# Service Manual

# HP Designjet 4500/4520 Printer series

invent

**For HP Internal Use Only**



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**Warranty**

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**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 4 of 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.

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# Service Manual

## HP Designjet 4500/4520 Printer series

# Using this Manual

## Purpose

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

- HP Designjet 4500 printer (Model Q1271A)
- HP Designjet 4500ps printer (Model Q1272A)
- HP Designjet 4500 mfp (Model Q1276A)
- HP Designjet 4520 printer (Model CM767A)
- HP Designjet 4520ps printer (Model CM768A)
- HP Designjet 4520 mfp (Model CM769A)

For information about using these printers, refer to the corresponding User and Quick Reference Guides.

## 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.

In some sections of this Service Manual you may see images which include parts of the HP Designjet 4000 Printer series; these areas of the image can be ignored.

# Table of Contents

# Troubleshooting 1

# 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 (See Note below). Check firmware in *Utilities / Statistics / Code rev.*
- The complete error number (See Note below).
- The Service Configuration Print.
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).

**When reporting the System Error Code, make sure that you supply the full Error Code and the firmware version. Without this information, HP Support Personnel cannot help you.**

## 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 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 - *Diagnostic Tests and Utilities*.

## Performing the Necessary Service Calibrations

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

**Remember that certain Calibrations 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 Diagnostic Print to help diagnose the problem. The Diagnostic Print will help you differentiate between possible printhead errors and other problems such as incorrect front-panel selection, driver or RIP configuration 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. Check to see if any of the LEDs on the Power Switch are On. If any of the LEDs are On, then refer to Page *1-18* for more information.
4. Check that the Front-Panel Cable is correctly connected to the Electronics Module. Also make sure that the Front-Panel cable is not damaged.
5. Replace the Power Supply Unit ⇒ Page *8-120*.

## The Printer Continuously Rejects Printheads

1. Clean the flex contacts on the Printhead and in the Carriage Assembly using the Carriage Interconnect Wiper (Refer to Chapter 3) and try again.
2. If ALL the Printheads are rejected (the status message on the Front Panel does NOT show "OK" for ALL the Printheads) then perform the Electronic Systems Test ⇒ Page *4-32*.

## Cover Sensors are not Working

1. Perform the Sensors Test ⇒ Page *4-43*.
2. Check if the cable for the faulty sensor is not damaged and is connected correctly.
3. Replace the faulty Sensor.

## The Line Sensor has Problems Detecting Media

1. Check the type of media that is being used since the Line sensor may have problems detecting transparent media or some types of Non-HP media. Try loading white HP media in to the Printer and check if the Line sensor detects it.
2. Excessive ink deposits on the Platen surface can fool the sensor by reflecting the light. Clean the Center Platen.
3. The Line Sensor is not calibrated correctly. Perform the Line Sensor Calibration ⇒ Page *5-16*.
4. The Line Sensor is damaged or faulty. Replace the Line Sensor ⇒ Page *8-133*.

## Troubleshooting Media Jams/Printhead Crashes

**If using HP Coated Media when problem occurred, please also refer to Page** *1-6*.

The failure modes "media jam" and "head crash" are grouped together because in many cases a media jam causes the media to lift up into the Carriage path and cause a Printhead crash, thus causing many media jam failures to be reported as head crashes.

1. Did the media jam occur when loading media?
   - If the client has had media jams, it is common for pieces of media to get stuck in the media path. Clear the media path.

**When clearing a media jam, sometimes media is stuck in the paper path. To clear this, you must lift the Pinchwheel Lever and insert thicker media into the paper path to push out the media that is still stuck there.**

2. Is the customer using non-HP media?
   - The use of non-HP media can easily be the cause of media jams and head crashes (especially head crashes because HP media is specially formulated to avoid cockle, one of the primary causes of head crashes). If the media is not HP approved, advise the customer to use HP media and check to see if the problem is now solved.
3. Check that the Vacuum Fan works correctly.

## Troubleshooting Shutdowns

If a shutdown occurs, you will get the message "Switch Power Off" followed by:

- Check Printhead Cleaner Path.
- Check Paper Path.
- Check Printhead Path (followed by (1), (2) or (3)).

A shutdown in each path will require different steps to resolve the problem as explained as follows.

**In each case, make sure that you power OFF the printer before attempting any procedures to resolve the problem.**

### Printhead Cleaner Path

Open the right door of the printer and check for any visible obstacles restricting the movement of the Service Station. Manually move the Service Station, checking for smooth and free movement.

### Paper Path

1. Open the Window and check for any visible obstacles restricting the movement of the Drive Roller. If there is a wrinkled mass of media inside the paper path, lift the Pinch wheels (using the Media Load Handles) and clear the obstruction.
2. If this shutdown happens at the end of a Roll of Media, it could be because the media is stuck firmly to the Roll. Lift the Pinch wheels (using the Media Load Handles) and pull the media clear.
3. Replace media spindle if broken.
4. Replace the Media-Axis Motor ⇒ Page *8-98*.

### Printhead Path

When a shutdown occurs in the Printhead path, you will get the message "Switch Power Off / Check Printhead Path (*). The (*) will be a number, which will give an indication on where the failure occurred:

### PWM Shutdown (1) and Energy Shutdown (3)

1. Clean Slider Rods and Apply Oil along the complete axis of the Slider Rods. After applying the Oil, perform the Scan-Axis Test ⇒ Page *4-7* and check that the values are within the given limits.
2. Replace the Scan-Axis Motor ⇒ Page *8-95*.

