HEWLETT®
PACKARD

Service Manual

HP DesignJet 2000CP
HP DesignJet 2500CP
HP DesignJet 2800CP
HP DesignJet 3000CP
HP DesignJet 3500CP
HP DesignJet 3800CP
Printers

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

Electrostatic Discharge

Refer to the beginning of Chapter 8 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.
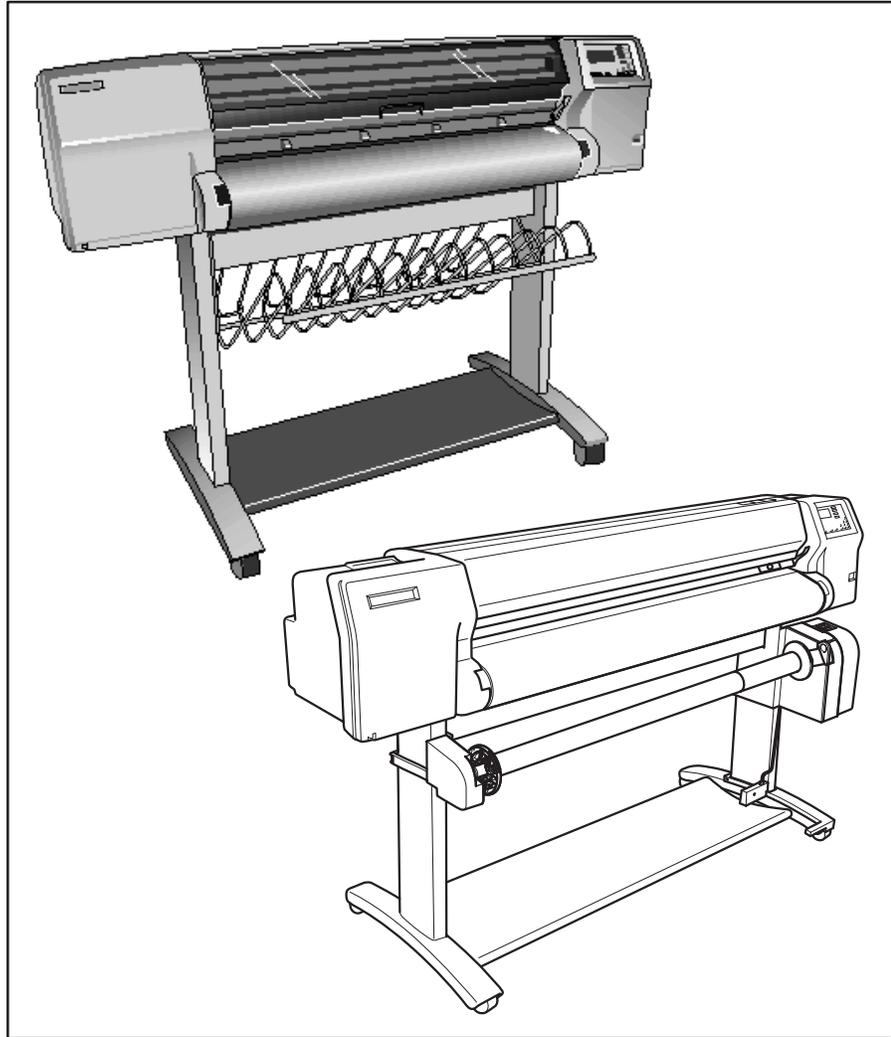
Service Manual

HP DesignJet 2000CP
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HP DesignJet 3500CP
HP DesignJet 3800CP
Printers

Using this Manual

Purpose

This manual contains information necessary to test, calibrate and service:

- HP DesignJet 2000CP printer (model C4703A)
- HP DesignJet 2500CP printer (model C4704A)
- HP DesignJet 2800CP printer (model C6085A)
- HP DesignJet 3000CP printer (model C4723A)
- HP DesignJet 3500CP printer (model C4724A)
- HP DesignJet 3800CP printer (model C6084A)

For information about using these printers, refer to the corresponding user and quick-reference guides.

Readership

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

Part Numbers

Part numbers for plotter options, accessories and service parts are located in chapter 7.

Conventions

This manual contains information for the color HP DesignJet 2000CP, 2500CP, 2800CP, 3000CP, 3500CP and 3800CP printers. Throughout this Manual, these printers will be referred to as the HP DesignJet CP Series Printers.

Concerning the hardware perspective, DesignJets 2800CP and 3800CP are basically DesignJets 2000CP and 3000CP (respectively) connected with an external Fiery RIP. Therefore, all information applicable to the DesignJets 2000CP/3000CP will also be applicable to DesignJets 2800CP/3800CP.

A small arrow ◗ is used to indicate other parts of the Service Manual or User's Guide where you can find information related to the topic you are consulting.

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APPENDIX - Reinstalling the Fiery Box

General Definition of Safety Symbols

International caution symbol (refer to manual): the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the instrument.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must also be marked).
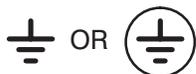
Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal that must be connected to ground before operating equipment.

Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. A terminal marked with this symbol must be connected to ground in the manner described in the installation (operating) manual, and before operating the equipment.
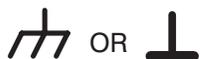
Frame or chassis terminal. A connection to the frame (chassis) of the equipment, which normally includes all exposed metal.

Alternating current

Direct current

Alternating or direct current

WARNING The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.

Take care not to cut yourself on the encoder strip inside the plotter.

CAUTION The CAUTION sign denotes a hazard. It 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.

1

Troubleshooting

Introduction

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

Which Firmware relates to which Ink system?

A.01.XX - This firmware revision is applicable to HP DesignJets 2500CP and 2000CP and means that the Printers can **only** use Imaging Inks.

A.02.XX - This firmware revision is applicable to HP DesignJets 2500CP and 2000CP and means that the Printers can use both the Imaging Inks and the new UV Durable Inks.

A.03.XX - This firmware revision is applicable to HP DesignJets 3500CP and 3000CP and means that the Printers can use both the Imaging Inks and the new UV Durable Inks.

A.04.XX - This firmware revision is applicable to all HP DesignJet CP Series Printers and means that the Printers can use both the Imaging Inks and the new UV Durable Inks.

How do I Check the Hard Disk Drive Version? (**Only applicable to HP DesignJet 2500CP/3500CP**)

For HP DesignJet 2500CP - To check which Hard Disk Drive Version the printer is using, print the PostScript Configuration using the front-panel menu in *Internal Prints / PostScript Config*.

For HP DesignJet 3500CP - To check which Hard Disk Drive Version the printer is using, use the front-panel menu in *Utilities / Statistics / Disk Rev.*

Is the Printer Using the Latest Firmware Revision?

Before spending time troubleshooting the problem by doing the various tests or replacing parts (which may not need replacing), check which firmware revision the printer is using. To check which firmware revision the printer is using, use the front-panel menu in *Utilities / Statistics / Code Rev.* Some problems which occurred in earlier firmware releases may have been solved in later revisions. So if there is a new firmware revision then update the Flash SIMM before replacing any parts. See below for information on upgrading the Flash SIMM.

Remember that:

- For the **HP DesignJet 2000CP/3000CP**, the first slot from the left contains an 8MB SIMM with the firmware code inside.
- For the **HP DesignJet 2500CP/3500CP**, the first slot from the left contains an 8MB SIMM with the firmware code inside and the second slot contains a 4 MB SIMM with the PostScript code inside.

How do I upgrade the Firmware Revision on the Flash SIMM?

You will need to have the Printer connected to a PC or a UNIX Workstation with a Parallel cable. Download the latest Firmware Revision from the Plotter Support WEB to your local drive and then follow these instructions:

1   Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2   Hold the CANCEL key down and switch the printer **ON**. Wait until the message "Flash Programmer 1.X / Push to continue" is displayed on the front-panel before releasing the CANCEL key.

3   Press the **Down Arrow** key and the message "Program Flash / Copy to 2nd Flash" is displayed on the front-panel.

4   Press the **Up Arrow** key and the message "Program 2nd Flash / Program 1st Flash" is displayed on the front-panel.

5   Press the **Down Arrow** key and the message "Really Erase Yes / 1st Flash? No" is displayed on the front-panel.

   If you do not wish to continue press the Down Arrow key and the message "Cancelled Program / Power off the board" is displayed on the front-panel. Switch the Printer OFF from the power switch on the back of the printer.

6   Press the **Up Arrow** key and the message "Erasing Flash" is displayed.

   THE DATA ON THE FLASH SIMM IS BEING ERASED AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

7   When the data on the Flash SIMM is erased the message "Please Download Binary Code" is displayed on the front-panel.

8   To download the firmware data to the Flash SIMM follow these instructions:

   - If using a UNIX Workstation, type:

     $ cat filename > device.file

     Substitute "filename" with the name of the file that contains the firmware data which you downloaded from the Plotter Support WEB. Substitute "device.file" with the name of your Workstation parallel device file.

   - If using a PC, type in MS-DOS:

     C:\> copy /b filename lpt1:

     Substitute "filename" with the name of the file that contains the firmware data which you downloaded from the Plotter Support WEB. Substitute "lpt1" with name of the parallel port that you have your Printer connected to on the PC.

9 While the firmware data is being received by the printer, the message "Receiving Binary Code" will be displayed on the front-panel.

THE DATA IS BEING DOWNLOADED ONTO THE FLASH SIMM AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

10 When the Flash SIMM is completely programmed, the message "Finished Programming / Power OFF the board" will be displayed on the front-panel.

11 Switch the Printer OFF from the power switch on the back of the printer.

12 Switch the Printer ON from the power switch on the back of the printer and the Printer will start the initialization procedure.

13 When the message "Status/Ready" is displayed on the front-panel, check that the new firmware revision has been correctly downloaded by using the front-panel menu in *Utilities / Statistics / Code Rev.* The front-panel should now show the new Firmware Revision of the Flash SIMM.

How do I upgrade the PostScript Revision on the Flash SIMM?

YOU ONLY NEED TO UPGRADE THE POSTSCRIPT SIMM IF THE FIRMWARE CODE IS A.02.08 OR HIGHER.

1 Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2 Install an additional 4MB Flash SIMM into the second slot.

3 Hold the CANCEL key down and switch the printer **ON**. Wait until the message "Flash Programmer 1.X / Push to continue" is displayed on the front-panel before releasing the CANCEL key.

If the Printer has problems starting up, the 8MB flash SIMM with the firmware code has been incorrectly upgraded (it can be dead) or it is incorrectly installed.

4 Press the **Down Arrow** key and the message "Program Flash / Copy to 2nd Flash" is displayed on the front-panel.

5 Press the **Up Arrow** key and the message "Program 2nd Flash / Program 1st Flash" is displayed on the front-panel.

6 Press the **Up Arrow** key and the message "Flash Size 8MB / 4MB" is displayed on the front-panel. The printer is asking you if you want to program a 4MB or 8MB SIMM.

7 Press the **Down Arrow** key and the message "Erasing Flash" is displayed on the front-panel.

THE DATA ON THE FLASH SIMM IS BEING ERASED AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

8 When the data on the Flash SIMM is erased the message "Please Download Binary Code" is displayed on the front-panel.

9 To download the PostScript data to the Flash SIMM follow these instructions:

- If using a UNIX Workstation, type:

  $ cat filename > device.file

  Substitute "filename" with the name of the file that contains the PostScript data which you downloaded from the Plotter Support WEB. Substitute "device.file" with the name of your Workstation parallel device file.

- If using a PC, type in MS-DOS:

  C:\> copy /b filename lpt1:

  Substitute "filename" with the name of the file that contains the PostScript data which you downloaded from the Plotter Support WEB. Substitute "lpt1" with name of the parallel port that you have your Printer connected to on the PC.

10 While the PostScript data is being received by the printer, the message "Receiving Binary Code" will be displayed on the front-panel.

THE DATA IS BEING DOWNLOADED ONTO THE FLASH SIMM AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

11 When the Flash SIMM is completely programmed, the message "Finished Programming / Power OFF the board" will be displayed on the front-panel.

12 Switch the Printer OFF from the power switch on the back of the printer.

13 Switch the Printer ON from the power switch on the back of the printer and the Printer will start the initialization procedure.

14 When the message "Status/Ready" is displayed on the front-panel, check that the new PostScript revision has been correctly downloaded by using the front-panel menu in *Utilities / Statistics / PS rev = PostScript.* The front-panel should now show the new PostScript Revision of the Flash SIMM.

How can I Copy Firmware Data from One Flash SIMM to a Second Flash SIMM?

This procedure can be used to copy Data from one Flash SIMM to another. This is very useful when you have to update the Firmware Revision of several Printers and is much faster than updating from the PC.

1 Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2 Remove the SIMM cover on the back of the Electronics Module.

3 Make sure that the master Flash SIMM is in the first slot from the left.

4 Install the 2nd Flash SIMM (that needs to be programmed) in the second slot from the left. If a DRAM SIMM is installed in the 3rd slot, then remove it first to allow more space to install the 2nd Flash SIMM.

5 Hold the CANCEL key down and switch the printer ON. Wait until the message "Flash Programmer 1.X / Push to continue" is displayed on the front-panel before releasing the CANCEL key.

6 Press the **Down Arrow** key and the message "Program Flash / Copy to 2nd Flash" is displayed on the front-panel.

7 Press the **Down Arrow** key and the message "Erasing Flash" is displayed on the front-panel.

   THE DATA ON THE SECOND FLASH SIMM IS BEING ERASED AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

8 After a short while the message "Copying Binary Code" will be displayed on the front-panel while the firmware data is being received by the printer.

   THE DATA IS BEING DOWNLOADED ONTO THE SECOND FLASH SIMM AT THIS POINT. DO NOT SWITCH OFF THE PRINTER BECAUSE IT WILL DAMAGE THE FLASH SIMM.

9 When the Second Flash SIMM is completely programmed, the message "Finished Programming / Power OFF the board" will be displayed on the front-panel.

10 Switch the Printer OFF from the power switch on the back of the printer.

11 Remove the master Flash SIMM from the first slot from the left and remove the 2nd Flash SIMM (that has just been programmed) from the second slot from the left.

12 To verify if the Second Flash SIMM is programmed correctly, install the 2nd Flash SIMM in the first slot from the left and switch the Printer ON from the power switch on the back of the printer. If the Printer initializes correctly, then the Flash SIMM has been programmed correctly.

What Can I do when a System Error Code Appears on the Front-Panel Display?

Chapter 2 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 Service Print (*Utilities / Service Tests*).
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).
- Is the problem reproducible by you?
- Additional comments about the usage, the setting, etc..

Have you performed a Service Test on the Failed Component/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 ◗ Chapter 4.

Have you Performed the Necessary Service Calibrations?

Is the printer calibrated correctly after replacing a component? Refer to the table below to determine when a calibration is required. For information on the Service Calibrations and how to use them ◗ Chapter 5.

REMEMBER THAT CERTAIN CALIBRATIONS ARE REQUIRED EVEN IF AN ASSEMBLY HAS BEEN DISASSEMBLED TO GAIN ACCESS TO ANOTHER ASSEMBLY OR COMPONENT.

	Calibrations To Be Done								
When Required	**C01**	**C02**	**C03**	**C05**	**C06**	**C07**	**C08**	**C09**	**C10**
Electronics Module is replaced	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Carriage is disassembled or replaced	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No
Refill Assembly is disassembled or replaced	No	**Yes**	No	**Yes**	No	**Yes**	No	No	No
X-axis Assembly is disassembled or replaced	No	No	No	No	No	No	**Yes**	No	No
Drive Roller is disassembled or replaced	No	No	No	No	No	No	**Yes**	No	No
Banding Problem	No	No	**Yes**	**Yes**	**Yes**	No	**Yes**	No	No
Edge Detect Problem	No	No	**Yes**	No	No	No	No	No	No
Misalignment between Colors	No	No	**Yes**	**Yes**	**Yes**	No	**Yes**	No	No
Color Accuracy Problem	No	No	**Yes**	No	No	**Yes**	No	No	No
Nozzles Out or Misdirected	No	No	No	No	**Yes**	No	No	No	No

What can I do to Solve Image Quality Problems?

Whenever an Image Quality problem appears, it is advisable to print the Image Quality Print to help diagnose the problem. The Image Quality 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 Image Quality problems ◗ Chapter 6.

What can I do if the Carriage is Noisy?

1 Dirty Carriage bushings. Remove dust particles from the Carriage bushings and from the slider rods along which the Carriage moves. If necessary, apply lubricant to the slider rods.

2 Check for a faulty Carriage. Perform the Carriage Axis Test ◗ page 4-12.

What can I do if the Service Station is Noisy?

1 Dirty Service Station slider rod. Remove dust particles from the Service Station slider rod along which the Service Station moves. If necessary, apply lubricant to the slider rod.

2 Check for a faulty Service Station. Perform the Service Station Test ◗ page 4-16.

What can I do if the Printer continuously rejects Printheads?

1 Clean the contacts on the Printhead and in the Carriage using the Ink Cleaner Part Number C6247A.

2 Remove all the Printheads from the Carriage and try installing just the rejected Printhead. If the Printhead is still rejected then replace the Printhead with a new one. If the new Printhead is not rejected then check, one by one, if the other Printheads are rejected or not.

3 Perform the Printhead Continuity Test ◗ page 4-29.

4 Perform the Electronics Test ◗ page 4-7.

5 Replace the Trailing Cable ◗ page 8-36.

6 Replace the Carriage Assembly ◗ page 8-42.

What can I do if the Printer has problems with Media Loading?

On HP DesignJets 3500CP and 3000CP a new Media Button has been installed to assist in Media Loading.

1 Check that the Media Sensor/Media Button is installed correctly.

2 Check if the cable for the Media Sensor/Media Button is connected correctly.

3 Check if the Pincharms are down (the Pincharm lever should be **up**).

4 Perform the Line Sensor calibration ◗ page 5-10.

5 If the media is continuously rejected during the media edge check, then make sure that the Line Sensor is installed correctly. If necessary, replace the Carriage Assembly ◗ page 8-42 .

6 Replace the Media Sensor/Media Button ◗ page 8-78.

7 Perform the Electronics Test ◗ page 4-7.

What can I do if the Cover Sensors aren't Working?

1 Check if the faulty sensor is installed correctly.

2 Check if the cable for the faulty sensor is connected correctly.

3 Replace the faulty Sensor.

What can I do if the "Switch Power Off / Check Printhead Path" message appears when the Printer is about to cut or is cutting?

1 Check the media path and clear it if necessary.

2 Perform the Cutter Test ◗ page 4-24.

3 Replace the Cutter Assembly ◗ page 8-48.

What can I do if the Bail Assembly does not lower all the way?

1 Check that there are no obstructions in the way of the Bail Assembly.

2 Perform the Bail Test ◗ page 4-25.

What can I do if the "Lens Maintenance" message appears on the Front-Panel?

1 The Mark Encoder, on the Drive Roller, is dirty. Clean the Mark Encoder first before trying anything else.

2 The lens cover, which is installed on the line sensor, is dirty. Replace the lens cover ◗ Users Guide, Chapter 10 (Lens Maintenance).

Troubleshooting Media Jams/Printhead Crashes

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 head 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.

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 now solved.

3 Is the client using Best Mode on Coated Media in high humidity?

- In this particular case, head crashes could occur due to worst casing. Recommend a change of media, print mode, or humidity conditions.

4 What is the Firmware Revision? (**Only applicable to HP DesignJets 2500CP and 2000CP**)

- Must be A02.01 or more recent. If not, upgrade.

    - Explanation - In earlier releases of firmware a media jam/head crash can be caused at the start of a plot. This can occur in the "POME" pen alignment or closed loop color calibration, because the leading edge of the media is brought back very close to the Media Separator edge. If the edges cross, the media can lift up when it is advanced, causing a media jam or head crash. It is more likely to occur the more curled the media is.

5 Check the Media Separator (**Only applicable to HP DesignJets 2500CP and 2000CP**)

- For units fabricated before Serial Numbers C4703A ESA7C04586 and C4704A ESA7C10343. If the Media Separator is detaching do not stick it down again, as it will detach again. Also, never reposition a Media Separator, because it has an extremely tight positioning tolerance. For Media Separators that are lifting off the Overdrive Assembly, replace the entire Overdrive Assembly.

    - Explanation - The previous adhesive used under the Media Separator can detach from the Overdrive Assembly. New Overdrive Assemblies use a much better adhesive – it can be easily differentiated from the old adhesive because it is white instead of transparent. The Media Separator should never be repositioned; it has an extremely tight tolerance. If it is too far from the linear blade it can cause media crashes against the Linear Blade. If it is too close it can cause media jams between the leading edges of the media and the Media Separator.

6 Did the failure occur at the end of the media roll?

- There are two known failure modes in this case. One is with Vinyl media, in which case the end of the media was glued too strongly to the roll, which can cause a head crash. The other is with Coated Media, where some rolls have the final edge of the media bent in a "C" shape which could cause a head crash when passing under the carriage. In both cases the problem has been fixed and a new roll of media should solve it.

7 Replace the Overdrive Assembly and the Clutch ◗ page 8-69.

- Explanation - For a unit fabricated before September of 1997 the clutch could cause intermittent media jams. Refer to the applicable Service Note. For a printer fabricated before July 1997 the linear blade could be too high, causing media jams.

8 Check for missing/blocked starwheels or starwheel mount assemblies.

- Explanation - These parts can lead to media jams if missing or blocked.

9 The Carriage is at the incorrect height in relation to the Drive Roller. Perform the Refill Calibration ◗ page 5-9 and try to load the media again.

- The refill station positioning must be checked afterwards since it is affected. The refill station can be adjusted to accommodate the change in Printhead Height. The specification for Printhead Height is 1.2 - 1.4mm. Printhead Heights higher than this can adversely affect print quality.

What can I do if the Printer does not Power ON?

1 Check that the power cord is connected correctly.

2 Check that the Flash SIMM is installed correctly in the correct slot (the first slot from the left) at the back of the Printer.

3 On the Main PCA, in the Electronics Module, there are other fuses that are not controlled by the firmware so that, if they are burnt, they can cause a no-power-up problem. **It is recommended to check the resistance of the motors in a no-power-up situation before installing a new Electronics Module.** If you have a short in one motor, you will burn the new Electronics Module.

4 Try to disconnect all the cables, apart from the Front Panel Cable, from the Electronics Module and then try to power ON the Printer again. If nothing appears on the front-panel display, then replace the Electronics Module ◗ page 8-6. If the Printer does Power On with the cables disconnected, then the problem must be with another component of the Printer. To find the faulty component, power OFF the Printer and connect one of the cables and power ON again. Once the faulty component is connected, it will not allow the Printer to power ON. This component should then be replaced.

What can I do if the Line Sensor has Problems Detecting Media?

1 Excessive ink deposits on the drive-roller surface can fool the sensor by reflecting the light. Clean the drive-roller ◗ page 9-3.

2 The lens cover, which is installed on the line sensor, is dirty. Replace the lens cover ◗ Users Guide, Chapter 10 (Lens Maintenance).

3 The Line Sensor is not calibrated correctly. Perform the Line Sensor calibration ◗ page 5-10.

4 The Line Sensor is installed incorrectly. Try to reinstall it and make sure that it is connected and seated correctly. If the problem continues, replace the Carriage Assembly ◗ page 8-42.

What is the Ink System?

For each of the four colors of ink in your printer's ink system, there are three separate components that work together as a system. The components for each ink color are color-coded to help you install them correctly.
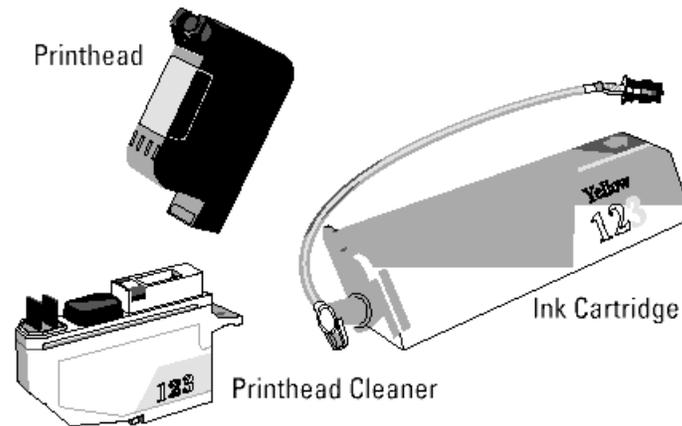
Ink Cartridge

The ink cartridges are a large-capacity ink supply from which the printheads are refilled whenever the ink volume in the printhead drops below a minimum level.

Printhead

The printhead has a 600 dpi thermal inkjet head for firing ink droplets onto the media and a reservoir which holds enough ink for a large number of prints. The actual number of prints between refills depends on the size and type of images you are printing.

Printhead Cleaner

The printer uses the printhead cleaner to clean and maintain the printhead to ensure the best possible image quality, and to seal the printhead when it is not in use to prevent it from drying out.

How Do I Troubleshoot the Ink System?

1 If the error message ″**Ink system Incomplt**″ appears on the front-panel it means that the ink cartridge valve has been disconnected, so:

- If this is the first failure try to REINSTALL the failing Ink System.
- If the failure has been very frequent REPLACE the failing Ink System (The valve could be damaged).

If this doesn't solve the problem, continue with the following process.

2 Reinstall the Ink Delivery System as follows:

1 Remove the four printheads from the carriage. On the front panel you will see the four squares representing the printheads flashing.

2 Clean the electrical contacts using the Ink Cleaner Part Number C6247A.

3 Reinstall all the printheads, one by one, checking on the front panel that the squares representing the reinstalled printheads are steady.

- DO NOT INSERT THE NEXT PRINTHEAD UNTIL THE PRINTER HAS ACCEPTED THE CURRENT PRINTHEAD.
- If, even after the electrical contacts have been cleaned, the printhead is not accepted REPLACE THE COMPLETE INK SYSTEM (Printhead/Head Cleaner/Ink Cartridge) for this color.
- If, after inserting a NEW Ink System, the printhead is not accepted, the problem may be with the printer. Replace the Carriage Assembly ▶ 8-42.

4 If you have reinserted the four printheads and the printer has accepted them continue reinstalling the head cleaners.

5 Remove and reinstall the ink cartridge valves, one by one, checking on the front panel that the squares representing the reinstalled ink cartridge are steady.

- If the ink cartridge is not accepted, REPLACE THE COMPLETE INK SYSTEM (Printhead/Head Cleaner/Ink Cartridge) for this color.
- If, after reinserting the NEW Ink System, the ink cartridge is not accepted, the problem may be with the printer. Make sure that the Refill Assembly cable is not damaged and is correctly connected to the Interconnect PCA. If the cable is correctly connected and is not damaged then replace the Refill Assembly ▶ page 8-55.

3 If the problem is fixed, but it reappears frequently, contact a HP dealer for a replacement (the Ink System may be damaged.)

Does the Customer have Mid-Print Refill Problems in HP DesignJets 3500CP/3000CP?

New Refill Features in HP DesignJet CP Series (in the case of DesignJets 2X00CP, the firmware release must be at least A.04.05)

1 Adaptive trigger. The printer looks for low density places to stop and refill in the print where it will be less noticeable. This feature becomes active when 75% of the ink in the printhead has been used up. RIP's may have disabled this feature, or enabled it at a different ink level.

2 Slightly more useable ink for Imaging printheads. There is an additional 10% of usable ink.

3 New refill type selections. User can select from three different refill types through the front panel (***Device Setup / Refill=***). RIP's may support these selections, too:

- Type A is similar to what HP DesignJet 2xxxCP does at refill.
- Type B finishes the print to a clean edge before refilling.
- Type C does a quicker, more frequent refill.
- The Default type makes the correct selection for HP media types.
- When using non-HP medias, the following settings are probably best:

Glossy - B or C   **Coated** - A or B   **Backlit** - B or A

4 Additional printhead servicing and warming activities are done during refills, which improves the quality over the 2xxxCP. The user may notice some new servicing (i.e. noises) at mid-page refills.

5 "Big print" feature. When a refill happens during a large print, the printer will automatically refill again at the end of the print, to make sure the maximum ink is available for the next print, which might also be expected to be large. The user is unlikely to notice this difference in behavior, since the printer often refills at the end of large pages.

Working with refill problems

General tips:
- Check media type is loaded correctly.
- Check refill type is set to default.
- Try a higher image quality setting for better performance.
- Check user's expectations - refill performance is not always "perfect", but almost always is acceptable for poster-type applications. Photo medias are the most sensitive to defects.

Troubleshooting Table 1

Problem	Hazy stripe in dark or black area with Hi/Semi Gloss Photo	Light line, any media	High Gloss/ Semi Gloss Photo problems	Non-HP medias
Solutions	Check that black contains undercolor (send RGB to printer, or add 33% CMY to black areas yourself)	Try higher image quality setting	Try higher image quality setting	Try different refill types A,B or C
	Make sure type B or default refill is selected	Switch between Type A and B refills	Make sure type B or default refill is selected	Use higher image quality settings
	Use higher image quality settings			
	Use a LOWER image quality setting			
	Use HP media			

Troubleshooting Table 2

Problem	Missing color PRIOR to refill	Missing nozzles AFTER refill	Poor start-up AFTER refill
Reason	Printhead is out of ink (but got a little more when it refilled)	Error hiding does not work in the first swath after a type B refill	Occasional occurrence
		First swath after a Type B refill	
Solution	Replace printhead	None/ replace printhead	Check printheads/ recover printheads

Refill Avoidance Tips

Printer:

1 Try to "top off" printheads before large prints with "Refill Now" option in Front Panel (*Image Quality / Printhead Service / Refill now*). If a refill happened at the end of the last print (usually happens with big prints), this is not necessary.

2 If you have just canceled a print, you may need to use the "refill now" option to guarantee the maximum ink available for the next print.

Print Composition Tips:

1 Don't try to nest more than 15 ft^2 of prints.

2 If the print is lighter in color at one end, rotate print so that it is the last part to be printed. Refills are less noticeable in light prints.

3 If possible, lighten background colors or use a gradient in place of a solid fill.

4 Textured areas make refills less noticeable than "flat" color areas.

How Do I Clean the Electrical Contacts?

The problem.

The printer fires drops by sending electrical signals from the printhead carriage to the printhead through the electrical contacts present on the carriage and on the printheads. The problem is that when you load the printheads into their stalls, sometimes some ink goes over the carriage electrical contacts, and when the printhead is installed over the printhead electrical contacts. When the printer prints, some ink goes to the bottom of the electrical contacts. This causes electrical continuity problems that can be fixed very easily.

The solution.

A new tool has been created especially to clean the electrical contacts and is called the Ink Cleaner (Part Number C6247A - includes the instructions).

How Do I Print some of the Internal Prints?

The Service Print

The purpose of the Service Print is to give information about the operating conditions, Usage Level, Serviceability and the MIO Configuration. This Print is very useful when troubleshooting the Printer, as it gives you information regarding the firmware revision, the last system error and the internal sensors.

If the EEROM is cleared, you will loose all the information on the Service Print (including the MIO Configuration).

Print the Service Print as follows:

Load media (A4 minimum) before printing the Service Print.

1 In the Utilities submenu, scroll to "Service Tests" and press **Enter**.

SERVICE TESTS
Service print
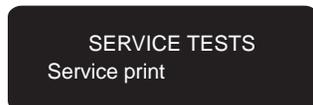
2 Scroll to "Service Print" and press **Enter**.

3 The Service Print will then be printed.

The Usage report

The purpose of the Usage Report is to give information about some of the Internal Counters which can help you to know the usage of the Printer.

If the EEROM is cleared, the counters will be reset to zero.

Print the Usage Report as follows:

Load media (A4 minimum) before printing the Usage Report.

1 In the Internal Prints submenu, scroll to "Usage Report" and press **Enter**.

> INTERNAL PRINTS
> Usage Report

2 The Usage Report will then be printed.

The PostScript Config

The purpose of the PostScript Config is to give information about the internal Hard Disk, Internal Fonts and the PostScript part of the front-panel configuration.

Print the PostScript Config as follows:

Load media (A4 minimum) before printing the PostScript Config.

1 In the Internal Prints submenu, scroll to "PostScript Config" and press **Enter**.


```
INTERNAL PRINTS
PostScript Config
```

2 The PostScript Config will then be printed.

How to Navigate through the Front-Panel Menu

Queueing & Nesting->

- Queue mgmt->
  - #: nK Vectors->
    #: ->
    - Copies=->
      - 99, 98, ... 2, 1*
    - Delete
    - Move to top
    - Statistics->
      - Width=
        Length=
    - Nest wait=->
      - 99, 98, ... 2*, 1 min
- Nest=->
  - Off*
  - Optimal->
  - In order->
  - On
    Off*
- Queue=->

Move Media

Internal prints->

- PostScript demo@
  PostScript config@
  PostScript fonts@
  HP-GL/2 config
  Usage report
  Menu
  HP-GL/2 palette

Utilities->

- Menu mode=->
  - Short*
    Full
- Service tests->
  - Accuracy calibration->
    - Restore factory
    - Recalibrate->
      - Create pattern
        Measure pattern
  - Service print
  - Image quality print
  - Recover printheads
- Default menu
- Display data
- Statistics->
  - Max X=
    Max Y=
    Code rev=
    PS rev=
    RAM present=
    Ink=
    Media=
    - Max X=
      Max Y=
      Code rev=
      PS rev=
      Disk rev=
      RAM present=
      Ink=
      Media=
- Transport mode

I/O setup->

- Modular->
  - MIO
- I/O timeout=->
  - 30*, ... 20, 1, .5 min

Device setup->

- Drying time=->
  - Automatic*
  - Manual->
    - 30, 25, 20, 15,
      12, 11, ... 2, 1 min
  - None
- Page accuracy=->
  - Optimized*
    Constant
    Maximum
- Graphics language=->
  - Automatic*@
    PostScript@
    HP-GL/2
- Skew tolerance=->
  - On
    Off*
- Cutter=->
  - On*
    Off
    - On
      Off*

Applicable only to
DesignJets 3XXXCP

Applicable only to
DesignJets 2XXXCP

Continued on Next Page

Continued from Previous Page

Take up reel=-> → On* / Off

Refill=-> → Default* / Type A / Type B / Type C

HP-GL/2 settings->
- Palette=-> → Software* / Palette A / Palette B / Factory
- Merge=-> → Off* / On
- Define palette-> → Palette A-> / Palette B-> / Factory-> → Pen number 15, ... 0->
  - Width=-> → 12.0mm, 8.0mm, 5.0mm / 3.0mm, 2.0mm, 1.40mm / 1.0mm,0.90mm,0.80mm / 0.70mm,0.65mm,0.50mm / 0.35mm*, 0.25mm / 0.18mm, 0.13mm
  - Color=-> → 255, ... 2, 1, 0

Page format->
- Size=->
  - Inked area
  - Software*
  - ISO-> → Best ISO A / ISO A0/A1-A4
  - ANSI-> → Best ANSI / ANSI E/D-A
  - JIS-> → Best JIS B / JIS B1/B2-B4
  - ARCH-> → Best ARCH / ARCH E/D-A
  - Oversize-> → Over A2 / Over A1
- PostScript scale=->@ → Fit to page, 419%, 400%, 352%, 282%, 258%, 210%, 200%, 141%, 129%, 100%* → Extrawide-> → 1.0x1.4m / 1.2x1.7m / 44x62in. / 52x73in. / 54x76in.
- Mirroring=-> → Off* / On
- Margins=-> → Extended* / Normal / Smaller
- Rotate=-> → 270, 180, 90, 0*

Ink Level-> → Yel   Mgnta / Cyan   Black

Image quality->
- Ink emulation=->@ → Enhanced / Native / SWOP / EuroScale* / TOYO
- Color calibration=->@ → On* / Off / Now
- Printhead service->
  - Printheads check-> → Frequency=->* → 10*, ... 2, 1 page / Now / Off
  - Align now
  - Refill now
- Qualify Media->
  - Select Media-> → Selectable media types
  - Test Media

Applicable only to DesignJets 3XXXCP

2

System Error Codes

System Error Codes

System error codes are hexa-decimal based numbers generally caused by internal system errors. The following pages contain a list of system error codes and their respective descriptions and recommended corrective actions.

The following table gives a quick explanation of the error codes:

Error code	Type of Problem
0100xx	Electrical Failure
010xxx	EEROM Failure
02xxxx	Mechanical Failure
04xxxx	MIO Card Error
05xxxx	X-mark Error
06xxxx	Line Sensor Error
07xxxx	Firmware Failure
08xxxx	PostScript Error
09xxxx	Hard Disk Failure

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 Print (*Utilities / Service Tests*).
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).
- Is the problem reproducible by you?
- Additional comments about the usage, the setting, etc..

Important Information on Troubleshooting Error Codes

Before spending time troubleshooting the problem by doing the various tests or replacing parts (which may not need replacing), check which firmware revision the printer is using or check if a service note deals with this particular problem. Some problems which occurred in earlier firmware releases may have been solved in later revisions. So if there is a new firmware revision then update the Flash SIMM before replacing any parts. Refer to page 1-3 for information on how to upgrade the firmware revision. Refer to Chapter 7 for the part number of the Flash SIMM.

System Error:	0000D8 XXXXXXXX
Problem Description:	Library Error.
Corrective Action:	Refer to System Error Code 07xxxx.

System Error:	010020
Problem Description:	The Checksum read on the Flash SIMM is incorrect.
Corrective Action:	Try the following:

- Reseat the Flash SIMM.
- Replace the Flash SIMM.
- Replace the Electronics Module ◗ page 8-6.

   Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010021 AXXXXXXX

Problem Description: The base DRAM or the RAM SIMM tests failed.

Corrective Action: Try the following:

NOTE: **The Printer will not function without any RAM SIMMs installed. Make sure that you have a minimum of 4MB memory module installed.**

- If the Error Data is **higher** than A4000000 then the failure is in the RAM SIMM. Try the following to solve the problem.

  - Check that the RAM SIMMs (memory modules) are the original HP supported parts. If the RAM SIMMs are from a 3rd Party then they should be replaced by HP supported parts before troubleshooting the problem any further. Product functionality cannot be guaranteed with 3rd party RAM SIMMs.

  - If more than one RAM SIMM (memory module) is installed, remove one of them and power on the printer again. If this system error is displayed again, reinstall the removed RAM SIMM and remove the other RAM SIMM and then power on the printer again. If this system error appears again then try to replace both RAM SIMMs with new ones.

- If the Error Data is **lower** than A4000000 then the failure is in the Base DRAM. Replace the Electronics Module ◗ page 8-6.

System Error: 010022

Problem Description: The SWATH RAM test failed.

Corrective Action: Replace the Electronics Module ◗ page 8-6.

System Error: 010023

Problem Description: A fuse on the Main PCA has blown.

Corrective Action: Try the following:

- Check the X-encoder and optical sensors cable path for damage. If the cables are damaged, they could cause the fuses in the new electronics module to also blow.
- Replace the Electronics Module ◗ page 8-6.

System Error: 010024

Problem Description: Problem initializing the encoder pulse generator.

Corrective Action: Replace the Electronics Module ◗ page 8-6.

System Error:	010030
Problem Description:	One of the two interconnect boards not detected.
Corrective Action:	Try the following:

- Make sure that the Interconnect Cables (the two black cables that connect the Refill Assembly and the Service Station Assembly to the Electronics Module) are correctly connected to the Electronics Module.
- Replace the interconnect cables:
  - Service Station Interconnect Cable ◗ Page 8-87.
  - Refill Interconnect Cable ◗ Page 8-87.
- Replace the Refill Interconnect PCA ◗ page 8-64.
- Replace the Service Station Assembly ◗ page 8-26.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010031

Problem Description: The Printhead Primitive Driver ASIC Test Failed.

Corrective Action: Try the following:

- Make sure that the Trailing Cable is connected correctly.
- Perform the Carriage Calibration ◗ page 5-7.
- Replace the Trailing Cable ◗ page 8-36.
- Replace the Carriage Assembly ◗ page 8-42.
- Replace the Electronics Module ◗ page 8-6.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error:	010032 000000**XX**
Problem Description:	Fan Test Failed - Current not detected in one or both fans.

Error data (**XX**):

1 → Electronics Module fan not running.
2 → Service station fan not running.
3 → Both fans not running.
10 → Electronics Module fan is short-circuited.
20 → Service Station fan is short-circuited.
30 → Both fans are short-circuited.
12 → Service Station fan is not running and the Electronics Module fan is short-circuited.
21 → Electronics Module fan is not running and the Service Station fan is short-circuited.

Corrective Action: Try the following:

- Make sure that the Service Station fan is connected correctly to the interconnect PCA.
- If both fans fail, replace the Electronics Module ◗ page 8-6.
- If the error code is related to the Service Station:
  - Make sure that the Service Station Interconnect Cable is correctly connected to the Electronics Module.
  - Replace the Service Station interconnect cable ◗ Page 8-87.
  - Replace the Service Station Assembly ◗ page 8-26.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010033
Problem Description: The DC Motor Driver ASIC Test Failed.
Corrective Action: Replace the Electronics Module ▶ page 8-6.

System Error: 010034 **000X0000**
Problem Description: One of the DC Motors has failed.

Error data:
00010000 → Y-axis Motor Failed.
00020000 → X-axis Motor Failed.
00030000 → Both DC Motors Failed.

Corrective Action: Try the following:

- Make sure that both DC Motors are connected correctly.
- If the error code is related to the Y-axis motor:
    - Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly to the Electronics Module) is correctly connected to the Electronics Module.
    - Replace the Refill Interconnect PCA ▶ page 8-64.
    - Replace the Y-axis Motor Assembly ▶ Page 8-45.
- If the error code is related to the X-axis Motor, replace the X-axis Motor Assembly ▶ Page 8-66.
- If both DC Motors fail, replace the Electronics Module ▶ page 8-6.

    Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error:	010035 **0XABCDEF**
Problem Description:	One of the Stepper Motors has failed.
	Error data (**0XABCDEF)**:
	If the value of each letter is **0**, then the component is OK. If the value of each letter is **different from 0** then the component has failed.
	X → Electronics signal failed (ignore other values).
	A → Elevator Stepper Motor Failed.
	B → Refill Stepper Motor Failed.
	C → Primer Stepper Motor Failed.
	D → Service station (Z-axis) Stepper Motor Failed.
	E → Service station (X-axis) Stepper Motor Failed.
	F → Bail Stepper Motor Failed.
Corrective Action:	Try the following:

- If the Error is related to the Electronic Signal **(X is not 0)** then replace the Electronics Module ▶ Page 8-6.
- Make sure that the Refill Interconnect Cable and the Service Station Interconnect Cable are correctly connected to the Electronics Module.
- Make sure that the failed Stepper Motor is connected correctly.
- If the Error is related to the Bail Stepper Motor, Elevator Stepper Motor or the Refill Stepper Motor then:
  - Replace the Refill interconnect cable ▶ Page 8-87.
  - Replace the Refill interconnect PCA ▶ Page 8-64.
- If the Error is related to the Primer or the Service Station Stepper Motors then replace the Service Station Interconnect cable ▶ Page 8-87.
- If the Error is related to the Elevator Stepper Motor then replace the Elevator Assembly ▶ Page 8-52.

- If the Error is related to the Refill Stepper Motor then replace the Refill Assembly ◗ Page 8-55.
- If the Error is related to the Primer Stepper Motor then replace the Primer Assembly ◗ Page 8-29.
- If the Error is related to the Service Station Stepper Motors then replace the Service Station Assembly ◗ Page 8-26.
- If the Error is related to the Bail Stepper Motor then replace the Bail Stepper Motor Assembly ◗ Page 8-62.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error:	010036 (see next page for 010036 **0000XX00**)
Problem Description:	ADC Test Failure in the Main PCA.
Corrective Action:	Try the following:

- Switch the Printer OFF from the back and then disconnect the Trailing Cable from the Electronics Module. Switch the Printer ON and see if the Error Code now changes to "010037". If the error code remains as "010036", replace the Electronics Module ◗ page 8-6.
- If the Error Code changes to "010037" then try the following:
  - Make sure that the Trailing Cable is connected correctly.
  - Replace the Trailing Cable ◗ page 8-36.
  - Replace the Carriage Assembly ◗ page 8-42.

- Replace the Electronics Module ◗ page 8-6.

Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010036 **0000XX00**

Problem Description: A short circuit in the Y/X-axis or ANY stepper motor. This short circuit is causing some of the fuses in the Electronics Module to burn.

Error data:
00000800 → Problem with the Y-axis.
00001000 → Problem with the X-axis.

Corrective Action: Try the following:

- Check which stepper motor has failed by measuring the resistance values of the connectors. Make sure that you check the resistance between pins 1-3 and 4-6. If any of the stepper motors are burnt, you will get a value of ~0-5 ohms. **ONCE YOU HAVE IDENTIFIED THE FAILING MOTOR YOU MUST REPLACE THE FAILING MOTOR ASSEMBLY AND THE ELECTRONICS MODULE TOGETHER AT THE SAME TIME TO SOLVE THE PROBLEM**. IF YOU INSTALL A NEW ELECTRONICS MODULE WITHOUT REPLACING THE FAILING MOTOR, THE ELECTRONICS MODULE WILL BE BURNED AGAIN.

Stepper Motor	Resistance (ohms)
Bail	$120 \pm 20\%$
Refill	$200 \pm 20\%$
Service Station (X-axis)	$54.4 \pm 20\%$
Service Station (Z-axis)	$50 \pm 20\%$

Primer	$46 \pm 20\%$
Elevator	$52 \pm 20\%$

System Error: 010037

Problem Description: ADC Test Failure in the Carriage PCA.

Corrective Action: Try the following:

- Make sure that the Trailing Cable is connected correctly.
- Replace the Trailing Cable ▶ page 8-36.
- Replace the Carriage Assembly ▶ page 8-42.
- Replace the Electronics Module ▶ page 8-6.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010038

Problem Description: A Printhead voltage could not be set - Main PCA Failure.

Corrective Action: Try the following:

- Make sure that the Trailing Cable is connected correctly.
- Replace the Trailing Cable ▶ page 8-36.
- Replace the Electronics Module ▶ page 8-6.
- Replace the Carriage Assembly ▶ page 8-42.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010039

Problem Description: A Printhead voltage could not be set - Carriage
                            PCA Failure

Corrective Action: Try the following:

- Make sure that the Trailing Cable is connected
  correctly.
- Replace the Trailing Cable ◗ page 8-36.
- Replace the Carriage Assembly ◗ page 8-42.

  *Only replace one component at a time and
  check if the error has gone before replacing
  another component. Using this procedure
  you will be able to determine exactly which
  component failed.*

System Error: 010040

Problem Description: The Ambient Temperature measured is out of the
                            normal range.

Corrective Action: Try the following:

- Make sure that the Trailing Cable is connected
  correctly.
- Replace the Trailing Cable ◗ page 8-36.
- Replace the Carriage Assembly ◗ page 8-42.
- Replace the Electronics Module ◗ page 8-6.

  *Only replace one component at a time and
  check if the error has gone before replacing
  another component. Using this procedure
  you will be able to determine exactly which
  component failed.*

System Error: 010041

Problem Description: Problem in setting the Printhead Voltage.

Corrective Action: Switch the Printer OFF and ON again. During
                            initialization another error code will appear. Refer
                            to the relevant error code for further information.

System Error: 010042 0000000**X**

Problem Description: The status of one of the optical sensors is not stable when it should be.

Error data (**X**):
0 → Problem with the Media Sensor.
1 → Problem with the Pinch-arm Sensor.
2 → Problem with the Refill Assembly Sensor.
3 → Problem with the Elevator Sensor.
4 → Problem with the Service Station Sensor.
5 → Problem with the Primer Sensor.

Corrective Action: Try the following:

- Make sure that all sensors are connected correctly.
- If the error code is related to the Service Station or the Primer then:
    - Make sure that the Service Station Interconnect Cable (the black cable that connects the Service Station to the Electronics Module) is correctly connected to the Electronics Module.
    - Replace the Service Station Interconnect cable ◗ Page 8-87.
- If the error code is related to the Refill Assembly or the Elevator then:
    - Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly and Elevator to the Electronics Module) is correctly connected to the Electronics Module.
    - Replace the Refill Interconnect cable ◗ Page 8-87.
- If the Error is related to the Pinch-arm sensor then replace the Pinch-arm Sensor ◗ Page 8-84.
- If the Error is related to the Refill Assembly Sensor then replace the Refill Assembly ◗ Page 8-55.

- If the Error is related to the Elevator Sensor then replace the Elevator Assembly ◗ Page 8-52.
- If the Error is related to the Service Station Sensor then replace the Service Station Assembly ◗ Page 8-26.
- If the Error is related to the Media Sensor/Media Button then:

  The Media Button is only applicable to HP DesignJets 3500CP and 3000CP.
  - Make sure that the Media Sensor/Media Button is installed correctly.
  - Make sure that the cable for the Media Sensor/Media Button is connected correctly.
  - Replace the Media Sensor ◗ Page 8-78.
  - Replace the Media Button ◗ Page NO TAG.
- If the Error is related to the Primer Sensor then replace the Primer Assembly ◗ Page 8-29.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010043
Problem Description: Problem with the Carriage Board.
Corrective Action: Try the following:
- Make sure that the Trailing Cable is connected correctly.
- Replace the Carriage Assembly ◗ page 8-42.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 010100

Problem Description: Error reading the EEROM.

Corrective Action: Replace the Electronics Module ◗ page 8-6.

System Error: 010101

Problem Description: An action outside the EEROM limits has been performed.

Corrective Action: Make sure you have the latest version of the Flash SIMM (firmware) installed or upgrade the firmware revision of the Flash SIMM ◗ page 1-3. If the error code remains after installing the latest Flash SIMM then report the error to the HP Response Center or the nearest HP Support Office, stating the following information:

- Model and Serial Number of the printer.
- the complete error number.
- service print (*Utilities / Service Tests*).
- plot file where the error has occurred.
- additional comments about the usage, the setting, etc..

System Error: 010102

Problem Description: Physical EEROM write and/or write operations failed. The EEROM data that is written does not match the data that is read.

Corrective Action: Replace the Electronics Module ◗ page 8-6.

System Error: 010110

Problem Description: The content of the permanent configuration area of the EEROM is not valid when the printer is initialized in Service Mode.

Corrective Action: Try the following:

- Test the Electronics Module ▶ page 4-7.
- Perform the following Calibrations:
  - Carriage ▶ page 5-7.
  - Refill ▶ page 5-9.
  - Line Sensor ▶ page 5-10.
  - Printhead Alignment ▶ page 5-13.
  - Color Calib. ▶ page 5-16.
  - Service Accuracy ▶ page 5-17.
- Make sure you have the latest version of the Flash SIMM (firmware) installed.
- Replace the Electronics Module ▶ page 8-6.

System Error: 010111

Problem Description: The content of the User configuration area of the EEROM is not valid when the printer is initialized.

Corrective Action: Press ENTER and re-configure the front panel settings. If the error code continues to appear then replace the Electronics Module ▶ page 8-6.

System Error: 010120

Problem Description: The content of the permanent configuration area of the EEROM is not valid when the printer is initialized in Normal Mode.

Corrective Action: Try the following:

- If this Error Code appeared during normal operation and not during the initialization, then the problem can be solved by switching the printer OFF and ON again.

- Enter in Service Mode ▶ page 4-6. During the initialization sequence the Error Code "010110" appears. Refer to that error code for further information.

System Error: 010121

Problem Description: One of the banks of the user area was corrupted while writing or reading in that area.

Corrective Action: Try the following:

- Switch the printer OFF and ON again.

- If the Error Code appears again then replace the Electronics Module ▶ page 8-6.

System Error: 020000

Problem Description: Error in finding the Primer home position.

Corrective Action: Try the following:

- Make sure that the Service Station Interconnect Cable (the black cable that connects the Service Station to the Electronics Module) is correctly connected to the Electronics Module.

- Make sure that the cables for the Primer Stepper Motor and Sensor are correctly connected to the Service Station Interconnect PCA.

- Make sure that the air tubes that are connected between the primer assembly and the service station are in the correct position and are not squeezed together.

- Make sure that the Primer Stepper Motor is NOT shorted.

- Replace the Service Station interconnect cable ◗ Page 8-87.

- Replace the Primer Assembly ◗ Page 8-29.

- Replace the Service Station Assembly ◗ page 8-26.

- Replace the Electronics Module ◗ page 8-6.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error:	020001
Problem Description:	Error in finding the Elevator home position.
Corrective Action:	Try the following:

- Make sure that there are no obstacles in the Elevator path. Check if the ink cartridges are installed correctly on the Elevator.
- Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly and Elevator to the Electronics Module) is correctly connected to the Electronics Module.
- Make sure that the cables for the Elevator Stepper Motor and Sensor are correctly connected to the Refill Interconnect PCA.
- Make sure that the Elevator Stepper Motor is NOT shorted.
- Replace the Refill interconnect cable ▶ Page 8-87.
- Replace the Refill Interconnect PCA ▶ Page 8-64.
- Replace the Elevator Assembly ▶ Page 8-52.
- Replace the Electronics Module ▶ page 8-6.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 020002

Problem Description: Error in finding the Refill Arm home position.

Corrective Action: Try the following:

- Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly and Elevator to the Electronics Module) is correctly connected to the Electronics Module.
- Make sure that the cables for the Refill Stepper Motor and Sensor are correctly connected to the Refill Interconnect PCA.
- Make sure that the Refill stepper motor is NOT shorted.
- Replace the Refill interconnect cable ◗ Page 8-87.
- Replace the Refill Interconnect PCA ◗ Page 8-64.
- Replace the Refill Assembly ◗ Page 8-55.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error:	020003
Problem Description:	Error in finding the Refill Stepper Motor home position.
Corrective Action:	Try the following:

- Perform the Refill Calibration ◗ page 5-9.
- Make sure that there are no obstacles in the Refill path.
- Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly and Elevator to the Electronics Module) is correctly connected to the Electronics Module.
- Make sure that the cables for the Refill Stepper Motor and Sensor are correctly connected to the Refill Interconnect PCA.
- Make sure that the Refill stepper motor is NOT shorted.
- Replace the Refill Interconnect cable ◗ Page 8-87.
- Replace the Refill Interconnect PCA ◗ Page 8-64.
- Replace the Refill Assembly ◗ Page 8-55.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 020004

Problem Description: Error in finding the Service Station home position.

Corrective Action: Try the following:

- Make sure that the Service Station flag is installed correctly ◗ page 8-26.
- Make sure that the Service Station nut is installed correctly. The nut is located on the front side of the Service Station, just below the Printhead Cleaner holder.
- Make sure that the Service Station Interconnect Cable (the black cable that connects the Service Station to the Electronics Module) is correctly connected to the Electronics Module.
- Make sure that the cables for the Service Station components are correctly connected to the Service Station Interconnect PCA.
- Make sure that the Service Station stepper motors are NOT shorted.
- Replace the Service Station interconnect cable ◗ Page 8-26.
- Replace the Service Station Assembly ◗ page 8-26.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 020005

Problem Description: Elevator has problem reaching a desired position.

Corrective Action: Try the following:

- Make sure that there are no obstacles in the Elevator path. Check if the ink cartridges are installed correctly on the Elevator.
- Make sure that the Refill Interconnect Cable (the black cable that connects the Refill Assembly and Elevator to the Electronics Module) is correctly connected to the Electronics Module.
- Make sure that the cables for the Elevator Stepper Motor and Sensor are correctly connected to the Refill Interconnect PCA.
- Make sure that the Elevator stepper motor is NOT shorted.
- Replace the Refill interconnect cable ▶ Page 8-87.
- Replace the Refill Interconnect PCA ▶ Page 8-64.
- Replace the Elevator Assembly ▶ Page 8-52.
- Replace the Electronics Module ▶ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 020006

Problem Description: The refill position in the Y-axis is not calibrated.

Corrective Action: Perform the Refill Calibration ▶ Page 5-9.

System Error: 020010

Problem Description: Problem with fine movement of the Y-axis motor.

Corrective Action: Try the following:

- Switch the printer OFF and ON again and check if the error code disappears. If the error code disappears, **do NOT try to troubleshoot any further**.
- Check that the Encoder Strip is NOT damaged or dirty. If necessary, clean the encoder strip, or if damaged, replace the Encoder Strip ▶ Page 8-32.
- Clean and lubricate the slider rods.
- Replace the Y-axis Motor Assembly ▶ Page 8-45.
- Replace the Tensioner Holder Assembly (with spring) ▶ Page 8-39.
- Replace the Y-axis belt ▶ Page 8-39.
- Replace the Carriage Assembly ▶ page 8-42.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 020011

Problem Description: Error during initialization of the Y-axis.

Corrective Action: Try the following:

- Switch the printer OFF and ON again and check if the error code disappears. If the error code disappears, **do NOT try to troubleshoot any further**.
- Check that the Encoder Strip is NOT damaged or dirty. If necessary, clean the encoder strip, or if damaged, replace the Encoder Strip ◗ Page 8-32.
- Clean and lubricate the slider rods.
- Replace the Y-axis Motor Assembly ◗ Page 8-45.
- Replace the Tensioner Holder Assembly (with spring) ◗ Page 8-39.
- Replace the Y-axis belt ◗ Page 8-39.
- Replace the Carriage Assembly ◗ page 8-42.
  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 040xxx

Problem Description: MIO Card Error

Corrective Action: Try the following:

- Press ENTER and switch the printer OFF. Make sure the MIO card is installed correctly and switch the printer ON again. If this error code continues to appear then replace the MIO Card.
- If the system error continues to appear after replacing the MIO card, then replace the Electronics Module ◗ page 8-6.

System Error: 040601

Problem Description: The MIO card does not support the MIO 6 protocol. Cards with version 5 or below can not be used with this plotter. Version 5.1 cards behave as expected but do not support PML instructions. Install the latest version.

Corrective Action: Install the latest version of the MIO Card.

System Error: 050000

Problem Description: The Line Sensor has problems finding the Mark Encoder.

Corrective Action: Try the following:
- Clean the Mark Encoder if necessary.
- Make sure the Line Sensor is installed and connected correctly.
- Perform the Service Accuracy Calibration ▶ Page 5-17.
- Replace the lens cover which is installed on the line sensor.
- Replace the Trailing Cable ▶ Page 8-36.
- Replace the Carriage Assembly ▶ Page 8-42.
- Replace the Electronics Module ▶ page 8-6.
   Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 060000

Problem Description: The Line Sensor is not functioning properly because there is too much ambient light.

Corrective Action: Try the following:

- Close the Window if it is open.
- Move the printer to a location with less light. The Printer MUST be kept away from direct intense sunlight or a spotlight.
- Replace the Trailing Cable ◗ Page 8-36.
- Replace the Carriage Assembly ◗ Page 8-42.
- Replace the Electronics Module ◗ page 8-6.

  Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

System Error: 060100

Problem Description: Incorrect Line Sensor type in the EEROM.

Corrective Action: Try the following:

- Calibrate the Line Sensor ◗ page 5-10.
- Clear the EEROM ◗ page 4-32 and perform all the calibrations again.
- Replace the Electronics Module ◗ page 8-6 and perform all the calibrations again.

System Error: 060200

Problem Description: Incompatible Firmware and Carriage PCA.

Corrective Action: Upgrade the Firmware.

System Error: 060300

Problem Description: Incompatible Firmware and Line Sensor.

Corrective Action: Upgrade the Firmware.

System Error: 060400

Problem Description: Incompatible Carriage PCA and Line Sensor **OR** Line Sensor not calibrated after replacing Carriage Assembly.

Corrective Action: Try the following:
- Calibrate the Line Sensor ◗ page 5-10.
- Replace the Carriage Assembly ◗ page 8-42.

System Error: 060500

Problem Description: Line Sensor not calibrated.

Corrective Action: Calibrate the Line Sensor ◗ page 5-10.

System Error: 07xxxx XXXXXXXX

Problem Description: Firmware Error.

Corrective action: Make sure you have the latest version of the Flash SIMM (firmware) installed or upgrade the firmware revision of the Flash SIMM ◗ page 1-3. If the error code remains after installing the latest Flash SIMM then report the error to the HP Response Center or the nearest HP Support Office, stating the following information:
- Model and Serial Number of the printer.
- the complete error number (07xxxx XXXXXXXX).
- service print (*Utilities / Service Tests*).
- plot file where the error has occurred.
- additional comments about the usage, the setting, etc..

HP DesignJet 2500CP/3500CP only

System Error: 08xxxx

Problem Description: PostScript Error.

Corrective Action: Make sure you have the latest version of the Flash SIMM (firmware) installed or upgrade the firmware revision of the Flash SIMM ◗ page 1-3. If the error code remains after installing the latest Flash SIMM then report the error to the HP Response Center or the nearest HP Support Office, stating the following information:

- Model and Serial Number of the printer.
- the complete error number.
- service print (*Utilities / Service Tests*).
- plot file where the error has occurred.
- additional comments about the usage, the setting, etc..

HP DesignJet 2500CP/3500CP only

System Error: 080001

Problem Description: Hard Disk Drive installed without PostScript.

Corrective Action: Install the PostScript SIMM in the 2nd slot from the left in the Electronics Module.

HP DesignJet 2500CP/3500CP only

System Error: 09xxxx

Problem Description: Hard Disk Drive Error.

Corrective Action: Try the following:

- Switch the printer OFF and ON again.
- If the Error Code appears again then check that the Hard Disk data cable is correctly connected at both ends. Also check that the Hard Disk Power Cable is correctly connected.
- Replace the Hard Disk data cable ◗ page 8-12.
- If the Error Code continues to appear, then replace the Hard Disk ◗ page 8-12.

HP DesignJet 2500CP/3500CP only

System Error: 090004

Problem Description: PostScript installed without the Hard Disk Drive.

Corrective Action: Install the Hard Disk Drive in to the Electronics Module ◗ page 8-12.

HP DesignJets 2500CP and 2000CP with firmware version A.02.14 or higher and HP DesignJets 3500CP and 3000CP only

Error Message: Ink System Error XX-YYYY

Ink Delivery System errors are identified by code numbers composed of 2 digits plus 4 additional digits, like this: XX-YYYY. These digits mean:

- **XX** is the proper code between 01 and 98
- **YYYY** indicates which ink system is affected. Each **Y** represents one color in the order YCMK (as installed in the Carriage) and can be either:
  - 0 - if the error **DOES NOT** apply to that color.
  - 1 - if the error **DOES** apply to that color.

The error codes (XX) are codified following these rules:

- A bigger number means higher severity of the error.

- Each **X** can be a digit from 0 to 9.
- The 1st digit is the severity and the main cause of the error. Codes (**XX**) that are below 50 correspond to ignorable errors (currently they are not displayed).

1st Digit	Cause of Error
9	Missing Ink Systems
8	Mixed Ink Systems
7	Removed Components
6	Electrical Problem
5	Logical Problem (Incorrect Ink System)
3	Alignment Error
2	Printhead Check Error
1	Other errors

- The 2nd digit indicates the component causing the error or the secondary source of the error. Ignore (when possible) a "0" or "1" in the 2nd **X** if the optional **YYYY** is present (because it is coded with these digits).

1st Digit	Component Causing Error
0	Media
1	LED or Lens Cover
2	Ink Cartridge
3	Head Cleaner
4	Printhead
5	Thermal Shutdown
6	Bad Printhead Initialization
7	Continuity Error
8	Ink Delivery System (the whole kit potentially affected)

3

User Messages

User Messages for HP DesignJets 2500CP and 2000CP with Firmware Version A.02.14 or Higher and HP DesignJets 3500CP and 3000CP

NOTE FOR HP DESIGNJETS 2500CP AND 2000CP: IF YOU HAVE ANY USER MESSAGES WHICH ARE NOT LISTED IN THIS CHAPTER, THEN CHECK WHICH FIRMWARE VERSION IS INSTALLED IN THE PRINTER, AND IF NECESSARY UPGRADE TO FIRMWARE VERSION A.02.14 OR HIGHER.

