PaintJet XL300

Repair Guide

Revision C

HEWLETT PACKARD

San Diego Printer Division

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Revision History

Revision A — April 1995
Revision B — May 1995
Revision C — August 1995

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1 August 1995

PaintJet XL300 Repair Guide Cover Letter

Welcome to the PaintJet XL300 Printer Repair Guide, revision C. This guide is designed for those in-volved in the repair of the PaintJet XL300 printer. It will assist you in identifying hardware and print quality problems and issues, and give guidance on how to correct known hardware failure modes.

Hardware problems and issues that may be encountered when repairing an XL300 are grouped into four broad categories:
- Servo Shutdown (All Lights Flashing)
- Media Load/Feed
- Paper/Print Cartridge LED
- Print Quality

Each failure category is discussed, and flowcharts are included for quickly pinpointing the cause of a failure.

A detailed power-on initialization flowchart is included. The flowchart gives in detail the various steps the printer takes during power-on initialization, showing the state of the front panel and the print mecha-nism. Should the printer not complete a given step, possible causes are listed. Included in the repair guide are copies of all current Service Notes and Inter-Office Service Memos, and actual printed pages from an XL300.

The user of this guide should have, or have access to, the PaintJet XL300 Service Manual (P/N C1645-90000) and the PaintJet XL300 User's Guide (P/N C1645-90001).

This is the third version of the repair guide. Revision A was printed in April, 1995. Revision B was printed in May, 1995. The changes in revision B are mostly cosmetic; some additions were made to the Definitions and Naming Conventions section, and the order of Appendix B and C were reversed, but the document is mostly unchanged. Revision C adds the section on Part Replacement Procedures and lists the HP Service Centers where the Carriage Height adjustment is performed. If you have any additions or corrections, please let me know.

Regards,

Donald Basta
SPR Post-Sales Marketing

PaintJet XL300 Repair Guide

Table of Contents

Introduction

The PaintJet XL300 printer repair guide is intended for the use of HP Bench Repair personnel. It is designed to help identify hardware and print quality problems and issues and gives guidance on how to correct known hardware failure modes. The sequence of events of the printer's power-on initialization process is in a detailed flowchart which can be used for diagnosing hardware problems. Hardware problems and issues that may be encountered when repairing an XL300 are grouped into four broad categories:

- Servo Shutdown (All Lights Flashing)
- Media Load/Feed
- Paper/Print Cartridge LED
- Print Quality

This document does not provide detailed XL300 theory of operation. Some theory of operation is presented where necessary to support problem diagnosis. The user of this document should have, or have access to, the PaintJet XL300 User's Guide (P/N C1645-90001) and the PaintJet XL300 Service Manual (P/N C1645-90000).

Note: *All troubleshooting steps and flowcharts in this document assume the PaintJet XL300 printer has firmware revision 7.0 or greater. See page 20.*

Note: *Assemblies recommended as possible causes of failure are given in order of probability. If a replaced part does not correct the problem, replace the original (working) part and continue troubleshooting the printer.*

Definitions and Naming Conventions

ALF	All Lights Flashing. All front panel lights flashing on and off at the same time. Indicates servo shutdown condition.
Pen	One of the four ink cartridges used in the printer.
Y Axis	Carriage axis. The direction of movement of the pen carriage assembly.
X Axis	Media axis. The direction of motion of the media.
Drop	One drop of ink fired from an ink cartridge, ideally 1/300 inch diameter. The smallest object the printer can place on a page.
Dot	Ink spot on media; generated by a drop.
Nozzle	Hole in the ink cartridge where drops of ink are ejected.
Drop Detect	Ink Cartridge alignment process—used to make sure dots from different pens can be placed on top of each other. Does *not* measure quantity of ink in ink cartridge.
Aperture Plate	Part of Drop Detect Assembly. Slots in aperture plate used during ink cartridge alignment. Also has white label, used for Edge-Sensor Calibration.
PQ	Print Quality.
Grill	Screen over main heater.
D-Wheel	D-shaped rollers on underside of media chassis; used to feed media toward drive roller.

PaintJet XL300 major assembly and parts identification

MOTOR PULLEY

CARRIAGE ASSEMBLY

REAR SLIDER ROD

FRONT FAN

Y-AXIS ASSEMBLY (CARRIAGE)

SERVICE STATION

APERTURE PLATE

DROP DETECT ASSEMBLY

TRAILING CABLE

IDLER PULLEY

CROSSBAR ASSEMBLY

WIREFORM

DROP DETECT STEPPER MOTOR

STACKING ROLLER

MEDIA STEPPER MOTOR

D-WHEELS (HIDDEN)

POWER PCA

X-AXIS ASSEMBLY (MEDIA)

DIGITAL PCA

BASE ASSEMBLY

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PaintJet XL300 major assembly and parts identification

GRILL

GRILL HEATER

DRIVE PLATE

DRIVE PLATE ASSEMBLY

WIREFORM

DATUM MOUNT

END-OF-PAGE SENSOR (PART OF THERMISTOR ASSEMBLY)

DRIVE ROLLER

EXIT ROLLER

DRIVE ROLLER HEATER

DATUM MOUNT

PINCHWHEELS

When repairing the PaintJet XL300 try to keep from separating the Carriage axis assembly from the Media axis assembly. This will ensure proper pen-to-paper spacing that was set at the factory. Some repairs will require these two assemblies be separated. In those cases, please make sure the Front Datum Bar fits properly over the Datum Mount on the side plates. There should be no gap between the two aluminum pieces. *Note:* If an extended #20 Torx bit is available, the Carriage and Media assemblies can be removed as a single unit by unscrewing the four screws that hold the media chassis to the base. This will allow access to the Power and Digital PCAs.

When the Pen Height is violated, the printer must be sent to a Pen Height Service Center.

(See page 21)

Drop Detect Assembly Repair and Replacement

– Rear of printer faces repair technician

1. Disconnect the power cord.
2. Remove any I/O cable(s).
3. Remove the top cover. Refer to the Top Cover removal procedure in the Service Manual. See Figure 6-2 page 6-5.
4. Remove Encoder Strip.
5. Remove the screw from the Duct assembly located in the "U" channel.
6. Slide the Duct assembly to the left to disengage locking tab on the bottom.
7. Remove Duct between Belt and Rear Slider Rod.
8. Unhook the actuator arm from the aperture plate. See Figure 6-17, page 6-20 of the Service Manual.
9. Disconnect the drop detect PCA connector from the drop detect.
10. Remove two screws (Torx #20) that hold the drop detect assembly in place.
11. Carefully lift the assembly out.

Drive Plate Assembly Repair and Replacement

– Rear of printer faces repair technician

1. Disconnect the power cord.
2. Remove any I/O cable(s).
3. Remove the top cover. Refer to the Top Cover removal procedure in the Service Manual, Figure 6-2, page 6-5.
4. Remove Encoder Strip.
5. Remove the screw from the Duct assembly located in the "U" channel.
6. Slide the Duct assembly to the left to disengage locking tab on the bottom.
7. Remove Duct between Belt and Rear Slider Rod.
8. Press on top of Drive Plate above stainless steel tab. Lift tab out and than slide up onto top of boss on pivot drive plate. Repeat for other side.
9. Remove Drive Plate, making sure not to lose the copper grounding contacts.

10.Install new drive plate by locating drive plate into plastic grooves on pivot drive plate. Slide down over top of the ground plates.

11.Snap tabs over plastic bosses.

12.Re-install Duct Assembly.

Crossbar Starwheel Assembly Repair and Replacement

– Front of printer faces repair technician

1. Disconnect the power cord.
2. Remove any I/O cable(s).
3. Remove the top cover. Refer to the Top Cover removal procedure in the Service Manual, Figure 6-2, page 6-5.
4. Remove the screw (Torx #20) on the right end of the starwheel crossbar. See Figure 6-25, page 6-30 of Service Manual.
5. Push crossbar assembly to left until locating bosses clear side plate.
6. Carefully remove crossbar: move it inward and slightly to the right as the end clears the side plate.
7. Install new crossbar—reinstall left locating bosses of crossbar in left side plate first (innermost boss goes in innermost hole of side plate).
8. Push left while gently pulling toward front of unit.
9. Slide crossbar to the right making sure locating bosses slide completely through plastic mount and into side plate.
10.Install screw while holding crossbar from sliding out of mount.

* Boss = circular knoblike protrusion

PaintJet XL 300 Front Panel

With the introduction of the Postscript PaintJet XL300 and rev 7.0 firmware in September 1992 changes were made to the front panel.

1. The **Check Paper** LED was changed from green to amber, and the wording changed to **Paper/Print Cartridges.**
2. The word **Ready** was added over the ready button, and the words **Print Fonts** are in red.
3. With rev 6.7 and 6.8 firmware a print cartridge error would cause the top four LEDs to flash alternately. With rev 7.0 firmware, a print cartridge error will turn the **Paper/Print Cartridges** LED on steady.
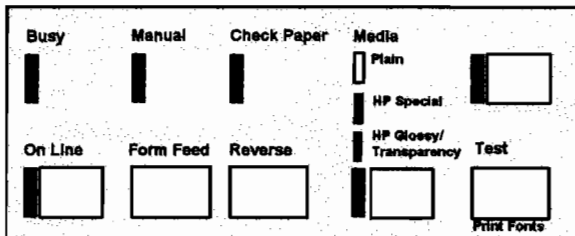
Control Panel (Serial Prefix 3205A – 3231A)   **Control Panel (Serial Prefix 3233A – 3510A)**
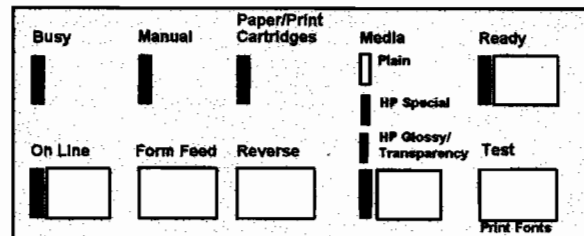
Busy light – indicates the following:

      Off: No data is being processed

      On: No data in I/O buffer; page buffer contains data

   Flashing: Data is being processed

Manual light – indicates the following:

      Off: Media will be loaded from the media tray

      On: Printer is ready for manual media load

   Flashing: Printer is requesting media to be loaded by hand

Paper/Print Cartridge light – indicates media or print cartridge problem

      Off: No media/print cartridge problems

      On: Problem with media, media tray or print cartridge. For other causes, see page 26.

Ready button and light – sets the ready state; the light indicates the following:

      Off: Printer is in standby state (powered off)

      On: Printer is in ready state (powered on)

   Flashing: Problem has been detected

Test button – prints the following:

      Self test page; press and immediately release

      Font listing; press and hold until **Busy** light flashes, then release

Media button and light – sets the printer for different media; the light indicates the following:

      Off: Plain paper

     Green: HP Special paper (CX JetSeries)

     Amber: HP Glossy paper and transparency film (LX JetSeries)

Reverse button – reverses the media to clear jams; must remove paper tray to operate

Form Feed button – prints contents of print buffer and ejects page

On Line button and light – sets the printer on line; the light indicates the following:

        Off: Printer is off-line, no data accepted

        On: Printer is on-line, data accepted and processed

How to access internal tests and demo pages

Sample output of the internal test and demo pages is in Appendix C.

Self-Test and Nozzle Check	Press **Test**
QA Page (Stephen's Plot)	Hold **On Line**
	Hold **Form Feed**
	Hold **Reverse**
	Release **Form Feed**
	Release **Reverse**
	Release **On Line**
Demo #1: Data Sheet	Press and hold **On Line**
	Press **Test** once
	Release **On Line**
Demo #2: Business Graphic—Pie Chart ...	Press and hold **On Line**
	Press **Test** twice
	Release **On Line**
Demo #3: Business Graphic—Bar Chart ..	Press and hold **On Line**
	Press **Test** three times
	Release **On Line**
Demo #4: HP-GL/2 Drawing	Press and hold **On Line**
	Press **Test** four times
	Release **On Line**
Demo #5: Newsletter	Press and hold **On Line**
	Press **Test** five times
	Release **On Line**
Bench Run Suite (3 sets of Demo Pages; 15 total)	Hold **On Line**
	Hold **Form Feed**
	Press **Reverse**
	Press **Reverse**
	Press **Reverse**
	Release **Form Feed**
	Press **Reverse**
	Press **Reverse**
	Press **Reverse**
	Release **On Line**
Internal Font list (PCL)	Press and hold **Test** until **Busy** light flashes

PostScript Configuration Page* .... .Press and hold **On Line**
Press **Test**
Release **On Line**

PostScript Font List* .... .With **On Line** light *off,* press and hold **Test** until **Busy**
flashes

* PostScript module must be installed and default language must be set to PostScript via rear-panel
DIP switches (switches 5 & 6 up).

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The following table lists the initialization steps for the PaintJet XL300. The time to complete each step is shown for a 'Cold' and 'Warm' start condition. The Cold start case is for when the printer has been left unplugged for some time. The Warm start case is from the printer being de-initialized from the front panel. The time for a Warm start can vary depending on the temperature of the drive roller. The longer the printer has been off since printing means a longer initialization time to a maximum of 165 seconds. A more detailed power-on initialization flowchart is on page 18.

Initialization Step	Warm Start	Cold Start
1 The **Ready** light comes on, **On Line** blinks briefly, and **Busy** starts flashing. **Busy** flashes continuously during initialization.	Start	Start
2 Firmware initializes and performs memory tests; determines line voltage. Nothing is moving.	N/A	30–70 seconds
3 The carriage finds the far right boundary. The aperture plate over the drop detect is moved to clean it.	10 seconds	10 seconds
4 The carriage pushes on the drive plate lift to disengage itself from the drive plate lift wireform.	10 seconds	10 seconds
5 The carriage returns to the service station to find the far left boundary.	5 seconds	5 seconds
6 The carriage moves to the right to lift the drive plate and turn the rollers to eject any media left in the printer.	15 seconds	15 seconds
7 The carriage returns to the service station at left-hand side after ejecting any media.	5 seconds	5 seconds
8 The printer performs the pen alignment process by firing ink into the drop detect subsystem. The carriage is moving back and forth over the aperture plate.	N/A	110 seconds
9 The drive roller is heated. The rollers are turned every 15 seconds to heat them evenly.	0-115 seconds	130 seconds
10 The **Busy** light stops flashing and goes out, **On Line** comes on and the side fan starts.	5 seconds	5 seconds
Totals:	50 to 165 seconds	320 to 360 seconds

Initialization Notes:
1. If the pen access door is open when you try to initialize by plugging in the AC cord:
   The **Ready** light will be on and **On Line** will blink, but nothing else happens. Close pen access door and initialization will start with step 2.
2. If the pen access door is open when you do a soft reset (pressing **Ready** twice):
   The printer will start the initialization process, completing steps 1 through 5. It will then stop with the **Paper/Print Cartridges** light on and the **Busy** light flashing. To clear the condition and continue initialization close the pen access door.
3. If the paper tray is left out when you try to initialize, either by AC cord or **Ready** button, the printer will start the process completing steps 1 through 5. It will then stop with the

. **Paper/Print Cartridges** light on and the **Busy** light flashing. To clear the condition and continue initialization replace the paper tray and press **On Line.**

4. If the pen access door is opened after step 5, the printer will stop and wait for the door to be closed (**Busy** light will flash). When the printer is heating the drive roller (step 9), removing the paper tray will stop heating the drive roller. The printer will stop with **Paper/Print Cartridges** on and **Busy** flashing. Replace the paper tray; the printer will then go on-line.

How to bypass parts of the printer initialization sequence

Pen Alignment (drop detect process)—to abort this process:

> Press the **Ready** button twice.
> (Firmware rev 7.x)

or: Open the pen access door (carriage will park)
> Press and Hold the **On Line** button
> Press and Release the **Reverse** button
> Release the **On Line** button
> (Firmware rev 6.x)

After drop detect is aborted, the **Paper/Print Cartridges** LED may turn on (indicating the pens are not aligned). Press the **On Line** button to clear this message; the **On Line** LED will come on.

Drive roller heater warm-up – to abort this process:
> Remove the paper tray
> Wait until the **Paper/Print Cartridges** LED comes on
> Replace the paper tray
> The **On Line** LED will then come on.

Disable Pen Alignment (drop detect) during troubleshooting

Allow ink cartridges to be replaced without the printer performing the ink cartridge alignment process. (Cycling power, via power cord or front-panel **Ready** button will re-enable ink cartridge alignment.)

> Open the pen access door
> Remove the Paper Tray
> Press and Hold the **On Line** button
> Press and Hold the **Reverse** button
> Wait 5 seconds
> Release the **On Line** button
> Release the **Reverse** button
> Replace paper tray and close pen access door

Power-On Initialization Flowchart

The PaintJet XL300 power-on initialization process is detailed in the flowchart on the following pages. The flowchart describes each of the steps taken during initialization and during the printing process. Should the printer fail at any of the initialization or printing steps, the front panel and mechanism (carriage and media handling) state is given, along with probable causes.

When troubleshooting an XL300 printer it is important to cycle power by disconnecting the printer from the AC source; then monitor the initialization and printing process. The same error condition (All Lights Flashing, etc.) can result from different causes. Knowing at what point the error occurs will help in defining the problem.

Initialization Flowchart
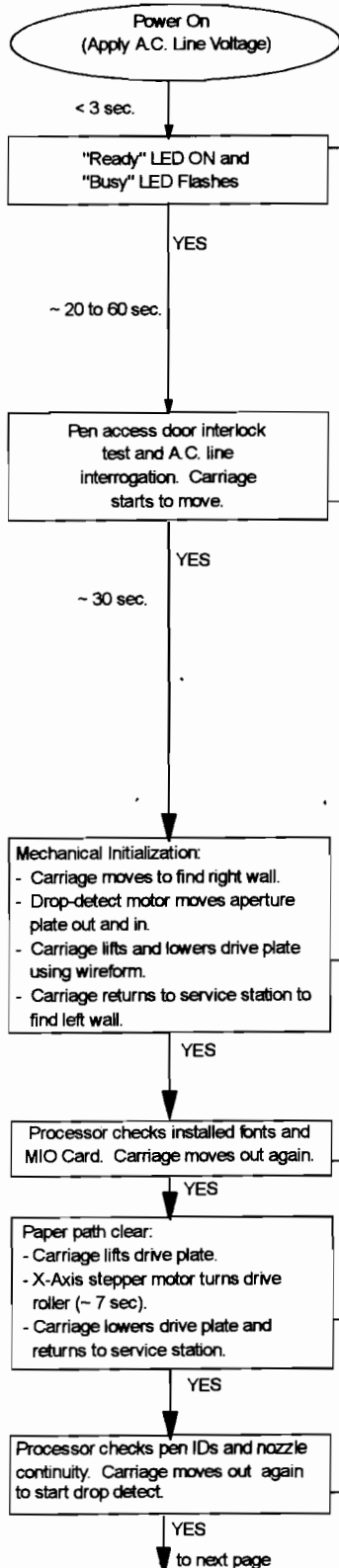
NORMAL INITIALIZATION SEQUENCE	FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
Power On (Apply A.C. Line Voltage)	o No LEDs on.	Nothing moves.	1. Trailing cable connections. 2. Power board. 3. Digital board. 4. Carriage board.
< 3 sec. → NO	o No LEDs on.	Unit still initializes.	1. Front panel connection. 2. Front panel assembly. 3. Digital board.
"Ready" LED ON and "Busy" LED Flashes	o Some LEDs on steady.	Nothing moves.	1. PostScript board (if applicable). 2. Digital board 3. Power board
YES	o All LEDs flashing.	Nothing moves.	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
~ 20 to 60 sec.	o "Ready" LED cycles on and off.	Nothing moves or carriage starts to move.	Reset occurred: 1. DC Motor 3. Digital board 2. Carriage Assy 4. Power board
Pen access door interlock test and A.C. line interrogation. Carriage starts to move. → NO	o "Busy" flashing and "Ready" on.	Nothing moves.	1. Pen access door interlock open. 2. Grill heater open/broken. 3. Power board 4. Digital board- if motors do not move 5. Thermistor assembly
	o "Paper/Print" LED on and "Glossy" (amber) on = Soft AC Line.	Nothing moves.	Refer to Service Note C1645A-15
YES	o "Paper/Print" LED on and "Special" (green) on = "Heater Fault.	Nothing moves.	1. Thermistor Assembly or connection (chassis). 2. EAROM not programmed (new power board). Recycle power 3. Power board. 4. Digital board.
~ 30 sec.	o All LEDs flashing.	Nothing moves.	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
	o "Ready" LED cycles on and off.	Nothing moves or carriage starts to move.	Reset occurred: 1. DC Motor 3. Digital board 2. Carriage Assy 4. Power board
Mechanical Initialization: - Carriage moves to find right wall. - Drop-detect motor moves aperture plate out and in. - Carriage lifts and lowers drive plate using wireform. - Carriage returns to service station to find left wall. → NO	o "Busy" flashing and "Ready" on.	Aperture plate didn't move.	1. Drop detect step motor/connection 2. Power board 3. Digital board 4. X-axis Motor gears
	o All LEDs turn off.	Carriage parks at service station.	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy 4. Power board
	o Aperture plate doesn't move out.	Continues on.	1. Digital board
YES	o All LEDs flashing.	Servo shutdown.	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
Processor checks installed fonts and MIO Card. Carriage moves out again. → NO	o "Busy" flashing and "Ready" on.	Nothing moves.	1. Fonts or MIO card hanging bus. 2. Digital board.
YES			
Paper path clear: - Carriage lifts drive plate. - X-Axis stepper motor turns drive roller (~ 7 sec). - Carriage lowers drive plate and returns to service station. → NO	o All LEDs flashing.	Serve shutdown...	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
	o "Paper/Print" Cartridges LED on.	Carriage comes out and then back.	1. Tray interlock or connection. 2. Digital board.
	o "Paper/Print" Cartridges LED on.	X-Axis stepper rotates > 7 sec.	1. EOP sensor (chassis).
YES	o "Paper/Print" Cartridges LED on.	Nothing moves.	Go to "Pen Continuity" Flowchart.
Processor checks pen IDs and nozzle continuity. Carriage moves out again to start drop detect. → NO	o All LEDs turn off.	Carriage may/may not move momentarily.	1. Power board (drop detect circuit). 2. Drop detect assembly (chassis).
YES ↓ to next page	o "On Line" comes on.	Drop detect skipped.	EAROM mach bits are set (new Power board). Disconnect from AC Line, wait 20 seconds and start over.

