Service Manual

HP Designjet 10000s Series Printers

invent

For HP Internal Use Only

First Edition, September 2006

Warranty

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

WARNING

The procedures described in this manual are to be performed by HP-qualified service personnel only.

Electrical Shock Hazard

Serious shock hazard leading to death or injury may result if you do not take the following precautions:

- Ensure that the ac power outlet (mains) has a protective earth (ground) terminal.

- Disconnect the Printer from the power source prior to performing any maintenance.

- Prevent water or any other liquids from running onto electrical components or circuits, or through openings in the enclosure.

Electrostatic Discharge

Refer to the beginning of Chapter 4of this manual, for precautions you should take to prevent damage to the Printer circuits from electrostatic discharge.

Safety Symbols

General definitions of safety symbols are given immediately after the table of contents.

WARNING

The Warning symbol calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning symbol until the indicated conditions are fully understood and met.

CAUTION

The Caution symbol calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood and met.

Content Management Department,
Barcelona Division,
Hewlett-Packard Espanola, S.A.
Avda. Graells, 501
08190 Sant Cugat del Valles
Spain

Service Manual

HP Designjet 10000s Series Printers

Using this Manual

Purpose

This Service Manual contains information necessary to test, calibrate and service:

- HP Designjet 10000s Series Printers (Model Q6693A).

For information about using these printers, refer to the corresponding User Guide.

Readership

The procedures described in this Service Manual are to be performed by HP Certified service personnel only.

Part Numbers

Part Numbers for Printer options, accessories and service parts are located in Chapter 7.

Conventions

A small arrow ⇒ is used to indicate other parts of the Service Manual where you can find information related to the topic you are consulting.

Safety Precautions

The following Warnings and Cautions are presented in this Service Manual and must be observed.

Follow the instructions marked with these symbols.

⚠ WARNING	Failure to follow the guidelines marked with this symbol could result in severe personal injury or death.
⚠ CAUTION	Failure to follow the guidelines marked with this symbol could result in minor personal injury or product and/or peripheral damage.

⚠ WARNING

	Inks used in the printer and liquids in the HP Cleaning and Maintenance kits contain an organic solvent (ethylene glycol monobutyl ether acetate, CAS No. 112-07-2). Observe all local, state, and federal regulations related to the handling, use, storage, and disposal of organic solvents.
	Avoid contact between ink and skin, eyes, and clothing. ■ Immediately wash skin with soapy water. ■ Remove clothing soaked with ink from contact with skin. ■ Use an approved eye wash station if ink is splashed into eyes and consult a doctor if necessary. ■ If an approved eye wash station is unavailable, flush eyes with cold water and consult a doctor if necessary.
	Be sure the printer is well-grounded. Failure to ground the printer may result in electrical shock, fire, and susceptibility to electromagnetic interference.
	Ink and fluids used in the Cleaning and Maintenance Kits are combustible. Do not use or store within 8 meters (25 feet) of open flames, sparks, or other sources of ignition.
	Switch power OFF, remove the power cords from the electric outlets and allow the printer to cool before attempting to remove any panels or covers. The printer contains high voltage and hot components. Removal of panels or covers may result in exposure to electric shock and burns.
	Do not allow metal or liquids (except those used in HP Cleaning and Maintenance Kits) to touch the internal parts of the printer. Doing so may cause fire, electric shock, or other serious hazards.
	When shutting down the entire system, always turn OFF the printer switch as well as the heater switch (breaker).
	Use only an HP Waste Ink Bottle. The bottle must be installed according to instructions or waste ink may overflow.
	An HP Waste Ink Bottle must always be installed before turning the printer ON. Automatic and manual service cycles produce waste ink that must be contained in an HP Waste Ink Bottle.
	Always use both hands to remove and carry an HP Waste Ink Bottle.
	Keep the HP Waste Ink Bottle upright. Do not place on tables or shelves where it could fall.

	Waste ink is combustible. Keep an HP Waste Ink Bottle containing waste ink away from open flames, sparks, or other sources of ignition.
	Never store waste ink in a glass container.
	Never pour waste ink into a container filled with other chemicals.
	The HP Waste Ink Bottle contains organic solvents and must be disposed of in compliance with all local, state, and federal regulations.
	Always securely replace the cap on a full or partially-full the HP Waste Ink Bottle after removing it from the printer to prevent ink spills.

