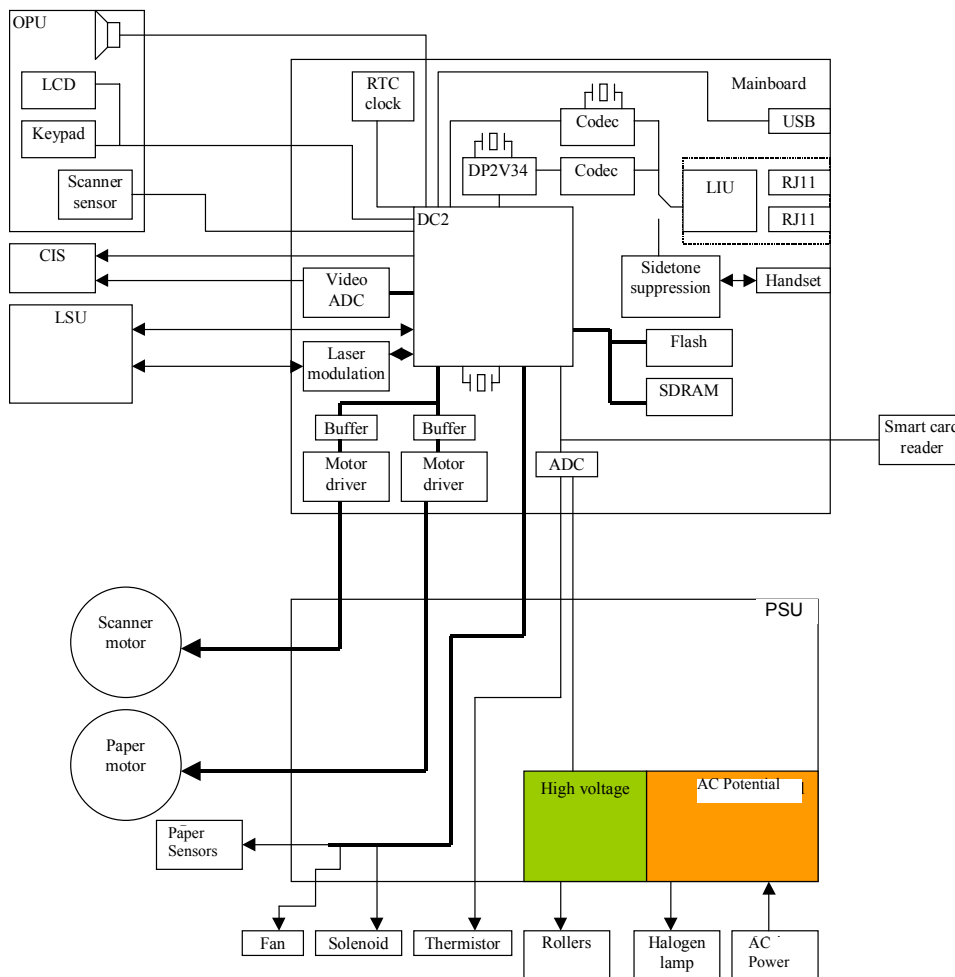


Figure 1

Digicolor2 Microprocessor

Internal Core for digicolor2 is a RISC ARM 946E.

Features:

- 32 bits internal architecture
- 2 external data bus
- Memory bus 16 bits data, 24 bits address max.
- Flash code 8 bits (8Mb max).
- Sdram 8 bits (256Mb max.) / 16 bits (512Mb max.)
- Peripheral bus 8 bits data / 24 bits address (16Mb max. by nCS), or 16 bits data / 15bits address bus (64Kb max. par nCS, A0 = 0). bus width (8 bits / 16 bits) programmable for each chip select. DIGICOLOR2 provide 4 chip select for peripheral bus.
- Power supply 2.7 - 3.3V
- Frequency: internal frequency 92Mhz.
- Access cycle are programmable for each Chip Select
- No external ready signal management.

System controller

System control is handled by DIGICOLOR2

DIGICOLOR2 manages the following functions:

- Decoding of SDRAM memory space and interface for SDRAM memory.
- Decoding of Flash code memory space.
- Decoding of peripheral bus memory space

During the boot sequence, the compressed code stored into the Flash memory is copied and expanded into the SDRAM to be executed.

Timers

4 timers 32 bits for general use are available into the Digicolor2. Timers are derived from the main clock digicolor2.

Serial links

DigiColor2 has been extended to include two independent serial receiver / transmitters. Each is able to operate either synchronously or asynchronously. The USARTs include programmable baud rate generators and 16 byte send and receive FIFOs.

A third serial link is dedicated to chip card ISO7816.

1) USART 0:

This synchronous link is used to control the OPU: LCD and keypad.

- RXpan, TXpan, Sclkpan

2) USART 1:

This link is used as a serial link to control the Dect base.

3) Chip card serial link:

The serial link ISO7816 for chip card is multiplexed with the ADC interface.

I/O mapping

The complete pixel bus port can be configured as pixel bus or as GPIO. In this case, the pin PO_DATA0 is used for sending the video signal to the laser unit, so the pins PO_Dat7:1 can not be used for any other function.

GPA[7:0] is also interrupt interface.

GPB[7:0] :

- GPB[2..0] are reserved for the serial link USART0
- GPB1 = RX0, GPB0 = TX0, GPB2 = SCLK0 (Even in asynchronous mode GPB2 can't be used as an I/O)

GPC[7:0]:reserved for peripheral bus address (PB_addr[7:0]).

GPD[6:0]

- GPD[5:0] are configured as ADC interface. When the signal FERCAP is active, the interface is reconfigured for Chip Car. If the CPAD signal it is not used for chip card function in this mode, he can't either be used as an I/O.
- GPD[6] is independent and used as an I/O.
CLK_EXT: This pin is sampled during the assertion of chip reset. A pull-down resistor assert a "0" so internally generated clocks will be used. After exiting reset, this pin is configured to output. Clk_Ext pin can be driven with an internally generated clock waveform or static value.

GP 14 Power Supply

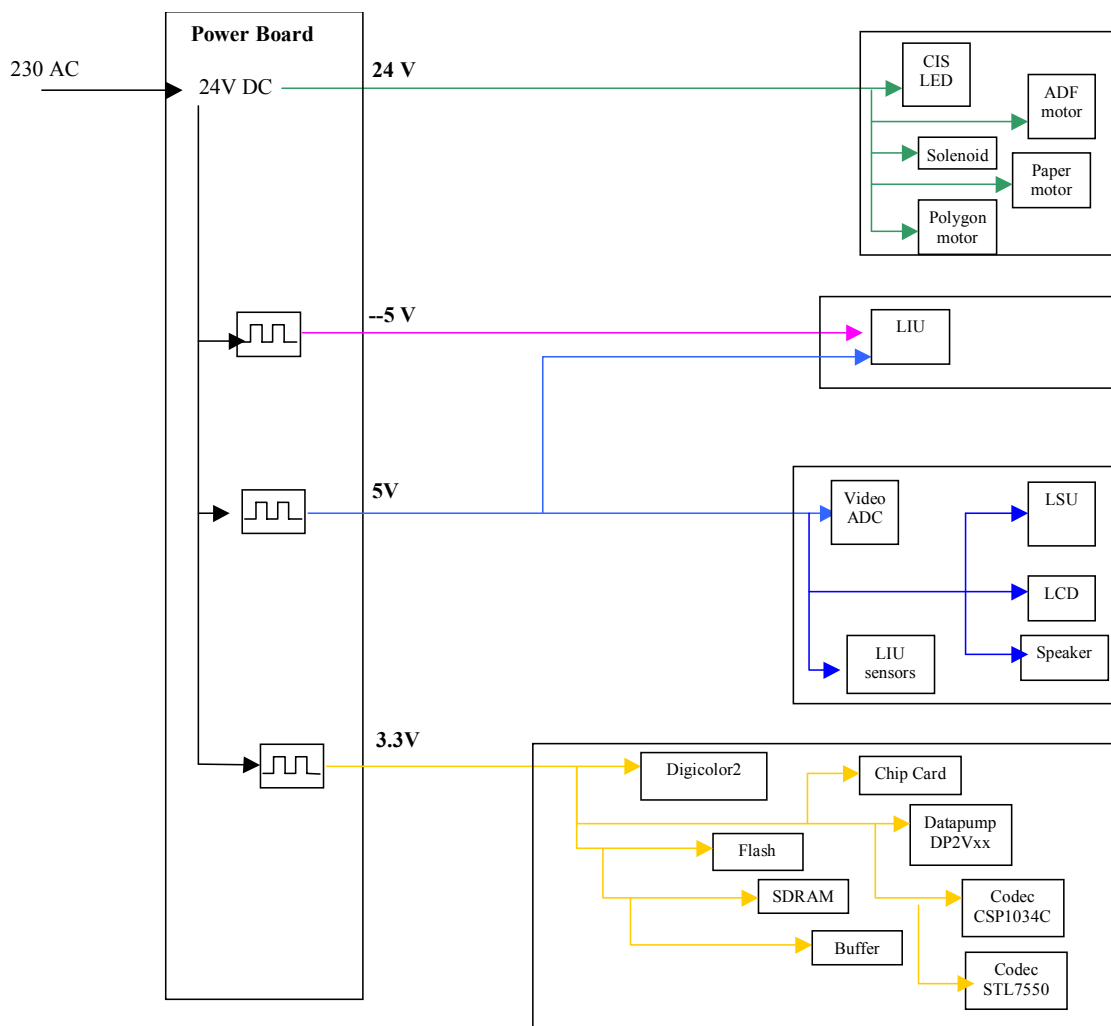


Figure 1 Power supply connections

Power save mode

To reach the lowest possible power consumption some parts are switched off or set to low-power mode.

During power save mode, the following parts are switched off:

- Paper motor driver
- LSU and polygon motor
- OPU
- Loudspeaker amplification
- Paper sensors
- ADC Z350

GP 15 Installation Requirement

When selecting a location for the machine, the following points should be taken into account:

- The telephone socket should be located at no more than 2 metres (6 feet).
- A standard single-phase power socket with earth (ground) (rated in conformance with the information on the label on the back of the machine) should be located at no more than 2 metres (6 feet).
- For easy access to the machine, leave a space of about 10 cm (4 inches) at the sides and the back. Also leave sufficient space in front of the machine.
- If the machine is installed close to a wall, make sure the distance between the wall and the upper edge of the tray is at least 10 inches (25 centimetres). This will allow for easier opening of the upper cover.
- Do not install the machine in direct sunlight, near heating radiators or near air conditioning outlets.
- The room should be adequately ventilated.
- Avoid locations where frequent vibrations occur.
- Avoid locations where water or other products might be splashed on to the machine.
- The machine should not be installed directly on to the floor.
- Place the machine on a flat horizontal support.

GP 16 Easy Install

Easy Install is the process used when a machine is initially connected. A series of questions are asked to guide the user to set up the machine correctly. e.g. country, date and time etc.

GP 17, 18 Not Used

GP 19 Printer Interface

Block diagram

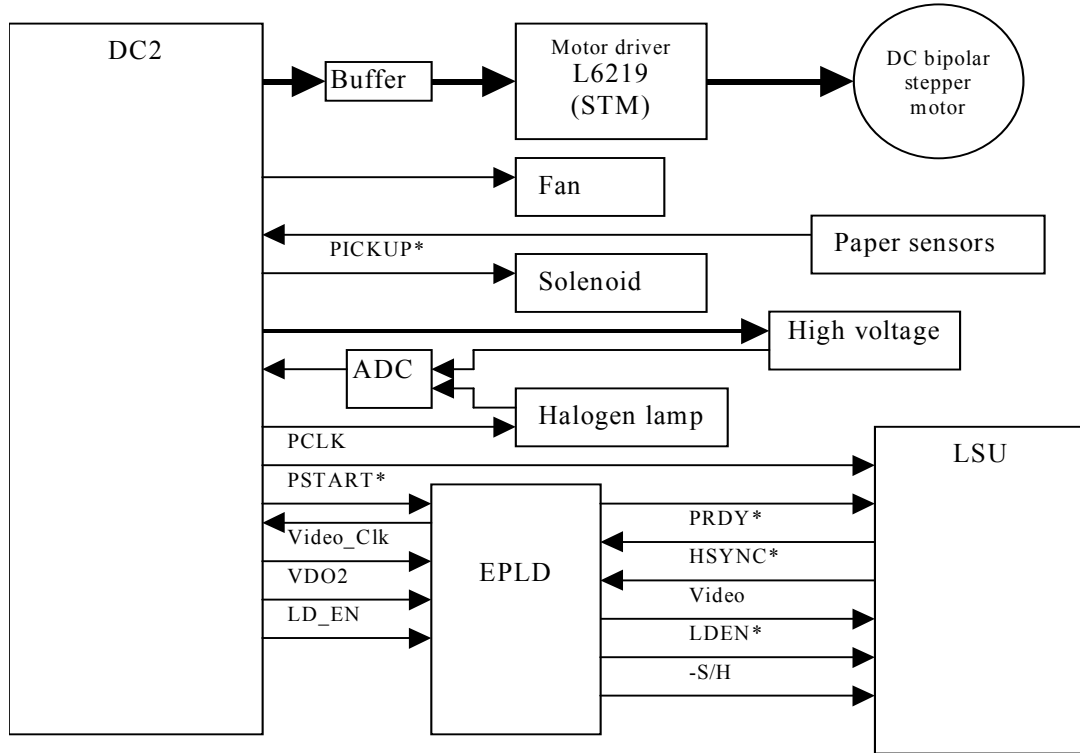


Figure 1

GP 20 USB Device

Table 1:

USB Slave	I/O	Level	Digicolor2	Signal
USB_B_P	I	1	PP_DRIVE	USB Bus Power
USB_O	O	1	PP_D1	High speed mode
D+	I/O	-	USB_DP	data
D-	I/O	-	USB_DM	data

Note: *Input or Output direction from the Digicolor2 side.*

Note: *An external transistor circuit drive the pull-up resistor (1.5KW) on the D+ signal for high speed USB device. The transistor protects Digicolor I/O from abnormal connection.*

GP 21 LSU

Refer to [WD 4](#)

The LSU includes the polygon motor, the laser diode, the sensor for line synchronisation and the lens to correct the beam distortion created by the polygon motor. The motor is driven at 11295,32 rpm, and the clock frequency is 1129.532Hz.