This is a list of the messages in the front–panel display. If an action is needed, it is shown in italics in the Explanation and Action column. The messages are listed in alphabetical order, except that the STATUS messages follow all other messages.

Message Explanations and Actions

Message	Explanation and Action
Accessing head cleaners	The printer is moving the platform that contains the printhead cleaners to a place where you can access them. *Wait for a few seconds until this operation has finished.*
Accessing printheads	The printer is moving the carriage that contains the printheads to a place where you can access them. *Wait for a few seconds until this operation has finished.*
Action unavailable Entry being printed	A print is being printed and you have requested to move, delete or modify the number of copies through the queue management menu. You cannot change the current entry until the print has finished. *Wait until the print has finished.*
Calibrate error Continue →	The calibration print was loaded incorrectly and it could not be measured. *Press ↓ to continue, then reload the print for measurement. Follow front panel instructions.*
Calibrate Yes → Color No →	You are using sheet media and color calibration is on. The printer is asking you if you want to calibrate the color for the loaded media. *Press ↑ for yes.* Press ↓ for no.

Message	Explanation and Action
Calibration done Continue →	Accuracy calibration is complete. *Press* ↓ *to continue.*
Cancelled Continue →	You have just cancelled the last print or function. *Press* ↓ *to continue.*
Check ■■□■ Close right door	The printer has detected an error in the printhead cleaners indicated by the stars. *Reseat (do not replace) the indicated cleaners. When you have done so, close the right door of the printer.*
Check ink cartridges ■■□■ Abort →	The printer has detected an error in the cartridges indicated by the empty squares. *Reseat (do not replace) the indicated cartridges or press the* ↓ key to terminate the procedure. In that case, you will not be able to print, and you may later resume checking the ink system by pressing the Replace Ink System button.*
Check ink system→ Ignore →	After an error has been detected in the ink system, you are given the chance to check it. *Press* ↑ *to check the ink system right now. The printer will indicate which ink systems are affected.* *Press* ↓ *to ignore the error and continue printing. In this case the image quality cannot be assured.*
Check printheads ■■□■ Abort →	The printer has detected an error in the printheads indicated by the empty squares. The printhead can be replaced, but you should replace all components of the failing ink systems as soon as possible. *Reseat (do not replace) the indicated printheads or press the* ↓ key to terminate the procedure. In that case, you will not be able to print, and you may later resume checking the ink system by pressing the Replace Ink System button.*
Close left door to continue	You opened the left door while the printer was busy, or you have finished installing the ink cartridges. *Close the left door to continue.*
Close roll cover Continue →	*Rewind the media to take up any slack in the roll, close the roll cover, then press* ↓ *to continue.*
Close window to continue	You have finished installing the printheads. *Close the window to continue.*
Create pattern → Measure pattern →	*Press* ↑ *to create the pattern for automatic calibration.* Press ↓ to measure the pattern for automatic calibration.
Disk error Continue →	(HP DesignJet 2500CP/3500CP only) An error on the hard disk has been detected. *Press* ↓ *to continue.*

Message	Explanation and Action
Edge not found Reload media	The printer could not find edge of media during loading procedure. *Check the leading edge of the media for unevenness or tears; cut a straight edge, if necessary, and reload. Be sure to position the right edge along the perforated line on the entry platen when loading.*
Error processing job Flushing rest of job→	An error was encountered while the print was being processed. The print has been lost. *Press ↓ to delete the print.*
Fatal disk error Continue →	(HP DesignJet 2500CP/3500CP only) An error on the hard disk has been detected. *Press ↓ to continue. Retry the operation by cycling the power. If the problem persists, Replace the Hard Disk Drive.*
Head cleaner full ■■❑■ →	**Either: After finishing printing, the printer has detected that one or more of the printhead cleaners are full of ink. The squares that are flashing indicate the head cleaners that are full.** *Press ↓ to continue.* The message [Check ink system → / Ignore → {is displayed. If you press ↓ again to continue, you may still be able to print again, but the ink in the head cleaner may overflow and the print quality of your images may be affected. To fix the problem, select ↑ to check the ink system. **Or: In the ink system replacement process, one or more of the printhead cleaners have not been replaced at the same time as the corresponding printheads. The squares that are flashing indicate the head cleaners that are full.** *Press ↓ to continue.* You may still be able to print again, but image print quality may be affected, as indicated by a subsequent message.
Head cleaner ink may overflow →	One or more of the printhead cleaners are full of ink, and the ink may overflow. *Press ↓ to continue. Image print quality may be affected, and ink may leak inside the printer and damage it. Replacement of the ink systems affected is recommended.*
Head cleaner removed ■■❑■ →	The printer has detected that one or more printhead cleaners have become dislodged or the printer cannot detect them, as indicated by the flashing squares. Printing is disabled. *Press ↓ to check the failing head cleaner.* You should reseat the head cleaners immediately. **If this does not solve the problem, you will have to replace the entire ink system (printhead, printhead cleaner, and ink cartridge) using the Replace Ink System key.** *If you don't correct the error now, you will see the status message "Ink system error".*

Message	Explanation and Action
Image quality not assured →	This message appears after the printer finds an error in the ink system. One or more of the ink systems have passed their specified life, one or more of the printhead cleaners are full of ink, or one or more of the printheads has failed an electrical test, or an alignment or nozzle check. **Press ↓ to continue. You may continue printing, but you may not get your usual image print quality.**
Imaging inks YES→ installed NO →	After you have finished installing a new ink cartridge, you are asked to confirm that you have changed the type of ink cartridges from UV Pigmented to Imaging. *Press ↑ to confirm that you have changed the ink cartridges from UV Pigmented to Imaging.* *Press ↓ to indicate that you have not changed the ink cartridges from UV Pigmented to Imaging. You will then be given the opportunity of replacing the incorrect ink cartridges by the correct ones.*
Incorrect ink system ■■❑■→	After you used the Replace Ink System procedure, which was cancelled by a time–out or aborted; the printer has detected that one or more of the ink systems are still faulty or have not been fully replaced, as indicated by the flashing squares. This message also appears if the printer believes that a component is incorrect; you must then confirm that the ink system is indeed correct, or rectify the error. *Press ↓ to continue, to replace the ink systems. Printing will be disabled. You should replace the faulty ink systems immediately*. *If you don't correct the error now, you will see the status message "Ink system error"*
Initializing new ink system	In the ink system replacement process, you have swapped an Imaging ink system for a UV Pigmented ink system, or vice versa. The printer will reinitialize and prepare to print with the new ink system. (This message only applies to firmware revision levels A.02.08 or higher.) *Wait until the new ink system has been initialized.*
Ink cartridge removed ■■❑■→	The printer has detected that one or more ink cartridges have been removed or cannot be detected, as indicated by the flashing squares. *Press ↓ to check the failing ink cartridge. Printing has been disabled. You should reseat the ink cartridge immediately*. **If this does not solve the problem, you will have to replace the entire ink system (printhead, printhead cleaner, and ink cartridge) using the Replace Ink System key.** *If you don't correct the error now, you will see the status message "Ink system error".*

Message	Explanation and Action
Ink cartridge valve out ■■❑■→	The printer has detected that one or more of the ink cartridge valves (as indicated by flashing squares) has popped out during refilling. *Press* ↓ to check the failing ink cartridge. You should reseat the valves immediately. **If this does not solve the problem, you will have to replace the entire ink system (printhead, printhead cleaner, and ink cartridge) using the Replace Ink System key.**
Ink system at end of life ■■❑■→	The printer has found that an earlier "Out of ink" error has not been corrected. One or more components of the ink system, as indicated by flashing squares, have reached the end of their intended lives. You should now replace all three components of those ink systems affected (the printheads, the printhead cleaners and the ink cartridges). *Press ↓ to continue. Image print quality may be affected. Replacement of the ink systems affected is recommended.*
Ink system at end of life. Retry→	The printer has detected that one or more components of the ink system have reached the end of their intended lives. You should now replace all three components of those ink systems affected (the printheads, the printhead cleaners and the ink cartridges). *Press ↓ to replace the erroneous ink systems*.
INK SYSTEM ERROR xx-xxxx	The printer has detected an error in the ink system, as shown in earlier messages. Printing will be disabled until the error has been corrected. If more than one error is pending, the one with the highest number, corresponding to the most severe error, will be displayed. Possible error codes (xx-xxxx) are: • 58.... See the message "Incorrect ink system" • 65.... or 66.... See the message "Printhead failure" • 67.... See the message "Printhead contact error" • 72.... See the message "Ink cartridge removed" • 73.... See the message "Head cleaner removed" • 74.... See the message "Printhead removed" • 88.... See the message "Mixed ink system". *Press the **Replace Ink System** key to replace the erroneous ink systems in order to print with your printer again.* *Press the **Enter** key to access the main front panel menus.* ***FOR FURTHER INFORMATION REFER TO INK SYSTEM ERROR XX-YYYY IN CHAPTER 2.***
Install complete	Ink system replacement has been completed successfully. *Resume normal operations.*

Message	Explanation and Action
Lift lever after aligning	You have lowered the media lever to align the media with the entry platen._Lift the lever at the right edge of the paper path on the printer when you've finished aligning the roll media as instructed._
Lift lever to continue	The media lever was lowered while the processor was busy._Lift the lever at the right edge of the paper path on the printer._
Load arrow edge print side down	_Remove the accuracy calibration print, turn it so that the edge with the arrows printed on it is print–side down, then load that edge into the printer._
Load cancelled Remove media	The **Cancel key was pressed while media loading was in progress.**_Remove media._
Load error Remove media	Media was inserted with the media lever raised._Lower the lever and reload the media._
Load media for calibration	_Load media to proceed with calibration._
Load media to align printheads	_Load media to proceed with printhead alignment._
Load media to check printheads	The printer is telling you to load media so it can perform the printhead check._Load media to proceed with printhead check._
Load sheet for calibration	The printer is ready to perform the accuracy calibration procedure, but media is not present._Load media to continue._
Lower lever	_Lower the lever at the right of the printer._
Lower lever Remove media	_Lower the lever at the right of the printer and remove the media._
Lower window to continue	The window was opened while the printer was busy._Close the window to continue._
Media too small	You may have sent a print file that is too large for the media loaded; the print may be clipped._Press **Cancel** if the media is unsuitable, and reload with appropriate media._

Message	Explanation and Action
Media too small for calibration→	The media you loaded for printhead alignment or a printhead check is too small. The procedure has been cancelled. You may continue printing without calibrating the printer, but the image quality is not assured. *Press* ↓ to continue. If you want to complete the interrupted procedure, reload with appropriate media (A3–size paper or larger, in landscape orientation) and redo the procedure: • **Use Image quality / Printhead service / Align now for printhead alignment.** • **Use Image quality / Printhead service / Printheads check / Now for a printhead check.**
MIO error Communication break	The flow of data from the computer to the printer stopped prematurely (for example, the computer may have been shut down before all data was sent). *Press* **Enter** *to clear the message from the front panel display.*
MIO error handshake	You configured the modular interface incorrectly. *Press the* **Enter** *key to clear the message from the front panel. Check the handshake settings in the printer's front panel, in the hardware configuration, and in your application software configuration to make sure they are compatible with one another.*
Mispositioned Reload roll	The roll media is mispositioned. *Remove and reload the roll.*
Mispositioned Reload sheet	The sheet media is mispositioned. *Remove and reload the sheet.*
MISSING INK SYSTEM Install→	One or more ink systems are missing. *Press* ↓ or the **Replace Ink System** key to install the ink systems in order to print with your printer.
Mixed ink system ❑■■■→	At power–on or after the ink systems have been serviced, the printer has detected components of different ink system types (for example, Imaging and UV Pigmented). Printing will be disabled until the ink systems are all of the same type. The flashing squares indicate which ink systems need checking. The error may be because the printhead, printhead cleaner and ink cartridge within an ink system are not all of the same type (UV Pigmented or Imaging) or that entire ink systems are of different types. *Press* ↓ to continue, to check the ink systems.

Message	Explanation and Action
MIXED INK SYSTEM 88xxxx	The printer has earlier detected components of different ink system types (for example, Imaging and UV Pigmented). Printing will be disabled until the ink systems are all of the same type. The error code "88xxxx" indicates a mixed ink system error. *Press the* **Replace Ink System** *key to replace the erroneous ink systems in order to print with your printer again. You can press the Enter key to access the main front–panel menu.*
No code for UV inks Continue→	The printer does not have the correct firmware for the HP DesignJet CP ink system UV currently installed. *(This message only applies to firmware revision levels A.01.xx.)* *Press* ↓ *to continue, and reinstall the HP DesignJet CP Ink System (Imaging ink system) back into the printer.* Access the menu Utilities / Statistics / Code rev to confirm the firmware revision present. If you have a code revision like A.01.xx, you need to upgrade your firmware to code revision A.02.08 or higher to use the HP DesignJet CP Ink System UV.
Open left door to access ink cartrg.	You are doing an ink system replacement. *Open the left door to access the ink cartridges.*
Open right door to access head cleaners	You are doing an ink system replacement. *Open the right door to access the printhead cleaners.*
Open window to access printheads	You are doing an ink system replacement. *Open the window to access the printheads.*
Out of disk space Data was lost	(HP DesignJet 2500CP/3500CP only) The current print file is too large for the printer's memory. *Try lowering the resolution of the file you are attempting to print, or otherwise reducing its complexity.*
OUT OF INK ■■❑■→	The printer has detected that the amount of ink in the ink systems indicated by one or more flashing squares, is below acceptable limits for satisfactory printing. *Press* ↓ *to check the indicated ink systems.*
Out of memory Data was lost	The current file is too large for the printer's memory; the printer has run out of disk space for processing the file. *To print files of this size, you may need to install more memory to your printer.*
Press ENTER when done	The printer is waiting for you to confirm an action or selection. *When you have taken the appropriate action press the* **Enter** *key.*

Message	Explanation and Action
Printhead alignment cancelled→	The printhead alignment procedure has failed, or the printer has detected a fault that stops the procedure from completing. Subsequent messages will explain the error further: ● *"Replacement of lens cover recommended" - You should check the section on replacing lens covers in the User's Guide.* ● ***"Media too small for calibration" - The roll that is loaded is not wide enough for the calibration to be done. It must be at least A3 size.*** *You should load appropriate media and repeat the procedure again, using **Image Quality / Printhead Service / Align Now. If you use sheet media that is too small, the printer will reject the media and prompt you to load new media.*** *Press ↓ to continue.* **You may continue printing, but you may not get your usual image print quality.**
Printhead alignment error ■■☐■→ or Printhead alignment error →	The printhead alignment procedure has failed, or the printer has detected a fault that stops the procedure from completing. The squares that are flashing indicate the ink systems that have failed. If the message contains no squares, the procedure has failed because of a problem that is not related to specific printheads, for example, a problem with the media. *Press ↓ to continue. The message **Check ink system** → / **Ignore**→ should be displayed. If you press ↓ again to continue, you may still be able to print again, but image print quality may be affected. To fix the problem, select ↑ to check the ink system.*
Printhead check cancelled→	The printhead check procedure has failed, or the printer has detected a fault that stops the procedure from completing. Subsequent messages will explain the error further: ● *"Replacement of lens cover recommended" - You should check the section on replacing lens covers in the User's Guide.* ● ***"Media too small for calibration" - The roll that is loaded is not wide enough for the check to be done. It must be at least A3 size.*** *You should load appropriate media and repeat the check again, using **Image Quality / Printhead Service / Printheads Check / Now. If you use sheet media that is too small, the printer will reject the media and prompt you to load new media.*** *Press ↓ to continue.* **You may continue printing, but you may not get your usual image print quality.**

Message	Explanation and Action
Printhead check error ■■□■ → or Printhead check error →	The message "Printhead check error" may be displayed if: • ***You are using colored media. Either disable checking or use media that is clean, white, and opaque.*** • *There are dirty nozzles on the printhead. Replace your ink system. Do not attempt to clean the nozzles.* The squares that are flashing indicate the ink systems that have failed. If the message contains no squares, the procedure has failed because of a problem that is not related to specific printheads, for example, a problem with the media. *Press ↓ to continue. The message **Check ink system → / Ignore →** will be displayed. If you press ↓ again to continue, you may still be able to print again, but image print quality may be affected. To fix the problem, select ↑ to check the ink system.*
Printhead contact error ■■□■→ **CAUTION:**	The printheads, indicated by flashing squares, have failed to function because of an unusual electrical signal from the printhead. The most likely cause of this message is that the electrical contacts on the printhead or printer carriage are dirty and need cleaning. *Press the ↓ key to check the printheads. Open the window when indicated, and remove the printheads indicated.* *Look at the electrical contacts on the printhead and carriage. If they are dirty, they should be cleaned.* ***Do not touch, wipe, or attempt to clean the printhead nozzles. This can damage the printhead. Handle the ink systems with care.*** *If you don't correct the error now, you will see the status message "Ink system error".*
Printhead failure ■■□■→	The printheads indicated by flashing squares have failed, either during printhead initialization or during printing. The printer may have detected an unusual electrical or thermal signal from the printhead that may require attention. The most likely causes of this message are: • The ink cartridge is empty. If this is so, your ink system has reached the end of its normal life, and you will need to buy a new ink system to replace the old one. • There has been a problem inside the printhead that has caused it to fail, for example, the printhead has overheated. *You should replace the indicated ink systems immediately.* *Press the ↓ key to check the printheads. Open the window when indicated, and remove the printheads indicated. Try reseating the printhead.* *If you don't correct the error now, you will see the status message "Ink system error".*

Message	Explanation and Action
Printhead removed ■■☐■→	The printer has detected that one or more printheads have become dislodged or the printer cannot detect them, as indicated by the flashing squares. *Press ↓ to continue. You should reseat the printheads immediately or replace the ink system.* *If you don't correct the error now, you will see the status message "Ink system error".*
Printing disabled→	The printer cannot print, because of errors previously notified. *Press ↓ to continue. Then press the Replace Ink System key to replace the erroneous ink systems in order to print with your printer again.*
Pull ↓ Align ↔ edges to roll	You are aligning roll media. *Grasp the left and right free edges of the roll media and pull them towards you until the media is taut. At the same time, align the left and right edges of the media so that they are flush with the left and right edges of the roll.*
Reload media	There was an error loading the media and the printer has ejected it. The printer is waiting for you to reload the media. *Reload the media.*
Reload sheet	Sheet media was loaded skewed and the printer ejected it. *Reload the sheet.*
Remove all ink cartridge(s)	You have selected the option **Utilities / Transport** mode of the front-panel menu, and opened the left door when instructe**d.** *The printer is instructing you to remove all the ink cartridges.*
Remove all printheads	You have selected the option **Utilities / Transport mode of the front–panel menu, and lifted the window when instructed.** *The printer is instructing you to remove all the printheads.*
Remove head cleaners Close right door	You have selected the option **Utilities / Transport mode of the front–panel menu, and opened the right door when instructed.** *The printer is instructing you to remove all the printhead cleaners, and then close the right door.*
Remove media	The ink is dry. *Remove the accuracy calibration print that has just been produced.* *Press ↓ to continue with accuracy calibration.*
Remove media Lift lever	An attempt to load media was made while the media lever was lowered. *Remove the media, lift the lever, and reload media with the lever up.*

Message	Explanation and Action
Replace ink cartridge(s) ■■■□	You are in the ink system replacement process, and opened the left door when instructed. *The printer is waiting for you to replace the ink cartridges indicated by flashing squares.*
Replace lens cover Continue→	You are in the ink system replacement process, and lifted the window when instructed. *The printer is waiting for you to replace the lens cover on the printhead carriage with a new one. Spare lens covers are inside the right door. Press ↓ to continue when you have completed the lens replacement.*
Replace printhead(s) ■■□■	You are in the ink system replacement process, and lifted the window when instructed. *The printer is waiting for you to replace the printheads indicated by flashing squares.*
Replace printhead(s) Close window	You are in the ink system replacement process, and lifted the window when instructed. *The printer is waiting for you to replace a printhead, or you can close the window without making any changes.*
Replace ■■■□ Close right door	You are in the ink system replacement process, and opened the right door when instructed. *The printer is waiting for you to replace the printhead cleaners indicated by *s, and then close the right door.*
Replacement of ink system recommended→	You are about to finish the ink system replacement process, and the printer recommends replacing one or more of the four ink systems (for example, because they have passed their specified life). *Press the ↓ key to continue. You will see the status message ″Low on ink″.* **Then press the Replace Ink System** *key to replace the ink systems that will be indicated.*
Replacement of lens cover recommended→	The printhead alignment procedure, or the printhead check procedure, or a calibration check has failed because the lens cover is dirty and needs replacing. Printing may continue but the image quality is not assured. *Press ↓ to continue. Replace the lens cover. Spare lens covers are inside the right door.*
Resource area full Unable to save res.	(HP DesignJet 2500CP/3500CP only) The printer's hard disk is full. You are attempting to save resources. The printer is unable to process the request. *You need to remove some of the resources from the hard disk, for example, saved print files, halftones, or fonts that you don't use. Then try saving the resource again.*

Message	Explanation and Action
Roll empty Load new roll	You have used all of the media roll. *Load a new roll of media.*
Roll misaligned Reload roll	Roll media is skewed. *Reload media.*
Set transport→ Yes Mode→ No	You have selected transport mode in the front–panel menu. The printer is waiting for you to accept or reject the transport mode. Accepting transport mode starts the process of removing all ink systems. *Press ↑ to accept or press ↓ to reject.*
Sheet load→ Roll load→	*Press ↑ to load sheet media.* Press ↓ to load roll media.
Sheet misaligned Reload sheet	Sheet media is skewed. *Remove it and reload it so that the left and right edges being loaded into the printer are square. The leading edge must also be straight.*
Sheet required for calibration	You have started an accuracy calibration check but media is not present. *Load media.*
Sheet / Roll? Reload media	**Either: Sheet mode was chosen while loading roll media.** *Reload media.* **Or: a sheet more than 51 inches (130 cm) long was loaded.** *Trim the sheet and reload.*
Switch power off	You have selected the transport mode shut-down sequence. The printer is waiting for you to turn the power switch, on the rear of the printer, to OFF. *Switch OFF the printer.*
Switch power off Check paper path	The printer may be jammed with media. *Turn OFF the printer. Check the media path and clear it if necessary. Then turn on the printer.*
Switch power off Check printhead path	The printhead carriage cannot move. The printer may be jammed with media. *Turn OFF the printer. Check the media path and clear it if necessary. Then turn ON the printer.*
System Error 060000	The ambient light level in the area of your printer is too bright and is causing the optical sensor in your printer to malfunction. ***Reduce the ambient light level or move the printer to a location where the light level is lower.***

Message	Explanation and Action
System error XXXXXX	An internal error has occurred and a system error number is displayed. *Press* **Enter***; this may clear the error and allow you to continue. If you cannot continue, turn off the printer, and then turn it on again. If you still see the system error message then refer to Chapter 2 for more information.*
System error XXXXXX XXXXXXXX	An internal error has occurred and a system error number is displayed. *Press* **Enter***; this may clear the error and allow you to continue. If you cannot continue, turn off the printer, and then turn it on again. If you still see the system error message then refer to Chapter 2 for more information.*
UV inks YES→ installed NO→	After you have finished installing a new ink cartridge, you are asked to confirm that you have changed the type of ink cartridges from Imaging to UV Pigmented. *Press* ↑ to confirm that you have changed the ink cartridges from Imaging to UV Pigmented. *Press* ↓ to indicate that you have not changed the ink cartridges from Imaging to UV Pigmented. You will then be given the opportunity of replacing the incorrect ink cartridges by the correct ones.
Verify ink system ■■☐■→	At power-on, the printer has detected an error in the ink systems shown by flashing squares. *Press* ↓ to continue. You should check the ink systems immediately.

STATUS Messages

Message	Explanation and Action
STATUS Accessing head cleaners	You have pressed the **Replace Ink System key or there is an error in the head cleaners and you have pressed** ↑ or ↓. The carriage is moving so that you can access the printhead cleaners. *Wait until the carriage is in position.*
STATUS Accessing printheads	You have pressed the **Replace Ink System key or there is an error in the printheads and you have pressed** ↑ or ↓. The carriage is moving out so that you can access the printheads. *Wait until the carriage is in position.*
STATUS Aligning printheads	The printer is printing a pattern to align the printheads. *Wait until the pattern has been printed.*

Message	Explanation and Action
STATUS Calibrating	The printer is performing the accuracy calibration check. *Wait until the printer has finished the check.*
STATUS Calibrating color	(HP DesignJet 2500CP/3500CP only) The printer is performing a color calibration. *Wait until the printer has finished calibrating.*
STATUS Calibrating printhds	The printer is performing an internal printhead calibration. *Wait until the printer has finished calibrating.*
STATUS Cancelling	The **Cancel** key has been pressed and the printer is in the process of cancelling a file or procedure. *Continue when this message is no longer displayed.*
STATUS Check pending	The right door has been opened while the printer was busy (for example, printing) and the printer is waiting to check the ink system. You may have done something that will affect image print quality. *Do not open any door or window on the printer when not instructed and it is busy.*
STATUS Checking ink system	The printer is verifying that the ink system was correctly installed, or that all the components are present after any door or window on the printer has been opened. *Wait until the check is complete.*
STATUS Checking media	The printer is checking to see if media is correctly positioned with respect to the perforated line of the entry platen. *Wait until the check is complete.*
STATUS Checking printheads	The printer is printing a pattern to test the printheads. *Wait until the check is complete.*
STATUS Creating pattern	The printer is performing an accuracy calibration. *Wait until the calibration is complete.*
STATUS Head cleaner(s) full	One or more of the printhead cleaners are full of ink. The printer will continue printing but image quality may be affected, and ink may leak inside the printer and damage it. *Press the* **Replace Ink System** key to replace the ink systems affected.
STATUS Initializing	The printer is doing an internal check on power–up. *Wait until the printer has finished initializing.*
STATUS Ink drying (xx m xx s)	The ink on your print is drying. *Wait before removing the print. If you remove it before the indicated time has passed, avoid smearing the ink.*

Message	Explanation and Action
STATUS Lens maintenance	The lens cover on the printhead carriage requires maintenance. *Press the* **Replace Ink System** *key to replace the lens cover with a new one. Spare lens covers are inside the right door.*
STATUS Loading roll	The printer is loading roll media. *Wait for the loading to complete.*
STATUS Loading sheet	The printer is loading sheet media. *Wait for the loading to complete.*
STATUS Low on ink	One or more of the four ink systems are out of ink. *Press the* **Replace Ink System** *key to replace the ink systems affected, if the last print showed any degradation in image quality. If there is still a large amount of ink remaining in the ink cartridges, see the message Printhead failure.*
STATUS Maintenance advised	The printer is being used more intensively than the recommended duty cycle. *Refer to Chapter 9 to perform the Preventive Maintenance.*
STATUS Measuring pattern	The printer is measuring the accuracy calibration print that you just loaded. *Wait for the calibration to complete.*
STATUS Out of media	The printer has received a file, is ready to print, but has no media loaded. *Load appropriate media.*
STATUS Pause pending	You have pressed the **Pause** key but the printer was busy performing a previous action. The printer will pause when it has completed its current action. *Wait for the current action to complete.*
STATUS Paused	You have pressed the **Pause** key. The printer will remain paused until you press the **Pause** key again. *Press the* **Pause** *key again when you are ready.*
STATUS Printing	The printer is printing. *Wait for the printing to complete.*
STATUS Printing (Special)	The printer is printing with a special print mode controlled by your software rather than by the printer. *Wait for the printing to complete.*
STATUS Processing	The printer has received a file from your software and is processing it ready to print. *Wait for the printing to complete.*

Message	Explanation and Action
STATUS Ready	The printer is ready to print. *Send a file to the printer.*
STATUS Ready for media	The printer is ready for you to load media. *Load appropriate media.*
STATUS Receiving	The printer has received data. *Wait for further messages.*
STATUS Recovering printhds.	The printer is recovering the printheads after an ink system replacement process (only for UV Pigmented inks), or you have initiated the printhead recovery procedure under **Utilities / Service Tests/ Recover Printheads.** *Wait for the printhead recovery procedure to complete.*
STATUS Refilling X m XX s	The printer is filling the printheads. *(This message only applies to firmware revision levels A.02.08 or higher.)* *Wait for the process to complete.*
STATUS Returning printheads	The ink system replacement process has been cancelled, and the printhead carriage is returning to its station at the right of the printer. *Wait until the carriage is in position.*
STATUS Roll feed edge trim	The printer is trimming the edge of roll media. *Wait until the media has been trimmed.*
STATUS Waiting nest	Nesting is turned on. The printer is waiting for another print to nest. *Send the printer another file for printing.*

4

Service Tests

Introduction

This chapter explains how to use the built-in Service Tests (Diagnostics) and what to do if the tests fail. If possible, always perform a Service Test on the component that you are about to replace, just to make sure that is the component that has failed. If the test on that component passes, there is no need to replace it.

Diagnostics - Self Test

Initialization Sequences

Whenever the the Printer is switched on, it automatically performs a series of internal self tests and mechanical initialization sequences. If the Printer is switched ON in Service Mode, the front-panel display will show a code next to the message "Initializing". These codes refer to the part which the printer is testing at that moment. If any of these parts fail, a system error will appear and you should consult the System Error Codes ▶ Chapter 2.

Code	Parts Tested	System Error if failed
b	Sensors and X-Encoder Fuse	010023
c	Interconnect Boards detection	010030
d	ADC in the Main PCA	010036
e	Fans	010032
f	DC Motor Driver ASIC	010033
g	DC Motors detection	010034
h	Stepper Motors detection	010035
i	ADC in the Carriage PCA	010037
j	Printhead Voltage in Main PCA	010038
k	Printhead Voltage in Carriage PCA	010039
l	Printhead Primitive Driver ASIC	010031
A	RAM SIMM	010021
B	Flash SIMM	010020
C	Swath RAM	010022
I	Hard Disk Drive	08xxxx

Service Tests (Diagnostics)

The following is a list of all internal service tests available in the Printers. Instructions for entering the service tests menu are given on page 4-6.

WARNING

ALL THE COVER SENSORS ARE DISABLED WHEN IN THE DIAGNOSTICS MENU. IF THE CARRIAGE IS MOVING IT WILL NOT STOP IF THE WINDOW IS OPENED, SO BE VERY CAREFUL NOT TO PUT YOUR HANDS INSIDE.

1 Electronics ◗ page 4-7

The purpose of this test is to verify the operation of the:
- Electronics Module.
- Line Sensor (only presence).
- Trailing Cable.
- Carriage Assembly.

2 Line Sensor ◗ page 4-10

The purpose of this test is to verify the operation of the Line Sensor which is installed on the carriage assembly.

3 Carriage Axis ◗ page 4-12

The purpose of this test is to verify the operation of the components of the Carriage Axis.

4 Media Axis ◗ page 4-14

The purpose of this test is to verify the operation of the components of the Media Axis.

5 Service Station ◗ page 4-16

The purpose of this test is to verify the operation of the Service Station, which also includes the Primer Assembly.

6 Refill ◗ page 4-18

The purpose of this test is to verify the operation of the Refill Assembly and the Elevator Assembly.

7 Front Panel ◗ page 4-19

The purpose of this test is to verify the operation of the front-panel keys and the LEDs.

8 Sensors ◗ page 4-20

The purpose of this test is to verify the operation of the following Sensors:
- Window Sensor.
- Right Door Sensor.
- Left Door Sensor.
- Refill Valve Sensors.
- Standby Button Sensor.
- Media Sensor.
- Pincharm Sensor.

9 MIO Presence ◗ page 4-23

The purpose of this test is to verify the presence of the MIO Card and the communication between the MIO Card and Main PCA.

10 Cutter ◗ page 4-24

The purpose of this test is to verify the operation of the cutter Assembly.

11 Bail ◗ page 4-25

The purpose of this test is to verify the operation of the bail stepper motor.

12 Image Quality ◗ page 4-26

The purpose of this test is to verify the image quality attributes of the printer.

13 Printhead ID ◗ page 4-28

The purpose of this test is to check the printhead ID.

14 Printhead Continuity ◗ page 4-29

The purpose of this test is to display the primitives and address maps of the printheads.

15 Clean Roller ◗ page 4-31

The purpose of this test is to enable you to rotate the Drive Roller when it requires cleaning.

16 Erase EEROM ◗ page 4-32

The purpose of this test is to clear the EEROM.

17 Reset Counters ◗ page 4-33

The purpose of this test is to reset the internal counters.

18 Not Applicable

19 Hard Disk Drive Revision ◗ page 4-34

The purpose of this test is to show the revision of the internal Hard Disk Drive.

Entering the Service Tests (Diagnostics) Menu System

1 Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2 Hold the UP and ENTER keys down and switch the printer **O**N. Wait until the message "Status/Initializing" is displayed on the front-panel before releasing the UP and ENTER keys.

   The reason for entering the Service Tests by powering ON is because various tests are performed during the initialization of the printer and also certain System Errors will cause an abnormal start up and will never reach the "Status/Ready" message on the front-panel.

3 Once the message "Status/Ready" is displayed on the front-panel, press the **Enter** key.

4 Use the **Arrow** keys to scroll to the "Utilities" menu display and press the **Enter** button. Make sure that you are in the Full menu mode because otherwise you will not be able to access the "Service Tests" submenu.

5 Use the **Arrow** keys to scroll to the "Service Tests" menu display and press the **Enter** button.

6 Use the **Arrow** keys to scroll to the "Diagnostics" menu display and press the **Enter** button.

7 Use the **Arrow** buttons to scroll through the test selections.

8 Press the **Enter** button to begin a specific test when the required test is displayed.

   If the printer is not used for 5 minutes, the printer exits out of the Service Mode and you must repeat the above steps to enter the service mode again.

   In some cases a quick press of a button may not be recognized by the processor. When pressing a button, be sure to press it deliberately and all the way to the bottom of its travel.

   If the Printer hangs up during a test, switch the Printer OFF and restart from step 2.

Once you are inside the Diagnostics submenu, the front-panel keys can be used in the following way:

- **Up Arrow** - Go to the next test.
- **Down Arrow** - Go to the previous test.
- **Previous** - Exit the current test.
- **Enter** - Perform the current test.

D01. Electronics

The purpose of this test is to verify the operation of the:

- Electronics Module.
- Hard Disk.
- Line Sensor (only presence).
- Trailing Cable.
- Carriage Assembly.

This test does not test the MIO Card. For testing the MIO Card, refer to the MIO Presence test ◗ *page 4-23.*

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE ELECTRONICS MODULE, TRAILING CABLE, HARD DISK OR THE CARRIAGE ASSEMBLY. IF THIS TEST PASSES, DO NOT REPLACE THE ELECTRONICS MODULE, TRAILING CABLE, LINE SENSOR OR THE CARRIAGE ASSEMBLY.

Perform the Electronics test as follows:

1 In the Diagnostics submenu, scroll to "D01 Electronics" and press **Enter**.

```
Diagnostics
D01 Electronics
```
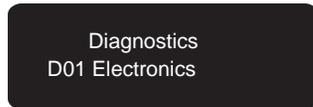
2 The test will start and a row of "***" will be displayed on the front-panel.

3 After a short while the message "Access Printheads / Continue" will be displayed on the front-panel. Open the window and reseat all the Printheads. Press the **Down Arrow** when you have reseated the Printheads.

4 The test will continue and a row of "***" will be displayed on the front-panel.

5 If the test passes, the "D0100 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE THE ELECTRONICS MODULE, TRAILING CABLE, HARD DISK OR THE CARRIAGE.

6 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

The test is continued on the next page.

Electronics Failure

If there is a problem with the components within the Electronics module then the following messages will appear.

- "D0101 Fail" - The Swath RAM has failed.
- "D0102 Fail" - The Writing System and Printhead control ASIC rotator failed.
- "D0103 Fail" - The EEROM is corrupted.

In these cases, *Replace the Electronics Module ▶ page 8-6.*

Hard Disk Failure

If there is a problem with the Hard Disk then the following message will appear.

- "D0104 Fail" - The Hard Disk has failed.

In this case, try one of the following:

1 If the Error Code appears again then check that the Hard Disk data cable is correctly connected at both ends. Also check that the Hard Disk Power Cable is correctly connected.

2 Replace the Hard Disk data cable ▶ page 8-12.

3 If the Error Code continues to appear, then replace the Hard Disk ▶ page 8-12.

Line Sensor Failure

If there is a problem with the Line Sensor then the following message will appear.

- "D0105 Fail" - The Line Sensor presence test failed.

In this case, try one of the following:

1 Check if the Line Sensor is installed and connected correctly.

2 Check and if necessary replace the Trailing Cable ▶ page 8-36.

3 Replace the Carriage Assembly ▶ page 8-42.

Only replace one component at a time and perform the test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

The test is continued on the next page.

Carriage Failure

If there is a problem with the components within the Carriage Assembly then the following message will appear.

- "D0106 Fail" - The problem could be related to several areas.

In this case, try one of the following:

1 *Remove the Printheads and clean the flex contacts on the Carriage and the Printheads. Reseat the Printheads and try the test again.*

2 *Perform the Printhead Continuity test ▶ page 4-29 to see if any of the Printheads are having a continuity problem. If any of the Printheads are having a continuity problem, replace the complete Ink Delivery System of that color.*

3 *Replace the complete Ink Delivery System of each color one by one, performing this test each time.*

4 *Check and if necessary replace the Trailing Cable ▶ page 8-36.*

5 *Replace the Carriage Assembly ▶ page 8-42.*

D02. Line Sensor

The purpose of this test is to verify the operation of the Line Sensor which is installed on the carriage assembly.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE LINE SENSOR. IF THIS TEST PASSES, DO NOT REPLACE THE LINE SENSOR.

Perform the Line Sensor test as follows:

Load GLOSSY or COATED media before performing this test.

REPLACE THE LENS COVER BEFORE YOU PERFORM THIS TEST IN ORDER TO PREVENT ANY AEROSOL PROBLEMS.

1 In the Diagnostics submenu, scroll to "D02 Line Sensor" and press **Enter**.
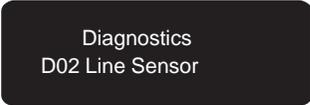
```
Diagnostics
D02 Line Sensor
```

2 If media is not loaded the test will stop and the message "Load Media" will be displayed on the front-panel. Load media in order to continue the test.

3 The message "Move Carriage" will be displayed on the front-panel. Use the following keys to move the carriage left and right over the loaded media.

- **Cancel** - Move the carriage to the left.
- **Form Feed and Cut** - Move the carriage to the right.

4 Make sure that the window is closed and then press **Enter** when the line sensor of the carriage is placed over the media.

5 While the test is being performed, a row of "***" will be displayed on the front-panel.

6 If the test passes, a message similar to the following is displayed on the front-panel.

```
Green OK V: 8.0
Blue OK V: 11.0 T: 0
```

IF THIS TEST PASSES, DO NOT REPLACE THE LINE SENSOR.

7 Press **Previous** when you have completed the test. The "D0200 Done" message is displayed on the front-panel if the test exits correctly.

The test is continued on the next page.

8 If the test fails, a message similar to the following is displayed on the front-panel.

> Green Fail V: 8.0
> Blue Fail V: 11.0 T: 0

Refer to the following table in order to know the limits for value **V** (Saturated Input Voltage) for the Green and Blue LEDs**:**

LED	V	
	Minimum	**Maximum**
Green	7	10
Blue	7	12

If the test fails to resolve the problem, try one of the following:

1 The lens cover, which is installed on the line sensor, is dirty. Replace the lens cover ▶ Users Guide, Chapter 10 (Lens Maintenance).

2 Make sure that the Mark Encoder on the Drive Roller is clean.

3 Perform the Electronics test ▶ page 4-7.

4 Check if the Media used is suitable for the printer.

5 Check if the Line Sensor is installed and connected correctly.

6 If the problem continues, replace the Carriage Assembly ▶ page 8-42.

D03. Carriage Axis (Y-axis)

The purpose of this test is to verify the operation of the components of the Carriage Axis.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE Y-AXIS MOTOR OR THE ENCODER STRIP. IF THIS TEST PASSES, DO NOT REPLACE THE Y-AXIS MOTOR ASSEMBLY OR THE ENCODER STRIP.

Perform the Carriage Axis test as follows:

1 In the Diagnostics submenu, scroll to "D03 Carriage Axis" and press **Enter**.

```
Diagnostics
D03 Carriage Axis
```

2 While the test is being performed, a row of "***" will be displayed on the front-panel.

3 If the test passes, the "D0300 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE THE Y-AXIS MOTOR ASSEMBLY OR THE ENCODER STRIP.

4 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

Y-axis Failure

If there is a problem with the components of the Y-axis then the following messages will appear:

- "D0301 Fail" - The Static test has failed
- "D0302 Fail" - The PWM test has failed (PWM too low)
- "D0303 Fail" - The PWM test has failed (PWM too high)

In these cases, try one of the following:

1 *Apply lubricant on the slider rods.*

2 *Replace the Encoder Strip ⟩ page 8-32.*

3 *Replace the Y-axis Motor Assembly ⟩ page 8-45.*

Only replace one component at a time and perform the test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

The test is continued on the next page.

Encoder Strip Failure

If there is a problem with the Encoder Strip then the following message will appear:

- "D0304 Fail" - The Encoder Strip has failed.

In this case, *Replace the encoder strip* ◗ *page 8-32.*

D04. Media Axis (X-axis)

The purpose of this test is to verify the operation of the components of the Media Axis.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE X-AXIS MOTOR. IF THIS TEST PASSES, DO NOT REPLACE THE X-AXIS ASSEMBLY.

Perform the Media Axis test as follows:

1 In the Diagnostics submenu, scroll to "D04 Media Axis" and press **Enter**.

> Diagnostics
> D04 Media Axis

2 While the test is being performed, a row of "***" will be displayed on the front-panel.

3 If the test passes, the "D0400 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE THE X-AXIS ASSEMBLY.

4 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

X-axis Failure

If there is a problem with the components of the X-axis then the following messages will appear:

- "D0401 Fail" - The Accuracy test has failed.
- "D0402 Fail" - The PWM test has failed (PWM too low).
- "D0403 Fail" - The PWM test has failed (PWM too high).

In these cases, *Replace the X-axis Assembly* ◗ *page 8-66.*

Mark Encoder Failure

If there is a problem with the Mark Encoder then the following message will appear:

- "D0404 Fail" - Problem finding the Mark Encoder.

The test is continued on the next page.

In this case, try one of the following:

1 *Clean the Mark Encoder if necessary.*

2 *Make sure the Line Sensor is installed correctly.*

3 *Perform the Service Accuracy Calibration ▶ Page 5-17.*

4 *Replace the lens cover which is installed on the line sensor.*

5 *Replace the Trailing Cable ▶ Page 8-36.*

6 *Replace the Carriage Assembly ▶ Page 8-42.*

7 *Replace the Electronics Module ▶ page 8-6.*

Only replace one component at a time and check if the error has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

D05. Service Station

The purpose of this test is to verify the operation of the Service Station, which also includes the Primer Assembly.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE SERVICE STATION ASSEMBLY OR THE PRIMER ASSEMBLY. IF THIS TEST PASSES, CHECK THE TUBES CONNECTING THE PRIMER ASSEMBLY TO THE SERVICE STATION.

Perform the Service Station test as follows:

1 In the Diagnostics submenu, scroll to "D05 Service Station" and press **Enter**.
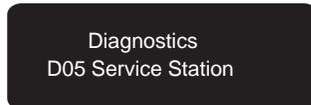
> Diagnostics
> D05 Service Station

2 While the test is being performed, a row of "***" will be displayed on the front-panel.

3 If the test passes, the "D0500 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE THE SERVICE STATION ASSEMBLY OR THE PRIMER ASSEMBLY.

4 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

Primer Assembly Failure

If there is a problem with the Primer Assembly then the following message will appear:

- "D0501 Fail" - Problem detected in the Primer Assembly.

In this case, *Replace the Primer Assembly* ◗ *page 8-29.*

Service Station Assembly Failure

If there is a problem with the Service Station Assembly then the following message will appear:

- "D0502 Fail" - Problem in the Hot Initialization of the Service Station.

In this case, try one of the following:

1 *Check if the Service Station flag is installed correctly.*

2 *Check that the interconnect cable for the Service Station Assembly is connected correctly ◗ page 8-87.*

3 *Replace the Service Station Assembly ◗ page 8-26.*

D06. Refill

The purpose of this test is to verify the operation of the Refill Assembly and the Elevator Assembly.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE REFILL ASSEMBLY OR THE ELEVATOR ASSEMBLY. IF THIS TEST PASSES, DO NOT REPLACE THE REFILL ASSEMBLY OR THE ELEVATOR ASSEMBLY.

Perform the Refill test as follows:

1 In the Diagnostics submenu, scroll to "D06 Refill" and press **Enter**.
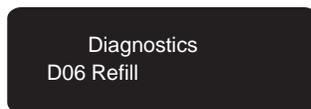
```
Diagnostics
D06 Refill
```

2 While the test is being performed, a row of "***" will be displayed on the front-panel.

3 If the test passes, the "D0600 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE THE REFILL ASSEMBLY OR THE ELEVATOR ASSEMBLY.

4 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

Refill Assembly Failure

If there is a problem with the Refill Assembly then the following message will appear:

- "D0601 Fail" - Problem detected in the Refill Assembly.

In this case, try one of the following:

1 Check that the Refill interconnect cable is connected correctly.

2 Replace the Refill Assembly ◗ page 8-55.

Elevator Assembly Failure

If there is a problem with the Elevator Assembly then the following message will appear:

- "D0602 Fail" - Problem detected in the Elevator Assembly.

In this case, *Replace the Elevator Assembly ◗ page 8-52.*

D07. Front Panel

The purpose of this test is to verify the operation of the front-panel keys.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE FRONT-PANEL ASSEMBLY. IF THIS TEST PASSES, DO NOT REPLACE THE FRONT-PANEL ASSEMBLY.

Perform the Front Panel test as follows:

1 In the Diagnostics submenu, scroll to "D07 Front Panel" and press **Enter**.

> Diagnostics
> D07 Front Panel
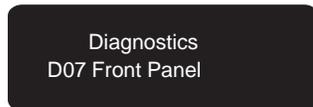
2 All the LEDs on the front-panel will illuminate and you will be requested to press each key on the front panel separately. If you do not press the required key within 10 seconds, the "D0701 Fail" message is displayed on the front-panel.

3 If all the keys are pressed and the test passes, the "D0700 OK" message is displayed on the front-panel and all the LEDs on the front-panel will go out.

IF THIS TEST PASSES, DO NOT REPLACE THE FRONT-PANEL ASSEMBLY.

4 If any of the keys are pressed but not recognized then the test has failed and the "D0701 Fail" message will displayed on the front-panel after 10 seconds.

If the test fails, to resolve the problem, try one of the following:

  1 *Check that the cable for the Front Panel Assembly is connected to the Electronics Module.*

  2 *Replace the Front Panel Assembly ◗ page 8-24.*

D08. Sensors

The purpose of this test is to verify the operation of the following Sensors:

- Window Sensor.
- Right Door Sensor.
- Left Door Sensor.
- Refill Valve Sensors.
- Standby Button Sensor.
- Media Sensor.
- Pincharm Sensor.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING ANY OF THE SENSORS. IF THIS TEST PASSES, DO NOT REPLACE ANY OF THE SENSORS.

Perform the Sensors test as follows:

1 In the Diagnostics submenu, scroll to "D08 Sensors" and press **Enter**.

> Diagnostics
> D08 Sensors
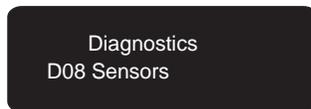
2 Follow the instructions on the front-panel display. If you do not complete each step within 10 seconds, the "08XX Fail" message is displayed on the front-panel.

The XX corresponds to the sensor which you were testing.

3 If you follow all the instructions and the test passes, the "0800 OK" message is displayed on the front-panel.

IF THIS TEST PASSES, DO NOT REPLACE ANY OF THE SENSORS.

4 If the test fails, an error message will be displayed on the front-panel. The error messages are split into different areas depending on which component failed.

Cover Sensor Failure

If there is a problem with the Cover Sensor then the following message will appear:

- "D0801 Fail" - Window Sensor failed.

The test is continued on the next page.

In this case, try one of the following:

>   *1* *Check that the Window Sensor is seated correctly.*
>
>   *2* *Check that the cable for the Window Sensor is connected correctly.*
>
>   *3* *Replace the Window Sensor* ◗ *page 8-21.*

Right Door Sensor Failure

If there is a problem with the Right Door Sensor then the following message will appear:

- "D0802 Fail" - Right Door Sensor failed.

In this case, try one of the following:

>   *1* *Check that the Right Door Sensor is seated correctly.*
>
>   *2* *Check that the cable for the Right Door Sensor is connected correctly.*
>
>   *3* *Replace the Right Door Sensor* ◗ *page 8-21.*

Left Door Sensor Failure

If there is a problem with the Left Door Sensor then the following message will appear:

- "D0803 Fail" - Left Cover Sensor failed.

In this case, try one of the following:

>   *1* *Check that the Left Door Sensor is seated correctly.*
>
>   *2* *Check that the cable for the Left Door Sensor is connected correctly.*
>
>   *3* *Replace the Left Door Sensor* ◗ *page 8-18.*

Refill Valve Sensors Failure

If there is a problem with the Refill Valve Sensors then one of the following messages will appear:

- "D0804 Fail" - Black Refill Valve Sensor failed.
- "D0805 Fail" - Magenta Refill Valve Sensor failed.
- "D0806 Fail" - Cyan Refill Valve Sensor failed.
- "D0807 Fail" - Yellow Refill Valve Sensor failed.

The test is continued on the next page.

In these cases, try one of the following:

1 Check that the cable for the Refill Valve Sensors is connected correctly.

2 Check that the Refill interconnect cable is connected correctly.

3 Replace the Refill Assembly ▶ page 8-55.

Standby Button Sensor Failure

If there is a problem with the Standby Button Sensor then the following message will appear:

- "D0808 Fail" - Standby Button Sensor failed.

In this case, try one of the following:

1 Check that the cable for the Standby Button Sensor is connected correctly.

2 Replace the Standby Button Assembly ▶ page 8-24.

Media Sensor Failure

If there is a problem with the Media Sensor then the following message will appear:

- "D0809 Fail" - Media Sensor failed.

In this case, try one of the following:

1 Check that the cable for the Media Sensor is connected correctly.

2 Replace the Media Sensor Assembly ▶ page 8-78.

Pincharm Sensor Failure

If there is a problem with the Pincharm Sensor then the following message will appear:

- "D0810 Fail" - Pincharm Sensor failed.

In this case, try one of the following:

1 Check that the cable for the Pincharm Sensor is connected correctly.

2 Replace the Pincharm Sensor Assembly ▶ page 8-84.

D09. MIO Presence

The purpose of this test is to verify the presence of the MIO Card and the communication between the MIO Card and Main PCA.

Perform the MIO Presence test as follows:

1 In the Diagnostics submenu, scroll to "D09 MIO Presence" and press **Enter**.

```
        Diagnostics
      D09 MIO Presence
```

2 If the test passes, the "D0900 OK" message is displayed on the front-panel.

3 If the test fails, or if the MIO card is not installed, the "D0901 Fail" message is displayed on the front-panel.

If the MIO card fails the test, try one of the following:

   1 Reseat the MIO card and perform the MIO test again.

   2 Replace the MIO card and perform the MIO test again.

D10. Cutter

The purpose of this test is to verify the operation of the Cutter Assembly.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE CUTTER ASSEMBLY. IF THIS TEST PASSES, DO NOT REPLACE THE CUTTER ASSEMBLY.

Perform the Cutter test as follows:

1 In the Diagnostics submenu, scroll to "D10 Cutter" and press **Enter**.
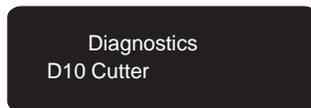
```
Diagnostics
D10 Cutter
```

2 While the test is being performed, a row of "***" will be displayed on the front-panel. During the test, the Carriage picks up the cutter and runs it along the length of the printer twice.

3 Once the test is completed, the "D1000 Done" message is displayed on the front-panel.

If the carriage picks up the Cutter Assembly and runs it along the length of the printer twice, then the test has passed.

IF THIS TEST PASSES, DO NOT REPLACE THE CUTTER ASSEMBLY.

If the carriage does not pick up the Cutter Assembly then the test has failed. To resolve the problem, try one of the following:

1 *Check if the Cutter has been disabled through the front-panel (**Device Setup / Cutter**).*

2 *Perform the Carriage test ◗ page 4-12.*

3 *Replace the Cutter Assembly ◗ page 8-48.*

D11. Bail

The purpose of this test is to verify the operation of the Bail Assembly.

IF POSSIBLE ALWAYS PERFORM THIS TEST BEFORE REPLACING THE BAIL ASSEMBLY. IF THIS TEST PASSES, DO NOT REPLACE THE BAIL ASSEMBLY.

Perform the Bail test as follows:

1 In the Diagnostics submenu, scroll to "D11 Bail" and press **Enter**.
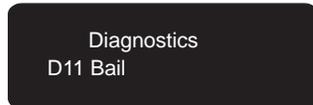
```
Diagnostics
D11 Bail
```

2 While the test is being performed, a row of "***" will be displayed on the front-panel. During the test, the bail is raised once.

3 Once the test is completed, the "D1100 Done" message is displayed on the front-panel.

If the Bail Assembly is raised, then the test has passed.

IF THIS TEST PASSES, DO NOT REPLACE THE BAIL ASSEMBLY.

If the Printer does not raise the Bail Assembly then the test has failed.

If the bail fails the test, try replacing one of the following components:

1 Bail stepper motor ▶ page 8-62.

2 Bail assembly ▶ page 8-58.

Only replace one component at a time and perform the test again before replacing another component. Using this procedure you will be able to determine exactly which component failed.

D12. Image Quality

The purpose of this test is to verify the image quality attributes of the printer.

Perform the Image Quality test as follows:

Load media before performing this Test.

1 In the Diagnostics submenu, scroll to "D12 Image Quality" and press **Enter**.

```
            Diagnostics
          D12 Image Quality
```

2 If media is not loaded the test will stop and the message "Load Media to align Printheads" will be displayed on the front-panel. Load media in order to continue the test.

3 The printer will print two printhead alignment patterns. During the printing, the message "Aligning Printheads" will be displayed on the front-panel.

4 If after aligning the Printheads the message "Bad Printhead Alignment" is displayed on the front-panel then try the following to solve the problem:

> *1* *Try recovering the printheads using the front-panel menu and try the test again.*

> *2* *If the test fails again, check the alignment pattern to check if any of the colors are printed badly. If a color is printing badly then replace the complete Ink Delivery System of the color that is bad.*

> *3* *The Line Sensor is not calibrated correctly. Perform the Line Sensor calibration ▶ page 5-10.*

> *4* *The lens cover, which is installed on the line sensor, is dirty. Replace the lens cover ▶ Users Guide, Chapter 10 (Lens Maintenance).*

> *5* *Check if the Line Sensor is installed and connected correctly.*

> *6* *Perform the Line Sensor Test ▶ page 4-10.*

> *7* *Perform the Electronics Test ▶ page 4-7.*

The test is continued on the next page.

5 When the printer has finished aligning the Printheads, the message "SAD Cyan: #.# / SAD Magenta #.#" will be displayed on the front-panel.

6 Press the **Up Arrow** key and the message "SAD Yellow: #.# / SAD Black #.#" will be displayed on the front-panel.

7 Press the **Up Arrow** key and the message "C2C X Cyan: #.# / C2C X Magenta #.#" will be displayed on the front-panel.

8 Press the **Up Arrow** key and the message "C2C X Yellow: #.# / C2C X Black #.#" will be displayed on the front-panel.

9 Press the **Up Arrow** key and the message "C2C Y Cyan: #.# / C2C Y Magenta #.#" will be displayed on the front-panel.

10 Press the **Up Arrow** key and the message "C2C Y Yellow: #.# / C2C Y Black #.#" will be displayed on the front-panel.

11 Press the **Up Arrow** key and the message "BIDIR 20: #.# / BIDIR 28 #.#" will be displayed on the front-panel.

12 Press **Previous** when you have completed the test. The "D1200 Done" message is displayed on the front-panel if the test exits correctly.

*For steps 5 thru 12, if the values of the Printheads are **between –1.0 and +1.0** for any of the Printheads then the test has **passed**.*

*For steps 5 thru 12, if the values of the Printheads are **NOT between –1.0 and +1.0** for any of the Printheads then the test has **failed**.*

*If the test **fails**, to resolve the problem, try one of the following:*

1 *Perform the Printhead Alignment Calibration ▶ page 5-13.*

2 *The Line Sensor is not calibrated correctly. Perform the Line Sensor calibration ▶ page 5-10.*

3 *The lens cover, which is installed on the line sensor, is dirty. Replace the lens cover ▶ Users Guide, Chapter 10 (Lens Maintenance).*

4 *Perform the Electronics test ▶ page 4-7.*

5 *Check if the Media used is suitable for the printer.*

6 *Check if the Line Sensor is installed and connected correctly.*

7 *Replace the Carriage Assembly ▶ page NO TAG.*

D13. Printhead ID

The purpose of this test is to verify the default settings of the printheads.

Perform the Printhead ID test as follows:

1 In the Diagnostics submenu, scroll to "D13 Printhead ID" and press **Enter**.

```
Diagnostics
D13 Printhead ID
```

2 If the Printer is using **HP DesignJet CP Ink System** (Inks for Imaging), the following message will be displayed on the front-panel.

```
C:200000  M:200000
Y:200000   B:200000
```

3 If the Printer is using **HP DesignJet CP Ink System UV** (UV Durable Inks), the following message will be displayed on the front-panel.

```
C:220000  M:220000
Y:220000   B:220000
```

This test is for information only. This information might be requested in the event of an escalation in order to understand the problem.

4 Press **Previous** when you have completed the test. The "D1300 Done" message is displayed on the front-panel if the test exits correctly.

D14. Printhead Continuity

The purpose of this test is to display the primitives and address maps of the printheads.

Perform the Printhead Continuity test as follows:

1 In the Diagnostics submenu, scroll to "D14 Printhead Cont." and press **Enter**.

```
         Diagnostics
      D14 Printhead Cont.
```
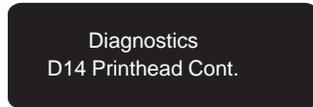
2 The following message is displayed on the front-panel:

PH	addr:	#
Cyan	PS:	#

3 Use the **Up** and **Down** arrow keys to show the values of the different colors.

*The values shown on the front-panel for all Printheads should be **0**. If a different value is shown then that Printhead has a continuity problem.*

Try the following to solve the problem:

1 *DO NOT replace any parts. **This will cause extra problems**. Remove the Printheads and clean the flex contacts on the Carriage and the Printheads. Reseat the Printheads and try the test again.*

2 *Even if one of the Printheads failed the Printhead Continuity test, you must remove **all** the Printheads from the Carriage and try installing them **one by one**. Before installing each Printhead, check the continuity of all four Printheads. The front-panel should display a 3ffff ∕ 3fff result for each Printhead that is not inserted and the original values (the value that was displayed before the Printhead was removed) for the Printheads when they are inserted. If you get a value that is different than 3ffff ∕ 3fff when the Printheads are removed then you must perform step **1** again. If you get the same results after repeating step 1, then the carriage is damaged. Replace the Carriage Assembly ▶ page 8-42. When you insert each Printhead, the values **should change only** for that Printhead. If the values of other Printheads also change, then the problem is the Printhead itself and **not** the actual Printer. In this case you **must** replace the complete Ink Delivery System of the color that failed.*

3 *If you continue getting the original value (the value that was displayed before the Printhead was first removed) then you **must** replace the*

complete Ink Delivery System of the color that failed and try the test again.

4 *As a **last resort**, replace the Carriage Assembly ◗ page 8-42.*

4 Press **Previous** when you have completed the test. The "D1400 Done" message is displayed on the front-panel if the test exits correctly.

D15. Clean Roller

The purpose of this test is to enable you to rotate the Drive Roller when it requires cleaning.

Perform the Clean Roller test as follows:

1 In the Diagnostics submenu, scroll to "D15 Clean Roller" and press **Enter**.

> Diagnostics
> D15 Clean Roller
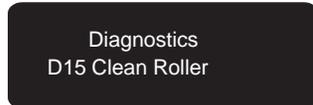
2 The "Unload Media" message is displayed on the front-panel. Remove the media (if loaded).

3 The "Move Roller" message is displayed on the front-panel. Use the **Up Arrow** to rotate the drive roller clockwise and the **Down Arrow** to rotate the drive roller counter-clockwise.

> *The cover sensors are disabled during this test so the window can be opened without having to over-ride the sensor.*

4 Press **Previous** when you have completed the test. The "D1500 Done" message is displayed on the front-panel if the test exits correctly.

D16. Erase EEROM

The purpose of this test is to clear the EEROM.

Perform the Erase EEROM test as follows:

Before erasing the EEROM, it is recommended that a configuration plot is printed for setup reference because you will need to re-configure the front-panel settings.

1 In the Diagnostics submenu, scroll to "D16 Erase EEROM" and press **Enter**.

> Diagnostics
> D16 Erase EEROM
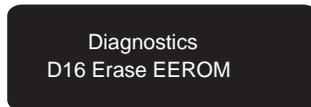
2 The "Yes=Enter No=Prev" message is displayed on the front-panel.

3 If you DO NOT want to erase the EEROM press the **Previous** key. The message "D1600 Cancelled" will be displayed.

4 If you want to erase the EEROM press the **Enter** key. While the EEROM is being erased, a row of "***" will be displayed on the front-panel.

5 Once the EEROM is erased, the "D1600 OK" message is displayed on the front-panel.

6 If the test fails, the "D1601 Fail" message is displayed on the front-panel.

If the test fails, *Replace the Electronics Module* ◗ *page 8-6.*

D17. Reset Counters

The purpose of this test is to reset the internal counters.

Perform the Reset Counters test as follows:

> ***This test does not reset the Preventive Maintenance Counter. To reset the preventive Maintenance Counter perform the Maintenance Calibration ▶ 5-19.***

1 In the Diagnostics submenu, scroll to "D17 Reset Counters" and press **Enter**.

```
Diagnostics
D17 Reset Counters
```
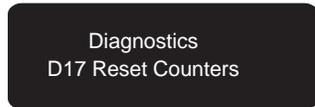
2 The "Yes=Enter No=Prev" message is displayed on the front-panel.

3 If you DO NOT want to reset the counters, press the **Previous** key. The message "D1700 Cancelled" will be displayed.

4 If you want to reset the counters, press the **Enter** key. While the counters are being reset, a row of "***" will be displayed on the front-panel.

5 When the Counters have been reset, the "D1700 OK" message is displayed on the front-panel.

6 If the test fails, the "D1701 Fail" message is displayed on the front-panel.

> ***If the test fails**, Replace the Electronics Module ▶ page 8-6.*

D19. Hard Disk Drive Revision (Only available in DesignJet 2500CP/3500CP printer)

The purpose of this test is to show the revision of the internal Hard Disk Drive.