⚠ CAUTION

	Treat any media, paper, used cleaning and maintenance supplies, and wipes soaked with ink as combustible materials. Handle and dispose of properly.
	Do not clean the printer with benzene or paint thinner. This may damage the paint.
	Wipe the printer clean with a soft cloth. A cloth moistened with a neutral detergent may be used. Do not allow liquid to enter the printer. This may create risk of fire and electrical shock and cause a malfunction.
	Never touch the printhead nozzles. They can be easily damaged or clogged.
	Do not touch heater surfaces in the paper path. This may cause burns. Take care when touching printer components near the heaters.
	HP Ink Cartridges must be installed before the “Install By” printed on the cartridge. Use of the Ink Cartridge 3 months beyond the “Install By” date may cause deterioration in print quality or a printer malfunction.
	Do not separate the cap from a new HP Waste Ink Bottle. The cap is needed to properly seal the HP Waste Ink Bottle for disposal.
	The level in the HP Waste Ink Bottle should be checked by visual inspection to prevent overflow. If the waste ink level is above the indication line, the bottle must be replaced with an empty HP Waste Ink Bottle.
	The use of safety glasses and gloves is recommended when performing cleaning and maintenance operations.

Table of Contents

Troubleshooting 1-1

System Error Codes 2-1

Head Adjustment 3-1

Maintenance Mode 4-1

Adjustments and Calibrations 5-1

Print Quality 6-1

Parts and Diagrams 7-1

Removal and Installation 8-1

Preventive Maintenance 9-1

Troubleshooting 7

Introduction 1-2
Troubleshooting System Error Codes 1-2
Performing a Service Test on a Failed Assembly 1-2
Performing the Necessary Service Calibrations or Adjustments 1-3
Solving Print Quality Problems 1-3
The Printer does not Power ON 1-3
Cover Sensors are not Working 1-3
The File Sent is Not Processed Immediately 1-3
Troubleshooting Media Jam Messages 1-4
Media Jams Occur Frequently 1-5
Print Speed is Very Slow 1-5
No Ink Message when there is Enough Ink 1-5
Abnormal Sound Coming from the Printer 1-5
Front Panel is Not Working 1-5
Heater Panel is Not Working 1-5
Solving Heater Problems 1-6
- "Power ON Heater Power Switch" appears on Heater Panel 1-6
- Heater Does NOT become Hot 1-6
- Abnormal Temperature is Displayed 1-6
- The Heater Temperature Becomes Extremely High 1-6
- "Initializing" Continuously Appears on the Heater Panel 1-6
- "Power Save Mode" Continuously Appears on the Heater Panel 1-7

Special Power On Procedure 1-7
Both NVRAM and Main PCA are Replaced Together 1-8

Guide to Troubleshooting the Printer

Introduction

This chapter will guide you through the relevant steps to take when troubleshooting the Printer.

Troubleshooting System Error Codes

Chapter 2 - *System Error Codes* contains a list of system error codes and their respective descriptions and recommended corrective actions. Only try one recommended action at a time and check if the error code has disappeared.

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error number.
- The System and History Prints.
- Which software application the customer is using (name, version, etc.).

Whenever an Error Message is displayed, you should try to switch the Printer Off and then On again to see if the error disappears. If the error disappears, there is no need to troubleshoot the Printer any further.

Performing a Service Test on a Failed Assembly

If possible, always perform a Service Test on the component/assembly that you are about to replace, just to make sure that is the actual component/assembly that has failed.

If the test on that component/assembly passes, you should NOT replace it.

For information on the Service Tests and how to use them see Chapter 4 - *Maintenance Mode*.

Performing the Necessary Service Calibrations or Adjustments

Is the printer calibrated or adjusted correctly after replacing a component? For information on the Service Calibrations and Adjustments and how to use them, see Chapter 5 - *Adjustments and Calibrations*.

Remember that certain Calibrations or Adjustments are required even if an Assembly has been disassembled to gain access to another Assembly or Component.

Solving Print Quality Problems

Whenever a Print Quality problem appears, it is advisable to print the Test Print to help diagnose the problem. The Test Print will help you differentiate between possible Printhead errors or mechanical problems. For information on solving Print Quality problems see Chapter 6 - *Print Quality*.