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Initialization Flowchart (continued)

(continued from page 1) NORMAL INITIALIZATION SEQUENCE		FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
Drop detect: - Carriage moves out over aperture plate. - Auxiliary stepper motor opens aperture plate. - Carriage moves back and forth over aperture plate. (~ 110 sec.) - Carriage returns to service station. - Auxiliary motor moves plate back in. Drop detect complete?	NO →	o "Paper/Print" cartridges LED on.	Carriage parks and aperture plate moves back in.	Refer to Troubleshooting Flowchart for "Paper/Print" LED on.
		o "Paper/Print" cartridges LED on.	Carriage parks but aperture plate never moves out or in.	1. Auxiliary stepper motor. 2. Power board. 3. Drop detect assembly.
		o "On Line" comes on.	Drop detect skipped.	New Power board (EAROM mech bits are set). Disconnect from AC Line, wait 20 seconds and start over.

↓ YES

Drive roller warm-up: - Between 15 sec and 2 mins. Drive roller heater on and drive roller rotates every 15 sec.	NO →	o All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
		o "Paper/Print" LED on and "Glossy" LED on = Soft AC Line.	Servo shutdown.	Refer to Service Note C1645A-15

↓ YES

Unit comes "On Line" and side fan turns on.	NO →	o All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
		o "On Line" LED on. "Ready" LED on.	Side fan not on.	1. Side fan/connection. 2. Power board. 3. Digital board.

↓ YES

(Start Print Process e.g. Self-test)

↓ YES

- "On Line" LED off and "Busy" LED flashing. - Carriage checks paper path and then parks again. - Side fan turns off. - Grill heater warms up for ~20 sec. (1st page only).	NO →	o All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
		o All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor 2. Carriage Assembly 3. Digital board 4. Power board
		o "Paper/Print" LED on and Glossy (orange) on. - Soft AC Line.	Carriage checked paper path but grill heater doesn't turn on.	Refer to Service Note C1645A-15

↓ YES

Load paper: - Grill heater turns off. - Carriage lifts drive plate. - X-Axis stepper motor rotates D-wheels and picks sheet from tray. - X-Axis stepper motor rotates drive roller until top of page comes out over grill 1/4 inch. - Carriage lowers drive plate and moves edge sensor to middle of page. - Drive roller moves paper forward 1 inch, trips paper edge sensor, then moves back and forward to trip sensor a second time for accuracy. - Carriage scans left and right edges of paper. - Drive roller moves paper back so leading edge is 1/4 inch out from drive plate extension.	NO →	o All LEDs flashing.	Servo shutdown..	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
		o All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor 2. Carriage Assembly 3. Digital board 4. Power board
		o "Paper/Print" LED on.	Paper stepper didn't turn (no sound).	1. Stepper motor 2. Power board 3. Digital board
		o "Paper/Print" LED on.	Paper not out from drive plate.	1. Check paper path for obstructions. 2. Wire form bent/out of place. 3. Clutch/gears 4. Drive plate.
		o "Paper/Print" LED on.	Paper extended too far out of drive plate.	1. Edge sensor on carriage. 2. Carriage Assembly 3. Digital board

↓ YES

Printing: - Front and side fans turn on. - Carriage comes out of service station and begins print process. - Grill heater turns on after a few swaths. - X-Axis stepper and drive roller advance paper. - When page finishes, carriage parks at service station, paper is slowly ejected, heater turns off and front fan turns off. - Unit goes back on line.	NO →	o All LEDs flashing.	Servo shutdown.	Refer to "ALF Error Code" Hold down "On Line" and "Form Feed" buttons and read error #.
		o All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy 4. Power board
		o Random set of LEDs on, or all LEDs off.	Side fan on. Front panel buttons and interlocks dead.	Mid-page shutdown: 1. Digital board 2. PostScript board 3. Power board

↓

(End)

Determine the printer's firmware revision by noting the firmware IC part numbers according to the following table. Firmware revision 7.0 and 7.01 includes diagnostics for front-panel All Lights Flashing condition.

Note: *A 0-Mbyte memory expansion card with rev 7.01 override firmware is available from the San Diego Printer Division (send a message via HP Desk to Sprtech ONLINE) and can be used as a service tool. When inserted in a printer with rev 6.7 or 6.8 firmware this expansion card will give the printer rev 7.01 capability, including front-panel ALF diagnostics.*

Firmware Revision	Serial Number Range	ROM Part Number	Ref Desig
6.7	3205A00101 to	C1645-18001	U7
	3205A01200	C1645-18002	U6
		C1645-18003	U4
		C1645-18004	U5
6.8	3205A01200 to	C1645-18013 or 1818-5445	U7
	3205A35000	C1645-18014 or 1818-5446	U6
		C1645-18015 or 1818-5447	U4
		C1645-18016 or 1818-5448	U5
7.0	3205A35000 to	C1645-18031 or 1818-5592	U7
	3235A70019	C1645-18032 or 1818-5593	U6
		C1645-18033 or 1818-5594	U4
		C1645-18034 or 1818-5595	U5
7.0 (CR)	3349A70020 to	1818-5570	
	3349A71725	1818-5571	
	(see Service Note C1645A-14)		
7.01 (CR)	3349A71726 to	1818-5889	
	3510A99999	1818-5890	
7.01	Not used in production	1818-5976	U7
	(only used for replacing	1818-5977	U6
	firmware rev 6.7 and 6.8).	1818-5978	U4
		1818-5979	U5

* CR = Cost Reduction PCA

Note: *All troubleshooting steps and flowcharts given here assume the PaintJet XL300 printer has firmware revision 7.0 or greater.*

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Adjustments & Calibration

There are no field adjustments on the PaintJet XL300 printer. Print quality on the PaintJet XL300 is affected by carriage height, specifically the distance from the ink cartridges to the media surface. Carriage height is set at the factory, and the carriage height setting is *not* to be changed or tampered with. Carriage height is set by adjusting the position of the rear slider rod. *There is no need to move the position of the rear slider rod.* If the Carriage Assembly needs to be changed, it can be removed without having to loosen the screws holding the rear slider rod.

If the rear slider rod has been moved, it is best to try to return it to its original position. This can be done by aligning the slider rod screws with the marks made by the lockwashers on the metal grounding plate. Should this not be possible, the carriage height will have to be re-set. This procedure must be done at one of four HP Bench Repair locations. They are:

Mountain View Service Center (2451)
301 E. Evelyn Avenue
Mountain View CA 94041
USA
TN 694 2678 or +1 415 694 2678

TMO Consignment Center (4401)
150 Green Pond Road, Dock 1
Rockaway NJ 07866
USA
TN 586 5400 or +1 201 586 5400

Customer Service Center - Wokingham (8006)
Eskdale Road, Winnersh Triangle
Wokingham
Berkshire
RG11.5DZ
United Kingdom
TN 315 4000 or +44 1734 69 66 22

Bad Homburg Sales (8360)
Hewlett-Packard GmbH
Hewlett-Packard Strasse
61286 Bad Homburg
Germany
TN 706 0000 or +49 6172 160

Contact the Service Center for instructions before shipping the printer. *Note:* The printer must be operational; all required repairs are to be done before the printer is sent for carriage height adjustment.

Edge Sensor Calibration

There is one calibration step that is required, Edge-Sensor Calibration. The edge sensor is part of the carriage assembly and is located at the right front of the carriage assembly. Its purpose is to detect the front and side edges of the media as it is being loaded. Edge sensor calibration constants are stored in an EAROM (Electrically Alterable Read-Only Memory) IC that is located on the Power PCA. The edge sensor is calibrated with the white label on the aperture plate; the edge sensor uses the label to determine what the edge of the media "looks" like. *Note:* the label can have some ink on it and still perform its function.

Edge sensor calibration should be performed after replacing the Carriage Assembly or replacing the power PCA.

Initiate the paper edge sensor calibration by performing the following front panel sequence:

> Press and Release **On Line** (**On Line** LED should be off)
> Press and Hold **On Line**
> Press and Hold **Form Feed**
> Press and Hold **Reverse**
> Wait 5 seconds (minimum)
> Release **On Line**
> Release **Form Feed**
> Release **Reverse**

Note: Plain paper must be loaded in the media tray. Using transparency film or glossy paper will affect edge-sensor calibration, and may result in calibration failure.
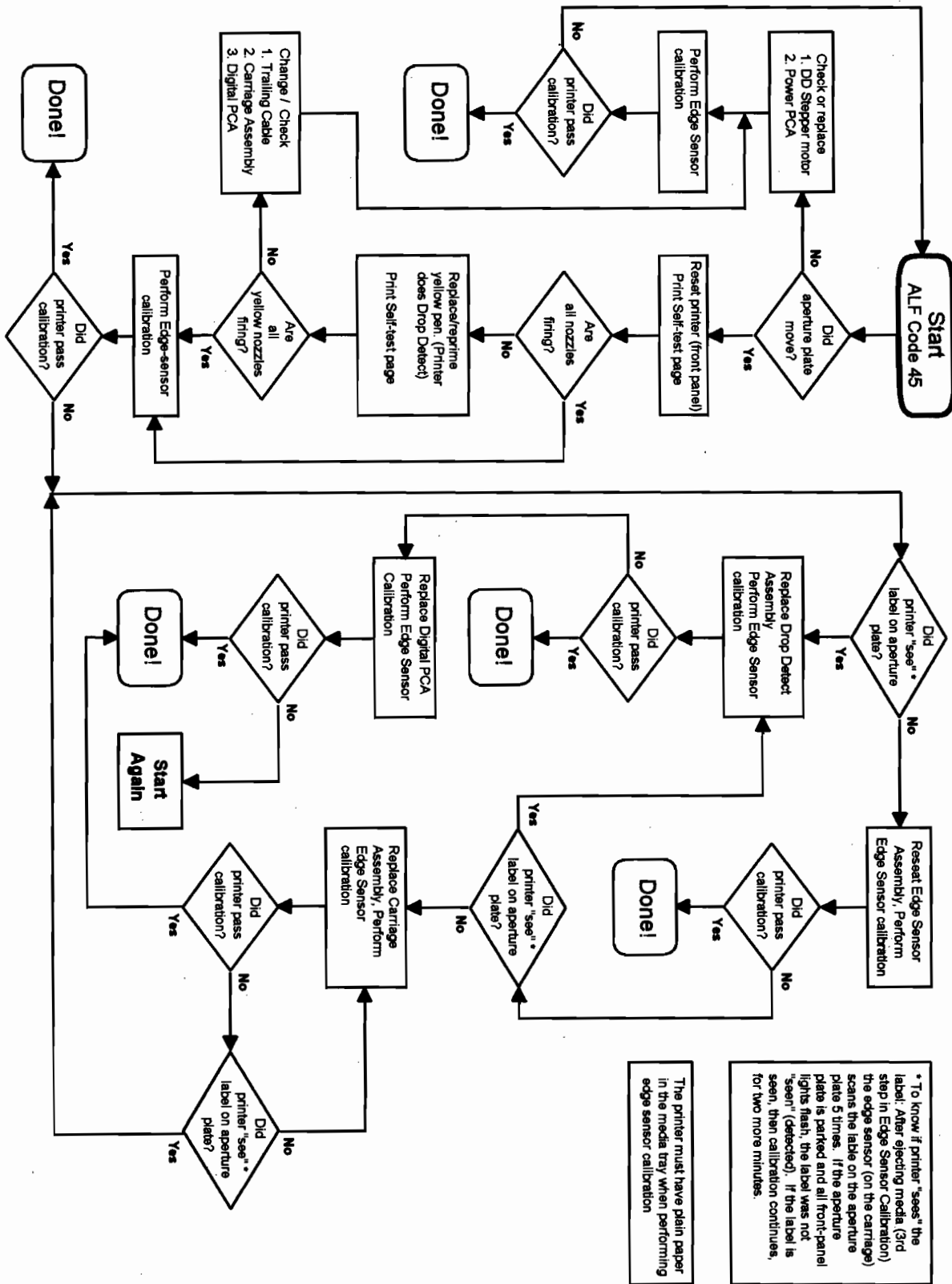
The printer will begin the automatic paper edge sensor calibration procedure

1. A sheet of media is loaded and ejected
2. The aperture plate moves forward a short distance
3. The carriage moves the edge sensor over the white label affixed to the aperture plate.
   The edge sensor is calibrated in both paper axis (aperture plate moves) and pen axis directions (carriage moves). The calibration procedure takes approximately 2 ½ minutes. At the end of the procedure the side fan turns on.

Should the Edge Sensor Calibration procedure fail, the printer will go into a servo shutdown condition, with all front-panel lights flashing. The ALF code (see page 24) will be 45. Use the flowchart on the following page to diagnose the Edge Sensor Calibration error.

All Lights Flashing Servo Shutdown Error Codes

An All Lights Flashing (ALF) servo shutdown condition occurs when the processor has determined that a fatal error exists. A servo shutdown can happen during power-on initialization or during printing. A servo shutdown results in the drive to all motors and ink cartridges being removed, and is indicated by the flashing of all front-panel LEDs.

If the printer has firmware version 7.0 or 7.01 use the power-on initialization flowchart on page 18 or in Service Note C1645A-07 to pinpoint when in the initialization process the ALF condition occurs. Then, use the front-panel diagnostic codes to determine what component or system the processor declares is at fault.

To determine the diagnostic code, hold down the **On Line** and **Form Feed** buttons when ALL LEDs on the front panel are flashing (printers with rev 7.0 or greater firmware). This will cause the LEDs to change from flashing to an "on" or "off" state. Each LED corresponds to a number. By adding up all the numbers for each of the LEDs that are on, the particular error condition can be determined. Seven LEDs give a total of 128 possible combinations (not all combinations are used). The LED values are listed below; relevant error codes are on the next page.

LED	Value	LED	Value
Ready	1	Manual	16
Glossy Media (amber)	2	Busy	32
Special Media (green)	4	On Line	64
Paper/Print Cartridges	8		

PaintJet XL300 Front Panel ALF Codes
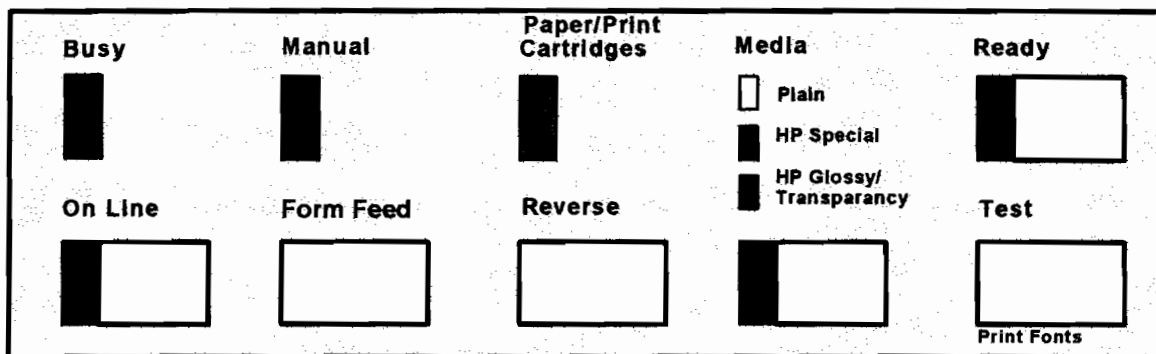
Legend for component(s) causing error

PB	Power Board (Power Supply PCA)	RH	Roller Heater (inside drive roller)
DB	Digital Board (Digital or Main PCA)	GH	Grill Heater
CB	Carriage Board (Carriage Assembly)	FF	Front Fan
PSM	Paper Stepper Motor (X axis motor)	ES	Edge Sensor (on Carriage Assembly)
DCM	DC Motor (Y axis motor)	DD	Drop Detect Assembly

Code #	Possible Cause	Generated by
0	PB	Processor can not determine problem location.
1	PB	EAROM heater calibration constant; incorrect check value.
2	PB	During AC line sync, excessive heater feedback pulse detected while sampling line frequency.
3	PB	During AC line sync, excessive heater feedback pulse detected while verifying zero-crossing point.
5	RH/PB	Cannot determine difference between interlock open vs. interlock closed (probably roller heater fuse open or problem with Power PCA triac).
6	PB/DB	Excessive heater feedback pulse detected (roller heater selected but not driven).
7	PB/DB	Excessive heater feedback pulse detected (roller heater selected and being driven).
8	PB/DB	Excessive heater feedback pulse detected (grill heater selected but not driven).
9	PB	Excessive feedback detected under close loop control.
10	PB/DB	Shutdown for unknown reason.
11	PB	Excessive (>8) false pen access door open detects.
20	PB	Failed heater hardware FET test.
21	PB	Failed heater hardware TRIAC high line voltage test.
22	PB	Failed heater hardware TRIAC high low voltage test.
30	DB	Grill heater shutdown. Impossible state during page eject.
31	FF/PB/DB	Crossflow fan shutdown. Sensed crossflow fan on during Power-on initialization.
32	FF/PB/DB	Crossflow fan shutdown. Sensed crossflow fan off when it should be on.
33	FF/PB	Crossflow fan shutdown. Sensed crossflow fan on when it should be off.
34	DB/PB	Grill heater shutdown. Impossible state while printing.
35	DB/PB	Grill heater shutdown. Impossible state in main heater loop.
36	PB/CB/DCM/DB	Power-on shutdown. Failed to sense carriage move off right wall.
37	PB/CB/DCM/DB	Power-on shutdown. Distance between walls seems too short.
38	DB/PB	Grill heater shutdown. Impossible state during preheat.
39	PB/DB/PSM	Paper stepper motor shutdown.
40	DB/DCM/PB	Servo shutdown. Impossible servo state.
41	CB/PB/DCM/DB	Servo shutdown. Excessive velocity.
42	CB/PB/DCM/DB	Servo shutdown. Excessive position error.
43	DB/PB/PSM	Paper stepper motor shutdown. (Case #1).
44	PB/DB/PSM	Paper stepper motor shutdown. (Case #2).
45	DD/ES/CB/PB/DB	Edge sensor calibration failed. See flowchart on page 23
103	PB	Timeout while waiting to finish AC line sync.
104	PB	Failed line configuation/verify after 3 tries.