Perform the HDD Revision test as follows:

1 In the Diagnostics submenu, scroll to "D19 HDD Revision" and press **Enter**.

```
Diagnostics
D19 HDD Revision
```
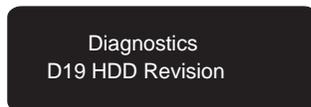
2 A message similar to the following will be displayed on the front-panel.

```
D19 HDD Revision
D1900 Done XX_XX_XX:
```
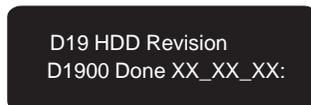
The following table shows the compatibility between the Hard Disk Drive Revision and the Firmware Revison:

> ### NOTE FOR HP DESIGNJETS 2500CP ONLY
>
> **IF THE HARD DISK VERSION IS LOWER THAN A.02.08 THEN YOU MUST INFORM THE CUSTOMER TO ORDER THE UV UPGRADE KIT BY FAXING THE SHEET THAT THEY RECEIVED WITH THE PRINTER INFORMING THEM ABOUT THE UV UPGRADE KIT. THEY CAN ALSO FAX THE SHEET ON THE FOLLOWING URL:**
>
> # http://www.hp.com/go/designjet
>
> **YOU CAN ALSO ORDER THE FIRMWARE UPGRADE KIT WHICH INCLUDES A CD-ROM TO UPGRADE THE HARD DISK DRIVE CONTENTS (REFER TO CHAPTER 7 FOR THE PART NUMBER).**

NOTES

5

Service Calibrations

Calibrations

The Printer has several calibration procedures that must be performed under certain conditions. Refer to the table below to determine when calibrations are required.

REMEMBER THAT CERTAIN CALIBRATIONS ARE REQUIRED EVEN IF AN ASSEMBLY HAS BEEN DISASSEMBLED TO GAIN ACCESS TO ANOTHER ASSEMBLY OR COMPONENT.

When Required	Calibrations To Be Done								
	C01	C02	C03	C05	C06	C07	C08	C09	C10
Electronics Module is replaced	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Carriage is disassembled or replaced	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Refill Assembly is disassembled or replaced	No	Yes	No	Yes	No	Yes	No	No	No
X-axis Assembly is disassembled or replaced	No	No	No	No	No	No	Yes	No	No
Drive Roller is disassembled or replaced	No	No	No	No	No	No	Yes	No	No
Banding Problem	No	No	Yes	Yes	Yes	No	Yes	No	No
Edge Detect Problem	No	No	Yes	No	No	No	No	No	No
Misalignment between Colors	No	No	Yes	Yes	Yes	No	Yes	No	No
Color Accuracy Problem	No	No	Yes	No	No	Yes	No	No	No
Nozzles Out or Misdirected	No	No	No	No	Yes	No	No	No	No

Service Calibrations

The following is a list of all internal service calibrations available in the Printers. Instructions for entering the service calibrations menu are given on page 5-5.

WARNING

ALL THE COVER SENSORS ARE DISABLED WHEN IN THE CALIBRATIONS MENU. IF THE CARRIAGE IS MOVING IT WILL NOT STOP IF THE WINDOW IS OPENED, SO BE VERY CAREFUL NOT TO PUT YOUR HANDS INSIDE.

1 Carriage ◗ page 5-7

The purpose of this calibration is to calibrate the temperature from which the printhead has to be warmed.

2 Refill ◗ page 5-9

The purpose of this calibration is to ensure the correct position of the carriage assembly in respect to the refill assembly.

3 Line Sensor ◗ page 5-10

The purpose of this calibration is to calibrate the intensity of the line sensor in the carriage PCA. An incorrect calibration can result in edge-detection failures during media loading and incorrect reading of prints that are used for alignment or calibration.

4 Service Station ◗ page 5-12

This Calibration is no longer required and should never be performed.

5 Printheads Alignment ◗ page 5-13

The purpose of this calibration is to test and if necessary correct the misalignment between the printheads. This Calibration is necessary to avoid color misalignments and print quality defects like banding.

6 Printheads Check ◗ page 5-14

The purpose of this calibration is to check that the Nozzles of the Printheads are functioning correctly.

7 Color Calib. ◗ page 5-16 **(Only available in the HP DesignJet 2500CP/3500CP printer)**

The purpose of this calibration is to determine a correction function to be applied in PostScript in order to match the color reproduction of a nominal Printer. This Calibration is necessary to improve color consistency between different prints and different Printers. This calibration is also independent of color accuracy or matching color from a monitor to the Printer.

8 Service Accuracy ◗ page 5-17

The purpose of this calibration is to calibrate the nominal advance of the media. This calibration is necessary to control the exact movement of the media in order to avoid print quality problems like banding.

9 Maintenance ◗ page 5-19

The purpose of this calibration is to read and, if necessary, adjust the preventive maintenance counter, which counts the number of swaths.

10 Font Type Set ◗ page 5-20 **(Only available in the HP DesignJet 2500CP/3500CP printer)**

The purpose of this calibration is to check and, if necessary, select a Font type (only possible when the printer detects that a new Hard Disk has been installed or when installing a new Electronics Module).

Entering the Service Calibrations Menu System

1 Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2 Hold the UP and ENTER keys down and switch the printer **O**N. Wait until the message "Status/Initializing" is displayed on the front-panel before releasing the UP and ENTER keys.

The reason for entering the Service Tests by powering ON is because various tests are performed during the initialization of the printer and also certain System Errors will cause an abnormal start up and will never reach the "Status/Ready" message on the front-panel.

3 Once the message "Status/Ready" is displayed on the front-panel, press the **Enter** key.

4 Use the **Arrow** keys to scroll to the "Utilities" menu display and press the **Enter** button. Make sure that you are in the Full menu mode because otherwise you will not be able to access the "Service Tests" submenu.

5 Use the **Arrow** keys to scroll to the "Service Tests" menu display and press the **Enter** button.

6 Use the **Arrow** keys to scroll to the "Service Calibrations" menu display and press the **Enter** button.

7 Use the **Arrow** buttons to scroll through the calibration selections.

8 Press the **Enter** button to begin a specific calibration when the required calibration is displayed.

If the printer is not used for 5 minutes, the printer exits out of the Service Mode and you must repeat the above steps to enter the service mode again.

In some cases a quick press of a button may not be recognized by the processor. When pressing a button, be sure to press it deliberately and all the way to the bottom of its travel.

If the Printer hangs up during a calibration, switch the Printer OFF and restart from step 2.

If you have media loaded you will be forced to remove it when you exit the Diagnostics menu.

Once you are inside the Service Calibrations submenu, the front-panel keys can be used in the following way:

- **Up Arrow** - Go to the next calibration.
- **Down Arrow** - Go to the previous calibration.
- **Previous** - Exit the current calibration.

• **Enter** - Perform the current calibration.

C01. Carriage

The purpose of this calibration is to calibrate the temperature from which the printhead has to be warmed.

THIS CALIBRATION MUST BE DONE WITH THE PRINTHEADS INSTALLED.

Perform the Carriage calibration whenever the:

- Carriage is disassembled or replaced.
- Electronics Module is replaced.

Perform the Carriage Calibration as follows:

1 In the Calibrations submenu, scroll to "C1 Carriage" and press **Enter**.

```
Calibrations
C1 Carriage
```

2 The message "Remove Printheads / Press Enter" will be displayed on the front-panel. Remove the Printheads and press **Enter** when you have removed them.

3 While the Calibration is being performed, a row of "***" will be displayed on the front-panel.

4 If the calibration is performed correctly, the "C0100 OK" message is displayed on the front-panel.

5 Press **Previous** and the "Reinstall Printheads" message is displayed on the front-panel. Reinstall the Printheads into the correct stalls in the carriage.

6 If the calibration fails, one of the following messages will be displayed on the front-panel:

- "C0101 Fail" - The Cyan Printhead has failed.
- "C0102 Fail" - The Magenta Printhead has failed.
- "C0103 Fail" - The Cyan and Magenta Printheads have failed.
- "C0104 Fail" - The Yellow Printhead has failed.
- "C0105 Fail" - The Cyan and Yellow Printheads have failed.
- "C0106 Fail" - The Magenta and Yellow Printheads have failed
- "C0107 Fail" - The Cyan, Magenta and Yellow Printheads have failed
- "C0108 Fail" - The Black Printhead has failed.

The calibration is continued on the next page.

- "C0109 Fail" - The Cyan and Black Printheads have failed.
- "C0110 Fail" - The Magenta and Black Printheads have failed.
- "C0111 Fail" - The Cyan, Magenta and Black Printheads have failed.
- "C0112 Fail" - The Yellow and Black Printheads have failed.
- "C0113 Fail" - The Cyan, Yellow and Black Printheads have failed.
- "C0114 Fail" - The Magenta, Yellow and Black Printheads have failed.
- "C0115 Fail" - The Cyan, Magenta, Yellow and Black Printheads have failed.

In these cases, Perform the Electronics test ◗ *page 4-7.*

C02. Refill

The purpose of this calibration is to ensure the correct position of the carriage assembly in respect to the refill assembly.

Perform the Refill calibration whenever the:

- Carriage is disassembled or replaced
- Refill Assembly is disassembled or replaced.
- System Error 020006 appears on the front-panel display.
- Electronics Module is replaced.

When the Carriage Assembly, Refill Assembly or the Electronics Assembly is ordered, a Refill Calibration Tool, a special Carriage height gauge and an Instructions flyer will be included. You must follow the instructions in the flyer in order to correctly calibrate the Refill Assembly and to make sure that the Carriage is at the correct height.

C03. Line Sensor

The purpose of this calibration is to calibrate the intensity of the line sensor in the carriage PCA. An incorrect calibration can result in edge-detection failures during media loading and incorrect reading of prints that are used for alignment or calibration.

This calibration also identifies which type of Line Sensor has been installed and stores this information in the EEROM.

Perform the line sensor calibration whenever the:

- Edge detect procedure fails during media loading.
- Carriage is disassembled or replaced.
- Electronics Module is replaced.
- Banding is detected in prints.
- Misalignment between colors is detected.
- There is a color consistency problem between prints.

Load white media before performing this calibration.

Perform the Line Sensor Calibration as follows:

MAKE SURE THAT THE WINDOW IS CLOSED BEFORE YOU PERFORM THIS CALIBRATION.

REPLACE THE LENS COVER BEFORE YOU PERFORM THIS CALIBRATION IN ORDER TO PREVENT ANY AEROSOL PROBLEMS.

1 In the Calibrations submenu, scroll to "C3 Line Sensor" and press **Enter**.
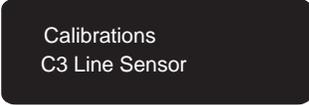
> Calibrations
> C3 Line Sensor

2 If media is not loaded the calibration will stop and the message "Load Media" will be displayed on the front-panel. Load media in order to continue the calibration.

3 While the Calibration is being performed, a row of "***" will be displayed on the front-panel.

4 Once the Calibration is completed, a message similar to the following is displayed on the front-panel.

> Green: I:8.0 O: 984
> Blue: I:10.0 T:0 C:2

Refer to the following table in order to know the limits for values **I** (Saturated Input Voltage) and **O** (Output Voltage in mV) for the Green and Blue LEDs:

LED	I		O	
	Minimum	**Maximum**	**Minimum**	**Maximum**
Green	7	10.5	980	1500
Blue	7	12	-	-

*If **I** Value is below the Minimum, then the printer has too much light. Make sure the Top Cover is closed.*

*If **I** Value is above the Maximum, then the printer has not enough light. Make sure you are using white paper. If you you are using white paper, then there might be an Aerosol problem in which case replace the lens cover before performing this calibration.*

5 Press **Enter** and the "C0300 Done" message is displayed on the front-panel.

C04. Service Station

THIS CALIBRATION IS NO LONGER REQUIRED AND SHOULD NEVER BE PERFORMED.

C05. Printheads Alignment

The purpose of this calibration is to test and if necessary correct the misalignment between the printheads. This Calibration is necessary to avoid color misalignments and print quality defects like banding.

Perform the Printheads Alignment calibration whenever:

- Carriage is disassembled or replaced.
- Banding is detected in prints.
- Misalignment between colors is detected.
- Refill Assembly is disassembled or replaced.
- Electronics Module is replaced.

Load media before performing this test.

Perform the Printheads Alignment Calibration as follows:

MAKE SURE THAT THE WINDOW IS CLOSED BEFORE YOU PERFORM THIS CALIBRATION.

1 In the Calibrations submenu, scroll to "C5 Printheads Align." and press **Enter**.
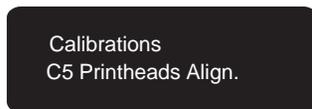
> Calibrations
> C5 Printheads Align.

2 If media is not loaded the calibration will stop and the message "Load Media" will be displayed on the front-panel. Load media in order to continue the calibration.

3 While the Calibration is being performed, the message "Aligning Printheads" will be displayed on the front-panel.

4 If the calibration is performed correctly, the "C0500 Done" message is displayed on the front-panel.

5 If the calibration fails, the "C0501 Fail" message is displayed on the front-panel.

If the calibrations fails, to resolve the problem, try one of the following:

   1 *If the calibration pattern is bad:*

- Try recovering the printheads using the front-panel menu and try the calibration again.
- If the calibration pattern is bad again, then replace the complete Ink Delivery System of the color that is bad.

   2 *Perform the Electronics Test* ◗ *page 4-7.*

   3 *Perform the Line Sensor Test* ◗ *page 4-10.*

C06. Printheads Check

The purpose of this calibration is to check that the Nozzles of the Printheads are functioning correctly.

Perform the Printheads Check calibration whenever:

- Carriage is disassembled or replaced.
- Banding is detected in prints.
- Nozzles Out or Misdirected.
- Misalignment between colors is detected.
- Electronics Module is replaced.

Load media before performing this test.

Perform the Printheads Check Calibration as follows:

MAKE SURE THAT THE WINDOW IS CLOSED BEFORE YOU PERFORM THIS CALIBRATION.

1 In the Calibrations submenu, scroll to "C6 Printheads Check" and press **Enter**.

> Calibrations
> C6 Printheads Check
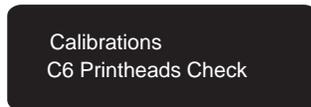
2 If media is not loaded the calibration will stop and the message "Load Media to Check Printheads" will be displayed on the front-panel. Load media in order to continue the calibration.

3 While the Calibration is being performed, the message "Checking Printheads" will be displayed on the front-panel.

4 If the calibration is performed correctly, the "C0600 Done" message is displayed on the front-panel.

5 If the calibration fails, one of the following messages will be displayed on the front-panel:

- "C0601 Fail" - The Cyan Printhead has failed.
- "C0602 Fail" - The Magenta Printhead has failed.
- "C0603 Fail" - The Cyan and Magenta Printheads have failed.
- "C0604 Fail" - The Yellow Printhead has failed.
- "C0605 Fail" - The Cyan and Yellow Printheads have failed.

The calibration is continued on the next page.

- "C0606 Fail" - The Magenta and Yellow Printheads have failed
- "C0607 Fail" - The Cyan, Magenta and Yellow Printheads have failed
- "C0608 Fail" - The Black Printhead has failed.
- "C0609 Fail" - The Cyan and Black Printheads have failed.
- "C0610 Fail" - The Magenta and Black Printheads have failed.
- "C0611 Fail" - The Cyan, Magenta and Black Printheads have failed.
- "C0612 Fail" - The Yellow and Black Printheads have failed.
- "C0613 Fail" - The Cyan, Yellow and Black Printheads have failed.
- "C0614 Fail" - The Magenta, Yellow and Black Printheads have failed.
- "C0615 Fail" - The Cyan, Magenta, Yellow and Black Printheads have failed.

If the calibrations fails, to resolve the problem, try one of the following:

1 *If the calibration pattern is **bad**:*

- Try recovering the printheads using the front-panel menu and try the calibration again.
- If the calibration pattern is bad again, then replace the complete Ink Delivery System of the color that is bad.

2 *If the calibration pattern is **good**:*

- Replace the Carriage Assembly ▶ *page 8-42.*

3 *Perform the Electronics Test ▶ page 4-7.*

4 *Perform the Line Sensor Test ▶ page 4-10.*

C07. Color Calib. (Only available in DesignJet 2500CP/3500CP printer)

The purpose of this calibration is to determine a correction function to be applied in PostScript in order to match the color reproduction of a nominal Printer. This Calibration is necessary to improve color consistency between different prints and different Printers. This calibration is also independent of color accuracy or matching color from a monitor to the Printer.

Perform the Color calibration whenever:

- Carriage is disassembled or replaced.
- There is a color consistency problem between prints.
- Refill Assembly is disassembled or replaced.
- Electronics Module is replaced.

   Load media before performing this test.

Perform the Color Calibration as follows:

   MAKE SURE THAT THE WINDOW IS CLOSED BEFORE YOU PERFORM THIS CALIBRATION.

1 In the Calibrations submenu, scroll to "C7 Color Calib." and press **Enter**.
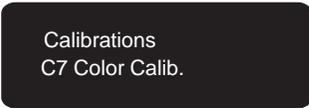
> Calibrations
> C7 Color Calib.

2 If media is not loaded the calibration will stop and the message "Load Media" will be displayed on the front-panel. Load media in order to continue the calibration.

3 While the Calibration is being performed, the message "Calibrating Color" will be displayed on the front-panel.

4 If the calibration is performed correctly, the "C0700 Done" message is displayed on the front-panel.

5 If the calibration fails, the "C0701 Fail" message is displayed on the front-panel.

   If the calibrations fails, to resolve the problem, try one of the following:

   1 *If the calibration pattern is bad:*

   - Try recovering the printheads using the front-panel menu and try the calibration again.
   - If the calibration pattern is bad again, then replace the complete Ink Delivery System of the color that is bad.

   2 *Perform the Electronics Test ◗ page 4-7.*

   3 *Perform the Line Sensor Test ◗ page 4-10.*

C08. Service Accuracy

The purpose of this calibration is to calibrate the nominal advance of the media. This calibration is necessary to control the exact movement of the media in order to avoid print quality problems like banding.

Perform the Service Accuracy calibration whenever:

- Banding is detected in prints.
- Carriage is disassembled or replaced.
- X-axis Assembly is disassembled or replaced.
- Drive Roller is disassembled or replaced.
- Misalignment between colors is detected.
- Electronics Module is replaced.

Remove any media already loaded into the Printer before performing the calibration.

Perform the Service Accuracy Calibration as follows:

MAKE SURE THAT THE WINDOW IS CLOSED BEFORE YOU PERFORM THIS CALIBRATION.

1 In the Calibrations submenu, scroll to "C8 Service Accuracy" and press **Enter**.
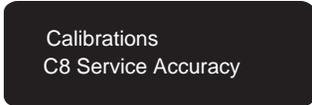
```
Calibrations
C8 Service Accuracy
```

2 The "Create pattern / Measure pattern" message is displayed.

3 Press the **Up Arrow** key to select "*Create pattern*".

4 The "*Status / Calibrating*" message is displayed while the Printer is calibrating.

5 When the Printer has finished calibrating, the "*Load media for calibration*" message is displayed.

You must use HP Matte film to perform this calibration even if it is not supported. You can select it as any media in the front-panel.

6 Load the media. If using D-size media, load the short edge as the leading edge in D-size Printers and the long edge as the leading edge in E-size Printers.

The calibration is continued on the next page.

7 When the media is loaded, the Printer will automatically begin to plot the pattern.

8 A "*Status / Printing*" message is displayed while plotting.

9 Remove the media when the Printer has finished plotting.

10 The "*Create pattern / Measure pattern*" message is displayed.

11 Press the **Down Arrow** key to select "*Measure pattern*".

12 Rotate the plot so that the edge with the arrows points to the leading edge, then reload the plot with the arrow edge print side down.

Arrow edge

Load arrow edge print side down
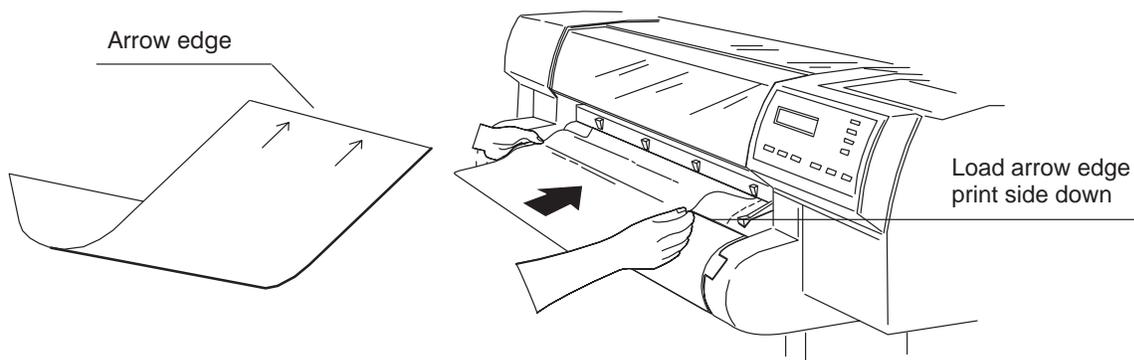
13 The Printer will load the plot and then measure the alignment marks using the line sensor on the carriage assembly.

14 If the calibration passes, the "C0800 Done" message is displayed on the front-panel.

15 If the calibration fails, the "C0801 Fail"message is displayed on the front-panel.

If the calibrations fails, to resolve the problem, try one of the following:

1 *If the calibration pattern is bad:*

- Try recovering the printheads using the front-panel menu and try the calibration again.
- If the calibration pattern is bad again, then replace the complete Ink Delivery System of the Black color.

2 *If the calibration pattern is **good**:*

- Replace the Carriage Assembly ▶ *page 8-42.*

3 *Perform the Electronics Test ▶ page 4-7.*

4 *Perform the Line Sensor Test ▶ page 4-10.*

C09. Maintenance

The purpose of this calibration is to read and, if necessary, adjust the preventive maintenance counter, which counts the number of swaths.

This Calibration must be used to reset the Maintenance counter to ZERO after the Preventive Maintenance Kit has been installed in order to disable the "Maintenance Advised" message on the front-panel. This calibration must also be used to set the correct value when replacing a new Electronics Module.

Perform the Maintenance Calibration as follows:

1 In the Calibrations submenu, scroll to "C9 Maintenance" and press **Enter**.

```
Calibrations
C9 Maintenance
```

2 The "Swaths: #### / Set New Number" message is displayed.

If you are about to replace the Electronics Module, you MUST note down the Swaths Counter (####).

3 If you need to adjust the swaths counter, press the **Down Arrow** key.

You should adjust the counter to the number that you noted before replacing the Electronics Module.

4 The "New Swath Counter / ########" message will be displayed on the front-panel. Use the following keys to adjust the swaths counter.

- **Up Arrow** - Increase the Counter Digit.
- **Down Arrow** - Decrease the Counter Digit.
- **Enter** - Select the Next digit.

5 When the last digit is entered, the "0900 Done" message is displayed on the front-panel. The new number will then be fixed and saved in the EEROM.

C10. Font Type Set (Only available in DesignJet 2500CP/3500CP printer)

YOU SHOULD ONLY NEED TO SET THE FORNT TYPE IF YOU REQUIRE ASIAN FONTS, OTHERWISE IT SHOULD NEVER BE USED.

The purpose of this calibration is to check and, if necessary, select a Font type.

NOTE FOR HP DESIGNJETS 2500CP WITH FIRMWARE VERSION LOWER THAN A.02.14:

IT IS HIGHLY RECOMMENDED THAT YOU UPGRADE THE FIRMWARE INSTEAD OF REPLACING BOTH THE HARD DISK DRIVE AND THE ELECTRONICS MODULE.

NOTE FOR HP DESIGNJET 2500CP WITH FIRMWARE VERSION A.02.14 OR HIGHER AND HP DESIGNJET 3500CP:

YOU MUST PERFORM THIS CALIBRATION WHEN YOU INSTALL A NEW ELECTRONICS MODULE IN ORDER TO SET THE CORRECT FONT TYPE.

IF YOU NEED TO DEFINE THE FONT TYPE BUT THIS CALIBRATION DOES NOT ALLOW YOU TO SELECT THE REQUIRED FONT TYPE, THEN YOU MUST PERFORM THE TEST "D17. RESET COUNTERS" ON PAGE ▶ 4-33 TO RESET THE COUNTERS TO ZERO AND THEN REDO THIS CALIBRATION.

Perform the Font Type Set Calibration as follows:

1 In the Calibrations submenu, scroll to "C10 Font Type Set" and press **Enter**.
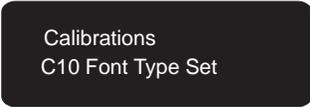
> Calibrations
> C10 Font Type Set

2 If you **have not** installed a new Electronics Module, the current font type will be displayed on the front-panel.

3 If you **have** installed a new Electronics Module (counter plots = 0), the message "Character Set New" will be displayed on the front-panel. Press the **Up Arrow** key to set the new type font.

---

4 The message "Choose Character Set" will be displayed on the front-panel. Use the **Up and Down Arrow** keys to select the font type required and then press **Enter**. The font types available are:

- 24 (R) - Roman.
- 25 (J2) - Japanese (2 Moriswa Fonts).
- 27 (CS) - Chinese Simplified.
- 28 (CT) - Chinese Traditional.
- 29 (CB) - Both Chinese.
- 30 (K) - Korean.

5 The first time a PostScript print is sent to the printer, the other font types **will be** deleted **and cannot be recovered**.

IF YOU DO NOT SELECT ANY FONT SET, THE ROMAN FONT WILL BE SELECTED BY DEFAULT WHEN A POSTSCRIPT FILE IS SENT.

6

Image Quality

Image Quality Troubleshooting Checklist

When faced with an Image Quality problem, use the following checklist as a guide in troubleshooting the problem:

1 Problem reproduction
- Reproduce the problem that the customer is seeing using their original settings.

2 Printer configuration:
- Printhead Service check: Set frequency to "1 Page" (Maximum) (Select *Image Quality / Printhead Service / Check* from the front-panel).
- Print Mode: Set to "Best" (in the printer and in the drivers).
- Dry time: Set to "Automatic".
- Select the correct media setting when loading the media.
- Close Loop Color Calibration: Set to "On" (Select *Image Quality / Color Calib.* from the front-panel).
- Printhead Alignment: Select *Image Quality / Printhead Service / Align Now* from the front-panel.

3 Hardware check list

Firmware Revision
- Check if the latest version of the firmware is installed. If not Install the latest firmware revision or download the latest version from the Plotter Support Web Page. Refer to page 1-3 for information on how to upgrade the firmware revision. Refer to Chapter 7 for the part number of the Flash SIMM.

4 Printheads

Printhead Troubleshooting Process:
- If you don't have any samples yet, reproduce the original problem with the correct printer settings.
- Print the Image Quality Print using the exact settings and Media that the Customer used when faced with the Image Quality problem ◗ page 6-5.

Printhead Alignment and Check:
- Perform the Printhead Alignment (details ◗ page 5-13) using HP High-Gloss Film. If not available, use Coated media if required.
- Perform the Printhead Check calibration (details ◗ page 5-14).

5 Media
- Make sure that you use HP or HP-approved media.
- Select the correct media type through the front-panel when loading it.

6 Driver print quality configuration:

To clarify if the reason of the problem is related with the print mode defined with the Non-HP Driver try the following:

- Print the same sample using the Non-HP driver and their normal media.
- Print one of the internal demos or print the Image Quality Print (details ◗ page 6-5) using HP Media and configuring the plotter/printer as indicated previously.

If the output obtained using the HP Solution is good and the one obtained through the 3rd party solution is bad, HP support organization should:

- Communicate to the customer that the problem is not in the printer and that he should address it through the 3rd party vendor support structure.

7 Service Accuracy Calibration (details ◗ page 5-17)

- Perform "Service Accuracy calibration" using HP Matte Film. If not available, use Coated media if required.

Print Modes

The Printers have a large number of print modes. A print mode specifies how to interpret and put on media a set of bitmap planes, each of which consists of a sequence of rows. Each mode corresponds to a unique combination of the following parameters:

- Print resolution (300 dpi, 600 dpi).
- Number of passes per swath.
- Number of advances per swath.
- Number of swaths per advance.
- Print direction (bidirectional).
- Swath height (swath width).
- Carriage speed.
- Smart Area Fill (SAF).
- Print masks.
- Servicing states.
- Multiple dotting (K).

User input to print mode selection consists of the following:

- Choice of media type.
- Choice of print-quality setting (fast, normal, best).
- The language in which the file is received.
- The model of printer used.
- The type of driver (HP or Non-HP)

Image Quality Print

Introduction

Whenever a Print Quality problem appears, it is advisable to print the Image Quality Print to help diagnose the problem. The Image Quality 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.

To achieve the best performance from the printer, advise the customer to only use genuine HP accessories and supplies, whose reliability and performance have been thoroughly tested to give trouble-free performance and best-quality prints.

Using the Image Quality Print

1 The size of the Image Quality Print is A3 and B so you must use media (roll or sheet) that is this size or larger.

   Do not use 3M Changeable Opaque Imaging media or equivalent when printing the Image Quality Print.

2 Use the same type of media that the customer was using when the image quality problem was discovered.

3 Study each of the test patterns in the order listed to determine the type of image quality problem.

4 If the customer was reporting problems of Image Quality using non-HP media and after the Image Quality Print test the same quality problems appear, advise the customer to use genuine HP media. Repeat the Image Quality Print test using genuine HP Media (Do not use 3M Changeable Opaque Imaging media).

Producing the Image Quality Print

1 Select the Image Quality Print from the *Utilities / Service tests* menu, then press **Enter** to print the test**.**

2 The printer will print out a series of images named Test 1 thru to Test 5. The Image Quality Test print looks like this:
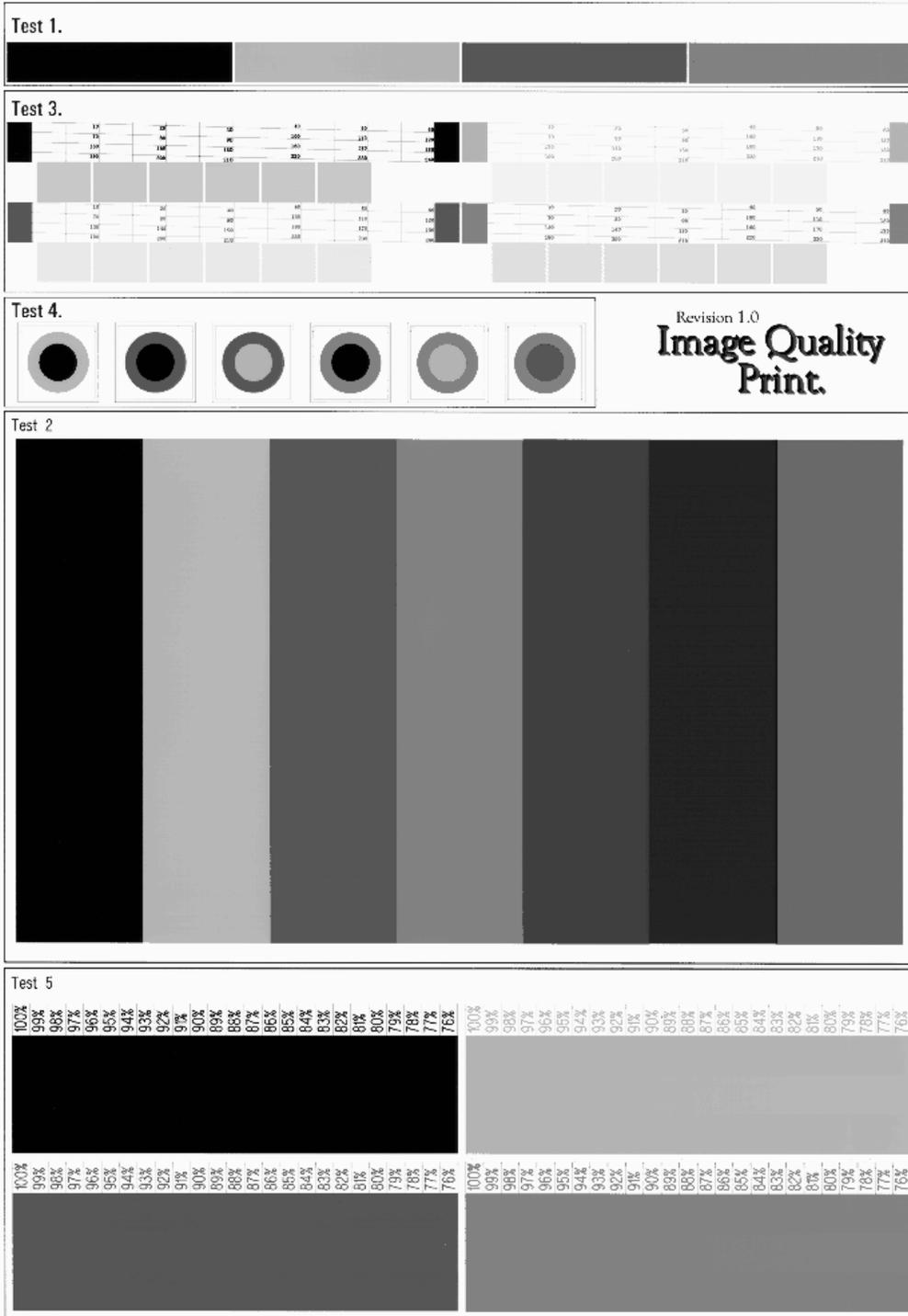
Image Quality Print

Analyzing the Image Quality Print

The Image Quality Print will contain five patterns as follows:

1 Print-head Warm Up (See below).

2 Image Quality Test (See Below).

3 Nozzle Print Test ◗ page 6-13.

4 Color Alignment Quality Test ◗ page 6-14.

5 Color Variation Test ◗ page 6-16.

Test Pattern 1: *Printhead Warm-up*

This pattern warms-up the printheads, leaving them in a perfect operating condition. You can ignore this pattern and continue with Test Pattern 2.

Test Pattern 2: *Image Quality Test*

This test pattern checks for overall image print quality.

If you do not see any problems with the image quality test (similar to the example shown below), then the printer is functioning correctly. The problem may be with the RIP, driver, etc. that the customer is using. Refer to page 6-18 for further information.
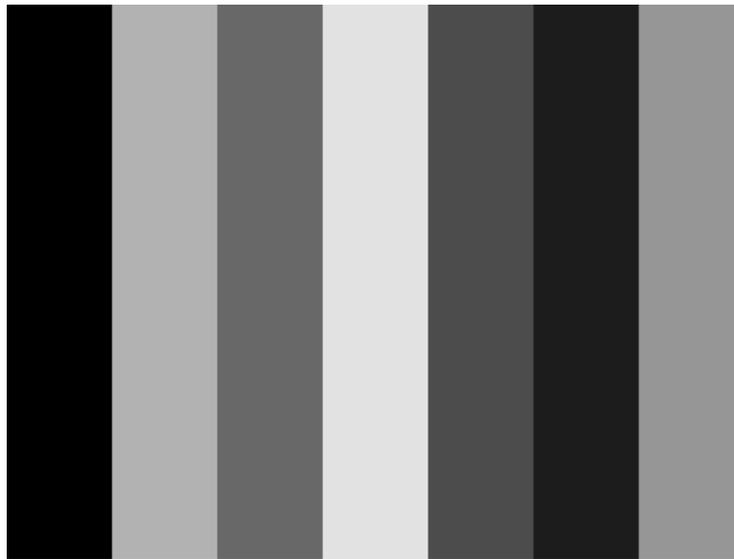
If you see image problems in this test pattern then continue with the following procedures which will help you determine the nature of the problem.

One of the most common problems that affects the overall image quality is 'Banding'.

Banding Problems

Banding is when you see repetitive horizontal bands within the printed image (these may appear as light or dark bands).

Test pattern 2 is printed with four primary colors; black, cyan, magenta and yellow. The three secondary colors printed are; red, blue and green which are composed by mixing the primary colors as shown in the table below:

Secondary Color	Primary Color Components
Red (R)	Magenta (M) and Yellow (Y)
Blue (B)	Magenta (M) and Cyan (C)
Green (G)	Cyan (C) and (Y)

The main causes of banding are due to:

- Printheads.
- Media advance.

Banding Caused by Printhead Problems

If **test pattern 2** has clear or dark horizontal bands in one or more of the primary color columns, then several of the secondary color columns will also have the same type of bands in the same position (but perhaps with less intensity).

These bands are caused by two types of printhead nozzle failure; either nozzles not printing, or nozzles misdirected. For further information on printhead nozzle failures, refer to **Test Pattern 3** ◗ page 6-13.

In the following Example A, several nozzles in the magenta printhead are not printing. There will be clear repetitive bands (perhaps white) in the magenta column. Consequently, you will see lower intensity bands in the same print position in the red (M + Y) and blue (M + C) secondary color columns.
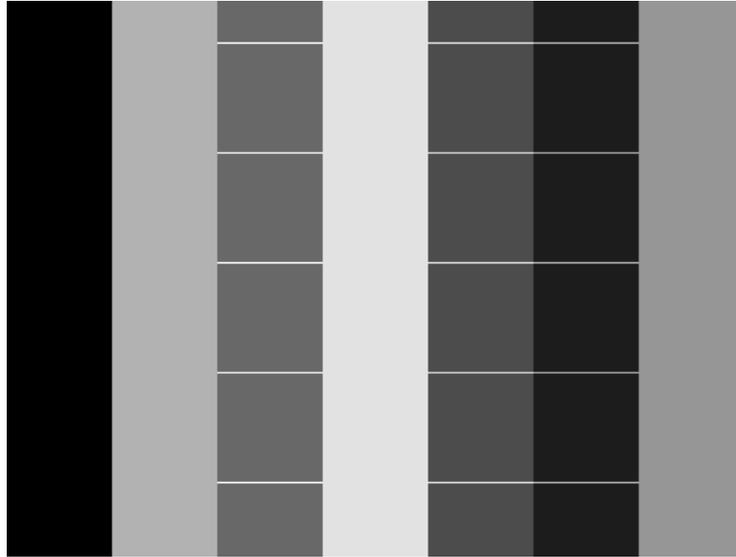
Example A

Banding Problem 1:	Banding in cyan, blue and green columns only, but more evident in cyan than in blue and green columns.
Problem Description:	This is an indication that the cyan printhead may require servicing or could be damaged.
Corrective Action:	Refer to **Test Pattern 3** ◗ page 6-13 to troubleshoot the Cyan Color.

Banding Problem 2:	Banding in magenta, red and blue columns only, but more evident in magenta than in red and blue columns.
Problem Description:	This is an indication that the magenta printhead may require servicing or could be damaged.
Corrective Action:	Refer to **Test Pattern 3** ◗ page 6-13 to troubleshoot the Magenta Color.

Banding Problem 3:   Banding in yellow, red and green columns only, but more evident in yellow than in red and green columns.

Problem Description: This is an indication that the yellow printhead may require servicing or could be damaged.

Corrective Action: Refer to **Test Pattern 3** ◗ page 6-13 to troubleshoot the Yellow Color.

Banding Problem 4:   Banding in black column only.

Problem Description: This is an indication that the black printhead may require servicing or could be damaged.

Corrective Action: Refer to **Test Pattern 3** ◗ page 6-13 to troubleshoot the Black Color.

Banding Caused by Media Advance Problems

Another type of banding is caused by an inaccurate media advance. The printer prints an image by 'bands' or 'swaths' which are fixed widths depending on the advance of the media roller. If the advance of the roller differs from the theoretical advance, there will be banding (horizontal repetitive bands along **Test Pattern 2**) in all the primary and secondary color columns.

The bands can appear as dark bands, due to a shorter advance of the roller which causes an overlap, or lighter bands due to a longer advance causing spaces.

Banding Problem: Banding in all color columns (see Example B).

Problem Description: The causes are not related to misalignment but the troubleshooting actions are the same.

Corrective Action: Refer to **Test Pattern 4** ◗ page 6-14 to troubleshoot the problem.

It is also possible that the banding was caused because the customer was using non-HP media. The performance of the printer can only be guaranteed if genuine HP media is used.
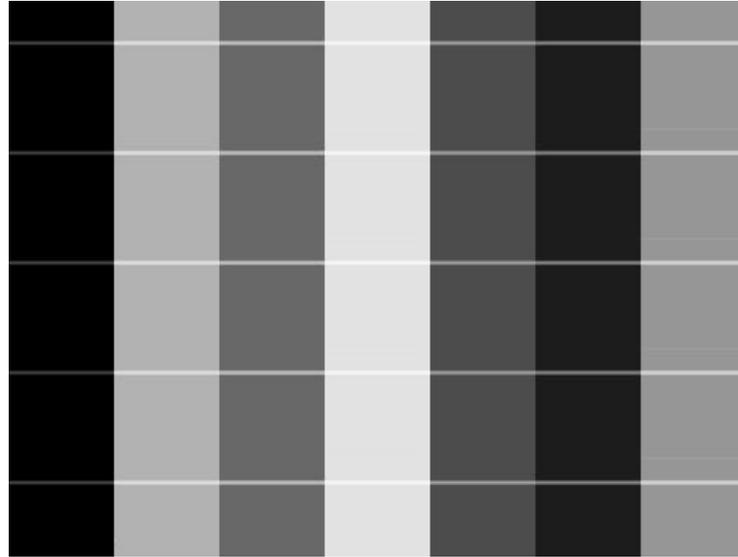
Example B

Banding Caused by Misalignment

There are two types of misalignment; vertical and horizontal. Refer to **Test Pattern 4** ◗ page 6-14 for further information.

Misalignment between two primary colors when creating a secondary color can cause two different effects:

- If there is horizontal misalignment of the colors, it will create banding.
- If there is vertical misalignment of the colors, it will create gaps or overlaps between colors (see Example C).

Banding Problem 5:	Black, cyan, magenta and yellow columns are correct but banding in one, or all of the secondary color columns.
Problem Description:	This is an indication that there is a horizontal misalignment.
Corrective Action:	Refer to Test Pattern 4 ◗ page 6-14 to troubleshoot the problem.

Banding Problem 6:   Different colors visible in the spaces between some or all of the columns (depending on the color of the printhead that is misaligned) (see Example C).

Problem Description: This is an indication of vertical misalignment.

Corrective Action: Refer to **Test Pattern 4** ▶ page 6-14 to troubleshoot the problem.

It is also possible that the banding was caused because the customer was using non-HP media. The performance of the printer can only be guaranteed if genuine HP media is used.
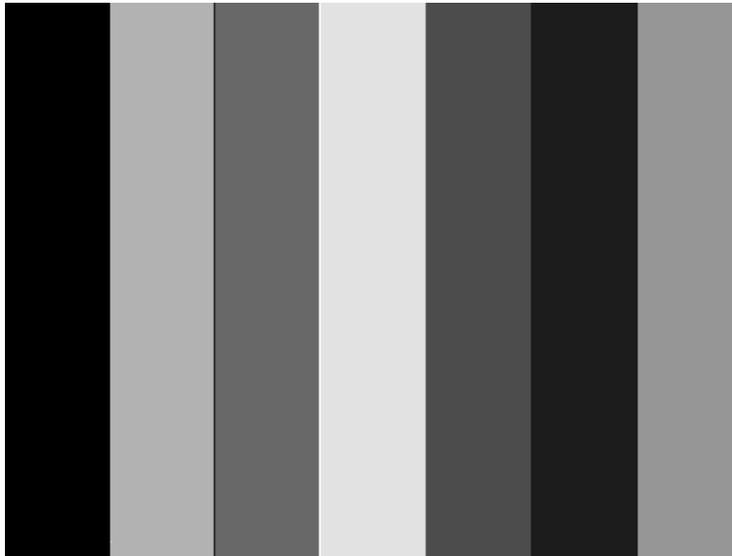
Example C

Test Pattern 3: *Nozzle Print Test*

Use this test purely to confirm an error highlighted in Test Pattern 2. Some of the printhead nozzle problems that you will see in Test Pattern 3 do not mean you will not get perfect image quality results. The printer has internal corrections that will hide many nozzle defects.

In this test all the 240 nozzles of each printhead are tested. For each of the 4 colors you will see the numbers 10 thru to 240 over the diagonally stepped lines in increments of 10. These numbers correspond to the nozzle number that prints each step.

There are two printhead nozzle errors:

- Nozzles not printing.
- Nozzles misdirected.

Nozzles not printing

There are two ways to see this problem, it is easier to see the error from the first check.

1 In the top pattern, marked with numbers, if the diagonally stepped lines are broken in one or more steps it indicates that this specific nozzle(s) may be blocked and are not printing. White lines will also be visible in the area fill at both sides of the pattern.

2 Below the top pattern, there is a set of horizontal straight lines. When one or more nozzles are not printing the corresponding lines will be missing.

Nozzles misdirected

If all the stepped lines are visible in the top pattern, then all the printhead nozzles are printing. However the nozzles could still be misdirected, possibly due to some dried ink around the nozzles.

There are two ways to see this problem, it is easier to see the misalignment from the second check.

3 In the top pattern, marked with numbers, if the diagonally stepped lines are not equally positioned in every step it indicates that this specific nozzle(s) may be misdirected.

4 Below the numbered pattern, there is a set of horizontal straight lines. When one or more nozzles are misdirected there will be unequal spaces between the corresponding lines.

Nozzles Problem 1:	Some printhead nozzles, in any one color, are not printing.
Nozzles Problem 2:	Printhead nozzles are misdirected in any one color.
Corrective Action:	Try the following steps:

1 From the *Image Quality/ Printhead service / Printhead check* Menu, set to ***Now*** to run the printhead check.

2 From the *Utilities / Service tests* menu, select "Recover printheads" to run the printhead recovery process.

3 Print the Image Quality Print again to see if there has been any improvement.

4 If there has been no improvement, try reinstalling the Ink System Components and print the Image Quality Print again.

5 If the error is still present, replace the Ink System Components and print the Image Quality Print again.

6 If the error continues try the following:
- Perform the Electronics Test ◗ page 4-7.
- Replace the Trailing Cable ◗ page 8-36.
- Replace the Carriage Assembly ◗ page 8-42.

Test Pattern 4: *Color Alignment Quality Test*

This test pattern is to check the color alignment, and produces 6 patterns each with 2 different primary colors. In each pattern you will see primary color circles. If there is misalignment between the primary colors the composite color will be present in one part of the circle and white will be visible at the opposite side of the circle.

There are two types of misalignment (see Example D):

- Horizontal – when the misalignment is in the horizontal axis.
- Vertical – when the misalignment is in the vertical axis.

Horizontal Misalignment   Vertical Misalignment

Correct   Incorrect   Correct   Incorrect
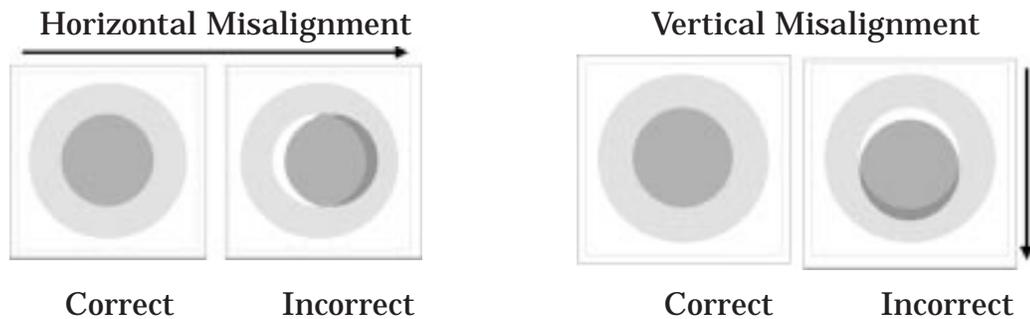
Example D

Alignment Problem:	Third color present/misalignment in either the boxes or circles of the test image (see Example D).
Corrective Action:	Try the following steps:

1 Perform the Printhead Alignment Calibration (Details ◗ page 5-13) using genuine HP media then print the Image Quality Print again to see if there has been any improvement.

2 If there has been no improvement, try reinstalling the Ink System Components and try **step 1** again.

3 If the Image Quality Print still has problems then replace the Line Sensor ◗ page NO TAG

4 If the problem continues perform the Service Accuracy Calibration (Details ◗ page 5-17) and print the Image Quality Print again to see if there has been any improvement.

5 If the error continues try the following:
  - Perform the Electronics Test ◗ page 4-7.
  - Replace the Trailing Cable ◗ page 8-36.
  - Replace the Carriage Assembly ◗ page 8-42.
  - Replace the X-axis Assembly ◗ page 8-66.

Only replace one component at a time and check if the problem has gone before replacing another component. Using this procedure you will be able to determine exactly which component failed.

Test Pattern 5: *Color Variation Test*

This test produces four boxes; black, blue, cyan and yellow. In each box there are three horizontal bands, the two outer bands are 100% shade, the inner band is shaded from 100% scaling to 75%.

The purpose of this test is to determine at what percent the middle shading becomes visible from the two outer bands. The best way to do this is to cover the box with a piece of paper and slide the paper horizontally across the box. Stop as soon as you see a different shade in the middle box. You can then determine the percentage scaling from the figure at the top of the box.
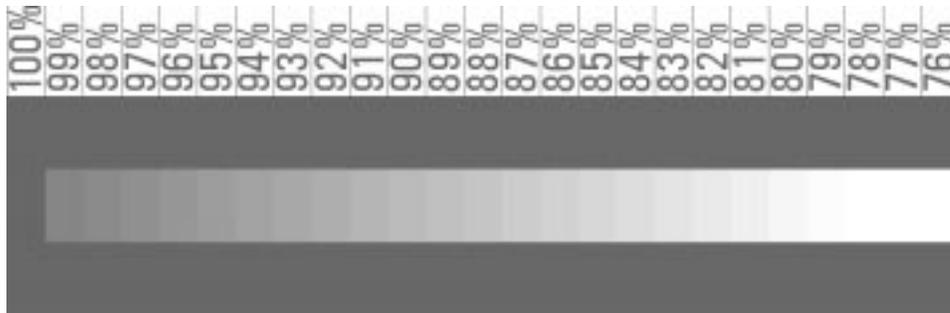
Example E (Correct)

Example F (Incorrect)

Variation Problem: If the middle box shading is **only** visible below 90% it is an indication that the printhead is producing incorrect size ink drops (see Example F).

Corrective Action: Select *Color Calibration* to ***Now***.

No Printing Defects Found in the Image Quality Print

If all the test patterns from the Image Quality Print are correct and you still experience print quality problems, here are some of the more likely causes to check:

- The print mode used in your printer is incorrect (this is defined by the printer's front-panel menu selections).
- Non-HP driver.
- The RIP (If you are using one).
- The software applications you are using.

Refer to the ***User's Guide*** for further information on how to configure the system with correct settings.

Media

Always make sure that the customer is using the appropriate media for the required image and that it is consistent with the software application being used. To ensure color accuracy and print quality performance of the printer, only media types that have been certified for the printer should be used. Use of non-HP media or HP media not certified for the printer may significantly reduce the color and print quality of the required images. For details of HP media, refer to the ***User's Guide*** or the ***Media Guide for the HP DesignJet CP Printers***.

To have accurate colors, the media settings must match the type of media loaded in the printer.

If the customer is using non-HP media with HP drivers, the colors in the required print may not be accurate. Advise the customer to use HP media if they want to improve the accuracy of the colors.

Print Quality Problems

PQ Problem: Dark Streaks at edges of page (Icicles)

Printheads Affected: Imaging Inks (Not UV resistant)

Problem Description: At one or both edges of print, thin dark lines appear, which are a few millimeters thick at the base, and may extend several centimeters into the print. They usually occur in heavy density prints. Sometimes ink smearing in the print margins is also seen.

Cause of Problem: Excess ink on the printhead surface during printing.

Corrective Action: Switch to a higher print quality mode. They tend to get less ink on the surface of the printhead. If you are printing on non-HP coated paper, if it cockles (gets wavy when printed on), this may be making the problem worse.

Only Applicable to HP DesignJet 3500CP

PQ Problem: Banding at mid-page refill

Printheads Affected: All

Corrective Action: Solution will be different depending on the type of problem:

1 Light band at refill - Band of 0.4 inches, all colors light, sharp edges ▶ cover was opened on printer while printing. This causes the remainder of a swath to not be printed, or to be printed incorrectly.

 • Solution - Don't touch printer while printing.

2 Wider band, single color missing, sharp bottom edge to defect ▶ printhead ran out of ink prior to refill.

 • Solution - Check Ink Cartridge and replace if empty. If still plenty of ink left, printer is not refilling correctly, which could be either a cartridge or a printer problem.

3 Band with sharp top edge, single or multiple colors missing ▶ printhead did not start printing correctly after refill.

- Solution - Slight color variation is normal, particularly on glossy medias. The defect should not normally be visible beyond 0.5-1.0 meter viewing distance. If a more severe defect occurs, this usually indicates that the printheads are dirty. Performing a printhead recovery may fix this problem. These types of problems may occur more frequently when printing at low humidity and temperature.

4 Missing single row of dots within 0.4″ of refill ▶ there is nozzle not functioning on the printhead. The printer cannot hide nozzles within 0.4" of a refill if you are using a type B refill.

5 Improving color variation seen at refill.

- Solution - If customer is printing on coated paper, check that they have indeed loaded it as Coated or Heavy Coated media. If not, they should load the paper as the correct type, or select Refill Type A in the front panel menus (***Device Setup ∕ Refill Type ∕ Type A***).

6 Improving haze seen at refill.

- Solution - Haze is the result of an ink-media interaction that is also dependent upon time, humidity, and temperature. Printing in very dry conditions will increase haze problems. Refill Type B will usually give better haze results than Type A (a thin line instead of 1 cm band of haze). On some medias, Refill Type C may reduce or eliminate haze problems. The Refill Type can be selected by the user through the front panel menus, ***Device Setup ∕ Refill Type ∕ Default*** is the normal setting, which chooses automatically between Refill Types A, B or C based upon Media type selection and Quality level selection. The User's Guide contains a table with the default selections.

PQ Problem: Color spots in print

Printheads Affected: All

Problem Description: Small (usually 1-3 mm) dots of color showing up in unexpected places on the print. Dots often show more strike-through on coated paper than normal printing.

Cause of Problem: Fiber on printhead directly over some nozzles is catching ink drops, then dripping onto print.

Corrective Action: Usually the problem goes away when the printheads are wiped at the end of the print. If it persists, a printhead check or printhead recovery will give it another try. If a user is having a lot of problems with drips, it may be related to paper dust from their media, or to a dusty environment they are printing in.

PQ Problem: Ghost image at top of page, first plot after pause

Printheads Affected: Imaging Inks

Problem Description: Light spots in imaged media matching up to mechanical features inside the printer (bail, pinch-arm assemblies).

Cause of Problem: Equilibration rate differences between media and environment in areas that are "protected" by parts of the printer.

Corrective Action: Advance a little bit of media before the first print of the day. "Move Media" option in the front panel is an easy way to do this.

PQ Problem: Missing/ Light Blocks of color in a print

Printheads Affected: All

Problem Description: Small well defined areas of light color, 0.4 inches tall, with a 4mm half–colored region on either side.

Corrective Action: Solution will be different depending on the type of problem:

1 Cover opened, or cover sensor not making good contact. If the user is present, usually a "Close Window to Continue" message will show on the front-panel if this is happening, or the printer's carriage will be slowing down in the middle of a printing pass.

- Solution - Check that covers are all shut. Wiggle covers with printer idle to see if this triggers any front panel messages. If so, the cover sensors need adjustment.

2 Intermittent opens/shorts in printhead. Printhead is shorting, probably due to ink in the electrical contacts. As the liquid short heats up, it may dry out and the printhead will start functioning properly again.

- Solution - Check printer carriage and printhead electrical contacts for dried ink. Clean if dirty. If printhead still fails with clean contacts, replace IDS.

3 Broken trace in carriage trailing cable.

- Solution - Replace the Trailing Cable or the Carriage Assembly.

PQ Problem: Bleed into white areas on Glossy media (Chia)

Printheads Affected: Imaging Inks (maybe UV Inks on non-recommended medias)

Problem Description: 1-3 millimeter ring or edge of light coloring where white should be. Occurs worst on thin lines, and after white regions of a print.

Cause of Problem: Thin-layer chromatography effect occurring between inked and uninked areas of the media.

Corrective Action: Try the following:

1 Printing in a faster printmode will reduce or eliminate this effect.

2 Add a 0.5cm stripe of the color showing the problem down the sides of the print, where it can be cut off after the print is finished.

3 If using non-HP media, try using HP media instead. If using HP High-Gloss White Film (not recommended for CP series!), try HP High Gloss Photo or 3M Vinyl instead.

4 Reduce ink density in the affected area of the print. This may prevent the problem as well.

PQ Problem: Bleeding in stacked prints

Printheads Affected: Imaging Inks

Cause of Problem: Prints develop bleed when stacked up soon after printing.

PQ Problem: Light band with frequency of 1/2 media roll circumference

Cause of Problem: Media stop or core insert rubbing against roll cover, causing media tension change.

PQ Problem: Printer Not Detecting Out Of Ink Properly

Printheads Affected: All

Problem Description: 1 - Printer fails to stop printing when Printheads out of ink, wasting media, possibly for several plots. 2 - Printer reports out of ink as Printhead Failure message.

Cause of Problem: Out of Ink is determined when the following conditions are true:

    1 Ink Level indicator shows low AND

    2 Six or more nozzles are missing in a Printhead Check OR

    3 The temperature of the printhead rises to 15 degrees above its normal operating temperature.

If the ink level indicator is not showing low, (2) or (3) will result in a Printhead Failure message.

Corrective Action: The Printhead Check usually does a more reliable job of checking for Out of Ink conditions. Setting the printhead check to more frequent use will reduce the amount of wasted media and ink. This is especially recommended if the printer is being used unattended. The printhead check does take about a minute and a half to perform, and uses a thin strip of media.