The Printer does not Power ON

1. Check that the power cord is connected correctly to the Printer and to the Power Socket.
2. Check that the Power Switch on the BACK of the Printer is in the ON position.
3. Replace the Power Supply Unit ⇒ Page *8-45*.

Cover Sensors are not Working

1. Perform the Sensors Test ⇒ Page *4-53*.
2. Check if the cable for the faulty sensor is not damaged and is connected correctly.
3. Replace the faulty Sensor.

The File Sent is Not Processed Immediately

1. Check that the USB Cable is connected correctly to the Computer and the Printer and that it is NOT damaged.
2. Check that the Data LED on the Front Panel is flashing. If it is flashing and nothing is printed, then maybe the file sent is corrupted or too big.
3. Make sure that the Printer is in the Online state when the file is sent. The file will be rejected if the file is sent when the Printer is in the Offline state.

Troubleshooting Media Jam Messages

There are three different messages that appear on the Front Panel if a media Jam occurs in the Printer:

- Warning (0) Clear Media Jam.
- Warning (1) Clear Media Jam.
- Warning (2) Clear Media Jam.

Warning (0) Clear Media Jam

Over-current has been detected in the use of the Paper-Axis Motor. Try the following:

1. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
2. Check the Tension Bar to make sure that it is not applying too much weight on the Media (check the User's Guide for information on the correct usage of the Tension Bars).
3. If sticky media is being used, then either use different media or use it with the Liner.
4. Clean the Drive Roller and make sure that there is no paper dust or other dirt trapped around the Drive Roller.
5. Check the tension of the Paper-Axis Belt and adjust it if necessary ⇒ Page *5-14*.
6. If this problem continues, replace the Paper-Axis Motor ⇒ Page *8-68*.

Warning (1) Clear Media Jam

Over-current has been detected in the use of the Scan-Axis Motor. Try the following:

1. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
2. Check the Ink Supply Tubes Rail to make sure that it is correctly positioned (if not correctly positioned, it could cause extra friction on the Carriage).
3. Check the tension of the Carriage Belt and adjust it if necessary.
4. Check the Encoder Strip to make sure that it is not dirty or damaged.
5. Check the Slider Rod to make sure that it not dirty.
6. Check the tension of the Scan-Axis Belt and adjust it if necessary ⇒ Page *5-12*.
7. If this problem continues, replace the Scan-Axis Motor ⇒ Page *8-72*.

Warning (2) Clear Media Jam

This problem could be caused by a firmware error. Try the following:

1. Switch the Printer OFF and ON again and check if the message still appears.

Media Jams Occur Frequently

1. Make sure that the paper type setting matches the type of paper loaded into the Printer.
2. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
3. Make sure that the Vacuum Fans are working correctly.

Print Speed is Very Slow

1. Make sure that the Printer is being used at temperatures of 20ºC or higher.

No Ink Message when there is Enough Ink

1. Make sure that the Ink Cartridge is installed correctly.
2. Check that the connector in the Ink Cartridge is NOT damaged.
3. Make sure that the Ink Cartridge Sensors are working correctly. Perform the Ink Sensor Test ⇒ Page *4-54*.

Abnormal Sound Coming from the Printer

1. One of the Motors in the Printer might be defective. Check that the Motors are working correctly ⇒ Page *4-72*.
2. Check that there are no foreign or loose objects inside the Printer.

Front Panel is Not Working

1. Make sure that the Front Panel Cable is connected correctly to the Front Panel and to the Main PCA.
2. Make sure that the Front Panel Cable is NOT damaged.
3. Replace the Front Panel ⇒ Page *8-25*.

Heater Panel is Not Working

1. Make sure that ALL Heater Panel Cables are connected correctly to the Heater Panel.
2. Make sure that the Heater Panel Cables are NOT damaged.
3. Replace the Heater Panel ⇒ Page *8-27*.

Solving Heater Problems

"Power ON Heater Power Switch" appears on Heater Panel

1. Check that the Heater Power Cable is connected and that the heater Power Switch is switched On.
2. Replace the Heater Relay Assembly ⇒ Page *8-52*.
3. Replace the Heater Panel ⇒ Page *8-27*.