### Velocity Shutdown (2)

1. Open the Window and check for any visible obstacles restricting the movement of the Carriage Assembly. Try and move the Carriage Assembly manually, checking for smooth and free movement.
2. Check that the Encoder Strip is clean. If necessary, clean Encoder Strip using a damp cloth.

## Vacuum suction much lower at high altitudes

At altitudes above 3,000 meters, the vacuum force holding down the media will be lower, therefore the media will not be held in place properly causing:

- Ink Smearing on the Media.
- Printhead crashes against the Media.
- Cut Sheet loading problems (high probability).
- Roll Media loading problems (low probability).

PRINTER LIMITATION - NO SOLUTION AVAILABLE.

## Banding at variable extreme environmental conditions

Since the Accuracy Calibration has been done at normal environmental conditions, printing in extreme environmental conditions will cause banding because the advance of the Drive Roller does not correspond to the same conditions that the calibration was done in. To solve the problem, try the following:

Perform the Accuracy Calibration in the new environmental conditions (Refer to the User's Guide).

## Printhead Crashes/Smears on High Density Prints Using Coated Media

High density prints can cause cockle mainly on HP Coated Media. This causes two main problems:

1. Cockling in the borders - Because the printer places too much ink on the Coated Media, the borders of the print become raised, causing the Printhead to crash against the media. To solve the problem, try the following:

   - Change the paper margins to 15mm, either in the Front Panel or in the Driver. If the customer is printing PostScript images, send them a PPD file containing the extended margins of 15mm.

2. Cockling within the print - If the Printer places too much ink within the print, the media starts to ripple, causing the Printhead to smear against the media. To solve the problem, try the following:

   - Check in the Front Panel if **Ink Limiting** is ON or OFF. If Ink Limiting is OFF, turn it ON.
   - Never use HP Coated Media for High Density prints. As a substitute use HP Heavy Coated Media.

## Banding due to Ink Cartridge replacement while printing

A user has removed the Ink Cartridge while the printer was printing, which has caused the printer to stop. If the user does not replace the Ink Cartridge immediately, when the printer starts to print again, a band will appear in the position where the printing restarted. This is because the wet ink interacts with the dried ink on the media causing the band to appear. To solve the problem, try the following:

- Do NOT remove the Ink Cartridge while the Printer is Printing. Only replace/remove Ink Cartridges in between Prints.
- If the Ink Cartridge was replaced due to the "Empty" status on the Front Panel, then advise the customer to replace the Ink Cartridge when the "Very Low" status is showing on the Front Panel.
- Reprint the file (without remove the Ink Cartridge).

## 34" Rice Paper not supported

Roll length is 34" (Non-standard) and the pinch wheels can't control edge of media causing ink smears and Printhead crashes in middle of prints with or without area fills.

PRINTER LIMITATION - NO SOLUTION AVAILABLE.

## Cut Sheet rice paper loading failure

Thin rice paper is sucked into the Center Platen grooves and Linear Blade Ridge. This implies that the friction between the Center Platen and the rice paper becomes higher than between the Overdrive wheels and the paper. This effect make it almost impossible to load the rice paper correctly because the Vacuum is too high.

PRINTER LIMITATION - NO SOLUTION AVAILABLE.

## Worm marks on HP Coated media with light area fills

Light bands (S-shaped) in Paper axis direction where light area fills are printed, causing unacceptable Image Quality defect.

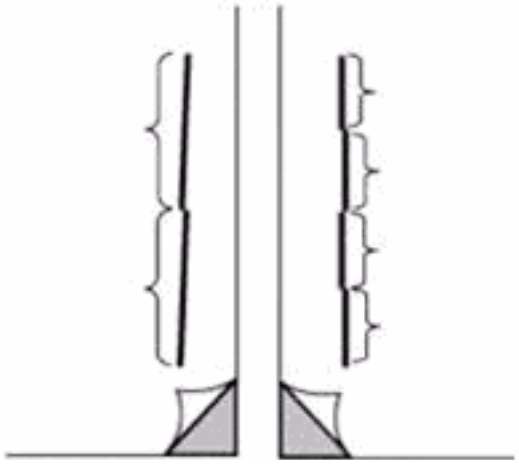
- Print the Service Configuration Print and check if the level of Humidity is very low (below 30%). Increasing humidity may help in reducing the severity of the problem.

**The media is causing the problem and NOT the Printer. Do not attempt to try and replace Printer parts to solve this problem.**

## Vertical lines are not straight

Vertical Line Skew (VLS) is an issue seen where the vertical lines of an image are not vertically straight. This issue can be seen most most apparently at the corners of an image, where the edge of the media tends

to make the inaccuracy of the lines more apparent. In severe case, such as in a CAD drawing for example, the lines are stepped, as shown here:



Perform the following steps in the order they appear. Only move on to the next step once you are sure that the VLS issue remains. Details on the following can all be found in the Service Manual or the User's Guide.

1. Check that you are using appropriate media settings for the type of media loaded (see User's guide and add-on flyers).
2. If a new media has been loaded and there is VLS, wait for the media to stabilize. The printer needs at least to have printed 3 meters of media before the printer can be considered as stabilized. After stabilization check to see if there is VLS.
3. An incorrect paper advance setting is a major contributor to VLS, perform the paper advance calibration.
4. Use a print mode with higher quality than the one you are using (Best, Maximum details ON...) this can improve the quality of the lines.
5. The print mode option "optimized for drawings" is the best selection for printing vertical lines.
6. The problem might be inherent in the image you are printing, try to improve it with an application such as Adobe PhotoShop or Illustrator.
7. The issue of VLS can easily be confused with another issue known as 'DECAP'. Check the service manual for Black printhead 'DECAP' problem.
8. Perform a printhead alignment and be sure to use the same media to print with as the one you have calibrated.
9. Replace the printheads. Only perform this step if all previous step have failed to solve the issue. Remember to calibrate printheads after replacement.
10. If the printer is still experiencing VLS replace the Carriage Assembly.