NOTES

7

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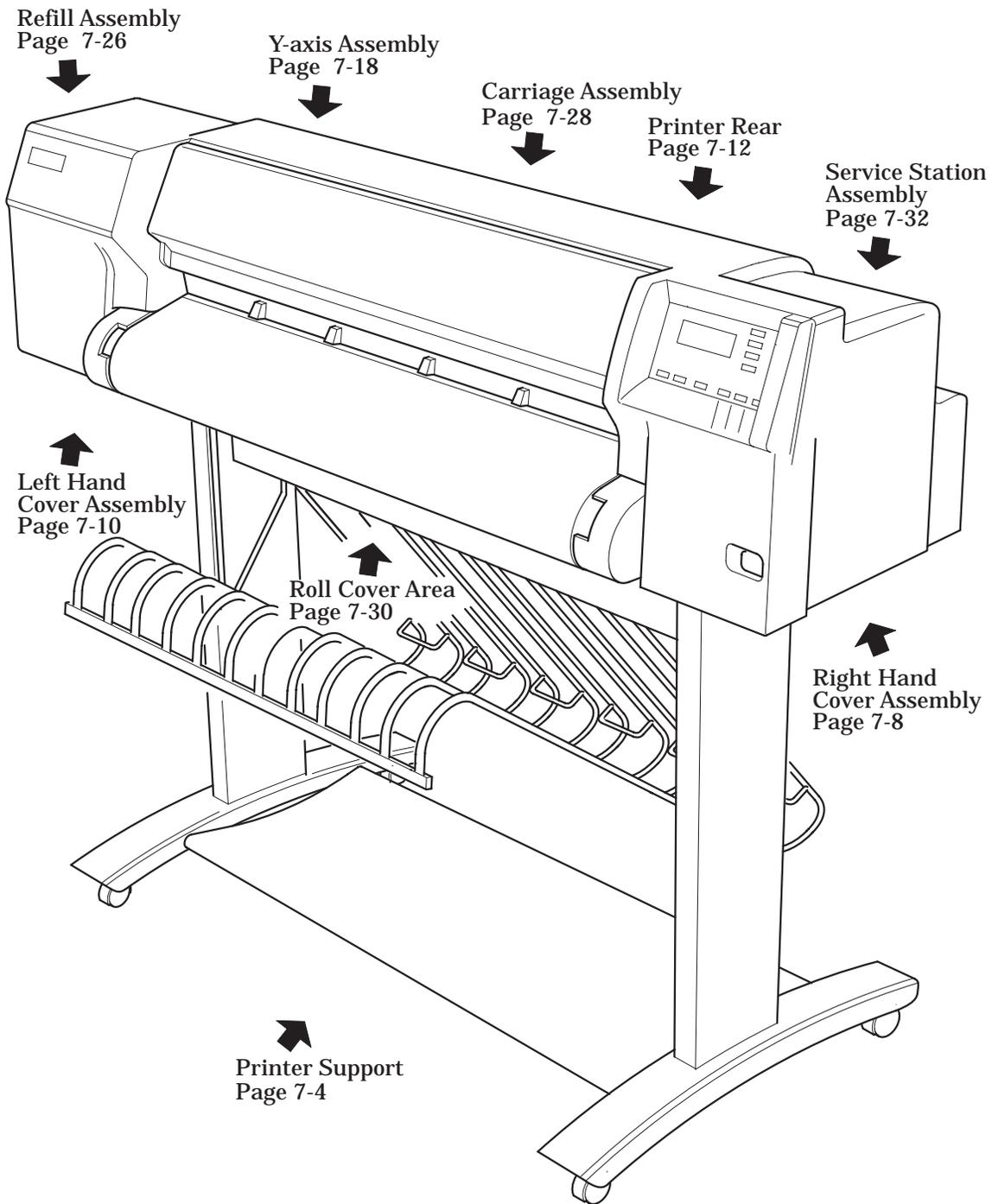
HP DesignJet 2X00CP (Overview)

Carriage Assembly
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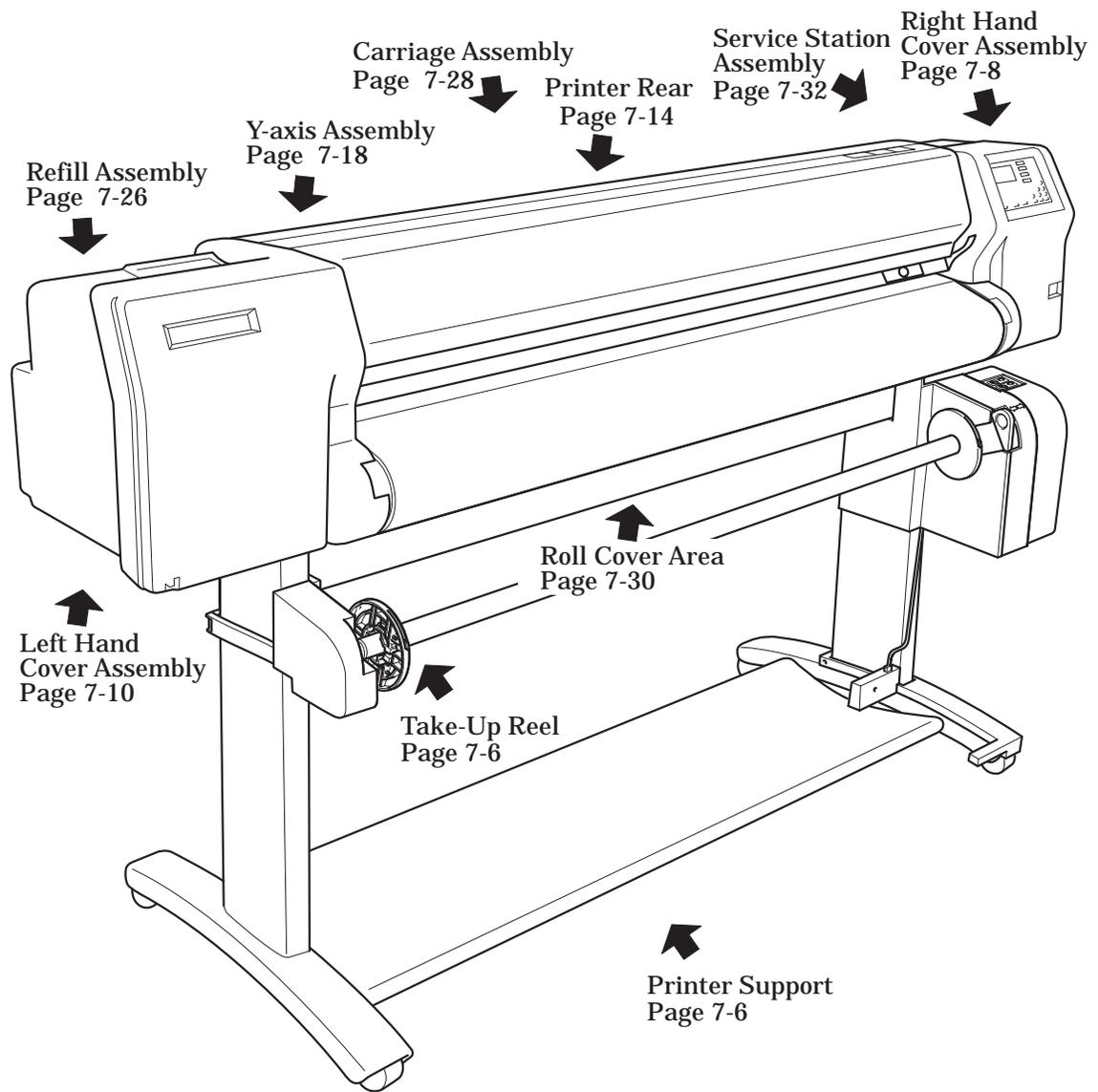
HP DesignJet 3X00CP (Overview)

Printer Support (HP DesignJet 2X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4704-60095	1	Hardware Kit (Includes Screw Drivers)
2	C4704-60086	2	Foot Assembly
3	C4704-60075	2	Legs Assembly
4	C4704-60084	1	Tray Assembly
5	C4704-60077	1	X-axis Brace
6	C4704-40070	1	End Cap
7	C4704-60074	1	X Bar Assembly
8	C4704-60073	6	Paper Loop Assembly
9	C4723-60144	1	Take-up Reel Right Hand Support
10	C4723-60072	1	Take-up Reel Left Hand Support
11	C4723-60071	1	Take-up Reel Sensor
12	C6246-60010	1	36 ″ Take-up Reel Spindle
13	C6246-60011	1	36 ″ Take-up Reel Tubes
–	C4723–60175	1	TUR Spindle 3.5" Core Adaptor
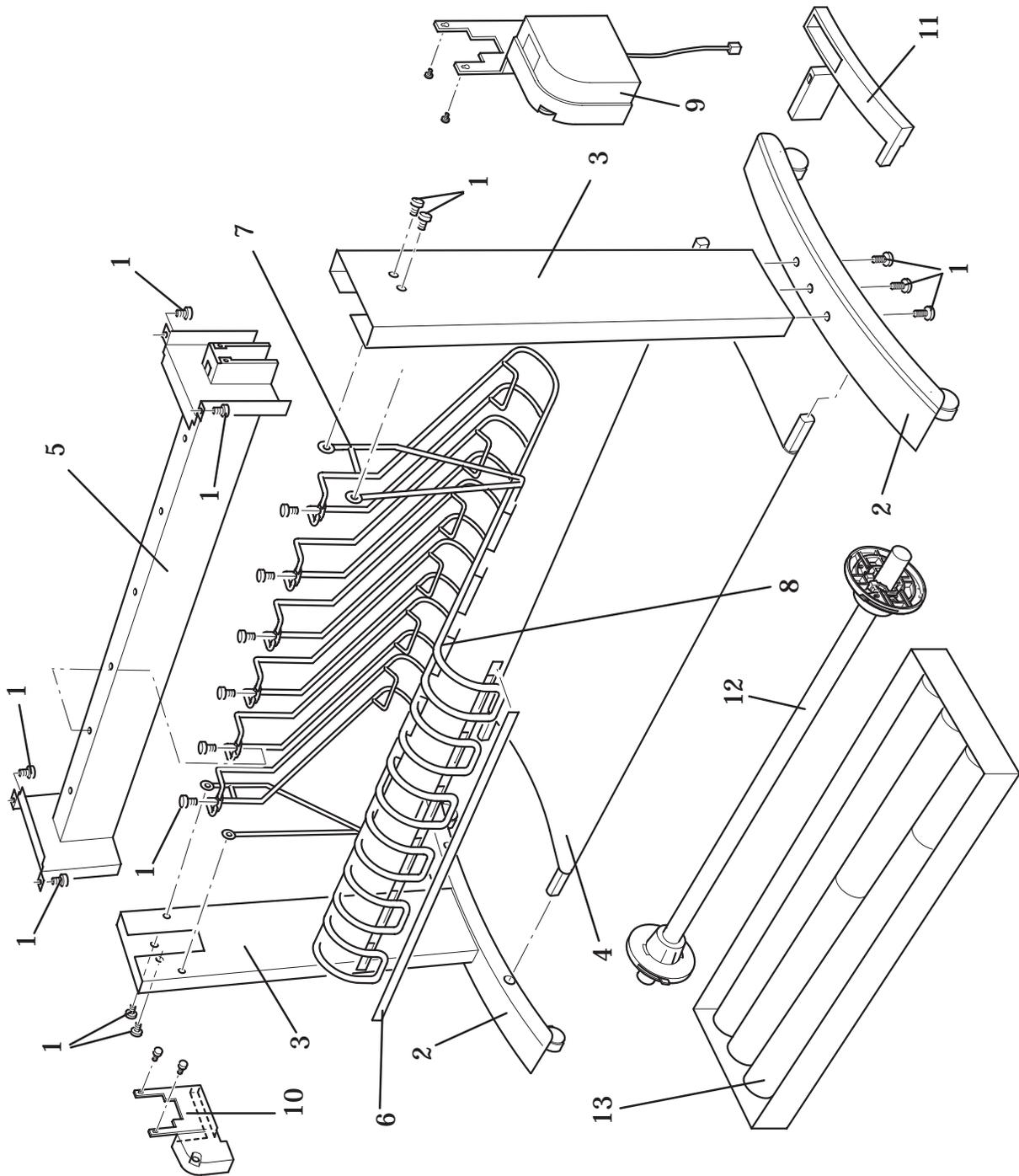
Printer Support (HP DesignJet 2X00CPOnly)

Printer Support (HP DesignJet 3500CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4704-60095	1	Hardware Kit (Includes Screw Drivers)
2	C4723-60086	2	Foot Assembly
3	C4704-60075	2	Legs Assembly
4	C4723-60084	1	Tray Assembly
5	C4723-60077	1	X-axis Brace
6	C4723-60144	1	Take-up Reel Right Hand Support
7	C4723-60072	1	Take-up Reel Left Hand Support
8	C4723-60071	1	Take-up Reel Sensor
9	C4723-60064	1	Take-up Reel Spindle
10	C4723-60060	1	Take-up Reel Tubes
–	C4723–60175	1	TUR Spindle 3.5" Core Adaptor
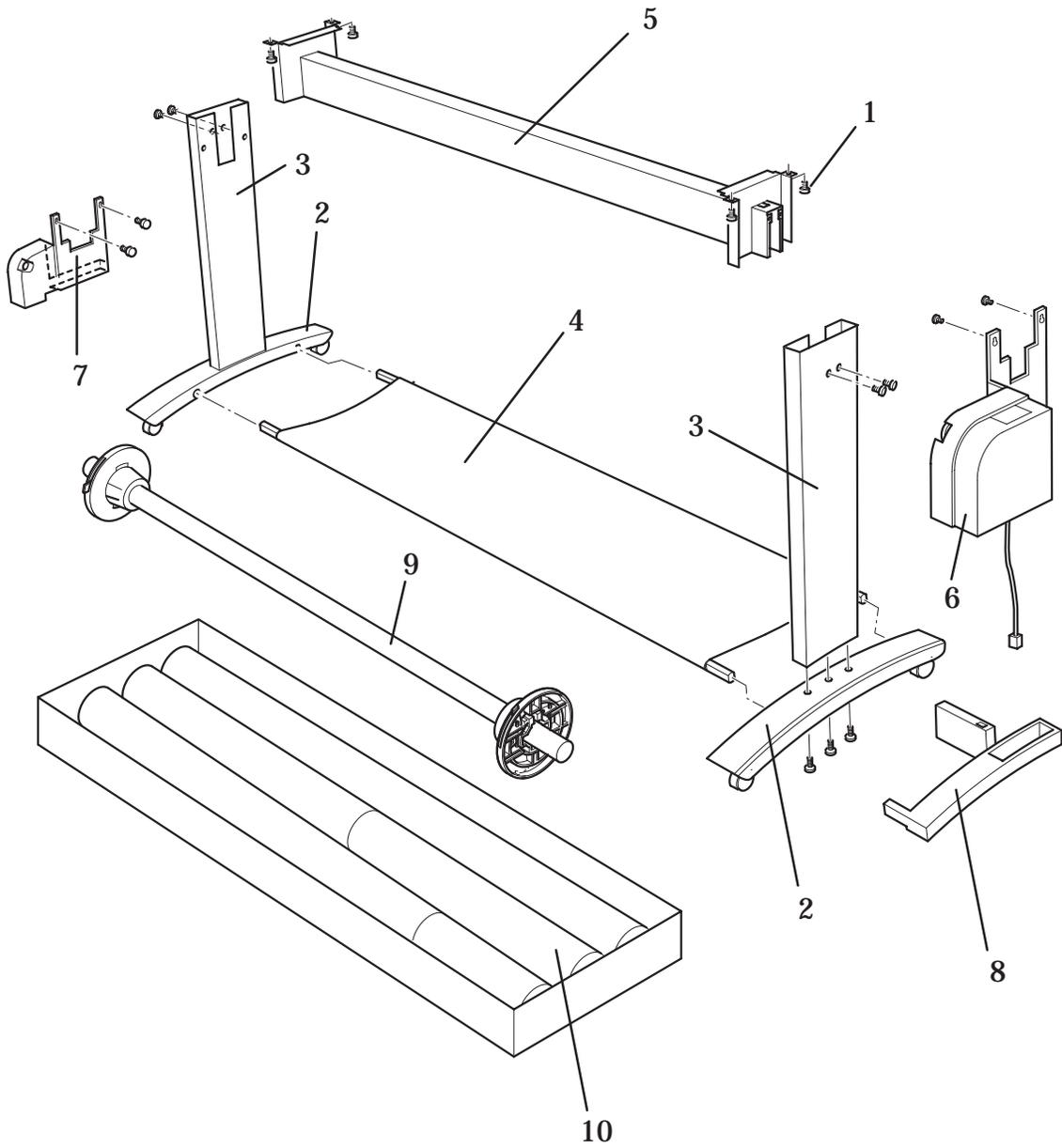
Printer Support (HP DesignJet 3X00CP Only)

Right Hand Cover Area

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-2337	0515-2337	5	Screw (T-15)
2	0624-0771	0624-0771	3	Screw (T-15)
3	C4704-60113	C4704-60113	1	Right Hand Trim Assembly
4	C4704-60091	C4723-60115	1	Right Hand Cover Assembly
5	C4704-60029	C4704-60029	1	Right Hand Cover Sensors
6	C4704-60087	C4723-60236	1	Window
7	C4704-40061	C4704-40061	1	Quick Reference Pocket
8	C4704-60046	C4704-60255	1	Front Panel Assembly
9	C4704-60045	C4704-60045	1	Stand-by Button
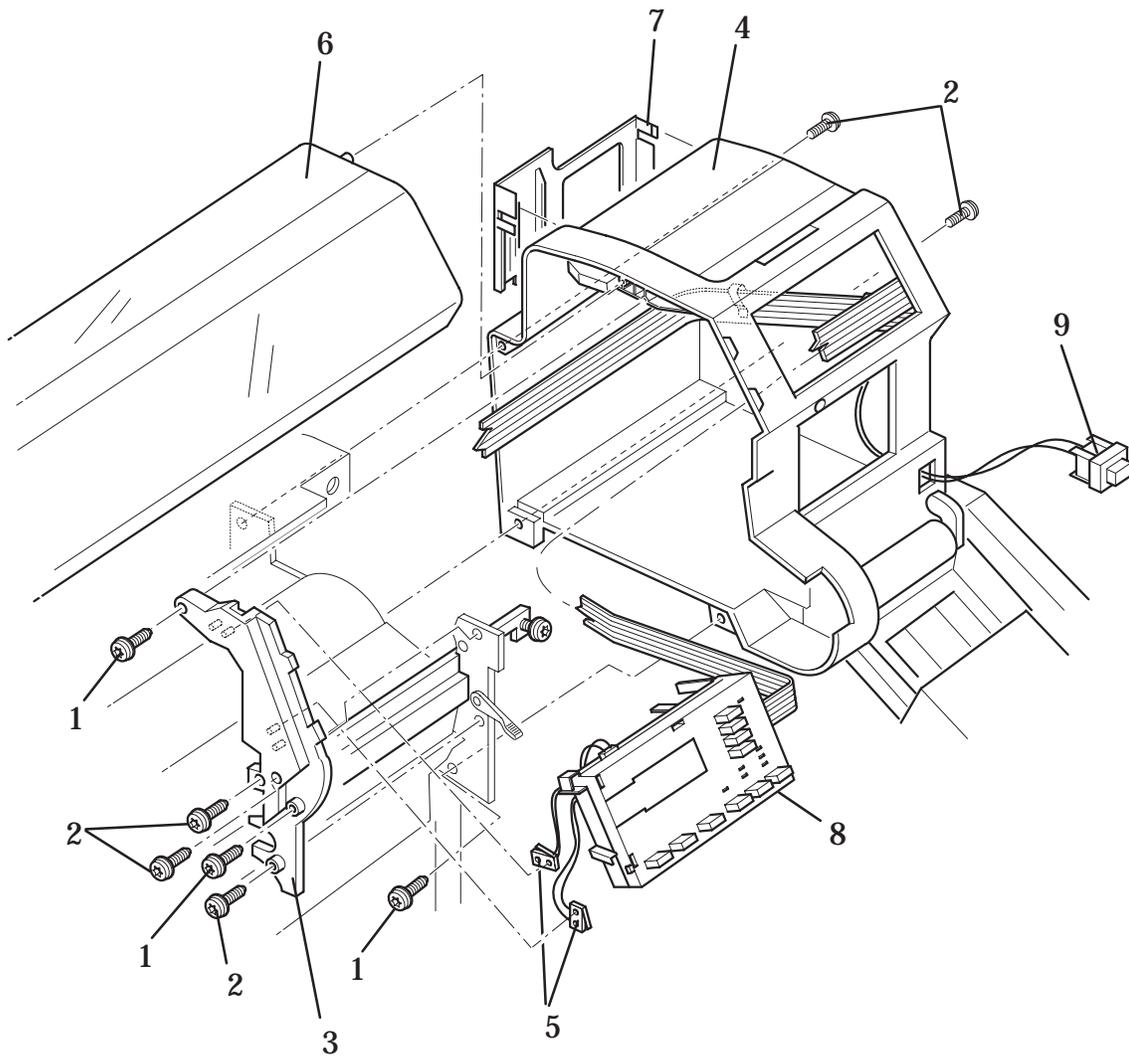
Right Hand Cover Area

Left Hand Cover Area

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-2337	0515-2337	3	Screw (T-15)
2	0624-0771	0624-0771	4	Screw (T-15)
3	0515-1743	0515-1743	2	Screw (T-15)
4	C4723-60111	C4723-60111	1	**Left Hand Trim Assembly**
5	C4704-60092	C4723-60116	1	**Left Hand Cover Assembly**
6	C4704-60058	C4704-60058	1	**Left Hand Cover Sensor**
-	C4704-00121	-	1	HP DesignJet 2500CP Name Plate
-	-	C4724-00001	1	HP DesignJet 3500CP Name Plate
-	C4703-00004	-	1	HP DesignJet 2000CP Name Plate
-	-	C4723-00074	1	HP DesignJet 3000CP Name Plate
■ -	C6084–00001	-	1	HP DesignJet 2800CP Name Plate
■ -	-	C6085–00001	1	HP DesignJet 3800CP Name Plate
-	C4704-00119	C4704-00119	1	Adobe Logo Label
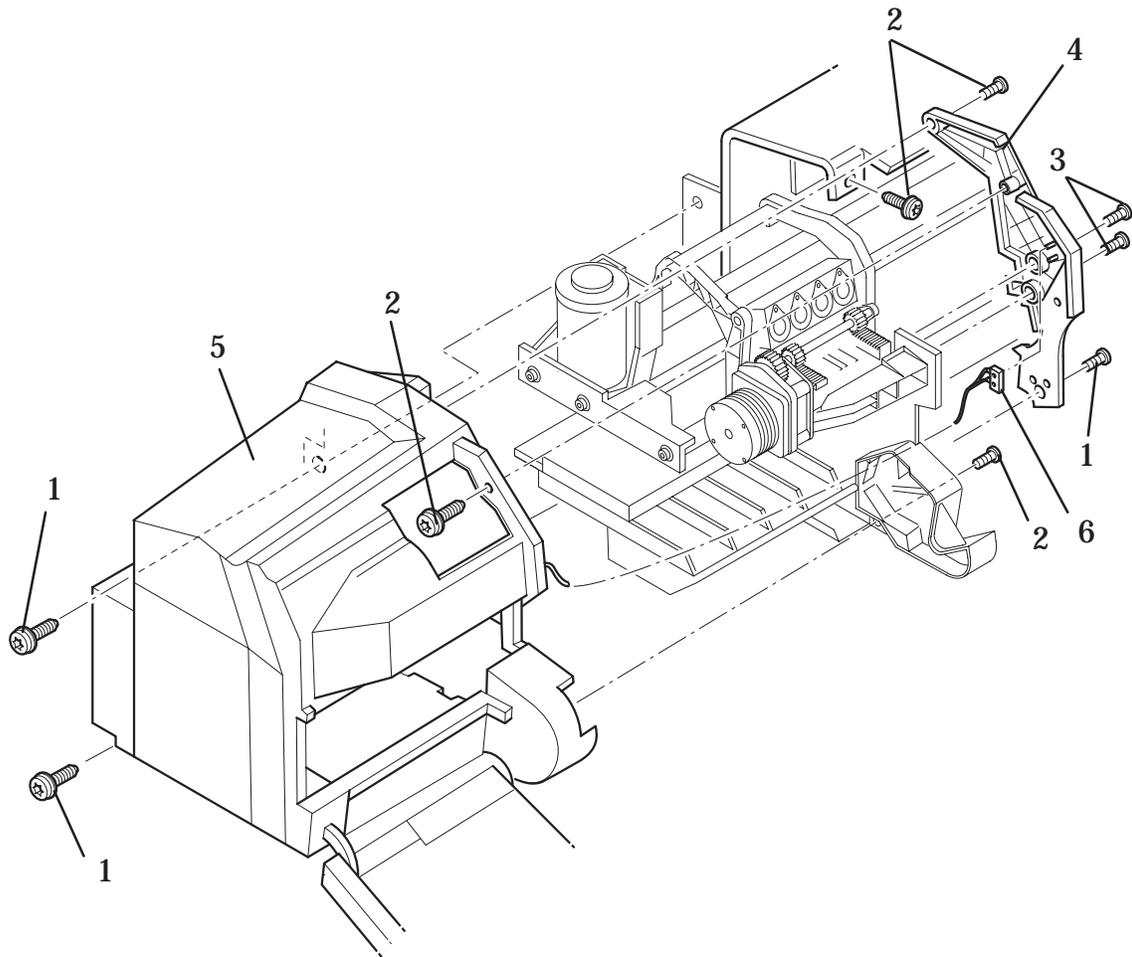
Left Hand Cover Area

Printer Rear (HP DesignJet 2X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4704-40058	1	Back Cover Right
2	C4704-40057	1	Back Cover Left
3	0515-2248	8	Screw (T-20)
4	C4704-00021	1	Top Cover
5	0515-2246	4	Screw (T-10)
6	C4704-60322	1	Firmware and PostScript Upgrade Kit (Includes Item 7) **(HP DesignJet 2500CP)**
	C4723-60322	1	Firmware Upgrade Kit **(HP DesignJet 2000CP/2800CP)**
7	DELETED		
8	-	1	Memory DRAM SIMM (see page 7-52)
9	C4723-60114 (New) C4723-69114 (Repaired)	1	Electronics Module
10	J2551-61016	1	MIO Card
-	C4704-00004	1	MIO Cover **(HP DesignJet 2000CP/2800CP)**
11	0515-2282	2	Screw (T20)
12	0515-2200	1	Screw (T15)
13	C3195-00048	2	Ferrite Clamp
14	9170-1822	1	Ferrite
15	C4704-60025	1	Refill Interconnect Cable
16	C4704-60015	1	Trailing Cable
17	C4704-40086	1	Trailing Cable Holder
18	C4704-60090	1	Electronics Support Frame
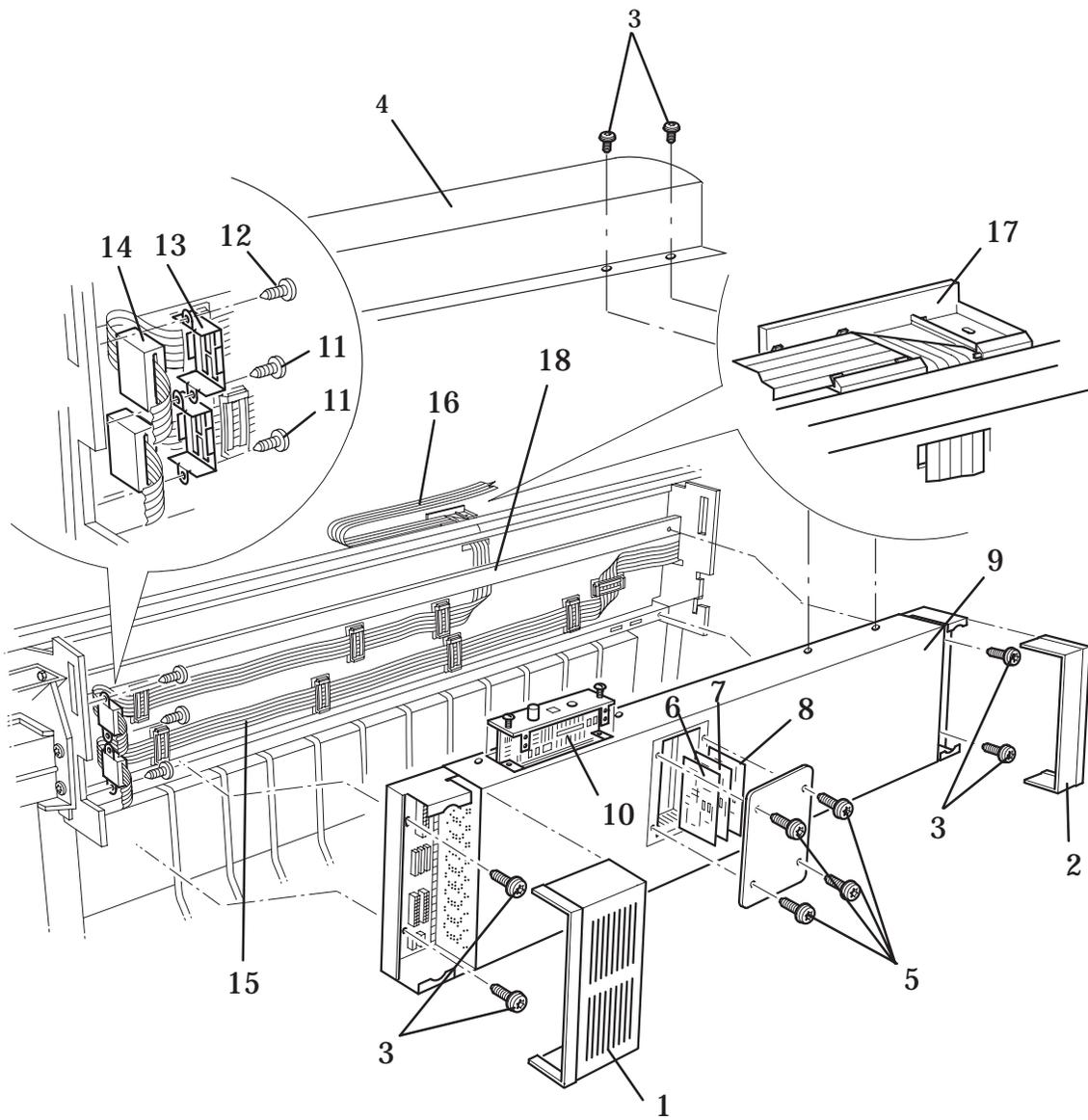
Printer Rear (HP DesignJet 2X00CP Only)

Printer Rear (HP DesignJet 3X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4704-40058	1	Back Cover Right
2	C4704-40057	1	Back Cover Left
3	0515-2248	8	Screw (T-20)
4	C4723-60011	1	Top Cover
5	0515-2246	4	Screw (T-10)
6	C4704-60322	1	Firmware and PostScript Upgrade Kit **(HP DesignJet 3500CP)**
	C4723-60322	1	Firmware Upgrade Kit **(HP DesignJet 3000CP/3800CP)**
7	DELETED		
8	-	1	Memory DRAM SIMM (see page 7-52)
9	C4723-60114 (New) C4723-69114 (Repaired)	1	Electronics Module
10	J2551-61016	1	MIO Card
-	C4704-00004	1	MIO Cover **(HP DesignJet 3000CP/3800CP)**
11	0515-2282	2	Screw (T20)
12	0515-2200	1	Screw (T15)
13	C3195-00048	2	Ferrite Clamp
14	9170-1822	1	Ferrite
15	C4723-60025	1	Refill Interconnect Cable
16	C4723-60237	1	Trailing Cable
17	C4704-40086	1	Trailing Cable Holder
18	C4723-60090	1	Electronics Support Frame **(includes items 19 and 20)**
19	-	1	Lower Cover Support
20	-	1	Upper Cover Support
21	C4723-20008	1	Rear Center Cover
22	C4723-00010	1	Additional Rear Cover
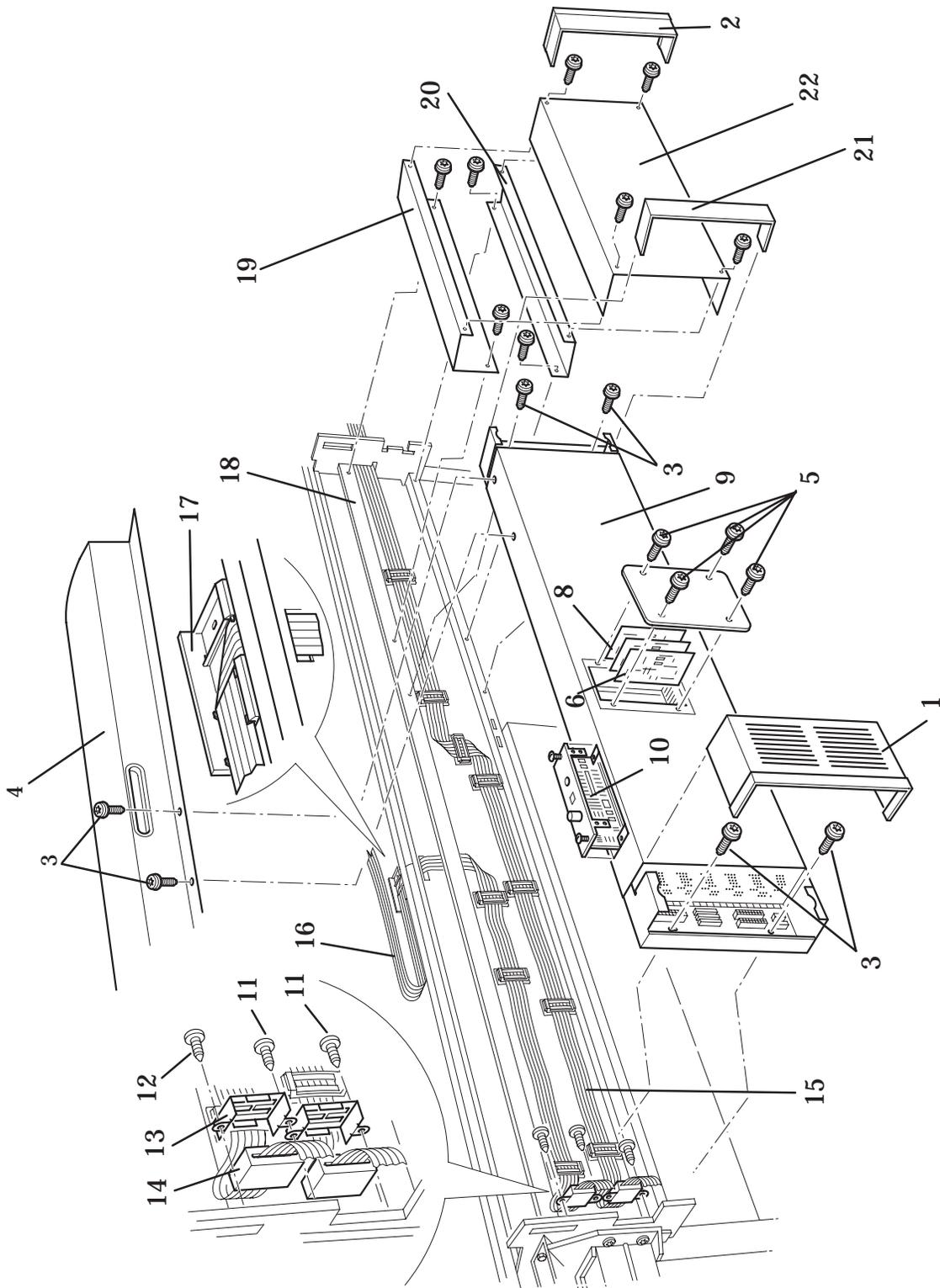
Printer Rear (HP DesignJets 3X00CP Only)

Electronics Module (Internal)

Reference on Drawing	HP Part Number	Quantity	Description
1	0515-2282	8	Screw (T-20)
2	C4704-60022	1	Hard Disk Data Cable
3	C4704-60021	1	Hard Disk Power Cable
4	C4724-60021	1	Hard Disk Drive (New)
	C4724-69021	1	Hard Disk Drive (Repaired)
5	C4704-60056	1	Power Switch Cable
6	C4704-00033	1	SIMM Cover
7	C4723-60070	1	Electronics Module Cover **(includes item 6)**
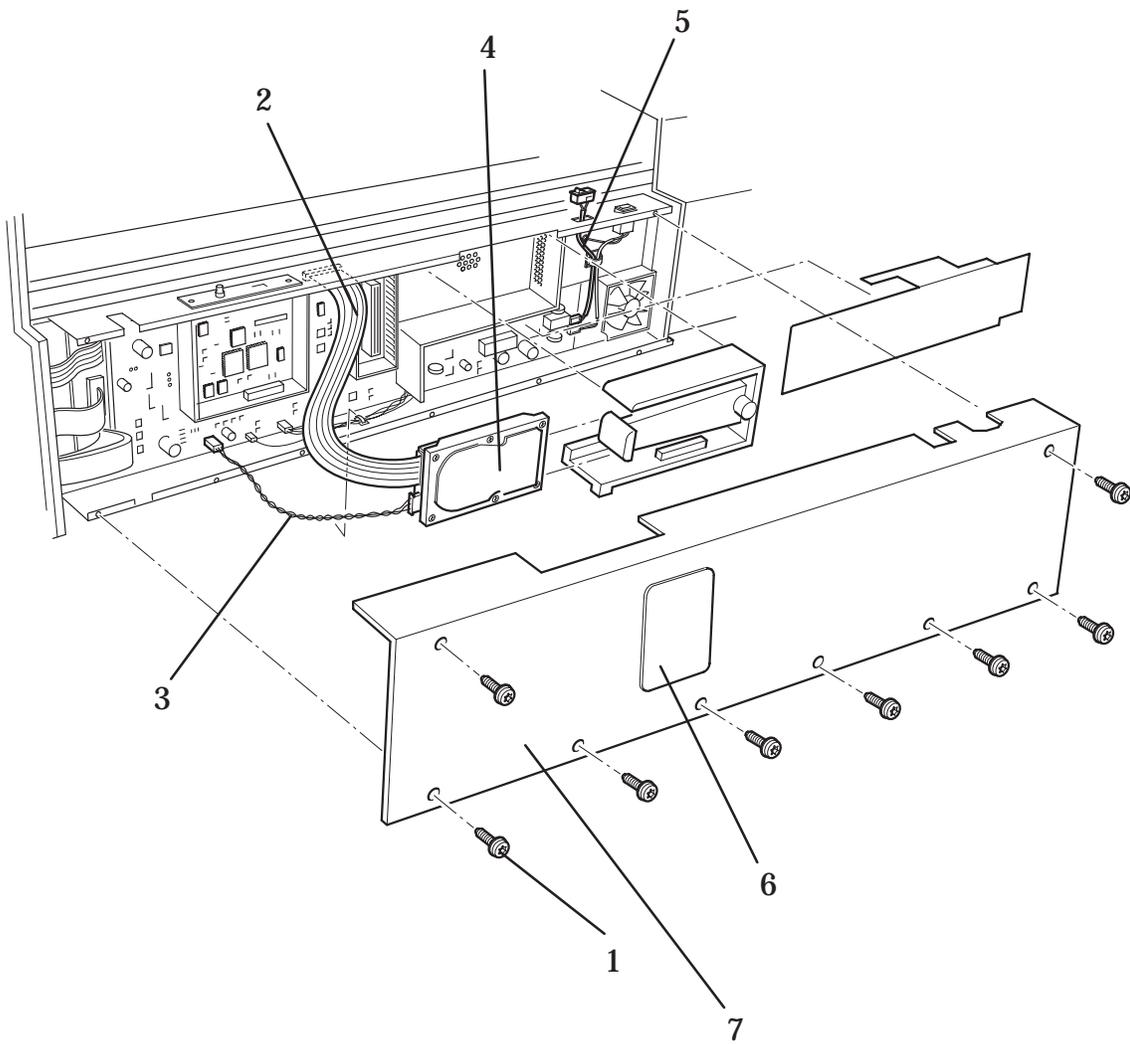
Electronics Module (Internal)

Y-axis Assembly

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0624-0704	0624-0704	1	Screw (T-15)
2	C4704-60224	C4723-60232	1	Encoder Strip Assembly
3	–	–	1	Wedge Clip
4	–	–	1	Y-axis Tensioner Spring
5	C4704-60020	C4704-60020	1	Pulley Assembly
6	C4704-60207	C4723-60235	1	Y-axis Belt
7	0515-2248	0515-2248	2	Screw (T-20)
8	C4704-60063	C4723-60063	1	Y-axis Tensioner Assembly (includes items 3 and 4)
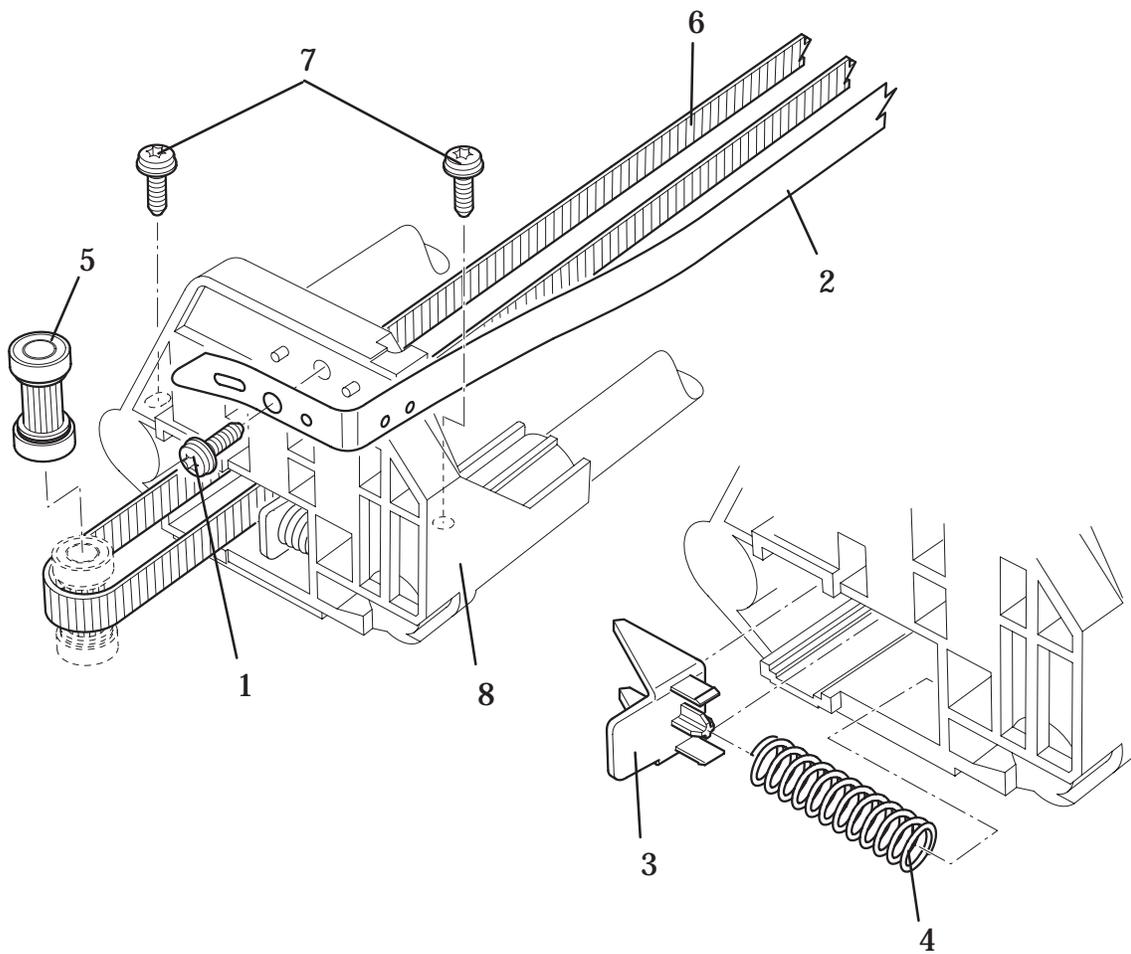
Y-axis Assembly

Y-axis Assembly (continued)

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-2248	0515-2248	2	Screw (T-20)
2	0535-0031	0535-0031	2	Nut
3	3050-0026	3050-0026	2	Washer
4	C4704-00016	C4704-00016	1	Encoder Grounding
5	C4699-00016	C4699-00016	1	Encoder Spring
6	C4704-60224	C4723-60232	1	Encoder Strip Assembly
7	C4704-60064	C4723-60083	1	Y-axis Motor Assembly
8	C4704-60207	C4723-60235	1	Y-axis Belt
9	9170-1687	9170-1687	1	Magnetic Core
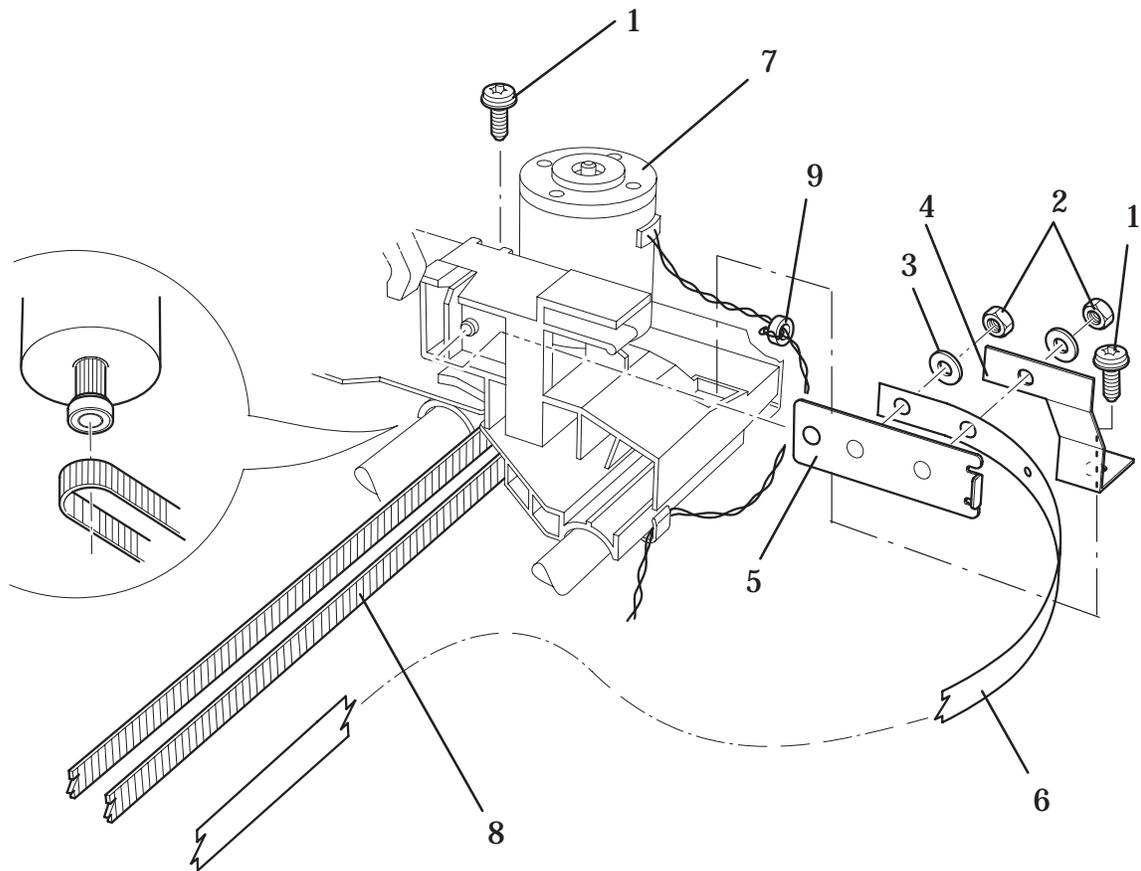
Y-axis Assembly (continued)

Y-axis Assembly (continued)

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0624-0771	0624-0771	2	Screw (T-15)
2	0515-2248	0515-2248	3	Screw (T-20)
3	2190-0760	2190-0760	3	Washer
4	1400-0577	1400-0577	2	Cable Tie
5	C4704-00005	C4704-00005	1	Y-axis Bracket (Includes Item 8)
6	C4704-00035	C4704-00035	1	Grounding Bridge
7	C4704-60064	C4723-60083	1	Y-axis Motor Assembly
8	04060-2536	0460-2536	1	Edge Wire Saddle (Included with Item 5)
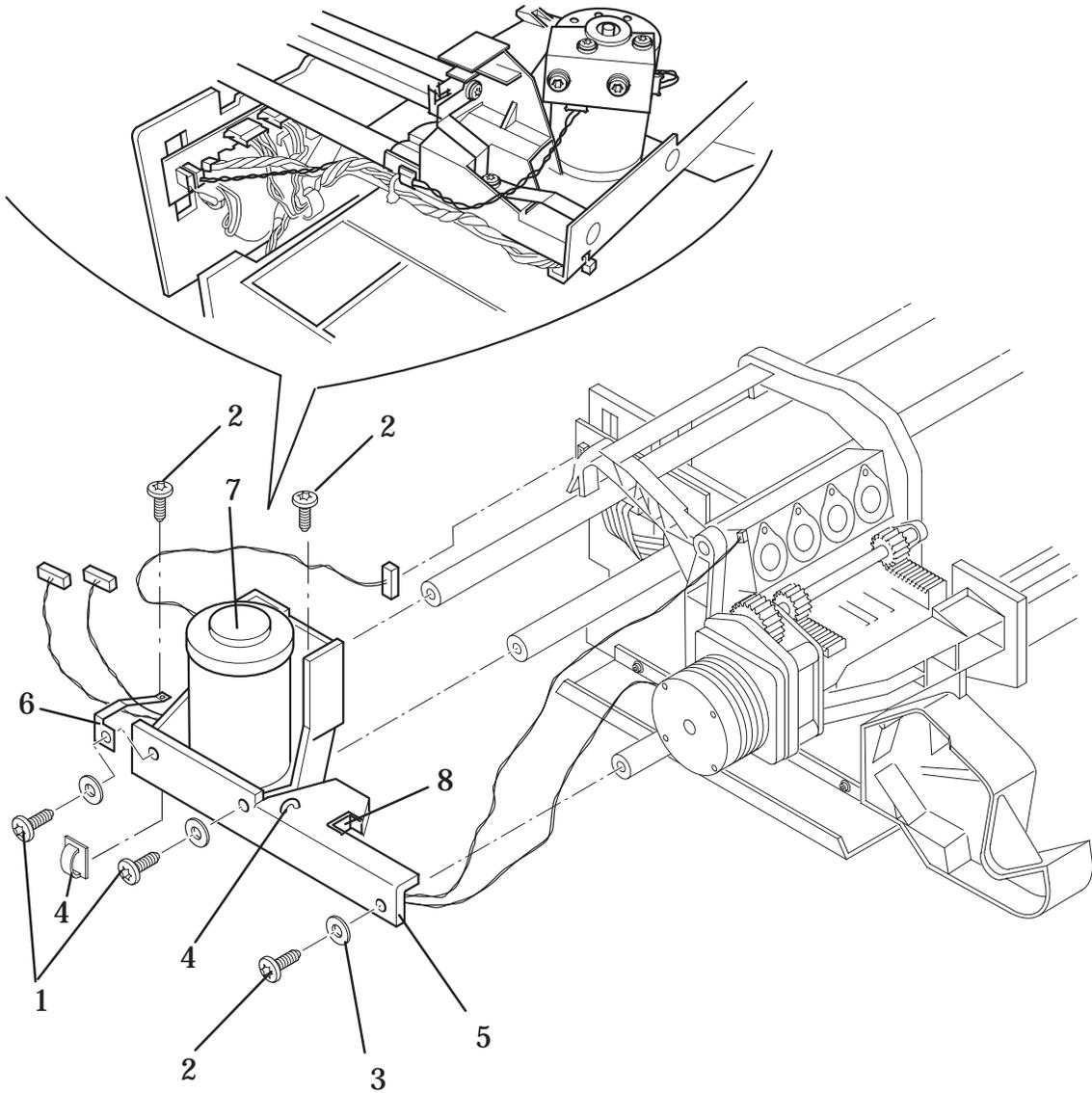
Y-Axis Assembly (continued)

Elevator Assembly
(Applicable to HP DesignJets 2X00CP and 3X00CP)

Reference on Drawing	HP Part Number	Quantity	Description
1	0515-1743	1	Screw (T-20)
2	0515-2521	3	Screw (T-20)
3	C4704-60033	1	Elevator Assembly
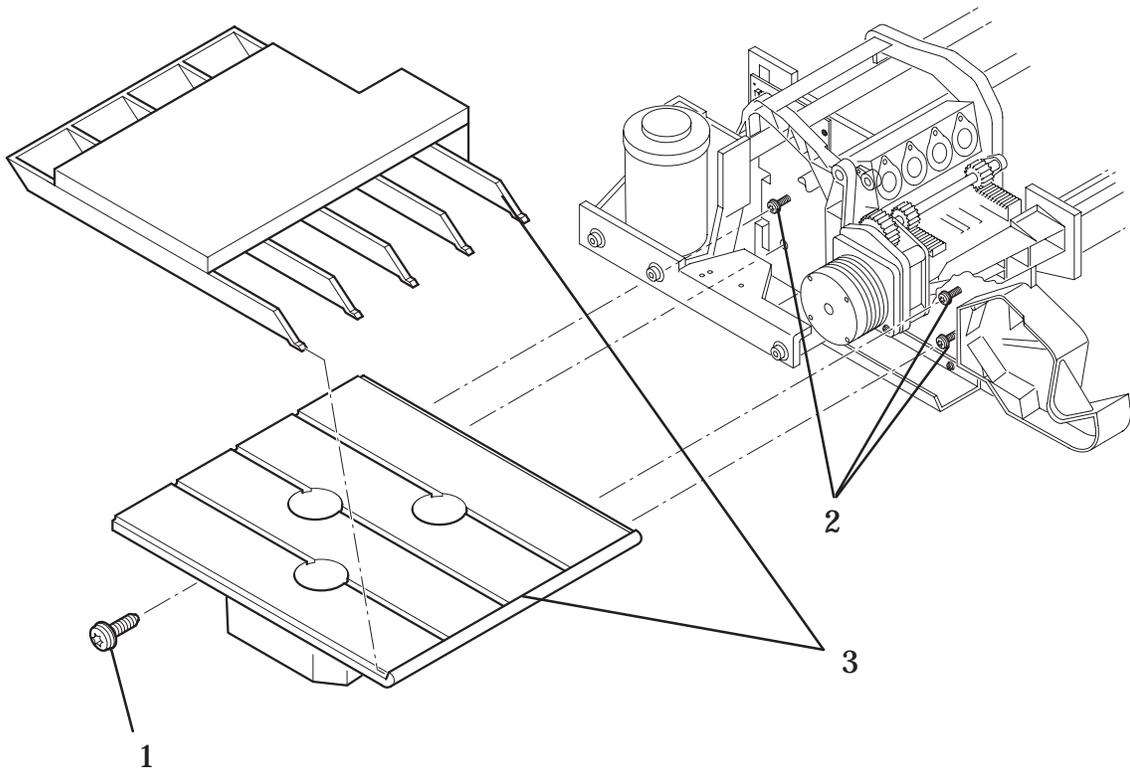
Elevator Assembly
(Applicable to HP DesignJets 2X00CP and 3X00CP)

Refill Assembly

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-2248	0515-2248	4	Screw (T-20)
2	C4723-60249	C4723-60249	1	Refill Assembly (Includes Item 3)
-	C4723-60238	C4723-60238	1	Adjustment kit
3	C4704-60058	C4704-60058	1	Left Hand Cover Sensor
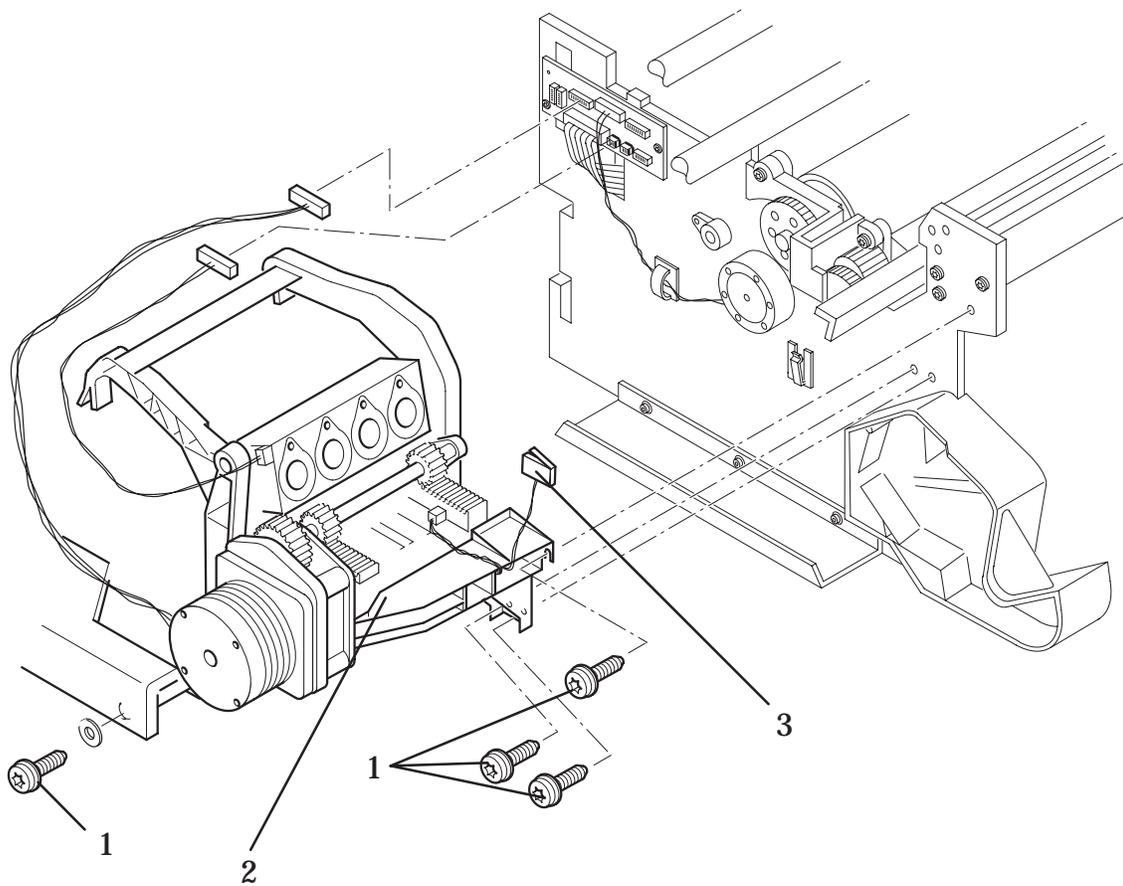
Refill Assembly

Carriage Assembly

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	C4704-60015	C4723-60237	1	Trailing Cable
2	C4704-40085	C4704-40085	1	Trailing Cable Carriage Clamp
3	-	-	1	Line Sensor (Included with Item 8)
4	C1633-80014	C1633-80014	1	Carriage Spring
5	C4704-40084	C4704-40084	1	Rear Bushing
6	C4704-40080	C4704-40080	1	Encoder Strip Roof
7	C4704-60117	C4704-60117	5	Line Sensor Lens Cover
8	C4723-60096	C4723-60096	1	Carriage Assembly **(includes items 3 thru 7)**
-	C4704-60198	C4723-60141	1	Preventive Maintenance Kit
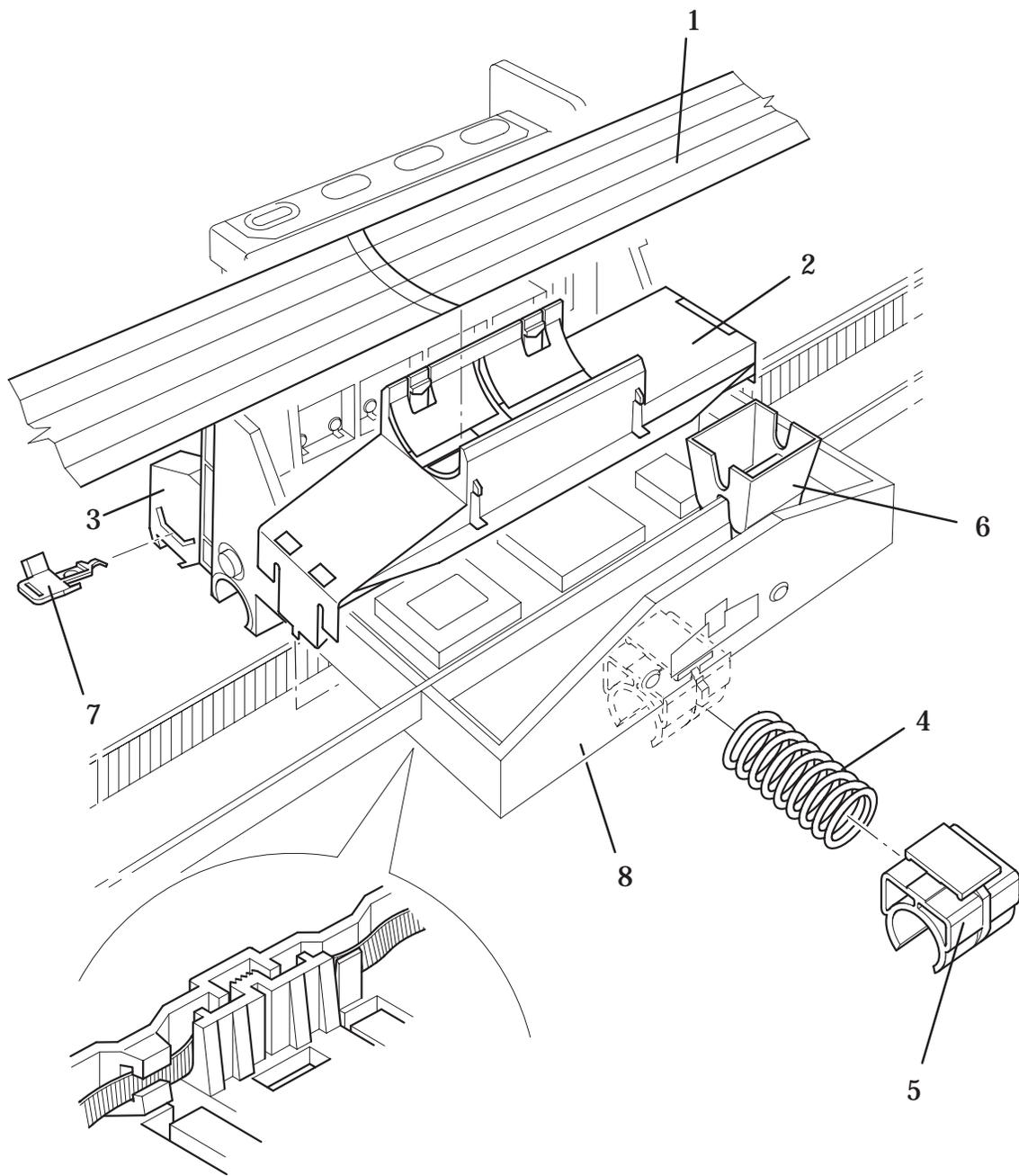
Carriage Assembly

Roll Cover Area

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	C3196-60163	C4723-60241	1	Spindle Assembly (includes item 9)
	C4704-60316	–		Spindle Assembly with Big Skew Guides
	C4704-60317			Spindle Assembly with Small Skew Guides (*See Note Below)
2	0515-2253	0515-2253	2	Screw (T-10)
3	C1633-80004	C4723-80021	2	Roll Cover Spring
4	C4704-60068	C4723-60245	1	Roll Cover
5	0535-0043	0535-0043	2	Nut
6	0515-2248	0515-2248	6	Screw (T-20)
7	C4704-60082	C4704-60082	1	Left Hand Roll Feed Assembly
8	C4704-60199	C4704-60199	1	Right Hand Roll Feed Assembly
9	C2858-40043	C4723–60147	1	Spindle Spacer

Note: Only included in 36" Take-up Reel Accessory.
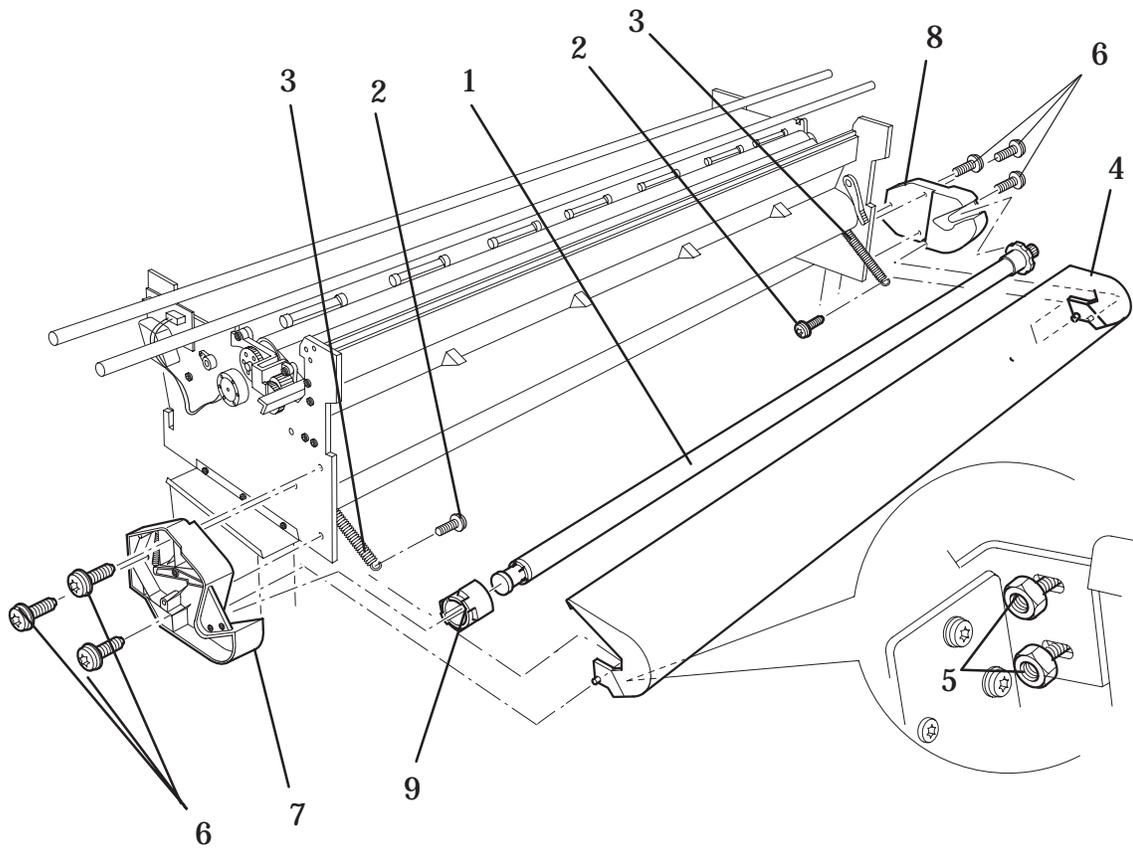
Roll Cover Area