The CLK clock is synchronised with the video clock. The frequency of the video clock is 10.22MHz.

HSYNC generation

In order to generate the horizontal synchronisation for the output pixel block, it is necessary to switch on the LED when the beam is in the area of the optical sensor.

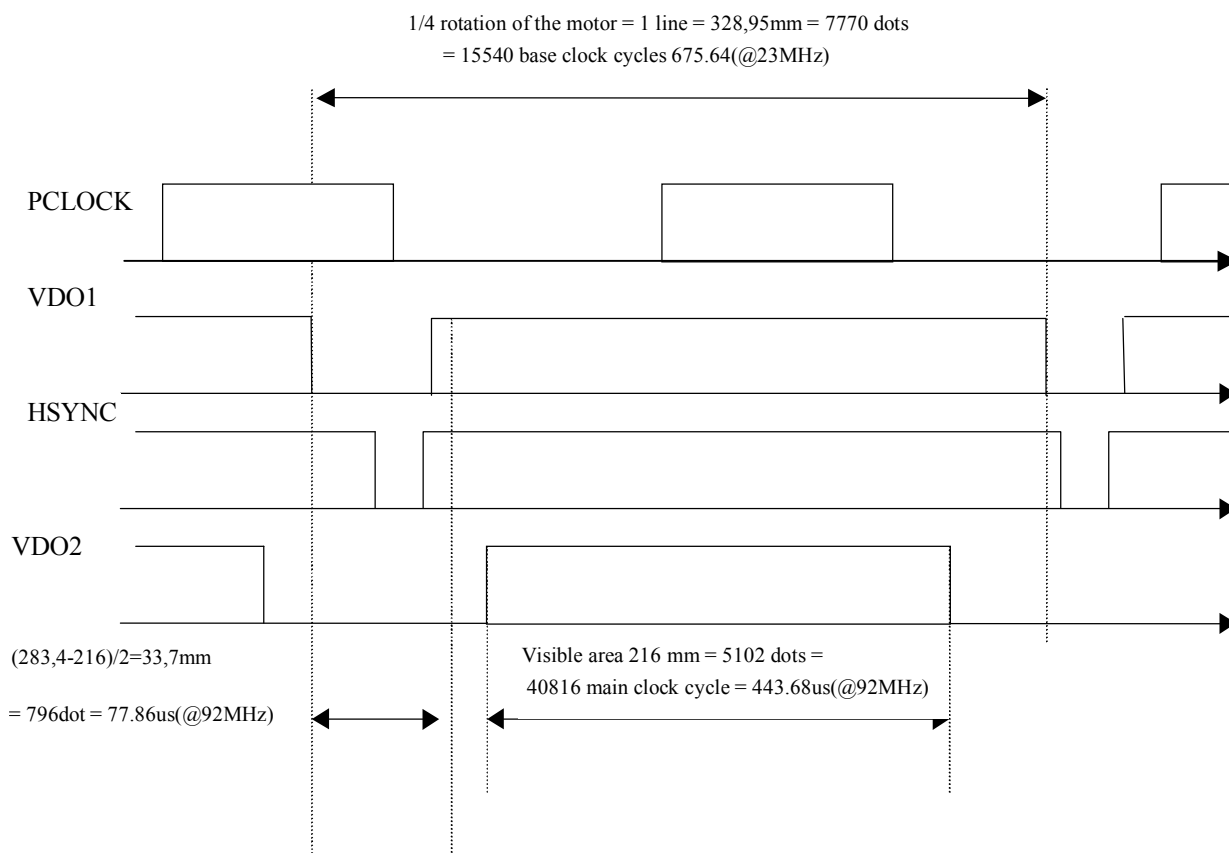


Figure 1

The nominal main clock is set at 92Mhz. The base clock used by the Pixel Output section is set to Mainclock / 4 = 23MHz.

The parameter Ack_Assert in the register PO_COUNT_CONTROL is set to 1 which gives a video clock of 11,5MHz(Base Clock / 2).

A line is 328.95mm this means 7770 dots at 600dpi. As the video clock is 1/8 the main clock, the period of the PWMs for PCLK and VDO1 is $7770 \times 8 = 62160$ mainclock cycles or 15540 base clock cycle. If the main clock is set to 92MHz, it gives 675.65us per line.

The motor period is $T_{\text{motor}} = 675.65 / 1.5 = 450,43\mu\text{s}$ which gives 2220.11Hz. The motor needs 6 clock cycle for a complete round. The clock is an output of the PWM regulator.

GP 22 Operation Panel Unit Interface

Refer to [WD 5](#)

OPU interface is an 8 pin connector

Functions on the OPU :

Keyboard 64 keys max.

2 LED

LCD 2 lines x 16 characters + icons.

Interface

OPU is controlled with digicolor2 serial link USART0 and I/O.

LCD access is write only. Other signal for LCD control are sent through serial link TX (4 parallel data bit & RS (Register Select)).

The sensors are only supplied if PSAVE_OPU is low.

GP 23 Motor Control

Connection

The digicolor2 drives one stepping motor for the printer module. This motor is controlled by current. The motor is controlled using the motor control block

The driver for the printer motor is the L9219 from STM (SO24 package) with 5V power supply. The motor is supplied from the 24V.

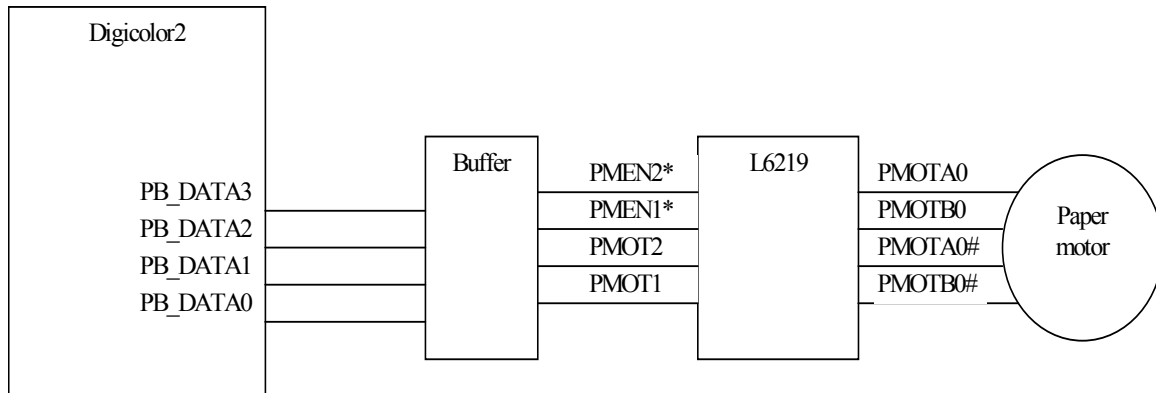


Figure 1

During the reset mode (power on) the signal AE1* is configured as input direction. A pull-up on the buffer input OE* forces the output of the buffer to high-impedance state. External pull-up I01, I11, I02, and I12 protects the motor.

After reset the motor buffer must be forced to the value 00h. The signal AE1* is controlled as output "0" to access motor and "1" for motor stand-by.

The maximum peak current is set using a voltage divider on the input Vref. The PWM frequency is set by the two RC filters R260, C253 and R261, C254. The current in each phase is sensed by two 1ohm resistor in parallel: R266, R267.

In this application, the maximum current is set to 600mA.

GP 24 Sensor / Actuator

To control the printer engine, some sensors and actuators are necessary:

- COVER: this signal enables the CPU to monitor the status of the cover. If 0, the cover is open the power supply to the PSU and the fuser are switched off. If 1, the cover is closed and the PSU and the fuser are normally supplied.
- nFAN and nFAN_HA enable the CPU to drive the fan at full or half speed. When both are inactive, the fan is switched off. The drawn current is 70mA at full speed and 35mA at half speed.
- PICKUP: Drive the solenoid to pickup paper. This signal is activated during 300ms to release the roll that picks up the paper. While activated, the current is 200mA and supplied by the 24V.
- PAPER EMPTY* : Detects if there is some paper left in the cassette.
- REGISTRATION* : Detects that the paper is correctly picked up from the cassette and enters the paper way.
- PAPER EXIT* : Detects that the paper is going out of the machine

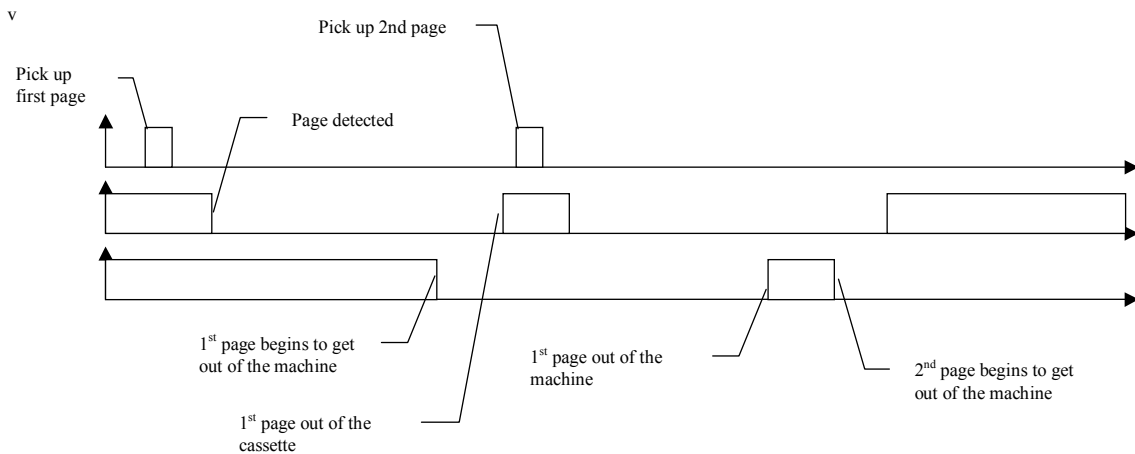


Figure 1

GP 25 Heat Control

A halogen lamp of 800W heats up the fuser. The initial heating time is around 15s, it means that at full power, the temperature of the system change not faster than 8°C/s.

The FUSER signal switches on(1)/off(0) the halogen lamp. To protect the device against over-heating, this signal is overridden by a thermal shutdown when necessary.

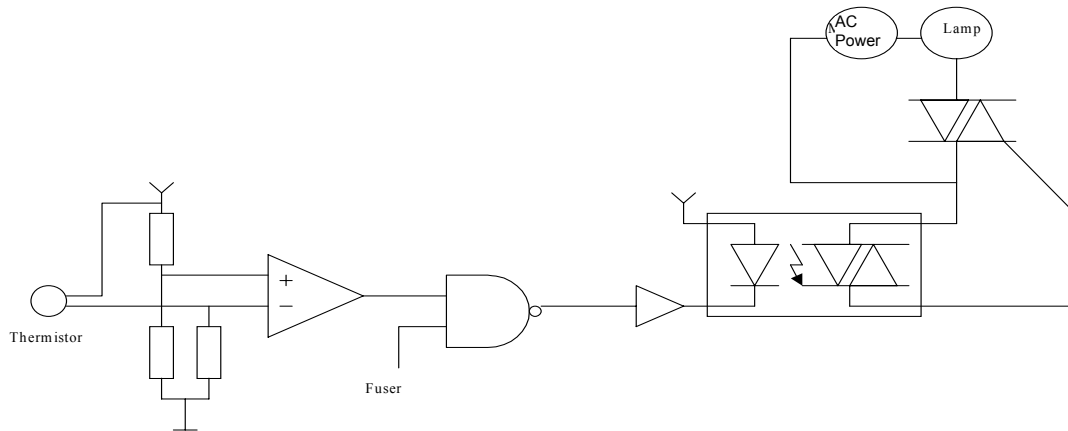


Figure 1

The output of the thermistor is measure through an ADC to enable an accurate regulation of the temperature. See following diagram for the normal behaviour.

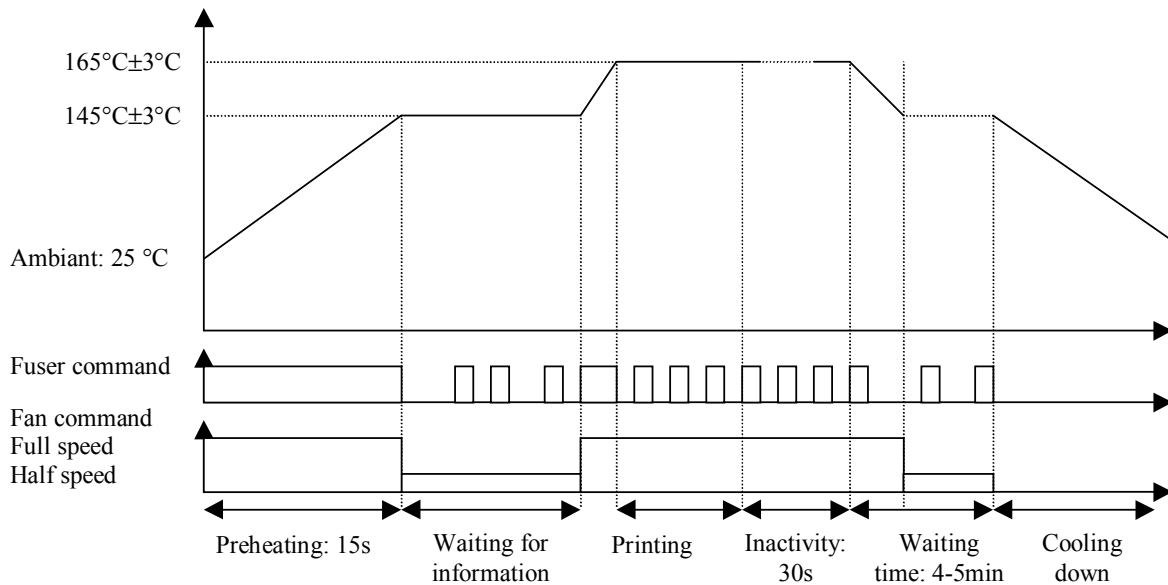


Figure 2

GP 26 Power Supply Interface

Refer to [WD 1](#).