## Problems Loading Media into Roll Module 2

**The printer persistently rejects media when attempting to load from Roll Module 2 and the "Media edge not found" message is displayed.**

The reason behind this is because the media is too far from the theoretical 'blue line' and does not fall into the media loading margin. The causes for that and its proposed solutions/workarounds are the following:

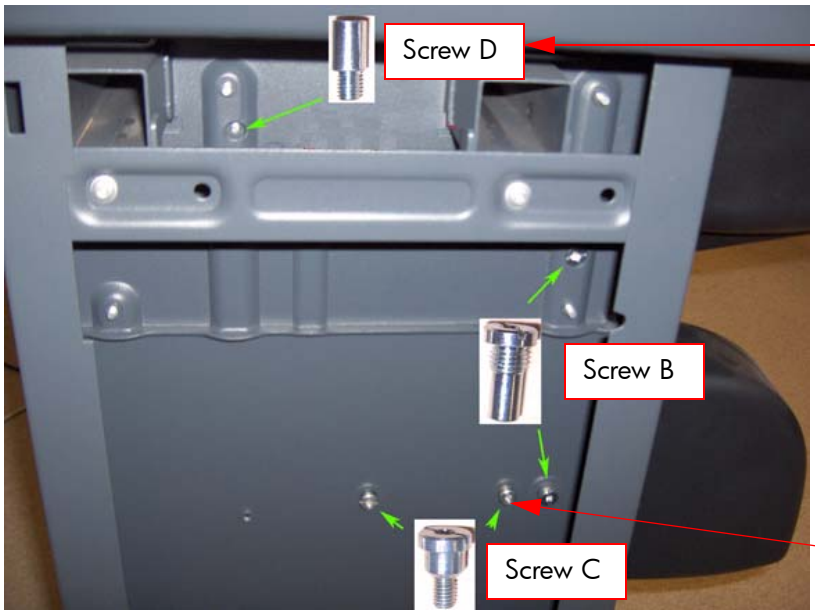
1 **The screws that fix Roll Module 2 to the legs are not correctly assembled (they have been installed in positions different from what the set-up poster indicates).**

There are different types of screws used to assemble the Roll Module 2 to the legs. However, all of them have the same diameter, so it's physically possible to put the screws in the incorrect holes.

If that happens and the screws are not in the holes they should be, the Roll Module 2 will be fixed to the legs (and it will seem that it is correctly assembled) but due to the different lengths of the different screws, this will cause the module to become displaced by 1-2 mm to the left of its reference position, causing the printer to persistently reject loading media.

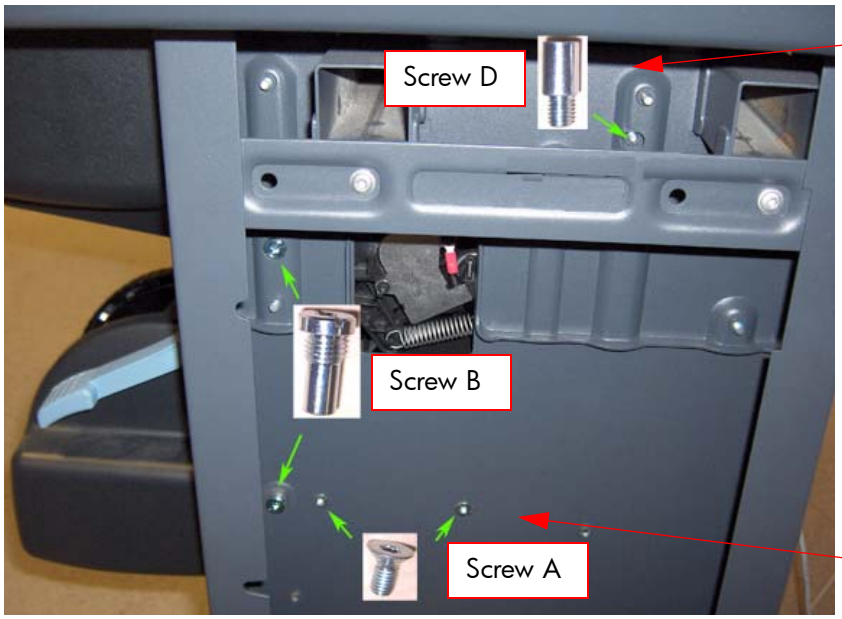
The following pictures show the screws that must be used to install the Roll Module 2 to the legs and where they go in their correct positions on the left and right legs:


Correct screw positions for the left leg (as if looking from the front).




The left side of Roll Module 2 hangs from this screw (D). It is installed from the other side of the leg and cannot be seen from this side of the legs (the left leg)

Correct screw position for the right leg (as if looking from the front).




The right side of the Roll Module 2 hangs from this screw (D). It is installed from the other side of the leg and cannot be seen from this side of the legs (the right leg)


Solution for issues caused by incorrect assembly of the Roll Module 2 screws

- If the printer has already been assembled, the only solution is to remove the screws and place them in their correct position. It is not necessary to remove the Roll Module 2 from its position because of this, as it is fixed by the holder screws.
- To help prevent mistakes refer to the labels next to each hole which contains a drawing of the correct screw.