Service Station Assembly Area
(Applicable to HP DesignJets 2X00CP and 3X00CP)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4704-60024	1	Service Station Interconnect Cable
2	0515-2521	3	Screw (T-20)
3	0515-2248	1	Screw (T-20)
4	C4723-60267	1	Service Station Assembly (Includes Items 5, 6 and 7)
5	C4704-60259	1	Primer Assembly
6	C4704-80009	1	Service Station Spring
7	C4704-40007	1	Service Station Flag
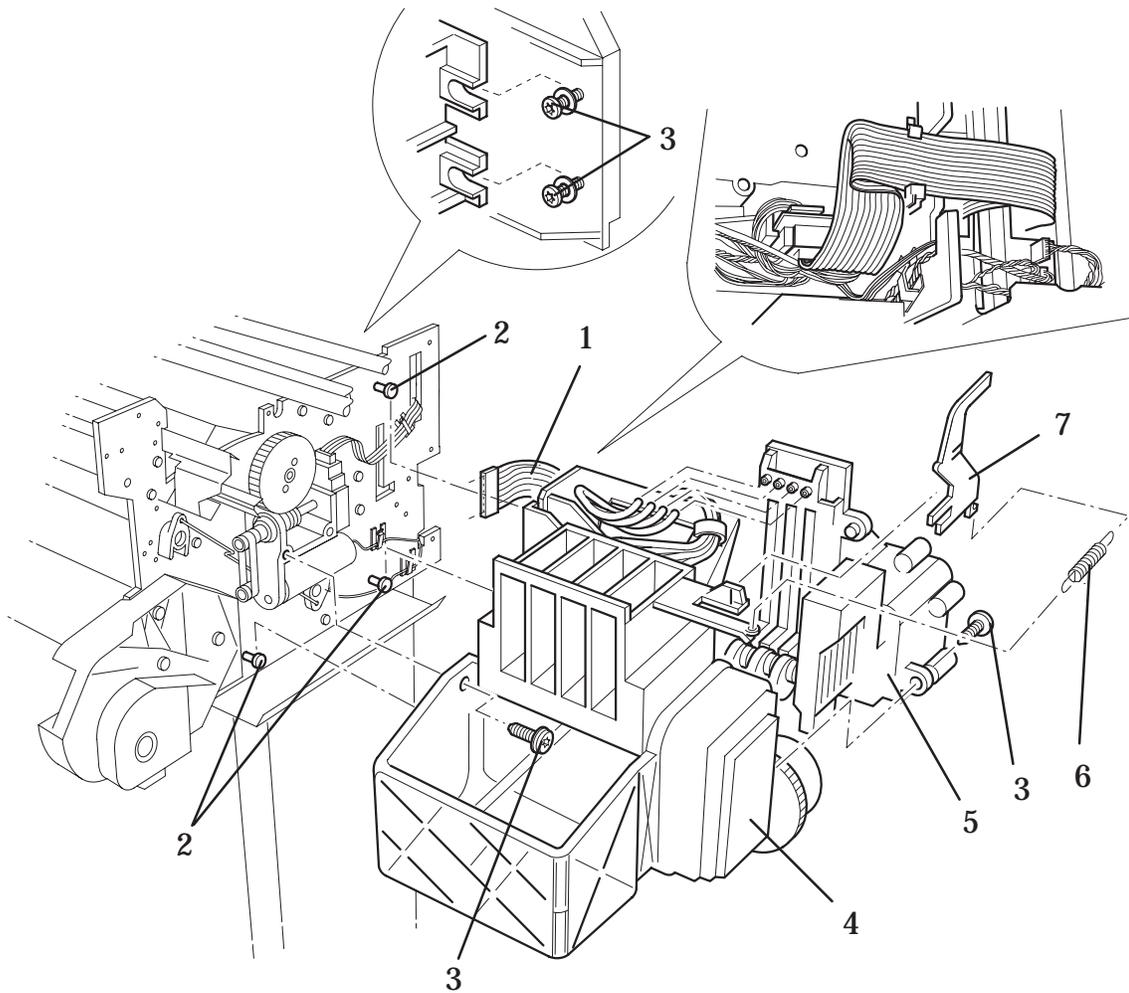
**Service Station Assembly Area
(Applicable to HP DesignJets 2X00CP and 3X00CP)**

X-axis Motor Assembly
(Applicable to HP DesignJets 2X00CP and 3X00CP)

Reference on Drawing	HP Part Number	Quantity	Description
1	0515-0375	2	Screws (T-10)
2	0515-2248	3	Screws (T-20)
3	C4723-60231	1	X-axis Motor Assembly
-	6040-0664	A/R	Silicon Grease
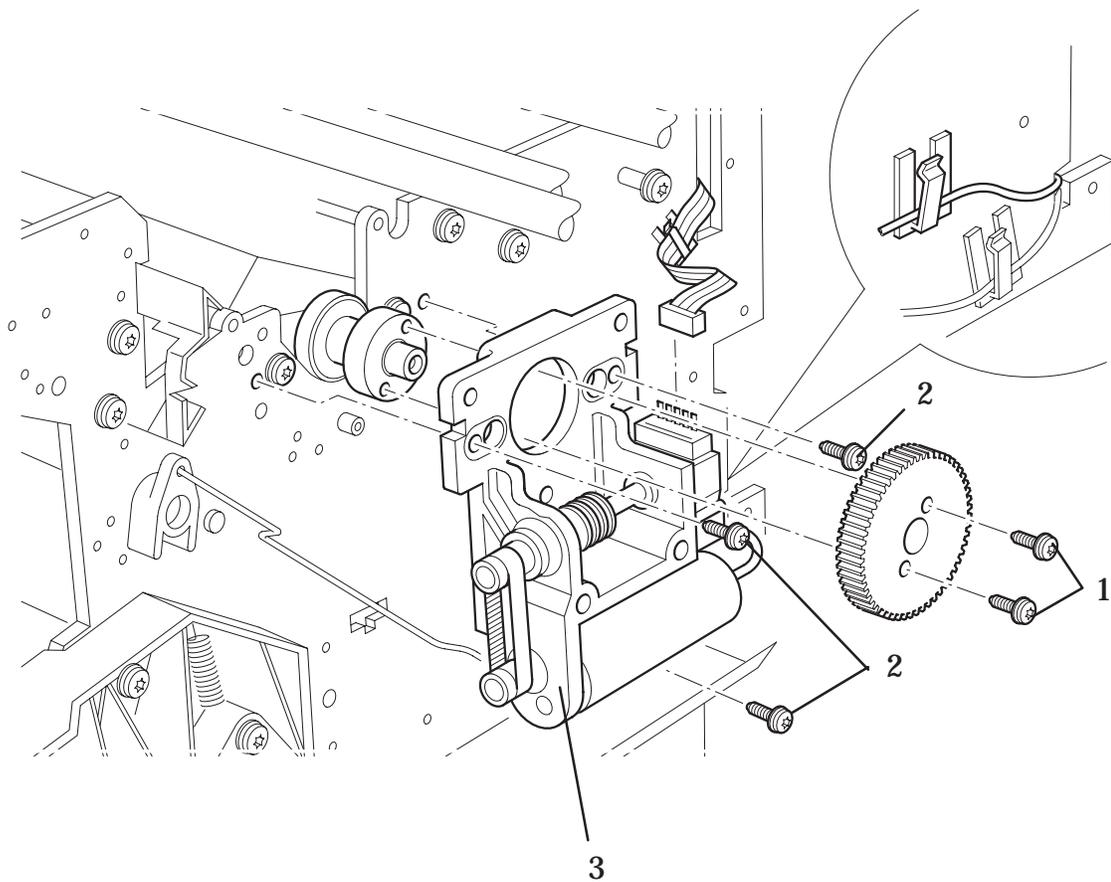
**X-axis Assembly
(Applicable to HP DesignJets 2X00CP and 3X00CP)**

Drive Roller Area (HP DesignJet 2X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	0515-2248	2	Screws (T-20)
2	C4704-40026	1	Roller Support Bracket
3	C2847-20017	1	Shoulder Screw
4	C1633-40019	1	Cluster Gear
5	-	1	Retaining Clip
6	C4705-60089	1	Clutch (Includes Items 5 and 7)
7	-	2	Washers
8	0515-2246	2	Screws (T-10)
9	C4704-60213	1	Overdrive Assembly (See Note A) (Includes Item 6)
	C4704-60281	1	Overdrive B Model Assembly (See Note B) (Includes Item 6)
10	1410-0708	1	Sleeve Bearing
11	C3196-60171	1	Drive Roller
12	C4723-60247	7	Pincharms
13	C1633-80005	7	Pincharm Spring
14	C1633-40082	7	Pincharm Bushing
15	C1633-40089	2	Mount Block

Note A: Applicable to Serial Number Format ESAXXXXXXX

Note B: Applicable to Serial Number Format ESBXXXXXXX
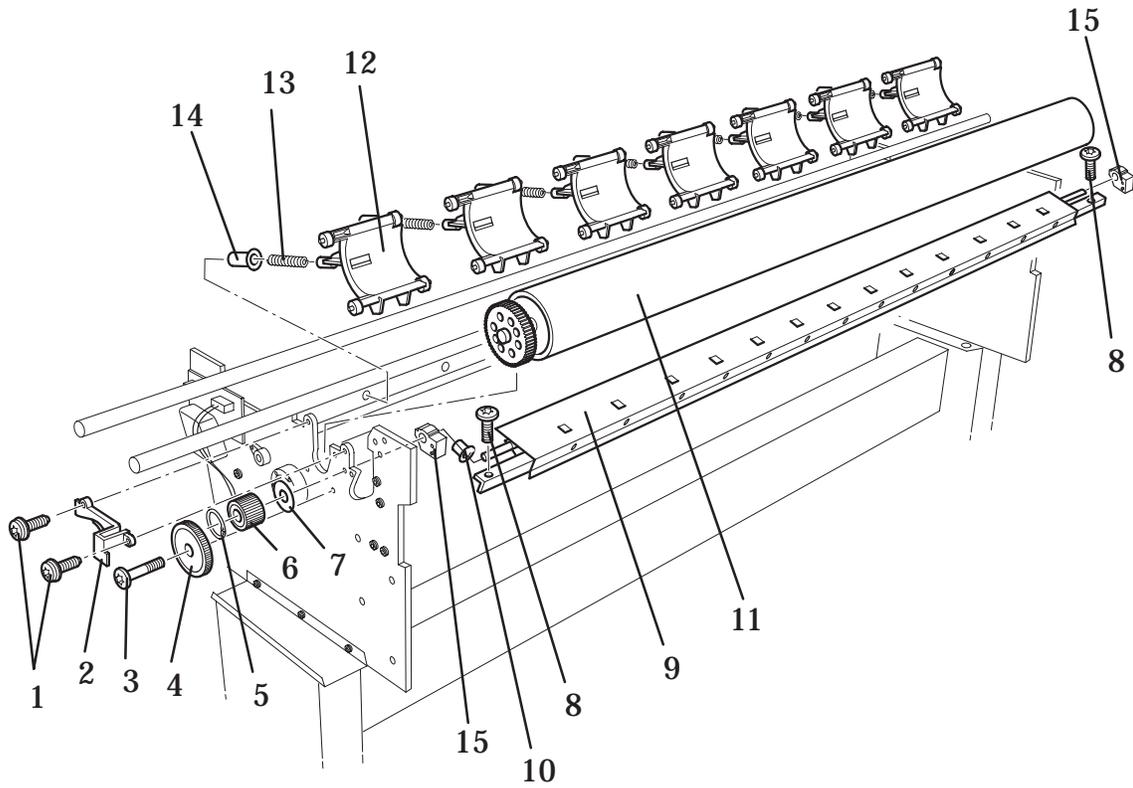
**Drive Roller Area
(HP DesignJet 2X00CP Only)**

Drive Roller Area
(HP DesignJet 3X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	0515-2248	2	Screws (T-20)
2	C4704-40026	1	Roller Support Bracket
3	C2847-20017	1	Shoulder Screw
4	C1633-40019	1	Cluster Gear
5	-	1	Retaining Clip
6	C4705-60089	1	Clutch (Includes Items 5 and 7)
7	-	2	Washers
8	0515-2248	2	Screw
9	0515-2765	4	Screw
10	C4723-60234	1	Overdrive Assembly (Includes Items 6 and 15)
11	C4723-60242	1	Drive Roller
12	C4723-60247	11	Pincharm
13	C1633-80005	11	Pincharm Spring
14	C1633-40082	11	Pincharm Bushing
15	-	2	Overdrive Shim (Included with Item 10)
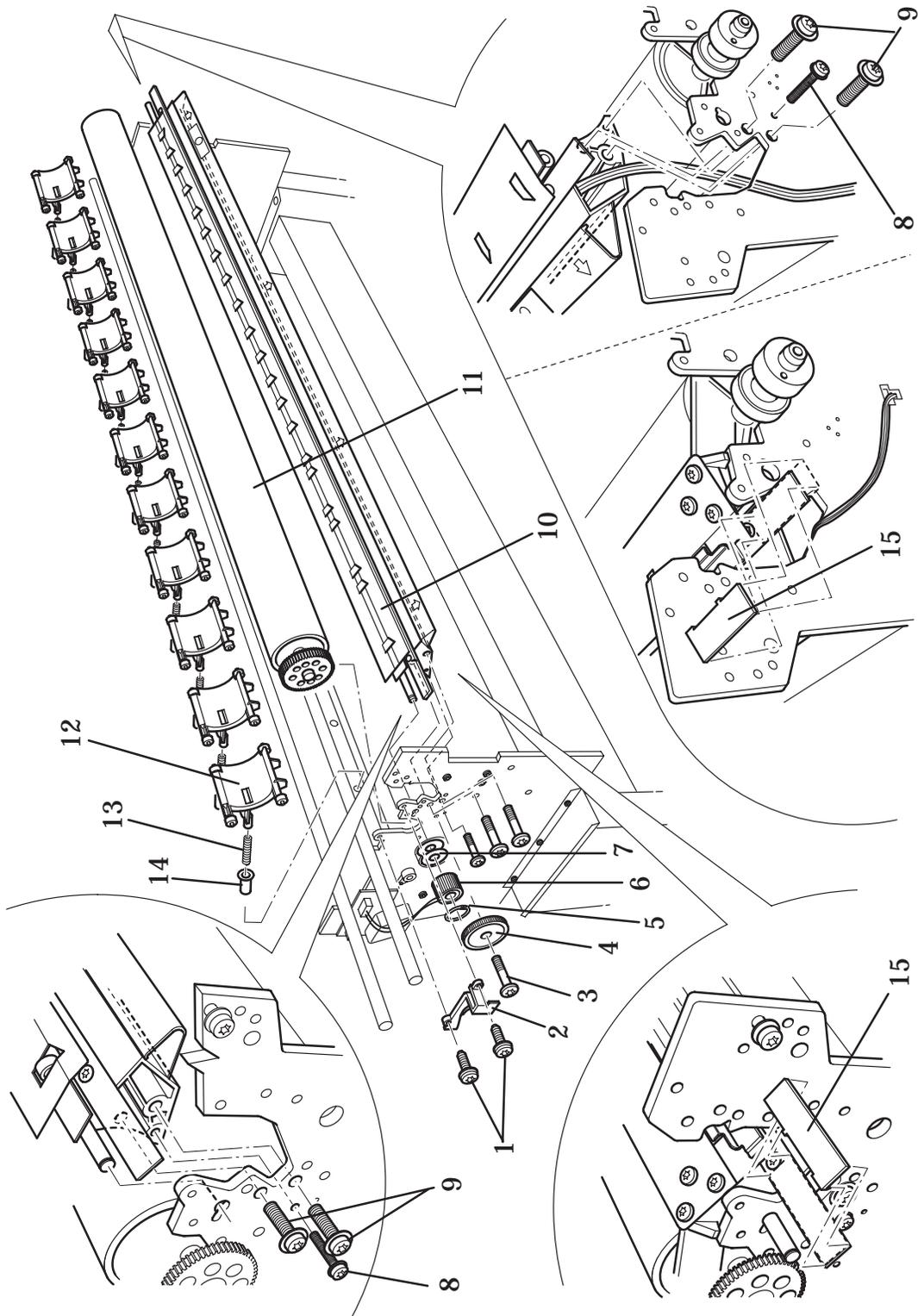
**Drive Roller Area
(HP DesignJet 3X00CP Only)**

Entry Platen Area

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	C4704-60226	C4723-60233	1	Bail Assembly
2	C4704-60143	C4704-60143	2	Big Star Wheel Assembly
3	C4699-60045	C4699-60045	11/19	Star Wheel Assembly
4	0515-2337	0515-2337	7	Screws (T-15)
5	C4704-60067	-	1	Cutter Enclosure
6	C4704-60079	C4723-60246	1	Entry Platen
7	C4704-60195	C4704-60195	1	Media Sensor
8	0515-2248	0515-2248	4	Screws (T-20)
9	C4704-60242	C4723-60250	1	Starguard Assembly
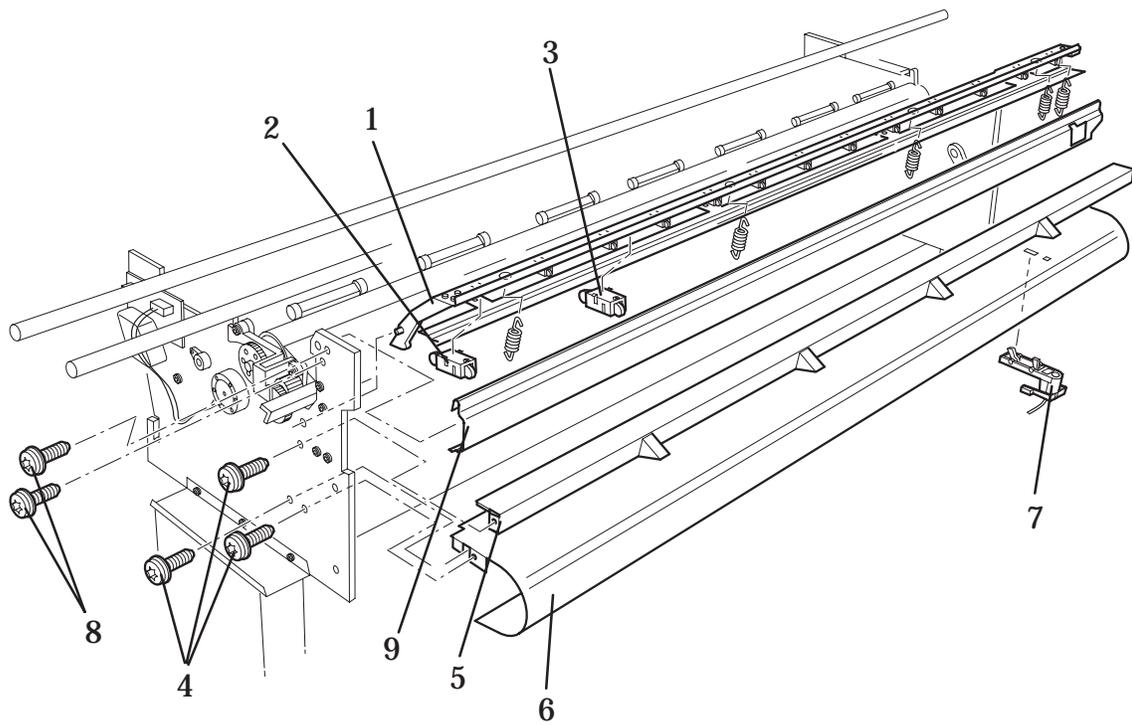
Entry Platen Area

Pincharm Assembly

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-2200	0515-2200	2	Screw (T-10)
2	C4704-60052	C4704-60052	1	Pincharm Sensor
3	0515-2815	0515-2815	1	Screw (T-9)
4	C3190-60149	C3190-40053	2	Cam Journal
5	0535-0152	0535-0152	2	Nut
6	C4704-00025	C4723-00025	1	Front Wire Link
7	0515-2414	0515-2414	1	Screw (T-20)
8	C3180-40020	C3180-40020	1	Pincharm Cam
9	C4704-40059	C4704-40059	1	Pincharm Lever
10	C2848-60032	C4723-60240	1	Pincharm Shaft Assembly (includes items 3 thru 5)
11	C1633-80007	C1633-80007	1	Spring
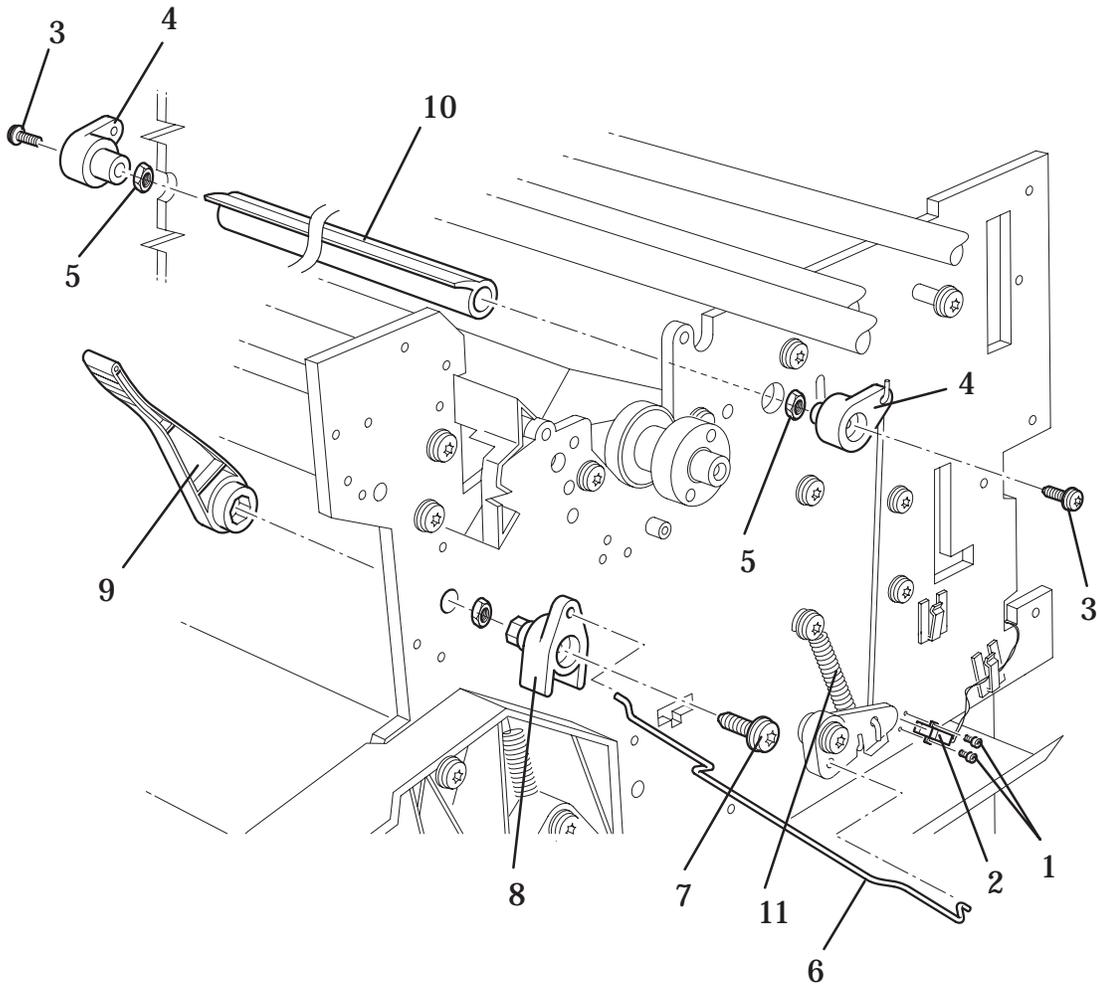
Pincharm Assembly

Refill Interconnect PCA and Cutter Assembly

Reference on Drawing	HP Part Number		Quantity	Description
	DesignJet 2X00CP	DesignJet 3X00CP		
1	0515-1743	0515-1743	2	Screw (T-20)
2	C4704-60009	C4704-60009	1	Refill Interconnect PCA
3	0515-2200	0515-2200	2	Screw (T-10)
4	C4704-60040	C4723-60040	1	Bail Motor
5	C4704-60019	C4723-60244	1	Cutter Assembly (See Note below)
6	C3195-40076	C3195-40076	1	Cutter Bushing

Note: Part Number C4704-60019 is Applicable to HP DesignJets 2X00CP with Serial Number Format ESAXXXXXX and ESBXXXXXX.

Note: Part Number C4723-60244 is Applicable to HP DesignJets 3X00CP and to HP DesignJets 2X00CP with Serial Number Format ESCXXXXXX.

6

2

1

5 (HP DesignJets 2X00CP
withSerial Number Format
ESA and ESB ONLY)

3

4

5 (HP DesignJets 3X00CP and
HP DesignJets 2X00CP with
Serial Number Format ESC)
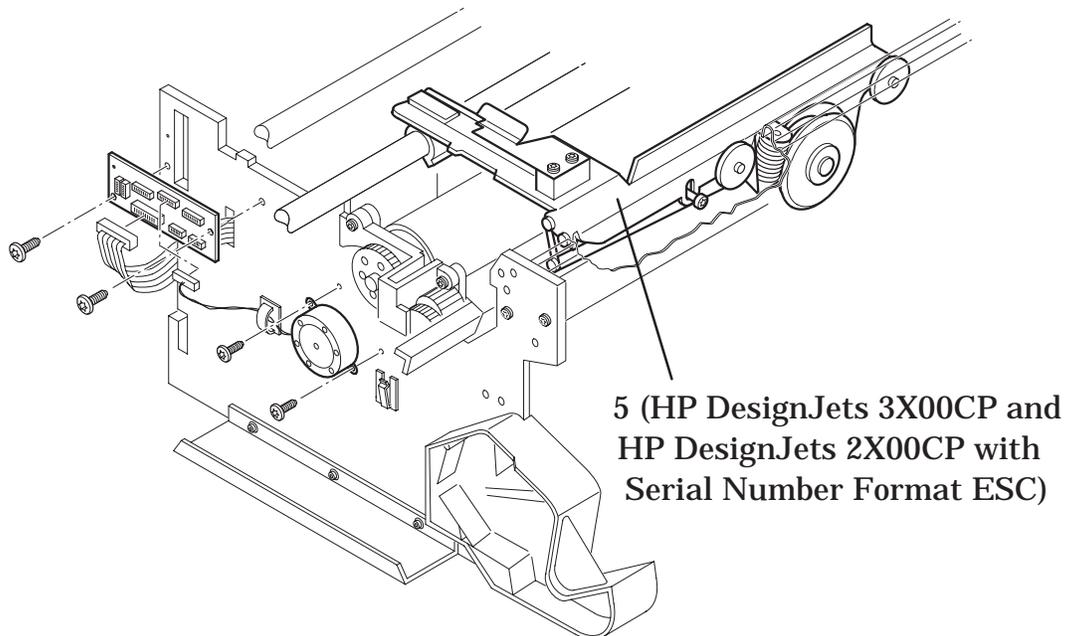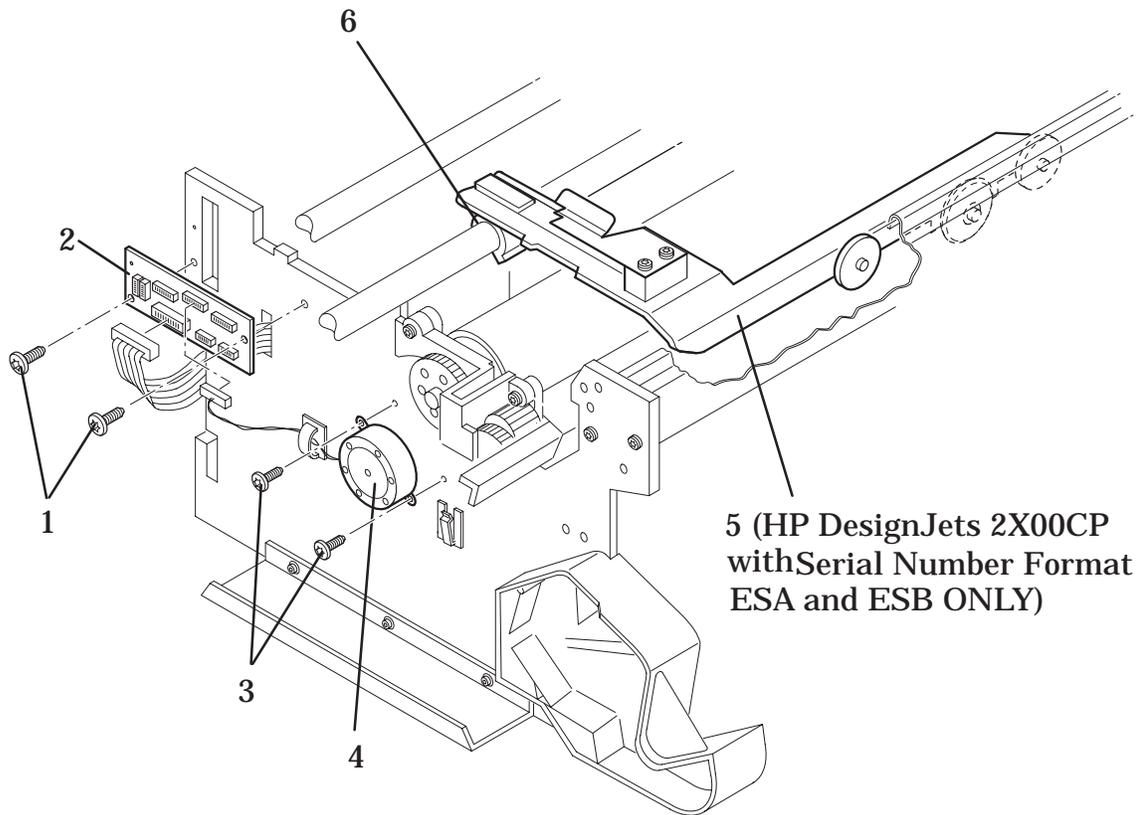
Refill Interconnect PCA and Cutter Assembly

Media Button (HP DesignJet 3X00CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C4723-00003	1	Media Guide
2	0515-2282	2	Screw
3	C4723-60017	1	Media Switch Assembly
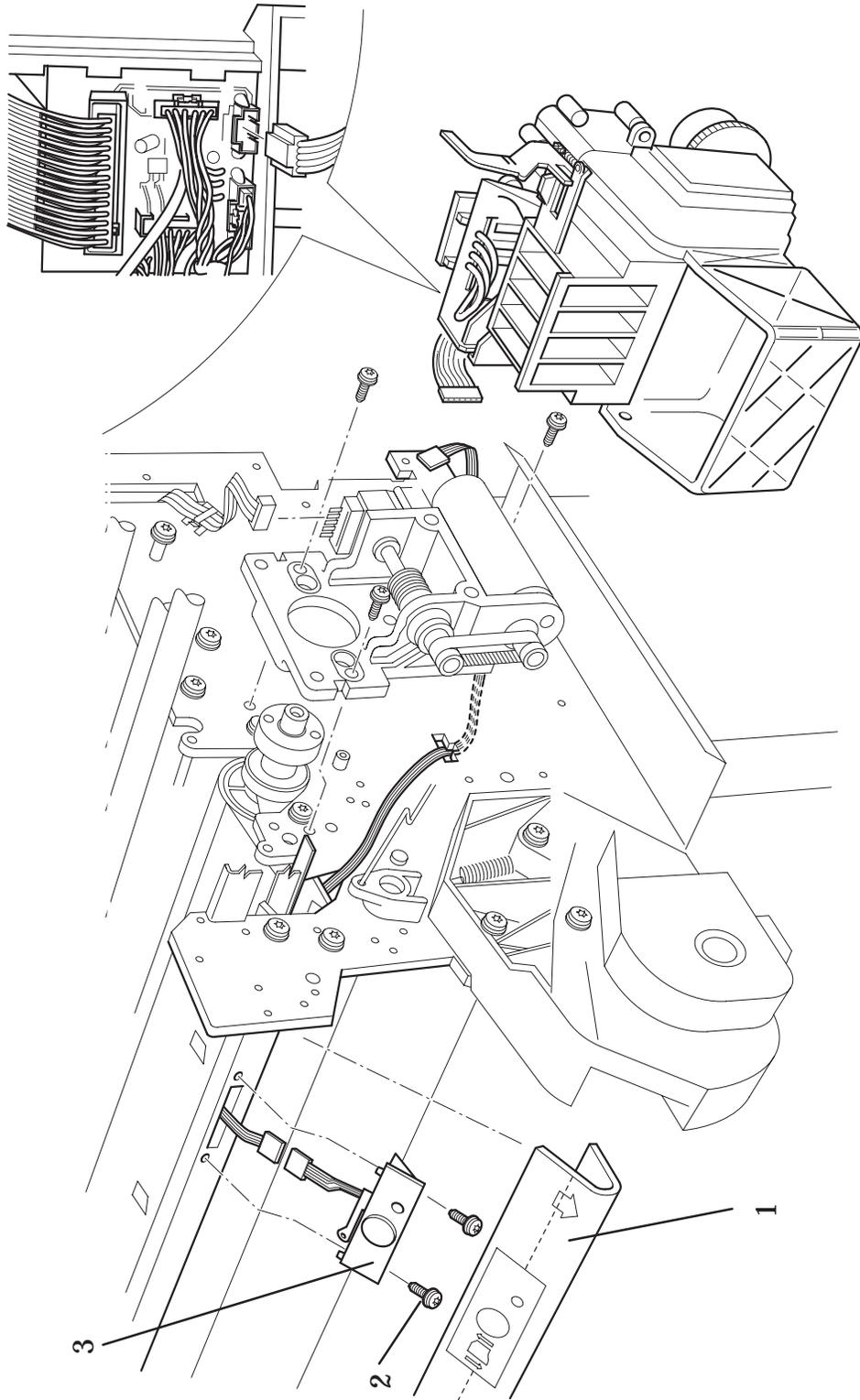
Media Button (HP DesignJet 3X00CP Only)

Fiery RIP Box (HP DesignJet 2800CP and 3800CP Only)

Reference on Drawing	HP Part Number	Quantity	Description
1	C6084-69001	1	Fiery X2-CP Roman
	C6084–69002		Fiery X2-CP Kanji
2	C2951A	1	Parallel Cable (A)
3	C2946A	1	Printer Interface Cable (B)

Fiery RIP Box (HP DesignJet 2800CP and 3800CP Only)

SCSI Interface Port

Not Used

Parallel Port (A)

Printer Interface Port (B)

AUI Port

RJ45 Port

Not Used

Power Connector

Power Switch
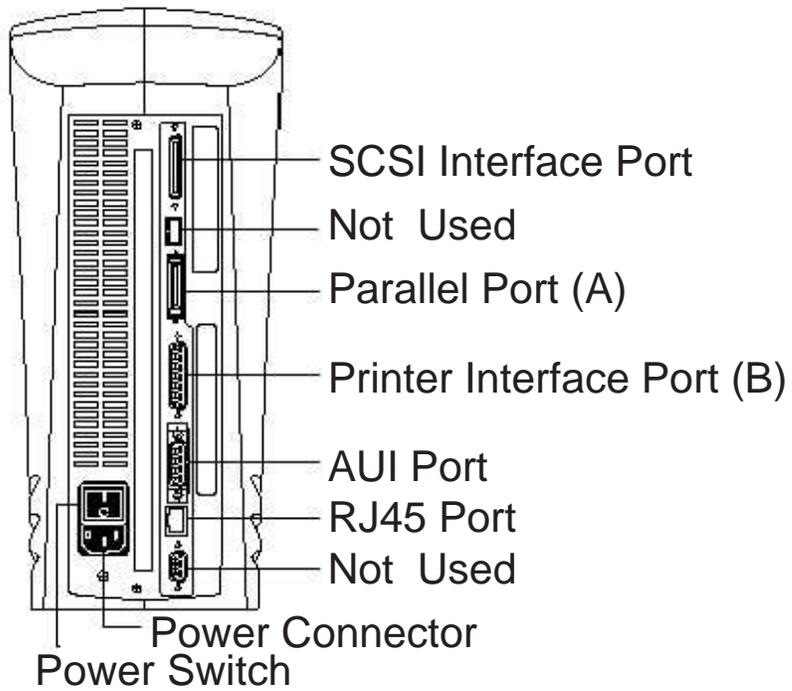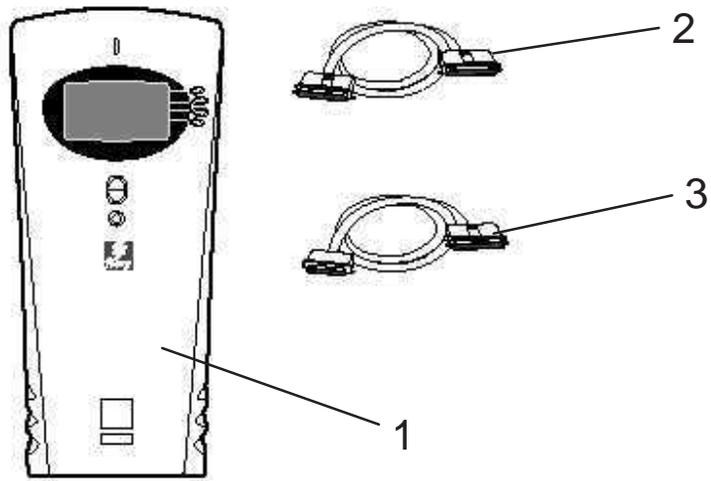
Compatible Documentation

HP Part Number	Description
C4704-90011	English User Guide (HP DesignJet 2500CP)
C4704-90015	French User Guide (HP DesignJet 2500CP)
C4704-90017	Italian User Guide (HP DesignJet 2500CP)
C4704-90014	German User Guide (HP DesignJet 2500CP)
C4704-90016	Spanish User Guide (HP DesignJet 2500CP)
C4704-90019	Portuguese User Guide (HP DesignJet 2500CP)
C4704-90012	Korean User Guide (HP DesignJet 2500CP)
C4704-90013	Taiwanese User Guide (HP DesignJet 2500CP)
C4704-90018	Japanese User Guide (HP DesignJet 2500CP)
C4704-90020	Chinese User Guide (HP DesignJet 2500CP)
C4703-90061	English User Guide (HP DesignJet 2000CP)
C4703-90065	French User Guide (HP DesignJet 2000CP)
C4703-90067	Italian User Guide (HP DesignJet 2000CP)
C4703-90064	German User Guide (HP DesignJet 2000CP)
C4703-90066	Spanish User Guide (HP DesignJet 2000CP)

Compatible Documentation (continued)

HP Part Number	Description
C4703-90069	Portuguese User Guide (HP DesignJet 2000CP)
C4703-90062	Korean User Guide (HP DesignJet 2000CP)
C4703-90063	Taiwanese User Guide (HP DesignJet 2000CP)
C4703-90068	Japanese User Guide (HP DesignJet 2000CP)
C4703-90070	Chinese User Guide (HP DesignJet 2000CP)
C4724-90051	English User Guide (HP DesignJet 3500CP/3000CP)
C4724-90055	French User Guide (HP DesignJet 3500CP/3000CP)
C4724-90057	Italian User Guide (HP DesignJet 3500CP/3000CP)
C4724-90054	German User Guide (HP DesignJet 3500CP/3000CP)
C4724-90056	Spanish User Guide (HP DesignJet 3500CP/3000CP)
C4724-90059	Portuguese User Guide (HP DesignJet 3500CP/3000CP)
C4724-90052	Korean User Guide (HP DesignJet 3500CP/3000CP)
C4724-90053	Taiwanese User Guide (HP DesignJet 3500CP/3000CP)
C4724-90058	Japanese User Guide (HP DesignJet 3500CP/3000CP)
C4724-90060	Chinese User Guide (HP DesignJet 3500CP/3000CP)

Compatible Documentation (continued)

HP Part Number	Description
C4704-90051	English Software Application Notes (graphics packages) (HP DesignJet 2500CP/2000CP)
C4704-90055	French Software Application Notes (graphics packages) (HP DesignJet 2500CP/2000CP)
C4704-90054	German Software Application Notes (graphics packages) (HP DesignJet 2500CP/2000CP)
C4704-90057	Italian Software Application Notes (graphics packages) (HP DesignJet 2500CP/2000CP)
C4704-90056	Spanish Software Application Notes (graphics packages) (HP DesignJet 2500CP/2000CP)
C4724-90021	English Software Application Notes (graphics packages) (HP DesignJet 3500CP/3000CP)
C4724-90025	French Software Application Notes (graphics packages) (HP DesignJet 3500CP/3000CP)
C4724-90024	German Software Application Notes (graphics packages) (HP DesignJet 3500CP/3000CP)
C4724-90027	Italian Software Application Notes (graphics packages) (HP DesignJet 3500CP/3000CP)
C4724-90026	Spanish Software Application Notes (graphics packages) (HP DesignJet 3500CP/3000CP)
5959-9733	HP-GL/2 and RTL Programmer's Reference Guide (English)
5959-9734	The product Comparison Guide for HP-GL/2 and HP RTL Peripherals (English)
5961-0938	PJL Technical Reference Manual (English)

Front Panel Overlays (HP DesignJets 2X00CP Only)

HP Part Number	Description
C4704-60101	English Front Panel Overlay
C4704-60105	French Front Panel Overlay
C4704-60107	Italian Front Panel Overlay
C4704-60104	German Front Panel Overlay
C4704-60106	Spanish Front Panel Overlay
C4704-60109	Portuguese Front Panel Overlay
C4704-60102	Korean Front Panel Overlay
C4704-60103	Taiwanese Front Panel Overlay
C4704-60108	Japanese Front Panel Overlay
C4704-60110	Chinese Front Panel Overlay

Front Panel Overlays (HP DesignJets 3X00CP Only)

HP Part Number	Description
C4723-60201	English Front Panel Overlay
C4723-60205	French Front Panel Overlay
C4723-60207	Italian Front Panel Overlay
C4723-60204	German Front Panel Overlay
C4723-60206	Spanish Front Panel Overlay
C4723-60209	Portuguese Front Panel Overlay
C4723-60202	Korean Front Panel Overlay
C4723-60203	Taiwanese Front Panel Overlay
C4723-60208	Japanese Front Panel Overlay
C4723-60210	Chinese Front Panel Overlay

Interface Cables

Computer Interface	HP Part Number	Cable Length	Description
Serial (RS 422) Interface (Apple Macintosh Plus SE II Series Classic LC family Quadra family PowerBook PowerMac)	92215S (see note)	1.5m (4.9ft)	8-pin male mini-DIN
Parallel Bi-tronics/Centronics Interface	C2951A	3.0m (9.8ft)	25 pin male

Note: If you have purchased the optional HP JetDirect Printer Server (Network Interface) for the HP DesignJet 2000CP printer this cable is required.

Plug-in memory (DRAMM SIMM)

HP Part Number	Description
1818-6171	4MB DRAMSIMM
C4723-60263	8MB DRAMSIMM
1818-6430	16MB DRAMSIMM
1818-6431	32MB DRAMSIMM

Note: For the location of the plug-in memory see page 7-12/7–14

Ink Delivery Systems

Imaging Inks HP Part Number	UV Inks HP Part Number	Description
C1806A	C1892A	Black
C1807A	C1893A	Cyan
C1808A	C1894A	Magenta
C1809A	C1895A	Yellow

8

Removal and Installation

Section Contents   page

Introduction

This chapter is a step by step guide to the removal and installation of the
key components in the printer. You may find it useful to tick off the steps as
they are performed. Use the illustration at the end of each procedure to
identify the parts referred to in the text.

The procedures appear in order of removal. So the whole machine can be
stripped down by starting at the beginning of this chapter and working
through the subsequent procedures.

**Before using this chapter to remove and install a new component,
always make sure that you have performed the relevant service test
from Chapter 4. If the test passes you will not need to replace the
component.**

Safety Precautions

(Safety symbols ◗ Immediately after the table of contents.)

Review WARNING and CAUTION symbols and instructions before you service the plotters. Follow these warnings and cautions for your protection and to avoid damaging the plotter.

WARNING   **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.

Switch the plotter off, and disconnect it from the power source prior to performing any maintenance.

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

Electrostatic Discharge (ESD) Precautions

To prevent damage to the plotter circuits from high-voltage electrostatic discharge (ESD):

1. Do not wear clothing that is subject to static build-up.

2. Do not handle integrated circuits (ICs) in carpeted areas.

3. Do not remove an IC or a printed circuit assembly (PCA) from its conductive foam pad or conductive packaging until you are ready to install it.

4. Ground (earth) your body while disassembling and working on the plotter.

5. After removing a cover from the plotter, attach an earthing (ground) lead between the PCA common and earth ground. Touch all tools to earth ground to remove static charges before using them on the plotter.

6. After removing any PCA from the plotter, place it on a conductive foam pad or into its conductive packaging to prevent ESD damage to any ICs on the PCA.

Required Tools

The following tools are required to remove and install the printer.
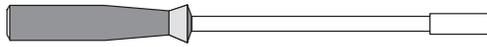
Long Torx screwdriver with the indicated attachments.

T8 T9 T10 T15 T20 T25
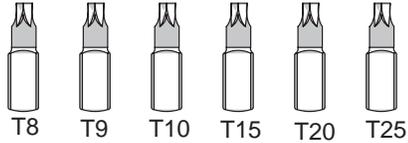
Pozidrive PZ1 screwdriver.

Small flat-blade screwdriver.
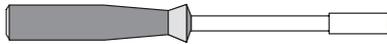
Nut driver with the indicated attachments.

3/16 inch   and   5.5 mm
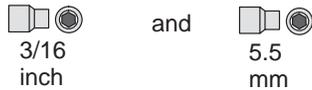
Electronics Module

Refer to figure 1A ◗ page 8-9

Removal

1. This step is **ONLY** to be performed if the electronics module is being **REPLACED** by a new electronics module**.**
   Otherwise go straight to step 2.

   1. Enter Service Mode.

   2. Enter Service Calibrations and go to C09 Maintenance. Record the value of the preventative maintenance number (ie the number of swaths) ◗ page 5-17.

WARNING
Switch off the printer and remove the power cord.

   3. Locate the four T-10 screws (item 1) that secure the SIMM cover (item 2) to the Electronics Module. Remove three screws only and loosen the fourth. Slide the cover to the side.

   Note the position of the SIMMs. From left to right:

   - The Firmware SIMM (Flash SIMM) is held in the 1st slot (Item 3).

   - The Postscript Code SIMM is held in the 2nd slot (Item 4).

   - The DRAM SIMM(s) are held in the 3rd and 4th slot (item 5).

   4. Remove the SIMMs by holding the outer non-metallic edge and gently pulling towards you. Store these parts in a safe place.

   5. With a flat end screwdriver, unscrew the 2 screws (item6) holding the MIO card (also known as the Jetdirect card)(item7). Lift the MIO card out and store in a safe place.

   6. Remove the following:

      1. Hard Disk Drive ◗ *page 8-12.*

2. Remove the left and right hand back covers (items 8 and 9) by releasing them from holding clips.

3. Carefully disconnect all the cables from the electronics module.

4. Remove the five (HP DesignJets 2500CP/2000CP) or eight (HP DesignJets 3500CP/3000CP) T-20 screws (item 10) which secure the top cover to the electronics module.

5. Remove two T-20 screws (item 11) which can be found at both ends of the electronics module at the bottom.

6. Loosen the two remaining T-20 screws (item 12).

7. Carefully remove the whole electronics module (item 13) by sliding it up and to the right.

Installation

Note: Working from the rear of the printer.

1. Ensuring there are no cables trapped between the printer and the electronics module, install the electronics module onto the two remaining loosened screws (item 12). Make sure you install first the right hand side and then the left hand side.

2. Install the bottom left and then the bottom right T-20 screws located inside the electronics module (item 11).

3. Tighten the top left and top right screws inside the electronics module.

4. Install the five (HP DesignJets 2500CP/2000CP) or eight (HP DesignJets 3500CP/3000CP) T-20 screws (item 10) into the rear of the top cover, securing the electronics module. Be careful not to damage the sheet metal MIO gasket which surrounds the centronics port.

5. This step is **ONLY** to be performed if the electronics module is being **REPLACED** by a new electronics module.
   Otherwise go straight to step 6.

   2. Install the following:

   > *1. Hard Disk Drive* ◗ *page 8-12.*

   1. Install the MIO card (item 7). Lower the card into the metal receptacle in the electronics module. Tighten the retaining screws (item 6).

   2. Install the Firmware SIMM (Flash SIMM). This SIMM plugs into the 1st slot on the left (item 3). Be careful not to bend the contacts in the plug when installing.

   3. Install the Postscript Code SIMM. This SIMM plugs into the 2nd slot on the left (item 4). Be careful not to bend the contacts in the plug when installing.

   4. Install the DRAM SIMM(s). These SIMMs plug into the 3rd and 4th slot from the left (item 5). Be careful not to bend the contacts in the plug when installing.

   5. Slide the SIMM cover (item 2) over the hole. Install the three T-10 screws (items 1) into the SIMM cover securing it to the electronics module. Tighten the 4th screw.

6. Carefully connect the following cables to the electronics module:

   > *1. Front panel cable in **J9***

   > *2. Stand-by switch cable in **J2***

> *3. X-encoder cable in **J1***
>
> *4. Service station cable in **J11***
>
> *5. Refill station cable in **J4***
>
> *6. Media sensor cable in **J6***
>
> *7. Pinch wheel sensor cable in **J8***
>
> *8. X-motor cable in **J7***
>
> *9. Trailing cable in **J3**, **J5** and **J10***

7. Install the left and right hand back covers (items 7 and 8).

8. Connect the power cord and turn the printer on in service mode.

9. If a new electronics module is being installed, perform the following service calibrations:

    1. **C01 Carriage ▶ page 5-7**

    2. **C02 Refill ▶ page 5-9**

    3. **C03 Line Sensor ▶ page 5-10**

    4. **C10 Font Type Set ▶ page 5-20**

    5. **C05 Printheads Alignment ▶ page 5-13**

    6. **C06 Printheads Check ▶ page 5-14**

    7. **C07 Color Calibration** *Only for HP DesignJet 2500CP/3500CP printer* **▶ page 5-16**

    8. **C08 Service Accuracy ▶ page 5-17**

    9. **C09 Maintenance ▶ page 5-19** (Adjust Counter)

    10. **C10 Font Type Set ▶ page 5-20** (Only for Asian Fonts)

10. Perform the D01 Electronics service test **▶** page *4-7.*
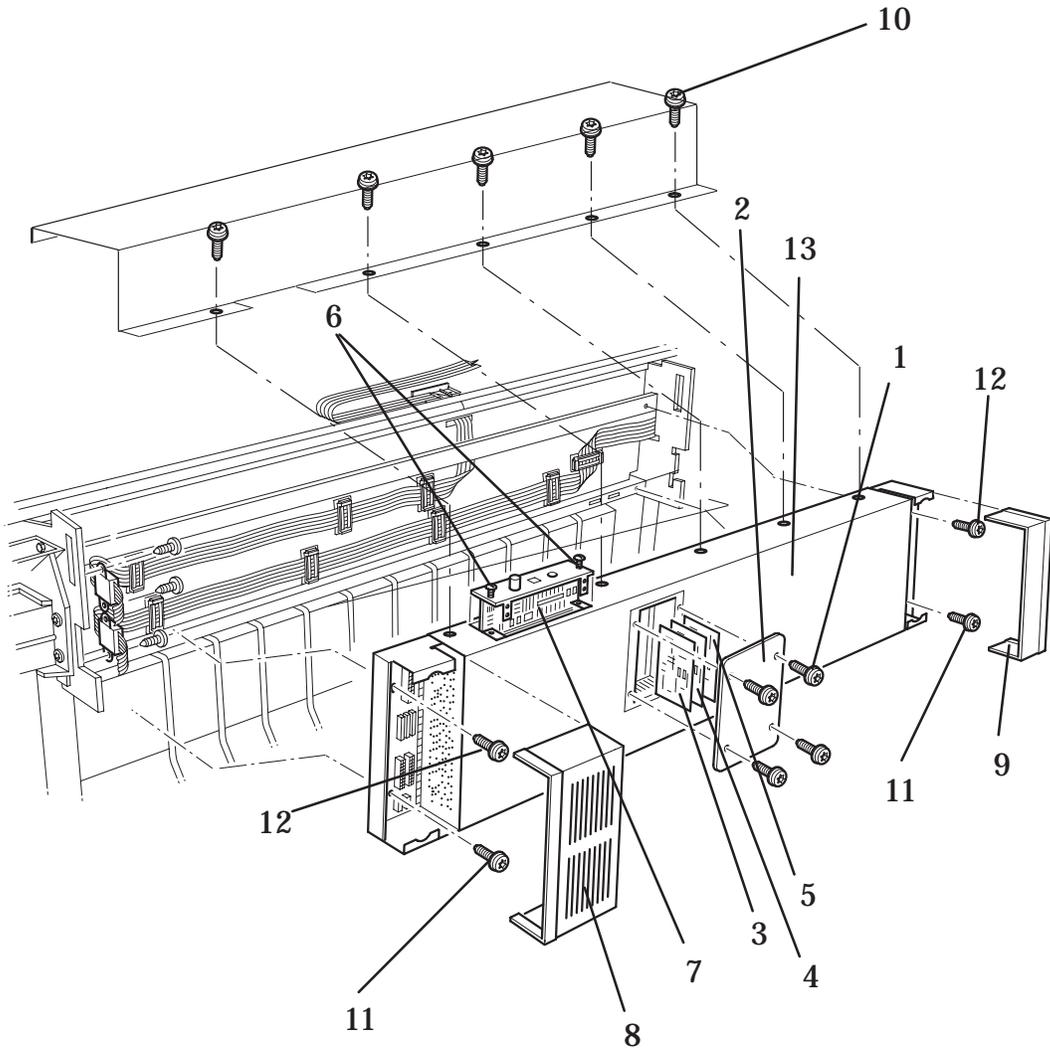
Figure 1A: Electronics Module

Additional Rear Cover (Only applicable to HP DesignJets 3500CP and 3000CP)

Refer to figure 1B ◗ page 8-11

Removal

1. Remove the central and right hand back covers (items 1 and 2) by releasing them from holding clips.

2. Remove the eight T-20 screws (item 3) which secure the top cover to the electronics module.

3. Remove the four T-20 screws (item 4) which secure the additional rear cover (item 5) to the cover support structure (item 6).

4. Remove the additional rear cover (item 5) from the cover support structure (item 6).

Installation

Note: Working from the rear of the printer.

1. Install the additional rear cover (item 5) onto the cover support structure (item 6).

2. Install the four T-20 screws (item 4) which secure the additional rear cover (item 5) to the cover support structure (item 6).

3. Install the eight T-20 screws (item 3) which secure the top cover to the electronics module.

4. Install the central and right hand back covers (items 1 and 2).
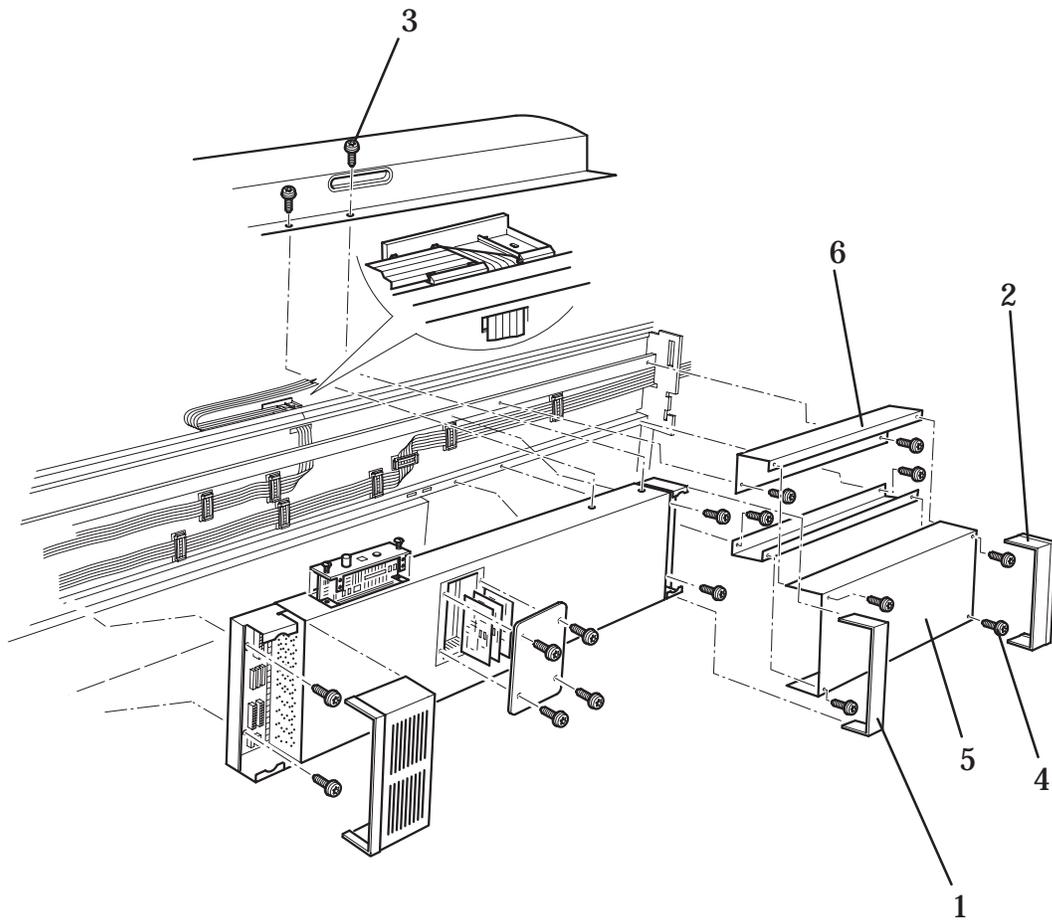
**Figure 1B: Additional Rear Cover
(Only Applicable to HP DesignJets 3500CP/3000CP)**

Hard Disk Drive, Power Switch Cable

THE HARD DISK DRIVE IS ONLY APPLICABLE FOR THE HP DESIGNJET 2500CP/3500CP PRINTER.

Refer to figure 2 ◗ page 8-14

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Window and Top Cover ◗ page 8-15.

2. Remove the electronics cover (item 2) by removing eight screws (item 1) securing it to the electronics module.

3. Remove the black polystyrene hard disk holder (item 3) with the hard disk drive (item 4) inside.

4. Disconnect the data cable (item 5) from the hard disk drive

5. Disconnect the data cable from position **J22 Hard Disk Drive** from the main PCA (item 6).

6. Disconnect the hard disk power cable (item 7) from the hard disk driver.

7. Disconnect the hard disk power cable from position **J15 HDD PWR** from the main PCA (item 8).

8. Lift up the black plastic guard (item 9) on the power PCA and disconnect the power switch cable (item 10) from position **J2** on the power PCA.

9. Remove the power switch cable by pinching together the retaining clips on the rocker switch (item 11), then pulling the switch and the cable through the hole in the electronics module.

Installation

1. Pull the power switch cable through the hole in the electronics module, then push the rocker switch (item 11) into the hole securing it with retaining clips.

2. Connect the power switch cable (item 10) to position **J2** on the power PCA.

3. Connect the hard disk power cable (item 8) to position **J15 HDD PWR** on the main PCA.

4. Connect the hard disk power cable (item 7) to the hard disk driver.

5. Connect the data cable (item 6) to position **J22 Hard Disk Drive** on the main PCA

6. Connect the data cable (item 5) to the hard disk drive.

7. Install the black polystyrene hard disk holder (item 3) with the hard disk drive (item 4) inside into the correct position in the electronics module.

8. Install eight screws (item 1) into the electronics cover (item 2) securing it to the electronics module. Be careful not to damage the sheet metal MIO gasket which surrounds the centronics port.

9. Connect the power cord and turn the printer on in service mode.

10. **Perform the C10 Font Type Set calibration ▶ page *5-20 (Only for Asian Fonts).***

11. Perform the D01 Electronics service test ▶ page *4-7.*
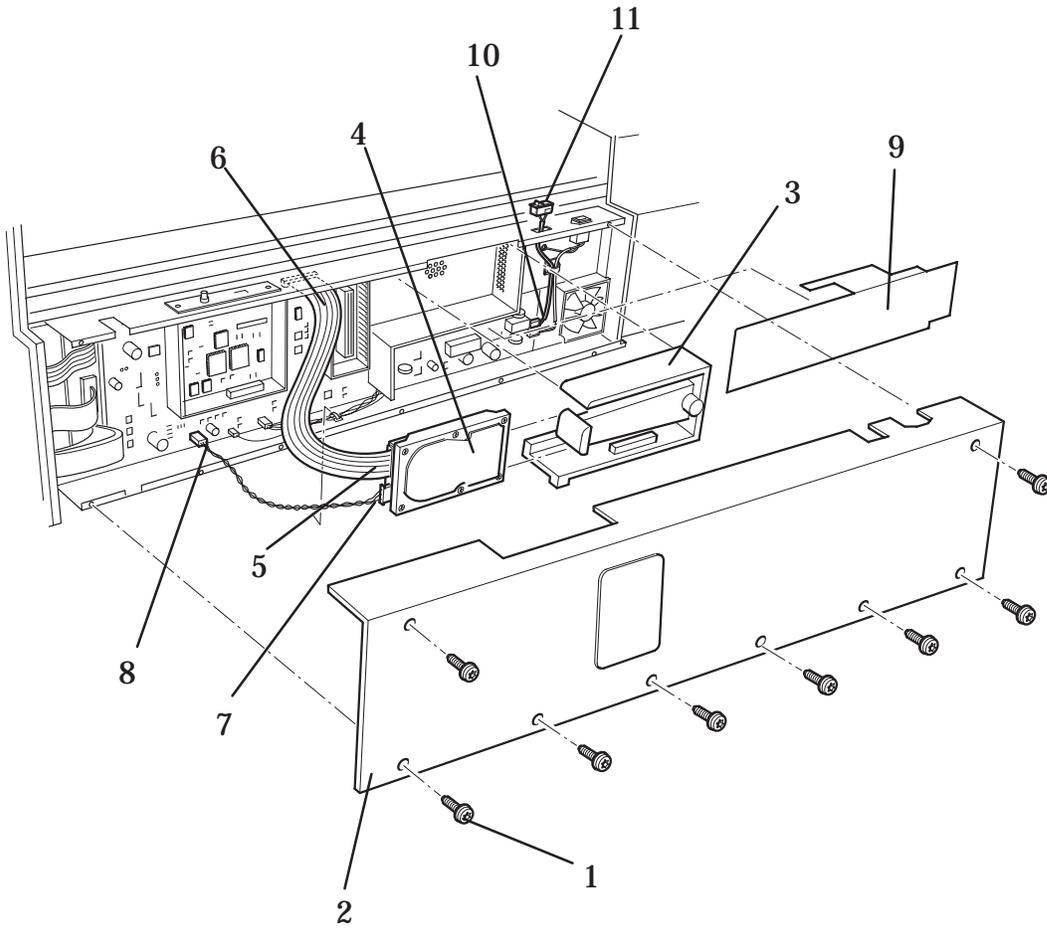
Figure 2: Hard Disk Drive

Window and Top Cover

Refer to figures 3 and 4 ▶ page 8-16 and 8-17

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove two T-15 screws (item 1 on figures 3 & 4) securing the top cover to the left and right hand covers.

2. **Loosen** the screws (item 2 on figure 3) on the left hand cover.

3. Pulling the left hand cover aside remove the window (item 3 on figure 4).

4. Remove the rear left and right hand back covers.

5. Remove five T-20 screws from the rear of the top cover.

6. Remove the top cover (item 4 on figure 3).

Installation

1. Install the top cover (item 4 on figure 3) making sure that the two small wire clamps on the centronics port are positioned vertically.