Media Feed / Media Load Problems

Paper pick problems can manifest themselves in two ways: Pick failure and Skew. When feeding paper from the tray, the carriage moves to the right side of the printer and engages the wireform and raises the drive plate. At the same time it engages a clutch that allows the paper advance stepper motor to turn the paper-feed driver rollers. The D-shaped paper pick rollers make one revolution, feeding the top sheet of paper towards the drive roller where it is grasped between the drive roller and the drive roller pinchwheels, and then fed under the drive plate.

The symptoms of pick failure are the **Paper/Print Cartridge** LED on solid and no media loaded in the printer; sometimes the top sheet of media will have been moved forward, but not enough to cause the sheet to engage the drive roller pinchwheels. These symptoms are caused by too little friction between the media and the paper-pick rollers. There are two causes of this: the media is either too stiff, or there is not enough friction between the paper-pick rollers and the media. Too little friction can be caused by media type or paper dust on the paper-pick rollers.

Media skew appears as either the text or image rotated on the page; the media may feed out of the printer correctly or it may jam inside the printer. Media can be skewing as it is fed into the printer from the paper tray or it can skew after it is loaded. Observe the paper-loading process. If the paper is not square with the drive plate when it is first fed past it, then the paper is being skewed as it is loaded. This is caused by the paper pick rollers not having equal friction when the paper is pushed into the printer. One roller is slipping on the paper, causing the skew. The rollers may only need to be cleaned, or they may have to be replaced.

If the paper is being loaded correctly but is skewing as it is being printed, then the cause is most likely the drive plate. Refer to Service Note C1645A-11. On older printers there is a plastic strip on the underside of the drive plate. If many transparency sheets are fed through the printer, the film's rough surface can wear the plastic away in places, exposing the adhesive below. The adhesive will act as an extra source of friction, causing the skew.

In short, if the skew happens during paper feed, the cause is not enough friction at the paper pick rollers. If the skew happens during printing, the cause is too much friction at the drive plate.

The specification for skew for the PJ XL300 is 0.008 inch per inch or 0.008 cm per cm. For an A-size sheet of paper this is equal to a skew of 0.088 inch over the length of the page (11 in); for A4-size paper the skew is 2.38 mm over the length of the page (297 mm).

Paper Print Light

There are many causes for the **Paper/Print Cartridge** LED to turn on. If the LED turns on during paper load it indicates the media tray is empty, or media is not feeding properly. The **Paper/Print Cartridge** LED turning on during power-on initialization can indicate an incorrect ink cartridge, or problems with the ink cartridge alignment process, or the end-of-page sensor. To diagnose these problems, use the **Paper/Print Cartridge** LED flowchart on the next page.

Troubleshooting Flowchart for Paper/Print Cartridges LED on

(Firmware revision 7.0 or greater)

Power On
With Power Cord
Not with **Ready** button
(Cartridge Cover
and Tray interlock
switches closed)

Paper/Print Cartridges LED on

Did unit try to clear paper path?

Yes → Did drop-detect process start?

No → Check Paper Tray interlock switch. Troubleshoot as necessary.

Yes → Drop-Detect probably failed → Press On Line to bypass error condition and continue power-on initialization → Print Self-test page → Are all pens working?

No → Press On Line

Did Paper/Print Cartridges LED turn off?

Yes → Did the unit try to clear paper path again?

Yes → Note: do not confuse Drive-roller warm-up with paper-path clear.

No → Pen continuity test failed → Print Self-test and look at "Error Reporting" to see which pen(s) and nozzles are out

Pen ID test failed

Press and hold **On Line** and **Form Feed** buttons. Amber **Media** LED will flash. Read bad pen from the top four LEDs:

Busy = Black
Manual = Yellow
Paper/Print = Magenta
Ready = Cyan

1. Make sure pens are correct P/N (51639A / Y / M / C).
If this does not fix, then:
2. Clean pen and carriage contacts.
If this does not fix, then:
3. Replace carriage assembly.
If this does not fix, then:
4. Replace Digital PCA

1. Clean pen and carriage contacts.
If this does not fix, then:
2. Replace trailing cable.
If this does not fix, then:
3. Replace carriage assembly.
If this does not fix, then:
4. Replace Digital PCA

End-of-Page sensor failed (located at drive roller)

1. Check paper sensor connection to Digital PCA and the sensor flag operation.
If this does not fix, then:
2. Replace Digital PCA.
If this does not fix, then:
3. Replace Thermistor Assembly

1. Replace Drop-detect PCA.
If this does not fix, then:
2. Replace Digital PCA.
If this does not fix, then:
3. Replace Power PCA.

Yes → Problem is probably Drop-detect

No →

1. Replace bad pen(s).
If this does not fix, then:
2. Replace carriage assembly.
If this does not fix, then:
3. Replace Digital PCA
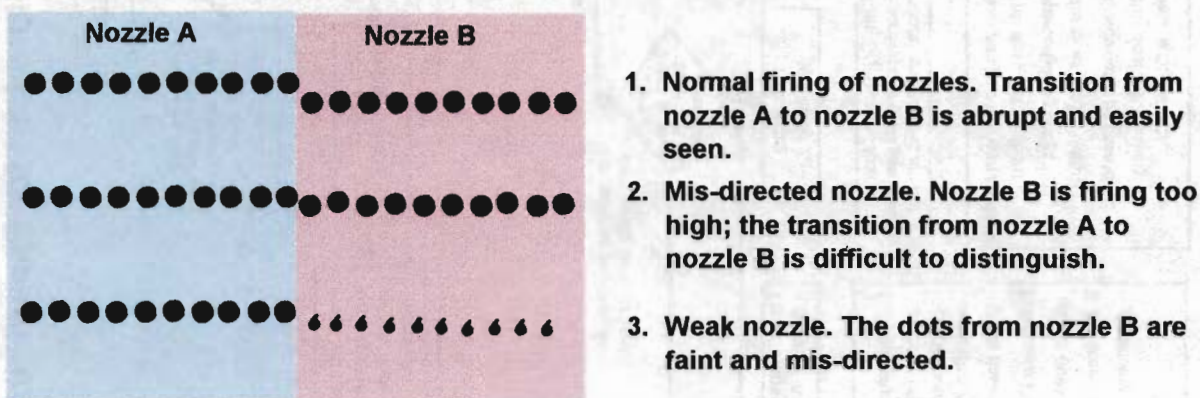If this does not fix, then:
4. Replace Power PCA.

Print Quality (PQ) problems for the most part can be attributed to ink cartridges. The ink cartridges can be firing the ink drops poorly, or the cartridges may not be aligned (drop detect). Two internal test pages exist that can be used to diagnose poor PQ.

Self-Test Page

The XL300 self-test page, accessible by pressing the front-panel **Test** button, is used to determine if the ink cartridges are functioning and if all nozzles are firing properly.

At the top of the self-test page are four color bands, one from each of the ink cartridges. The color bands are Black, Yellow, Magenta and Cyan, in that order. Below the color bands are nozzle tests for each of the ink cartridges. Each nozzle (there are forty-eight) is fired in turn; the first fires 25 dots of ink, then the second fires 25 dots, then the third, and so on. The result is a "stairstep" pattern going across the page, one line for each ink cartridge. See Appendix C.

Following is a sample of how to interpret the nozzle test.

1. **Normal firing of nozzles. Transition from nozzle A to nozzle B is abrupt and easily seen.**

2. **Mis-directed nozzle. Nozzle B is firing too high; the transition from nozzle A to nozzle B is difficult to distinguish.**

3. **Weak nozzle. The dots from nozzle B are faint and mis-directed.**

Mis-directed nozzle can be an inherent problem with the pen, or there may be contamination on the nozzle plate. A weak nozzle can indicate contamination or a low ink condition. A nozzle that is not firing, a "nozzle out," can be detected by the absence of a line of dots.

Nozzle-outs that are caused by an electrical problem (poor ink cartridge-to-carriage contact, trailing cable or carriage electrical problems) are noted on the self-test page under "ERROR REPORTING." The nozzle-out information is printed as one line of text for each ink cartridge; a letter denoting the ink cartridge color followed by a row of numbers that correspond to nozzles. Typical error reporting with nozzle-outs will look like this:

ERROR REPORTING:

Memory out Errors = 0
HPGL/2 Error: No Error

c: 6

m: 25 27 29 31

y: 30 32 34 36 38 40 42 44 46 48 50

k: 2 10 48

The four ink cartridges are listed by color: Cyan = **c**; Magenta = **m**; Yellow = **y**; and Black = **k**. The numbers listed after the ink cartridge colors are the nozzles that have failed the power-on pen continuity test. There should be a corresponding gap in the ink cartridge nozzle test lines. Referring to the nozzle-out example, pens that have only a few random nozzle outs (such as the Cyan and Black) probably have poor contact between the pen body contacts and the carriage assembly. Removing the pens and cleaning the contacts may correct that error. Nozzle-outs that show a pattern of all even or all odd nozzles, such as the Magenta and Yellow pens, besides being caused by poor ink cartridge contact, can be caused by a defective pen, defective carriage PCA, or poor contacts at the trailing cable connectors. Try re-seating the pens and trailing cable connectors; if the nozzle-out pattern persists, the pen, trailing cable or carriage assembly may need replacing.

QA Page

The QA Page can be accessed from the printer's front panel. It is used to determine print quality and is a useful diagnostic tool. To print this page, use the following steps:

Hold **On Line**
Hold **Form Feed**
Hold **Reverse**
Release **Form Feed**
Release **Reverse**
Release **On Line**

Note: In order to properly diagnose print quality problems with the QA Page, the ink cartridges *must* be operating properly: all nozzles must be firing, and there should be no mis-directed nozzles. Use the printer's self-test page to determine that all nozzles are firing properly.

Following is a sample of the QA Page (alias Stephen's plot) and a description of its various sections.

PaintJet XL300 Internal QA Page
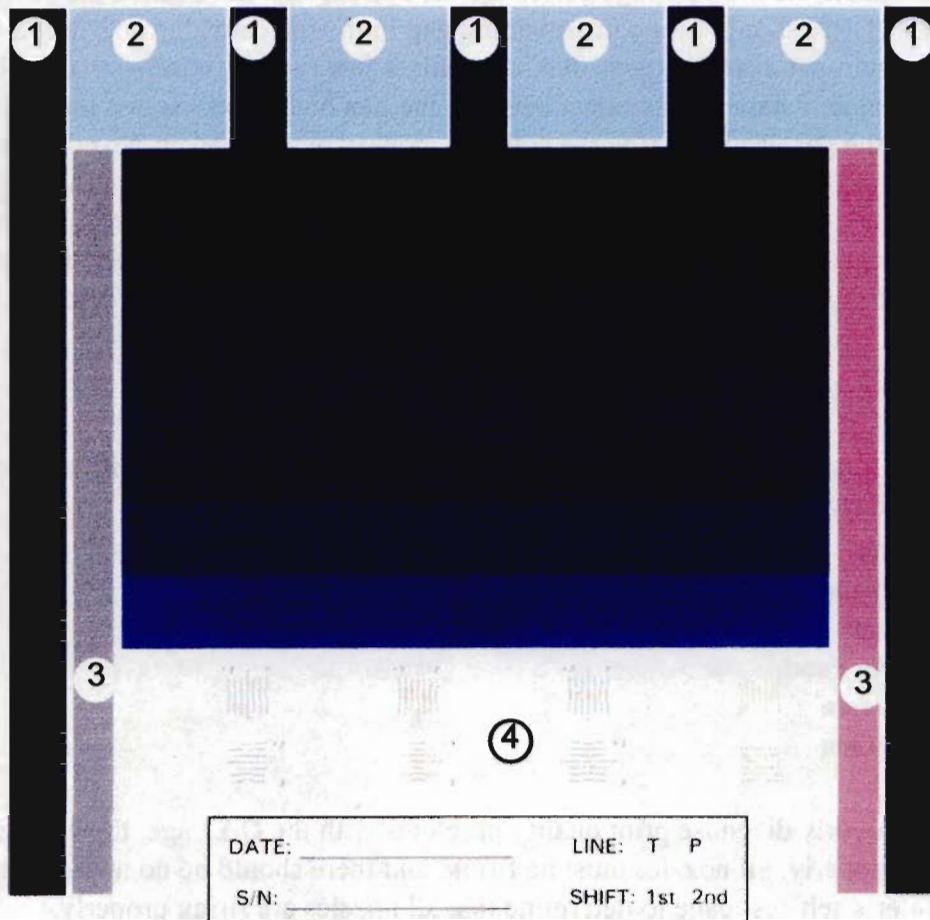
I believe the Archives staff has found **exactly what we need** for our new *Space Exploration* display. It's **an eyewitness account of the dramatic July 16, 1969 launch of Apollo 11** at Cape Kennedy. Here's an excerpt:

Just before the emissaries left the cape, the morning star, Venus, fading in the early sunlight, seemed to wink down at Pad 39-A. It reminded some, that men were just inching into space by going to the moon. *But no stephen would be tougher than this one, the last stephen.*
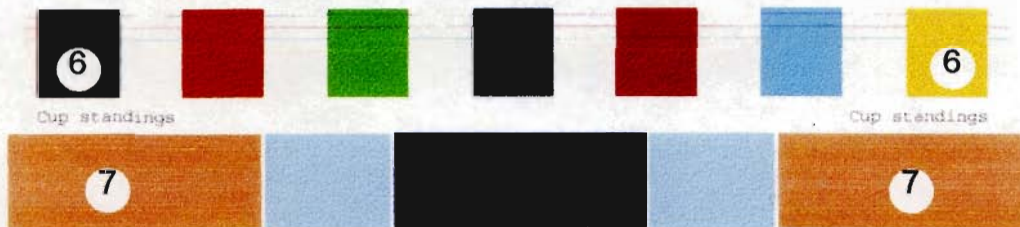
Components of the HP PaintJet XL300 QA Test Page.

1   Starwheel tracks
2   Top-of-page handoff
3   Banding (paper axis)
4   Pen-to-pen alignment verniers
5   Text print quality
6   Color-to-color bleed
7   Bottom-of-page handoff

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Description of print quality aspects observable on the QA page

① Starwheel tracks

There are five dark blue vertical strips at the top of the page. These strips coincide with the star-wheels, and can be used with glossy media to determine if the starwheels are leaving tracks on the page.

② & ⑦ Top-of-page Handoff and Bottom-of-page Handoff

The five light blue blocks at the top of the page and the five colored blocks at the bottom of the page are used for showing top-of-page and bottom-of-page handoff errors. Handoff will appear as a change in the pattern in the boxes at the top and bottom of the page, at about 1 cm or ½ inch from the edge of the page.

Top-of-page handoff can occur when the leading edge of the media is forced under the star-wheels. The starwheels and output roller perform a needed function, one of which is to keep the media taut during printing. The output roller turns faster than the drive roller (by 3%), so the media is constantly being pulled by the starwheels/output roller. The drive roller must first push the leading edge of the media under the starwheels; if there is any change in the media motion at this time, top-of-page handoff will occur.

Bottom-of-page handoff has somewhat of a similar cause: as the bottom of the page is being printed the page's trailing edge gets to the point where it is no longer being pushed along by the drive roller; at this time all paper motion is provided by the starwheels/output roller combination. For a time, however, the trailing edge of the paper is still under the drive plate, which puts extra drag on the page. As the trailing edge of the page is pulled out from under the drive plate, bottom-of-page handoff happens.

Note: Top- and Bottom-of-Page Handoff occur in all PaintJet XL300s to some extent. This is a function of the mechanics of the printer's paper path. Customers who experience Handoff errors will complain of a change of color in the background of a graphic at the handoff position; seldom, if ever, will handoff be noticeable when printing text. If a customer specifically complains of handoff errors, you may try cleaning the drive roller and replacing the drive plate, but there is no guarantee that this will help. Handoff is greatly affected by the type of media used and the color and fill pattern of the graphic fill. It might be best to recommend to the customer that a different fill pattern be used if handoff errors are persistent.

③ Banding (paper axis)

The light gray and light pink bars on either side of the QA Page are used to measure banding caused by the drive roller not rotating at a constant rate. In a printer with no banding error, both bands will appear as a solid, unvarying color. If there is banding the bars will have light and/or dark horizontal lines (discontinuities). *An ink cartridge with a mis-directed or weak nozzle will print the bars with symptoms of banding.*

If a printer exhibits banding, remove the paper stepper motor. Rotate the drive roller by hand to check for smooth rotation of the drive roller and its gears. If the drive roller rotation is smooth,

replace the stepper motor with a new unit. If banding persists, inspect all drive roller drive-train gears (including the exit and stacking rollers) for wear.
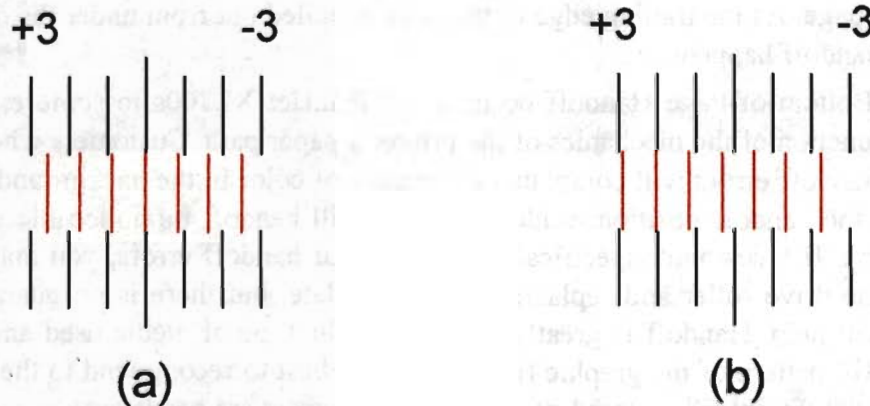
④ Pen-to-pen alignment verniers

There are eight ink cartridge alignment verniers. These show ink cartridge alignment, in both the pen and paper axis, for black-to-cyan, black-to-magenta, cyan-to-magenta and black-to-yellow alignment.

The PaintJet XL300 owes its high print quality to its ability to accurately place one dot of ink on top of another. The manufacturing tolerances of the ink cartridges and carriage chassis prevent this dot placement accuracy without some adjustment by the printer firmware. Because of this the Ink Cartridge Alignment process, "Drop Detect," was designed to allow alignment of the ink cartridges.

During the ink cartridge alignment process, selected nozzles are fired from each ink cartridge through a slotted aperture plate. The drops of ink fall past an LED-photo diode pair; the processor measures where in space the drops are falling with respect to the black ink cartridge, and from this information constants are derived. These constants are used during printing to adjust the timing of when the ink cartridges fire, ensuring that dots are placed exactly on top of other dots. A symptom of mis-aligned ink cartridges would be large areas of solid color, for instance green or red, that would have on one or two sides a "halo" of yellow (in case of green) or magenta (in case of red) where the two ink colors that make green (yellow and cyan) or red (yellow and magenta) are not being placed accurately.

The alignment verniers appear as shown below:

(a)   (b)

The ink cartridge alignment verniers have lines numbered from +3 through zero to –3. The "units" of the verniers are dot rows. In (a) above is shown a vernier with no (zero) mis-alignment. The outside lines (black) match with the inside lines (magenta) to create one straight line at zero. In (b) above a two-dot mis-alignment is shown. The outside and inside lines make a straight line at +2, indicating a mis-alignment of two dots between those ink cartridges. Acceptable cartridge mis-alignment is no greater than plus or minus one dot row.