Heater Does NOT become Hot

1. Try performing the Heater Test ⇒ Page *4-91*. If the Heater **does not** work during the test, try the following:
   - Make sure that the Cable between the Heater Panel and the Heater Relay Assembly is connected correctly and NOT damaged.
   - Make sure that the Heaters are connected correctly to the power voltage alternation switch.
   - Replace the Heater Relay Assembly ⇒ Page *8-52*.
   - Replace the Heater Panel ⇒ Page *8-27*.
2. If the Heater **does** work during the Heater test, try the following:
   - Make sure that ALL Heater Panel Cables are connected correctly to the Heater Panel.
   - Make sure that the Heater Panel Cables are NOT damaged.
   - Replace the Heater Panel ⇒ Page *8-27*.
   - Replace the Main PCA ⇒ Page *8-36*.

Abnormal Temperature is Displayed

1. Make sure that the Heater that is experiencing the abnormal temperature is installed correctly. Check that the Heater Cable is connected correctly.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Heater that is experiencing the abnormal temperature.

The Heater Temperature Becomes Extremely High

1. Make sure that the Heater that is experiencing the high temperature is installed correctly. Check that the Heater Cable is connected correctly.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Heater Relay Assembly ⇒ Page *8-52*.

"Initializing" Continuously Appears on the Heater Panel

1. Make sure that the Cable between the Heater Panel and the Main PCA is connected correctly and NOT damaged.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Main PCA ⇒ Page *8-36*.

"Power Save Mode" Continuously Appears on the Heater Panel

1. Make sure that the Cable between the Heater Panel and the Power Supply Unit is connected correctly and NOT damaged.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Power Supply Unit ⇒ Page *8-45*.
4. Replace the Main PCA ⇒ Page *8-36*.

Special Power On Procedure

When turning On the Printer, the Printer will follow the internal initialization process, turning on the different systems and making the necessary system checks. In order to troubleshoot the Printer the following Power On options are available:

1. Press the **Cancel** key and Power On button - This will allow you to skip the system check of the Printer.
2. Press the **Cancel** and **Shift** keys and Power On button - This will allow you to skip the error recovery check of the Printer. You will be given the option to enter the Maintenance Mode in order to troubleshoot the Printer by entering a password: ◀, ▶, **Shift** and **OK**.

   MAINTENANCE MODE
   PASSWORD?

   - This option is useful if you want to perform the following:
     - Ink purging without installing media. In a normal power On situation, the Printer cannot function without the media loaded.
     - Recovery of a damaged NVRAM. By powering in the special power On situation, the NVRAM can be recovered by entering the Maintenance Mode and by performing the necessary steps to recover the NVRAM.

Both NVRAM and Main PCA are Replaced Together

When both the NVRAM and the Main PCA are replaced at the same time, mechanical correction value parameters, counters, calibrations, etc... are lost. Whenever possible, this most be prevented by just replacing either the NVRAM or the Main PCA. If for whatever reason, both the NVRAM and the Main PCA are replaced together, you need to perform the following:

1. Make sure that the NVRAM and the Main PCA have been installed correctly.
2. Press the **Cancel** key and Power On button in order to skip the system check.
3. Enter into the Maintenance Mode ⇒ Page *4-7*.
4. Press the **Shift** key once and then the ◀ key to enter in to the Setup menu.
5. In the Setup submenu, scroll to "NVRAM Init" and press the **OK** key.

```
# NVRAM INIT
>
```

6. You will need to confirm that you want to initialize the NVRAM by pressing the **OK** key.

```
# NVRAM INIT
* OK?
```

7. In the Setup submenu, scroll to "Language" and press the **OK** key.

```
# LANGUAGE
> ENGLISH
```

8. In the Language submenu, select "English" or "Japanese" and press the **OK** key.

```
# LANGUAGE
* ENGLISH
```

9. Power Off the Printer.
10. Press the **Cancel** and **Shift** keys and Power On button in order to skip the error recovery check of the Printer.
11. Perform the Line Sensor Test (⇒ Page *4-53*) to register the platen's maximum value read by the Line Sensor to the NVRAM automatically.
12. Power Off the Printer, wait a few seconds and power On the Printer again.
13. You will need to check, and if necessary perform the following:
    - Wiping Position Calibration ⇒ Page *5-55*.
    - Capping Position Calibration ⇒ Page *5-57*.
    - Printhead Voltage ⇒ Page *4-22*.
    - Printhead Row Value ⇒ Page *4-19*.
    - Printhead to Printhead Value ⇒ Page *4-19*.
    - Bidirection Definitions ⇒ Page *4-21*.
    - Media Advance Print ⇒ Page *4-11*.