2. Install the five T-20 screws into the rear of the top cover.

3. Install the rear left and right hand back covers.

4. Carefully push the left hand cover aside and install the window (item 3 on figure 4).

5. Tighten the screws on the left hand cover (item 2 on figure 3).

6. Using two T-15 screws, secure the rear cover to the left and right hand covers (item 1 on figures 3 & 4).

7. Connect the power cord and turn the printer on in service mode.

8. Perform D08 Sensors Service Test ▶ page 4-20
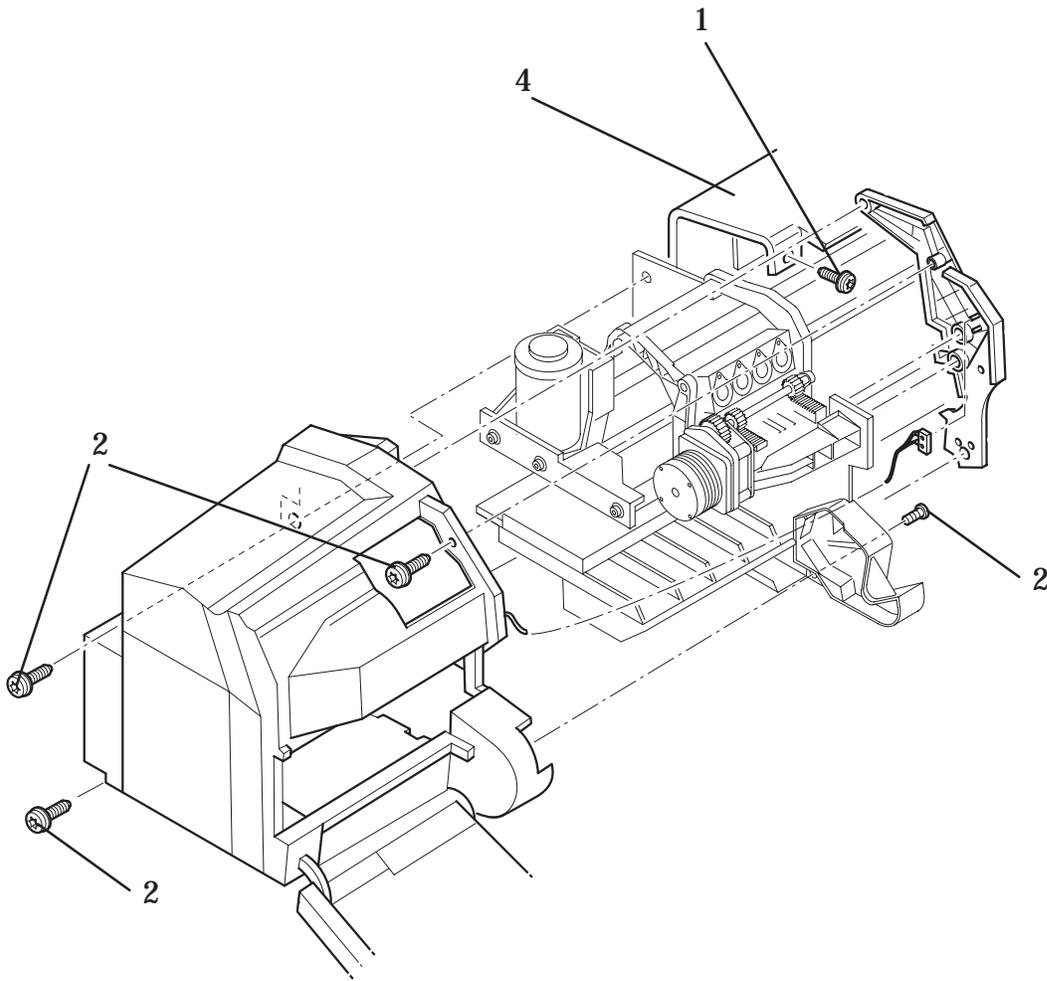
Figure 3: Top Cover
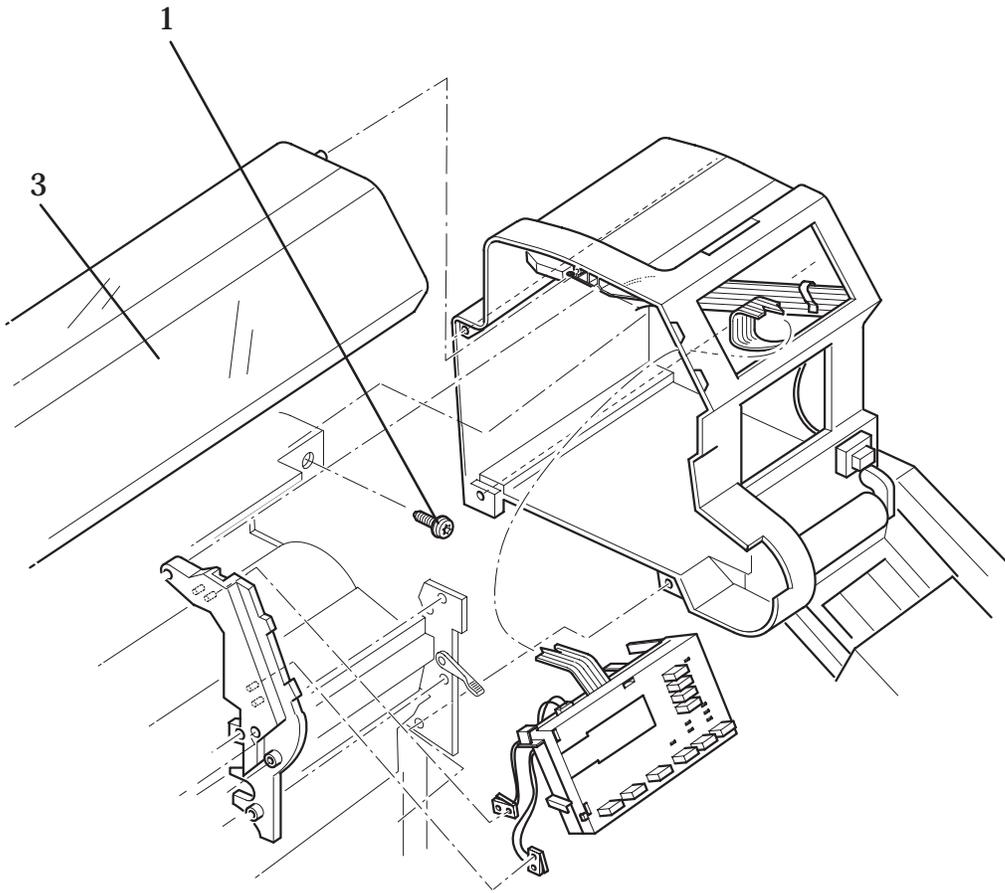
Figure 4: Window

Left Hand Cover and Left Hand Trim Assembly

Refer to figure 5 ◗ page 8-20

Removal

1. Remove the ink delivery system (Refer to the User Guide).

WARNING
Switch off the printer and remove the power cord.

2. Remove the following:

   1. Window and Top Cover ◗ *page 8-15.*

3. Open the door on the left hand cover (item 1).

4. Remove the left hand trim assembly (item 2) by removing four T-15 screws (item 3) and one T-20 screw (item 4) and disconnecting the cover sensor (item 5).

   Be careful not to drop the cover once the securing fasteners have been removed. Support the cover throughout the next step.

5. Remove the three T-15 screws (item 6) securing the cover to the left hand side chassis.

6. Making sure the left hand door is open, remove the left hand cover (item 7).

   Note: To remove the Cover Sensor, disconnect it from position J6 DOOR SW on the Refill Interconnect PCA.

Installation

1. Open the door on the left hand cover (item 1).

2. Ensuring the cover sensor cable (item 5) is not trapped, install the left hand cover (item 7) into the correct position on the chassis.

3. Install three T-15 screws (item 6), securing the left hand cover to the left hand side chassis.

4. Install the cover sensor (item 5) onto the left hand trim assembly (item 2) by pushing it onto the retaining clips.

5. Install the left hand trim assembly in position, making sure the cover sensor cable is not trapped

6. Install four T-15 screws (item 3) and one T-20 screw (item 4) securing the left hand trim assembly.

7. Close the door of the left hand cover.

8. Install the following:

    1. Window and Top Cover ◗ *page 8-15.*

9. Install the ink delivery system (Refer to the User Guide).

10. Connect the power cord and turn the printer on in service mode.

11. Perform D08 Sensors Service Test ◗ page 4-20
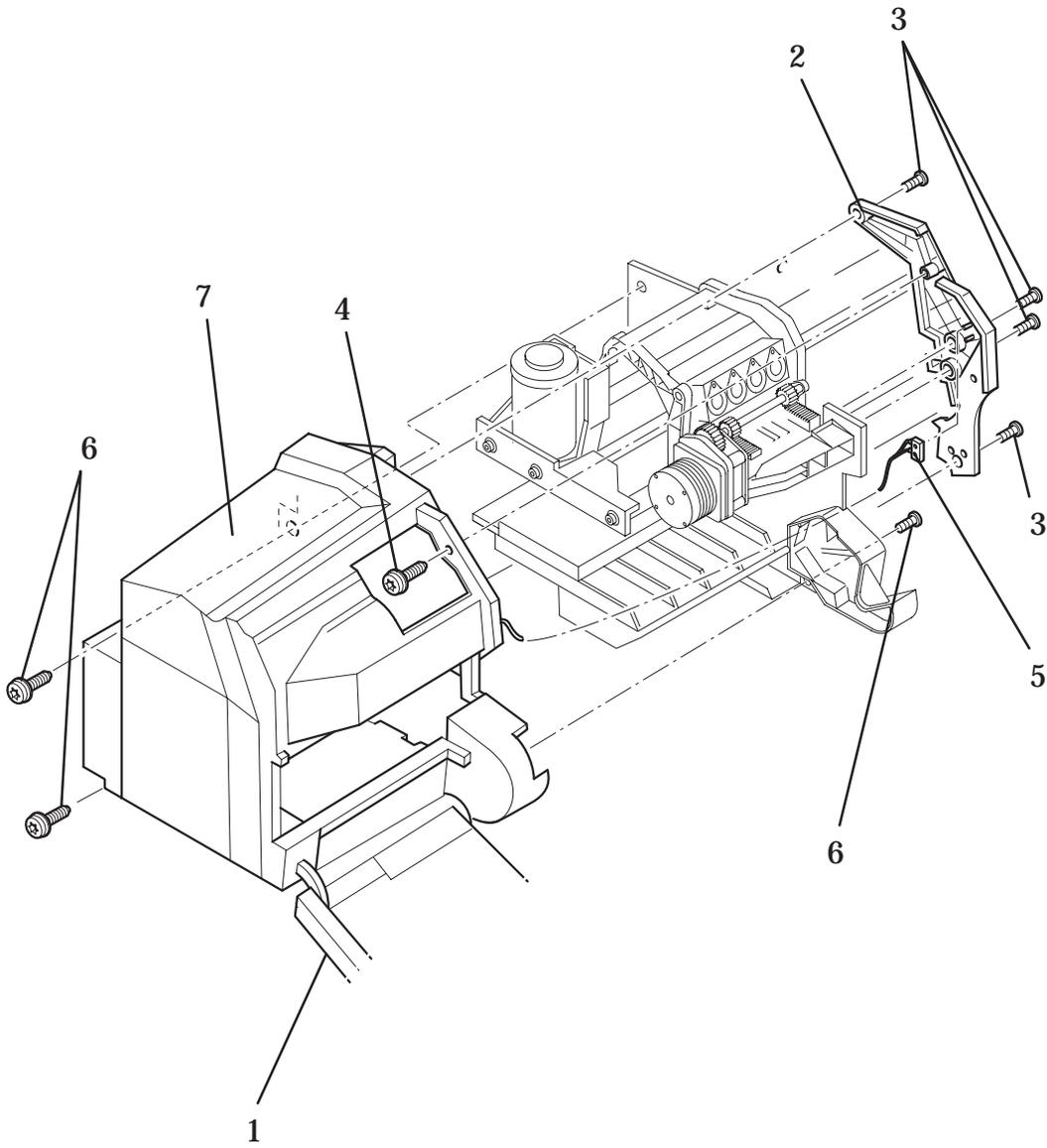
Figure 5: Left Hand Cover

Right Hand Cover and Right Hand Trim Assembly

Refer to figure 6 ◗ page 8-23

Removal

1. Remove the ink delivery system (Refer to the User Guide).

WARNING
Switch off the printer and remove the power cable.

2. Remove the left hand back cover.

3. Disconnect the front panel cable from position **J1 FRONT PANEL** on the electronics module.

4. Disconnect the stand-by button cable from position **J2 ON/STBY** on the electronics module.

5. Remove the following:

   1. Window and Top Cover ◗ page 8-15.

6. Open the door on the right hand cover (item 1).

   Note: Position the pinch-arm lever at half way to enable you to perform the next step (item 2).

7. Remove the right hand trim assembly (item 3) by removing five T-15 screws (item 4) and disconnecting two cover sensors (item 5) located on the inside.

   Be careful not to drop the cover (item 7) once the securing fasteners have been removed. Support the cover throughout the next step.

   The right hand cover and window sensors can be removed by disconnecting them from the front panel assembly.

8. Remove the three T-15 screws (item 6) securing the right hand cover to the right hand side chassis.

9. Remove the right hand cover (item 7), carefully passing the front panel cable and the stand-by button cable through the hole in the right hand side chassis.

Installation

> ***Note 1: Ensure the front panel cable and the stand-by button cables are secured by the cable clamps on the inside of the cover.***

> ***Note 2: At the rear of the right hand side chassis is a hole for the cables to go through. If the cables are not through this hole the cover cannot be installed.***

1. Ensuring the cover sensor cable is not trapped (item 5), install the right hand cover (item 7) into the correct position on the right hand side chassis.

2. Install three T-15 screws (item 6), securing the right hand cover to the right hand side chassis.

3. Open the door on the right hand cover (item 1).

4. Install the two cover sensors (item 5) onto the right hand trim assembly (item 3) by pushing it onto the retaining clips. Use a **small** amount of glue to glue the sensor onto the right hand trim.

> ***Note: Position the pinch-arm lever (item 2) at half way to enable you to perform the next step.***

5. Install the right hand trim assembly in position and secure with five T-15 screws (items 4).

6. Connect the front panel cable to the electronics module in position **J9 FRONT PANEL.**

7. Connect the stand-by button cable to the electronics module in position **J2 ON/STBY**

8. Install the following:

   1. Window and Top Cover ◗ *page 8-15.*

9. Install the ink delivery system (Refer to the User Guide).

10. Connect the power cord and turn the printer on in service mode.

11. Perform D08 Sensors Service Test ◗ page 4-20
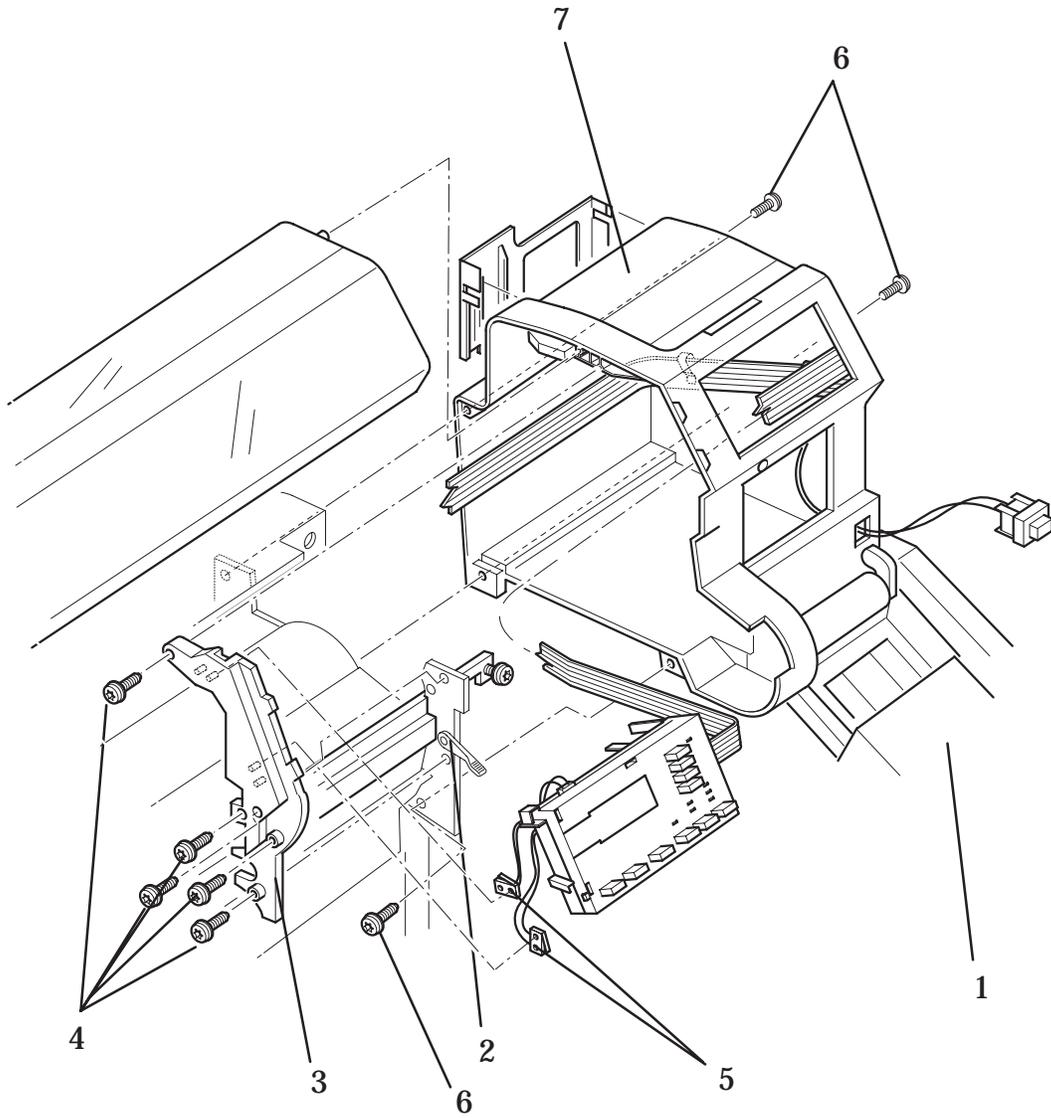
Figure 6: Right Hand Cover

Front Panel and Stand-by Button

Refer to figure 7 ◗ *page 8-25*

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ *page 8-15.*

    2. Right Hand Cover ◗ *page 8-21.*

2. Remove the stand-by button cable and the front panel cable from the wire clamps (item 1) on the inside of the right hand cover.

3. Remove the front panel (item 2) from inside the right hand cover (item 3) by releasing it from the retaining clips.

4. Open the door (item 4) on the right hand cover.

5. Remove the stand-by button (item 5) by releasing it from the securing clips located inside the right hand cover.

6. Remove the stand-by button through the front of the right hand cover.

Installation

1. Open the door (item 4) on the right hand cover. Feed the cable for the stand-by button (item 5) through a hole in the front of the right hand cover (item 3).

2. Secure the button in the cover by pushing it onto retaining clips.

3. Push the front panel (item 2) into the securing clips inside the right hand cover.

4. Route the stand-by button cable and the front panel cable through cable clamps (item 1) on the inside of the right hand cover.

5. Install the following:

    1. Right Hand Cover ◗ *page 8-21.*

    2. Window and Top Cover ◗ *page 8-15.*

6. Connect the power cord and turn the printer on in service mode.

7. Perform D07 Front Panel Service Test ◗ page 4-19
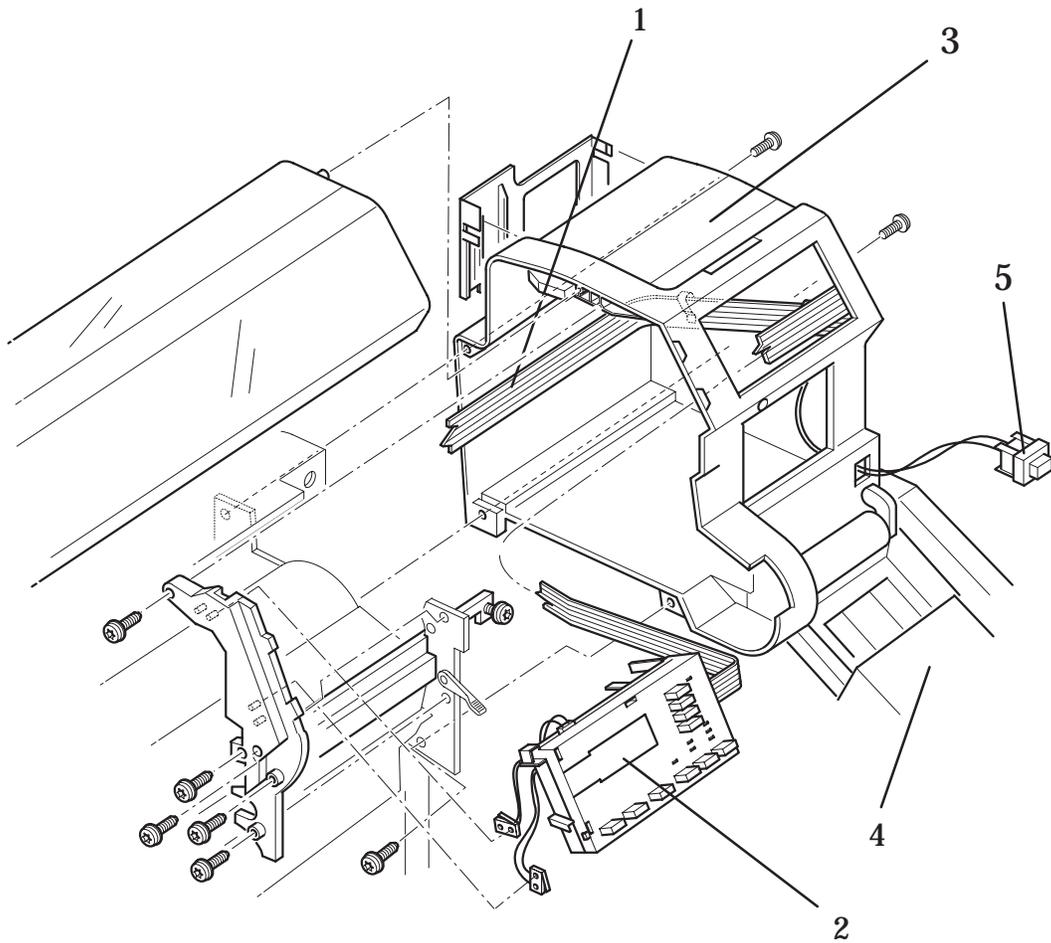
Figure 7: Front Panel and Stand-by Button

Service Station Assembly and Service Station Flag

Refer to figure 8 ◗ page 8-28

Removal of the Service Station Assembly

1. Remove the ink delivery system (Refer to the User Guide).

WARNING
Switch off the printer and remove the power cord.

2. Remove the following

    1. Window and Top Cover ◗ page 8-15.

    2. Right Hand Cover ◗ page 8-21.

3. Manually slide the carriage assembly to the middle of the printer.

4. Carefully disconnect the black service station interconnect cable (item 1) from the service station interconnect PCA, this is located under the service station assembly.

   Note for HP DesignJets 3500CP/3000CP: Make sure you disconnect the Media Button Cable (Item 10) from the Service Station Interconnect PCA.

5. To remove a T20 screw (item 3) it may be necessary to move the head cleaner holders to the rear. This can be done by turning the service station motor gear (item 2), the screw can then be reached by a screw driver.

6. Loosen the remaining three T-20 screws (item 4) securing the service station to the printer. These screws are long and can be fully loosened.

7. Remove the service station assembly (item 5) by lifting up and pulling towards you.

Removal of the Service Station Flag.

1. Release the spring (item 6) from the service station flag (item 7).

2. Position the flag horizontal and push down and to the right

   Note: To remove the primer assembly from the service station assembly, refer to the primer removal procedure ◗ page 8-29.

Installation of the Service Station Assembly

1. Release any cable clamps that may be wrapped around the service station to protect it while in transportation.

   Note: On the service station assembly there are two locating pins, these will help you to align the service station assembly to the right hand side chassis.

   Note: Be careful not to damage the service station flag while performing the following procedure.

2. Install the service station assembly onto the three loosened T-20 screws (item 4). Tighten the screws.

3. Install the T-20 screw (item 3) securing the service station.

   Note: Make sure the tubes (item 8) are not bent or twisted.

4. Install the black service station interconnect cable (item 1) to the service station interconnect PCA, this is located under the service station assembly.

   Note for HP DesignJets 3500CP/3000CP: Make sure you reconnect the Media Button Cable (Item 10) to the Service Station Interconnect PCA.

5. Install the following:

   1. Right Hand Cover ◗ *page 8-21.*

   2. Window and Top Cover ◗ *page 8-15.*

6. Install the power cable and turn the printer on in service mode.

7. Enter service test and perform D05 service station test ◗ page 4-16

8. Install the ink delivery system (Refer to the User Guide).

Installation of the Service Station Flag

1. Position the flag (item 7) horizontally, then push up into a retaining clip on the service station assembly. The correct clip on the flag is shown as (item 9).

2. Install the spring (item 6) from the service station flag to the service station assembly.
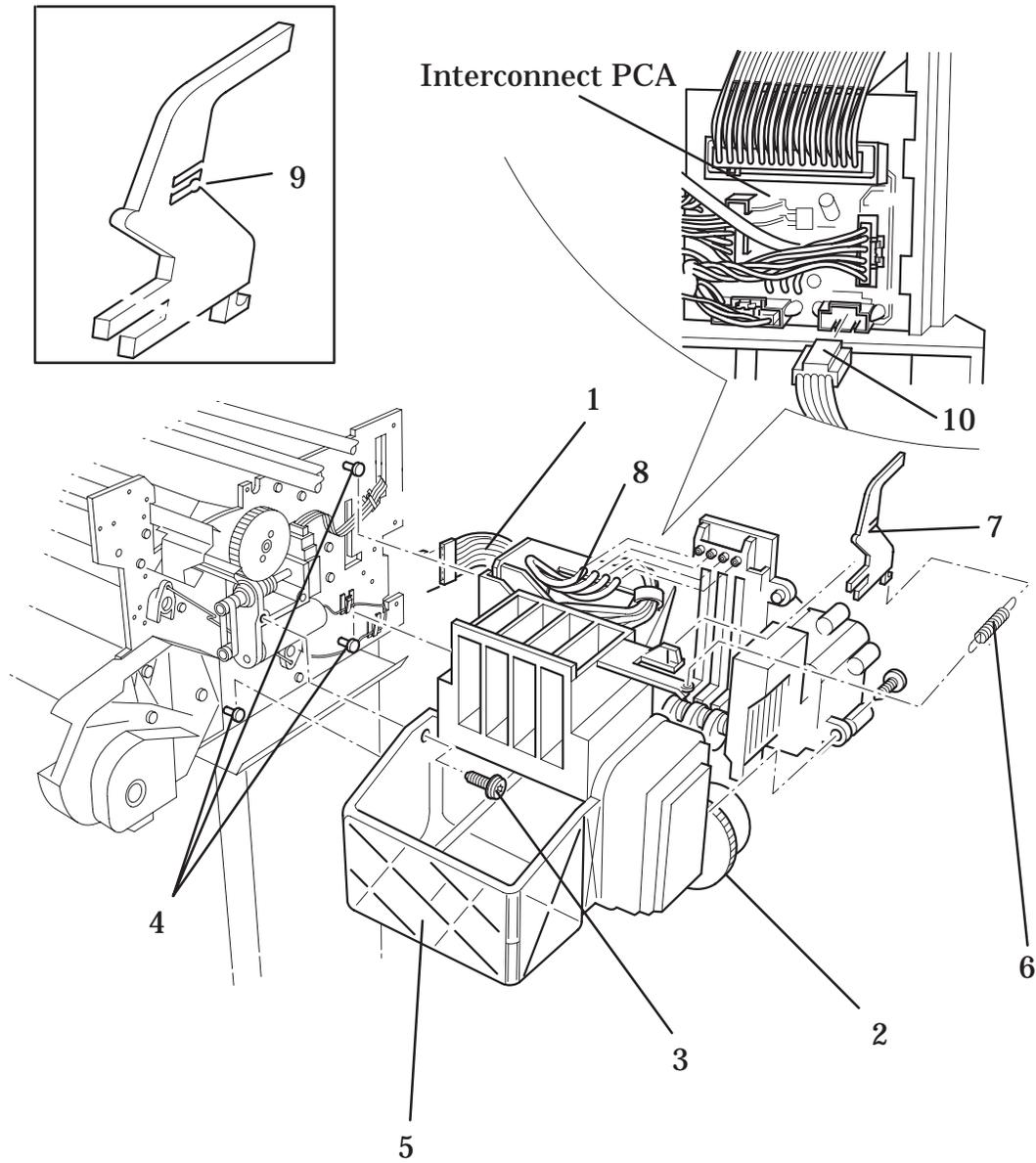
Figure 8: Service Station Assembly

Interconnect PCA

Primer Assembly (Only Applicable to HP DesignJets 2500CP/2000CP)

NOTE FOR HP DESIGNJETS 3500CP/3000CP: IF THE PRIMER ASSEMBLY FAILS, YOU MUST REPLACE THE COMPLETE SERVICE STATION.

Refer to figure 9 ◗ page 8-31

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Window and Top Cover ◗ *page 8-15.*

   2. Right Hand Cover ◗ *page 8-21.*

2. Manually slide the carriage assembly to the middle of the printer.

3. Disconnect the 4 tubes (item 1) from the primer assembly (item 3).

4. Release the cables from the cable clamp located underneath the service station assembly.

5. Remove the service station interconnect PCA from underneath the service station assembly by releasing it from a retaining clip and sliding it out.

6. Disconnect the primer stepper cable from position **J8 PRIMER STEPPER** on the service station interconnect PCA.

7. Disconnect the primer sensor cable from the position **J4 PRIMER SENSOR** on the service station interconnect PCA.

8. Remove the three T-15 screws (item 2) securing the Primer Assembly (item 3) to the service station assembly (item 4).

9. Remove the primer assembly.

Installation

1. Install the primer assembly (item 3) into the correct position in the service station assembly (item 4), making sure no cables are trapped between the two assemblies.

2. Install three T-15 screws (item 2) securing the primer to the service station assembly.

3. Connect the primer sensor cable to the position **J4** on the service station interconnect PCA.

4. Connect the primer stepper cable to the position **J8** to the service station interconnect PCA.

5. Route the cables through the cable clamps on the underside of the service station assembly.

6. Holding the retaining clip up, slide the service station interconnect PCA into place underneath the service station assembly.

7. Connect the 4 tubes (item 1) to the primer assembly, making sure that the tubes are correctly connected to the corresponding colour on the head cleaner.

8. Install the following:

   1. Right Hand Cover ◗ *page 8-21.*

   2. Window and Top Cover ◗ *page 8-15.*

9. Install the power cable.
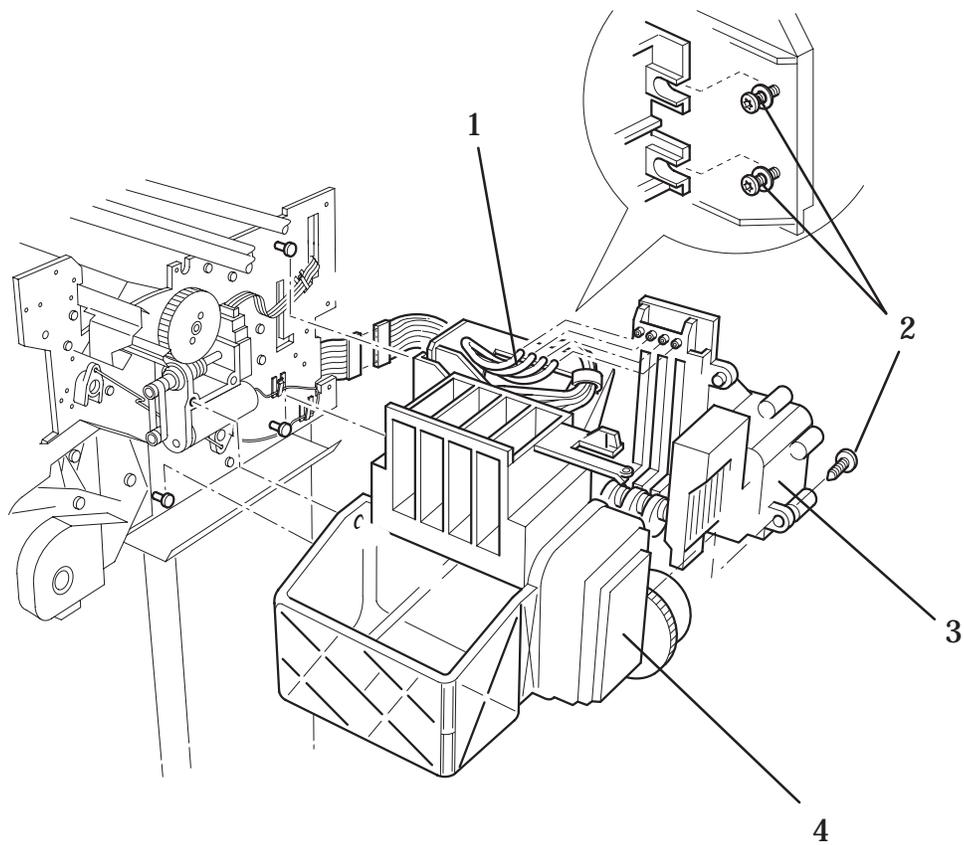
**Figure 9: Primer Assembly
(Only Applicable to HP DesignJets 2500CP/2000CP)**

Encoder Strip

Refer to figures 10 and 11 ◗ pages 8-34 and 8-35

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Window and Top Cover ◗ *page 8-15.*

   2. Right Hand Cover ◗ *page 8-21.*

   3. Left Hand Cover ◗ *page 8-18.*

WARNING
Care should be taken while performing the following procedure, the encoder strip has sharp edges and could cause injury.

Caution: To prevent damage to the encoder strip, hold it at the ends only.

Caution: Lay the encoder strip down on a flat surface when not installed in the printer.

2. Remove the encoder strip roof over the carriage by squeezing it slightly.

3. Cut the cable tie which secures the magnetic core (item 1) to the encoder grounding (item 12).

4. Remove two T-15 screws (item 2) securing the grounding bridge (item 3) to the Y-axis motor assembly (item 4).

   Note: Working from the rear of the printer.

5. Remove the T-15 screw (item 5) securing the left side of the encoder strip (item 7).

6. Release the encoder strip from the retaining pin (item 6) on the Y-axis tensioner holder (item 8). It may help to pull the encoder spring (item 9) towards the middle of the printer to release some tension.

7. Remove the encoder spring (item 9) from the Y-axis motor assembly by releasing it from a retaining pin (item 10).

8. Remove the two nuts and two washers (items 11) securing the encoder spring to the encoder grounding (item 12).

Installation

WARNING
Care should be taken while performing the following procedure, the encoder strip (item 6) has sharp edges and could cause injury.

Caution: To prevent damage to the encoder strip, hold it at the ends only.

Caution: When installing the encoder strip ensure that the transparent side is underneath.

1. Install the two nuts and two washers (items 11) securing the encoder grounding (item 12) to the encoder spring (item 9).

   Note: Working from the rear of the printer.

2. Install the encoder spring (item 9) into the Y-axis motor assembly (item 4) by sliding it onto a retaining pin (item 10).

3. Route the encoder strip (item 7) through the encoder sensor in the carriage assembly. Install the encoder strip roof.

4. Install the left side of the encoder strip onto the retaining pin (item 6) on the Y-axis tensioner holder (item 8), then secure with a T-15 screw (item 5).

5. Install two T-15 screws (item 2) through the grounding bridge (item 3).

6. Secure the magnetic core (item 1) to the encoder grounding with a cable tie.

7. Manually slide the carriage assembly along the printer. Check the encoder strip does not touch the encoder sensor in the carriage assembly.

8. Install the following:

   1. Left Hand Cover ▶ page 8-18.

   2. Right Hand Cover ▶ page 8-21.

   3. Top Cover and Window ▶ page 8-15.

9. Install the power cable and turn the printer on in service mode.

10. Perform the D03 carriage axis (Y-axis) service test ▶ page 4-12.
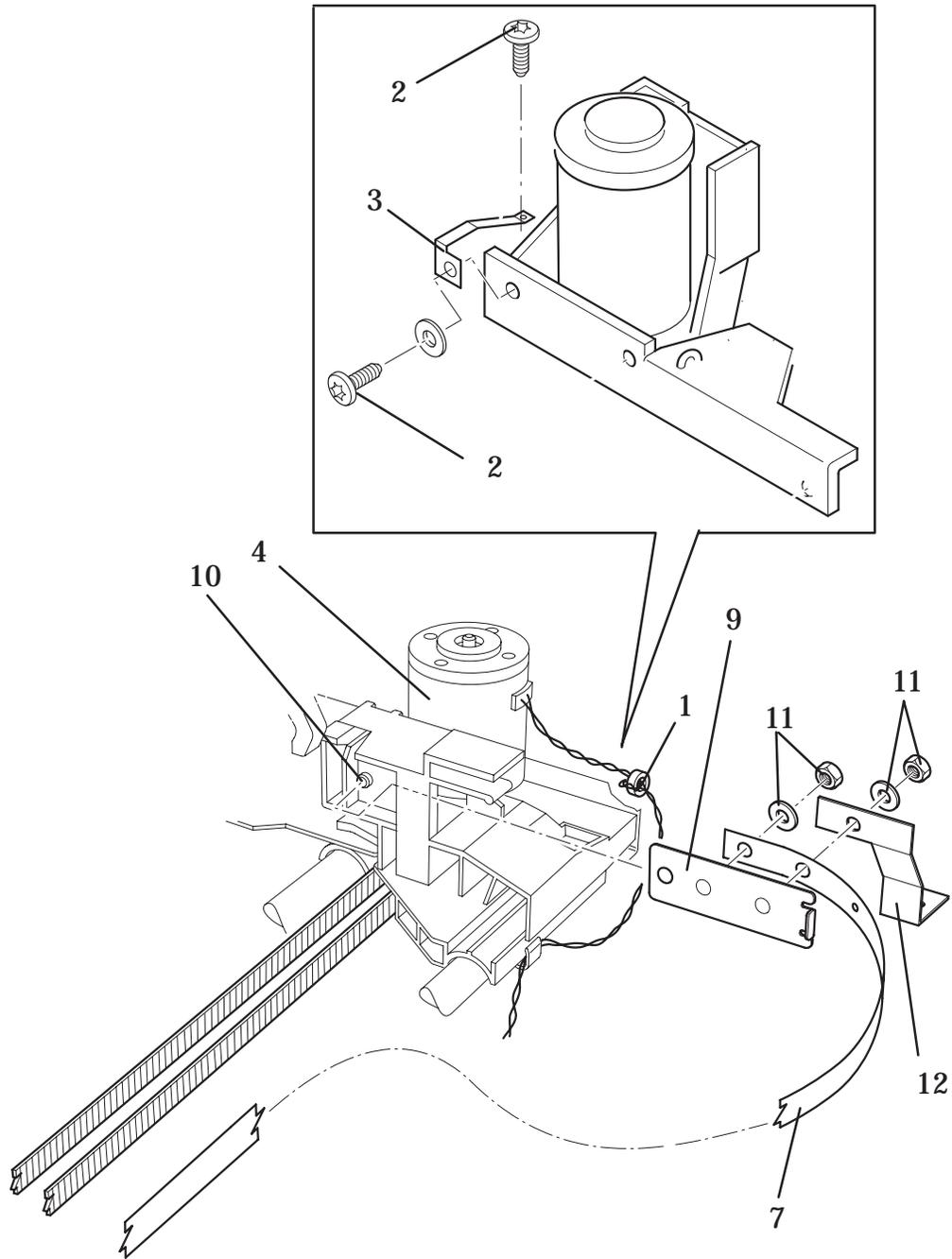
Figure 10: Encoder Strip
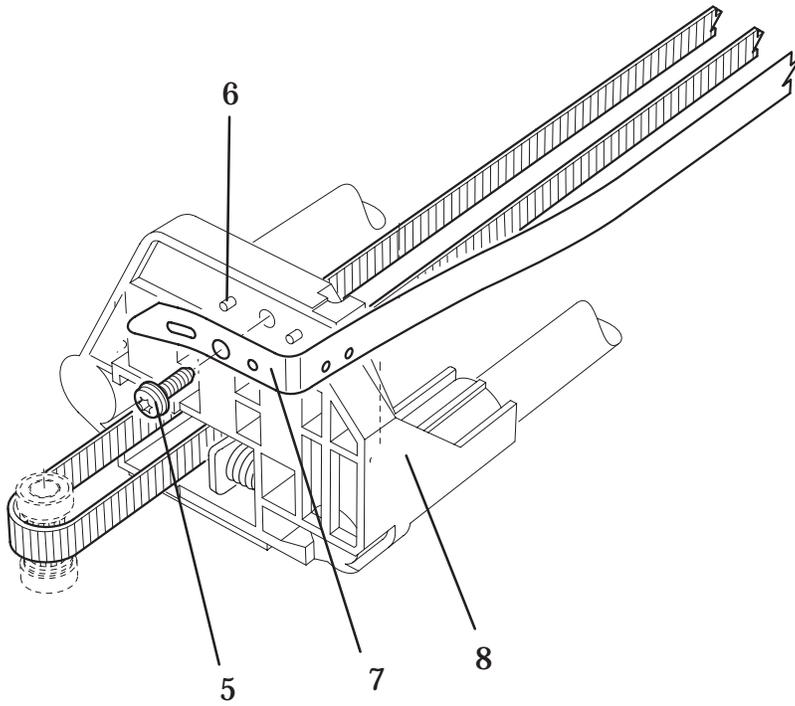
Figure 11: Encoder Strip

Trailing Cable

Refer to figure 12 ◗ page 8-38

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Electronics Module ◗ *page 8-6.*

   2. Window and Top Cover ◗ *page 8-15*

   3. Right Hand Cover ◗ *page 8-21*

2. Manually slide the carriage assembly to the center of the printer.

3. Carefully disconnect the trailing cable (item 1) from connectors on the carriage PCA.

4. Remove the trailing cable from the trailing cable carriage clamp (item 2).

5. Remove the trailing cable from the trailing cable holder (item 3).

6. Pull the trailing cable through a hole in the Y-axis assembly (item 4).

7. Pull the trailing cable through a hole in the electronics support frame (item 5).

8. Remove the trailing cable from the 3 cable clamps at the rear of the printer (item 6).

9. Disconnect the trailing cable from the following positions in the electronics module:

   1. **J3 MISC**

   2. **J5 DATA**

   3. **J10 SUPPLY**

10. Remove the trailing cable by pulling it through the ferrite (item 7) at the rear of the printer.

Installation

1. Connect the trailing cable into the three connectors on the carriage PCA.

2. Install the trailing cable (item 1) onto the trailing cable carriage clamp (item 2). Align the printed red line on the trailing cable as shown.

3. Install the trailing cable into the trailing cable holder (item 3).

4. Pull the trailing cable through a hole in the rear of the Y-axis assembly (item 4).

5. Pull the trailing cable through a hole in the electronics support frame (item 5).

6. Install the cable through three cable clamps, on the rear of the printer (item 6).

7. Feed the cable through the ferrite at the rear of the printer (item 7).

8. Install the following:

    1. *Electronics Module* ⬥ *page 8-6.*

    2. *Right Hand Cover* ⬥ *page 8-21*

    3. *Window and Top Cover* ⬥ *page 8-15*

9. Connect the trailing cable to the following positions in the electronics module:

    1. **J3 MISC**

    2. **J5 DATA**

    3. **J10 SUPPLY**

10. Move the carriage to the left and right to ensure the trailing cable does not interfere with the movement of the carriage.

11. Connect the power cord and turn the printer on in service mode.

12. Perform the D01 Electronics service test ⬥ page *4-7.*

Align red
line as shown

1

2

3

4

7

5

6
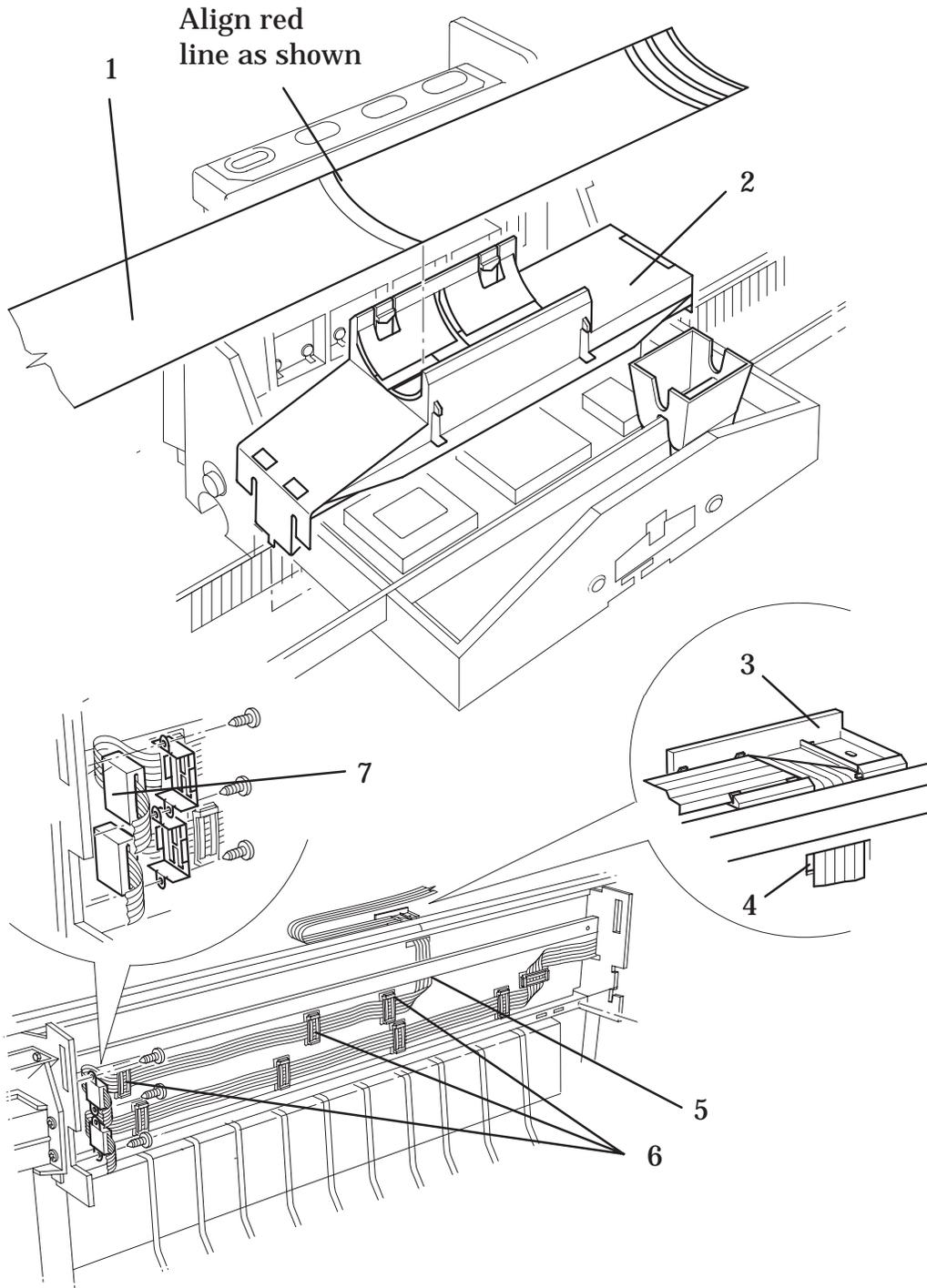
Figure 12: Trailing Cable

Y-Axis Belt

Refer to figure 13 ◗ page 8-41

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ page 8-15.

    2. Right Hand Cover ◗ page 8-21.

    3. Left Hand Cover ◗ page 8-18.

WARNING
The spring (item 1) in the next step is under high tension and could spring out of the Y-axis tensioner holder (item 2).

Caution: Cup your hand over the Y-axis tensioner holder in the next step to avoid losing the spring.

2. To release the tension on the Y-axis belt (item 3), manually squeeze the spring (item 1) using the tensioner wedge clip (item 4) until you hear it click into place. If the tensioner wedge clip will not click into place, carefully remove the spring and the tensioner wedge clip with a screw driver.

3. Remove the Y-axis belt from the Y-axis motor pulley (item 5).

4. Remove the Y-axis belt pulley (item 6) located in the Y-axis tensioner holder.

5. The rest of the procedure is **ONLY** to be performed if the Y-axis belt is being **REPLACED** by a new Y-axis belt.

6. Remove the carriage assembly ◗ page 8-42

7. Remove the Y-axis belt by releasing it from the carriage assembly.

Installation

1. Install the Y-axis belt (item 3) onto the carriage assembly making sure the belt is in between the two slider rods (see figure 14, item 5).

2. Install the carriage assembly ◗ page 8-42

   Note: Make sure the Y-axis belt is not twisted.

3. Install the Y-axis belt (item 3) around the Y-axis belt pulley (item 6).

4. Install the Y-axis belt pulley with the belt into the Y-axis tensioner holder (item 2).

5. Install the belt around the Y-axis motor pulley (item 5).

WARNING
The spring is under high tension and could spring out of the Y-axis tensioner holder.

Caution: Cup your hand over the Y-axis tensioner holder in the next step to avoid losing the spring.

6. If you have removed the tensioner wedge clip (item 4) and the spring (item 1), install it now. To tension the belt, use a small flat-blade screw driver to release the wedge tensioner clip from its position in the Y-axis tensioner holder.

7. Install the following:

   1. Left Hand Cover ◗ *page 8-18.*

   2. Right Hand Cover ◗ *page 8-21.*

   3. Window and Top Cover ◗ *page 8-15.*

8. Install the power cable.

Right Side (from the rear)

5

3

2

6

Left Side (from the rear)

4

1
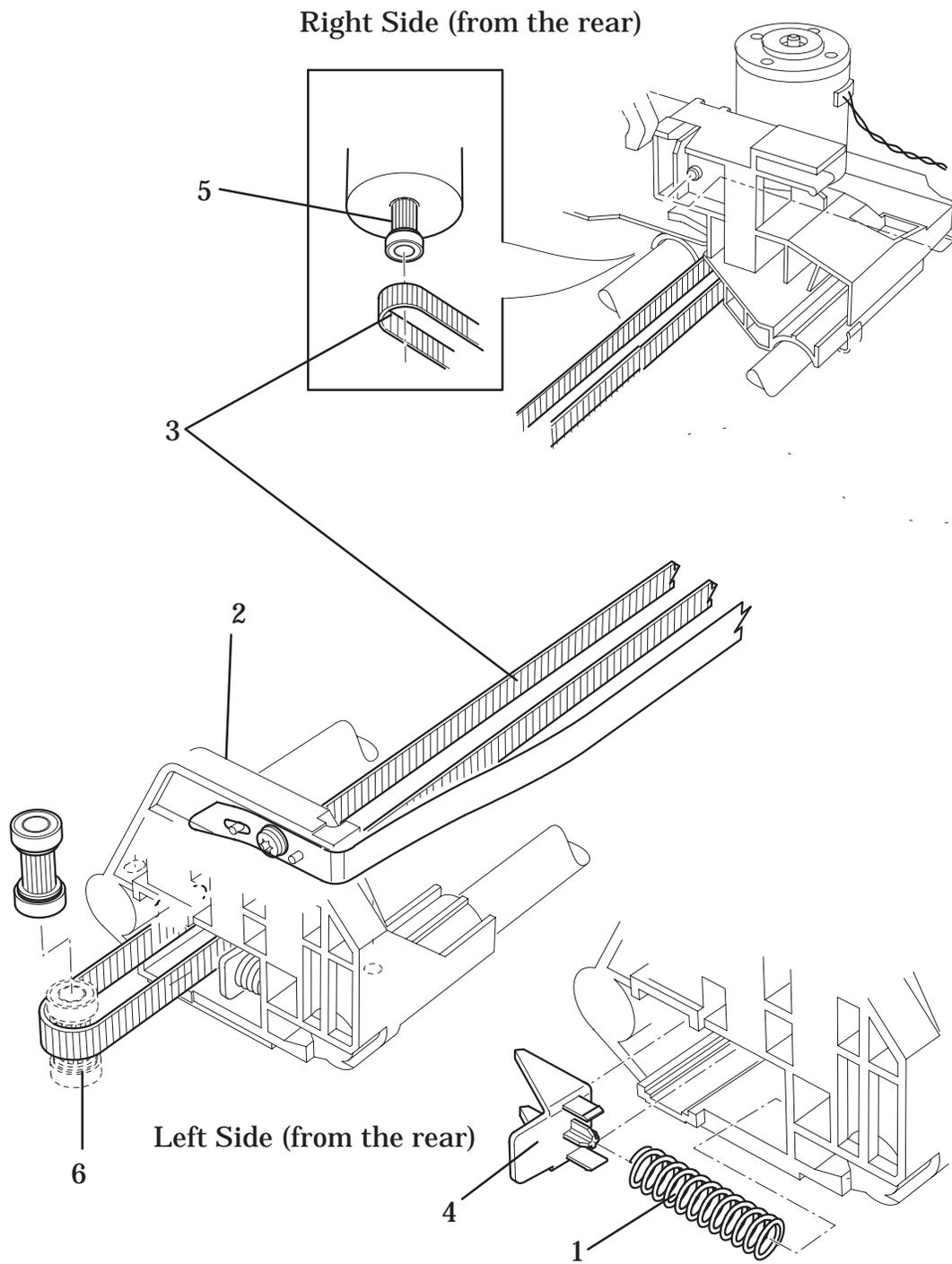
Figure 13: Y-Axis Belt

Carriage Assembly

Refer to figure 14 ◗ page 8-44

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Left Hand Cover ◗ *page 8-18.*

    2. Window and Top Cover ◗ *page 8-15.*

    3. Right Hand Cover ◗ *page 8-21.*

    4. Service Station Flag ◗ *page 8-26*

    5. Encoder Strip ◗ *page 8-32.*

    6. Y-Axis Belt ◗ *page 8-39.*

2. Carefully disconnect the trailing cable from the carriage assembly.

3. Remove the trailing cable carriage clamp (item 1) from the carriage by releasing it from the retaining clips.

4. Remove the Y-axis tensioner holder by removing two T-20 screws from the slider rods.

Caution: The rear bushing (item 2) on the carriage assembly is tensioned with a spring (item 3). When removing the carriage assembly, hold the rear bushing on the carriage assembly.

5. Remove the carriage assembly (item 4) by sliding it off the slider rods.

6. Remove the Y-axis belt (item 5) from underneath the carriage assembly.

Installation

1. Lubricate the slider rod with a small amount of oil.

2. Install Y-axis belt (item 5) onto the carriage assembly.

    Caution: The rear bushing (item 2) on the carriage assembly is tensioned with a spring (item 3). When installing the carriage assembly, hold the rear bushing on the carriage assembly.

3. Making sure the Y-axis belt (item 5) is between the sliding rods, slide the carriage assembly onto the slider rods.

4. Install the trailing cable carriage clamp (item 1) in the correct position on the carriage assembly.

5. Carefully connect the trailing cable to connectors on the carriage PCA.

6. Install two T-20 screws securing the Y-axis tensioner holder to the slider rods.

7. Install the following:

    1. Y-Axis Belt ◗ page 8-39.

    2. Encoder Strip ◗ page 8-32.

    3. Service Station Flag ◗ page 8-26

    4. Right Hand Cover ◗ page 8-21.

    5. Window and Top Cover ◗ page 8-15.

    6. Left Hand Cover ◗ page 8-18.

8. Install the power cable and turn the printer on in service mode.

9. Perform the following calibrations.

    1. **C01 Carriage ◗ page 5-7**

    2. **C02 Refill ◗ page 5-9**

    3. **C03 Line Sensor ◗ page 5-10**

    4. **C05 Printheads Alignment ◗ page 5-13**

    5. **C06 Printheads Check ◗ page 5-14**

    6. **C07 Color Calibration** *(Only for HP DesignJet 2500CP/3500CP printers* ◗ **page 5-16**

    7. **C08 Service Accuracy ◗ page 5-17**
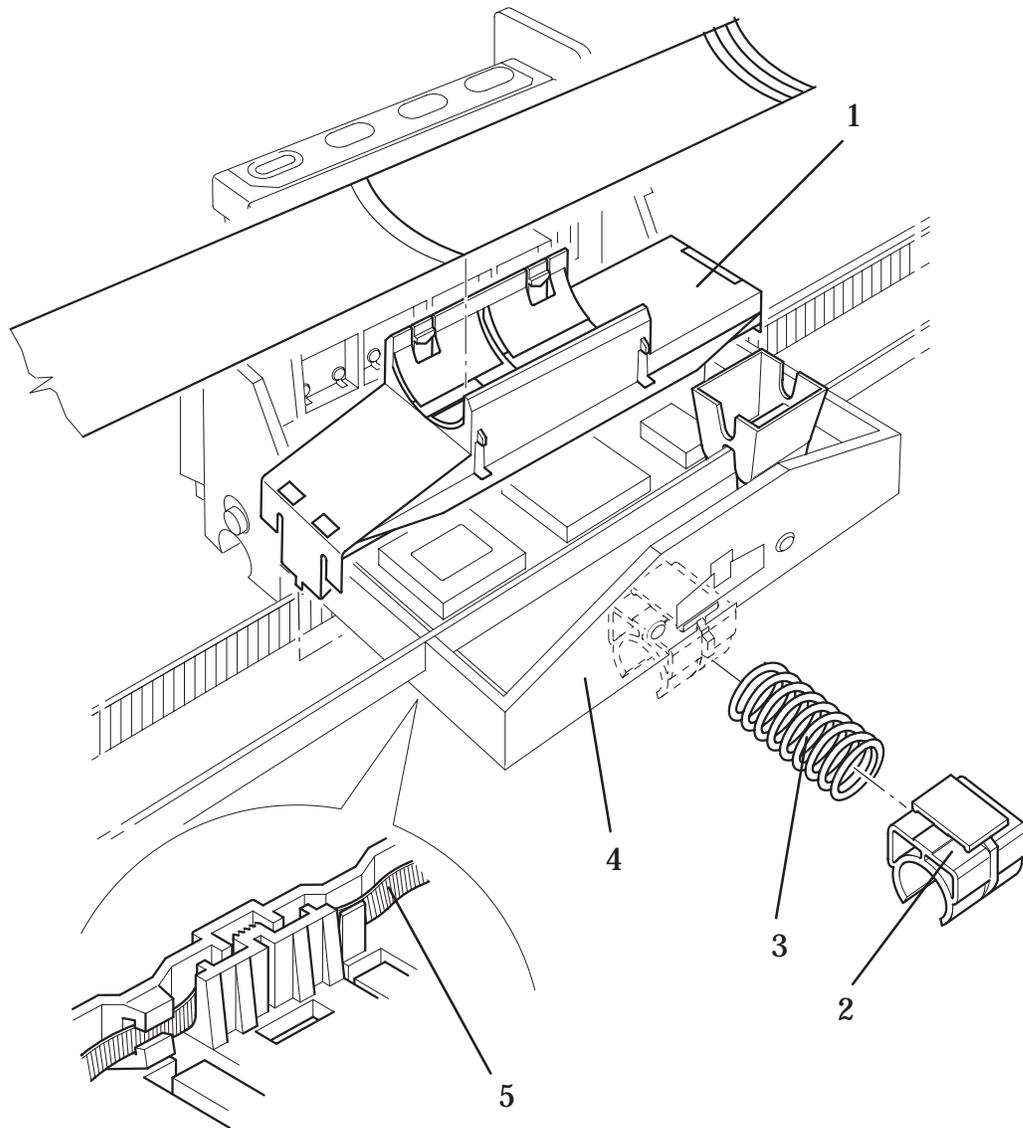
Figure 14: Carriage Assembly

Y-Axis Motor Assembly

Refer to figure 16 ◗ page 8-47

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ *page 8-15.*

    2. Right Hand Cover ◗ *page 8-21.*

    3. Left Hand Cover ◗ *page 8-18.*

    4. Encoder Strip ◗ *page 8-32.*

    5. Y-Axis belt ◗ *page 8-39*

2. Remove the cables from the cable clamps (item 1) on the Y-axis bracket (item 2).

3. Remove two T-15 screws and washers installed into the Y-axis bracket (item 3).

4. Remove the one remaining T-20 screw (item 4) which secures the Y-axis Motor assembly (item 6) to the front slider rod (the other screw was removed when you removed the encoder strip).

5. Disconnect the Y-axis motor cable (item 5) from the position **J2 Y MOTOR** on the refill interconnect PCA (item 7).

6. Remove the Y-axis motor assembly from the slider rods.

Installation

1. Install the T-20 screw (item 4) securing the Y-axis motor assembly (item 6) to the front slider rod.

2. Connect the Y-axis motor cable (item 5) to the position **J2 Y MOTOR** on the refill interconnect PCA (item 7), then install the cable into a retaining clip on the side of the Y-axis motor assembly.

3. Install the two T-15 screws (item 3) into the Y-axis bracket (item 2) securing it to the printer.

4. Install the following:

    1. Y-Axis belt ◗ *page 8-39*

    2. Encoder Strip ◗ *page 8-32.*

    3. Left Hand Cover ◗ *page 8-18.*

    4. Right Hand Cover ◗ *page 8-21.*

    5. Window and Top Cover ◗ *page 8-15.*

5. Install the power cable and turn the printer on in service mode.

6. Perform D03 Carriage Axis (Y-axis) Service Test ◗ *page 4-12*
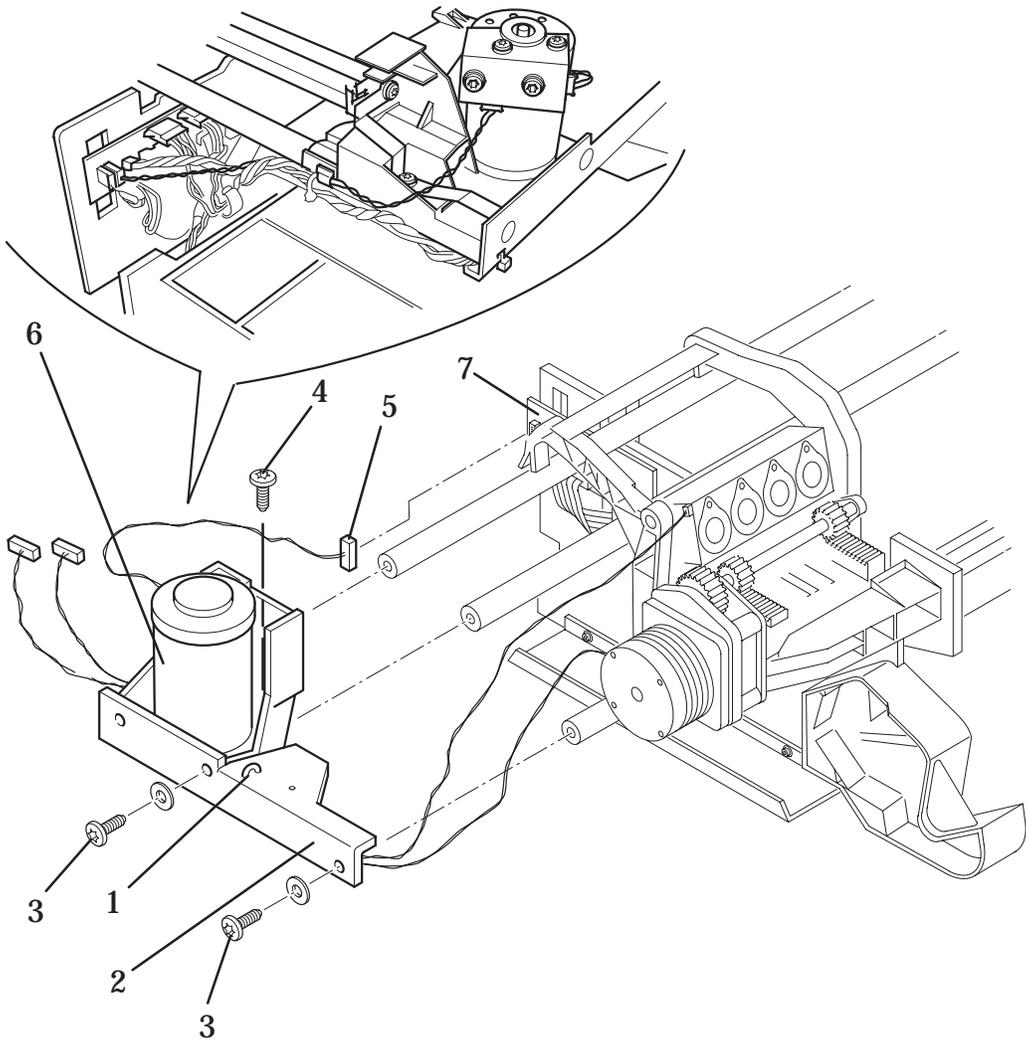
Figure 16: Y-Axis Motor Assembly

Cutter Assembly (Only Applicable to HP DesignJets 2500CP and 2000CP)

Refer to figure 17A ◗ page 8-49

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Right Hand Cover ◗ page 8-21.