⑤ Text print quality

The two text blocks and the words "Cup standings" are used to determine text print quality. Text print quality is greatly affected by media used. If the text print quality is poor (ragged characters) and the printer's self-test page shows all nozzles firing, try a different type of media.
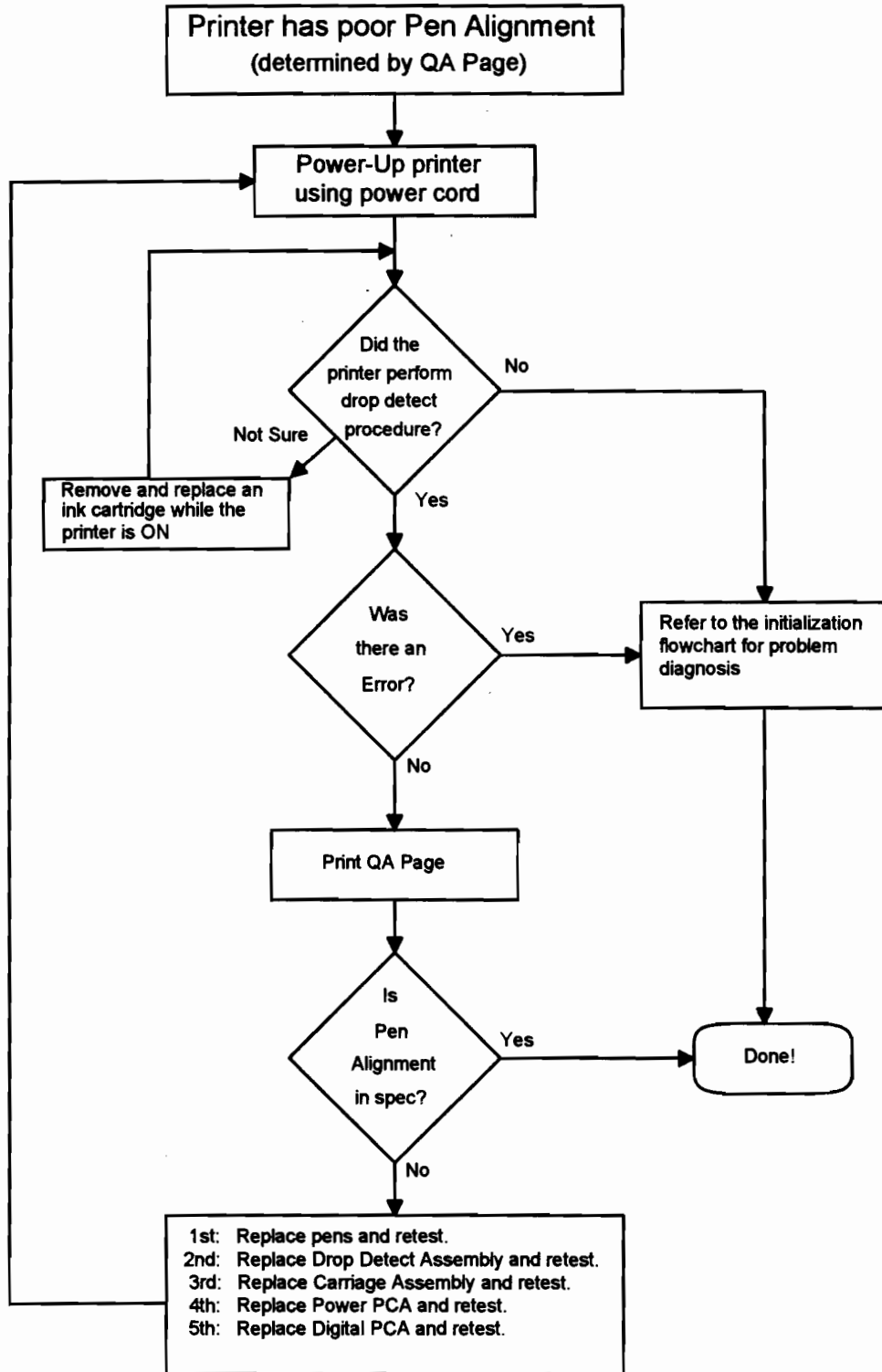
There is a PQ problem known as "tails" that occurs on some ink cartridges. It is most noticeable on black ink cartridges. The dots of ink, instead of being round, will have a narrow line of ink trailing away from the main dot. This tail is not long, on the order of 2 to 3 dot diameters. Tails are a function of the ink cartridge manufacturing process and do not indicate any problem with the printer.

Tails will be most noticeable on text, less so on graphic images. They will be most evident on HP special paper. Text printed on plain paper will not exhibit obvious tailing, except under magnification. The recommended fix for tails is to replace the ink cartridge.
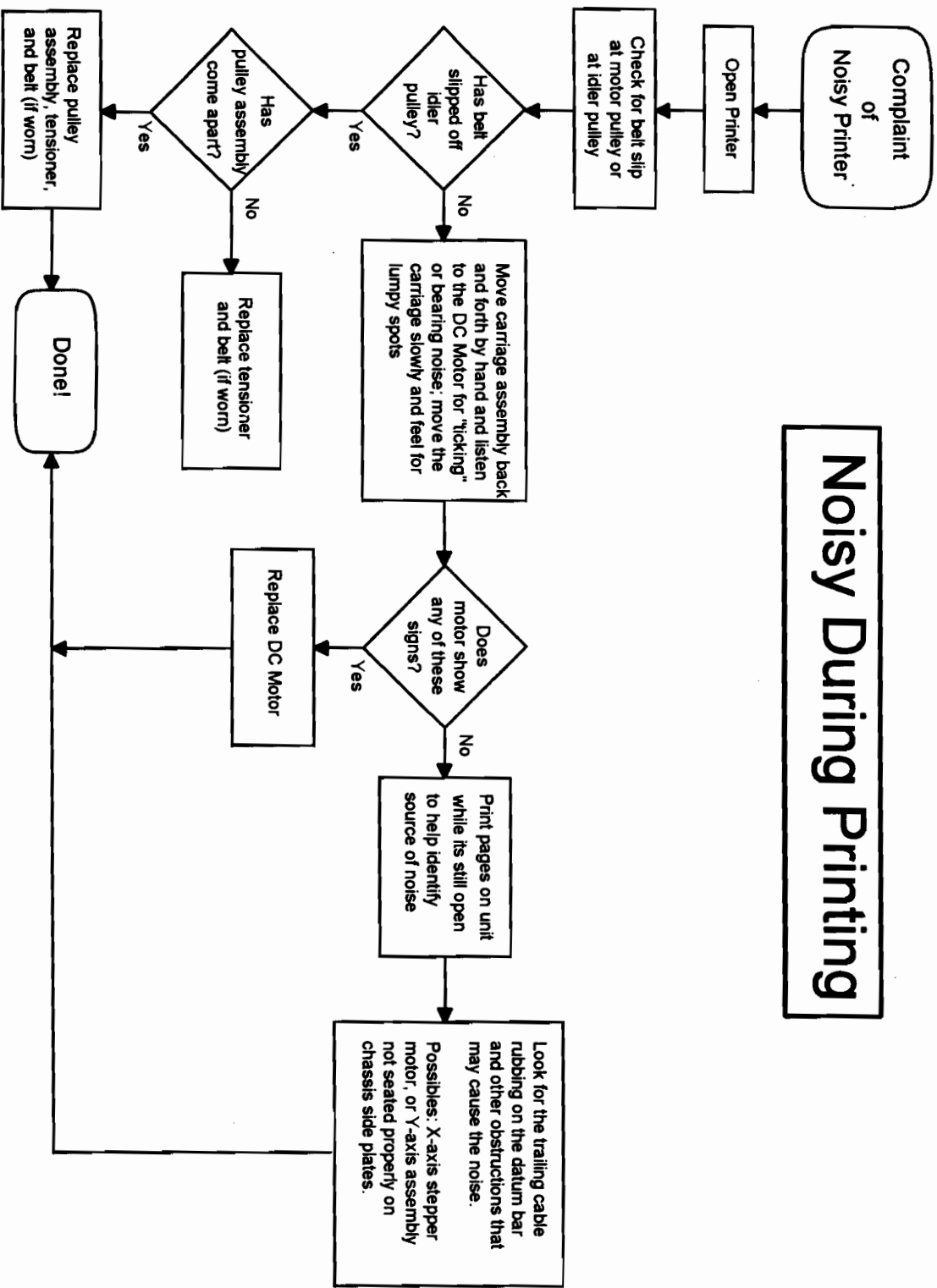
⑥ Color-to-color bleed

The seven blocks of color near the bottom of the page can be used with transparency media to measure color-to-color bleed. The lines through the blocks should not bleed into the block color.

Pen Alignment Troubleshooting Flowchart

```
              ┌─────────────────────────────┐
              │  Printer has poor Pen Alignment  │
              │   (determined by QA Page)    │
              └─────────────────────────────┘
                            │
                            ▼
              ┌─────────────────────────────┐
              │      Power-Up printer       │
              │      using power cord       │
              └─────────────────────────────┘
```



```
                          Did the
                      printer perform        No
           Not Sure   drop detect  ─────────────────►
      ◄──────────────   procedure?
┌──────────────────────┐     │
│ Remove and replace an │    Yes
│ ink cartridge while the│
│ printer is ON          │
└──────────────────────┘
```

```
                          Was
                        there an          Yes      ┌──────────────────────────┐
                         Error?      ──────────────►│ Refer to the initialization │
                                                    │ flowchart for problem       │
                            │                       │ diagnosis                   │
                           No                       └──────────────────────────┘
                            ▼
              ┌─────────────────────────────┐
              │        Print QA Page        │
              └─────────────────────────────┘
                            │
                            ▼
                           Is
                          Pen            Yes         ┌───────────┐
                       Alignment    ─────────────────►│   Done!   │
                        in spec?                      └───────────┘
                            │
                           No
                            ▼
   ┌─────────────────────────────────────────────────┐
   │ 1st:  Replace pens and retest.                   │
   │ 2nd:  Replace Drop Detect Assembly and retest.   │
   │ 3rd:  Replace Carriage Assembly and retest.      │
   │ 4th:  Replace Power PCA and retest.              │
   │ 5th:  Replace Digital PCA and retest.            │
   └─────────────────────────────────────────────────┘
```

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Noisy Printer Flowchart

Noisy During Printing

Complaint of Noisy Printer → Open Printer → Check for belt slip at motor pulley or at idler pulley →

Has belt slipped off idler pulley?
- Yes →
- No →

Has pulley assembly come apart?
- Yes → Replace pulley assembly, tensioner, and belt (if worn)
- No → Replace tensioner and belt (if worn) → Done!

Move carriage assembly back and forth by hand and listen to the DC Motor for "ticking" or bearing noise; move the carriage slowly and feel for lumpy spots →

Does motor show any of these signs?
- Yes → Replace DC Motor → Done!
- No →

Print pages on unit while its still open to help identify source of noise →

Look for the trailing cable rubbing on the datum bar and other obstructions that may cause the noise.
Possibles: X-axis stepper motor, or Y-axis assembly not seated properly on chassis side plates. → Done!

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Additions/corrections to C1645A Color Printer Service Manual (P/N C1645-90000) dated September, 1992

Packaging for shipping:

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
	C1645-40135	8	1	FOAM SET
	C1645-00057	9	1	PACKAGE-BOX
	C1645-00058	0	1	INSERT-CARDBOARD (Carriage)

Table 10-2 Top Cover Assembly

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
10	C1645-40128	9	2	RETAINER-FRONT PANEL

Table 10-3 Base Assembly

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
4	C1645-60077	9	1	CLEARING STATION

Table 10-4 Y-Axis Assembly

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
5	C1645—20035	5	1	CARRIAGE BUSHING
29	C1645-60272	6	1	TRAILING CABLE

Table 10-5 X-Axis Assembly

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
7	C1645-40020	0	1	EXIT SHAFT GEAR
11	C1645-40122	3	1	FRICTION ADDER
32	C1602-80016	7	1	SPRING-CLUTCH RELEASE
34	C1602-80031	6	1	SPRING-CLUTCH
54	1460-1940	6	1	SPRING-COMPRESSION
55	2190-0369	9	1	WASHER
62	C1645-60002	0	1	SIDEPLATE-RH
63	C1645-60003	1	1	SIDEPLATE-LH
64	C1645-60048	4	1	CABLE AY-DROP DETECT
65	C1645-40079	9	1	GEAR-EXIT ROLLER

Table 10-6 Media Tray

REF DES	HP PART NUMBER	C D	QTY	DESCRIPTION
3	C1645-40067	5	2	PAPER STOP

PaintJet XL300 Memory SIMM Specifications

The specifications for SIMMs used in the PaintJet XL300 are: 72-pin, 36-bit, and 80 nanoseconds. SIMM sizes allowed are 1, 2, 4, and 8 Mbyte.

A SIMM (Single In-line Memory Module) is a small-format PC board with DRAM memory chips mounted on it. SIMMs are used to add memory to the printer, and are installed in the printer's available SIMM sockets. A SIMM will occupy less space than an equivalent number of discrete chips through use of vertical space. It is also easier to add a single SIMM instead of multiple chips when expanding printer memory.

36-bit refers to the logical width of the SIMM. Other widths are 8-bit, 9-bit, 32-bit, and 40-bit. The width also determines the number of pins. 8-bit or 9-bit SIMMs use 30 pins; 32- 36- and 40-bit SIMMs use 72 pins. Advertisements for third-party SIMMs typically say "1 Mbyte x 36" or "1 Mbyte x 9." This can be interpreted to mean 36-bit or 9-bit.

"Presence Detect," an option available only on 32- 36- and 40-bit SIMMs, allows the using product to determine SIMM size and speed information. The PaintJet XL300 printer uses presence detect to reject any SIMMs slower than 80 nanoseconds.

A final physical specification is single-sided or double-sided modules. The PaintJet XL300 memory expansion card can accommodate both types.

PaintJet XL300 Media and Drive-Roller Heater Power Settings

The heaters on the PaintJet XL300 do not have temperature settings. The heater control circuitry is designed to monitor and deliver to the heaters a certain power level.

The drive roller temperature is monitored by a thermistor. The temperature of the drive roller is maintained at approximately 70 C; the maximum temperature allowed is 100 C.

During the drive roller warm-up at power-on the drive roller heater is run at a level of 220 watts; after the drive roller operating temperature is attained the power level is dropped to 50 watts, and will increase to 70 watts in order to maintain the drive roller temperature. That is, the steady state of the drive roller heater is to vary between 50 and 70 watts.

The grill heater is set to different power levels depending on media type. The power settings are:

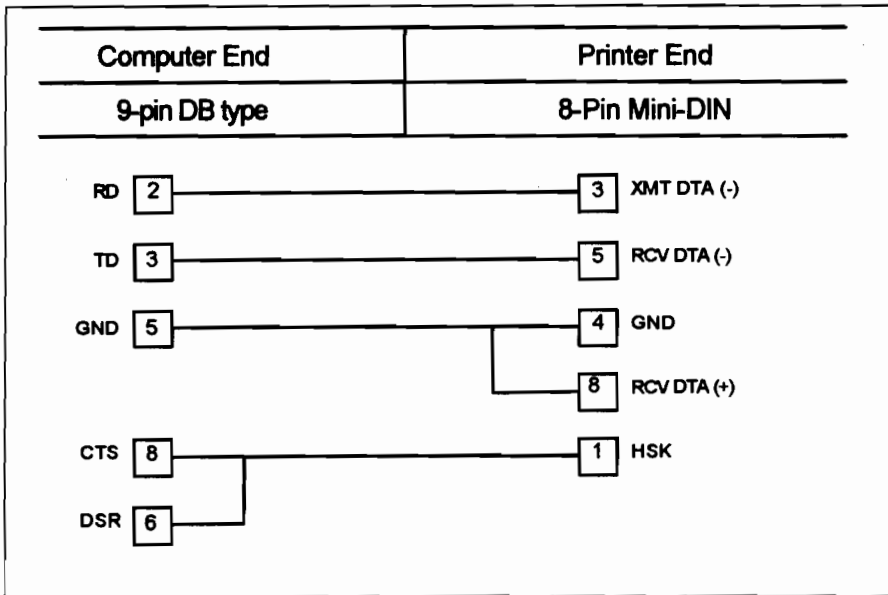|	
Plain Paper	130 Watts
Special paper	110
Transparency/Glossy	60

All of the above is for A- and A4-size paper. If B- or A3-size paper is loaded the power settings are about 10 watts lower, due to the higher heating efficiency of the larger media. (More of the grill is covered, and the carriage has further to travel; hence the media stays over the grill for a longer period.)

If there has been no activity for a time, the printer will pre-heat the grill. During this 20 second preheat the grill heater is at 220 watts. When printing starts, the grill heater is turned on at 240 watts and then quickly ramped down to the appropriate operating level.
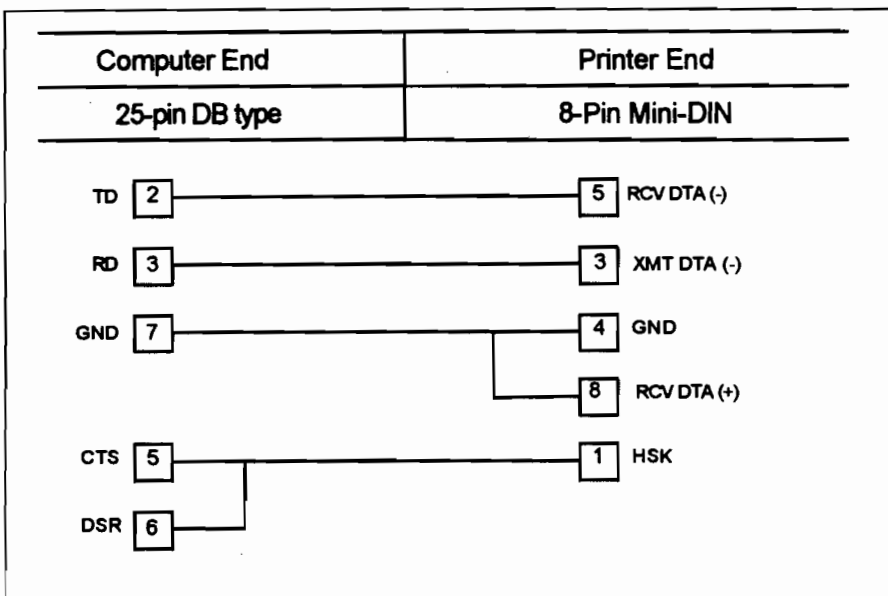
RS-232 Cable

RS-232C communications on the PaintJet XL300 are *not* officially supported by Hewlett-Packard. These cable schematics have been tested and do work. The user must have the rear panel switches set to RS-422, and for the correct baud rate and for DTR handshake. Support for RS-232 communication is limited to providing these diagrams *only*.
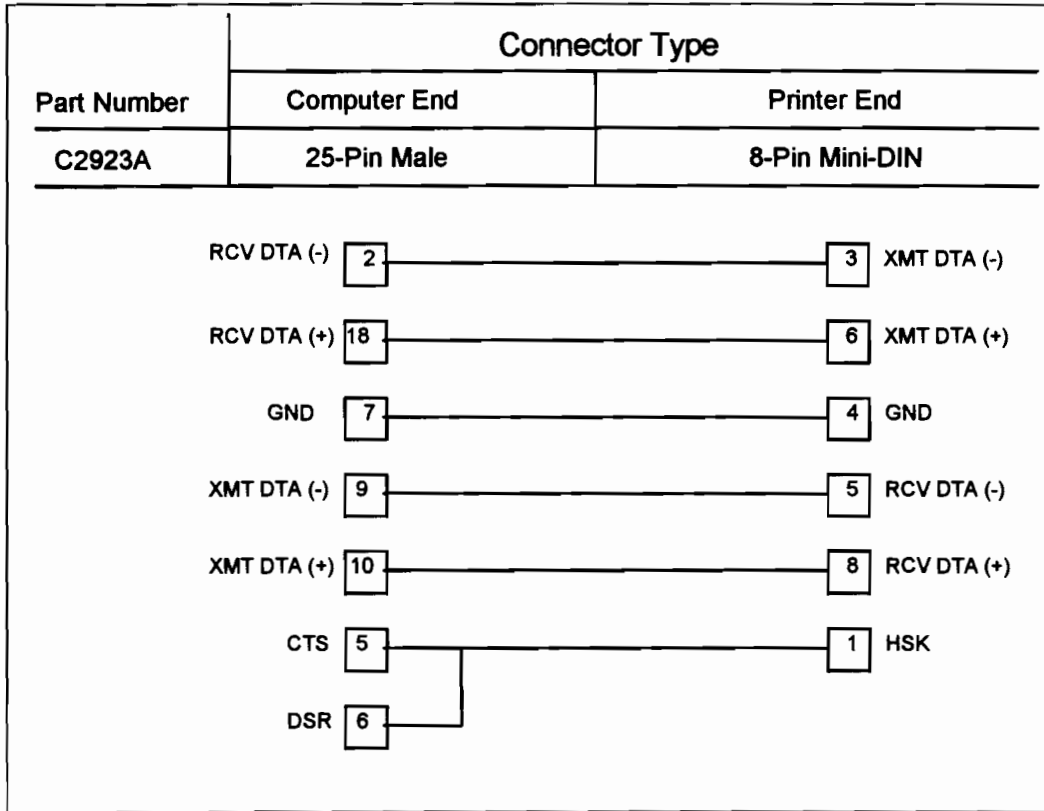
9 pin DB to 8 pin DIN

Computer End	Printer End
9-pin DB type	8-Pin Mini-DIN

RD [2] ─────────────── [3] XMT DTA (-)

TD [3] ─────────────── [5] RCV DTA (-)

GND [5] ─────────────── [4] GND

                          [8] RCV DTA (+)

CTS [8] ─────────────── [1] HSK

DSR [6]

25 DB to 8 pin DIN

Computer End	Printer End
25-pin DB type	8-Pin Mini-DIN

TD [2] ─────────────── [5] RCV DTA (-)

RD [3] ─────────────── [3] XMT DTA (-)

GND [7] ─────────────── [4] GND

                          [8] RCV DTA (+)

CTS [5] ─────────────── [1] HSK

DSR [6]

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RS-422 Cable

The schematic diagram for the HP C2923A RS-422 cable given in the PaintJet XL300 User's Guide is incorrect; use the schematic shown below for RS-422 connections.