- Side Margin Position Calibration ⇒ Page *5-59*.
- Top Margin Position Calibration ⇒ Page *5-60*.

14 In the Printhead Maintenance submenu, scroll to "Ink Charge Done" and press the **OK** key.

```
# INK CHARGE DONE
> NO
```

15 In the Ink Charge Done submenu, select "Yes" to indicate that ink charge has been completed and then press the **OK** key.

```
# INK CHARGE DONE
* YES
```

16 In the Setup submenu, scroll to "Save Calibs" and press the **OK** key.

```
# SAVE CALIBS
>
```

17 You will need to confirm that you want to save the NVRAM Calibrations by pressing the **OK** key.

```
# SAVE CALIBS
* OK?
```

18 In the Setup submenu, scroll to "Save NVRAM" and press the **OK** key.

```
# SAVE NVRAM
>
```

19 You will need to confirm that you want to save the NVRAM contents by pressing the **OK** key.

```
# SAVE NVRAM
* OK?
```

20 Power Off the Printer, wait a few seconds and power On the Printer again.

System Error Codes 2

Introduction 2-2
Self-Diagnostic Errors at Power On 2-3
System Error Codes 2-8
Heater Error Codes 2-17
System Error Codes 2-20

System Error Codes

Introduction

The following pages contain a list of error codes and their respective descriptions and recommended corrective actions. Only try one recommended action at a time and check if the error code has disappeared.

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error number.
- The Service Configuration Print.
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).

Whenever an Error Message is displayed, you should try to switch the Printer Off and then On again to see if the error disappears. If the error disappears, there is no need to troubleshoot the Printer any further.

Self-Diagnostic Errors at Power On

When the Printer is powered up, it performs the Boot-Up sequence which initializes the major components of the Printer. If for some reason the Boot-Up sequence fails because a component has failed to initialize, an error code will appear on the Front Panel.

The Boot-Up error codes are hexa-decimal based numbers and correspond to bits which are explained in the following table:

Bit	Error Code (nnnn)	Diagnosis
0	0001	Internal RAM
1	0002	SRAM
2	0004	Flash ROM
3	0008	PIO
4	0010	NVRAM
5	0020	FPGA (Main PCA)
6	0040	FPGA (Carriage PCA)
7	0080	ASIC CONF (Main PCA)
8	0100	ASIC CONF (Carriage PCA)
9	0200	DRAM
10	0400	USB Register
11	0800	Power Supply
13	2000	Add-ON (HEB2) Control PCA
14	4000	Cap Position Adjustment Value
15	-	Reserved

When multiple errors occur during the Boot-Up sequence, the error codes are added together and only one hexa-decimal figure is displayed on the Front Panel. For example, if the **NVRAM** and the **Power Supply** fail during the Boot-Up sequence, the error code E0810 will be displayed.

NVRAM (0010) + Power Supply (0800) = 0810

Each error code and it's appropriate corrective actions are explained on the following pages.

Boot-Up Error: Internal RAM (**0001**)

Problem Description: The read/write of the RAM on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: SRAM (**0002**)

Problem Description: The read/write of the SRAM on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Flash ROM (**0004**)

Problem Description: The program area in the Flash ROM is sum-checked, and it could not be read, causing an error.

Corrective Action: Try the following:

- Reinstall the Firmware (Printer and Boot Firmware).
- If the Error continues, replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: PIO (**0008**)

Problem Description: The read/write of a specific Parallel I/O (PIO) was tested and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: NVRAM (**0010**)

Problem Description: Problems with the NVRAM detected.

Corrective Action: Try the following:

- If multiple errors have occurred that include the NVRAM error, try to resolve the other errors first. After resolving the other errors (except NVRAM), switch the Printer Off.
- Switch the Printer On again and only the NVRAM error recovery will be performed.
- If System Error Code 11Ax appears when the Printer is turned On, then refer to Page *2-11*.
- Replace NVRAM ⇒ Page *8-41*.
- Replace Main PCA ⇒ Page *8-36*.