2. Remove the window.

3. Move the Carriage Assembly to the right.

4. Remove the stopper (item 1) located on the right end of the overdrive assembly.

5. Remove the cutter assembly (item 2) from the slider rod by sliding it to the left and pulling it off the rear bushing (item 3).

Installation

Note: Make sure you install the front wheel of the media cutter under the lip of the starguard assembly.

1. Install the cutter assembly (item 2) onto the rear bushing (item 3) and slide to the left. To obtain the correct position so that the cutter assembly moves easily into position, you may have to move the cutter wheel (item 4) (which is sprung loaded).

2. Install the stopper (item 1) located on the right end of the overdrive assembly onto the overdrive assembly.

3. Install the following:

   2. Right Hand Cover ◗ page 8-21.

4. Install the window.

5. Install the power cable and turn the printer on in service mode.

6. Perform D10 Cutter Service Test ◗ *page 4-24*
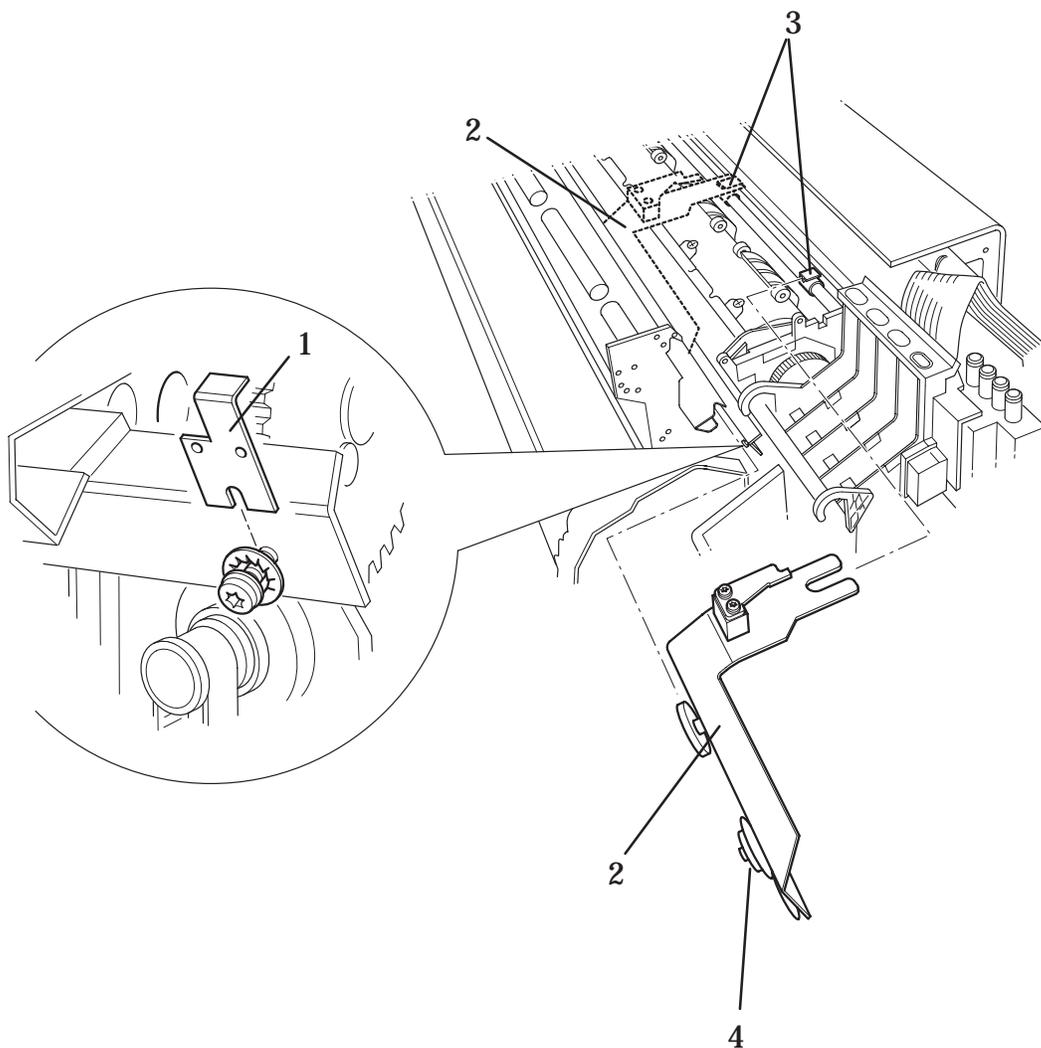
Figure 17A: Cutter Assembly
(Only Applicable to HP DesignJets 2500CP and 2000CP)

Cutter Assembly (Only Applicable to HP DesignJets 3500CP and 3000CP)

Refer to figure 17B ◗ page 8-51

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

   1. Right Hand Cover ◗ page 8-21.

2. Move the Carriage Assembly to the right.

3. Loosen the screw (item 1) located on the right end of the Starguard.

4. Remove the cutter assembly (item 2) from the slider rod by sliding it to the right and pulling it off the rear bushing (item 3).

Installation

   Note: Make sure that when you install the Cutter Assembly that both black wheels of the cutter assembly enter the starguard assembly.

1. Install the cutter assembly (item 2) onto the rear bushing (item 3) and slide to the left. To obtain the correct position so that the cutter assembly moves easily into position, you may have to move the cutter wheel (which is sprung loaded).

2. Tighten the screw (item 1) located on the right end of the Starguard assembly onto the overdrive assembly.

3. Install the following:

   2. Right Hand Cover ◗ page 8-21.

4. Install the power cable and turn the printer on in service mode.

5. Perform D10 Cutter Service Test ◗ *page 4-24*
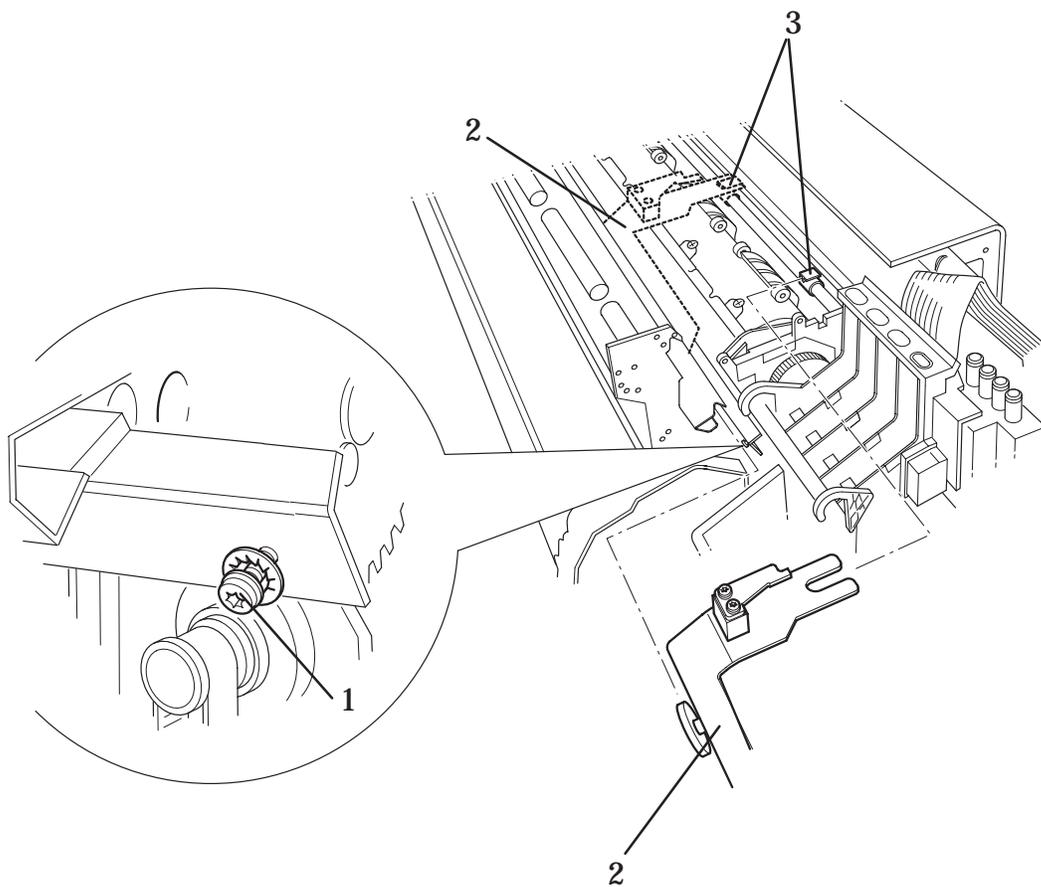
Figure 17B: Cutter Assembly
(Only Applicable to HP DesignJets 3500CP and 3000CP)

Elevator Assembly

Refer to figure 18 ▶ page 8-54

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the ink delivery system (Refer to the User Guide).

2. Remove the following:

    1. Window and Top Cover ▶ page 8-15.

    2. Left Hand Cover ▶ page 8-18.

    Note: To gain access to the screws securing the elevator assembly to the left hand side chassis, it may be necessary to manually raise the elevator assembly. This can be done by turning the motor gear under the elevator assembly.

3. Remove the T-20 screw (item 1) located at the bottom rear of the elevator assembly.

4. Loosen the three T-20 screws (item 2) securing the elevator assembly to the left hand side chassis.

5. Remove the top half of the elevator assembly (item 3) by releasing it from two retaining clips at the back, then lifting up and to the left.

6. Disconnect the platform sensor cable from position **J5 PLATEF SENSOR** on the refill interconnect PCA and release from the cable clamp.

7. Disconnect the elevator stepper motor cable from position **J9 ELEV STEPPER** on the refill interconnect PCA and release from the cable clamp.

8. Remove the elevator assembly by sliding it up and pulling it towards you.

Installation

Note: At the same time as performing step one, install loose cables into the cable clamp, which is located on the left hand side chassis.

1. Install the elevator assembly onto the three loosened T-20 screws (item 2). Tighten the three screws.

2. Install the T-20 screw (item 1) into the bottom rear of the elevator assembly.

3. Connect the platform sensor cable in position **J5 PLATEF SENSOR** on the refill interconnect PCA.

4. Connect the elevator stepper motor cable in position **J9 ELEV STEPPER** on the refill interconnect PCA.

5. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

6. Install the following:

    1. Left Hand Cover ▶ *page 8-18.*

    2. Window and Top Cover ▶ *page 8-15.*

7. Install the ink delivery system (Refer to the User Guide).

8. Install the power cable and turn the printer on in service mode.

9. Perform D06 Refill Service Test ▶ *page 4-18*
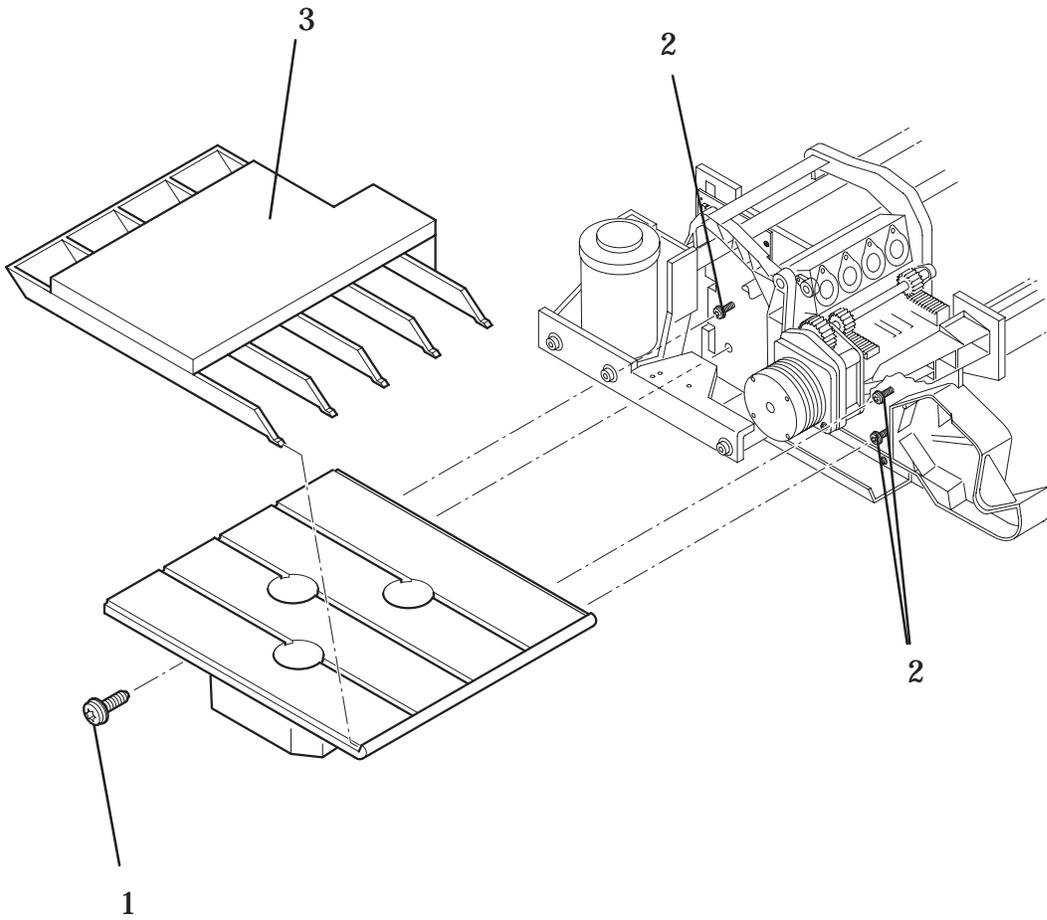
Figure 18: Elevator Assembly

Refill Assembly

Refer to figure 19 ▶ page 8-57

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. *Window and Top Cover page* ▶ *8-15.*

    2. *Left Hand Cover* ▶ *page 8-18.*

2. Disconnect the following cables from the refill interconnect PCA (item 1):

    1. *Valve sensor cable in position* ***J4 VALVE SENSOR***

    2. *Door Sensor cable in position* ***J6 DOOR SW***

    3. *Refill Sensor Cable in position* ***J3 REFILL SENSOR***

3. Remove the cables from two cable clamps (item 2) on the left hand side chassis.

4. Carefully disconnect from the refill stepper motor the refill stepper motor cable (item 3).

5. Remove the cable clamp securing the cables to the Y-axis bracket.

6. Loosen fully the three T-20 screws (item 4) from the refill assembly.

7. Remove the T-20 screw (item 5) at the end of the metal rod securing it to the Y-axis bracket (item 6).

8. Remove the refill assembly (item 7).

Installation

1. Install the refill assembly (item 7) in the correct position between the Y-axis bracket (item 6) and the left hand side chassis.

2. Install the refill assembly onto the three T-15 screws (item 4) and secure the refill assembly to the left hand side chassis.

3. Install the T-15 screw (item 5) securing the refill assembly to the Y-axis bracket.

4. Connect the following cables to the refill interconnect PCA (item 1):

   1. *Valve sensor cable in position* ***J4 VALVE SENSOR***

   2. *Door Sensor cable in position* ***J6 DOOR SW***

   3. *Refill Sensor cable in position* ***J3 REFILL SENSOR***

5. Install the door sensor cable and the refill sensor cable into two cable clamps (item 2) on the left hand side chassis.

6. Connect the stepper motor cable (item 3) to the stepper motor.

7. Use a cable clamp to clamp the valve sensor cable and the refill stepper motor cable to the Y-axis bracket (item 6).

8. Install the following:

   1. *Window and Top Cover page* ◗ *8-15.*

9. Connect the power cord and turn the printer on in service mode

10. **Perform C02 Refill Service Calibration page ◗ 5-9 .**

11. Perform D06 Refill Service Test 4-18

12. Install the following:

   1. *Left Hand Cover* ◗ *page 8-18.*
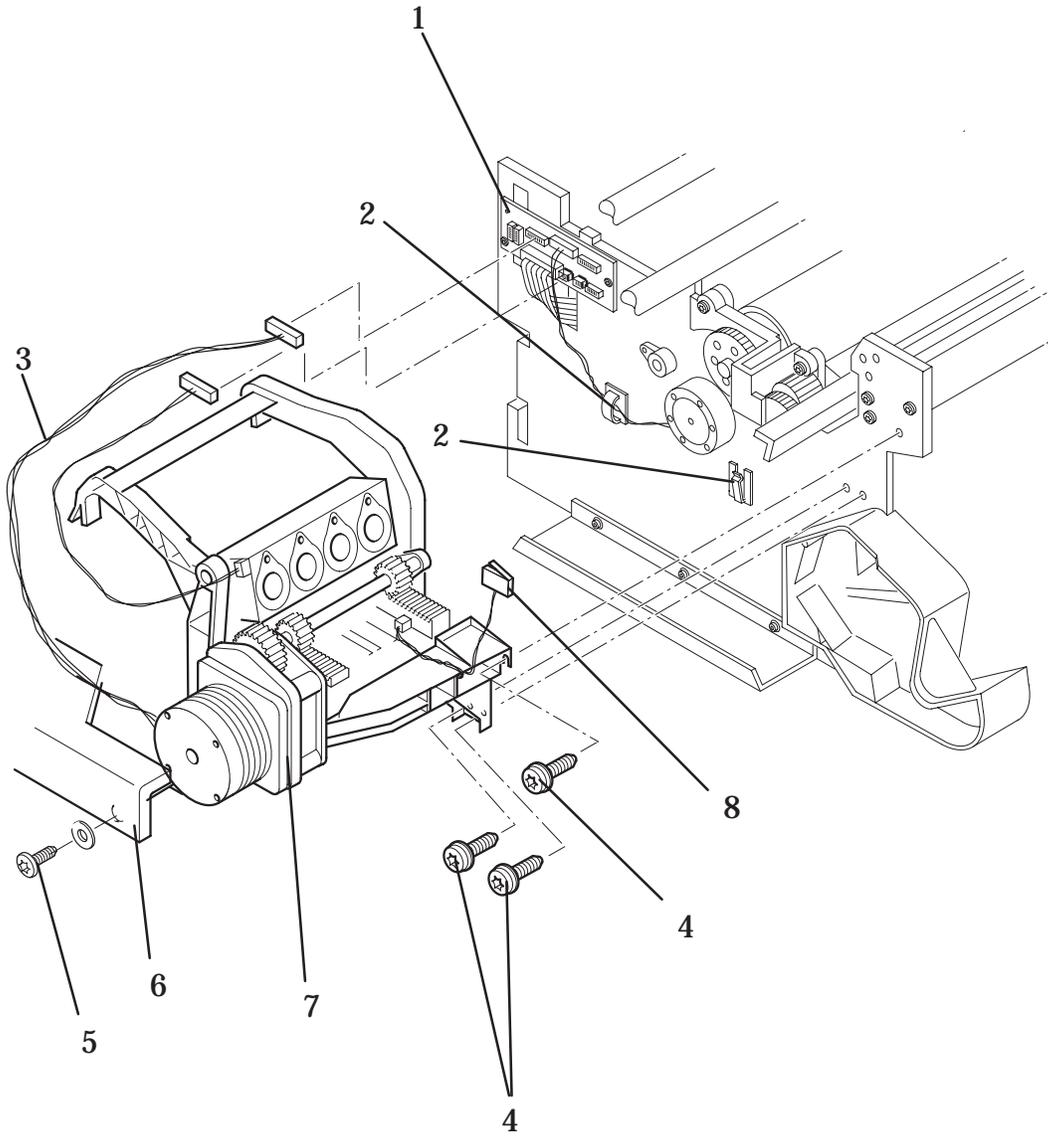
Figure 19: Refill Assembly

Bail Assembly and Star Wheel Assemblies

Refer to figure 20 ◗ page 8-59

Removal

1. Open the window.

2. Manually move the carriage assembly to the left side of the printer.

3. Lifting up the bail assembly (item 1), push both the plastic arms at the end of the bail assembly together. This will release it from holes in the left and right hand side chassis.

4. Remove the right side of the bail arm first and then the left.

    Note: If the mark encoder which is glued to the drive roller obstructs the removal of the bail assembly, press **Form Feed and Cut** *this will move the drive roller around.*

5. Remove the star wheel assemblies (item 2) by pushing together the retaining clips and pulling them off

Installation

1. Install the star wheel assemblies (item 2) by pushing the retaining clips into the bail assembly (item 1).

2. Install the bail assembly by installing the left side first, then install the bail assembly into holes in the left and right hand side chassis.

3. Close the window.

4. Perform D11 Bail Service Test ◗ page 4-25
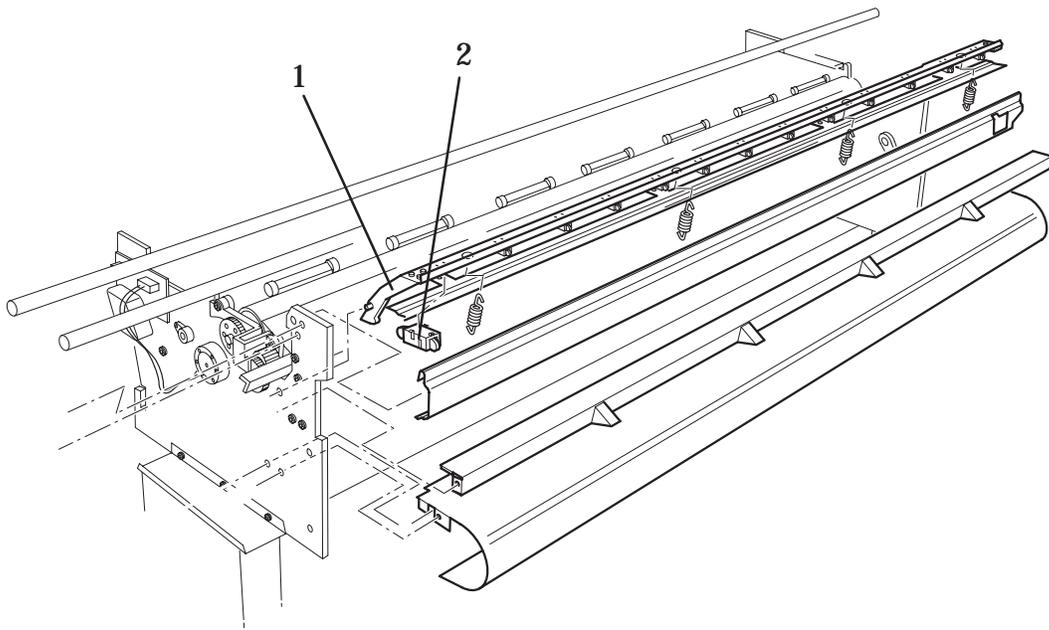
Figure 20: Bail Assembly

Starguard Assembly

Refer to figure 21 ◗ *page 8-61*

WARNING
Switch off the printer and remove the power cord.

Removal

1. Remove the following:

    1. Window and Top Cover ◗ *page 8-15.*

    2. Left Hand Cover ◗ *page 8-18.*

    3. Right Hand Cover ◗ *page 8-21.*

    4. Refill Assembly ◗ *page 8-55*

2. Remove the two T-20 screws (item 1) securing the starguard assembly (item 2) to the right hand side chassis.

3. Remove the two T-20 screw securing the starguard assembly to the left hand side chassis.

4. Slide out the starguard assembly.

Installation

1. Install the starguard assembly into the correct position in the printer.

2. Install the two T-20 screws (item 1) securing the starguard assembly (item 2) to the right hand side chassis.

3. Install two T-20 screw securing the starguard assembly to the left hand side chassis.

4. Install the following:

    1. Refill Assembly ◗ *page 8-55*

    2. Right Hand Cover ◗ *page 8-21.*

    3. Left Hand Cover ◗ *page 8-18.*

    4. Window and Top Cover ◗ *page 8-15.*

5. Connect the power cord.
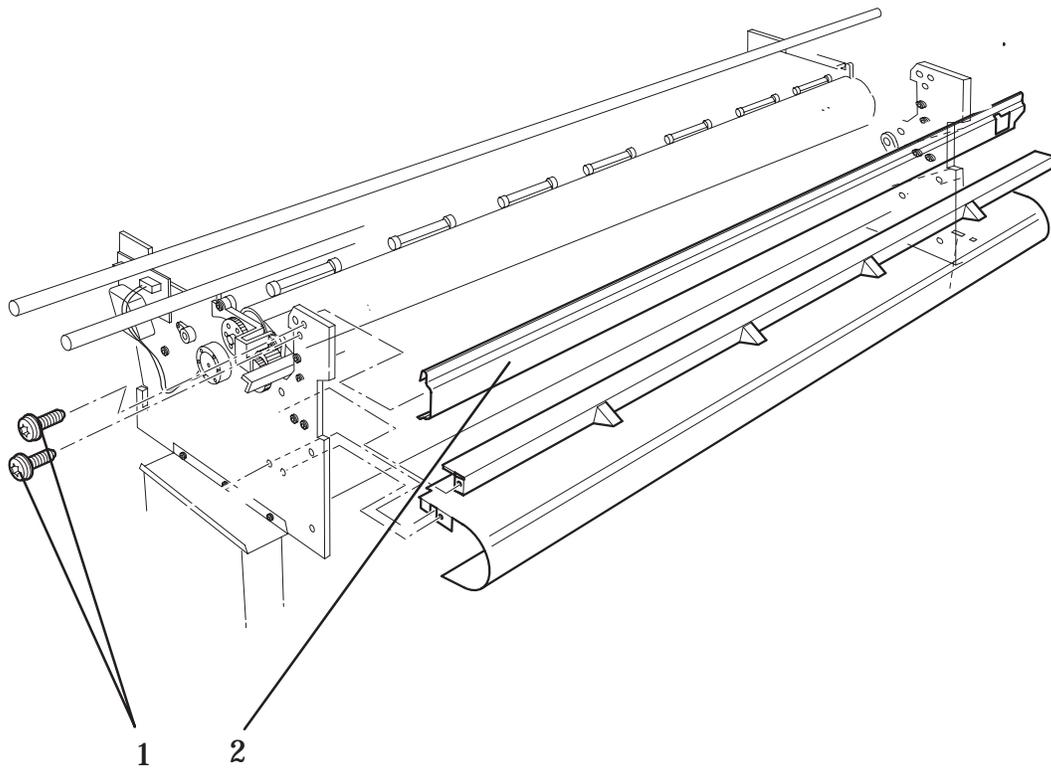
Figure 21: Starguard Assembly

Bail Stepper Motor

Refer to figure 22 ◗ page 8-63

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Left Hand Cover ◗ *page 8-18.*

    2. Bail Arm Assembly ◗ *page 8-58*

2. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back and lifting up and to the left.

3. Disconnect the bail stepper motor cable (item 1) from position **J7 STEPPER MOTOR** on the refill interconnect PCA (item 2).

4. Release the bail stepper motor cable from the cable clamp (item 3) on the left hand side chassis.

5. Remove the bail stepper motor (item 5) by removing two T-10 screws (item 4).

Installation

1. Install the bail stepper motor (item 5) in the correct position on the left hand side chassis.

2. Install two T-10 screws (item 4) into the left hand side chassis securing the bail stepper motor.

3. Connect the bail stepper motor cable (item 1) to the refill interconnect PCA (item 2) in position **J7 STEPPER MOTOR**.

4. Install the bail stepper motor cables into a cable clamp (item 3) on the left hand side chassis.

5. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

6. Install the following:

    1. Left Hand Cover ◗ *page 8-18.*

    2. Bail Arm Assembly ◗ *page 8-58*

7. Connect the power cord and turn the printer on in service mode.

8. Perform D11 Bail Service Test ◗ page 4-25
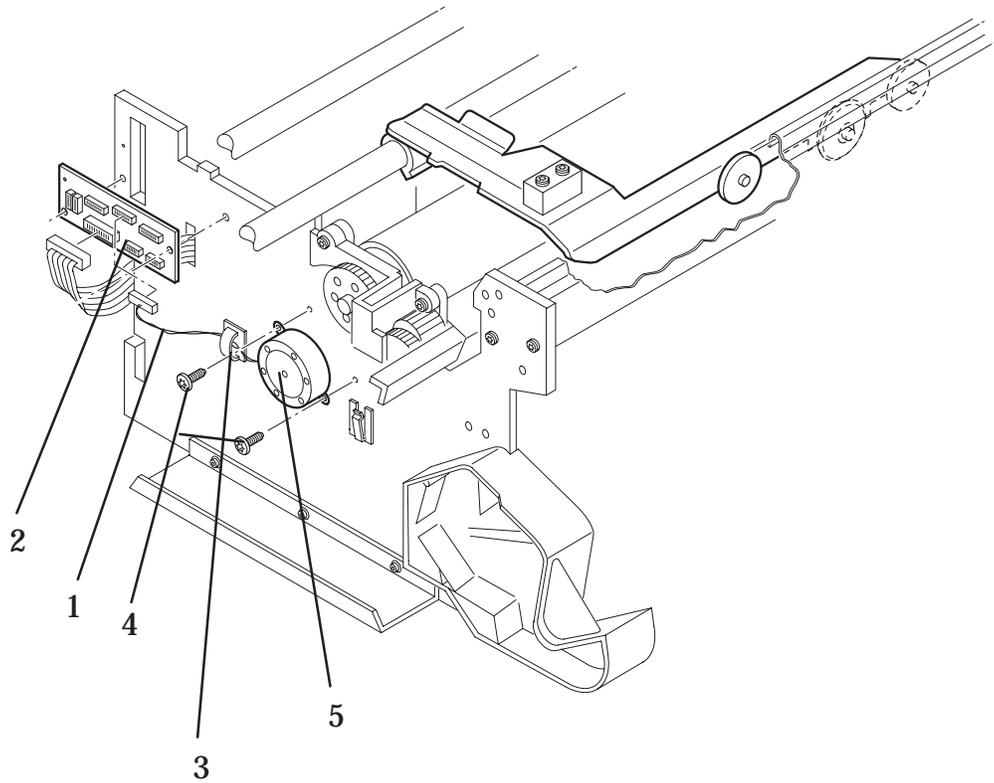
Figure 22: Bail Stepper Motor

Refill Interconnect PCA

Refer to figure 23 ◗ page 8-65

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Left Hand Cover assembly ◗ page 8-18.

2. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back and lifting up and to the left.

3. Carefully disconnect all cables (item 4) from the refill interconnect PCA.

4. Remove the refill interconnect PCA (item 1) by removing two T-20 screws (item 2) installed through two support rings (item 3) and into the left hand side chassis.

Installation

1. Install two T-20 screws (item 2) through the refill interconnect PCA and the two supporting rings (item 3) into the left hand side chassis.

2. Connect all cables (item4) to the refill interconnect PCA.

3. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

4. Install the following:

    1. Left Hand Cover assembly ◗ page 8-18.

5. Connect the power cord.

6. Perform the following service tests:

    1. D11 Bail ◗ page 4-7.

    2. D08 Sensors ◗ page 4-20.

    3. D03 Carriage Axis (Y-axis) ◗ page 4-12 .

    4. D06 Refill ◗ page 4-18.
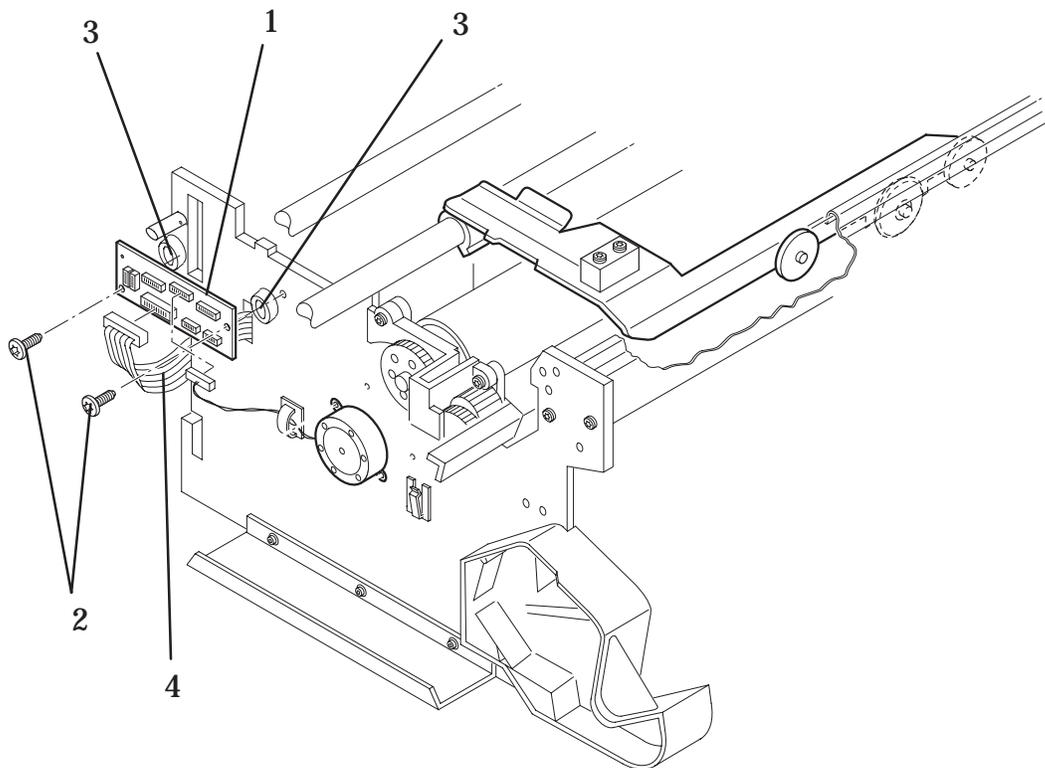
Figure 23: Refill Interconnect PCA

X-Axis Assembly

Refer to figure 24 ◗ page 8-68

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Right Hand Cover ◗ *page 8-21.*

    2. Window and Top Cover ◗ *page 8-15.*

    3. Service Station Assembly ◗ *page* **8-26***.*

    4. Left Hand Back Cover.

2. Disconnect the X-axis encoder cable (item 1) from the X-axis assembly

3. Disconnect the X-axis motor cable from position **J7 X MOTOR** from the electronics module.

4. Remove the X-axis motor cable from the cable clamp (item 2).

5. Remove the helical gear (item 4) by removing two T-10 screws (item 3).

6. Remove the three T-20 screws (item 5) securing the X-axis assembly (item 6) to the right hand side chassis.

7. Remove the X-axis assembly.

Installation

1. Install the X-axis assembly (item 6) in the correct position on the right hand side chassis,

2. While pushing down the X-axis assembly against the right hand side chassis, install three T-20 screws (item 5) securing the X-axis assembly to the right hand side chassis.

3. Install the helical gear (item 4) in the correct position on the drive roller by aligning the holes on the helical gear to the holes on the drive roller shaft (item 7).

4. Install the two T-10 screws (item 3) through the helical gear and into the drive roller shaft.

5. Connect the X-axis encoder cable (item 1) to the X-axis assembly (item 6).

6. Connect the X-axis motor cable to position **J7 X MOTOR** on the electronics module.

7. Install the X-axis motor cable in the cable clamp (item 2).

8. Install the following:

    1. Service Station Assembly ▶ page 8-26.

    2. Right Hand Cover ▶ page 8-21.

    3. Window and Top Cover ▶ page 8-15.

    4. Left Hand Back Cover.

9. Connect the power cord and turn the printer on in service mode.

10. Perform D04 Media Axis (X-axis) Service Test ▶ page 4-14.

11. Perform the following calibration:

    1. C08 Service Accuracy ▶ page 5-17
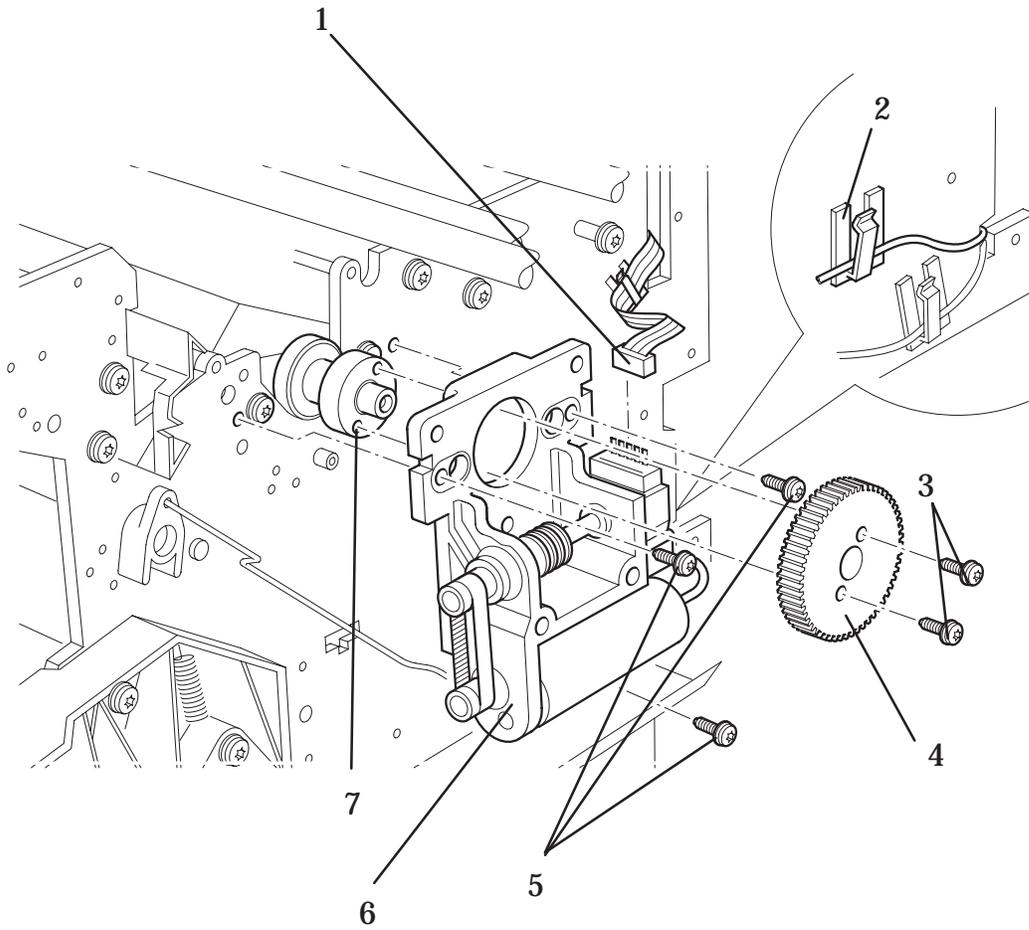
Figure 24: X-Axis Assembly

Overdrive Assembly and Drive Roller (Only Applicable to HP DesignJets 2500CP and 2000CP)

Refer to figure 25A ◗ page 8-71

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ page 8-15.

    2. Left Hand Cover ◗ page 8-18.

    3. Right Hand Cover ◗ page 8-21.

    4. Bail Arm Assembly ◗ page 8-58

    5. Cutter Assembly ◗ page 8-48

2. Manually slide the carriage assembly to the right side of the printer.

3. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back, then lifting up and to the left.

4. Remove the two T-15 screws (item 1) securing the roller support bracket (item 2) to the left hand side chassis.

5. Remove the roller support bracket.

6. Remove the clutch (item 4) and washers (item 5) on the left end of the overdrive shaft by removing the retaining clip (item 3).

7. Remove the two T-10 screws (item 8) securing the overdrive assembly (item 9) to the left and right hand side chassis.

8. Remove overdrive assembly by lifting it out on the right, then sliding to the right.

To remove the Drive Roller only

9. Remove the following:

    1. X-Axis Motor Assembly ◗ page 8-45.

    2. Service Station Assembly ◗ page 8-26.

10. Remove the shoulder screw (item 6) securing the cluster gear (item 7) to the left hand side chassis.

11. Move the pinch-arm lever to the up position.

12. Remove the drive roller (item 10) by holding the ends and lifting out.

Installation of the drive roller

Note: Make sure all the pincharm assemblies (item 11) are in the correct position before performing the next step.

1. Install the drive roller (item 10). Make sure the bearings at either end of the drive roller are installed into the correct position in the left and right hand side chassis.

2. Install the shoulder screw (item 6) securing the cluster gear (item 7) to the chassis.

3. Install the following:

   1. Service Station Assembly ▶ page 8-26.
   2. X-Axis Motor Assembly ▶ page 8-45.

Installation of the overdrive assembly

4. Install the overdrive assembly (item 9) by holding both ends and sliding the left end first through a sleeve bearing (item 12) into the mount block (item 13).

5. Install two T-10 screws (item 8) securing the overdrive assembly to the left and right hand side chassis.

6. Install the clutch (item 4) and two washers (item 5) on the left end of the overdrive shaft, then secure with the retaining clip (item 3).

7. While pressing down on the roller support bracket, install two T-15 screws (item 1) securing the roller support bracket to the chassis.

8. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

9. Install the following:

   1. Cutter Assembly ▶ page 8-48
   2. Bail Arm Assembly ▶ page 8-58
   3. Right Hand Cover ▶ page 8-21.
   4. Left Hand Cover ▶ page 8-18.
   5. Window and Top Cover ▶ page 8-15.

10. Connect the power cord and turn the printer on in service mode.

11. Perform following calibrations:

    1. C08 Service Accuracy Calibration ▶ page 5-17.

12. Perform following service tests:

    1. D11 Bail Service Test ▶ page 5-12
    2. D05 Service Station Service Test ▶ page 4-16
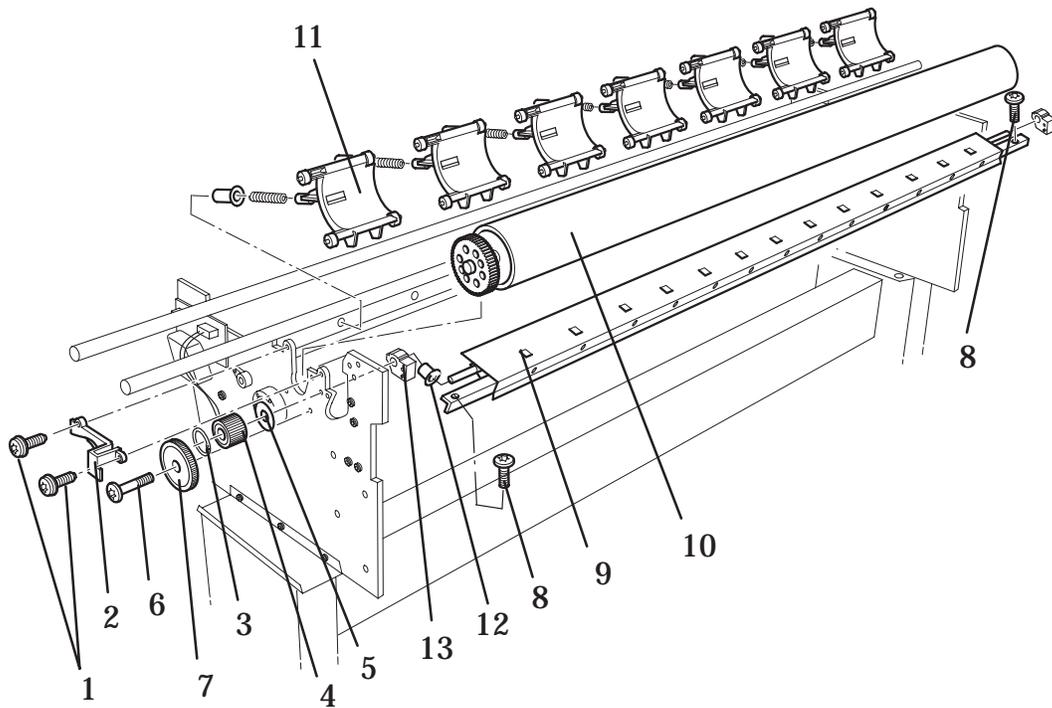
**Figure 25A: Overdrive Assembly
(Only Applicable to HP DesignJets 2500CP and 2000CP)**

Overdrive Assembly and Drive Roller (Only Applicable to HP DesignJets 3500CP and 3000CP)

Refer to figure 25B ◗ page 8-75

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ page 8-15.

    2. Left Hand Cover ◗ page 8-18.

    3. Right Hand Cover ◗ page 8-21.

    4. Bail Arm Assembly ◗ page 8-58.

    5. Cutter Assembly ◗ page 8-50.

2. Manually slide the carriage assembly to the right side of the printer.

3. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back, then lifting up and to the left.

4. Remove the two T-15 screws (item 1) securing the roller support bracket (item 2) to the left hand side chassis.

5. Remove the roller support bracket (item 2).

6. Remove the clutch (item 4) and washers (item 5) on the left end of the overdrive shaft by removing the retaining clip (item 3).

7. Remove the four T-10 screws (item 8) (two on each side) securing the overdrive assembly (item 9) to the left and right hand side chassis.

8. Remove the two screws (item 10) (one on each side) securing the overdrive assembly (item 9) to the left and right hand side chassis.

    Make sure you disconnect the Media Button Cable from the Service Station Interconnect PCA (See Figure 25C ◗ page 8-76).

9. Remove the overdrive assembly (item 9) by lifting it out on the right, then sliding to the right.

To remove the Drive Roller only

1. Remove the following:

    1. X-Axis Motor Assembly ◗ page 8-45.

    2. Service Station Assembly ◗ page 8-26.

2. Remove the shoulder screw (item 6) securing the cluster gear (item 7) to the left hand side chassis.

3. Move the pinch-arm lever to the up position.

4. Remove the drive roller (item 11) by holding the ends and lifting out.

Installation of the drive roller

Note: Make sure all the pincharm assemblies (item 12) are in the correct position before performing the next step.

1. Install the drive roller (item 11). Make sure the bearings at either end of the drive roller are installed into the correct position in the left and right hand side chassis.

2. Install the shoulder screw (item 6) securing the cluster gear (item 7) to the chassis.

3. Install the following:

   1. Service Station Assembly ▶ page 8-26.
   2. X-Axis Motor Assembly ▶ page 8-45.

Installation of the overdrive assembly

Take care when installing the Overdrive Assembly and make sure that the Media Button Cable is positioned as shown on figure 25B. If it is not correctly positioned, it will get trapped between the Overdrive Assembly and the chassis and will become damaged. Also make sure that the Media Button is routed correctly as shown on Figure 25C ▶ page 8-76.

1. Install the overdrive assembly (item 9) by holding both ends and sliding the left end first into the chassis and push it firmly down. Then push the right hand side down firmly until it reaches the pin stops.

2. Install two screws (item 10), one on each side, securing the overdrive assembly to the left and right hand side chassis.

   Note: Make sure that you install the first screw (item 10) on the right hand side first before installing the second screw (item 10) on the left hand side.

3. Install the four T-10 screws (item 8) (two on each side) securing the overdrive assembly (item 9) to the left and right hand side chassis.

4. Install the clutch (item 4) and two washers (item 5) on the left end of the overdrive shaft, then secure with the retaining clip (item 3).

5. While pressing down on the roller support bracket, install two T-15 screws (item 1) securing the roller support bracket to the chassis.

6. Connect the Media Button Cable to the Service Station Interconnect PCA (See Figure 25C ▶ page 8-76).

7. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

8. Install the following:

    1. Cutter Assembly ◗ *page 8-50*
    2. Bail Arm Assembly ◗ *page 8-58*

    IF YOU ARE INSTALLING A NEW OVERDRIVE ASSEMBLY, YOU MUST INSTALL THE OVERDRIVE SHIMS IN ORDER TO PREVENT THE CUTTER ASSEMBLY FROM CRASHING INTO THE BAIL ASSEMBLY.

9. You must install the Overdrive Shims on the Overdrive Assembly as follows (Refer to Figures 25D and 25E on page ◗ 8-77):

    *1. Peel the paper from the back of the first Overdrive Shim (**Item 1**) and install it on the Linear Blade (**Item 2**) of the Overdrive Assembly on the left-hand side of the Printer (Refer to **Figure 25D**).*

    Make sure that when you install the Overdrive Shim (item 1) that there is a gap of approximately 3mm between the Overdrive Shim (Item 1) and the Cutter Assembly Shim (Item 3) as shown on Figure 25D.

    *2. Peel the paper from the back of the second Overdrive Shim (**Item 1**) and install it on the Linear Blade (**Item 2**) of the Overdrive Assembly on the right-hand side of the Printer (Refer to **Figure 25E**).*

    Make sure that when you install the Overdrive Shim (item 1) that there is a gap of approximately 3mm between the Overdrive Shim (Item 1) and the Cutter Assembly Shim (Item 3) as shown on Figure 25E.

10. Install the following:

    1. Right Hand Cover ◗ *page 8-21.*
    2. Left Hand Cover ◗ *page 8-18.*
    3. Window and Top Cover ◗ *page 8-15.*

11. Connect the power cord and turn the printer on in service mode.

12. Perform following calibrations:

    1. C08 Service Accuracy Calibration ◗ **page 5-17.**

13. Perform following service tests:

    1. D11 Bail Service Test ◗ *page 5-12*

    2. D05 Service Station Service Test ◗ *page 4-16*
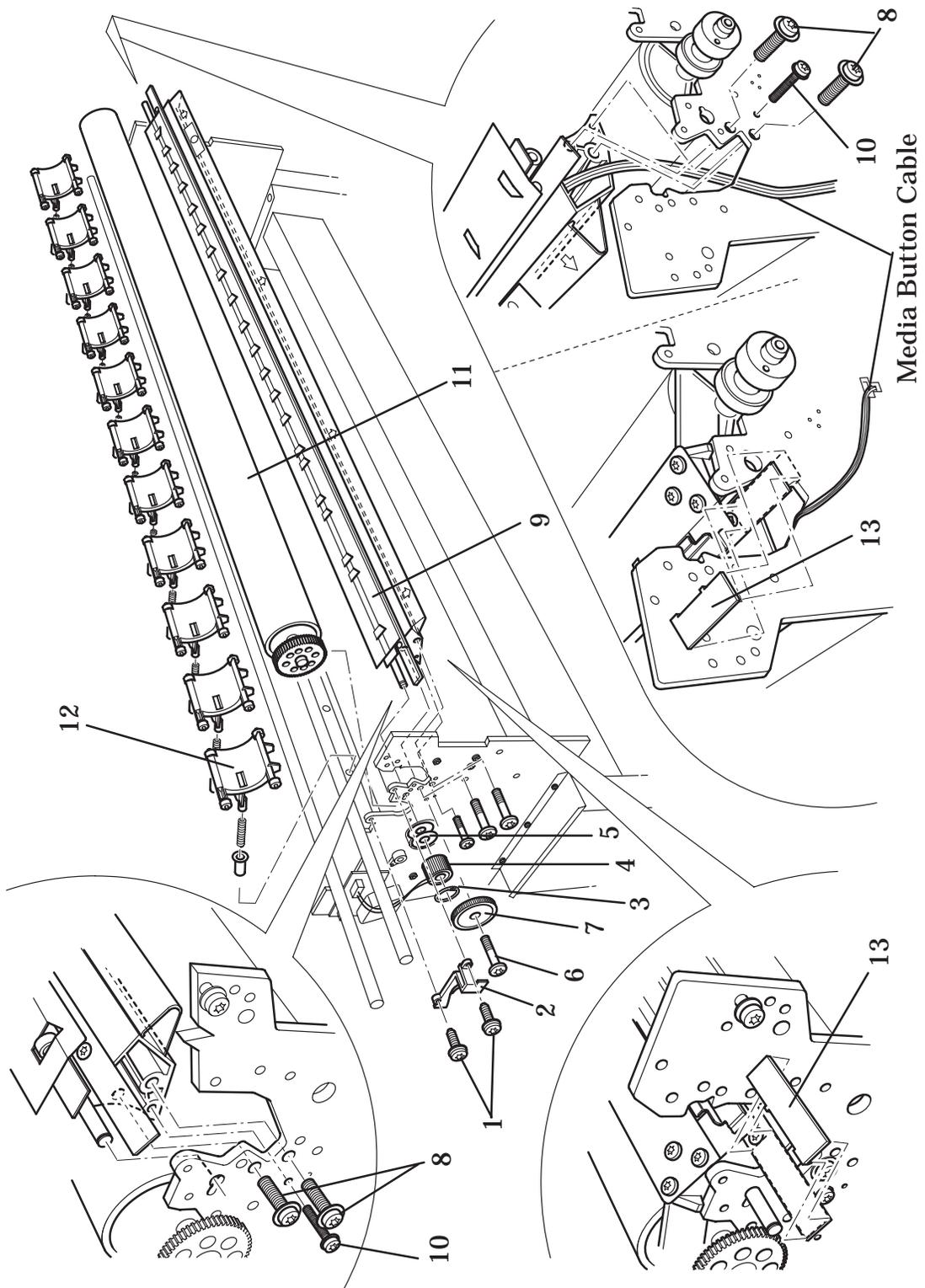
**Figure 25B: Overdrive Assembly
(Only Applicable to HP DesignJets 3500CP and 3000CP)**

Interconnect PCA

Media Button Cable

Make sure that the Media Button
Cable is Routed as shown
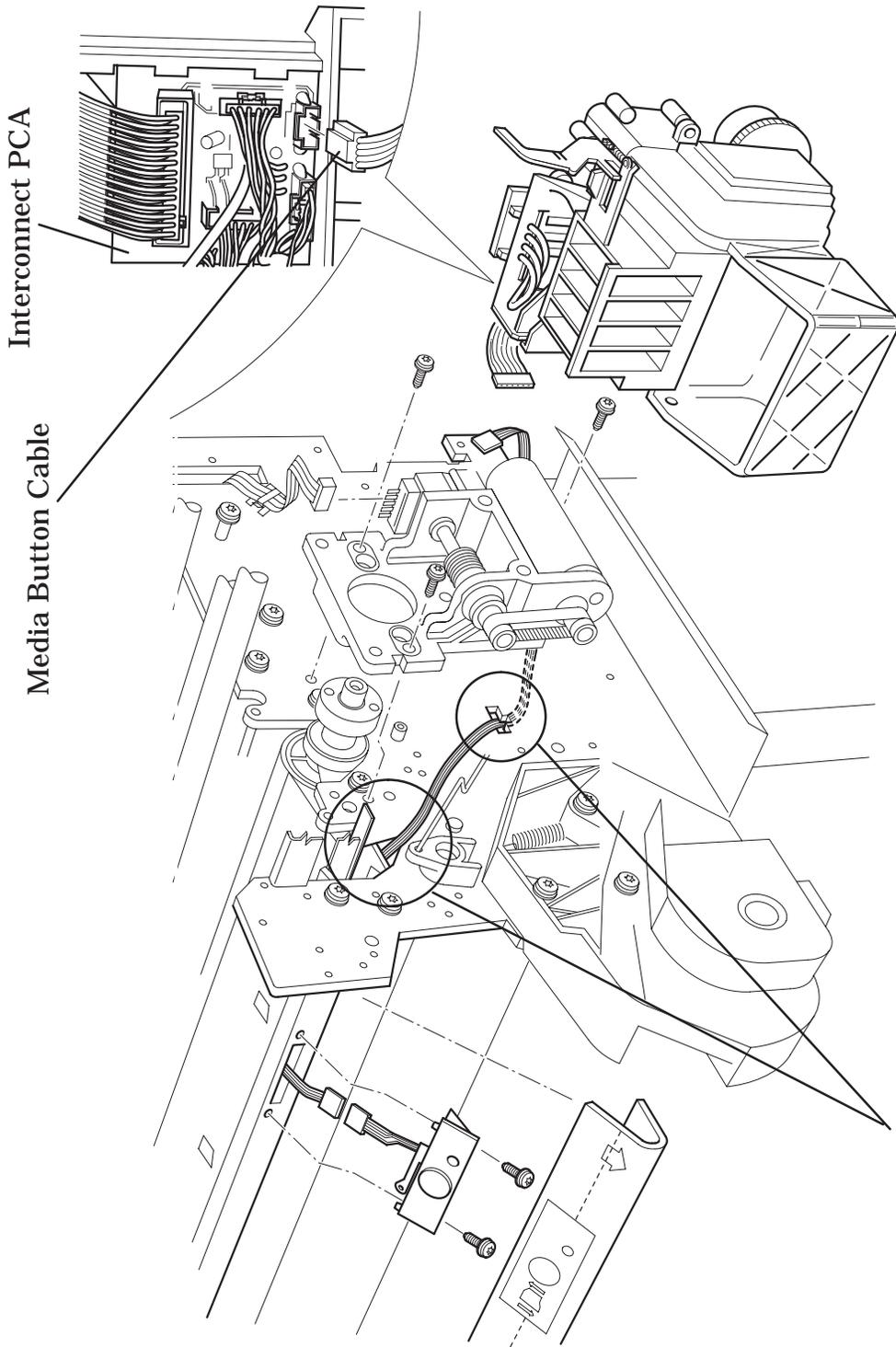
**Figure 25C: Media Button Cable Routing
(Only Applicable to HP DesignJets 3500CP and 3000CP)**

Media Button (HP DesignJets 3500CP and 3000CP Only)

Bail Assembly

Cutter Assembly Shim (Item 4)

3mm
Minimum

Screw (Item 3)

Overdrive Shim (Item 1)

Linear Blade (Item 2)
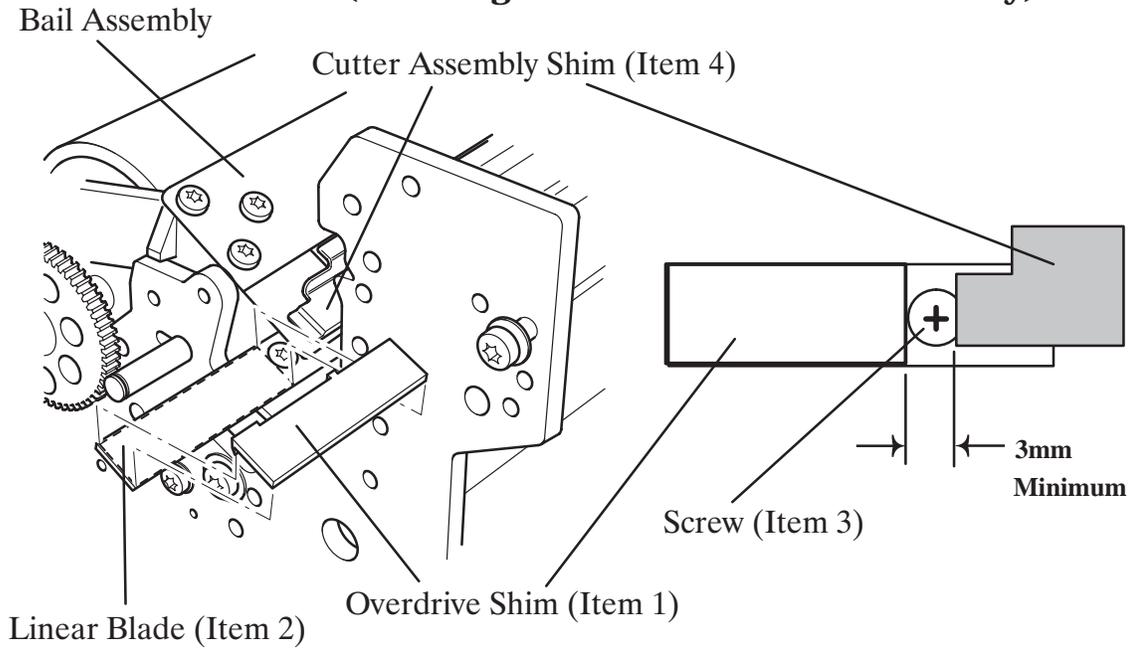
**Figure 25D: Overdrive Shims
(Only Applicable to HP DesignJets 3500CP and 3000CP)**

Bail Assembly

Cutter Assembly Shim (Item 4)

Overdrive Shim (Item 1)

Screw (Item 3)

3mm
Minimum

Overdrive Shim (Item 1)

Linear Blade (Item 2)
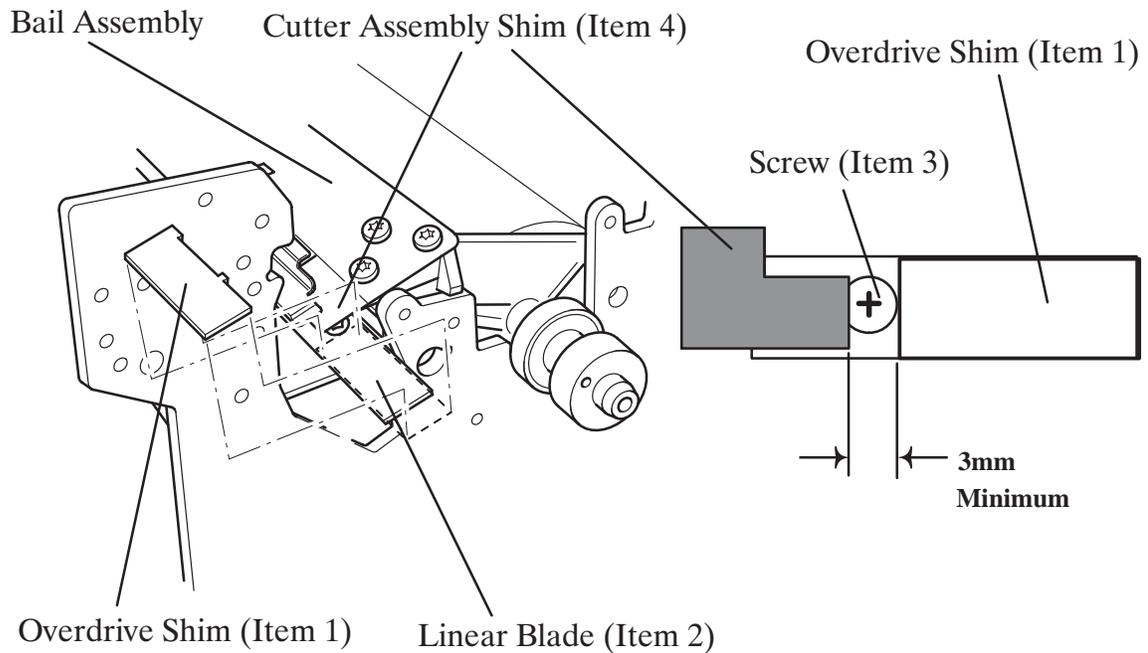
**Figure 25E: Overdrive Shims
(Only Applicable to HP DesignJets 3500CP and 3000CP)**

Entry Platen

Refer to figure 26 ◆ page 8-80

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◆ *page 8-15.*

    2. Left Hand Cover ◆ *page 8-18.*

    3. Right Hand Cover ◆ *page 8-21.*

2. Carefully disconnect the media sensor cable from the electronics module in position **J6 MEDIA**.

3. Carefully pull the media sensor assembly (item 1) off the retaining pin located underneath the entry platen (item 2). Make sure that when you pull the media sensor off the pin you do not lose the two actuators inside the assembly.

4. Remove the media sensor cable from a cable clamp at the rear of the printer.

5. Open the roll cover.

6. Remove the spindle by pulling it towards you.

WARNING
Care should be taken while performing the following procedure, the entry platen has sharp edges and could cause injury.

7. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back and lifting up and to the left.

8. Move the pincharm lever to the down position.

9. Remove the two T-15 screws securing the entry platen to the right hand side chassis.

    Caution: Be careful not to drop the entry platen once the securing fasteners have been removed. Support the entry platen throughout the next step.

10. Remove the entry platen by removing two T-15 screws (item 3), which secure the entry platen to the left side of the chassis.

Installation

1. Carefully push the media sensor assembly (item 1) onto the retaining pin located underneath the entry platen.

WARNING
Care should be taken while performing the following procedure, the entry platen has sharp edges and could cause injury.