Part Number	Connector Type	
	Computer End	Printer End
C2923A	25-Pin Male	8-Pin Mini-DIN

RCV DTA (-) [2] ———————————— [3] XMT DTA (-)

RCV DTA (+) [18] ———————————— [6] XMT DTA (+)

GND [7] ———————————— [4] GND

XMT DTA (-) [9] ———————————— [5] RCV DTA (-)

XMT DTA (+) [10] ———————————— [8] RCV DTA (+)

CTS [5] ———————————— [1] HSK

DSR [6] ——

PaintJet XL300 Memory Usage

Introduction

The PaintJet XL300 uses PCL5C as its native page description language and may be optionally configured with PostScript. Memory is used in the XL300 to process commands received from the host, to produce a printed page. The XL300 with PCL5C ships with a base memory configuration of 2 Mbytes. If the PostScript option is installed, the base memory is increased to 6 Mbytes. Additional memory can be added to the XL300 (both PCL5C and PostScript) by installing additional SIMMs. This section explains how the PaintJet XL300 uses memory, and why it is sometimes necessary to install additional memory.

Page Printers

The XL300 is a page printer. When printing a document, the XL300 receives commands from the computer and builds the complete page in memory. Once the XL300 has received and processed a complete page, it starts the printing mechanism and transfers the page to paper. There are two basic methods of creating a page in printer memory: Frame Buffer and Display List.

Frame Buffer

The complete image may be built in memory as a bitmap and then transferred to the page. This is conceptually like using a photographic negative to produce a finished print. Each dot of ink that can be placed on the page is represented by one bit in memory. The memory that contains the page image is referred to as a *frame buffer*. Frame buffers require a fixed amount of memory regardless of page complexity or density. PostScript as implemented on the PaintJet XL300 uses the frame buffer method. The advantage of a frame buffer is that the page, no matter how complex, can usually be printed. The disadvantage is the expense of loading the printer with enough memory to support the frame buffer.

Display Lists

Another method of creating a page in memory is to produce a sequential stream of simple graphic commands that can be quickly converted to dots and transferred directly to the paper. A sequence of these graphic objects is referred to as a *display list*. A display list is very memory-efficient because a small display list can fill large areas of the page. PCL5C as implemented on the XL300 uses display lists. The advantage of a display list is that it can print most pages with a relatively small amount of memory. If the page cannot be printed successfully, more memory can be added.

PCL5C Memory Usage

Of the 2 Mbytes of installed base memory, a portion is reserved for PCL5C system needs. The remainder exists as a memory pool that is allocated as needed for display lists and downloaded objects, such as fonts. The display list is built until the page is complete or the available memory space is full. If memory is full, the printing mechanism is started and begins printing the incomplete display list. As the paper moves through the mechanism, display list objects are printed and the memory they occupied then becomes available. The XL300 will then process more data and complete the display list as the page advances, using the newly-available memory. If the display list is still not complete by the time the page is ejected, a message will be printed on the bottom of the page stating *Not Enough Memory - See Users Guide*.

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PostScript Memory Usage

The size of the PostScript frame buffer is dependent upon the size of the physical page. Changing paper size affects memory allocation. Since the XL300 is a color device, one frame buffer must be allocated for each of cyan, magenta, yellow and black ink. The approximate size of a frame buffer necessary to support a letter-sized page is calculated as follows:

Printable area = 8 x 10.5 inches = 84 square inches.
90 000 dots per square inch = 11 250 bytes per square inch
11 250 bytes x 84 square inches = 945 000 bytes per page (approximately 1 Mbyte)
1 Mbyte x 4 frame buffers = 4 Mbytes total memory required.

An 8½ x 11 inch letter-sized frame buffer in the PaintJet XL300 requires approximately 4 Mbytes of memory. A ledger-sized page (11 x 17 inches) is twice the size of a letter-sized page and requires twice the memory or approximately 8 Mbytes. Since the base memory configuration of the XL300 with PostScript is 6 Mbytes, there is not enough memory for a ledger-sized frame buffer. Therefore, ledger-sized paper (and A3 and B4 as well) cannot be supported unless more memory is added. A total of 10 Mbytes is sufficient to support ledger-sized paper.
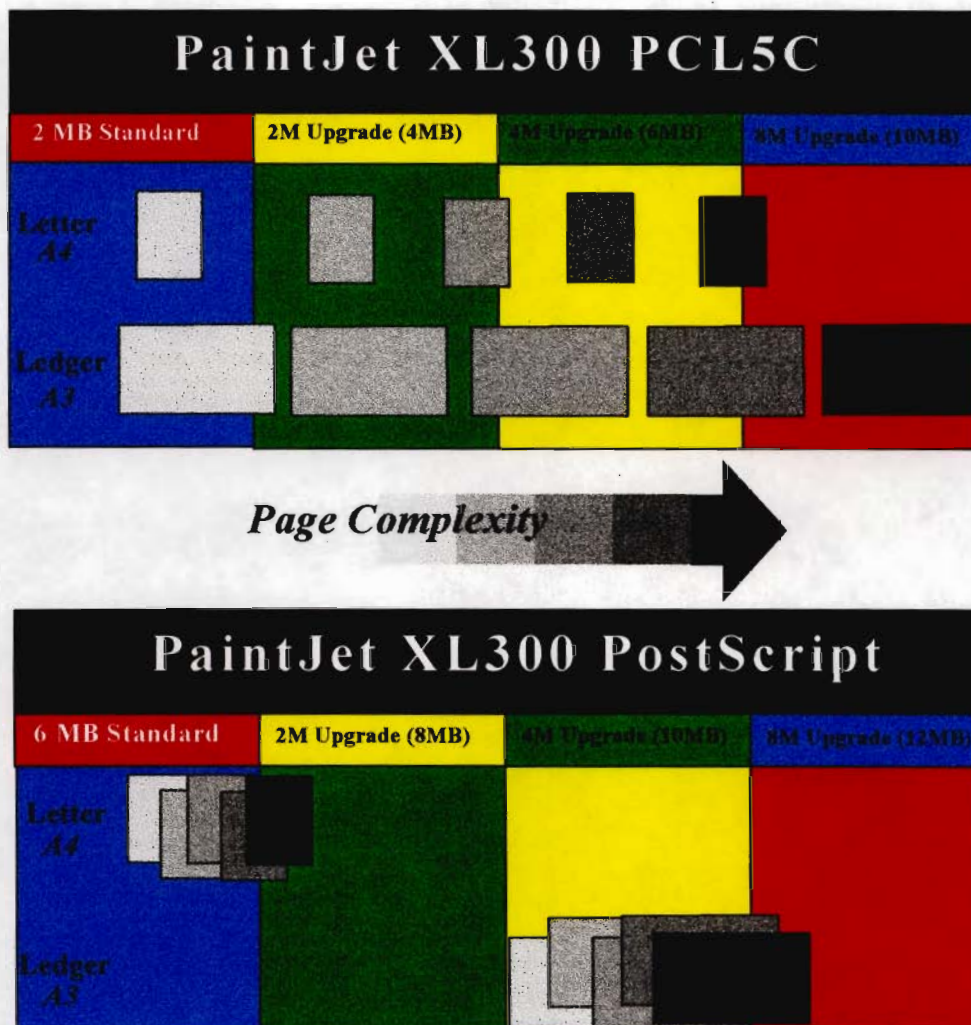
Production Change History

The following chart lists the production changes to the C1645A and C1656A PaintJet XL300 printers, from the beginning of production in April 1992 to the present. For each change the beginning serial number and applicable service note is given.

Serial Prefix	Number	Production Changes / Affected Components	Applicable Service Notes
3205A	00101	First production printer. Firmware revision 6.8; the first 1200 printers shipped with revision 6.7 firmware.	——
3231A	31181	Pickoff shaft assembly design change	C1645A-10
	34035	Printers in serial number range 34035 to 38000 were manufactured with rev 6.8 firmware but then reworked to rev 7.0 firmware at distribution centers (see prefix 3235A).	C1645A-05
3233A	35000	Changes made to control panel: "**Check Paper**" changed to "**Paper/Print Cartridges**" and its associated LED was changed from green to amber. The word "**Ready**" was added over the ready button	——
	36617	Top Case assembly changed to include relief for front fan wires.	C1645A-09
3235A	38000	Change made to carriage chassis to eliminate damage to trailing cable Revision 7.0 firmware. Serial number 38000 and above manufactured with 7.0 firmware (see serial number 34035) PostScript printer (Model C1656A) introduced. All C1656A printers require firmware rev 7.0 or greater.	C1645A-02 C1645A-04
	50363	Fan Duct design and material change	C1645A-01
	57220	Redesigned Crossbar assembly	C1645A-06
	57225	Drive Plate assembly redesigned to eliminate transparency skew	C1645A-11
	59351	Toroid removed from DC motor (pen axis)	C1645A-01
	62500	Centronics I/O failure	C1645A-19
3343A	65756	Cost-reduction Power PCA used in production	IOSM 0194-1
3349A	70020	Incorrect firmware version used in new cost-reduction Digital PCA (P/N C1645-60226)	C1645A-14
3402A	71726	Revision 7.01 firmware used in new cost-reduction Digital PCA	——
		Soft AC Line failure	C1645A-15
		B/A3 clipping	C1645A-16
3420A	84395	Power PCA with fix for Mid-Page shutdown (Error 11) in production	C1645A-18
	94897	PostScript Mid-page Shutdown	C1656A-16
3510A	00101	Serial number 99999, start sequence over with new prefix	——
3510A	07826	Microprocessor lock-up with J2550A series JetDirect cards	C1645A--20
Service notes that apply to *all* serial numbers:		Power supply replacement procedure	C1645A-03
		Troubleshooting procedures (Firmware revision 7.0)	C1645A-07
		Transparency top-of-page handoff	C1645A-08
		Power supply replacement—front fan connector warning	C1645A-12
		Transparency pick failure	C1645A-13
		Paper jams with B/A3 size CX paper	C1645A-17

INTEROFFICE SERVICE MEMO

Subject: New printed circuit board assemblies.

Date: 11 February 1994

The Main PCA and Power PCA in the C1645A and C1656A PaintJet XL300 printers have been redesigned. The new assemblies are in printers manufactured since the last half of November 1993.

The changes to the circuit board assemblies do not affect the boards' form, fit, or function in the printer. The changes were made to increase reliability, enhance manufacturing efficiency, and reduce the boards' overall cost.

The main, or Digital, PCA is the most affected. Surface-mount components have been moved from the backside of the board to the front, and the overall board parts count has gone down. The most obvious difference is the firmware ICs. The older PCA had eight; four font ROMs and four firmware ROMs. The new PCA has only three; one font ROM and two firmware ROMs. These ROMs are all soldered to the board instead of being in sockets.

The changes to the Power PCA are more subtle. At first glance, no difference can be seen between the two assemblies. The basic change to the power PCA has been for parts cost reduction; many discrete resistors have been replaced with resistor networks, and some components have been moved. The connector for the drop-detect assembly has been moved to the edge of the board, and all connectors are now labeled with their function instead of a "JXX" number. Note that the new location of the drop-detect assembly connector makes it easier to interchange the drop-detect and front fan connectors; service note C1645A-12 must be heeded now more than ever.

The printer's serial number prefix was changed when the new PCAs went into production. The new Power PCA was used in production first, followed by the new Digital PCA a few weeks later. The serial number prefixes and serial numbers of the first printers with the new assemblies are:

Power PCA:	3343A 65756
Digital PCA:	3349A 70020

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INTEROFFICE SERVICE MEMO

Empty Packet Causing Errors on PaintJet XL300 Postscript printer

A problem with network printing on the Postscript version of the PaintJet XL300 printer is described below. The problem manifests itself as a Postscript error page being printed after a print job is completed. The error specified on the error page can be either a Timeout error or Incomplete Job error.

Data is sent to across a network in packets, which consist of a header followed by data and a footer. At the end of a Postscript print job the last packet sent may contain zero bytes of data; The MIO card passes this empty packet on to the printer. The printer erroneously interprets this empty packet as the beginning of a new print job; it then waits for the rest of the data.

At this point one of two Postscript errors can occur.

1. No other print jobs are sent to the printer; eventually the sixty-second print job timeout happens, causing the printer to print the error page.

2. A new print job is sent to the printer before the 60-second timeout; as the printer already is working on a print job (the empty packet), this produces an error page as well.

The cause of this problem is in the XL300 printer firmware, which accepts the zero-byte packet as valid input. The workaround at this time is to append a CTRL-D end-of-file command trailer to the print job footer.

Sending the following Postscript commands to the printer will turn off error reporting. Note that this will cause ALL error pages to be turned off.

```
true 0 startjob pop
<</DoPrintErrors false
>>setsystemparams
false 0 startjob pop
```

This problem can be mimicked if there is no CTRL-D at the end of the print job. A CTRL-D can be stripped by the network software or if the print data is saved to a file and later spooled to the printer.

Sending a file that contains a CTRL-D character (ASCII 04) to the printer will terminate any job and ensure no error pages are caused by this problem.

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PaintJet XL300 and C2066A 8-Mbyte SIMM

The C2066A 8-Mbyte SIMM is used in the LaserJet 4 series, the DeskJet 1200C, and the PaintJet XL300. With the PaintJet XL300 a memory expansion card with two SIMM sockets is used to increase printer memory.

Recently the various vendors of the C2066A SIMM have changed the type of memory IC used on the SIMM. On these SIMMs the ICs sit closer to the PCA edge connector. This causes no problems for the LaserJets and the DeskJet 1200C, as those printers use a 90 degree SIMM socket. The PaintJet XL300, however, uses a 30 degree SIMM socket in its memory expansion card. The 8-MByte SIMMs will not fit in the XL300's 30-degree socket because of interference between the ICs on the back side of the SIMM and bypass capacitors on the memory expansion circuit board.

The printed circuit boards used in the PaintJet XL300 memory expansion boards (C1650A and C1652A) and the PostScript upgrade kit (C1651A) are being modified and the capacitors moved so they will no longer interfere with the SIMMs. The modified memory expansion cards will be available in August, 1994.

There are currently 13 vendors of the C2066A SIMM. Of those, three are known to have SIMMs that will fit the PaintJet XL300 memory expansion card. They are:

Vendor	Vendor P/N
Goldstar	GMM73620000S-80
Hitachi	HB56D236SB
S-8	
Micron	MT24D236M-8

Until the modified memory expansion cards are available it is recommended that customers that wish to add 8-MByte SIMMs to their PaintJet XL300 printers purchase them locally, and specify the above listed vendor parts. If a customer should have difficulty obtaining the proper SIMM contact the San Diego Printer division Technical Marketing department either by HP Desk to Sprtech ONLINE or by voicemail at T/619 592 4776.

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INTEROFFICE SERVICE MEMO

From: San Diego Printer Division
To: Bench Repair Techs
Date: 11 January 1995
Subject: PaintJet XL300 and J255XA JetDirect MIO

A microprocessor lock-up problem can happen when the J2550A (10Base-T), J2552A (10Base-T,BNC, LocalTalk), or J2555A (Token ring) JetDirect MIO cards are used with a PaintJet XL300 printer (C1645A or C1656A).

The symptoms are that the printer will "lock up" when the MIO card is installed and the printer is turned on. The printer's front-panel lights will turn on in a random fashion and will be on steady; they will NOT be blinking. The front-panel buttons will not be active and the printer will not respond to printing commands.

The problem has as its cause the printer not providing a proper reset signal to the MIO card at power-up, which causes the MIO card to power-on in an unknown state; this in turn can cause the printer's microprocessor to lock up.

A fix for this has been found and tested; it consists of an added component to the PaintJet XL300 Digital PCA. Implementing this fix requires the Digital PCA circuit board be modified; the modified PCA will be available in February, 1995.

In the interim, there are two workarounds available to customers that are affected by this problem:

A.) If the customer's MIO card is a J2552A, they may be able to use a J2372A MIO JetDirect card. This card, now discontinued, has a subset of the J2552A functionality. The J2372A lacks the J2552A's LocalTalk port and does not have multi-protocol capability. If the customer does not need these features then the J2372A is the quickest way to get the customer's printer up and running.

B.) If the customer requires all the functionality of the J255X JetDirect card, the printer's Digital PCA can be replaced with a modified assembly.

Use the following procedure to acquire a J2372A card or to get a modified Digital PCA installed in the printer.

1. Determine the customer's MIO needs to determine if a J2372A card can be used in the interim.

2. Send an HPDesk message to Sprtech ONLINE. Use "XL300/MIO" as the subject of the message.

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C1645A-1294-04

2a. If the customer is to be provided with a J2372A MIO card include the customer's or CE's name and shipping address. A J2372A MIO card will be sent from San Diego Printer Division (SPR). There is no charge for the J2372A.

2b.If the printer's Digital PCA is to be replaced the customer must make arrangements for the printer to be serviced, and send it to an HP-approved service provider. The repair will be handled as a standard warranty repair (O2G), with no charge to the customer. Send an HPDesk message to Sprtech ONLINE. Use "XL300/MIO" as the subject of the message. The text of the message should indicate that the printer is to have its Digital PCA replaced. Include in the text the customer's name and address; the printer serial number; the service provider address, telephone number and name of a contact there; and the estimated date of arrival at the service provider. A modified Digital PCA will be sent from SPR to the service provider, for installation in the PaintJet XL300 printer. One hour labor will be allowed for this repair.

INTEROFFICE SERVICE MEMO

From: San Diego Printer Division
To: Bench Repair Techs
Date: 10 February 1995
Subject: PaintJet XL300 Service Notes--Application Summary

Service Note	Subject	Serial Number Range	Valid Until
C1645A-02A/C1656A-17	Trailing Cable Resets	0000A00000/3235A60000	1 NOV 1995
C1645A-05B	Firmware Upgrade	3205A00000/3231A38000	1 APR 1995
C1645A-06B/C1656A-02B	Crossbar Assembly	3205A00000/3235A57220	1 JUL 1995
C1645A-09A/C1656A-06A	Crossflow Fan Wires	3205A00000/3402A99999	1 MAY 1996
C1645A-11 /C1656A-07	Drive Plate Assembly	3205A00000/3235A57225	1 JUN 1995
C1645A-15A/C1656A-11A	Soft AC Line	3205A00000/3349A71725	1 MAR 1996
C1645A-16A/C1656A-12A	B/A3 Clipping Bug	3205A00000/3349A71725	1 MAR 1996
C1645A-18 /C1656A-14	Mid-Page Shutdown (E11)	3235A58670/3343A70019	1 APR 1996
C1645A-19 /C1656A-15	Centronics I/O Failure	3205A00000/3235A62500	1 APR 1996
C1656A-16	PS Mid-Page Shutdown	3235A38000/9999A99999	1 DEC 1996

List of "Modification Recommended" service notes for the PaintJet XL300 (C1645A) and PaintJet XL300PS (C1656A)

With the exception of two service notes, C1645A-05B and C1645A-06B/C1656A-02B, all the above service notes are to be employed only on specified failure, as detailed in the service note. The modifications specified in C1645A-05B and C1645A-06B/C1656A-02B are to be implemented at an agreeable time, which means at the customer's convenience or when a general failure occurs.

Some repair sites are implementing any or all of the "on specified failure" modifications whenever a printer is sent in for repair, regardless of the original customer complaint. These charges, if applied indiscriminately, are an additional warranty expense for the division and for HP. It is not the intention of San Diego Printer Division that these service notes be implemented in this manner. Depending on the circumstances of a printer's use, a customer may never experience a particular problem and hence the modification may never have to be performed.