Boot-Up Error: FPGA (Main PCA) (**0020**)

Problem Description: The read/write of the FPGA-ATG (Band Memory) and FPGA-RSM (Mask Memory) registers on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: FPGA (Carriage PCA) (**0040**)

Problem Description: The read/write of the FPGA-PTC (Print Timing Controller) and FPGA-PDD (Print Data Distributor) registers on the Carriage PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Carriage PCA ⇒ Page *8-96*.
- Make sure that the Carriage Cable is correctly connected.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: ASIC CONF (Main PCA) (**0080**)

Problem Description: The program load from the Flash ROM on the Main PCA to the FPGA on the Main PCA or sum-check was not performed correctly and an error occurred.

Corrective Action: Try the following:

- Reload the ASIC program from the IC Card.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: ASIC CONF (Carriage PCA) (**0100**)

Problem Description: The program load from the Flash ROM on the Main PCA to the ASIC on the Carriage PCA or sum-check was not performed correctly and an error occurred.

Corrective Action: Try the following:

- Reload the ASIC program from the IC Card.
- Make sure that the Carriage Cable is correctly connected.
- Replace the Carriage PCA ⇒ Page *8-96*.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: DRAM (**0200**)

Problem Description: The read/write of the image band memory on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: USB Register (**0400**)

Problem Description: The read/write of the USB controller on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Power Supply (+36V, +24V, +12V) (**0800**)

Problem Description: The power supplies of +36, +24 and +12 V were diagnosed and could not be detected.

Corrective Action: Try the following:

- Open the Electronics Cover and check LED 11 and LED 13.
- If both LED 11 and LED 13 are OFF, then try the following:
  - Check the Interlock Switches to make sure they are installed/connected correctly. Make sure that the Rear Cover lips (that activate the Interlock Switches) are not bent and that the Rear Cover is closed correctly.
  - If the Interlock Switches are installed and connected correctly, then replace the Main PCA ⇒ Page *8-36*.
- If both LED 11 and LED 13 are ON, then try the following:
  - Check whether the correct voltages are supplied from the power source (refer to the table below). If the correct voltages are not supplied, then replace the Power Supply Unit ⇒ Page *8-45*.
  - It is possible that this error occurred because of a faulty Main PCA. Replace the Main PCA ⇒ Page *8-36*.
  - Check whether the motors have been short-circuited by testing +24 V. If +24 V is not supplied then replace both Scan-Axis/Paper-Axis Motors. If error continues, replace the Main PCA ⇒ Page *8-36*.

Power Line	Measuring Position (on the Main PCA)	Normal Value
+1.5 V	TP70	+1.45 V to +1.55 V
+3.3 V	TP69	+3.20 V to +3.40 V
+5 V REF	TP36	+4.90 V to +5.10 V
5 V	TP35	+4.75 V to +5.25 V
+12 V	TP50	+11.00 V to +13.00 V
+24 V	TP34	+23.00 V to +25.00 V
+36 V	TP93, TP33	+35.00 V to +37.00 V

Boot-Up Error: Add-On (HEB2) Control PCA (**2000**)

Problem Description: Problems with the Add-On (HEB2) Control PCA detected.

Corrective Action: Try the following:

- Make sure the HEB2 Board Interface Cable is connected correctly and is not damaged
- Replace the Add-On (HEB2) Control PCA ⇒ Page *8-45*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Cap Position Adjustment Value (**4000**)

Problem Description: This error appears when the Cap Position Adjustment Value is set to zero.

Corrective Action: Try the following:

- To clear this error:
  - Turn the Printer ON in error skip mode by holding down the **Cancel** and **Shift** keys and pressing the ON button.
  - Enter the Password to enter the Maintenance Mode menu: ◀, ▶, **Shift** and **OK**.
  - Set the correct Cap Position value (so that it is not set at 0.0 mm) ⇒ Page *4-13*.

System Error Codes

A System Error Code appears on the Front Panel when a component of the Printer has failed during normal usage. Each System Error Code and it's appropriate corrective actions are explained on the following pages.