Transfer voltage management

RTRBEN*: Enables the transfer voltage generation.

TRREAD: This voltage is proportional to the current on the transfer voltage. The value is between 0 and 3.3V. The minimum voltage is reached when Transfer = -800V and the maximum when Transfer = -2200V.

TRPWM*: PWM signal used by the firmware to regulate the transfer voltage. The PWM frequency is 16kHz. The duty cycle is between 0% and 100%.

When RTRBEN* is ON(0) and TRPWM* is off(0%), the output voltage is reversed (Transfer=+800) to discharge completely the drum and clean it.

To protect Digicolor, the signal RTRBEN* and TRPWM* should be properly buffered.

Toner management

PRBEN*: Enables the high voltage output to charge the drum.

DBEN*: enables the high voltage output to precharge the toner.

To protect the output of the Digicolor, these two outputs should be properly buffered.

GP 27 ADC for Temperature and High Voltage Control

Block diagram

The ADC08832 enables the Digicolor to measure the temperature of the drum and the transfer voltage.

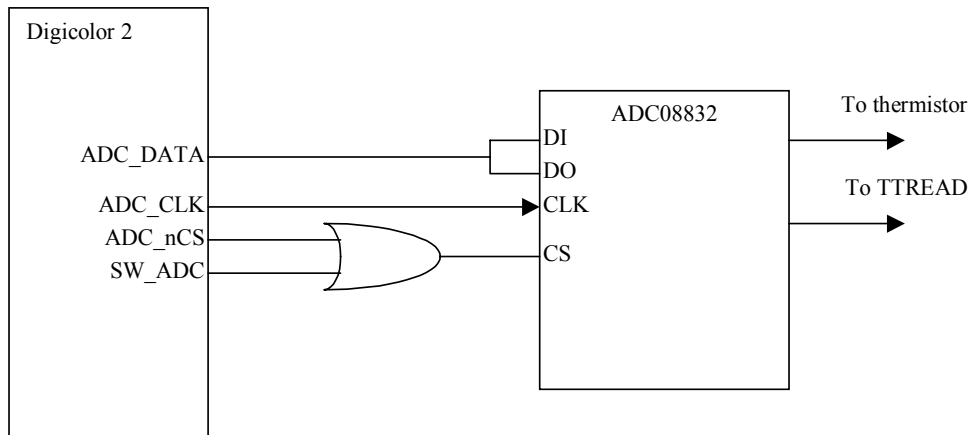


Figure 1

The signals DI and DO are tied together to use only one pin for programming and reading the ADC.

The clock frequency is set to 2MHz, which is done setting the register EA_CLOCK_DIVIDE to 45. In this case the conversion time will be 6,5us.

The signal CS_ADC is used to properly multiplex the smart card interface with the ADC interface. When the ADC interface is active, the signal CS_ADC is set to 0. When the smart card interface is active, the signal is set to 1.

EPLD

Hsync generation

This block is composed of two parts. The first one is a 14bits-shift register and the second one a 14bits decounter.

The 14bits-shift register is loaded using the signal data in (DI), clock (CLK) and chip select (CS).

The 14bits decounter is loaded with the value stored in the shift register on the falling edge of HSYNC. On the rising edge of HSYNC, the counter starts decounting. When it reaches 0, the output(VDO1) is set to 1. When decounting the output is set to 0. After reset the output is set to 1.

To enable printing, the firmware should load the shift register with the proper value and then set LDEN. The laser will then be switched on permanently until the decounter gets the first falling edge on HSYNC. After the first line, the counter is automatically reloaded and restarted at each end of line.

Smartcard and ADC mutiplexing

The EPLD filters all signals coming from the Digicolor during ADC operations and disable the ADC during smartcard operations.

GP 28 Fuser Interface

The fuser interface is protected against excessive temperature.

- HEATER = FUSER nor THERM_IN

FUSER is set to 1 by the firmware to switch on the heater. When the temperature raises above the maximum limit, THERM_IN is set to 0 by the hardware.

GP 29 Scanner Interface

Refer to [WD 2](#).

Block diagram

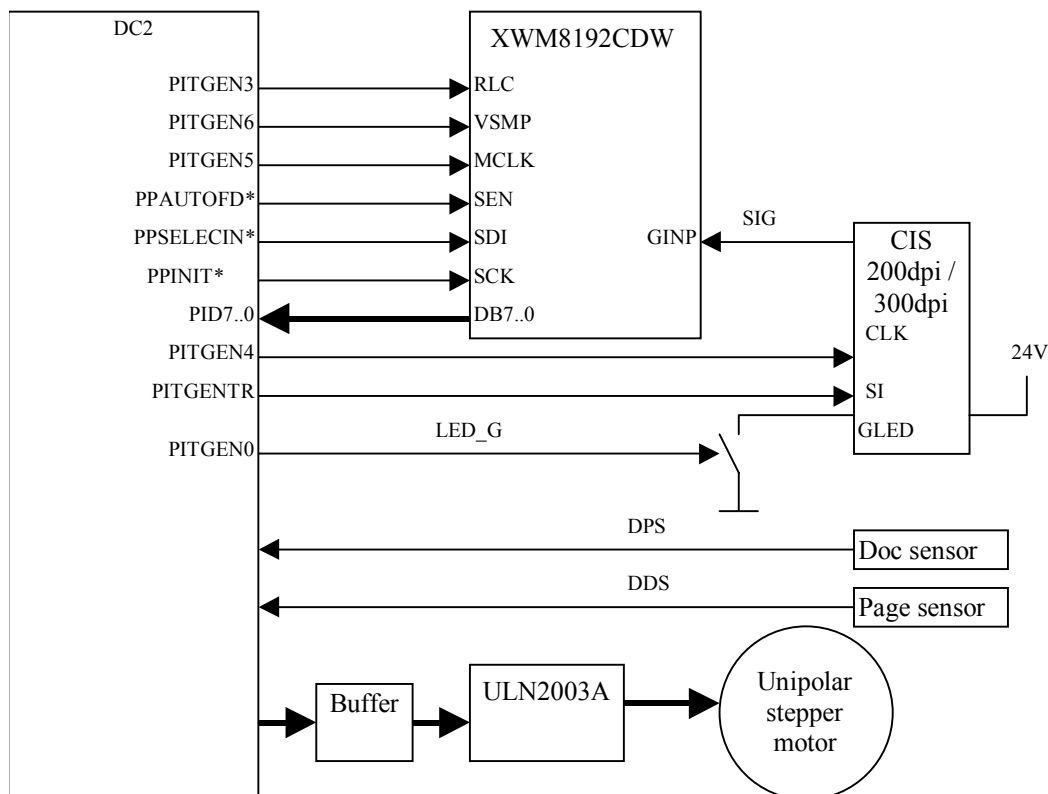


Figure 1 Block diagram

The CIS is controlled using 2 signals:

- CLK: Pixel clock. The maximum frequency is 2MHz.
- SI: Start pulse to begin a new scanning line. This signal is active high and should last one clock cycle.

GP 30 LED Management

The signal VLED of the CIS is connected to the 24V. The signal GLED is switched on and off by a port of a ULN2003 (Z202). Three resistor in parallel limits the current to the requested value.

For the 200DPI CIS, the characteristics are:

- 92mA
- Forward voltage of the LED: 13.5V-15V (for 35mA)

Set to 92mA for 200DPI CIS. The source is switched on/off by the signal LED_G. The minimum forward voltage is 17.4V, the maximum **18.9V**, so the source current should withstand a Vce between **xxxV** and **xxxV**, and a maximum power of **1W**.

GP 31 AFE

The analogue front end is a XWM8192 from Wolfson. This is a 16bits, 6MPS ADC. The red channel is used to digitalize the output of the CIS. The analogue signal is amplified by the transistor Q320. This amplifier can be short cut by the resistor R312.

The Digicolor controls the ADC through a serial link and gets the data through a pixel bus (PI_DATA7..0).

The reference voltages are filtered by 100nF in parallel with a 22uF to minimise the ripple.

GP 32 Motor Control

The motor for the ADF scanner is a PM35S-048-ZKS5 from Minebea Electronics unipolar stepper motor. The motor is driven from the Digicolor using a buffer and a ULN2003A.

During the reset mode (power on) the signal AE1* is configured as input direction. A pull-up on the buffer input OE* forces the output of the buffer to high-impedance state. The internal pull down of the ULN2003 prevent the motor to be improperly driven.

After reset the motor buffer must be forced to the value 00h. The signal AE1* is controlled as output "0" to access motor and "1" for motor stand-by.

The driver is protected against overvoltage by a xxxV zener diode connected to the COM pin.

GP 33 SENSOR

The two sensors LTH-301A from xxxx are located on the OPU.

DDS: Document detection sensor, is **1** when a document is introduced in the ADF, **0** when the ADF is empty.

DPS: Document position sensor. This signal is **1** when there is no paper in the feeder and 0 otherwise. This sensor is used to detect a change of page while scanning a document.

GP 34 MODEM & Line Interface

Block Diagram LIU

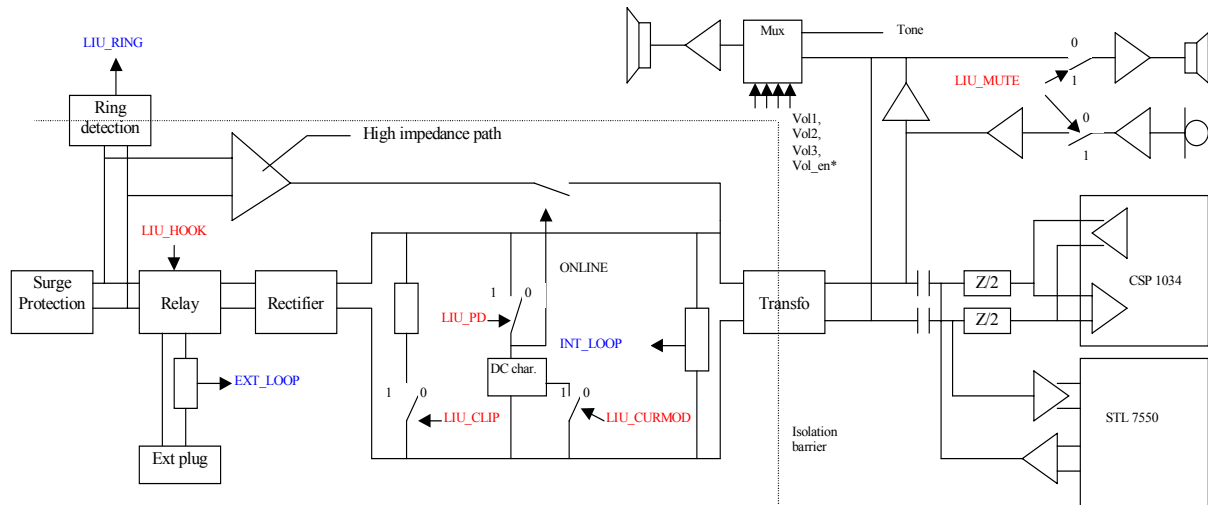


Figure 1 Block diagram LIU

Description

General

The direct interface to the line should be insulated from the rest of the PCB for safety reasons. This means that at least a free area of 3mm should be present on the layout between the hot side and the rest of the PCB. All control signals use optocouplers with an insulation of 3000V minimum. The AC signal is coupled to the line via a transformer with sufficient insulation.

Protection

The protection block protects the circuit against surges on the lines up to +8kV in common mode and provides some filtering for EMC. This block should not have any effect on sinusoidal signals up to 120Vrms with an offset of 60Vdc.

Clip impedance

The clip impedance is presented on the line on request by the signal LIU_CLIP. It is composed of one DC impedance of 100kOhms and one AC impedance connected between a and b.

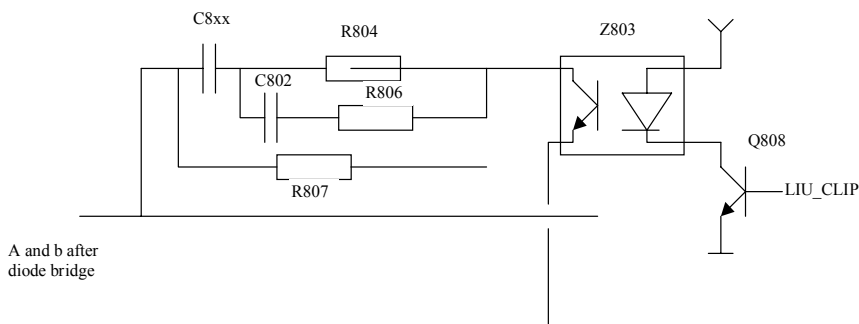


Figure 1

During On-Hook configuration some Calling Line information may be received by using CLID handling. To enhance the reception of this CLID information the line characteristic has to be adapted by activating a specific CLID control signal (**LIU_CLIP**).

Line sensing

Incoming Ring (On-Hook)

To signal the Terminal Equipment, whether an incoming call is pending, a **ring signal** is generated at the line by the network.

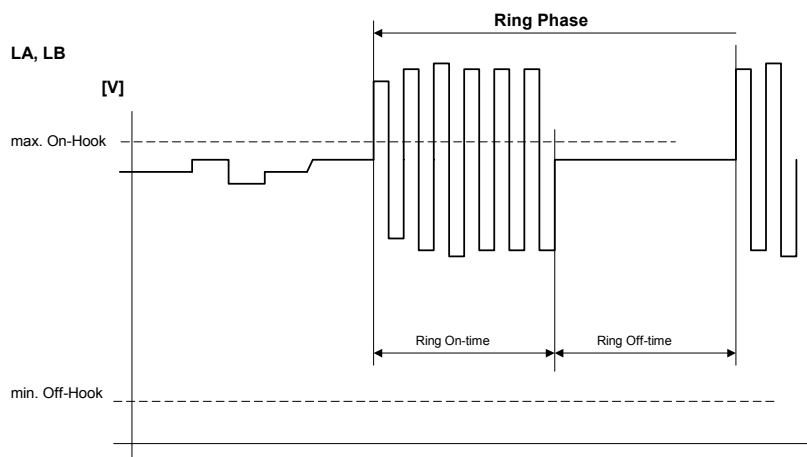


Figure 2

The ring signal is specified by its amplitude, its frequency and the cadence (On- and Off-time relationship). The ring signal transmission is terminated when a valid loop current is detected by the network. The ring amplitude is added to the line On-Hook voltage.