Note: On the inside of the left and right hand side chassis, there are locating pins (item 4). The correct locating pin for the entry platen is located just below the starguard assembly.

2. Install the entry platen (item 2) onto the entry platen locating pins (item 4).

   Caution: Be careful not to drop the entry platen. Support the entry platen throughout the next step.

3. Install two T-15 screws (item 5) into the right hand side chassis securing the entry platen.

4. Install two T-15 screws (item 3) securing the entry platen to the left hand side of chassis.

5. Install the top half of the elevator assembly by securing it with two retaining clips at the back and push down and to the right.

6. Connect the media sensor cable to the electronics module in position **J6 MEDIA**.

7. Install the media sensor cable in the cable clamp at the rear of the printer.

8. Install the following:

   1. Right Hand Cover ◗ page 8-21.

   2. Left Hand Cover ◗ page 8-18.

   3. Window and Top Cover ◗ page 8-15.

9. Connect the power cord and turn the printer on in service mode.

10. Perform D08 Sensor Service Test ◗ page 4-31
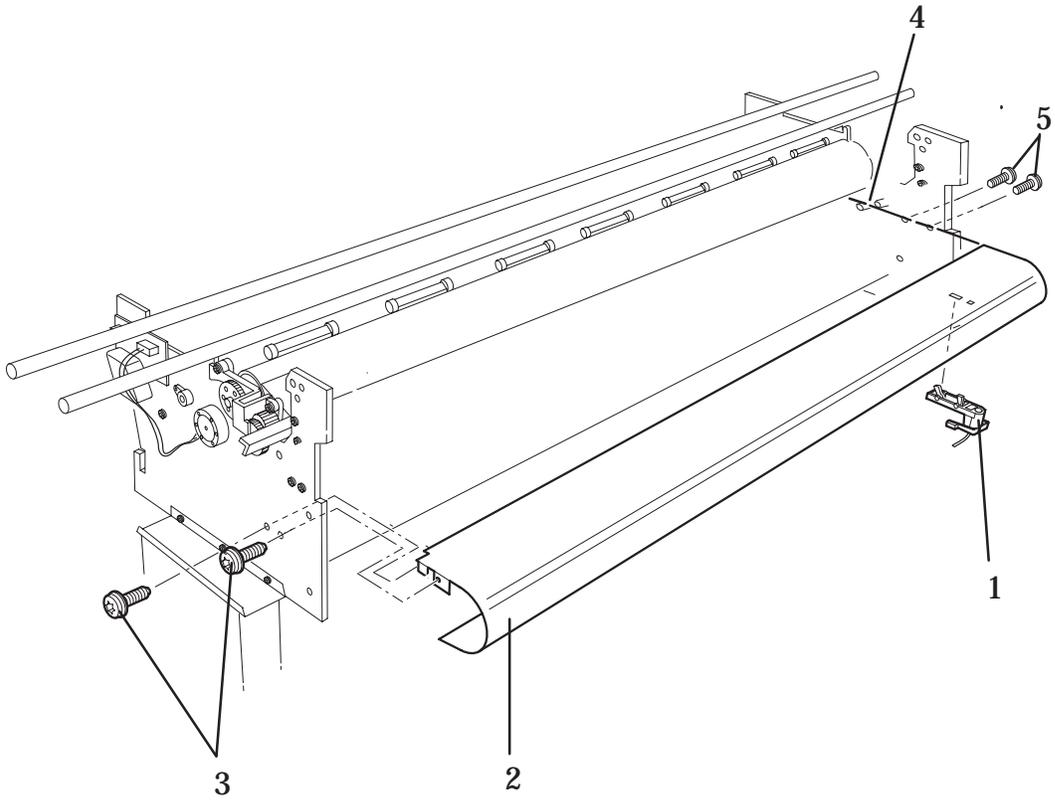
Figure 26: Entry Platen

Roll Cover and Roll Feed Assemblies

Refer to figure 27 ◗ page 8-83

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Window and Top Cover ◗ *page 8-15.*

    2. Left Hand Cover ◗ *page 8-18.*

    3. Right Hand Cover ◗ *page 8-21.*

    4. Service Station Assembly ◗ *page* 8-26.

2. Remove the spindle assembly (item 1) by pulling it towards you on the right side.

WARNING
The two springs on the roll cover are under high tension.

3. Remove the two T-10 screws (item 2) securing the two springs (item 3) onto the roll cover (item 4)

4. Loosen the two nuts (item 5) on the adjustment bracket on the left side to remove the cover.

5. Remove the three T-20 screws (item 6) securing the left hand roll feed assembly to the left hand side chassis.

6. Remove the three T-20 screws (item 7) securing the right hand roll feed assembly to the right hand side chassis.

Installation

1. Install the three T-20 screws (item 6) securing the left hand roll feed assembly to the left hand side chassis.

2. Install the three T-20 screws (item 7) securing the right hand roll feed assembly to the right hand side chassis.

3. Install the roll cover (item 4) into the correct position in the roll feed assemblies.

4. Move the adjustment bracket as far left as it can go to secure the roll cover to the left hand chassis, then tighten the nuts (item 5) on the adjustment bracket.

5. Install the two roll cover springs (item 3) onto the roll cover with two T-10 screws (item 2).

6. Install the spindle assembly (item 1) by pushing it into the retaining clips in the roll feed assembly.

7. Install the following:

    1. Service Station Assembly ▶ page **8-26***.*

    2. Right Hand Cover ▶ page 8-21.

    3. Left Hand Cover ▶ page 8-18.

    4. Window and Top Cover ▶ page 8-15.

8. Connect the power cord.
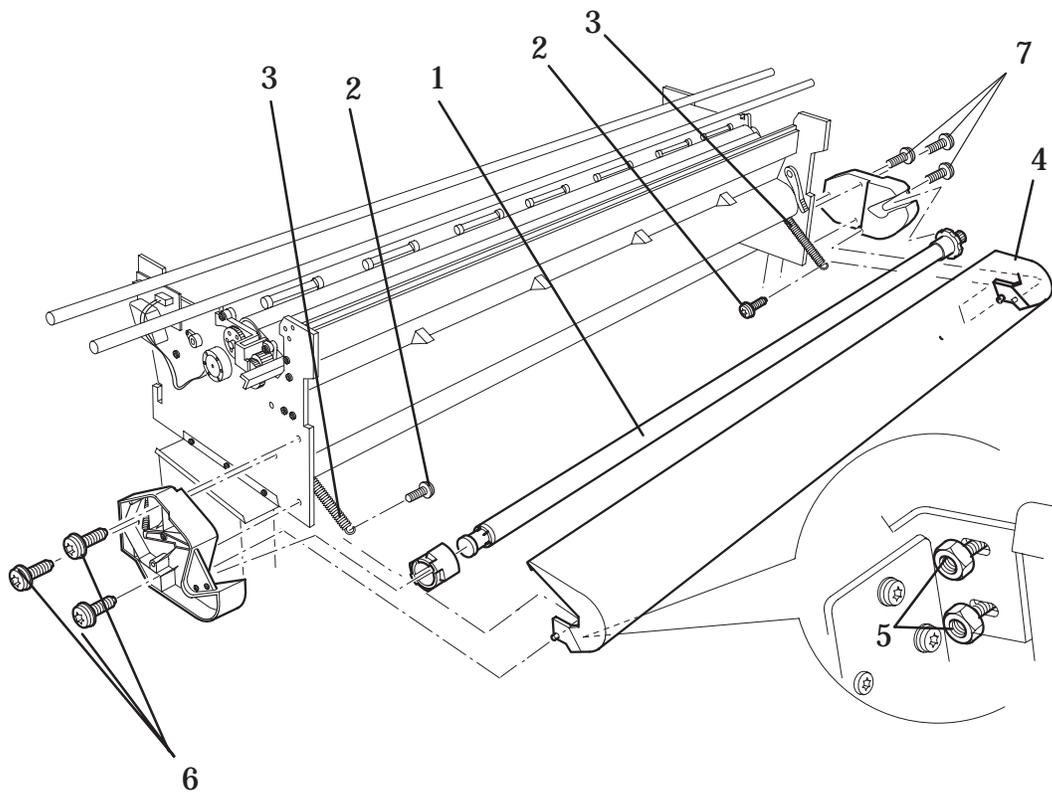
Figure 27: Roll Cover Assemblies

Pincharm Assemblies, Pincharm Shaft and Pincharm Sensor

Refer to figure 28 ◗ page 8-86

Removal of the pincharm sensor

WARNING
Switch off the printer and remove the power cord.

1. Remove the following:

    1. Right Hand Cover ◗ *page 8-21.*

    2. Service Station Assembly ◗ *page 8-26*

2. Remove the two T-10 screws (item 1) securing the pincharm sensor to the right hand side chassis.

3. Remove the pincharm sensor cable from the cable clamp (item 2) secured to the left hand side chassis.

4. Disconnect the pincharm sensor cable from the electronics module in position **J8 PINCH**.

Removal of the pincharm assemblies and the pincharm shaft.

1. Remove the following:

    1. Window and Top Cover ◗ *page 8-15.*

    2. Left Hand Cover ◗ *page 8-18.*

    3. Right Hand Cover ◗ *page 8-21.*

    4. Service Station Assembly ◗ *page 8-26.*

    5. Overdrive assembly and Drive roller ◗ *page 8-69.*

2. To remove the pincharm shaft (item 6), **loosen** the T-9 screw (item 3) at the right end of the pincharm shaft. Be careful not to loosen the screw too much as you may loose the nut (item 5)

3. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back and lifting up and to the left.

4. Pull out the cam journal (item 4) from the hole in the right hand side chassis

5. Remove the pincharm shaft from the left side of the printer by pulling it out.

6. To remove any of the pincharm assemblies (item 7) pull out from the chassis.

Installation of the pincharm sensor.

1. Install the pincharm sensor into the correct position and secure with two T-10 screws (item 1).

2. Install the pincharm sensor cable into the cable clamp (item 2) secured to the left hand side chassis.

3. Connect the pincharm sensor cable to the electronics module in position **J8 PINCH**.

4. Install the following:

   1. Right Hand Cover ◗ *page 8-21.*

   2. Service Station Assembly ◗ *page 8-26*

5. Connect the power cord and turn the printer on in service mode.

6. Perform D08 Sensor Service Test ◗ page 4-31

Installation of the pincharm assemblies and the pincharm shaft.

1. Install the pincharm shaft (item 6) into the left hand side chassis and at the same time install the pincharm spring (item 8) and pincharm assemblies (item 7) into the plastic bushing (item 9) in the chassis.

2. Install the cam journal (item 4) onto the pincharm shaft on the right hand side chassis.

3. Making sure that you do not over tighten the screw, secure the cam journal on the end of the pincharm shaft with the T-9 screw (item 3).

4. Install the top half of the elevator assembly by securing it to two retaining clips at the back and push down and to the right.

5. Install the following:

   1. Overdrive Assembly and Drive Roller ◗ *page 8-69.*

   2. Service Station Assembly ◗ *page 8-26.*

   3. Left Hand Cover ◗ *page 8-18.*

   4. Right Hand Cover ◗ *page 8-21.*

   5. Window and Top Cover ◗ *page 8-15.*

6. Connect the power cord and turn the printer on in service mode.

7. Perform D08 Sensor Service Test ◗ page 4-31
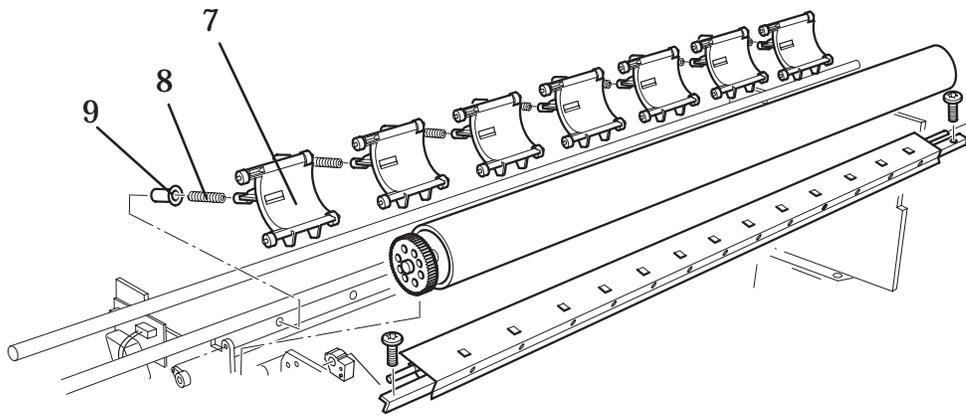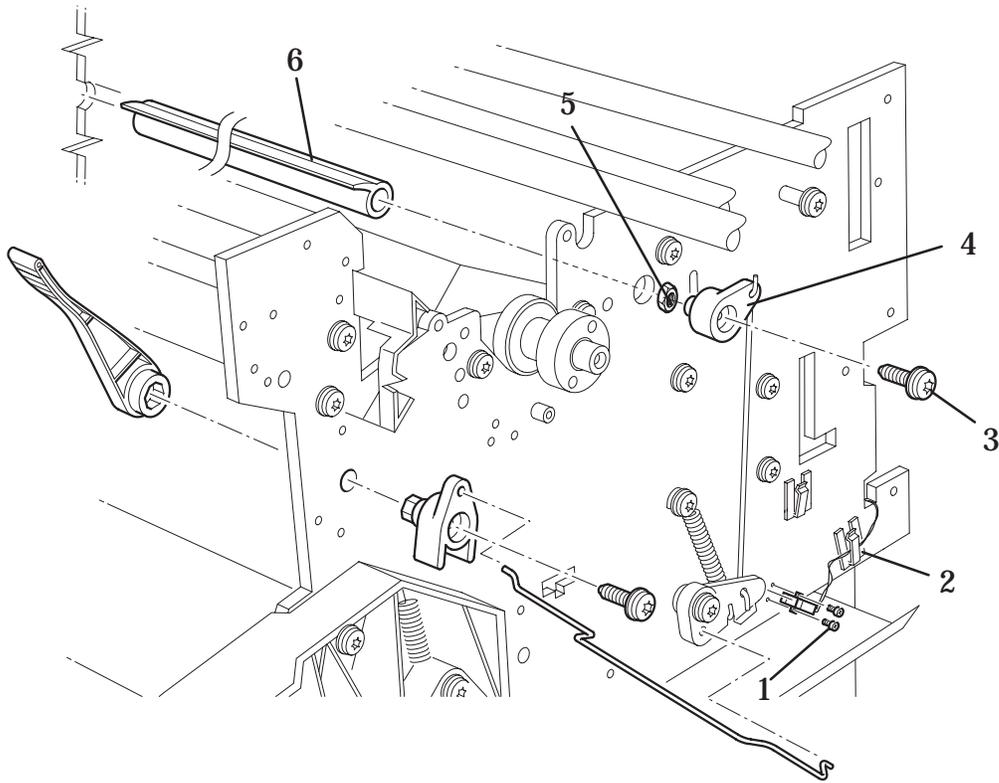
Figure 28: Pincharm Assemblies

Interconnect Cables

Refer to figure 29 ▶ page 8-89

WARNING
Switch off the printer and remove the power cord.

Removal of the refill interconnect cable.

1. To remove the following:

    1. Electronics Module ▶ *page 8-6.*

    2. Left Hand Cover ▶ *page 8-18.*

    3. Right Hand Cover ▶ *page 8-21.*

2. Remove the top half of the elevator assembly by releasing it from two retaining clips at the back and lifting up and to the left.

3. Carefully disconnect the refill interconnect cable from position **J1** on the refill interconnect PCA.

    Note: Working from the rear of the printer.

4. Remove the refill interconnect cable from the cable clamp on the right hand side chassis.

5. Pull the refill interconnect cable through the hole (item 1) in the right hand side chassis.

6. Remove the refill interconnect cable from five cable clamps (item 2) located at the back of the printer.

7. Remove the two T-20 screws (item 3) securing the ferrite clamp (item 4) to the left hand side chassis.

8. Remove the refill interconnect cable and the ferrite (item 5) from the ferrite clamp.

Removal of the service station interconnect cable.

1. Remove the following:

    Note: Working from the rear of the printer.

    1. Right Hand Cover ▶ *page 8-21.*

2. Remove the left hand back cover by releasing it from the holding clips.

3. Carefully disconnect the service station interconnect cable from the electronics module from position **J11 SRVCE STN**.

4. Carefully disconnect the service station interconnect cable from the service station interconnect PCA located underneath the service station assembly.

Installation of the service station interconnect cable

1. Connect the service station interconnect cable to the service station interconnect PCA located underneath the service station assembly.

2. Connect the service station interconnect cable to the electronics module in position **J11 SRVCE STN**.

3. Install the left hand back cover.

4. Install the following:

   1. Right Hand Cover ◗ *page 8-21.*

5. Install the power cable and turn the printer on in service mode.

6. Perform the D01 Electronics service test ◗ *page 4-7*

Installation of the refill interconnect cable

1. Install the ferrite on the refill interconnect cable into the ferrite clamp (item 4).

2. Install the ferrite in the correct position on the left hand side chassis with two T-20 screws (item 3).

3. Install the refill interconnect cable through five cable clamps (item 2) located at the back of the printer.

4. Pull the refill interconnect cable through the hole (item 1) in the right hand side chassis.

5. Install the refill interconnect cable through the cable clamp on the right hand side chassis.

6. Connect the refill interconnect cable to position **J1 REFILL STATION** on the refill interconnect PCA.

7. Install the top half of the elevator assembly by securing it with two retaining clips at the back and push down and to the right.

8. Install the following:

   1. Electronics Module ◗ *page 8-6.*

   2. Left Hand Cover ◗ *page 8-18.*

   3. Right Hand Cover ◗ *page 8-21.*

9. Install the power cable and turn the printer on in service mode.

10. Perform the Electronics service test ◗ *page 4-7.*
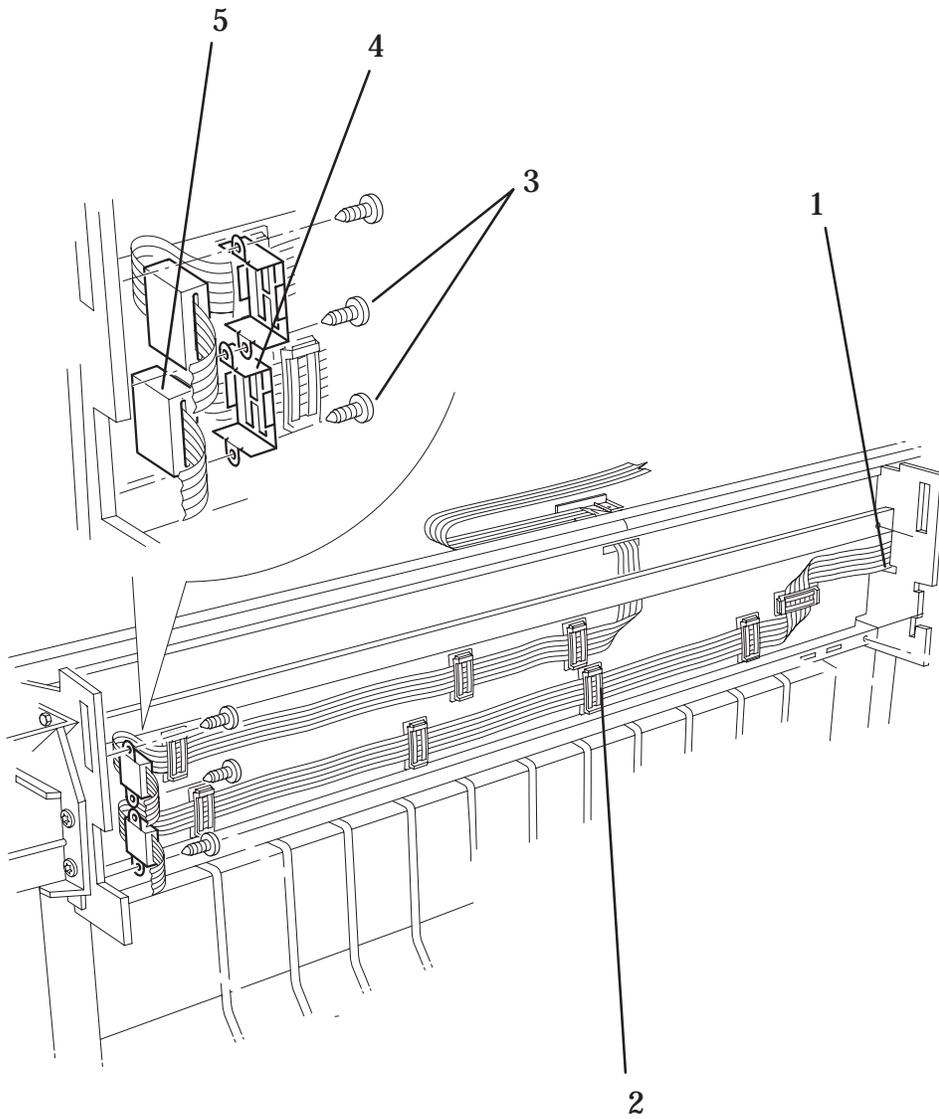
Figure 29: Interconnect Cables

Media Button (Only Applicable to HP DesignJets 3500CP and 3000CP)

Refer to figure 30 ◗ page 8-91

Removal

WARNING
Switch off the printer and remove the power cord.

1. Remove the Media Guide (item 1) from the Overdrive Assembly by unclipping it from underneath.

2. Remove the two screws (item 2) securing the Media Button (item 3) to the Overdrive Assembly.

3. Carefully pull out the Media Button (item 3) and disconnect it from the Media Button Cable (item 4).

Installation

1. Connect the Media Button (item 3) to the Media Button Cable (item 4).

2. Install the two screws (item 2) that secure the Media Button (item 3) to the Overdrive Assembly.

3. Install the Media Guide (item 1) by clipping it onto the Overdrive Assembly.
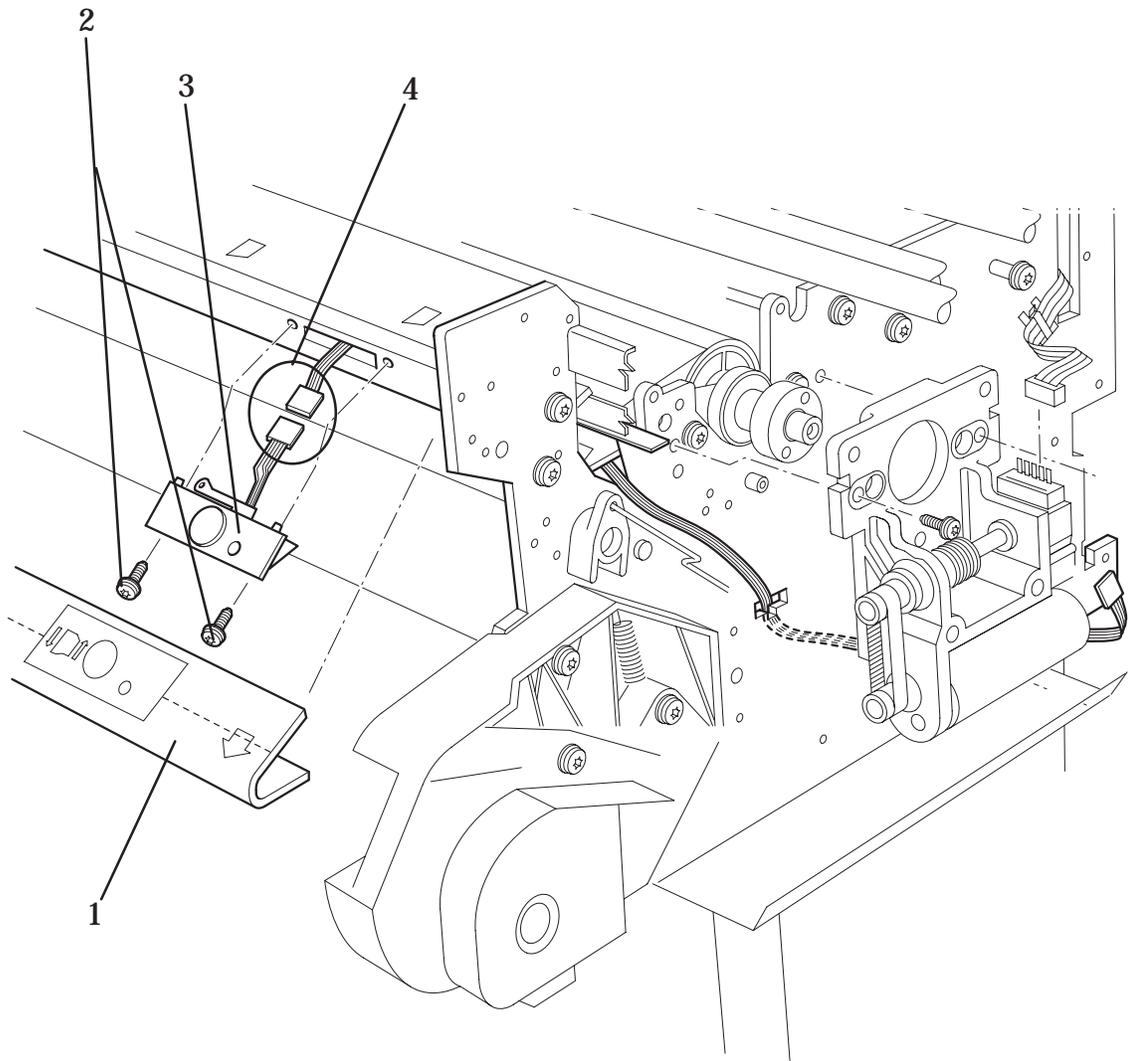
Figure 30: Media Button
(Only Applicable to HP DesignJets 3500CP and 3000CP)

9

Preventive Maintenance

Moisture on the Printer

Users should use the Printer in an environment between 5% and 95% relative humidity. To recover from moisture condensation, turn the Printer Off, and, using the main roller as a reference, wait until the Printer is completely dry before using it again.

Noisy Carriage Bushing

To prevent noisy movement of the carriage, remove aluminum or dust particles from the bushing at the back of the carriage, and from the slider path along which the bushing moves.

Belt Swelling

To prevent new belts from swelling incorrectly, keep them in their bags with dissicant until you need to install them.

Cleaning the Printer

To maintain the Printer in good operating condition, keep it free of dust accumulation, ink, and other contamination. Cleaning intervals are determined by the Printer environment and by the types of Printer supplies used.

W A R N I N G **Disconnect the Printer from the power source prior to performing any cleaning. DO NOT allow liquid to run on to electrical components or circuits, or through openings in the enclosure, as this can create a shock hazard leading to death or injury.**

General Cleaning

Proper general cleaning should include the following:

1 Blow away dust accumulation with compressed air if available.

2 Clean the outer surface of the Printer with a damp sponge or cloth. Use a mild soap and water solution if necessary. Do not use abrasive cleaners.

3 Wipe the Printer dry with a soft lint-free cloth.

Cleaning the Drive Roller

WARNING The drive roller cleaning procedure should be performed only by HP trained personnel: otherwise personal injury may occur.

If ink is spilled on the drive roller, remove the ink. Due to the ink's reflectance, ink on the roller can disrupt the Printer's edge-sensing function. To remove any ink from the roller, perform the following procedure:

1 Make sure the printer is switched OFF from the power switch on the back of the printer and **not** from the standby button on the front of the printer.

2 Hold the UP and ENTER keys down and switch the printer **O**N. Wait until the message "Status/Initializing" is displayed on the front-panel before releasing the UP and ENTER keys.

3 Once the message "Status/Ready" is displayed on the front-panel, press the **Enter** key.

4 Use the **Arrow** keys to scroll to the "Utilities" menu display and press the **Enter** button. Make sure that you are in the Full menu mode because otherwise you will not be able to access the "Service Tests" submenu.

5 Use the **Arrow** keys to scroll to the "Service Tests" menu display and press the **Enter** button.

6 Use the **Arrow** keys to scroll to the "Diagnostics" menu display and press the **Enter** button.

7 Using the **Up Arrow** button, scroll to reach the following display and press **Enter**:

> Diagnostics
> D15 Clean Roller

8 The "Unload Media" message is displayed on the front-panel. Remove the media (if loaded).

9 The "Move Roller" message is displayed on the front-panel. Use the **Up Arrow** to rotate the drive roller clockwise and the **Down Arrow** to rotate the drive roller counter-clockwise.

10 Open the window and apply any common household cleaning solution (water based only) to a soft, lint-free rag and apply it to the drive roller surface while it is rotating. Thoroughly clean the roller surface. Also make sure that you clean the mark encoder on the left side of the driver roller.

11 Press **Previous** when you have completed the cleaning procedure. The "D1500 Done" message is displayed on the front-panel.

12 Switch the Printer OFF and then ON again after a few seconds.

13 Allow the drive roller to dry before inserting media in the Printer.

Cleaning the Electrical Contacts?

The problem.

The printer fires drops by sending electrical signals from the printhead carriage to the printhead through the electrical contacts present on the carriage and on the printheads. The problem is that when you load the printheads into their stalls, sometimes some ink goes over the carriage electrical contacts, and when the printhead is installed over the printhead electrical contacts. When the printer prints, some ink goes to the bottom of the electrical contacts. This causes electrical continuity problems that can be fixed very easily.

The solution.

A new tool has been created especially to clean the electrical contacts and is called the Ink Cleaner (Part Number C6247A - includes the instructions).

Scheduled Maintenance

In some segments of the printer market, the customer tends to print more than the maximum number of prints that the throughput allows, exceeding by far the limit of the design. When this happens the customer runs into print quality problems and continuous Printer failures.

The purpose of scheduled preventive maintenance is to avoid these failures - ensuring a good performance during all the product life.

Level of Printer Usage

Normal printer use means an average of 15 image prints with an area of 0.76 m^2/print (8 ft.^{2}/print) per day. If the prints are smaller than this, the number of pages per day can be higher.

Under normal usage conditions, it will be approximately 5 years before the printer needs maintenance. If the printer is used more than the normal usage conditions, then it will need maintenance service much more frequently.

One of the EEROM counters is assigned to counting the number of swaths. When the printer exceeds 7,000,000 passes (HP DesignJets 2500CP/2000CP) or 6,000,000 passes (HP DesignJets 3500CP/300CP), the front panel displays the following message:

"Maintenance Advised"

The Service Print also conveys the usage information, and it is accessible by the user.

Once the maintenance advised message is displayed, the preventive maintenance kit must be used to replace the most worn parts of the printer. Use the Removal and Installation Chapter of this Service Manual as a guide to replace the necessary parts.

After the preventive maintenance is done the Customer Engineer must reset the maintenance counter by entering the Service Calibrations Menu and performing the Maintenance Calibration ◗ page 5-19. All other internal counters must also be reset by entering the Service Tests Menu and performing the Reset Counters test ◗ page 4-33.

Preventive Maintenance Kit - Part Number C4704-60284 (Only Applicable to HP DesignJets 2500CP/2000CP)

Preventive Maintenance Kit - Part Number C4723-60141 (Only Applicable to HP DesignJets 3500CP/3000CP)

Y-axis Maintenance Parts

In addition to the wearing of the Y-axis motor, the friction in this area can increase due to the accumulation of ink particles and dust from the media or the atmosphere in the vicinity of the slider rods.

The Y-axis maintenance parts include the items necessary to clean the slider rods properly, and a lubricant to apply onto the rods.

The most important parts to keep clean are the upper and internal sides of the rods.

NOTES

10

Functional Overview

Service Station Stepper Motor X-Axis

Service Station Stepper Motor Z-Axis

Primer Assembly Stepper Motor

Service Station Sensor

Primer Sensor

Line Sensor

Temperature Sensor

Humidity Sensor

Encoder Strip Sensor

Carriage PCA

Valve Sensors

Elevator Stepper Motor

Refill Stepper Motor

Elevator Sensor

Refill Sensor

Service Station Interconnect PCA

Right Hand Cover Sensor

Window Sensor

Left Hand Cover Sensor

Refill Interconnect PCA

Front Panel

Bail Motor

Service Station Interconnect Cable

Refill Interconnect Cable

Front Panel

Data Cable

MIO

Trailing Cable

Main PCA

Service Station

Standby Button

Media Sensor

Pinch Wheel Sensor

X-Axis Motor

X-Axis Encoder

Hard Disk Drive

Hard Disk Drive Power Cable

ROM (Code)

DRAM (Data)

Power Switch Cable

Power PCA

Refill Interconnect Cable

Y-Axis Motor

Standby Button

Media Sensor

Pinch Wheel Sensor

X-Axis Assembly Motor

Electronics Module

DesignJet 2500CP/3500CP PostScript SKU

The PostScript SKU will have a network interface, 20 MB of memory and a Hard Disk Drive. Mac PostScript, Windows PostScript Drivers and HP color kit will be provided.

DesignJet 2000CP/3500CP RTL SKU

The RTL SKU will have 8 MB of memory. It will not be able to print large/complex HP-GL/2 or mixed files without extra memory. It will support the HP-GL/2, PJL, PML and HP RTL languages plus VarWare. No drivers are provided since it is intended for use with an external hardware or software RIP.

DesignJet 2800CP/3800CP

This configuration is based on a DesignJet 2000CP or 3000C connected to an external Fiery RIP, together forming the 2800CP or 3800CP Units.

Printed Circuit Assemblies (PCA)

The printer contains a system of several PCA and cabling which link the various sub systems. The PCA system consists of the following:

- Power Supply Unit(PSU): This is connected directly to the mains supply. It provides 35v and 26v to the rest of the electrical system.

- Main PCA: The controller PCA. It contains the I/O connectors for connection to the host (MAC, PC or network) which provides the data to be printed. The processing of this data is performed by the digital system, the processor, the control ASIC and the memory. The processed data is then sent to the carriage and the printheads via the writing system ASIC, while at the same time the motors and the other systems are controlled by the periphery control ASIC.

- Carriage PCA: Connected to the main PCA via the trailing cable. The printhead data and power comes from the main PCA. The Carriage PCA contains two ASICs for driving the four printheads. Also on the carriage PCA are Analogue to Digital Converters (ADCs). These monitor the printheads, the temperature and humidity sensors and the printhead voltages. This information is fed back to the main PCA, enabling control of the printheads over the expected range of environmental conditions. Additionally the Y-axis encoder signals are sent to the main PCA via the carriage PCA.

- Front Panel Assembly: This provides the user interface to the machine. It is connected directly to the main PCA. The front panel assembly consists of the Vacuum Fluorescent Display (VFD), a push button keyboard and light emitting diodes (LEDs).

- Service Station Interconnect: This small PCA provides connectivity between the main PCA and the sensors and stepper motors on the right hand side. It is located underneath the service station.

- Refill Station Interconnect: This small PCA provides connectivity between the main PCA and the sensors and stepper motors on the left hand side. It is located on the left hand side plate.

Y-Axis Assembly

The Y-axis Assembly provides accurate left and right motion to the printheads. It aligns the printheads to the refill assembly and the service station. The Y-axis assembly contains the following:

- Carriage Assembly.
- Y-axis Belt.
- Y-axis Belt Tensioner Holder.
- Y-axis Motor Assembly.
- Encoder Strip.
- Trailing Cable

Carriage

The carriage assembly is installed onto slider rods with three bushings, these are located underneath the carriage assembly. The carriage assembly holds the four printheads.

- It warms the printheads and fires the nozzles.
- It regulates the distance between the printheads and the media by means of a screw and nut system located at the rear.

It also contains the carriage PCA, temperature and air humidity sensors, the line sensor, encoder strip sensor and the trailing cable. The carriage assembly also pulls the media cutter across the media.

Y-axis belt and Y-axis belt tensioner

The Y-axis belt is secured to the carriage assembly by routing it through a labyrinth located under the carriage assembly. The Y-axis belt is tensioned with a spring and wedge clip system located at the right side of the printer. The belt is driven by the Y-axis motor assembly

Y-axis motor assembly

The Y-axis motor assembly is secured to the slider rods on the left side of the printer and contains a dc motor. The grounding of the encoder strip is provided by a metal strip which is secured to the Y-axis motor assembly.

Encoder Strip

The encoder strip is used by the carriage Assembly as a reference point. The carriage assembly sensor reads windows in the encoder strip. This enables the carriage assembly to know exactly where it is on the Y-axis assembly.

Trailing cable

The trailing cable consists of three ribbon cables. There are 32 conductors in each cable, however conductor number 1 and 32 are not used, as they can be broken when removing or installing. The three cables are all strapped together, but are misaligned to make them easier to connect to the carriage assembly. One end of the trailing cable is printed with red lines. These show the engineer which end of the trailing cable to install into the carriage assembly.

Service Station Assembly

The Service Station is housed inside the right hand cover. At the top of the Service Station is the printhead cleaner carriage. This assembly contains four printhead cleaners (one for each printhead). Printhead cleaners are disposable cassettes which maintain the condition of the printheads.

The main functions of the Service Station are:

- Move the Printhead Cleaner Carriage to the different positions needed to perform the maintenance tasks on the printheads.
- Enable the change of the printhead cleaners by the customer.
- Press caps on the printhead cleaners against the printheads with sufficient force to assure a perfect seal.
- Move the wipers on the printhead cleaners with a minimum speed to clean the printheads.

Primer Assembly

The Primer Assembly applies a vacuum to the printhead. It is a sub-assembly of the Service Station Assembly. It has two chambers (one larger than the other). Air is moved from one chamber to the other by a motor, this results in a vacuum which is applied to the printhead for maintenance purposes.

Refill Assembly

The Refill Assembly is housed inside the left hand cover. It refills all four printheads simultaneously when the ink in any of the printheads fall below a certain threshold. Ink is moved from the ink cartridges to the printheads via four tubes. The ink is sucked up the four tubes to valves in the Refill Assembly by air pressure. This is controlled by the raising and lowering of the ink cartridges, which is done by the Elevator Assembly.

Elevator Assembly

The Elevator Assembly is located under the Refill Assembly. Its function is to raise and lower the four ink cartridges. The Elevator Assembly is raised and lowered by three cams and a stepper motor.

- When the Elevator is in the up position it causes negative air pressure in the Refill Assembly. This has the effect of drawing ink from the ink cartridges into the printheads.
- When the Elevator is in the down position the air pressure is stabilized.
- The middle position enables the removal and installation of the four ink cartridges.

X-Axis Assembly

The X-axis assembly is located on the right hand side of the printer and contains a dc motor. This turns the drive roller via a worm drive and a helical gear.

Electronics Module

Most of the electronics used by the printer are located in the electronics module. This enables the electronics to be repaired by simple removing the whole module, and replacing it with a new one. A new electronics module consists of the following:

- Main PCA
- Power Supply Unit (PSU)
- Cooling Fan

Components which are not supplied with a new electronics module but are located inside the module are:

- Hard Disk Drive (***Only for HP DesignJet 2500CP/3500CP printer***)
- MIO - Supports LAN connectivity
- Flash SIMMs (firmware)
- RAM SIMMs (memory modules)

Stepper Motors

Three six pin connectors connect three stepper motors on the left hand side to the refill interconnect PCA:

- The Bail stepper motor lifts the bail assembly during paper loading
- During printhead refill the Elevator stepper motor moves the elevator assembly up and down.
- The Refill stepper motor moves the refill assembly to engage the valves.

Three six pin connectors connect three stepper motors on the right hand side to the service station interconnect PCA:

- Two stepper motors move the service station forward and backward and up and down.
- The primer stepper motor drives the primer assembly.

Sensors

Line Sensor

The line sensor is located on the carriage assembly. The functions of the line sensor are:

- Detect and measure lines when performing the accuracy calibration.
- Detect and measure lines when performing the printhead alignment.
- Detect the media width and skew during media loading.
- Detect the position of the drive roller by reading a mark located on the side of the drive roller.
- Checks each nozzle is operating correctly.
- Detect the amount of ink that a printhead has to spit in order to reach the reference colour.
- Performs the X-axis calibration

Other sensors located on the carriage PCA are the temperature and humidity sensors and the encoder strip sensor.

Cover Sensors

There are two mechanical sensors located on the right hand cover. These sense the opening and closing of the right hand cover door and the window. They are connected to the control panel, information is then relayed to the main PCA in electronics enclosure.

The left hand cover door sensor is mounted on the side plate. It is connected to the refill interconnect PCA, information is then relayed to the main PCA in the electronics module.

Mechanical Interface Sensors

- Media Sensor: Detects if the media is loaded or not.
- Pinch wheel Sensor: Detects if the position of the pinch arm is up or down.
- Service Station Sensor: Senses the position of the service station assembly.
- Primer Sensor: Senses the position of the primer assembly.
- Elevator Sensor: Senses the position of the elevator assembly.
- Valve Sensor: Four mechanical micro-switches sense the installation of the reservoir valves in the refill assembly.
- Refill Sensor: Senses the two extreme positions of the refill assembly.

APPENDIX - Reinstalling the Fiery Box

Reinstalling the Fiery X2-W

This is the procedure for replacing a Fiery X2-W at a customer site. It is assumed that you have contact with a system administrator who will supervise the installation and the network setup.

Front panel

a
b
c
d

Back panel

e
f
g
h
i

Printer interface cable

Parallel interface cable

Power cable

Media package
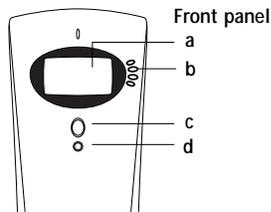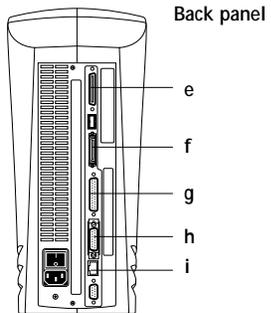
Before you begin

Make sure you are familiar with the following before you attempt to reinstall the Fiery X2-W:

- The operation of the Control Panel on the front panel (see left above)—**a**. display window (LCD), **b**. line selection buttons, **c**.up and down button, **d**. menu button

- The location of connectors on the back panel (see left below)—**e**. SCSI interface port, **f**. parallel port, **g**. printer interface port, **h**. AUI port, **i**. RJ-45 port

It is essential that you perform the following before you begin reinstallation:

- Contact the network administrator or your contact at the customer site and advise that person of your intent to reinstall the Fiery X2-W.

- If possible, have a copy of the Configuration page from the Fiery X2-W that is being replaced for network settings needed for the reinstallation. If not, use the checklist at the end of this document to obtain the information for network setup.

Unpack the Fiery X2-W

1. **Open the box and remove any packing materials.**

    Do not discard the original boxes and packing materials—leave at the customer site.

2. **Remove the contents from the top container. Inspect the contents for visible damage. The contents may or may not include the following items:**

    - Printer interface cable in the accessory kit

    - Bag containing a parallel interface cable

    - The power cable is shipped with the printer, not the Fiery X2-W.

    - Fiery X2-W media package (includes a package of user documentation, the User Software CD, and the System Software CD). If a media pack is included, leave it at the customer site

3. **Set aside the remaining components from the top container.**

4. **Remove the top container and any packing materials.**

5. **Carefully lift the Fiery X2-W out of the box.**

    If you notice shipping damage to any Fiery X2-W component, be sure to save the shipping container in case the carrier needs to see it.

Connect power and start the Fiery X2-W

When you have just unpacked the Fiery X2-W, power it on before you connect it to the printer and the network. Diagnostics are run automatically during startup.

1. **Connect the recessed end of the power cable to the power connector on the Fiery X2-W back panel. Make sure that the Fiery X2-W power switch is in the Off position (press 0), and plug the other end of the power cable into a grounded electrical outlet.**
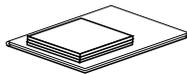
2. **Power on the Fiery X2-W using the power switch on the back panel.**

3. **Allow the Fiery X2-W Start-up diagnostics to proceed without interruption while you watch the Control Panel. Do not press any buttons on the Control Panel when the message appears: "For software update or setup, press any key."**

    If an error occurs during startup, the activity light flashes red and remains on at the end of the tests. The Control Panel then displays the Test Failed screen. Pressing the Details line selection button in the Test Failed screen gives you more information about the failing test.

4. **If the Select Language screen is displayed, select the language for the Control Panel.**

    The Select Language screen is displayed the first time you start the Fiery X2-W after unpacking it and after system software is installed. To select a language different from the one initially highlighted on the Control Panel, use the up and down button to scroll through the list and select OK when the desired language is highlighted.

5. **If the Setup screen is displayed, select Server, Network, Printer and then Exit Setup.**

    To exit Setup, you must first enter Server Setup, Network Setup, Printer Setup, and save changes. To skip through the Setup options, press the menu key to access the Save Changes screen and select Yes which configures each Setup with the default configuration. After the Fiery X2-W is connected to the network, the system administrator can reset options according to the network and user environment.

    NOTE: It is the responsibility of the system/site administrator at the customer site to complete server/network setup for the Fiery X2-W. At most sites, may users will be sending jobs to printers and servers on the network during the time of your visit—you need to be sure you do not interfere with their work.

6. **Allow the system to proceed to Idle to confirm that the Fiery X2-W is operating correctly.**

    Once the Fiery X2-W reaches Idle, you are ready to connect it to the printer and the network. Setup options should be configured after making these connections.

Connect to the printer and print a Test page

1. **Power off the Fiery X2-W. If the printer is on, power it off.**

    Make sure the Info screen reads Idle before you power off the Fiery X2-W. If the system has just finished processing, wait one minute before you power it off.

2. **Locate the printer interface cable (see page 1) and connect the proper end of the cable to the parallel port on the printer.**

3. **Connect the other end of the cable to the Fiery X2-W printer interface port (see g in illustration of back panel on page 1).**

4. **Power on the printer and allow it to warm up to Ready state.**

5. **Power on the Fiery X2-W using the power switch on the back panel. When the Info screen is at Idle, press the menu button to display the Functions menu (see left).**

    ```
    Print Pages       ▶  ◀──
    Reboot Server     ▶

    Functions        i↑
    ```

6. **Press the line selection button to the right of Print Pages, and then select Test Page from the submenu. Examine the quality of the Test Page from the printer.**

    You have now verified the connection between the Fiery X2-W and the printer.

Connect to the network

The network ports on the motherboard are:

- AUI (Attachment Unit Interface) port for a thin Ethernet cable (thinnet) or a thick Ethernet cable (thicknet)
- RJ-45 port for 10/100BaseT twisted pair

TO CONNECT A THINNET OR THICKNET CABLE TO THE FIERY X2-W:

1. Power off the Fiery X2-W before connecting it to any network device.

2. With the AUI slide latch in the open position, connect the network cable to the AUI port on the back of the Fiery X2-W (see h in illustration of back panel on page 1). Slide the latch to lock the connector in place.

    - To connect a 10Base2 thinnet cable to the Fiery X2-W, an Ethernet transceiver must be installed on the Fiery X2-W AUI port. The thinnet cable then connects to the BNC connector on the Ethernet transceiver. If the transceiver has an SQE switch, make sure the switch is set to OFF.
    - To connect a 10Base5 thicknet cable to the Fiery X2-W, connect the AUI drop cable directly to the AUI port on the back of the Fiery X2-W.

3. Work with the system administrator at the customer site to configure Setup options. Use the Configuration page from the deinstalled Fiery X2-W as a guide.

    (Network setup is detailed in the *Administrator Guide* that came with the user documentation.)

4. Verify the network connection and perform any additional network Setup required. Print a Configuration page from the Print Pages submenu (see page 2) for reference.

5. Verify that the Fiery X2-W appears in the list of printers on a networked computer, and print a few test documents from a computer that will use the Fiery X2-W.

TO CONNECT A TWISTED PAIR CABLE TO THE FIERY X2-W:

1. Power off the Fiery X2-W before connecting it to any network device.

2. Connect the network cable to the RJ-45 port on the back of the Fiery X2-W (see i in illustration of back panel on page 1).

    A Category 5 unshielded twisted pair (UTP) network cable must be used for 100BaseT.

3. Work with the system administrator at the customer site to configure Setup options. Use the Configuration page from the deinstalled Fiery X2-W as a guide.

    (Network setup is detailed in the *Administrator Guide* that came with the user documentation.)

4. Verify the network connection and perform any additional network Setup required. Print a Configuration page from the Print Pages submenu (see page 2) for reference.

5. Verify that the Fiery X2-W appears in the list of printers on a networked computer, and print a few test documents from a computer that will use the Fiery X2-W.

Connect the Fiery X2-W to a PC via the parallel port

The IEEE 1284-C parallel port on the back of the Fiery X2-W provides a high-speed interface for connecting directly to the parallel port of a stand-alone or networked PC through a parallel cable. The parallel cable should be IEEE 1284-C subcompliant and have a male 36-pin mini C connector on one end, and a 25-pin male D-sub shielded connector at the other.

1. Power off the Fiery X2-W and the PC.

2. Connect a parallel cable to the parallel port on the back panel of the Fiery X2-W (see f in illustration of back panel on page 1).

3. Connect the other end of the parallel cable to the parallel port of the PC.

4. Power on the PC and the Fiery X2-W.

5. Work with the system administrator at the customer site to configure Setup options. Use the Configuration page from the deinstalled Fiery X2-W as a guide.

   (Network setup is detailed in the *Administrator Guide* that came with the user documentation.)

6. Verify the parallel port connection, and once the Fiery X2-W reached the idle state, print a few test documents from the PC connected to the Fiery X2-W.

Before you leave the customer site

To ensure that the Fiery X2-W has been reinstalled correctly and is functioning properly, perform the following:

- Print another Test page from the Fiery X2-W (see page 2).
- Print a test document from a Windows computer.

  Have the customer choose Control Panel from the Start menu. In the Control Panel window, double-click the Printers icon, and in the Printers window, right-click the icon for the Fiery X2-W and choose Properties from the menu that appears. In the Properties window, click Print Text Page. The Fiery X2-W should begin processing and printing the Test Page.

- Print a Configuration page from the Fiery X2-W.

  At the Idle screen, press the Menu button to display the Functions menu. Press the button to the right of Print Pages. In the Print Pages submenu, press the button to the right of Configuration.

  If possible, post it on a well near the Fiery X2-W or attach it to the side of the Fiery X2-W.

Table for Fiery X2-W Network Setup

Obtain information from the network administrator or the contact at the customer site to fill in the column on the far right if you do not have a Configuration page from the Fiery X2-W that was deinstalled.

Network type	Information from the network administrator	Fiery X2-W settings/enter data	Comments	Setting/value to be input at Fiery X2-W Setup
AppleTalk	AppleTalk zone	*List of zones*	If your segment has only one zone, the Fiery X2-W is assigned to that zone automatically.	
TCP/IP	Communication speed via Ethernet	Auto Detect 100 Mbps 10 Mbps TP 10 Mbps AUI	10 Mbps TP and 10 Mbps AUI refer to how the Ethernet cable is connected to the Fiery X2-W either through twisted pair cable on the RJ-45 port or through the AUI port.	
	IP address	[Enter data]		
	Subnet Mask	[Enter data]		
	Gateway address	[Enter data]		
IPX/SPX in a Novell network environment	Frame types	Ethernet 802.2 Ethernet 802.3 Ethernet II Ethernet SNAP		
	NetWare Directory Services (NDS) or Bindery or both	NDS Setup Bindery Setup	Version of Novell NetWare—Version 4.x (NDS) or version 3.x (Bindery)	
IPX/SPX (NDS)	NDS tree for Fiery X2-W to log into	*List of NDS trees*	Browse to find the User Login object.	
	User login required?	Yes/No		
	If yes, which area of the NDS tree to navigate to find the related user object?	*NDS tree name* Object list ".."		
	Password required to log into NDS tree?	[Enter data]		
	Location of print server object on NDS tree	[Navigate the NDS to the print server]		
	Password required to attach to the print server object?	[Enter data]		
	Where should the Fiery X2-W look for Print Queues	Entire NDS Tree Specified subtree	Restricting the search with Specified subtree is more efficient.	
	If the Fiery X2-W has been set to look at a subtree for the Print Queue, where does the subtree begin?	[Browse to the root of the Print Queue subtree]		

Network type	Information from the network administrator	Fiery X2-W settings/enter data	Comments	Setting/value to be input at Fiery X2-W Setup
IPX/SPX (Bindery)	If using NetWare 3.x (or NetWare 4.x with Bindery emulation), which file server should the Fiery X2-W connect to?	From List Search by Name		
	Necessary for the Fiery X2-W to log into the file server?	administrator supervisor Enter Login Name	To enter your login name and password or to log in as a guest, choose Enter Login Name.	
	If a password is required to log in, enter the file server password.	[Enter data]		
	Which NetWare print server should the Fiery X2-W communicate with?	*Names of print servers*	Select the name of the print server configured in the NetWare utility PCONSOLE. This is the print server that will route print jobs to the Fiery X2-W from computers on IPX networks	
	If a password is required, enter the print server password.	[Enter data]		
SMB printing (Windows)	WINS server name required?	Yes No	Broadcasts from SMB devices cannot pass across a router without a WINS server name.	
	If yes, IP address	[Enter data]		
	Network Neighborhood name for Fiery X2-W	[Enter data]	This name will appear on the network for accessing the Fiery X2-W via SMB.	
	Workgroup or domain name	[Enter data]	Enter the workgroup of domain yu want the Fiery X2-W to appear in.	

Glossary

Number of units.

°C   Degree(s) Celsius.

°F   Degree(s) Fahrenheit.

A   1. Amp(s).
2. A pressure of one atmosphere, commonly used as a reference level in asessing sound pressure.

AC   Alternating current.

Accuracy Calibration   X-axis calibration.

ADC   Analogue to Digital Converters.

Addressable DPI   A resolution higher than the nominal value of the cartridges, giving a finer grid on which the plotter can selectively position dots and improve print quality.

Ambient Temperature   The surrounding temperature.

ASIC   Application-Specific Integrated Circuit.

Banding   A type of printing fault when you see repetative hozizontal bands within the printed image (these may appear as light or dark bands).

Baud Rate   For the RS-232-C interface, the data transmission rate between the computer and the plotter (bits per second).

Bidirectional Print Mode   A print mode in which plotting is performed while the carriage is moving in either direction.

Binding   Obstruction to movement.

Bi-Tronics   A parallel interface standard.

°C   Degree(s) Celsius.

CAD   Computer-Aided Design.

Calib.   Calibration.

CAM   Computer-Aided Manufacturing.

Carriage Axis   The axis along which the carriage moves. (Y-axis.)

Carriage LED   Line sensor.

Cartridge   Print cartridge (pen).

Centronics   A parallel interface standard.

Checkout   Of nozzles: testing of nozzles by firing them one by one.

Checksum   A programming method used to minimize data errors when data are transferred. ... (Part of a definition from *The Harper Collins Dictionary of Computer Terms*, © Ian R. Sinclair 1991.)

CM   Centimeter(s).

Customer Engineers   HP field support engineers.

D/A1-Size Plotters   Models C3190A and C4694A.

Data Display   Service monitor.

dB   Decibel(s).

DC   Direct current.

Depletion   The selective reduction of the number of drops placed on the media, in order to prevent an excess of ink on the media.

Display Data   Service monitor.

Display List   An internal logical map, in swath format, containing data representing graphical objects.

DOS   (MS-DOS.) MicroSoft Disk-Operating System.

dpi   Dot(s) per inch, the plotter's resolution of raster images on the media.

DRAM   Dynamic Random-Access Memory.

Drive Roller   Platen roller.

Drive-roller Gear   Helical gear at right-hand side of drive roller.

Driver   1. An electronic circuit that provides input to another electronic circuit, (from *Webster's Ninth New Collegiate Dictionary*, © Merriam-Webster 1991).
2. Configuration data used by software to control input and output between the computer and the plotter.

DTR   Data Terminal Ready.

Duty Cycle   The amount of use a plotter should withstand without undue maintenance.

E/A0-size plotters   Models C3191A and C4695A.

ECP   Extended Capability Port. (A Bi-Tronics operating mode.)

EEROM   Electrically Erasable Read-Only Memory.

Electronics Module   The equivalent of the *electronics enclosure* of previous models in the DesignJet series.

EPROM   Erasable Programmable Read-Only Memory.

ESD   Electrostatic discharge.

°F   Degree(s) Fahrenheit.

Firmware

Film   A type of media.

Flow Mode   The plotting of images that have already been rasterized by computer software and do not need to be rasterized by the plotter itself.

ft   foot/feet

Halftoning   The placement of dots to create a visual effect of different colors or different shades of gray.

Hard Disk   Held in the Electronics Module in a moulded foam. It has 2GB of memory.

Helical Gear   Right-hand drive-roller gear.

HP   Hewlett-Packard.

HP-GL   Precursor of HP-GL/2.

HP-GL/2   Hewlett-Packard's standard graphics language for its plotters.

HP-RTL   Hewlett-Packard Raster Transfer Language.

Hz   Hertz.

IC   Integrated Circuit.

IEEE   Institute of Electrical and Electronics Engineers.

in   Inch(es).

Interconnect Cable   Black cables located at the rear of the printer. These connect the Service Station and the Refill Interconnect PCA to the Main PCA.

Ink Cartridge   Part of the Ink Delivery System. Each ink cartridge is a large capacity ink supply that refills the printhead whenever the ink volume in the printhead drops below a minimum level.

Ink Delivery System   The ink system used in the this printer is made of three separate parts: Ink Cartridge, Printhead, Printhead Cleaner.

I/O   Input/Output

IPA   Isopropilic alcohol.

ips   Inch(es) per second.

K   Kilobyte(s)

Kana-8   A Japanese character set.

Kanji   A Japanese character set.

Kbyte   Kilobyte

kg   Kilogram(s).

Kg   Kilogram(s).

LAN   Local Area Network.

lb   Pound(s).

LED   Light-Emitting Diode.

Line Sensor   Carriage LED.

Main PCA   The printed circuit board contained in the Electronics Module.

m   Meter(s)

Margin   Part of the media on which the plotter is incapable of printing.

Mbyte   Megabyte.

Media   (Used instead of medium.) The material on which the graphics are plotted: paper, translucent material, vellum, film, or special paper.

Media Axis   The axis along which the media moves. (X-axis; paper axis.)

Media Jam   A situation in which media becomes blocked in the plotter mechanisms.

Media-jam Lever   Pinch-arm lever.

Media-length Calibration   Media-sensor calibration.

Media-sensor Calibration   Media-length calibration.

mil   1/1000 of an inch.

Minimum Pass Time   The time necessary for ink to dry sufficiently before the plotter can place more ink adjacent to it.

MIO   Modular Input/Output.

mm   Millimeter(s).

Monitor Mode   Service monitor.

MS-DOS   MicroSoft Disk-Operating System

Nesting   Placing two or more images side-by-side to avoid wasting the media.

No Negative Motion   An RTL command that indicates to the plotter that it will receive all data already in the order in which it should be plotted.

Nozzles   240 holes in the printhead through which ink is fired onto the media.

Off-axis Ink System   A system whereby ink is pumped to the cartridges from a reservoir that does not move with the carriage.

PAL   Programmable Array Logic.

Palette   A set of pens for which width and % shading are defined using the setup sheet or the graphics software.

Paper Axis   Media axis (X-axis).

Parity   An error-checking method for information transfer between a computer and a peripheral device. Parity is used to check the accuracy of binary data.

Pass   A movement of the carriage from left to right, or from right to left, as it plots the graphic.

Pass Advance   The distance that the media advances between carriage passes.

PC   Personal Computer.

PCA   Printed Circuit Assembly.

Pen   1. Even though the inkjet plotter has no physical pens, the lines it draws match the attributes for pens numbered 1 through 8 in the application software. (See also "palette.")
2. Sometimes used instead of "print cartridge."

Pinch-arm Lever   Pinch-wheel lever, media-jam lever.

PJL   Printer Job Language, developed by Hewlett-Packard to give software applications more job-level device control and to provide device status information to the application.

Platen Roller Drive roller.

Plot Quality Print quality.

PML Printer Management Language.

P/N Part Number.

Power Cycle The switching of the plotter off and then on again.

Preventive Maintenance Counter This is a count of the swaths the printer has performed. From this count the maintenance requirments can be calculated.

Primary Colors cyan, magenta, yellow, black.

Printhead Part of the ink delivery system. The printhead has a 600 dpi thermal inkjet head for firing ink droplets onto the media and a reservoir which holds enough ink for a large number of prints. The actual number of prints depends on the size and type of image being printed

Printhead Cleaner The printer uses the printhead cleaner to clean and to maintain the printhead. It also seals the printhead to prevent it from drying out.

Print Quality Quality of the Image.

Product Line 30 Hewlett-Packard's product line of large-format, pen and thermal-inkjet plotters.

PWM Pulse-Width Modulation.

RAM Random-Access Memory.

Raster 1. A matrix of dots, or pixels, where each pixel is defined by a bit. A bit that is "on" will print a dot on the paper. A bit that is "off" will leave the area blank.
2. A method for defining a plot directly in terms of the pixels rather than as vectors.

Raster Image Processor Software that converts graphics data to pixel format.

Refill Interconnect PCA The PCA located on the left hand side chassis. It connects the Refill Assembly, the Elevator Assembly, Bail Motor and the Y-axis Assembly all on to one PCA, this is then connected to the main PCA via the Refill Interconnect Cable.

Refill Interconnect Cable This connects the Refill Interconnect PCA to the Main PCA.

Relative Humidity The ratio of the amount of water vapor actually present in the air to the greatest amount possible at the same temperature, (from *Webster's Ninth New Collegiate Dictionary*, © Merriam-Webster 1991).

Resolution A measure of image sharpness expressed as a number of lines per unit length. When referring to plotters, addressable resolution means the smallest move the plotter can make programmatically.

RIP Raster Image Processor.

RMS Root mean square.

ROM Read-Only Memory.

Roman A character set based on the Latin alphabet.

RS-232-C interface A serial interface standardized by the Electronic Industries Association Standard RS-232-C.

RTL see "HP-RTL."

SAD Swath Axis Direction

Sec Second(s).

Secondary Colors Red, blue, green.

Service Monitor Data display; display data; monitor mode.

SIMM Single In-line Memory Module.

Skew Misalignment.

Special Paper A paper specifically developed by HP, for HP inkjet plotters.

SPROC   Servo-Processor Code.

Stepper Motor   Small motors used in the Service Station, Refill Assembly amd the Elevator Assembly

Swath   That portion of a drawing plotted between advances of the drive roller in **Fast** mode. (In **Best** mode, the drive roller advances half a swath at a time; in **Normal** mode, it may advance a full swath or half a swath, depending on whether the plot is color or monochrome.)

TCP/IP   Transmission Control Protocol / Internet Protocol.

Theta-z Error   A print-quality error caused when the nozzles on a printhead are not perpendicular to the carriage axis. The error shows up as jagged vertical lines.

Troubleshoot   The system of finding the component(s) which have failed.

Translucent   Describes a type of media through which light passes.

UART   Universal Asynchronous Receiver Transmitter.

Unidirectional Print Mode   A print mode in which plotting is performed while the carriage moves in one direction, and no plotting is performed while the carriage moves in the opposite direction.

Vellum   A type of strong paper.

VLS   Vertical-line straightness.

X-axis   Media axis.

X-axis calibration   Accuracy calibration.

Y-axis   Carriage axis.

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What's in This Book

This manual contains information necessary
to test, calibrate and service

- HP DesignJet 2000CP printers
  (model C4703A)

- HP DesignJet 2500CP printers
  (model C4704A)

- HP DesignJet 2800CP printers
  (model C6085A)

- HP DesignJet 3000CP printers
  (model C4723A)

- HP DesignJet 3500CP printers
  (model C4724A)

- HP DesignJet 3800CP printers
  (model C6084A)

For information about using these printers,
refer to the corresponding user and
quick-reference guides.

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