**2 The printer's stand is deformed or displaced when installed against the printer.**

If the legs are not correctly assembled (some screws are missing, the crossbrace is not tightened or the screws are not tight enough), it is possible that it can become deformed or displaced, this is true if some force is applied to it while the printer is blocked or vice versa, if some force is applied to the printer while the legs are blocked (for example, against a step). This is also true even when an assembled stand has been correctly assembled and the necessary deforming force has been applied.

Tests show that the contribution of this deformation to the displacement of Roll Module 2 can be as much as 4 mm (in incorrectly assembled stands where a strong force has been applied at the key points). This is the worst case. For other cases, the deformation should be much smaller.

**Solutions:**

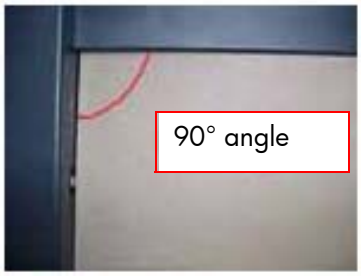
- Make sure the firmware installed in the printer is the latest version.
- If the latest firmware does not provide enough margin, the solution is to reposition the stand and the Roll Module 2:
  - In most cases it will be enough to loosen the screws, reposition the Roll Module 2, and tighten the screws again.
  - For extreme cases, it may be necessary to completely disassemble and

reassemble the Roll module 2 and the legs.

– In case the stand is visibly deformed, then replacing the legs may be necessary. This should only be necessary in very isolated cases

- One of the main contributors to having a deformed stand is an incorrect installation of the legs (especially when the legs and crossbrace are not perpendicular).
  – You can see how to check if the legs are perpendicular and how to correct the issue if they're not in the pictures below:


  – In the photo below there is a 90° angle between the legs and the crossbrace:




  – Roll Module 2 and the crossbrace of the legs are not perpendicular to each other (no 90° angle) (incorrect). It needs to be fixed by loosening the screws, correcting the position of the stand and tightening the screws again:

## Problems loading sheet media

Sheet media is only used in the HP Designjet 4500 printer for calibration purposes.

- The sheet must be loaded with the right-hand edge against the blue line on the Print Platen.
- The media may be crumpled or warped or may have irregular edges.
- If hand-cut media is used, the edges may not form a right-angle or they may be rough. If possible, hand-cut media should not be used. Only purchased sheet media should be used in the Printer.
- If the overdrive is covered in dust, it will have problems picking up the sheet media during the load process. Clean the Overdrive using the Turn Drive Roller Service Utility ⇒ Page *4-85*.

## Using the Buzzer at Power-up to Troubleshoot

As the Printer turns On, normally it does not make a "Beeping Sound" until completely initialized. If one or muliple beeps are heard during the power-up sequence, this indicates there is a problem in the Electronics Module. The table below troubleshoots the issue using the number of beeps heard.

| Number of Beeps | Problem Description | Corrective Action |
|---|---|---|
| 1 | Processor absent | ■ Check the cable between the Power Supply Unit and the Main PCA is correctly connected or is not damaged.<br>■ Replace the Main PCA ⇒ Page *8-112*. |
| 2 | Faulty Main PCA or PSU | ■ Check that the cable between the Power Supply Unit and the Main PCA is correctly connected or is not damaged.<br>■ Replace the Main PCA ⇒ Page *8-112*.<br>■ Replace the PSU ⇒ Page *8-120*. |
| 3 | Faulty Memory Module | ■ Check that the Memory Module is installed correctly.<br>■ Installing the Memory Module into the other memory slot and check if the problem remains.<br>■ If the problem remains replace the Memory Module ⇒ Page *8-110*.<br>■ If the problem does NOT remain, the original slot could be faulty, in this case, replace the Main PCA ⇒ Page *8-112*. |
| 4 | Front Panel | ■ Check that the Front Panel cable is not damaged and is correctly connected between the Front Panel and the Interconnect PCA.<br>■ Replace the Front Panel ⇒ Page *8-27*<br>This functionality is only availble in the HP Designjet 4520. A future firmware release is anticipated to give this funcionality to the HP Designjet 4500. |
| 5 | Faulty PCI Card | ■ Replace the Main PCA ⇒ Page *8-112* |
| 6 | BIOS Damaged | ■ Replace the Main PCA ⇒ Page *8-112* |
| 7 | Main PCA damaged | ■ Replace the Main PCA ⇒ Page *8-112* |
| 8 | Hard Disk Drive damaged or missing | ■ Remove the Main PCA Cover and (with the Printer switched On) check the HDD is turning (feel it turning when you touch it or at least hear it turning). If the HDD is **not** turning, then it could be damaged, replace the HDD ⇒ Page *8-111*.<br>■ Ensure ALL cables are connected to the HDD and are not damaged.<br>■ Replace the HDD ⇒ Page *8-118*<br>■ Replace the Main PCA ⇒ Page *8-112* |

If the printer is turned On and the Power switch Amber LED is On but the printer turns itself Off after a few seconds during the initialization sequence, replace the CPU fan on the Main PCA ⇒ Page *8-112*.

■ Check that the cables between the Interconnect PCA and the Main PCA are not damaged and

are correctly connected.