LIU_RING:

Digital InputRinger/Polarity Reversal input signal. This signal is used to detect ringer signals (frequency, cadence) and polarity reversals on the line.

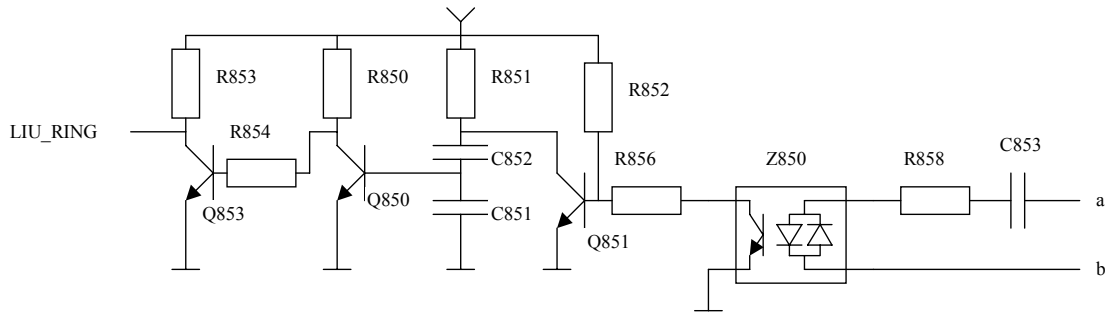


Figure 3

The output signal is properly provided for a ringing signal between 18Vrms and 100Vrms with a frequency between 13Hz and 50Hz and a DC offset between -60V and +60V.

The capacitor C853 acts as high pass filter to cut off any DC current during on hook. The optocoupler Z850 provides a square wave signal for detecting polarity reversal and ringing signal. For each edge the flip-flop Q851 / Q850 provides a pulse. The duration of the pulse is set with resistor R851 and capacitor C851, C852. The transistor Q853 inverts the signal.

A square wave signal with constant pulse width (**5 ms**) is provided when a ring is applied. A single pulse is provided if the line has been reversed. The ring signal frequency is twice (x 2) the applied ringer frequency.

Ring signal status (RING) changes if PD changes, a line break occurred or an external or parallel phone has taken the line !

Table 1:

RING	State
0	Default, no line transition occurred
1	Ring or Polarity Reversal

Line control

EXT_LOOP:

Loop current input signal. This signal is used to indicate that a loop current is drawn by an external phone (if Off-Hook). External loop current status (EXT_LOOP) also changes if Ringer applied Parallel Phone state changes

Table 2:

EXT_LOOP	State
0	Loop current, external Phone Off-Hook
1	Default , no loop current

The loop detection detects the current that flows in the external parallel phone. The detection should be bi-directional and work from 5mA to 100mA without disturbing the external phone.

INT_LOOP:

Internal loop detected. This signal is used to check the voltage in the LIU.

Table 3:

INT_LOOP	State
0	Default , Off Hook or line disconnected (LIU_HOOK=0)
1	Line connected (LIU_HOOK=1) and On Hook

The voltage is measured just after the rectifier bridge. The threshold level can be adjusted by R817 and R818. The transistor Q805 then drives the optocoupler Z801.

External loop current status (EXT_LOOP) also changes if

- PD changes**
- Ringer applied**
- Parallel Phone state changes**
- Line polarity reversal**
- Flash key dialed**

The two signals EXT_LOOP and INT_LOOP are then used by the firmware to decide whether or not to switch the relay.

LIU_HOOK:

External phone Connection, controls output the relay. This signal is used to establish a line connection (**LA2, LB2**) between the FAX system (Terminal Equipment, TE) and the Ext. phone

Loop current status (LOOP) changes if HOOK changes!

Table 4:

HOOK	<i>State</i>
0	On-Hook (External phone connected)
1	Off-Hook (External phone disconnected)

Table 5:

Line State	HOOK	<i>PD</i>
On-Hook	0	0
Off-Hook	1	1
Off-Hook (dialling)	1	1,0

When not powered, the relay should connect the external phone to the line. At start-up the firmware activates the relay to connect the LIU.

PD: Pulse Dial

This signal is used to generate line (loop current) connections and disconnection. If inactive (Low) no connection between the line and the terminal equipment exists.

Loop current status (LOOP) changes if PD changes!

Table 6:

PD	<i>State</i>
1	Make (Line connected)
0	Break (Line disconnected)

LIU_CURMOD:

Current Modulation. The signal is used during Pulse Dial only to enhance the switching characteristics of **PD** (Loop Current). Keep activated during dialling of a complete digit. Not activated if flash is dialed.

Table 7:

CURMOD	<i>State</i>
0	Default , no current
1	Loop current enforced

LIU_CLIP:

Clip Impedance Setting Control output signal. The signal is used to select additional line impedance during CLI handling. This signal should be activated only during V23 or DTMF reception.

Table 8:

CDIM P	State
1	CLI Line Impedance on
0	Default , Normal Line Impedance

Gyrator (DC characteristics)

The DC characteristic must be easily customised to fit the needs of TBR21, Eastern Europe (600ohms), Australia and USA. If possible, two impedance's should be mounted at the same time and switched by firmware depending on country setting.

The main characteristic is given by the two transistors Q802 and Q803. The transistor Q804 limits the current rushing through Q802 and Q803. The threshold level for the limitation can be set with R810, R811 and R808.

High impedance path

The high impedance path enables the codec to listen to the line during on-hook state: clip reception, CNG detection. The signal is taken between a and b, just after the protection circuitry. The amplifier Z852 amplifies the signal. The high impedance path is muted during off-hook by the transistor Qxxx. To switch on/off this path, the voltage is measured in parallel with the DC characteristics. The threshold level is given by R878 and R876.

Signal flow

Line handling

The **Line Signals** are used to transfer information depending on the state of the voltage and current rating. Each signal is influenced according to the current information transfer.

**LA, LB,
LA1, LB2**

On-Hook, Off-Hook Configuration

The activation of the **hook-switch (HOOK)** in the line connection, of the **Line Control** component, establishes a connection between the network and the terminal equipment (**LIU**).

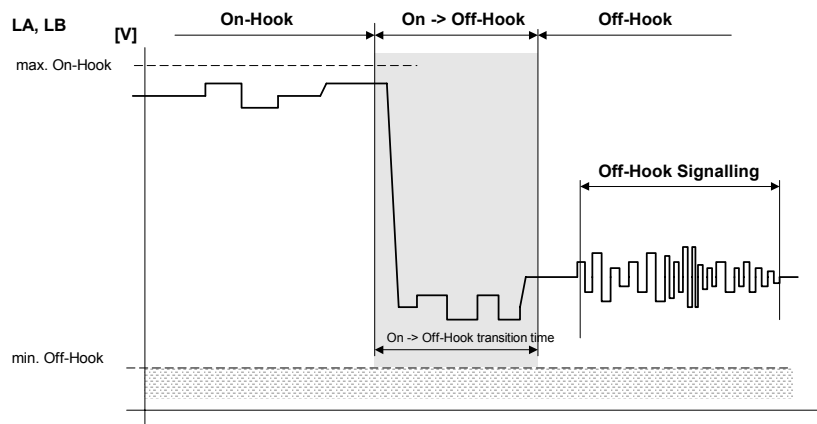


Figure 9

Due to the change of the source resistance of the terminal equipment the line voltage drops from an idle state (On-Hook) to a connection state (Off-Hook).

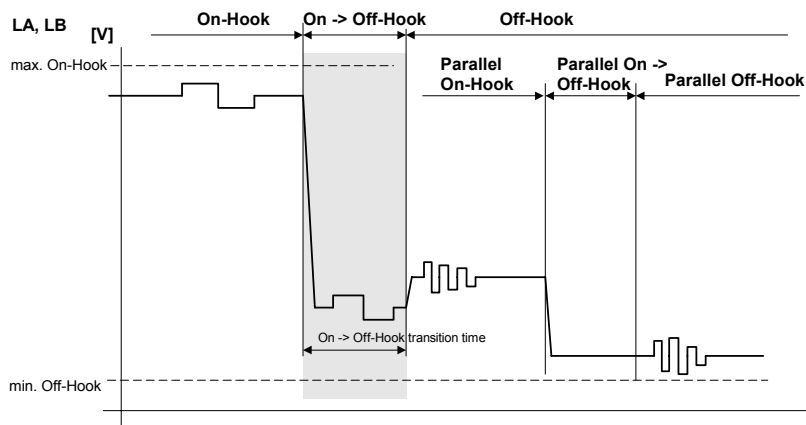
Drops at the line voltage (connection) are not necessary a On- to Off-Hook transition. A rising loop current in conjunction with a voltage drop at the line is indicating a valid connection.

Parallel Terminal Equipment Off-Hook (On-Hook)

The activation of a parallel Terminal equipment, during normal terminal equipment On-Hook (HOOK=0), establishes a connection between the network and the parallel terminal equipment only. Due to the source resistance change of the parallel terminal equipment the voltage drops from an idle state (On-Hook) to a connection state (Off-Hook).

Parallel Terminal Equipment Off-Hook (Off-Hook)

The activation of parallel Terminal equipment, while terminal equipment Off-Hook, establishes not a new connection between the network and the parallel terminal equipment but due to the additional, parallel source resistance a additional drop of the line voltage and the loop current will occur



External Phone Detection

The external phone is not connected to the line as long as a Off-Hook Line configuration is executed, which connects the terminal equipment instead of the external phone.

If the terminal equipment was On-Hook the behaviour is the same as described with *Off-Hook, On-Hook Configuration*. If Off-Hook, the external phone is connected prior disconnecting the terminal equipment. During the transition phase a short drop of the loop current can occur.

Pulse-Dial (Off-Hook)

To signal the network to establish a connection between the terminal equipment and another line equipment, a number of impulses is used to transfer a 'phone number' (a defined number of digits) of the other line equipment to the network. The digits that are used to specify a phone number are coded by the number of line disconnection's and reconnections. These voltage and current changes are mirrored at the line signals

Incoming Ring (On-Hook)

To signal the Terminal Equipment, whether an incoming call is pending, a ring signal is generated at the line by the network.

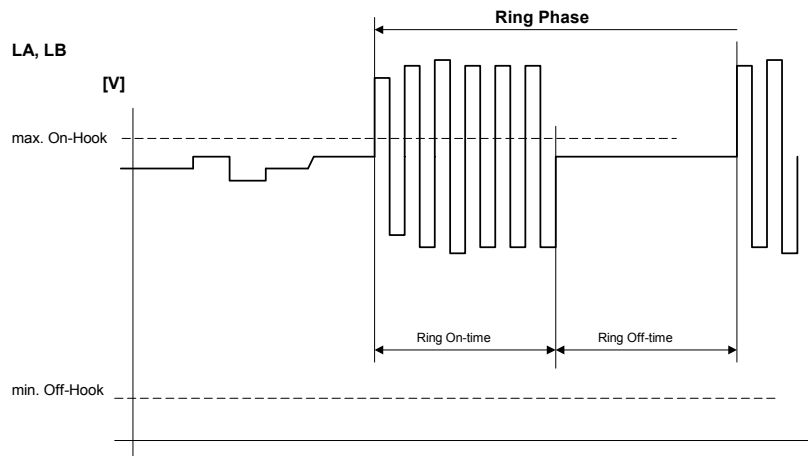


Figure 10

The ring signal is specified by its amplitude, its frequency and the cadence (On- and Off-time relationship). The ring signal transmission is terminated when a valid loop current is detected by the network. The ring amplitude is added to the line On-Hook voltage.

CLI Polarity Reversal (On-Hook)

The signalling of some network services (e.g. CLI) is indicated by a reversal of the line voltage, which means the polarity of the voltage between the line connection LA, LB changes.

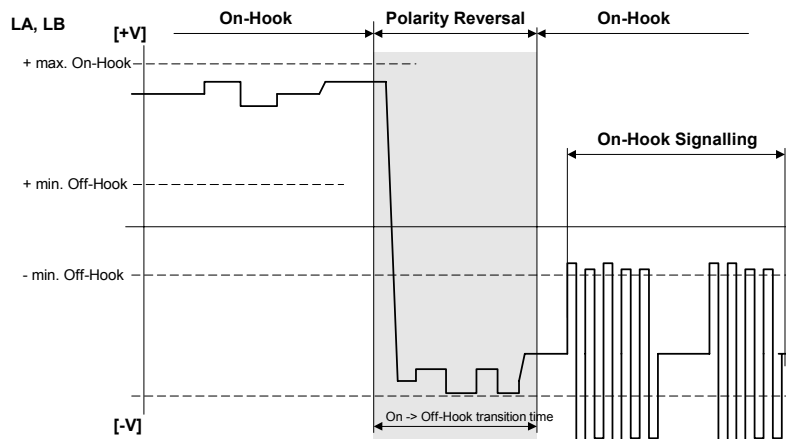


Figure 11

GP 35 INTLOOP Signal

Loop Current Detection

The activation of a On-Hook or Off-Hook Configuration, a parallel Terminal equipment On- or Off-Hook change, an External Terminal equipment On- or Off-Hook change and Pulse Dial activity change the loop current accordingly. This signal can change only if the LIU is connected to the line (LIU_HOOK=1).