System Error: System Error 1110: GA_ATG Block Clear Error

Problem Description: The ATG band memory block erase does not end. This error is checked during Boot-Up sequence and printing.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1111: GA_ATG DMA Transfer Error

Problem Description: There is a problem in the data path. This error is checked during printing.

Corrective Action: Try the following:

- Make sure that the host PC and the Printer are connected correctly via a USB Cable.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 112x: Vacuum Fan Error

Problem Description:

- x = 0: The Vacuum Fan (Wiping Side) has failed.
- x = 1: The Vacuum Fan (2nd Fan from Wiping Side) has failed.
- x = 2: The Vacuum Fan (Center of the Platen) has failed.
- x = 3: The Vacuum Fan (2nd Fan from Capping Side) has failed.
- x = 4: The Vacuum Fan (Capping Side) has failed.

Corrective Action: Try the following:

- Make sure that the failing Vacuum Fan Cable is connected correctly and is not damaged
- Replace the failing Vacuum Fan ⇒ Page *8-35*.
- If the error continues, replace the Add-On (HEB2) Control PCA (for errors where x = 0 or 1) and the Main PCA (for errors where x = 2, 3 or 4).

System Error: System Error 1140: Flash ROM Write Error

Problem Description: A time-out error occurs when the NVRAM contents are being saved in the flash memory in Maintenance Mode and erasing does not end.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1150: Home Position Sensor Error

Problem Description: The Carriage cannot be moved to it's home position.

Corrective Action: Try the following:

- Enter the Sensors Menu (in Maintenance Mode) and select "Printer Sensors". Then execute the "Home Position" option, which will display the state of the home position sensor. If the home position is detected, "1" will be displayed on the Front Panel. If the home position is not detected, manually move the Carriage and check the Front Panel to see if the "1" is displayed.
- Make sure the Home Position Sensor Cable is connected correctly and is not damaged.
- Replace the Home Position Sensor.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1160: Wiping Error

Problem Description: When the Wiping Motor has been running for a while, the sensor fails to detect that the Motor has made one turn.

Corrective Action: Check whether the Wiper turns once and the Wiper Sensor detects the turn when the Printer is initializing when it is powered On.

- If the Wiper **does not** turn once:
  - Check manually by turning the Wiper Gears to see if the Wiper turns. If it does not turn then replace the Wiping Station.
  - Check whether 24 V is supplied to the Main PCA with the circuit tester. If the Wiper Motor does **not** turn even though the 24 V is supplied, there is a possibility of a failure in the Wiper Motor. Replace the Wiping Station ⇒ Page *8-145*.
  - Make sure the Wiper Sensor Cable is connected correctly and is not damaged.
  - If the error continues, replace the Main PCA ⇒ Page *8-36*.
- If the Wiper **does** turn once:
  - Check whether the Wiper Sensor can be switched ON and OFF by manually rotating the Wiper. Check whether the lever type switch is not loose.
  - Make sure the Wiper Sensor Cable is connected correctly and is not damaged.
  - Make sure that the Wiper Sensor is clean.
  - If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error:	System Error 1170: Temperature Sensor Error
Problem Description:	The Temperature Sensor detects abnormal temperatures (-10°C or lower or 85°C or higher).
Corrective Action:	Try the following: ■ Make sure that the Printer is in an environment where the temperature is between -10°C and 85°C. ■ Make sure the Ambient Temperature Sensor Cable is connected correctly and is not damaged. ■ Replace the Main PCA ⇒ Page *8-36*.

System Error:	System Error 1180: Capping Motor Error
Problem Description:	Capping Motor over current is detected.
Corrective Action:	Try the following: ■ When the ambient temperature is very low, the Pump Motor Tube becomes hard and the load on the Capping Motor is increased. Make sure that the Printer is in an environment where the temperature is not below -10°C or higher than +85°C. ■ The Capping Station has a Torque Limiter for up and down operation so that the Capping Station does not experience any over current. ■ Apply grease on the shaft of the Capping Station Gear so that it helps with rotation. ■ Enter the Motors Menu (in Maintenance Mode) and open Solenoids L and R. Access the Pump Motors and check whether the Motor Drive Circuit and Motor work correctly by manually rotating the Motor. When the home position is set to "0", it is clear that the home position has not been adjusted and that capping is not available. ■ Make sure that the Capping Station cables are connected correctly and are not damaged ■ If the Capping Motor cannot be rotated, replace the Capping Station ⇒ Page *8-120*. ■ Make sure the Cap Sensor Cable is connected correctly and is not damaged. ■ Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 119x: Head Relay Variable Supply Error

Problem Description: Output voltages of the Head Relay Board are abnormal.