- Check that the cable between the Power Supply Unit and the Main PCA is not damaged and is correctly connected.
- Replace the Interconnect PCA ⇒ Page *8-100*
- Replace the Gamut PCA ⇒ Page *8-105*

## Using the Power-up Sequence to Troubleshoot

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, the following will help you to locate the failing component:

| Step | Initialization Process |
|---|---|
| | BULNEX KERNEL BOOT |
| 30 | rc.sysinit rerun through initlog. |
| 29 | ■ Environmental variables PATH, NETWORKING, HOSTNAME set.<br>■ Source /etc/init.d functions. |
| 28 | ■ Fix console loglevel.<br>■ Mount /proc.<br>■ Dismount the initrd, if necessary.<br>■ Configure kernel parameters. |
| 27 | Set the system clock. |
| 26 | Load keymap. |
| 25 | Load system font. |
| 24 | Start up swapping. |
| 23 | ■ Set the hostname.<br>■ Initialize USB controller and HID devices |
| 22 | ■ Set variables for options to be later used for filesystem check<br>■ Turn Off DMA on CD-ROMs<br>■ Turn On Hard Disk optimization |
| 21 | Perform file system check on root volume. |
| 20 | Update quotas if fsck was run on root |
| 19 | Setup pnp |

| Step | Initialization Process |
|---|---|
| 18 | ■ Remount the root filesystem read-write.<br>■ LVM initialization.<br>■ Clear mtab.<br>■ Enter root, /proc and (potentially /proc/bus/usb and devfs into mtab.<br>■ Remove /lib/modules/preferred and /lib/modules/default.<br>■ Tweak isapnp settings if needed.<br>■ Load sound modules if the need persistent DMA buffers. |
| 17 | ■ Load modules from /etc/rc.modules.<br>■ File system check.<br>■ Add raid devices. |
| 16 | ■ Setup Logical Volume Management.<br>■ Check filesystems on all volumes found on /etc/fstab. |
| 15 | Mount local filesystems. |
| 14 | Check remaining quotas other than root. |
| 13 | Enable local filesystem quotas. |
| 12 | ■ Configure machine if necessary (if the respective configure files exist).<br>■ Reread in network configuration data. |
| 11 | ■ Clean out /etc, (w/u)tmpx files, /var.<br>■ Reset pam_console permissions.<br>■ Cleanup utmp/wtmp.<br>■ Delete X locks.<br>■ Delete VNC and X locks.<br>■ Delete Postgres sockets.<br>■ Turn On swap in case we swap to files. |
| 10 | ■ Initialize the Serial Ports.<br>■ If a SCSI tape has been detected, load the st module unconditionally.<br>■ Load usb storage to match most other things.<br>■ If ide-scsi is required, load it.<br>■ Generate a header that defines the boot kernel. |
| 9 | ■ Dump the syslog ring in /var/log/dmesg.<br>■ Keep kernel symbols in /var/log/ksyms.<br>■ Create the crash indicator flag to warn on crashes, offer fsck with timeout. |
| 8 | Export this variable BOOT_PART and INSTALL_PART. |
| PRINT APPLICATION STARTING POINT | |
| 7 | IO kernel mode initialization (basically). |
| 6 | Printer Application Infrastructure startup. |

| Step | Initialization Process |
|---|---|
| 5 | Printer IO startup. |
| 4 | Front Panel application startup (but wait for engine launching, i.e. Front Panel is not cleared yet). |
| 3 | Engine startup, start EE and Mechanical initialization. |
| 2 | HPGL/PS parsers startup. |
| 1 | All subsystems launched.<br>Wait for Front Panel application to clear the Front Panel and start signaling the initialization sequence. |

### Corrective Actions for Power-Up Problems

**1** If the Printer's Power-Up process stops when the front panel is displaying the number **17**, this indicates that there is a problem with the file system on the Printer's Hard Disk Drive, so the Printer is checking the whole file system and making any necessary corrections. This problem can arise when there has been a power cut while the Printer was switched On, or if there is a physical problem with the Hard Disk Drive.

Checking the whole file system normally takes about half an hour (but could take much longer). There is nothing that can be done to speed up the file checking process. If you turn Off the Printer during the checking process, the file system check will restart whenever you turn it On again.

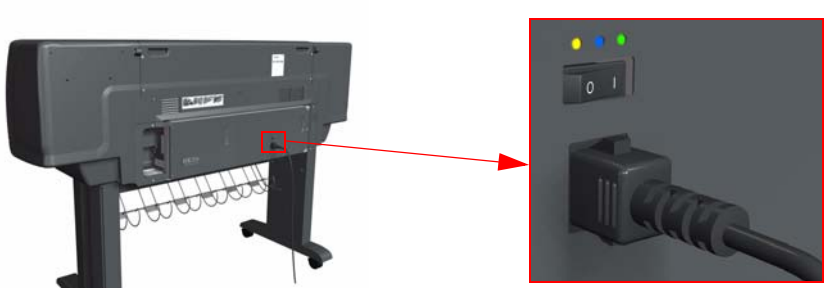
If you experience this problem repeatedly when there has been no power cut, then this could mean that the Hard Disk Drive is faulty. In this case, replace the Hard Disk Drive ⇒ Page *8-114*.

**2** If the printer's start-up process stops when the front panel is displaying any number between **1** to **30**, then try the following:

- Switch the Power OFF from the back of the Printer and disconnect the Power cord. Reconnect the power cord and power On the Printer.
- If the Printer continues to stop during the power-up process, replace the Hard Disk Drive ⇒ Page *8-114*.

## Using the Power Switch LEDs to Troubleshoot

In certain circumstances, the LEDs located on top of the power switch (located at the rear of the Printer) can help to troubleshoot the Printer. The LEDs can either be ON or Off and using different combinations can indicate different problems:



Make sure you look directly at the LEDs and not at an angle.