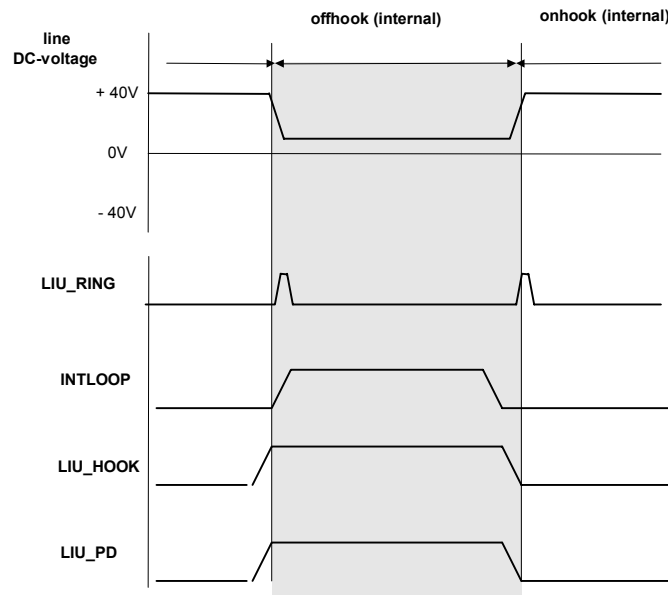


Table 1: Loop Detection Table

Onhook / Loop	0	0	0	1	NO LOOP	EXT. PHONE
Onhook / No Loop	0	0	0	0	NO LOOP	NO EXT. PHONE
Offhook / Handset lifted	1	1	1	0	LOOP DET.	INTERNAL
Offhook / Pulse Dial	1	X	X	0	LOOP DET.	INTERNAL
Offhook / DTMF Dial	1	1	1	0	LOOP DET.	INTERNAL
Offhook / FAX	1	1	1	0	LOOP DET.	INTERNAL
Offhook / No Loop	1	1	0	0	NO LOOP	INTERNAL

Off-Hook, On-Hook Configuration

The activation of the hook-switch (HOOK = 1 and PD=1) within the line connection, establishes a connection between the network and the terminal equipment. Due to the reduction of the source resistance of the terminal equipment, the loop current (I_{loop}) rises which indicates an Off-hook condition. The loop current is above a certain threshold as long as the terminal is connected (by detecting a valid loop current within the terminal equipment) or the network is in a valid loop current state (see also *LA, LB On-Hook, Off-Hook Configuration*). Due to a hook change, the changing line voltage may introduce an erroneous ring (RING) signal !

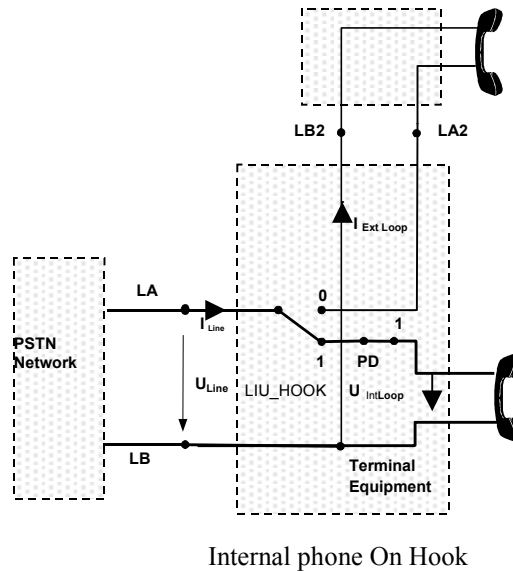


Figure 2

Parallel Terminal Equipment Off-Hook(FCU Off-Hook)

When a parallel terminal equipment, connected directly to the line, goes Off-Hook, it reduces the line voltage, which results in a drop of the loop current that may be detected.

Parallel Terminal Equipment Off-Hook(FCU On-Hook)

The loop current change due to an parallel off-hook condition has only little effect for the idle loop current (On-Hook state).

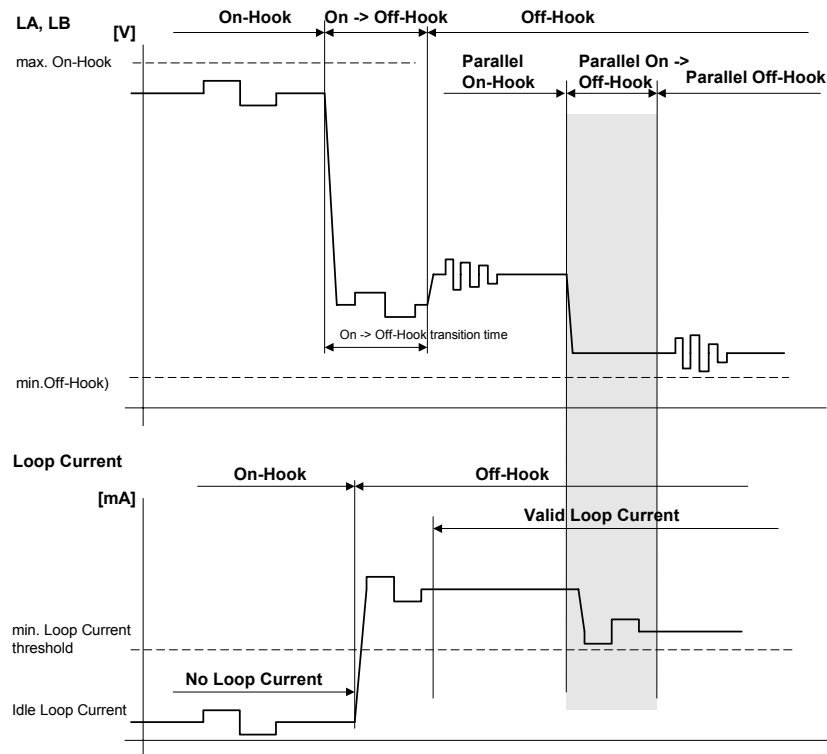


Figure 3

Incoming Ring (On-Hook)

The line voltage change due to an incoming ring has no effect on the loop current detection if LIU_HOOK=0 and may have an effect if LIU_HOOK=1. See also EXTLOOP signalling.

CLI Polarity Reversal Detection (On-Hook)

The line voltage changes the polarity as well as the idle loop current, but has no effect if LIU_HOOK=0 and may have an effect if LIU_HOOK=1.

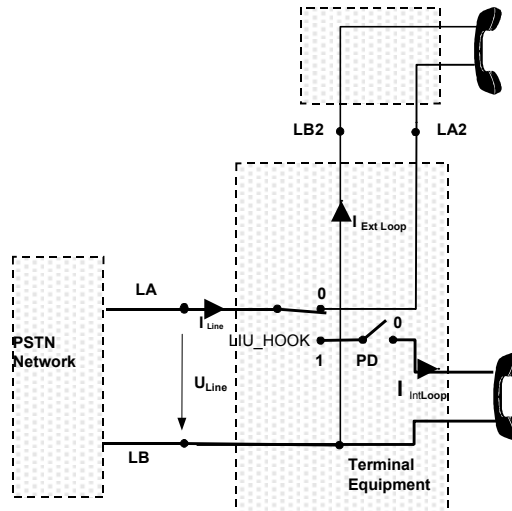
Pulse-Dial

The signalling during Pulse-Dial has been described in detail with PD Pulse-Dial. The current changes during Pulse-Dial are mirrored by INTLOOP.

GP 36 EXTLOOP Signal

During FCU Off-Hook, the terminal equipment is connected to the line, and the external phone completely disconnected, so no external phone detection is possible.

During terminal equipment On-Hook (HOOK = 0, PD = 0), the external terminal equipment is connected to the line by LA2, LB2. If the external terminal equipment goes Off-Hook (e.g. by lifting the Handset) it draws a loop current from the network ($I_{Ext Loop}$). This current change is sensed by the Loop Detection Component and a status (EXTLOOP) signal is activated as long as the external equipment is Off-Hook and the internal is disconnected



External phone On Hook

Figure 1

If the external terminal equipment is connected with the line (HOOK = 0, PD = 0) (going Off-Hook), a valid loop current has to be drawn to established a valid connection.

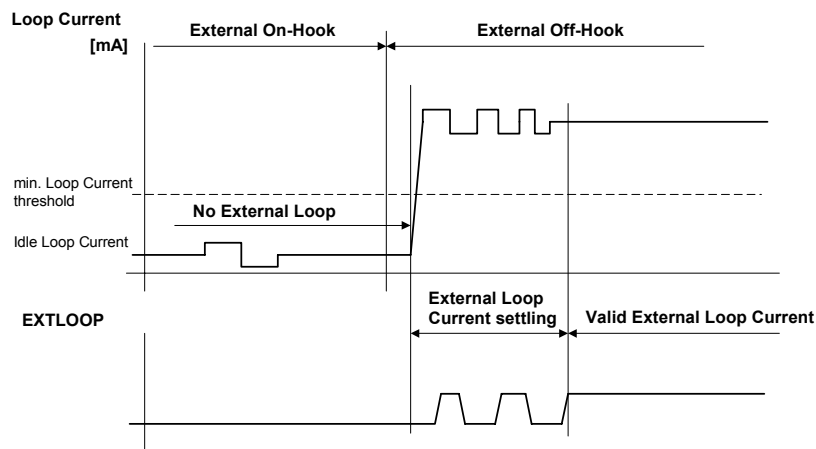
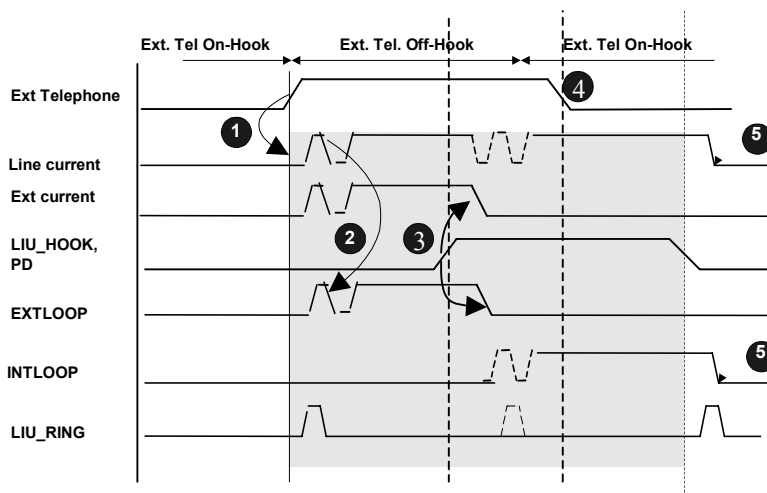


Figure 2

After an external phone has seized the PSTN line (1) some loop current is drawn (2) and the external loop detection signal (EXTLOOP = 0) is activated. If the FCU LIU is then connected (Off-Hook) to the line (3) (LIU_HOOK = 1, PD=1), the external loop current is removed (EXTLOOP=0) while the internal loop current is drawn by the LIU (INTLOOP=1). The switching from the external to the internal equipment may introduce a short loop loss. If the external phone is now dropped, no loop current change occurs (4). At the release of the internal loop current, due to going On-Hook (HOOK = 0, PD=0), the loop current is removed (5) followed by deactivating the loop current signal (INTLOOP = 1)

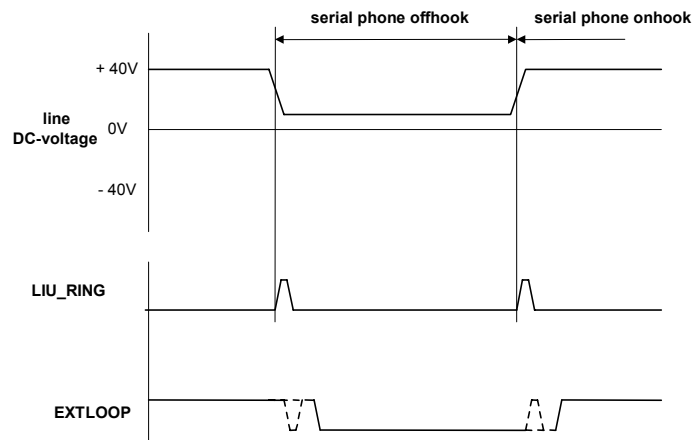


External phone transfer

Figure 3

External (Phone) Loop Detection

External Loop Detection is valid during On-Hook only. If internal On-Hook (LIU_HOOK = 0) and an external phone is Off-Hook, a loop current is drawn and the loop detection signal is activated (EXTLOOP = 0). The external loop current is equivalent to the loop current. Due to other LIU activities (Incoming Ring, Pulse Dial etc.) the loop detection signal (EXTLOOP) may change erroneously !



External phone loop signalling

Figure 4

Table 1: External Phone Detection Table

Onhook / No External Phone	0	0	0	NO LOOP DET.	NO EXT. PHONE
Onhook / External Phone	0	0	1	NO LOOP DET.	EXT. PHONE
Offhook / External Phone	1	0	0	LOOP DET.	No Change
Offhook / No External Phone	1	0	0	LOOP DET.	No Change

Incoming Ring

The line voltage change due to an Incoming Ring may have an effect for the external loop current (EXTLOOP). During an incoming ring, while On-Hook, the ringer signal (see RING Signal Description) may be mirrored by the EXTLOOP signal !

Pulse-Dial (External Phone)

The line voltage and current change during external phone Pulse Dial has an effect for the external loop current (EXTLOOP) as long as the internal phone (LIU_HOOK = 0) stays On-Hook. The pulse dialing signals are mirrored by the EXTLOOP signal !

Parallel Terminal Equipment Off-Hook(On-Hook)

The line voltage change due to parallel Off-Hook has some effect on the internal loop detection (EXTLOOP). If the parallel phone is Off-Hook in addition the loop current signal may be lost (change) erroneously !

GP 37 RING

Incoming Ring

To signal the terminal equipment an incoming call during On-Hook, a defined AC signal is applied by the PSTN network.

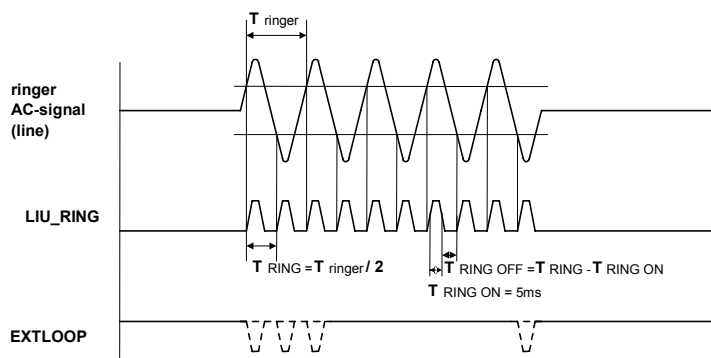


Figure 1

The level and the frequency as well as the on- off ratio (cadence) of the signal is within certain limits Any change of the line voltage is detected by the ring detector which generates a pulse of a defined duration. A changing line signal is mirrored by the ring detection signal (RING) with twice the line signal frequency : $f_{ringer} = f_{RING} / 2$. . An Incoming Ring on the line may be mirrored by the loop detection signal. (INTLOOP) if LIU_HOOK=1.