Corrective Action: Try the following:

- Check whether 36V is supplied to the Main PCA. If not, then:
  - Make sure that the Rear Cover is closed.
  - Replace Power Supply Unit ⇒ Page *8-45*.
- Preset the Head Relay Board Voltage from the Diagnostic Menu. Use a circuit tester to check the voltages of the channels that have an error.
- If the voltage is supplied, it means that the voltage check circuit is defective. Replace the Main PCA ⇒ Page *8-36*.
- If the voltage is not supplied, replace the Head Relay Board ⇒ Page *8-42*.
- There is a possibility of a short circuit off the Head Relay Board output line. Perform a short circuit test on the Main PCA.
- Make sure the Carriage Trailing Cable is connected correctly and is not damaged.

System Error: System Error 11Ax: NVRAM Error

Problem Description: The data in the NVRAM is incorrect.

Corrective Action: Try the following:

- Switch the Printer OFF and ON again and check if the error still appears.
- If the error continues, skip the Power-ON Self-Diagnostic by keeping the Cancel Key pressed and powering ON the Printer. Perform NVRAM Initialization (⇒ Page *4-47*) and then perform Restore Calibs (⇒ Page *4-48*). Switch the Printer OFF and ON again and check if the error still appears.
- If the error continues, restore the Printer to defaults settings. Switch the Printer OFF and ON again and check if the error still appears.
- Check whether the NVRAM is mounted on the Main PCA correctly. If necessary, replace the NVRAM ⇒ Page *8-41*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 11C0: Cap Position Error

Problem Description: The Carriage position sensors have detected more than a 2mm gap during the capping operation.

Corrective Action: Try the following:

- Make sure that the Encoder Strip is **not** stained.
- Make sure that the Encoder Sensor is mounted correctly and that the cable is connected correctly.
- Make sure that the Trailing Cable is connected correctly.
- Replace the Carriage PCA ⇒ Page *8-96*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error:	System Error 11D0: Cooling Fan Error
Problem Description:	When the Printhead temperature reaches above 43°C, the Printer will check whether the temperature drops below 43°C during printing. This error will appear if the temperature does not drop below 43°C after 10 minutes.
Corrective Action:	Try the following: ■ Make sure that the Printhead Cooling Fans are working correctly. If the Printhead Cooling Fans are not working correctly, replace them ⇒ Page *8-87*. ■ Make sure that the Printer Cooling Fans are connected and working correctly.

System Error:	System Error 11E0: Long Term Storage Error
Problem Description:	This error is displayed when the Printer has been left switched OFF for more than 31 days.
Corrective Action:	Try the following: ■ This error can be avoided if the "Store Ink System" procedure is performed before turning the Printer OFF for long periods. ■ To clear this error: – Turn the Printer ON in error skip mode by holding down the **Cancel** and **Shift** keys and pressing the ON button. – Enter the Password to clear the internal error flag: ◀, ▶, **Shift** and **OK**. – Switch the Printer OFF and then ON again.

System Error:	System Error 12Ax: End of Life of Part Reached
Problem Description:	The end of life of the Pump Tube has been reached since it has been working for more than 73 hours.
Corrective Action:	Try the following: ■ Replace the Ink Pump Assembly ⇒ Page *8-99*.

System Error:	System Error 120x: Printhead Drive IC Error
Problem Description:	The Piezo Drive IC on a Printhead is too hot (85°C or higher) or too low (-10°C or lower).
Corrective Action:	Try the following: ■ Check whether the temperature of the Printhead voltage circuit on the Carriage PCA is extremely hot. If it is extremely high, check the short-circuit of the Printhead and the Printhead Cable using a tester. The Short-circuit may have been caused by the incorrect insertion of the Printhead Cable, internal failure of the Printhead or by a foreign object attached to the Carriage PCA. ■ Replace the Printhead ⇒ Page *8-36*. ■ Replace the Carriage PCA ⇒ Page *8-96*.