Amber is on the Left
Blue is in the center
Green is on the Right

1 When only the **Amber LED** is On:
- The Printer has been switched Off from the Front Panel (after having pressed the On/Off button).
- The Power Supply Unit only delivers a 5 V "Standby"; power that is needed to restart the Printer after the Front Panel On/Off button is pressed (the Formatter/Main PCA will initiate the Printer to start).

2 When the **Blue LED** is On: Deliver standard "ATX" power for the Electronics Module PCAs (+12V, +5V, -5V, -12V, etc...). All the functions of the Electronics Module are fully operational (EWS, etc...).

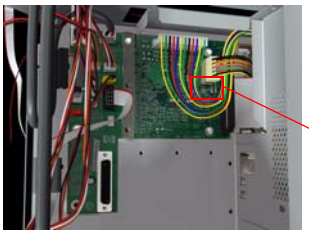
3 When the **Green LED** is On: Deliver "analog" 24V and 42V to enable printing.

The Printer monitors and reports different signals: PSU fan issues, 24V and 42V delivery failures (specific System Error reported pointing to PSU failure).

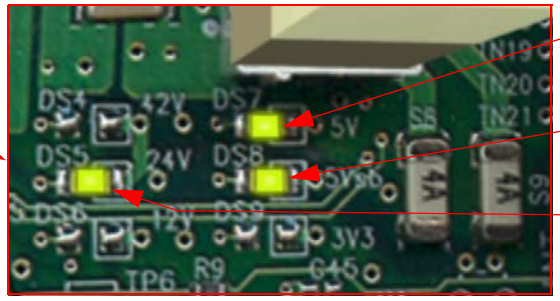
| PSU Blue LED Status | PSU Green LED Status | Left LED (on Front Panel) Status | Printer Status |
|---|---|---|---|
| ON | OFF | Red (Front Panel Black) | Standby (with Embedded Web Server up and running) |
| ON | OFF | Green (flashing) | Initializing |
| ON | ON | Green | Ready (but not printing) |
| ON | ON | Green | Printing or preparing to print |
| OFF | ON | Any | Not possible |
| ON | ON | Red (Front Panel Black) | Not possible |

## Using the PCA LEDs to Troubleshoot

In certain circumstances, the LEDs located on the Interconnect PCA and PrintMech PCA can help to troubleshoot the Printer. The LEDs can either be ON or Off and using different combinations can indicate different problems:



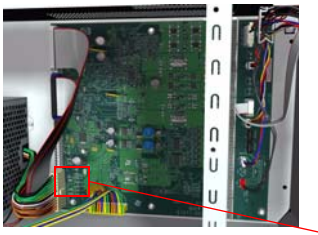
**Interconnect PCA**



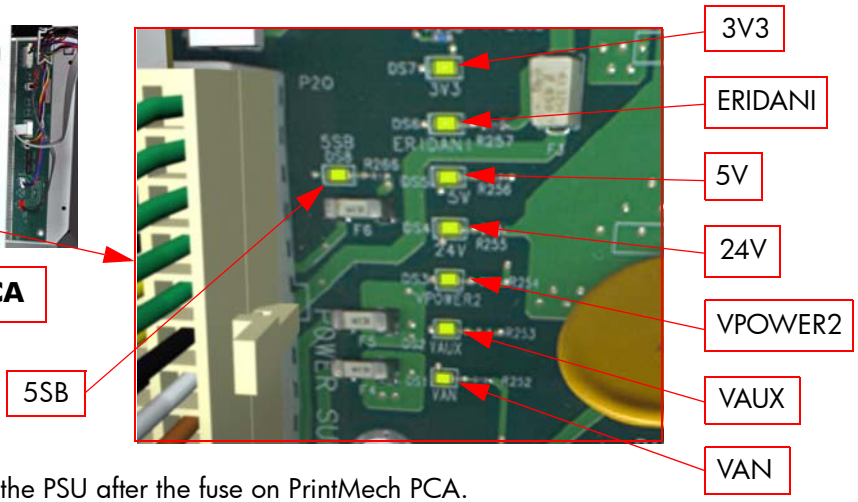

**5V -** Comes from the PSU after the fuse on Interconnect PCA. Used to power On Front Panel and some Interconnect Electronics. Should be ON at the same time as Blue Power Switch LED.

**5Vsb -** Comes from the PSU after the fuse on Interconnect PCA. Used to power On the Printer from the Front Panel. Should be ON at the same time as Blue or Amber Power Switch LED.

**24V -** Comes from the PSU after the fuse on Interconnect PCA. Used to power the Carriage PCA. Should be ON at the same time as Green Power Switch LED.



**PrintMech PCA**




**5Vsb -** Comes from the PSU after the fuse on PrintMech PCA.
**3V3 -** Comes from the Power Supply Unit.
**5V -** Comes from the Power Supply Unit.
**ERIDANI -** Specific power line from PSU which powers ERIDANI chip after a fuse on PrintMech.
**24V -** Comes from the PSU after a fuse on the PrintMech PCA.
**VPOWER2 -** Comes from the PSU (42V) after a fuse on the PrintMech PCA.
**VAUX -** Comes from the PSU (12V) after a fuse on the PrintMech.
**VAN -** Is generated in the PrintMech PCA (reference tension is generated from ERIDANI IC). The value is around 5V. If this LED is **not** ON, and the others are ON, this indicates that there is high probability that the PrintMech PCA is defective.