Given the "on specified failure" nature of these service notes, unless a printer has multiple failures, the most service notes applied is three*: the two service notes

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IOSM C1645A-0295-05

(C1645A-05B and C1645A-06B/C1656A-02B) mentioned above, and a third if the root cause of the failure is covered by a service note.

Each service note has an estimate of the amount of time (labor hours) allowed for the modification, which is reimbursed by the division. This time assumes the modification is the only work being done to a printer; if there is another repair being done at the same time then the added labor charge for the service note modification should be no more than one-half hour per service note, to a maximum of 2 hours.

*Note: The reimbursment period for Service Note C1645A-05B expires on 1 April 1995, and for Service Note C1645A-06B/C1656A-02B on 1 July 1995. After these dates there should be no more than one service note applied, except in those rare instances involving multiple failures.

S   E   R   V   I   C   E   N   O   T   E

SUPERSEDES: C1656A-16

HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: 3235A38000 / 3402A94896

Mid-page Shutdown Condition

To Be Performed By: HP-Qualified Personnel

Parts Required: C1645-69110

Situation:

The PaintJet XL300 Postscript printer (C1656A) can experience a mid-page shutdown that is not related to the pen-access door error 11 (All Lights Flashing) condition (ref. Service Note C1656A-14). The mid-page shutdown condition is characterized by the following: the printer will stop printing in mid-page or between pages of a multiple-page print job. The servo system will shut down, i.e., the carriage can be easily moved by hand; the side fan may be on. The printer can have various combinations of front panel lights on (but not All Lights Flashing); front panel lights on can be any combination of Ready, Busy, On Line and Media LED on solid (not flashing), or all front panel lights can be off. Cycling power on the printer either by the front-panel Ready button or by unplugging the power cord will restore the printer to normal operation, but with loss of data.

Solution/Action:

If a mid-page shutdown condition is diagnosed on a C1656A printer, replace the Digital PCA.

DATE   **16 January 1995**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:				
MODIFICATION RECOMMENDED				
ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.00 Hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY: ☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	☐ RETURN ☐ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 01 December 1996		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION: Changes serial number range only		

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S E R V I C E   N O T E

SUPERSEDES   **None**

HP C1645A PaintJet XL300 Color Printer

Serial Numbers: 0000A00000/9999A99999

Common Failures Occurring During Shipping

To Be Performed By: HP-Qualified Personnel

Parts Required: None

Situation:

Since the introduction of the PaintJet XL300 printer, two failure modes have commonly been found as a result of damage during shipping.

1. Y-axis motor connector disconnects from the power supply PCA. The Y-axis motor wiring harness has a shielding toroid attached to it. When the unit is shipped, the toroid acts as a weight that can cause the cable connector to pull off the mating connector on the power supply PCA.

    Printer symptoms: On power-up, all front panel lights will flash after 30 seconds.

2. Fan Ducting assembly breaks loose from datum bar. The fan ducting assembly is designed for quick and easy installation. One end of the assembly is attached to the datum bar via a plastic hook while the other end is screwed down. If the printer is subjected to a large impact during shipping, this plastic hook may snap and cause the ducting assembly to come loose.

    Printer symptoms: During power-up initialization the carriage will come in contact the ducting. The printer will either shut down (all lights flashing) or make noises as the carriage moves back and forth during the initialization process and/or during printing.

DATE   **20 November 1992**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
DB	1100	

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Solution/Action:

1. The solution to the Y-axis motor connector problem is to make sure that the wire assembly is routed through two (2) cable clips on the rear of the datum bar. Most importantly, the wires should be secured in the cable clip that is located directly above the Y-axis motor connector on the power supply PCA. Ensure that the cable is reconnected properly to the PCA.

    Note: Some early shipments of the PaintJet XL300 did not include this toroid on the Y-axis motor wire assembly. In addition, a production change will occur sometime in early 1993 in which the toroid will be eliminated.

2. A long-term solution to the fan ducting hook problem is still in progress. One part of the solution already implemented is to add an additional hook to the assembly, which attaches to a different part of the datum bar. This hook, however, does not protect the assembly if the impact occurs on the top face of the product. Thus, a more complete solution is currently being investigated. For now, simply replace the fan ducting assembly.

If you have a printer that shows the symptoms of all lights flashing on power-up or loud audible noise during carriage movement, check that the Y-axis motor is properly connected to the power supply PCA and that the fan ducting is not damaged and is not loose inside the unit.

In general, for all repairs of the PaintJet XL300 printer, make sure that the Y-axis motor wire assembly is routed through two (2) cable clips located on the rear of the datum bar. Most importantly, the wires should be secured in the cable clip that is located directly above the Y-axis motor connector on the power supply PCA.

SUPERSEDES: **C1645A-02**

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers: 0000A00000/3235A60000

Soft Resets Caused by Trailing Cable Short

To Be Performed By: HP-Qualified Personnel

Parts Required:

HP P/N	Description
C1645-60272	Trailing Cable Ay

Situation:

A failure mode on the PaintJet XL300 printer (C1645A) has been identified. The symptom is an intermittent or sometimes continuous soft reset. A soft reset is characterized by the printer toggling between the Ready and the Not Ready power-up states. In the Ready mode, the Ready light (upper right) on the Control-panel will be lit. In the Not Ready mode the Ready light will be off; however, power is still present within the printer if the power cord is connected to an AC outlet. Another symptom of the soft reset is the printer stopping abruptly in the middle of a page and turning itself off.

The cause of these resets is an electrical short between the trailing cable and the car-

DATE   **9 December 1994**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.0 hour			
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ■ SEE TEXT	USED PARTS:	☐ RETURN ☐ SCRAP ■ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 01 November 1996			
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:			

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riage chassis, which is made of conductive plastic. The trailing cable connects the carriage PCA to the main (digital) PCA. The exact location of the short is at the bottom of the opening in the carriage where the cable is connected to the carriage PCA. The wall at this opening is sharp and can cut into the cable during installation.

Note: If you have a printer that shows the symptoms of a soft re-set problem, first check to make sure they are not caused by an intermittent connection at either end of the trailing cable. The trailing cable connectors being not fully seated will mimic the trailing cable short symptoms.

Solution/Action:

The carriage chassis mold has been changed by adding a round corner at the point of contact with the cable; his modified carriage chassis has been used in all printers since serial number 3235A38000. The trailing cable insulation has been changed to a more robust material; at that time the part number of the trailing cable changed from C1645-60022 to C1645-60272.

There are three supported solutions to this problem:

1. Replace the entire carriage assembly (P/N C1645-60076) (including trailing cable) with one that has either had the corner radiused or the mold has changed to include the round corner.

or 2. Remove the carriage assembly from the printer. Remove the cable and PCA. Using a flat metal file, radius the sharp corner until it is relatively smooth. Inspect the trailing cable for visible signs of damage where is contacts the edge of the carriage. Replace the cable if necessary. Reassemble the carriage into the printer.

or 3. Remove the trailing cable from the carriage assembly. Install a piece of non-conducting foam tape around the sharp corner of the carriage to act as buffer between the corner and the cable. Make sure that the tape sticks well to the sides of the carriage and does not interfere with the movement of the cable or the carriage. Replace the trailing cable.

S E R V I C E   N O T E

SUPERSEDES   C1645A-03

HP C1645A PaintJet XL300 Color Printer

Serial Numbers: 0000A00000/9999A99999

Power Supply PCA Replacement Procedure

Parts Required: None

Situation:

New power supply PCAs for the PaintJet XL300 printer are shipped pre- configured for installation into a printer on the production line. The first time power is applied to a new Power Supply PCA, the printer will perform a quick initialization: the carriage will park at the left side of the printer without performing its normal mechanical initialization sequence. This quick initialization may be confusing to service personnel if they are not aware of it. When installing the PCA into a printer in the field, a simple procedure should be followed to ensure the printer functions properly and is calibrated correctly. If this procedure is not followed, it may result in either of the following:

1. Uncalibrated paper edge sensor (print margins may be inaccurate)

2. Rejected Power Supply PCA (service personnel may mistakenly reject the PCA as defective when in fact there is nothing wrong with it).

Solution/Action:

The following steps should be performed after a new power supply PCA is installed into a PaintJet XL300 printer:

DATE   **19 February 1993**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
DB	1100	

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1. Plug in the power cord and apply ac line voltage. The printer will perform a quick in-
   itialization where the carriage assembly parks at the left side without performing its
   normal mechanical initialization sequence. The printer will then come on-line. Un-
   plug the power cord and wait a minimum of 20 seconds. Then plug in the power cord
   again. This time the printer should perform a normal power-up sequence including
   mechanical initialization, automatic pen alignment, and drive roller warm-up. Let the
   printer come on-line again.

2. Initiate the paper edge sensor calibration by performing the following front panel se-
   quence:

   PRESS AND RELEASE On Line (On Line LED should now be off)
   PRESS AND HOLD On Line
   PRESS AND HOLD Form Feed
   PRESS AND HOLD Reverse

   Wait 5 seconds ...

   RELEASE On Line
   RELEASE Form Feed
   RELEASE Reverse

   The printer will begin the automatic paper edge sensor calibration procedure; if not, try
   the front panel sequence again. A sheet of Paper will be loaded and ejected; the car-
   riage will move the edge sensor over the white label affixed to the aperture plate. The
   edge sensor will be calibrated in both the paper axis (aperture plate moves) and pen
   axis (carriage moves) directions. The calibration procedure will take approximately 2
   1/2 minutes. At the end of the procedure the side fan will turn on.

SUPERSEDES   **None**

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers:
    3205A00000/9999A99999
    3235A00000/9999A99999

**PaintJet XL300 PostScript Printer Introduction and
PaintJet XL300 PostScript Upgrade**

Situation:

With the introduction of the PaintJet XL300 PostScript(TM) printer (C1656A) the firmware ROMs on the Main (Digital) PCA in the PaintJet XL300 (C1645A) were changed; the ROMs in all C1645A PaintJet XL300 printers with serial number 3235A38001 and greater are the same as those used in the C1656A PaintJet XL300 PostScript printer.

The base hardware and electronics of the PaintJet XL300 printer is not changed when a C1656A PostScript printer is made. The additional PostScript firmware is contained on an expansion card; this card is installed in the front of the printer, where the memory expansion option is installed. (The PostScript expansion card can be used as a memory expansion card as well; it comes with 4 Mbyte of RAM memory installed in one of the card's two SIMM slots.)

Please note: when the Main (Digital) PCA is replaced in a C1656A PostScript printer care must be taken to ensure that the firmware installed on the digital PCA is revision 7.0 or greater; the C1656A PostScript expansion card will not work properly with firmware revisions below 7.0.

DATE   **5 February 1993**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
DB	**1100**	

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A PostScript upgrade kit, P/N C1651A is available for use with the C1645A PaintJet XL300 printer. Adding a C1651A PostScript upgrade kit to a C1645A PaintJet XL300 printer will make it functionally equivalent to a C1656A PaintJet XL300 PostScript printer. The C1651A is an expansion board that contains rev 7.0 override firmware, Postscript firmware and an additional four megabytes of RAM. The override firmware adds revision 7.0 functionality to the printer, allowing the C1651A PostScript card to be used with any existing C1645A PaintJet XL300 printer.

Note: The PostScript expansion card used in the C1656A printer is different from the C1651A expansion card; the two are NOT equivalent. The expansion board from a C1656A cannot be used in a C1645A unless the firmware installed on the printer's digital PCA is rev 7.0 or greater.

S E R V I C E N O T E

SUPERSEDES   C1645A-05A

HP C1645A PaintJet XL300 Printer

Serial Numbers: 3205A00000/3231A99999

Printer Firmware Upgrade

To Be Performed By: HP-Qualified Personnel

Parts Required:

HP P/N	Description	Ref Desig
1818-5592	IC-Firmware C0	U7
1818-5593	IC-Firmware C1	U6
1818-5594	IC-Firmware C2	U4
1818-5595	IC-Firmware C3	U5
C1645-90026	New Features Booklet	
C1645-60030	Bezel-Front Panel-English	
C1645-60031	Bezel-Front Panel-French	
C1645-60032	Bezel-Front Panel-German	
C1645-60033	Bezel-Front Panel-Japanese	
C1645-60034	Bezel-Front Panel-Spanish	
C1645-60035	Bezel-Front Panel-Swedish	
C1645-60036	Bezel-Front Panel-Italian	
C1645-60072	Bezel-Front Panel-Dutch	

DATE   17 June 1994

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ☐ ON SPECIFIED FAILURE ■ AGREEABLE TIME	STANDARDS: LABOR: 1.0 hour			
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ■ SEE TEXT	USED PARTS:	☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL:1 April 1995			
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:			

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C1645A-05B

Situation:

A new revision of firmware is now being used in production in the PaintJet
XL300 printer. Among the user enhancements are improved print cartridge prob-
lem indication, and a "reset" feature. Complete information on these enhance-
ments is detailed in the "New Features" booklet.

In addition, more extensive diagnostics are available for troubleshooting error
indications that occur during initialization: the Paper/Print Cartridges LED turn-
ing on, and the print engine shutdown indication of all front-panel LEDs flash-
ing. Details of these diagnostic procedures are found in service note C1645A-07.

Solution/Action:

If a PaintJet XL300 printer is being repaired for any reason and contains firm-
ware with revision 6.7 or 6.8, replace the four firmware ICs and replace the
front-panel bezel with one of the above-listed P/N. The New Features booklet is
to be returned to the user along with the printer.

The firmware revision number can be found on the printer's self-test page.

Note: When the printer is first plugged in, the initial self-test page will report
a firmware revision of "Power-up." A second self-test page must be
printed in order to read the firmware revision.

S E R V I C E   N O T E

SUPERSEDES   C1645A-06A
C1656A-02A

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers:

C1645A	3205A00000/3235A57220
C1656A	3235A00000/3235A57220

Improved Starwheel Lever and Crossbar Design

To Be Performed By: HP-Qualified Personnel

Parts Required:

HP P/N	Description
C1645-60239	Crossbar Assembly

Situation:

In normal operation of the PaintJet XL300 printer, after the carriage places ink on the page it is fed over the exit roller and onto the output tray. The starwheels provide traction by holding the page against the exit roller.

Some papers, due to variations in humidity or grain direction may curl as they pass over the grill heater, and cause a paper jam. The page does not feed under the starwheels, but bunches up in front of them instead. If the paper jam is severe, the page will lift starwheel levers off the exit roller. When this happens

DATE   9 July 1993

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ☐ ON SPECIFIED FAILURE ■ AGREEABLE TIME	STANDARDS: LABOR: 1.0 hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY: ■ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 February 1995		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

HEWLETT PACKARD

the carriage, in its travel, will break the starwheel levers, requiring replacement of individual levers or the entire crossbar assembly.

Solution/Action

If a Paintjet XL300 printer is being repaired for any reason, inspect the starwheel levers; if they can be rotated through ninety degrees they are of the old design and the assembly must be replaced. The new design restricts the starwheel lever rotation to a few degrees. Both the Crossbar (C1645- 40010) and the Starwheel Lever (C1645-40011) have been redesigned, and new part numbers assigned to these parts (C1645-40140 and C1645-40141). The new design restricts the motion of the starwheel lever, so that in the case of a paper jam, the starwheel lever cannot be damaged by the motion of the carriage. Old parts are not to be used for repairing PaintJet XL300 printers.

Note that this new lever/crossbar design does not eliminate paper jams, which are a function of the paper being used.

SUPERSEDES   **None**

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers:
   C1645A   3205A00000/9999A99999
   C1656A   3235A00000/9999A99999

PaintJet XL300 Troubleshooting Procedures

To Be Performed By: HP-Qualified Personnel

Parts Required: None

To assist service personnel in diagnosing problems on the PaintJet XL300 Printer that occur during power-on initialization (AC power applied to printer), the following troubleshooting tools are included in this service note:

   I   Power-on initialization flow chart and general troubleshooting tree

   II Paper/Print Cartridges LED at power-on troubleshooting tree

   III Front-panel print engine shutdown diagnostics

Note that the following procedures apply ONLY to PaintJet XL300 printers with revision 7.0 firmware. If a C1645A printer has revision 6.7 or 6.8 firmware, refer to service note C1645A-05.

Power-on initialization flow chart and general troubleshooting tree

The following flow chart is a detailed description of the series of steps the printer takes when performing a power-on initialization, along with a troubleshooting tree.

DATE   **2 April 1993**

PAINTJET XL300 TOP-LEVEL GENERAL REPAIR TREE

NORMAL INITIALIZATION SEQUENCE

- Power On (Apply A.C. Line Voltage)
- < 3 sec
- "Ready" LED On and "Busy" LED Flashes
- ~ 20 to 60 sec
- YES → Pen access door interlock test and A.C. line interrogation. Carriage starts to move.
- ~30 sec
- To page 2

FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
• No LEDs on.	Nothing moves.	1. Trailing cable connection. 3. Digital board. 2. Power board. 4. Carriage board.
• No LEDs on.	Unit still initializes.	1. Front panel connection. 2. Front panel assembly. 3. Digital board.
• All LEDs flashing.	Nothing moves.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
• Some LEDs on steady.	Nothing moves.	1. PostScript board (if applicable). 2. Digital board.
• Ready LED cycles on and off.	Nothing moves or carriage starts to move	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy 4. Power board
• "Busy" flashing and "Ready" on.	Nothing moves.	1. Pen access door interlock open. 2. Grill heater open/broken.
• Paper/Print LED on and glossy (orange) on = "Soft Line".	Nothing moves.	1. Drive roller heater (check continuity). 2. Power board. 3. Digital board.
• Paper/print LED on and Special (green) on = "Heater Fault".	Nothing moves.	1. Thermistor Assembly or connection. 3. Power board. 2. EAROM not programmed (power board). 4. Digital board.
• All LEDs flashing.	Nothing moves.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #. Reset occurred:
• Ready LED cycles on and off.	Nothing moves or carriage starts to move	1. DC motor 3. Digital board 2. Carriage Assy 4. Power board

NORMAL INITIALIZATION SEQUENCE

From page 1

Mechanical Initialization:
- Carriage moves to find right wall.
- Drop-detect motor moves aperture plate out and in.
- Carriage lifts and lowers drive plate using wireform.
- Carriage returns to service station to find left wall.

↓ YES

Processor checks installed fonts and MIO Card. Carriage moves out again.

↓ YES

Paper path clear:
- Carriage lifts drive plate.
- X-axis stepper motor turns drive roller (~ 7 sec).
- Carriage lowers drive plate and returns to service station.

↓ YES

Processor checks pen IDs and nozzle continuity. Carriage moves out again to start drop detect.

↓ YES

To page 3

FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
● "Busy" flashing and "Ready" on.	Aperture plate didn't move.	1. Drop-detect stepper motor/connection. 3. Digital board 2. Power board 4. Stepper motor housing/gears.
● All LEDs turn off.	Carriage parks at service station.	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy. 4. Power board
● All LEDs flashing.	Servoshutdown.	Refer to "Error Code" document. Hold down "On Line and "Form Feed" buttons and read error #.
● "Busy" flashing and "Ready" on.	Nothing moves.	1. Fonts or MIO card hanging bus. 2. Digital board.
● All LEDs flashing.	Servoshutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
● Paper/Print cartridges LED on.	Carriage comes out and then back.	1. Tray interlock or connection. 2. Digital board.
● Paper/Print cartridges LED on.	X-axis stepper rotates > 7 sec.	1. End-of-page sensor.
● Paper/Print cartridges LED on.	Nothing moves.	Refer to Troubleshooting Flow-chart for "Paper/Print" LED on.
● All LEDs turn off.	Carriage may/may not move momentarily.	1. Power board (drop detect circuit). 2. Drop detect assembly.
● "On Line" comes on.	Drop detect skipped.	EAROM mech bits are set. Run EA_UTIL.EXE or replace power board.

NORMAL INITIALIZATION SEQUENCE

From page 2

Drop detect:
- Carriage moves out over aperture plate.
- Auxiliary stepper motor opens aperture plate.
- Carriage moves back and forth over aperture plate.
- Carriage returns to service station.
- Auxiliary motor moves plate back in.

Drop detect complete? → YES

Drive roller warm-up:
- Drive roller heater on and drive roller rotates every 15 seconds.
- Total time: 15 sec. to 2 mins. depending on initial temperature of drive roller.