On-Hook , Off-Hook Line Configuration

During terminal equipment On-Hook the line control signal is set inactive (HOOK = 0) to inhibit a valid loop current. Due to the line voltage change, a change of the ring signal within the ring detection HW-component may occur. If settled, only an idle loop current (On-Hook) is drawn from the network.

Pulse-Dial (External Phone)

The line voltage and current change during external phone Pulse Dial has an effect for the ring detection signal (RING) as long as the internal phone (HOOK = 0) stays On-Hook. The pulse dialling signals may generate some ring detection pulses !

Parallel Terminal Equipment Off-Hook (FCU On-Hook)

The loop current change due to an parallel off-hook condition has some effect for the idle loop current (On-Hook state). A change of the line voltage may result in a short invalid change of the ring signal !

Parallel Terminal Equipment Off-Hook (FCU Off-Hook)

Due to the possibility of connecting a parallel terminal equipment which, when also internal Off-Hook, reduces the line voltage which may result only in a reduction of the loop current. This line voltage change may also introduce an invalid ring detection pulse !

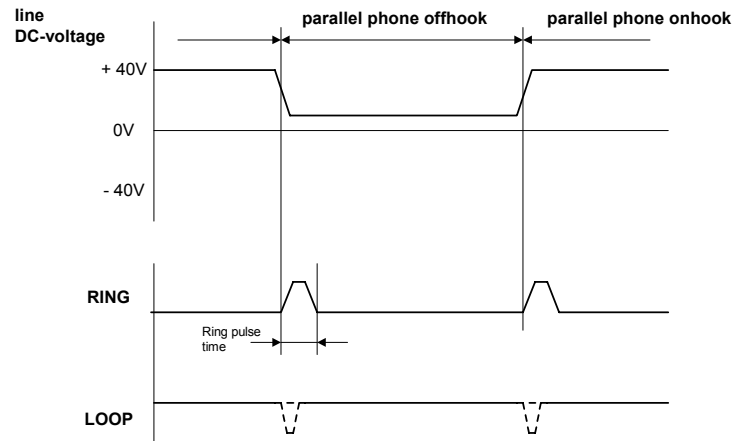


Figure 2

CLI Polarity Reversal, CLI Services

Any line voltage polarity change is used to generate a single ring detection pulse during either LIU On- or Off-Hook. To indicate a valid polarity reversal detection no other pulse is to be allowed within a defined duration !

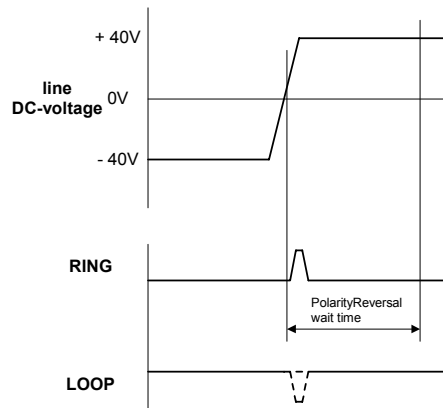


Figure 3

On-Hook, Off-Hook Line Configuration

During terminal equipment On-Hook the line control signal is set inactive (HOOK = 0) to inhibit a valid loop current. Due to the line voltage change, a change of the ring signal within the ring detection HW-component may occur, generating an invalid polarity reversal pulse !

Pulse-Dial(External Phone)

The line voltage and current change during external phone Pulse Dial has an effect for the polarity reversal signal (LIU_RING) as long as HOOK is kept deactivated (On-Hook). The pulse dialling signals may generate an invalid polarity reversal detection pulse !

If a parallel phone has seized the line changing of the line voltage, due to the dialled digits, may also generate an invalid polarity reversal detection pulse !

Parallel Terminal Equipment Off-Hook(FCU On-Hook)

The line voltage change due to an parallel off-hook condition has some effect on polarity reversal detection (On-Hook state). A change of the line voltage may result in a short pulse of the ring signal and a invalid polarity reversal detection !

Parallel Terminal Equipment Off-Hook(FCU Off-Hook)

Due to the possibility of connecting a parallel terminal equipment which, when also internal Off-Hook, reduces the line voltage which may result also in a reduction of the loop current. This line voltage change may also introduce an polarity reversal detection pulse !

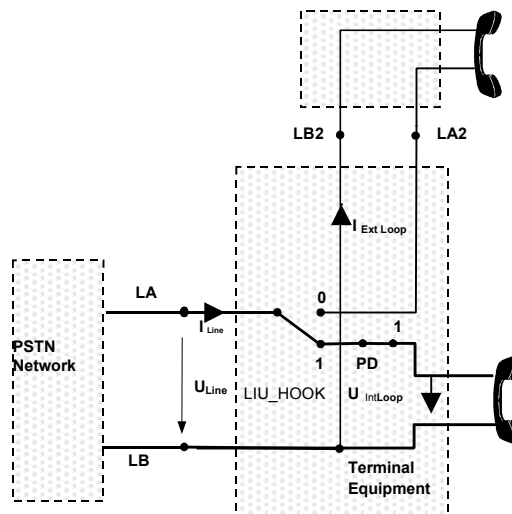
GP 38 LIU_HOOK

On-Hook Line Configuration

During terminal equipment On-Hook the line control signal stays inactive to inhibit a valid loop current. Only an idle loop current (On-Hook, external On-Hook) is drawn from the network. The dial control signal should be kept activated (PD = 0).

Off-Hook Line Configuration

The activation of the Hook-signal (HOOK = 1) establishes a connection between the terminal equipment and the network. To draw a valid loop current the dial control signal (Hook/Pulse Dial control signal, PD) has to be activated (PD = 0) in addition.



Internal phone On Hook

Figure 1

CLI Services

To signal a CLI service transmission start, during CLI service handling, the terminal equipment has to draw a current pulse from the network (Wetting Pulse) by activating the HOOK signal. To signal a valid preparation for CLI reception, a short loop current pulse is drawn from the network. This is handled by activating the line connection switch (HOOK) for a defined duration.

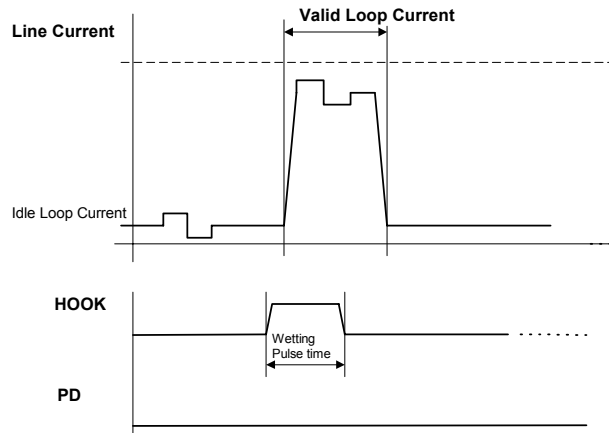


Figure 2

GP 39 Pulse Dial

On-Hook Line Configuration

During terminal equipment On-Hook the PD control signal stays inactive to inhibit a valid loop current. Only an idle loop current (On-Hook) is drawn from the network

Off-Hook Line Configuration

The activation of the dial control signal (PD) in addition with the line control signal (HOOK) establishes a connection between the terminal equipment and the network. To draw a valid loop current the PD signal (Hook/Pulse Dial control signal) has to be kept activated.

Pulse-Dial

To signal the network to establish a connection between the terminal equipment and another line equipment, a number of impulses is used to transfer a 'phone number' (a defined number of digits) of the other line equipment to the network. The digits which are used to specify a phone number are coded by the number of line disconnection's and reconnections of the PD signal. These voltage and current changes are mirrored at the line signals (LA, LB)

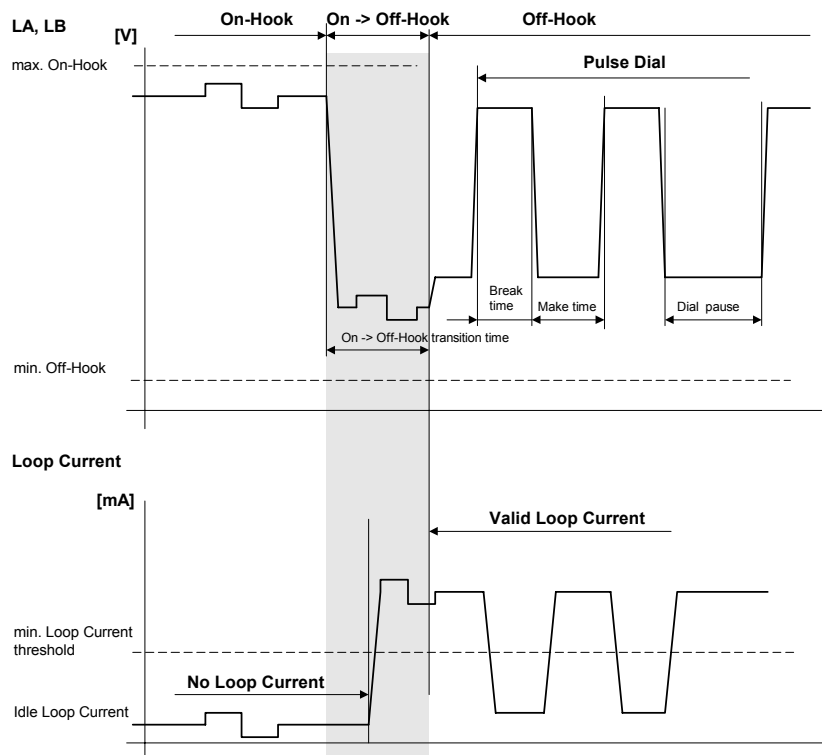


Figure 1

The digit of a phone number corresponds to the number of disconnection's (Break) and reconnections (Make). A digit '3' has three 'Breaks' and three 'Makes'.

The PD pulse duration relationship of break-time and make-time is country specific.

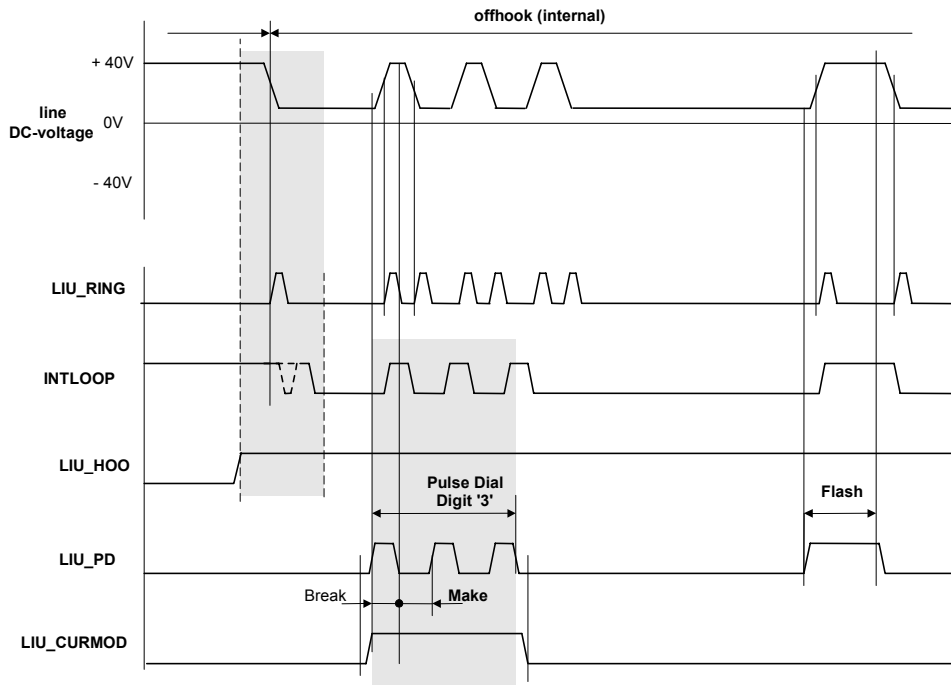


Figure 2

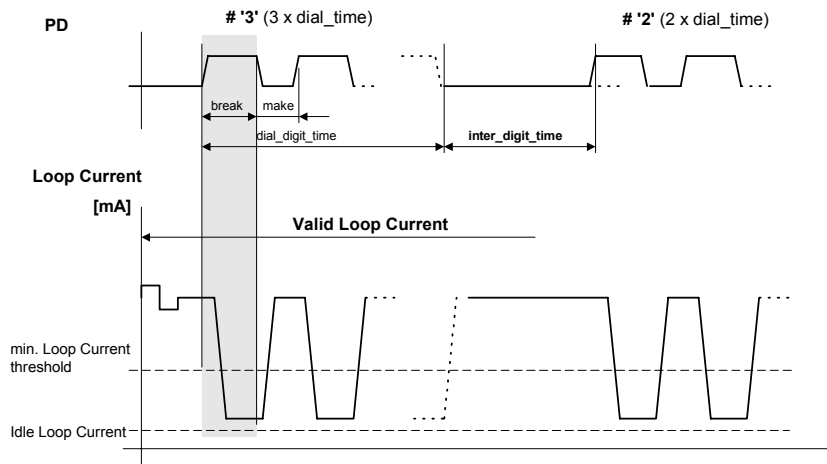


Figure 3

CLI Services

To signal a CLI service transmission start, during CLI service handling, the terminal equipment has to draw a current pulse from the network (Wetting Pulse) by activating PD.

(see HOOK Signal Description)

GP 40 CURMOD

CURMOD Handling

To get the required waveform on the line (acc. PTT regulations) an additional current has to be supplied by the LIU during dialling. The CURMOD signal serve this special purpose during Pulse Dial. The timing relationship of CURMOD and the Pulse Dial port depends on the country specific regulations.