**1** If the Printer cannot be turned ON:

| Signal | LED on Interconnect PCA | LED on PrintMech PCA | Power Switch LED | Corrective Action |
|---|---|---|---|---|
| 5Vsb | OFF | ON | Amber | ■ Check the connection between the PSU and the Interconnect PCA.<br>■ If connection OK, replace the Interconnect PCA ⇒ Page *8-100*. |
| 5Vsb | ON | OFF | Amber | ■ Check the connection between the PSU and the PrintMech PCA.<br>■ Make sure that ALL cables between the PSU and PrintMech are not damaged and are connected correctly. |
| 5Vsb | OFF | OFF | Amber or no LED | ■ Check the connection between the PSU and the PrintMech PCA and Interconnect PCA.<br>■ If connection OK, check that power reaches the PSU (check the power outlet).<br>■ If power reaches PSU, replace the PSU ⇒ Page *8-120*. |

**2** If the Printer starts (after having pressed the ON button on the Front Panel) but the front Panel remains black:

| Signal | LED on Interconnect PCA | LED on PrintMech PCA | Power Switch LED | Corrective Action |
|---|---|---|---|---|
| 5V | OFF | ON | Blue | ■ Check the connection between the PSU and the Interconnect PCA.<br>■ If connection OK, replace the Interconnect PCA ⇒ Page *8-100*. |
| 5V | ON | ON | Blue | ■ Check the connection between the Front Panel and the Interconnect PCA.<br>■ If connection OK, replace the Interconnect PCA ⇒ Page *8-126* and the Front Panel ⇒ Page *8-27*. |

**3** The Printer is up and running, or may have a System Error at the end of the power-up sequence. For the Carriage PCA connection, perform the Scan-Axis Test ⇒ Page *4-7*:

| Signal | LED on Interconnect PCA | LED on PrintMech PCA | Power Switch LED | Corrective Action |
|---|---|---|---|---|
| 5V | OFF | ON | Blue | ■ Check the connection between the PSU and the Interconnect PCA.<br>■ If connection OK, replace the Interconnect PCA ⇒ Page *8-100*. |
| 24V | ON | ON | Blue and Green | ■ Check the System Error that is produced and run the corresponding Diagnostic Test (either Scan-Axis or Media-Axis Test. |
| 24V | OFF | OFF | Blue and Green | ■ Check the connection between the PSU and the PrintMech PCA and Interconnect PCA.<br>■ If connection OK, run the Electronics Module Test to further diagnose the problem. |
| 24V | OFF | ON | Blue and Green | ■ Check the connection between the PSU and the Interconnect PCA.<br>■ If connection OK, run the Electronics Module Test to further diagnose the problem. |
| 24V | ON | OFF | Blue and Green | ■ Check the connection between the PSU and the PrintMech PCA.<br>■ If connection OK, run the Electronics Module Test to further diagnose the problem. |

**4** On the PrintMech PCA, if the 3V3 LED is ON, 5V LED is ON, ERIDANI LED is ON, VAUX LED is ON and the VAN LED is OFF, then try the following:

- Run the Electronics Module Test to further diagnose the problem.
- Replace the PrintMech PCA ⇒ Page *8-126*.

**5** If the Power Switch LED is Green and the 3V3 LED is ON, 5V LED is ON, ERIDANI LED is ON, VAUX LED is ON, VAN LED is ON and the VPOWER2 LED is OFF, then try the following:

- Check the connection between the PSU and the PrintMech PCA.
- Run the Electronics Module Test to further diagnose the problem.
- Replace the PrintMech PCA ⇒ Page *8-126*.

## How to Interpret the Service Information Pages

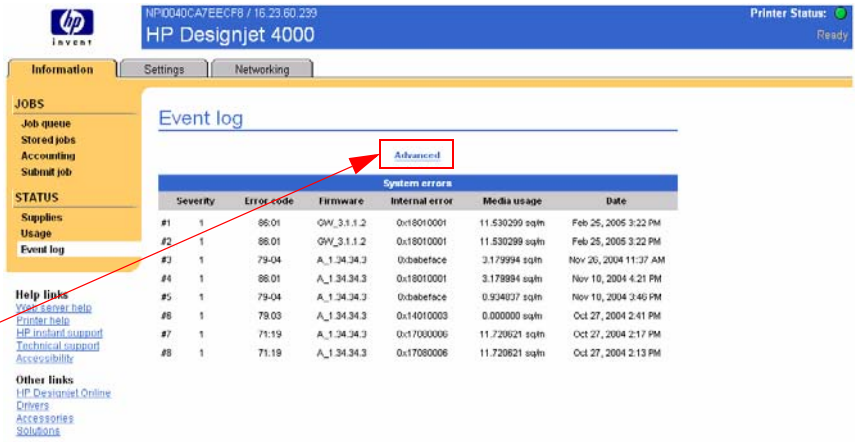
The Service Information Pages contain the following information:

- Current Information.
- Printer Usage Information.
- Event Logs.
- Calibration Status.
- Network and I/O Configuration.

It is possible to print the Service Information Pages either through the Front Panel or through the Embedded Web Server:

- Front Panel: Setup menu ⇒ Information Menu ⇒ Internal Prints ⇒ Print Service Information.
- Embedded Web Server: Information ⇒ Event Log ⇒ Advanced

Even the Printer cannot print, the Information Pages are still accessible through the Embedded Web Server.