Printer comes "On-Line" and side fan turns on. → YES

Start Print Process e.g. Self-test → YES

- "On Line" LED off and "Busy" LED flashing.
- Carriage checks paper path and then parks again.
- Side fan turns off.
- Grill heater warms up for ~20 sec (1st plot only).
→ YES

To page 4

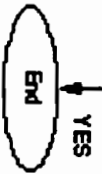|	FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
NO	Paper/Print cartridges LED on.	Carriage parks and aperture plate is put back in garage.	Refer to Troubleshooting Flow chart for "Paper/Print" LED on.
NO	Paper/Print cartridges LED on.	Carriage parks but aperture plate never moves out or in.	1. Auxiliary stepper motor. 2. Power board. 3. Drop detect assembly.
NO	"On Line" comes on.	Drop detect skipped.	EAROM mech bits are set. Run EA UTIL.EXE or replace power board.
NO	All LEDs flashing.	Servo shutdown	Refer to "Error Code" document. Hold down "On Line" and "Form-Feed" buttons and read error #.
NO	"Paper Print" LED on and "Glossy" LED on (softline)	Servo shutdown.	1. Power board. 2. Digital board. 3. Drive roller heater (chassis).
NO	All LEDs flashing.	Servo shutdown.	1. Side fan/connection. 2. Power board.
NO	"On Line" LED on and "Ready" LED on.	Side fan not on.	1. DC motor. 2. Carriage Assy. 3. Digital board. 4. Power board.
NO	All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor. 2. Carriage Assy. 3. Digital board
NO	All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form-Feed" buttons and read error #.
NO	Paper/print LED on and Glossy (orange) on = "Soft Line".	Carriage checked paper path but grill heater doesn't turn on.	1. Grill heater open/broken. 2. Power board. 3. Digital board.

NORMAL INITIALIZATION SEQUENCE

From page 3

Load paper:
- Grill heater turns off.
- Carriage lifts drive plate.
- X-axis stepper motor rotates D-wheels and picks sheet from tray.
- X-axis stepper motor rotates drive roller until top of page comes out over grill ~1/4".
- Carriage lowers drive plate and moves edge sensor to middle of page.
- Drive roller moves paper forward ~1", trips paper edge sensor, then moves back and forward to trip sensor a 2nd time for accuracy.
- Carriage scans left and right edge of paper.
- Drive roller moves paper back so leading edge is ~1/4" out from drive plate extension.

Printing:
- Front and side fans turn on.
- Carriage comes out of service station and begins print process.
- Grill heater turns on after a few swaths.
- X-axis stepper and drive roller advance paper.
- When plot finishes, carriage parks @ service station, paper is slowly ejected, heater turns off and front fan turns off.
- Printer goes back on line.

→ End

YES → (from Printing box)

NO → (from Printing box)

YES →

NO → (from Load paper box)

FRONT PANEL STATE	MECHANISM STATE	POSSIBLE CAUSE
• All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line" and "Form Feed" buttons and read error #.
• All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy 4. Power board
• Paper/Print LED on.	Paper stepper didn't turn (no sound)	1. Stepper motor 3. Digital board 2. Power board
• Paper/Print LED on.	Paper not out from drive plate.	1. Check paper path for obstructions. 2. Wire form bent/out of place. 3. Shift lever, clutch, or gears. 4. Drive plate.
• Paper/Print LED on.	Paper extended too far out of drive plate.	1. Edge sensor on carriage. 2. Carriage assembly. 3. Digital board.
• All LEDs flashing.	Servo shutdown.	Refer to "Error Code" document. Hold down "On Line and "Form Feed" buttons and read error #.
• All LEDs off.	Carriage parks at service station.	Reset occurred: 1. DC motor 3. Digital board 2. Carriage Assy 4. Power board
• Random set of LEDs on, or all LEDs off.	Side fan on. Front panel buttons and interlocks dead.	Mid-plot shutdown: 1. Digital board. 2. PostScript board. 3. Power board.

Paper/Print Cartridges LED at power-on troubleshooting tree
Paper/Print Cartridges LED turns on during initialization.

PaintJet XL300 Color Printer
TROUBLESHOOTING FLOWCHART FOR "PAPER/PRINT CARTRIDGES" LED ON

(Firmware Revision 7.0 and greater)

```
                    ( Power On )
                         │
          ┌──────────────────────────────┐
          │ "Paper/Print Cartridges" LED on. │
          └──────────────────────────────┘
                         │
                      ╱Did╲        No     ┌──────────────────┐
                   ╱unit try to╲──────────▶│ Check tray        │
                  ╱ clear paper ╲           │ interlock. T'shoot │
                   ╲   path     ╱           │ as necessary.     │
                      ╲  ?  ╱               └──────────────────┘
                       │ Yes
                      ╱Did╲
                  ╱drop-detect╲  Yes                              ┌──────────────────┐
                 ╱  process    ╲────────────────────────────────▶│ Drop-detect       │
                  ╲  start     ╱                                  │ probably failed.  │
                     ╲ ? ╱                                        └──────────────────┘
                       │ No                                                │
            ┌──────────────────┐                          ┌────────────────────────────┐
            │ Press "On-Line"  │                          │ Press "On-Line" to          │
            └──────────────────┘                          │ bypass error condition      │
                       │                                  │ and continue power-up       │
                      ╱Did╲                               │ initialization.             │
         No       ╱Paper/Print╲  Yes                      └────────────────────────────┘
    ┌──────────╱Cartridges LED╲──────┐                                   │
    │          ╲  turn off    ╱      │                          ┌──────────────────┐
    │             ╲   ?  ╱           │                          │ Print self-test. │
    │               │                │                          └──────────────────┘
┌──────────┐       │            ╱Did the╲                              │
│ Pen ID test │     │        ╱unit try to clear╲ Yes              ╱Are╲    No   ┌──────────────────────────┐
│ failed.    │     │        ╲paper path again? ╱───────┐      ╱all pens╲────────▶│ 1. Replace bad pen(s). If this│
└──────────┘       │           ╲    ?    ╱            │      ╲working ╱          │ does not fix, then:        │
    │              │               │ No               │        ╲ ? ╱            │ 2. Replace carriage assembly.│
┌──────────────────────┐   ┌──────────────┐    ┌──────────────┐  │ Yes          │ If this does not fix, then:│
│Press and hold "On-Line"│  │ Pen continuity│    │ End-of-page   │  │             │ 3. Replace digital PCA.    │
│and "Form-Feed" buttons.│  │ test failed.  │    │ sensor failed │  ┌──────────────────┐ │ If this does not fix, then:│
│Read bad pen from       │  └──────────────┘    └──────────────┘  │ Problem is probably│ │ 4. Replace power PCA.      │
│top four LEDs:          │        │                    │          │ drop detect.      │ └──────────────────────────┘
│ Busy = Black           │  ┌──────────────┐    ┌──────────────┐  └──────────────────┘
│ Manual = Yellow        │  │Print self test│    │1. Check paper sensor│      │
│ Paper/Print = Magenta  │  │and look       │    │ connection to digital│ ┌──────────────────────┐
│ Ready = Cyan           │  │at "Error      │    │ board and sensor flag│ │1. Replace drop detect PCA.│
└──────────────────────┘   │Reporting" to  │    │ operation. If this does│ │ If this does not fix, then:│
    │                      │see which pen(s)│    │ not fix, then:      │ │2. Replace digital PCA.   │
┌──────────────────────┐   │and nozzles    │    │2. Replace digital PCA.│ │ If this does not fix, then:│
│1. Replace bad pen(s). If this│ │are out.    │    │ If this does not fix,│ │3. Replace power PCA.     │
│ does not fix, then:   │   └──────────────┘    │ then:               │ └──────────────────────┘
│2. Replace carriage assembly.│  │              │3. Replace paper sensor.│
│ If this does not fix, then:│ ┌──────────────┐ └──────────────┘
│3. Replace digital PCA.│   │1. Replace bad pen(s). If this│
└──────────────────────┘   │ does not fix, then:│
                           │2. Replace carriage assembly.│
                           │ If this does not fix, then:│
                           │3. Replace digital PCA.│
                           └──────────────┘
```

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If the printer DOES PERFORM THE DROP DETECT procedure after initialization, but the Paper/Print Cartridges LED comes on immediately after it finishes, then follow this troubleshooting procedure:

Print a self test. If all pens are printing then the problem is probably related to the drop detect circuit. With power off, remove the drop detect assembly. Route the drop detect wires out the back of the printer and plug it in such that you can measure the voltages on the 3-wire connector while the printer is running. When the drop detect procedure begins, read the voltages on the connector:

Red = 16V   Blue = 5V   Black = GND

- If 5V is missing then replace the Power PCA. If 16V is missing then replace the Digital PCA first. If the 16V is still missing, replace the Power PCA.
- If 5V and 16V are both present, replace the drop detect assembly first. If it still fails try the Digital PCA, then finally the Power PCA.

Front-panel print engine shutdown diagnostics

When the Print Engine Shutdown pattern is being displayed on the front panel (all LEDs flashing synchronously), further information about the initial source of the shutdown is available by holding down the On Line and Form Feed buttons (printers with rev 7.X firmware only). This will cause all the LEDs to change from flashing to an on or off state. The particular combination of all 7 LEDs will give a binary code for the cause of the problem. Each LED corresponds to a number; by adding up the numbers for each LED that is on, the particular error condition can be determined.

LED	Value
On-Off	1
Glossy Media (orange)	2
Special Media (green)	4
Check Paper	8
Manual Feed	16
Busy	32
On Line	64

This gives 128 possible indications. The relevant codes are listed below with a brief description and a possible cause (see below for legend):

Possible Cause	Code No.	Generated by
PB	0	Processor can not determine problem location.
PB	1	EA ROM heater calibration constant; incorrect check value.
PB	2	During AC line sync, excessive heater feedback pulse detected while sampling line frequency.
PB	3	During AC line sync, excessive heater feedback pulse detected while verifying zero-crossing point.
RH/PB	5	Cannot detrmine difference between interlock open vs. interlock closed (probably roller heater fuse open or problem with Power PCA triac).
PB/DB	6	Excessive heater feedback pulse detected (roller heater selected but not driven).
PB/DB	7	Excessive heater feedback pulse detected (roller heater selected and being driven).
PB/DB	8	Excessive heater feedback pulse detected (grill heater selected but not driven).
PB	9	Excessive feedback detected under closed-loop control.
PB/DB	10	Shutdown for unknown reason.
PB	11	Excessive (8) false pen access door-open detects.
PB	20	Failed heater hardware FET test.
PB	21	Failed heater hardware TRIAC high line voltage test.
PB	22	Failed heater hardware TRIAC high low voltage test.
DB	30	Grill heater shutdown. Impossible state during page eject.
FF/PB/DB	31	Crossflow fan shutdown. Sensed crossflow fan on during Power-on initialization.
FF/PB/DB	32	Crossflow fan shutdown. Sensed crossflow fan off when it should be on.
FF/PB/DB	33	Crossflow fan shutdown. Sensed crossflow fan on when it should be off.
DB/PB	34	Grill heater shutdown. Impossible state while printing.
DB/PB	35	Grill heater shutdown. Impossible state in main heater loop.P
B/CB/DCM/DB	36	Power-on shutdown. Failed to sense carriage move off of right wall.
PB/CB/DCM/DB	37	Power-on shutdown. Distance between walls seems too short.
DB/PB	38	Grill heater shutdown. Impossible state during preheat.
PB/DB/PSM	39	Paper stepper motor shutdown.
DB/PB	40	Servo shutdown. Impossible servo state.
CB/PB/DCM/DB	41	Servo shutdown. Excessive velocity.
CB/PB/DCM/DB	42	Servo shutdown. Excessive position error.
DB/PB/PSM	43	Paper stepper motor shutdown. (Case #1).
PB/DB/PSM	44	Paper stepper motor shutdown. (Case #2).
DD/ES/CB/PB/DB	45	Edge sensor calibration failed.
PB	103	Timeout while waiting for finished AC line sync.
PB	104	Failed line config/verify after 3 tries.

Legend for component(s) causing error:

PB = Power Board (Power Supply PCA)   RH = Roller Heater
DB = Digital Board (Main PCA)   GH = Grill Heater
CB = Carriage Board (Carriage PCA)   FF = Front Fan

CONTROL PANEL DIAGNOSTIC CODES
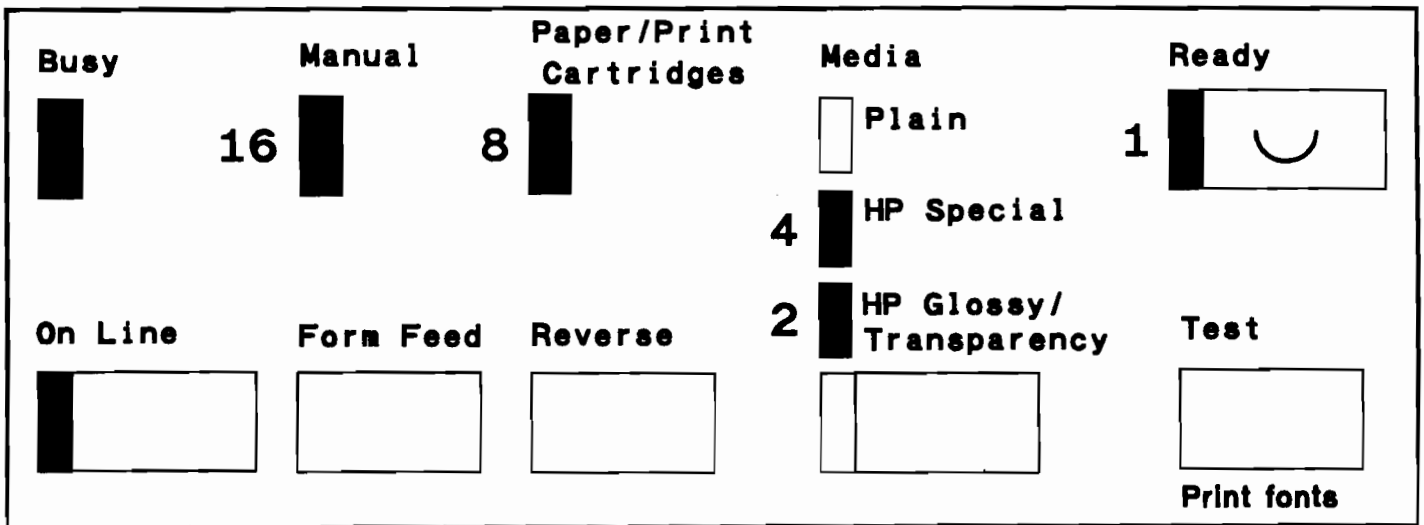
		Paper/Print Cartridges	Media		Ready
Busy	**Manual**				
32 ■	**16** ■	**8** ■	□ Plain		**1** ■ ⌣
			4 ■ HP Special		
			2 ■ HP Glossy/ Transparency		
On Line	**Form Feed**	**Reverse**			**Test**
64 ■					
					Print fonts

S E R V I C E   N O T E

SUPERSEDES   **None**

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers:

C1645A	3205A00000/9999A99999
C1656A	3235A00000/9999A99999

Drive-roller Cleaning Procedure for Transparency Top-of-page Handoff Error

To Be Performed By: HP-Qualified Personnel

Parts Required: None

Situation:

This service note describes a condition found on transparency media output where a small visible white band occurs across the entire width of the printed output, about 2.25 cm (7/8 inch) from the top edge of the transparency. This condition is referred to as a Top-of-Page Handoff error and occurs on some transparency media output. The likelihood that a printer's output will exhibit this problem is dependent on how often certain medias are used by the customer, and given that each customer's media preferences are different, the problem will not show up on all printers. If this problem seems to be occurring on a given printer, cleaning the drive-roller will correct it immediately. The procedure for cleaning the roller is described here.

How to recognize the problem: On transparency output only a discontinuity or "white band" will consistently appear across graphics output at approximately 2.25 cm (7/8 inch) from the top edge of the media. It is most likely seen across dark area fill graphics, and will most likely not be found in standard text output.

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Who will most likely encounter this problem: Not all users will experience this problem, only those who print a high percentage of their output on high- quality clay-coated papers, including HP's CX JetSeries paper. Although the problem is not exhibited on these medias, it has been found that the coating from these papers will slowly deposit on the surface of the drive-roller, thus creating a slick surface on the roller which the transparency film may eventually slip on.

Solution:

Since the Top-of-Page Handoff problem is caused by depositing material on the drive-roller, the solution requires cleaning the drive-roller. The deposits do not dissolve in any solvents, so no chemicals, no FAX or printer cleaners, should be used. Only a clean cotton cloth and water are to be used while following this procedure:

1. The printer should be sitting idle, with the On Line button lit and the busy light not blinking. If the printer is not on, plug it in or press the Ready button, and wait for the initialization procedure to finish.

2. Press the On Line button so the On Line light goes off.

3. Remove the paper tray from the front of the printer.

4. Soak a clean cotton cloth with water ONLY, and wring dry until no water drips from the cloth when squeezed tightly.

5. Insert the cloth with the tip of your fingers, all the way to the back and top of the paper tray opening, to the surface of the heated drive-roller. The roller will be hot to the touch.

6. While applying upward pressure, rub the cloth from one side of the roller to the other to wipe away deposits that are embedded on the roller's surface.

7. Remove the cloth and hold down the Reverse button for a few seconds. This will turn the roller and expose another section for cleaning. Shift to a clean section of the cloth, as a gray build-up will accumulate on the cloth as you rub.

8. Re-insert the cloth and repeat steps 6, 7, and 8 above a minimum of eight times to ensure the entire surface of the drive-roller has been cleaned. ·

9. When the procedure is complete, return the paper tray to the front of the printer and press the On Line button to return the printer to service.

This procedure can be repeated as often as necessary to fix the problem. More frequent cleanings will be required for customers who print a high percentage of the time with special clay-coated papers.

S E R V I C E   N O T E

SUPERSEDES   C1645A-09
C1656A-06

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers:

C1645A	3205A00000/3402A99999
C1656A	3235A00000/3402A99999

Intermittent Failures Due To Pinched Crossflow Fan Wires

To Be Performed By: HP-Qualified Personnel

Parts Required: See text

Situation:

The wires leading from the crossflow, or front fan on the PaintJet XL300 printer can be pinched between the fan mechanical assembly and the top cover, in the area where the wires exit the fan motor. The insulation on the wires can be punctured, and the wires short to ground. Additionally, insulation can be punctured by burrs on the right-hand side plate or by a sharp edge of the chassis ground plane, or by the heatsink on the Power PCA.

Indications:

The problem is intermittent; the symptom is a servo shut-down, with all front-panel lights flashing. The front-panel error code will be 31, 32, or 33 (ref. service note C1645A-07 / C1656A-04). Depending on which of the three wires are pinched, the Power PCA may or may not be damaged; removing the top cover may momentarily "correct" the problem when pressure is removed from the

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ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.5 hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS: ☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 May 1996		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

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wires. The crossflow fan's red wire being shorted to ground will cause Q7 on the Power Supply PCA to be damaged.

Solution:

For this failure, check the cable of the Crossflow Fan (C1645-60069) for any wires shorted to chassis ground. If there are any visible punctures that could result in a short to ground, replace the Crossflow Fan. If Q7 on the power Supply assembly is shorted, carefully check the crossflow fan's red wire for a short to ground; this is the only known cause of a failed Q7. Use an ohmmeter to measure the resistance between any of the three leads of Q7; a measurement of 100 ohms or less is a short. Please record anything noteworthy in the CE Comments section of the CSO if you find a punctured fan cable.

When replacing the front fan, route the wires as shown below in the illustration. Route the wires behind the fan support and secure the wires to the support with a tie-wrap to ensure the wires do not contact the fan rotor.