Pulse-Dial

To enhance the current (switching) characteristics (smaller rising times of the loop current) a current enhancement signal is activated during Pulse Dial. This CURMOD signal is activated synchronous with the PD signal during Pulse Dial. The timing relationship is country specific, but similar.

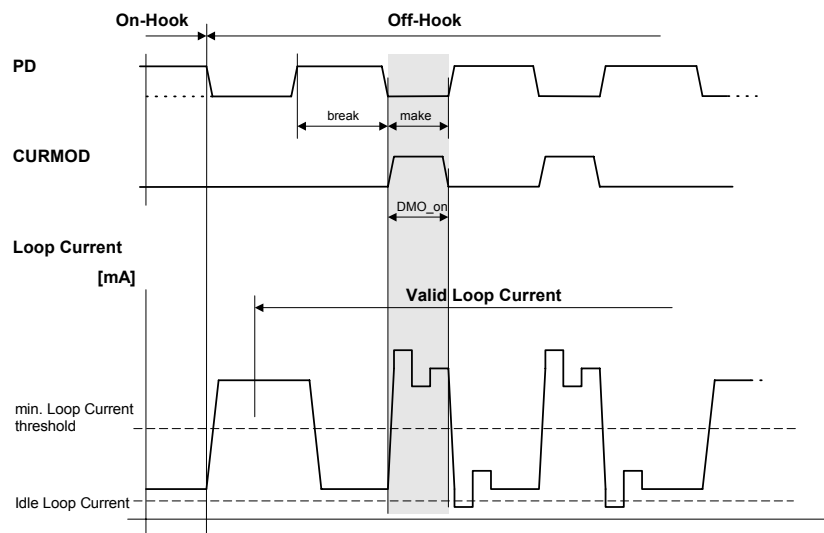


Figure 1

CURMOD Set-up (General)

In general the CURMOD is activated with the first make and handled like the Pulse dial port including the last break, where the CURMOD port is deactivated.

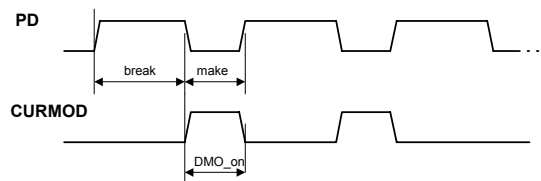


Figure 2

CURMOD Set-up Spain

The CURMOD port is activated before make within a set-up time and cleared after a set-up time and make.

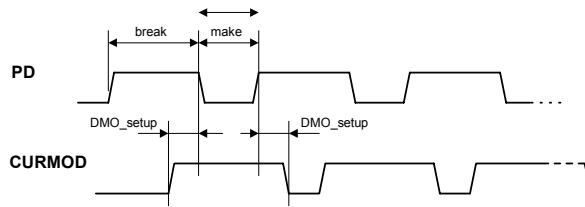


Figure 3

CURMOD Set-up France

The CURMOD port is handled using the inverted Pulse Dial port information.

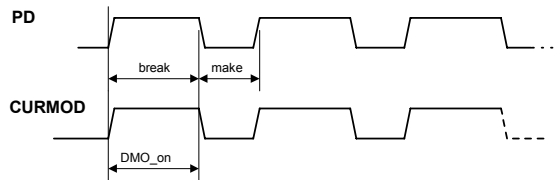


Figure 4

CURMOD Set-up Portugal (International)

The CURMOD port is activated before the first break and kept active until the last make of the digit is done. If several digits are dialled, the CURMOD stays active until the last make of the last digit is done.

GP 41 CIDIMP

On-Hook, Off-Hook Line Configuration

No **CIDIMP** signal handling involved

CLI Polarity Reversal, CLI Services

To adapt the line impedance during CLI Services, the **CIDIMP** control signal has to be activated. If activated a impedance is connected in parallel to the nominal source impedance of the terminal equipment.

Table 1: CLI Impedance Table

Onhook / No CLI handling	0	0	1	1	No CLI Impedance
Onhook / CLI Impedance	0	0	0	1	CLI Impedance
Onhook / CLI Wetting Pulse	1	0	1	0	Draw loop current

GP 42 MUTE

On-Hook, Off-Hook Line Configuration

To receive tone signals during On-Hook, when no line connection has been established, and to prevent corruption of tone signals during Off-Hook, a muting signal has to be used. To enable receiving of tone signals during On-Hook, MUTE has to be deactivated. If transmitting of modem signals during Off-Hook is necessary the muting control signal has to be activated.

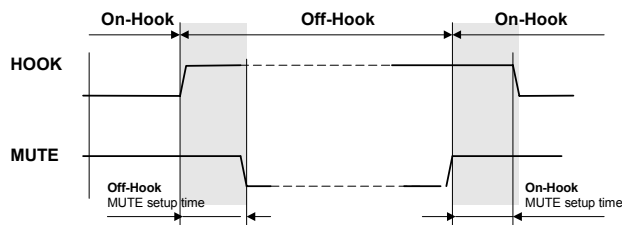


Figure 1

To gain a smooth **On-Hook** to **Off-Hook** transition and vice versa without any audible spikes, the muting signal has to be switched accordingly using a set-up time (**Off-Hook MUTE set-up time**, **On-Hook MUTE set-up time**).

Pulse-Dial

To prevent any influence of voice signals from being transmitted via the line, or dial pulses heard via the handset, a mute signal disables the voice path if activated. The **MUTE** signal has to be activated prior dialling of a number and has to be deactivated, to re-establish the voice path, after the digit has been dialled.

DTMF-Dial

To prevent any influence of voice signals from being transmitted via the line or dial tones heard via the handset and to establish a connection between the modem and the line (MTXD), the mute signal disables the voice path if activated. The MUTE signal has to be activated prior dialling of a number and has to be deactivated, to re-establish the voice path, after the digit has been dialled.

GP 43 OFF_HOOK

Handset Lift, Handset Drop

To indicate the lifting of the handset to seize the line or to record voice during TAM handling a change of this signal has to be detected. No line access is established by activation of the cradle signal only. A corresponding LIU configuration has to be executed to establish a valid line connection.

GP 44 Connection of the Codec to DC2

Low End

For low-end version, the codec is directly connected to the Digicolor2. The modem function is realised in firmware. The codec is a STLC7550 codec from STM.

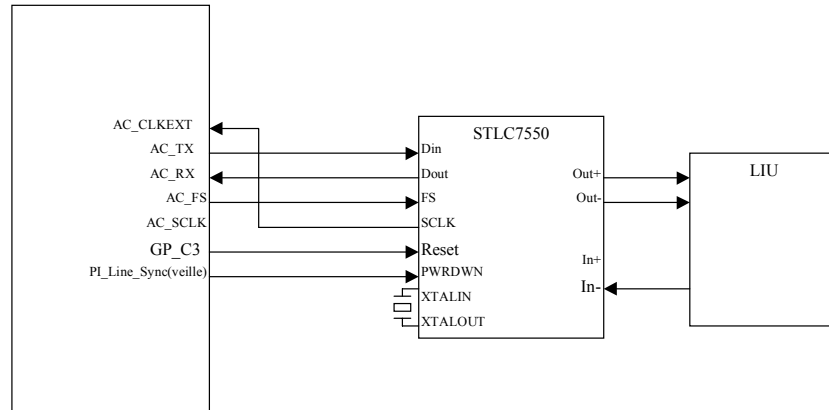


Figure 1

The codec is clocked by a 18,432MHz crystal.

To provide a proper clock to the serial link, the codec must be configured as a slave, providing the SCLK. For this pins MCM is tied to 1 and M/S to 0. The bus clock SCLK is connected to the AC_CLKEXT of the Digicolor2 and the output AC_SCLK of the Digicolor is left unconnected.

The register Config2 of the codec interface block should be programmed as follow:

- Bit 7-6: extclk_md[1:0]= 10
- Bit 5: tr_extclk = 0
- Bit 4: tr_nbaud = 1

With this configuration, the codec block uses the SCLK coming from the codec as its internal clock and the SCLK coming out of Digicolor2 is equal to the input AC_CLKEXT.

High end

The chip modem is an Agere data pump (DP2Vxx) + CODEC (1034C). V32 to V90 data pump can be used. The data pump is supervised by digicolor2 on peripheral bus.

The line interface can manage an external telephone.

GP 45 Audio

The microphone of the handset is polarised through R904, C901, R905 and R909. The signal then goes through a dual stage amplifier Z900 (section 2 and 3) and can be muted by Z901 section 2.

The signal coming from the line is amplified by Z900 and can be muted by Z901 section 1.

The last section of Z900 is used for sidetone suppression.

LIU_MUTE

This signal is used to switch on and off the handset. When LIU_MUTE is set, the microphone is disconnected and the speaker is attenuated by xxdB.

Table 1:

MUTE	Source
0	Not Muted , Handset connected
1	Handset muted.

Speaker

The speaker can reproduce signal coming from two sources:

- Signal coming from the line for line monitoring.
- Signal coming from Digicolor2 (Tone) for the beeps and ringing tone.

The volume of the ringing signal and of the beeps is controlled using a digital multiplexer (Z550) to choose the gain of the audio amplifier and the source of the signal.

The output of the multiplexer is amplified by two LM358 (Z551 section 1 and 2) and then by a discrete amplifier (Q550 and Q551).

Table 2:

State	VOL3	VOL2	VOL1	VOL_EN*	OUTP
Ringer high	H	H	H	L	7
Ringer medium	H	H	L	L	6
Ringer low	H	L	H	L	5
Line monitoring high	H	L	L	L	4
Line monitoring medium	L	H	H	L	3
Line monitoring low	L	H	L	L	2
Mute	X	X	X	H	0

GP 46 Technical Data

Refer to:

[Table 1](#), General

[Table 2](#), Paper

[Table 3](#), Print Cartridge

[Table 4](#), Printer

[Table 5](#), Fax

[Table 6](#), Copier

[Table 7](#), PC Connection

[Table 8](#), Scanner

[Table 9](#), Telephone

[Table 10](#), SMS

Table 1: General

Dimension	370 x 200 x 330mm (14.5 x 7.8 x 13in) (W x H x D)
Weight	Approx. 7.25kg (16lbs)
AC Power Connection	110 – 120 Volt / 50-60Hz 220 – 240 Volt / 50-60Hz
Power Consumption	Standby < 8W Transfer < 17W Reception < 20W Standard
Recommended Environment	Temperature 62.6 – 82.4F (17 - 28C) Relative Humidity 20 –80%
Connection to the telephone network	FCC Part 68
Emission	FCC Part 15
Safety	UL 60950-I

Table 2: Paper

Automatic Document Feeder	20 Documents
Paper Sizes	A4 210 x 297mm Letter 8.5 x 11 Inch 216 x 279mm Legal 8.5 x 14 Inch 216 x 356mm
Paper Thickness	0.08 – 0.12mm
Paper Weight	60 – 90gms (16lb-24lb) Legal: 90gsm
Paper Tray	Max. 250Sheets

Table 3: Print Cartridge

Capacity (5% Black)	
Starter Cartridge	Approx. 1000 Pages
Additional Cartridges	Approx. 3000 Pages

Table 4: Printer

Type	Class 1 Laser Printer
Warm - Up Time	Approx. 15sec.
Resolution	600 x 600dpi
Printing Speed	10 Pages/Minute
Print Width	215mm (8.5 inch)

Table 5: Fax

Connection Type	Public Switched Telephone Network (PSTN) Private Automatic Branch Exchange (PABX)
Device Type	Group 3 Facsimile
Compatibility	ITU-TT.30
Encoding	MH, MR, MMR
Fax Memory	120 Pages
Telephone Book Entries	Approx. 200
Transfer Speed	33.6K
Horizontal Resolution	8dots/mm
Vertical Resolution	Standard 3.85 lines/mm Fine 7.7 lines/mm

Table 6: Copier

Type	Black and White, 64 grey tones	
Resolution	Fast Quality Photo	200 x 300dpi 400 x 300dpi 400 x 300dpi
Copying Speed	10 Pages/Minute	
Multiple Copies	Up to 99 Pages	

Table 7: PC Connection

Connection Type	USB 1.1 (USB 2.0 Full Speed)
Supported Operating Systems	Windows® 98SE / 2000 / ME / XP
Scanner Driver	TWAIN

Table 8: Scanner

Type	Black and White, 256 grey tones
Resolution	300 x 300dpi
Scan Area	Max. 218 x 600mm (8.5 x 24 inch)
Scan Width	208mm
Speed	6sec. / A4-Page (Letter 8.5 x 11 inch)

Table 9: Telephone

Type	Public Switched (PSTN) Private Branch Exchange (PABX)
Telephone Book Entries	Approx. 200

Table 10: SMS (Short Message Service) *

Gateway	V23
Memory	30 Messages
Message Length	640 Character

* Depending on country and telephone network

GP 47 Safety - Test Specification

Demand

Universal device suitable for use as **IT / HV / ECT - TEST**
for Terminal & IT – Equipment according to IEC/ EN 60950-1:2001

Abbreviations

IT Isolation Test
 HV High Voltage Test
 ECT Earth (Ground) Continuity Test
 UUT Units Under Test
 USB PC Interface
 TNV PSTN Line / External
 AC POWER .. Primary Circuit
 SELV Secondary Circuit
 BODY ... Chassis (earthed/grounded)

Technical data

Test Voltage Range: 0 – 4500 V DC (adjustable)
 Conformity of application: DIN VDE 0104

Measurement Current: $I_{\max} = 0,25 \text{ mA}$ (\Rightarrow only for HV tests)
 $I_{\text{ECT}} = 25 \text{ A}$ (\Rightarrow only for ECT test); Duration: min. 1 sec.

Test Voltages: a) $U_{T1} = \text{max. } 12 \text{ V DC}$;
 b) $U_{T2} = 380 \text{ V DC}$; Duration: min. 1 sec.
 c) $U_{T3} = 1680 \text{ V DC}$; Duration: min. 1 sec.
 d) $U_{T4} = 4240 \text{ V DC}$; Duration: min. 1 sec.
 (3000 V AC)

Rise / Fall Rate: < 1000 V/ms (\Rightarrow automatic discharge after measuring cycle)

Additional requirements:

Statistical Evaluation (via PC):

- count of units under test
- count of faulty units under test
- test results recorded
- serial numbers recorded

Terminals / plugs

UUT >>> TNV = PSTN-line – ext.
 SELV = USB = Body = chassis
 AC POWER = power terminal – plugs

IT / HV > see operator's manual of test equipment (available in engineering department)
The principle of measurement is a 4-wire test method.