EWS Event Log Page - Advanced Button

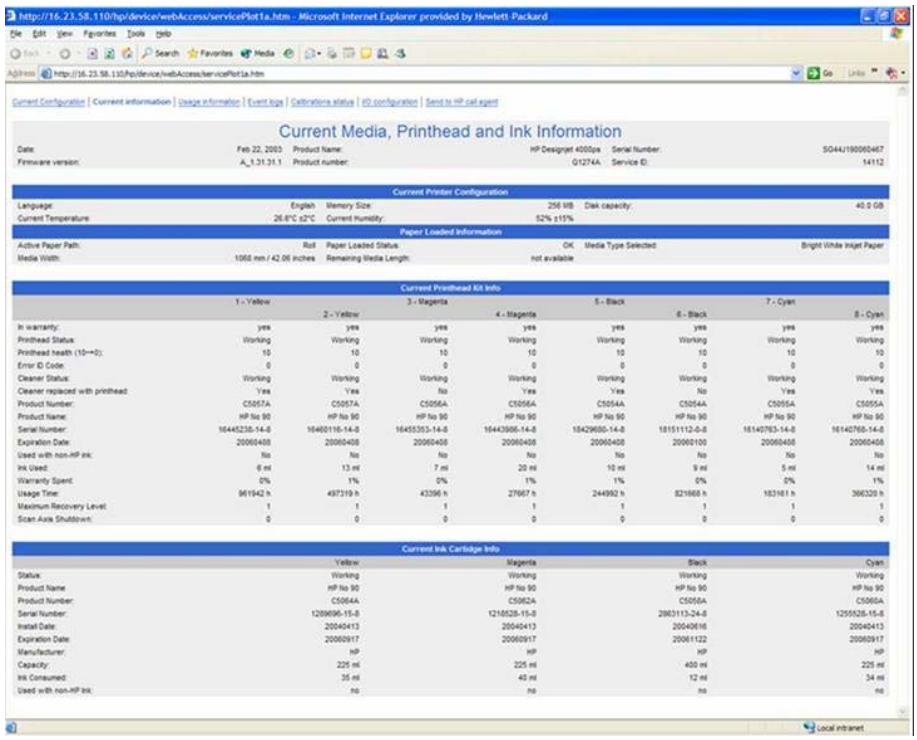
### Main Characteristics

- Each Service Information page fits on a sheet of A4/A-size media (so that it can be faxed if necessary).
- Only available in English (except the current information page).
- From the Front Panel, you can choose to print ALL pages or just select the specific pages that are needed. If ALL pages are printed:
  - Nesting is turned ON automatically (and turned OFF once all the pages have been printed).
  - Nesting cannot be mixed with other jobs in the queue.
- Each page can be printed from the Web browser when using the Embedded Web Server.
- Each page can be sent by e-mail from the Web Browser when using the Embedded Web Server (File ⇒ Send ⇒ Page by E-mail).
- You can see the same information through the Front Panel or the Embedded Web Server.

## Current Media, Printhead and Ink Information

This page contains the following information:

- Current Printer Configuration.
- Paper Loaded Information.
- Current Printhead Kit Information.
- Current Ink cartridge Information.




The first two lines are available at the beginning of each Service Information Page and contains standard information (like Service ID, Firmware version).

### Items of Interest

The items explained below are useful to know:


- **Temperature and Humidity**: The sensors are located on the ISS PCA (at the top of the Ink Cartridges).
- **Active Paper Path**: Whether Roll or Cut Sheet is currently loaded.
- **Remaining Media Length**: Currently this will show "not available" all the time since the media length tracking function in not available.

| | 1 - Yellow |
|---|---|
| In warranty: | yes |
| Printhead Status: | Working |
| Printhead health (10→0): | 10 |
| Error ID Code: | 0 |
| Cleaner Status: | Working |
| Cleaner replaced with printhead: | Yes |
| Product Number: | C5057A |
| Product Name: | HP No 90 |
| Serial Number: | 16445238-14-8 |
| Expiration Date: | 20060408 |
| Used with non-HP ink: | No |
| Ink Used: | 6 ml |
| Warranty Spent: | 0% |
| Usage Time: | 961942 h |
| Maximum Recovery Level: | 1 |
| Scan Axis Shutdown: | 0 |

- **Printhead Status**: 'OK', 'Missing', 'Reseat', 'Replace' or 'Remove'.
- **Expiration Date**: Manufacture date (date marked on the actual Printhead) + 24 months.
- **Used with non-HP ink**: Can be reset to NO only when a new Printhead has been installed and neither the Ink Tubes nor the Ink Cartridges have been marked as "Used with non-HP ink = Yes".
- **Warranty spent**: Percentage (%) versus 1000ml.
- **Scan Axis Shutdown**: Corresponds to a media jam.

| | 1 - Yellow |
|---|---|
| In warranty: | yes |
| Printhead Status: | Working |
| Printhead health (10→0): | 10 |
| Error ID Code: | 0 |
| Cleaner Status: | Working |

- **Printhead Health**: This represents the number of nozzles out of service during the last drop detection that was performed.

| Number of Nozzles Out | Printhead Health |
|---|---|
| < 5 | 10 |
| > or = 5 and < 10 | 9 |
| > or = 10 and < 20 | 8 |
| > or = 20 and < 30 | 7 |
| > or = 30 and < 50 | 6 |
| > or = 50 and < 70 | 5 |
| > or = 70 and < 100 | 4 |
| > or = 100 and < 150 | 3 |
| > or = 150 and < 200 | 2 |
| > or = 200 and < 400 | 1 |
| > or = 400 | 0 |