Description / Earth (Ground) Continuity Test / Isolation Test / High Voltage Test

General

No start-conditions are defined; possibility of automatic or manual operation
The IT / HV test - voltage is an adjustable direct voltage (preferred instead AC)
The maximum HV test-current is 0,25 mA and therefore is regarded as safe for Service Provider (no cover necessary)
The duration of the test is 1 second min.
After each test performed, the UUT must be discharged automatically by the IT
High voltage-Test: PSTN-line (TNV-3) / housing, handset ... not applicable
Remark:performed at the Type Examination test

Test Procedure

1) Earth (Ground)-Continuity – Test -> Earth (Ground) (AC power outlet) / chassis (bottom):
To ensure the required earth (ground) continuity resistance < 0,1 ohms this test is performed in compliance to the standard IEC / EN 60950-1:2001, clause 2.6.3.3
 U_{T1} max = 12 V DC ; I test = 25 A ; t min > 1 sec

2) Isolation - Test -> PSTN-line (=TNV-3) / chassis / USB-earth (ground) :
To check the electric strength of the insulation between the TNV-3 and the chassis all devices (100%) are tested at two voltages (I max = 0,25 mA ; t min > 1 sec):

U_{T2} = 380 V DC → to check, if the protection device is assembled correctly
(e.g. no short-circuit due to loose screws)

Remark:380 V because of IEC / EN 60950-1:2001, clause 6.1.2.1: requested minimum DC spark over voltage has to be 1,6 times the upper voltage of the rated voltage range

U_{T3} = 1680 V DC → to check, if the protection device works correctly
(quality issue)

Remark: 1680 V according the datasheet of the used surge arrester: nominal DC spark over voltage is 1400 V ± 20%

3) High voltage – Test -> 100 % -Test primary / secondary with a voltage of 4240 V DC is performed between power source (terminal plugs) and chassis / USB-earth (ground) in conformity to IEC/EN 60950-1:2001, clause 5.2.2 (table 3b): U_{T4} = 4240 V DC;
I max = 0,25 mA; t min > 1 s

4) High voltage – Test -> 100 % - Test PSTN (TNV-3) / AC power with a voltage of 4240 V DC is performed between TNV-3 and power source in conformity to IEC/EN 60950-1:2001, clause 5.2.2 (table 3b): U_{T4} = 4240 V DC;
I max = 0,25 mA ; t min > 1 s

GP 48 Acronyms and Abbreviations

- CIS ... Contact Image Sensor
- PSU ... Power Supply Unit
- OPU ... Operation Panel Unit (Control Panel)
- LIU ... Line Interface Unit for Fax
- MAB ... Main Board
- ADC ... Analogue to Digital Converter
- AFE ... Analogue Front End

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7. Wiring Data

WD 1 Connector to PSU (P350)	7-3
WD 2 Connector to CIS (P300)	7-4
WD 3 External Connection	7-5
WD 4 Connector to LSU (P351)	7-6
WD 5 Connector P402	7-7
WD 6 Wiring Diagram	7-8

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WD 1 Connector to PSU (P350)

Refer to [GP 26](#) and [WD 6](#).

Table 1:

Pin	Signal	Pin	Signal
1	+24V after switch	2	+24V after switch
3	PRBEN*	4	TRREAD
5	TRPWM	6	RTRBEN*
7	DEBEN*	8	PAPER*
9	REGIST*	10	PICKUP*
11	+24V	12	+24V
13	GND	14	GND
15	GND	16	GND
17	+5V	18	+5V
19	+5V	20	+5V
21	-12V	22	HEAT
23	FAN*	24	PMOTB0*
25	PMOTA0	26	PMOTA0*
27	PMOTB0	28	SMOTB0*
29	SMOTB0	30	SMOTA0*
31	EXIT*	32	SMOTA0

WD 2 Connector to CIS (P300)

Refer to [GP 29](#) and [WD 6](#)

Table 1:

Pin	Signal
1	AO
2	GND
3	VDD(+5V)
4	SI
5	CLK
6	GLED
7	VLED

WD 3 External Connection

Refer to [GP 34](#) through [GP 44](#)

Table 1: Line Connector P701

Name	Pin	Function
NC	1	Not connected
R2	2	Loopback L1
L2	3	Telephone line pair
L1	4	Telephone line pair
R1	5	Loopback L2
NC	6	Not connected

Table 2: External Phone connector P700

Name	Pin	Function
NC	1	Not connected
NC	2	Not connected
R2	3	Loopback L1
R1	4	Loopback L2
NC	5	Not connected
NC	6	Not connected

Table 3: Handset connector P901

Name	Pin	Function
MIC-	1	Microphone
GND	2	Ground (Earth)
DECT_EAR	3	Loudspeaker
MIC+	4	Microphone

Table 4: DECT connector(P900)

Signal	Pin	I/O	Digicolor2	Pin	I/O	Comment
Vcc	9	-	-	-	-	Power supply 5V
RxD	8	I	USART1_TX	145	O	Serial data receive
TxD	7	O	USART1_RX	143	I	Serial data transmit
-6V	6		-	-	-	NC
DECT_RES	5				-	Reset for the dect base
AGND	4		-	-	-	Analog ground (earth)
Audio_in	3		-	-	-	Audio in
Audio-out	2		-	-	-	Audio out
Agnd	1		-	-	-	Analog ground (earth)

WD 4 Connector to LSU (P351)

Refer to [WD 6](#) and [GP 21](#)

Table 1:

Name	Pin	I/O	Active	Current	Function
CLK	1	O		2mA	Clock for the motor
*READY	2	I	Low	2mA	Motor rotation detection (Low=synchronised)
*START	3	O	Low	2mA	Motor rotation (Low=Start ; High=Stop)
GND	4				Ground (Earth)
+24V	5				Power supply
NC	6				Not connected
GND	7				Ground (Earth)
Video*	8	O	Low		Video signal
LDEN*	9	O	Low		LED enable
-S/H*	10	O	Low		Enable LED power control
+5V	11				Power supply
GND	12				Ground (Earth)
GND	13				Ground (Earth)
*HSYNC	14	I	Low	2mA	Horizontal synchronisation

WD 5 Connector to OPU (P402)

Refer to [GP 22](#) and [WD 6](#)

Table 1:

OPU	I/O	Level	P400	Digicolor2 I/O	DC2	function
P5V			1			Power supply 3.3V
GND			2			Ground (Earth)
CS_LCD*	O	1	3	PP_nACK	156	LCD chip select
CS_PAN*	O	1	4	PP_nSTROBE	167	Keypad chip select
TX_PAN	O		5	USART0_TX	1	Serial link TX
RX_PAN	I		6	USART0_RX	2	Serial link RX
GND			7			Ground (Earth)
SCLK_PAN	O		8	USART0_CK	8	Serial link clock
DDS	I		9	GP_A2	28	Document sensor (ADF)
DPS	I		10	PI_TGEN0	131	Document position sensor(ADF)
P3.3VOPU			11			

WD 6 Wiring Diagram

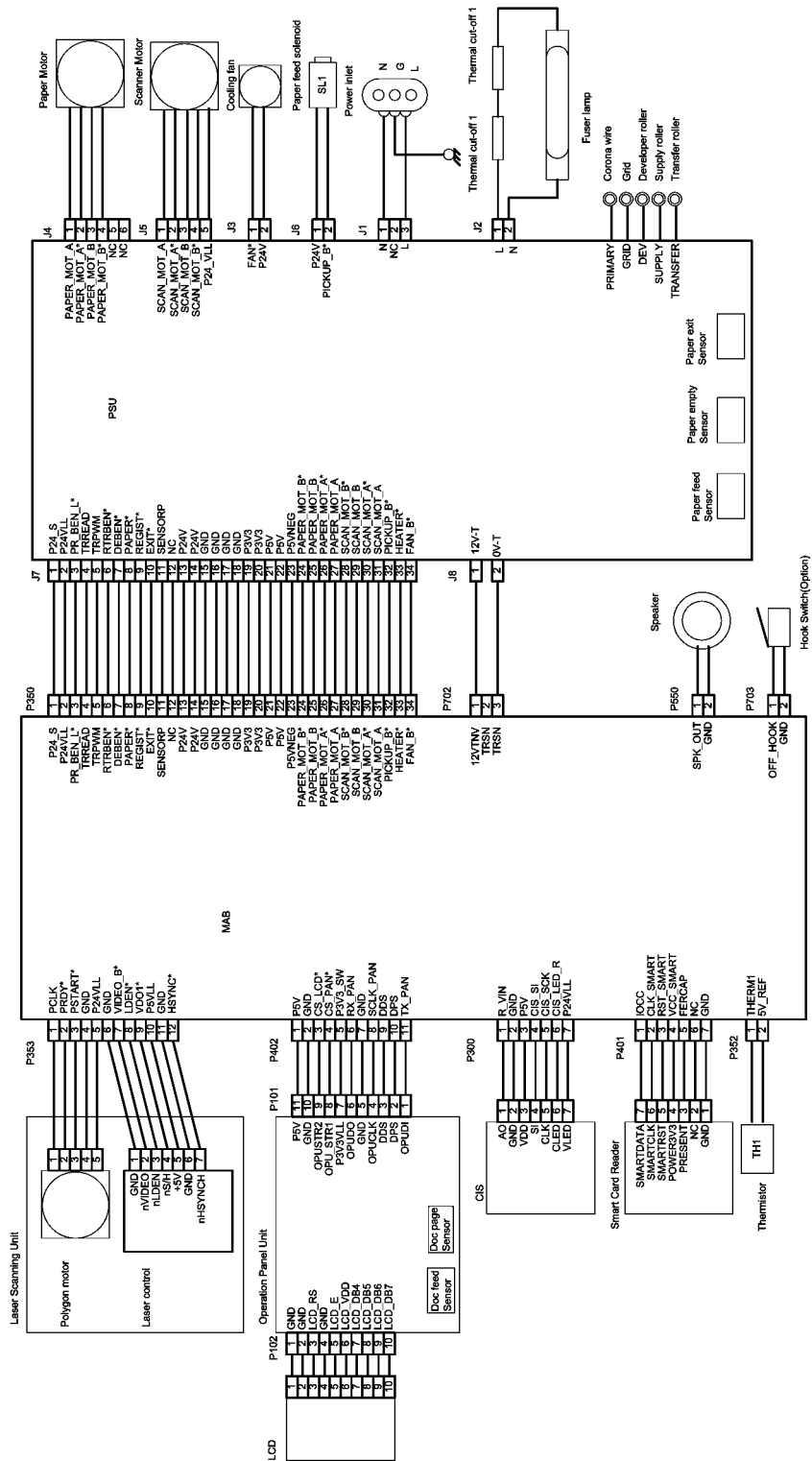


Figure 1

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PRODUCT AND PUBLICATION TITLE:	PUBLICATION REVISION DATE:	SOFTWARE REVISION LEVEL:
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PAGE NUMBER:	<p align="center">COMMENT</p> <p align="center">Please submit a marked-up photocopy of the relevant pages</p>
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CUSTOMER SATISFACTION QUESTION SET

QUESTION	NOT APPLICABLE	VERY SATISFIED	SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	DISSATISFIED	VERY DISSATISFIED
DO YOU FIND THE MANUAL IS TECHNICALLY ACCURATE?						
DO YOU FIND THE FORMAT OF THE MANUAL EASY TO USE?						
WHAT IS YOUR OVERALL SATISFACTION LEVEL WITH THE MANUAL						

FOR OFFICE USE ONLY	Global Knowledge & Language Services Xerox Europe Enterprise Centre Bessemer Road Welwyn Garden City Hertfordshire AL7 1HE England Attention: Phil Hayes
RECEIVED DATE:	
PCS. NUMBER:	
MANAGER:	
DUE DATE:	

**APPENDIX A: Health & Safety Incident Report Involving a Xerox Product**

Customer Identification		
Customer Name:		Name of Customer Contact Person:
Address:	E-mail:	Telephone :
		Fax :
Customer Service Engineer Identification		
Name:	Employee :	Pager :
Location:	Phone :	
Details of Incident		
Date Of Incident (mm / dd / yr):		
Description Of Incident: (Check all that apply) <input type="checkbox"/> Excessive Smoke Describe quantity and duration of smoke: <input type="checkbox"/> Fire with open flames seen <input type="checkbox"/> Electric shock to operator or service representative <input type="checkbox"/> Physical injury/illness to operator or service representative Describe: <input type="checkbox"/> Other Describe:		
Any damage to customer property? No <input type="checkbox"/> Yes <input type="checkbox"/> Describe:		
Did external emergency response provider(s) such as fire department, ambulance, and etc. respond? No <input type="checkbox"/> Yes <input type="checkbox"/> Identify: (ie, source, names of individuals)		
Apparent cause of incident (identify part that is suspect to be responsible for the incident)		
Preliminary actions taken to mitigate incident:		



Product Description		
Model No. or Product name:		
Product Serial :	Serial Number(s) of Accessory (ies):	
Installation Date:	Total Copy Meter:	
Date of last service maintenance:		
List damaged and affected part(s) of the machine by description and part number:		
<u>Description</u>	<u>Part Number</u>	
Location of product and affected part(s):		
Individual Providing Notification		
Name:	Title:	Telephone Number:
Organization:		E-Mail:
Mailing Address:		Date Report Submitted:

Instructions: E-mail or fax this completed form to EH&S:

For incidents in **Xerox Europe** and **Developing Markets East**
(Middle East, Africa, India, China, and Hong Kong)
please **e-mail:** Elaine.Grange@gbr.xerox.com or **fax:** +44 (0) 1707 35 3914 [intelnet 8*668 3914]
Note: - If you fax this form, please also send original by internal mail

For incidents in **North America** and **Developing Markets West**
(Brazil, Mexico, Latin American North and Latin American South)
please **e-mail:** Doris.bush@usa.xerox.com or fax 585-422-6449 [Intelnet 8*222-6449]