Beginning with serial number 3235A36618 the top cover (P/N C1645-60027) was modified to eliminate the problem of the fan wires being pinched by the top case. Even if a printer has this modified top case, re-route the wires when the front fan is replaced.
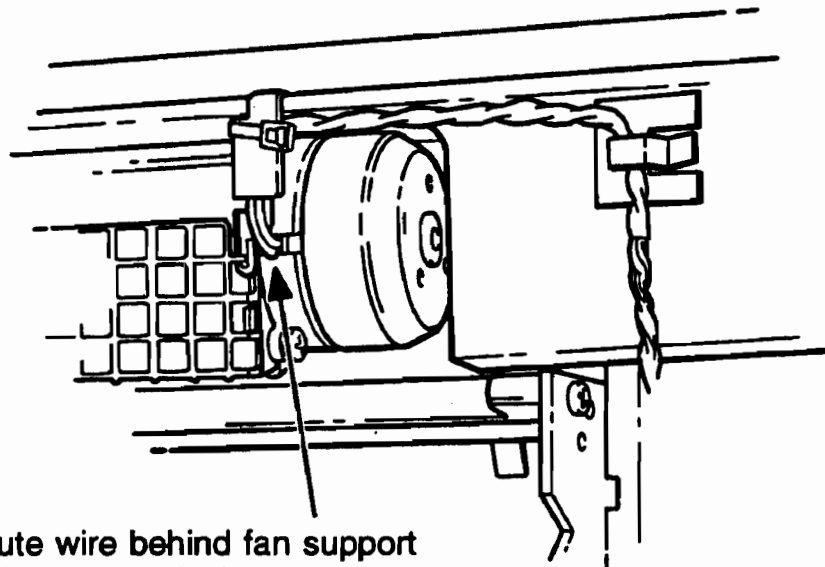
Route wire behind fan support
and secure with tie-wrap.

S E R V I C E N O T E

SUPERSEDES   **None**

HP C1645A PaintJet XL300 Color Printer

Serial Numbers: 3205A00000/3205A99999

Pickoff Shaft Assembly Design Change

To Be Performed By: HP-Qualified Personnel

Parts Required: None

Situation:

The shaft on the end of the Pickoff Shaft assembly (service manual, pg 10-9, item 57) has been changed, from a keyway to a flatted shaft. In addition, the Clutch Hub (service manual, pg 10-8, item 35) was changed to match the flat on the end of the Pickoff Shaft assembly.

Solution:

During a repair of a C1645A printer, if the Pickoff Shaft assembly or the Clutch Hub needs to be replaced, it will be necessary to replace both parts if they are of the old design, in order for them to fit together properly. For reference, the new design part numbers are:

Pickoff Shaft Assembly   C1645-60153
Clutch Hub   C1645-40138

Printers with the new design parts have a serial number prefix of 3231A or greater.

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ADMINISTRATIVE INFORMATION

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INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
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S E R V I C E   N O T E

SUPERSEDES   None

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers:

C1645A   3205A00000/3235A57225
C1656A   3235A00000/3235A57225

Transparency Skew

To Be Performed By: HP-Qualified Personnel

Parts Required:

P/N	Description
C1645-60269	Drive Plate Assembly

Situation:

A problem exists with the PaintJet XL300 that causes transparency media to skew or stick; it is most prevalent as the last 25 cm of the film is being printed. It shows up most clearly when solid fill of a mixed color is being printed, and appears as a distortion of the shape being printed. This problem is found on printers that are used primarily for printing on transparency film. Due to the abrasiveness of the coating found on transparency media, a strip of mylar tape on the underside of the Drive Plate Assembly is being prematurely worn through. As this mylar tape is worn small holes appear in the mylar, exposing

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SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.0 hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY: ■ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 June 1995		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

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the adhesive underneath, which grabs at the media, causing it to skew as it is being released from the drive roller.

Solution:

This problem can be corrected by replacing the Drive Plate Assembly with P/N C1645-60269. This assembly has no mylar strip.

SUPERSEDES   None

HP C1645A PaintJet XL300 Color Printer
HP C1656A PaintJet XL300 Postscript Color Printer

Serial Numbers:

C1645A	3205A00000/9999A99999
C1656A	3235A00000/9999A99999

PaintJet XL300 Power Supply Replacement - Warning

To Be Performed By: HP-Qualified Personnel

Parts Required: None

Situation:

When replacing a Power Supply PCA in a PaintJet XL300 printer be careful when reconnecting various connectors. The 3-pin connectors used for the front fan and the drop-detect assembly are identical. Cross-connecting these two WILL result in damage to the power supply PCA. Note that the front fan connector (J6) is close to the edge of the board, while the drop detect connector (J4) is toward the center of the circuit board assembly.

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SERVICE NOTE CLASSIFICATION:

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SUPERSEDES   None

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers:

C1645A	3205A00000/9999A99999
C1656A	3235A00000/9999A99999

PaintJet XL300 Transparency Pick Failure

Situation:

There are currently two problems unique to the PaintJet XL300 printer involving transparency film (P/N 51636F, A-size & 51636G, A4-size). The two conditions are referred to here as the "transparency skew" and "transparency pick" problem.

The transparency skew problem has a solution in place, and is addressed in service notes C1645A-11 and C1656A-07. As a reminder, transparency skew causes the media to skew or twist as the last 25 cm of the film is being printed, or there may be no skew but the entire image will appear shortened or compressed.

The transparency pick problem manifests itself by the transparency film twisting or skewing as it is picked from the paper tray. The symptoms are text or graphics not printed squarely on the page. In some cases the media will misfeed completely and the printer's media light will turn on. The transparency pick problem is caused by a contaminant on the back side of the media which reduces the friction between it and the media pick wheels on the PaintJet XL300. The

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Transparency pick problem may or may not occur depending on the severity of the contamination.

This problem has been observed only on the HP PaintJet XL300 printer. The DeskJet family of printers have a wider performance range when feeding transparency media, and have not exhibited this problem.

Solution/Action

A re-formulated version of the current film which does not exhibit the transparency pick problem is now available, but will not be on dealer shelves until September. Because the DeskJet family of printers have not exhibited this problem, all stock of the current formulation of film will be distributed before releasing the new stock. For PaintJet XL300 users that experience this problem, HP will supply the new formulation film directly until it is readily available through normal supply channels. To effect this solution, HP Customer Engineers and Authorized Dealers are asked to contact their HP Response Center with the amount of film required and the name and address of the customer. Please include your customer's 2 month requirement. To identify the transparency film, locate the date code on the bottom of the box. The OLD film which causes the pick problem has a date code of 81-xxxx (where xxxx can be any four-digit number).

S E R V I C E N O T E

	SUPERSEDES None

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: 3349A70020/3349A71725

HP PaintJet XL300 Incorrect Firmware Version

The Main PCA in the C1645A and C1656A PaintJet XL300 printers have been redesigned. The new assemblies are in printers manufactured since the last half of December 1993. Changes to the circuit board assembly does not affect its form, fit, or function in the printer. The changes were made to increase reliability, enhance manufacturing efficiency, and reduce the boards' overall cost.

The ROM ICs installed in the first production run of the Digital PCA are not en-coded with the the correct firmware revision; the ICs were manufactured with a firmware revision that is earlier than the current revision 7.0. The printer's self-test, however, will report revision 7.0 erroneously.

Model C1645A:
Until Digital PCAs with correct firmware were available, printers were shipped with a memory expansion card, P/N C1645-60214. This memory expansion card contains revision 7.0 override firmware ICs that enhance the firmware on the Main PCA, making the printer's firmware equivalent to revision 7.0. Digital PCAs with the correct firmware revision have been installed in printers with a serial number prefix of 3402A, and the C1645-60214 expansion PCA is not re-quired in these printers.

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The purpose of this service note is to inform you of the existence of the C1645-60214 expansion card, and to emphasize that this expansion card is necessary for proper operation of printers with serial number prefix 3349A.

The C1645-60214 expansion card is equivalent to a zero-Mbyte memory card, and can be used as such by the end user. If the user wishes to upgrade their printer by adding Postscript capability, the C1651A Postscript upgrade can be added to the printer in place of the C1645-60214 with no loss in basic functionality.

Model C1656A:
PaintJet XL300 Postscript printers (C1656A) that shipped with incorrect firmware on the Digital PCA have a C1651A Postscript upgrade card installed. The C1651A provides full firmware revision 7.0 functionality as well as the Postscript Language. These C1656A printers also have a serial number prefix of 3349A; the correct firmware revision has been installed in printers with a 3402A serial number prefix.

SUPERSEDES: **C1645A-15**
C1656A-11

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: 3205A00000/3349A71725
3235A38000/3349A71725

PaintJet XL300 Soft AC Line Failure

To Be Performed By: HP-Qualified Personnel

Parts Required:

Part No.	Description	Ref. Desig.
1818-5976	IC-FIRMWARE C0	U7
1818-5977	IC-FIRMWARE C1	U6
1818-5978	IC-FIRMWARE C2	U4
1818-5979	IC-FIRMWARE C3	U5

Situation:

There are two failure modes that are symptoms of a Soft AC Line. One is the printer failing to pass line voltage interrogation when first connected to the AC line; the error condition is one of all front-panel lights flashing and no mechanical movements within 2 minutes of applying power. The other soft AC line error indication is the front panel Check Paper and Glossy Media (amber) LEDs on steady. This indication can happen when power is applied or during printing. In both cases the printer shuts down and must be powered off in order to recover from the fault.

DATE   **10 February 1995**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:				
MODIFICATION RECOMMENDED				
ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.0 hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS: ☐ RETURN ☐ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 01 September 1996		
AUTHOR: DB	ENTITY:1100	ADDITIONAL INFORMATION:		

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C1645A-15A   C1656A-11A

The PaintJet XL300's heater control circuitry can be affected by a "soft" AC line condition. A "soft AC line" is one that has a relatively high source impedance. Any given power source may be "soft;" anything from a portable AC generator up to and including city power can cause a soft AC line failure.

Soft AC line can exist at the power generation source, and/or be caused by the power distribution system. Once power is delivered to the customer it is influenced by building wiring and the quantity and type of other devices connected to the AC line. Every site is unique; sometimes the problem can be solved by moving the printer to a different part of the building, other times it may require a move across town.

The PaintJet XL300 requires an AC line voltage that is not soft, and whose frequency is stable. This is a consequence of safety features that prevent the heaters from being over-driven. Soft AC line failures are more prevalent at higher line voltages (200 volts and greater).

Solution/Action

The soft AC line problem is corrected with a revised version of firmware, revision 7.01. Rev 7.01 firmware is available as four individual IC ROMs that can be installed on the Digital PCA (the four ROMs are socketed). Revision 7.01 firmware is now shipping in printers with serial number prefix 3402A.

Note: Printers with a serial number prefix of 3349A shipped with a Digital PCA having soldered-in ROMs (ref service note C1645A-14/C1656A-10). For these printers the Digital PCA must be replaced with a rebuilt assembly, P.N C1645-69110.

A customer may be experiencing the Soft AC Line condition in their C1645A printer that has been upgraded by having a C1651A Postscript board installed. In this case, in addition to replacing the firmware ICs the C1651A Postscript Upgrade PCA must be replaced as well, with a C1645-60109 standard Postscript expansion PCA. The digital PCA firmware is overridden by the C1651A PCA. The C1645-60109 provides full Postscript functionality.

Note: If rev 7.01 firmware is installed in any C1645A that has a PCL Upgrade expansion PCA (C2878A) installed, the four PCL upgrade ROMs must be removed. The PCL upgrade ROMs will override portions of the firmware on the Digital PCA.

S E R V I C E   N O T E

| | SUPERSEDES: | C1645A-16 |
| | | C1656A-12 |

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: 3205A00000/3349A71725
3235A38000/3349A71725

PaintJet XL300 B/A3 Clipping Bug

To Be Performed By: HP-Qualified Personnel

Parts Required:

Part No.	Description	Ref. Desig.
1818-5976	IC-FIRMWARE C0	U7
1818-5977	IC-FIRMWARE C1	U6
1818-5978	IC-FIRMWARE C2	U4
1818-5979	IC-FIRMWARE C3	U5

Situation:

There is an anomaly in the PaintJet XL300 printer firmware that occurs when using HP-GL/2 plotting commands. This anomaly will cause B or A3-size output to print the image clipped to A or A4 size. This is a defect in the HP-GL/2 formatter and requires a specific sequence of commands to produce the problem:

DATE   10 February 1995

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:						
MODIFICATION RECOMMENDED						
ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.0 Hour				
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	☐ RETURN ☐ SCRAP ☐ SEE TEXT	
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 01 September 1996				
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:				

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C1645A-16A   C1656A-12A

1. In the course of sending a PCL print job to the printer, a PCL page size command is sent, setting the page size to either A or A4.

2. A later HP-GL/2 print job then sends an HP-GL/2 PS command that sets the page size to B or A3.

3. The B or A3 output on the page is clipped to either an A or A4 size. Sending the HP-GL/2 print job a second time will result in the proper size output.

Solution/Action

The B/A3 clipping problem problem is corrected with a revised version of firmware, revision 7.01. Rev 7.01 firmware is available as four individual IC ROMs that can be installed on the Digital PCA (the four ROMs are socketed). Revision 7.01 firmware is now shipping in printers with serial number prefix 3402A.

Note: Printers with a serial number prefix of 3349A shipped with a Digital PCA having soldered-in ROMs (ref service note C1645A-14/C1656A-10). For these printers the Digital PCA must be replaced with a rebuilt assembly, P/N C1645-69110.

A customer may be experiencing the A3/A4 clipping problem in their C1645A printer that has been upgraded by having a C1651A Postscript board installed. In this case, in addition to replacing the firmware ICs, the C1651A Postscript Upgrade PCA must be replaced as well, with a C1645-60109 standard Postscript expansion PCA. The digital PCA firmware is overridden by the C1651A PCA. The C1645-60109 provides full Postscript functionality.

Note: If rev 7.01 firmware is installed in any C1645A that has a PCL Upgrade expansion PCA (C2878A) installed, the four PCL upgrade ROMs must be removed. The PCL upgrade ROMs will override portions of the firmware on the Digital PCA.

SUPERSEDES   None

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: 0000A00000/9999A99999

HP PaintJet XL300 Paper Jams with B/A3-Size CX Paper

Situation:
HP CX JetSeries cut-sheet paper in B and A3 sizes (P/N 51631A and 51631B) can contribute to paper jams when used in the HP PaintJet XL300 printer. The B/A3-size paper will jam by curling as it leaves the printing area and riding up over the starwheels, instead of underneath them. Paper containing excessive "In-Ream curl" causes paper jams.

Solution/Action:
Proper quality control procedures are in place and paper now being produced is free of in-ream curl. Packages of paper that are free of in-ream curl have a lot number of 169.xxx and greater (xxx = any three digits). The lot number is printed on the underside of the box. If a PaintJet XL300 user is experiencing paper jams with B or A# size paper check the paper's lot number; if it is below 169.xxx replace the paper. All B/A3 size papers stocked at HP distribution centers are of lot number 169.xxx and greater.

DATE   31 March 1994

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SERVICE NOTE CLASSIFICATION:

INFORMATION ONLY

AUTHOR:	ENTITY:	ADDITIONAL INFORMATION:
DB	1100	

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S E R V I C E   N O T E

SUPERSEDES   None

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers:

  3235A58670/3343A70019
  3235A58670/3343A70019

HP PaintJet XL300 Mid-Page Shutdown

To Be Performed By: HP-Qualified Personnel

Parts Required: C1645-69111

Situation:

A user can experience a mid-page shutdown of the PaintJet XL300 printer. The symptom is while printing, the printer goes into a servo shutdown state, with all front-panel lights flashing. Printer with rev 7.0 firmware or higher will give an error code of 11 if the On Line and Form Feed buttons are held down while all front panel lights are flashing. (Error 11 = Paper/Print Cartridges, Amber Media, and Ready LED on steady, all others off.)

Error 11 (ref. service note C1645A-07) is defined as "Excessive false pen access door open detects." The characteristics of a component on the Power PCA was changed by the vendor; this changed component can cause the XL300's microprocessor to falsely detect an error 11 condition. This false error 11 will occur when printing many pages at one time. When this prob-

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SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.5 hours		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY:	■ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	■ RETURN ☐ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 April 1996		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

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lem occurs, the microprocessor will begin to count what it assumes are in-stances of the pen access door interlock switch not working: the grill heater energized while the interlock switch is open. after eight of these false read-ings the microprocessor will shut down the servo system, in order to avoid a potential safety violation. The error can be reset by cycling power from the front panel. Opening the pen access door during printing will reset the microprocessor's error 11 count to zero.

Solution/Action

A printer being serviced due to complaints of mid-page shutdown should have the Power PCA replaced. Due to the requirements of a large number of pages printed without the pen access door being opened, it may not be possible to duplicate this failure on the bench. The Power PCA has been redesigned, and a resistor added to eliminate this problem from occurring. The added 100 Kohm, half-watt resistor is located adjacent to J1. Current rebuilt Power PCAs are being reworked, with an added 100K resistor be-tween the cathode of CR27 and the ground plane (at R2). Make sure that any Power PCA installed to correct this problem has that resistor added.

S E R V I C E   N O T E

SUPERSEDES   None

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers:

    3205A00000/3235A62500
    3235A38000/3235A62500

HP PaintJet XL300 Centronics I/O Failure

To Be Performed By: HP-Qualified Personnel

Parts Required: C1645-69110

Situation:

A problem with a Centronics I/O failure has been identified and corrected. The symptoms are the Centronics I/O not working; the printer will not print or accept data, but will perform a self-test and the printer's Appletalk/RS-422 serial port will function properly.

The problem has been traced to a component on the Digital PCA that has a potential to latch-up during operation. A new device has been specified, and is now in production printers.

Solution/Action

If an inoperative Centronics port is diagnosed, replace the Digital PCA.

DATE   31 March 1994

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:

MODIFICATION RECOMMENDED

ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.5 hours		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY: ■ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS:	■ RETURN ☐ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 April 1996		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

HEWLETT PACKARD

SUPERSEDES: **None**

HP C1645A PaintJet XL300 printer
HP C1656A PaintJet XL300 PostScript printer

Serial Numbers: C1645A   3205A00101/3510A07826
                      C1656A   3235A38000/3510A07826

HP PaintJet XL300 Microprocessor Lock-up with J2550A Series JetDirect Cards

To Be Performed By: HP-Qualified Personnel

Parts Required: See text

Situation:

A microprocessor lock-up problem can happen when the J2550A (10Base-T), J2552A (10Base-T,BNC, LocalTalk), or J2555A (Token ring) JetDirect MIO cards are used with a PaintJet XL300 printer (C1645A or C1656A).

The symptoms are that the printer will "lock up" when the MIO card is installed and the printer is turned on. The printer's front-panel lights will turn on in a random fashion and will be on steady; they will NOT be blinking. The front-panel buttons are not active and the printer does not respond to printing commands.

Solution/Action

1. The customer must make arrangements for the printer to be serviced, and send it to an HP-approved service provider. The repair will be handled as a standard warranty repair (O2G), with no charge to the customer.

DATE   **14 August 1995**

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:				
MODIFICATION RECOMMENDED				
ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR: 1.0 Hour		
LOCATION CATEGORY:	☐ CUSTOMER INSTALLABLE ☐ ON-SITE ■ HP LOCATION	SERVICE INVENTORY: ☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS: ■ RETURN ☐ SCRAP ☐ SEE TEXT	
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	RESPONSIBLE UNTIL: 1 September 1997		
AUTHOR: DB	ENTITY: 1100	ADDITIONAL INFORMATION:		

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C1645A-20   C1656A-18

2. The repair person must request a modified Digital PCA from the San Diego Printer Division. Send an HPDesk message to Sprtech ONLINE or phone at TELNET 655-4776 or +619 655 4776. Use "XL300/MIO" as the subject of the message. The text of the message should indicate that the printer is to have its Digital PCA replaced. Include in the text the customer's name and address; the printer serial number; the service provider address, telephone number and name of a contact there; and the estimated date of arrival at the service provider. A modified Digital PCA will be sent from SPR to the service provider, for installation in the PaintJet XL300 printer. One hour labor will be allowed for this repair.

PaintJet XL300 internal test and demo pages

Self-test ....Press **Test**

QA Page ....Hold **On Line**
Hold **Form Feed**
Hold **Reverse**
Release **Form Feed**
Release **Reverse**
Release **On Line**

Demo #1: Data Sheet ....Press and hold **On Line**
Press **Test** once
Release **On Line**

Demo #2: Business Graphic—Pie Chart ...Press and hold **On Line**
Press **Test** twice
Release **On Line**

Demo #3: Business Graphic—Bar Chart ..Press and hold **On Line**
Press **Test** three times
Release **On Line**

Demo #4: HP-GL/2 Drawing ....Press and hold **On Line**
Press **Test** four times
Release **On Line**

Demo #5: Newsletter ....Press and hold **On Line**
Press **Test** five times
Release **On Line**

Internal Font list (PCL) ....Press and hold **Test** until **Busy** light flashes

PostScript Configuration Page* ....Press and hold **On Line**
Press **Test**
Release **On Line**

PostScript Font List* ....With **On Line** light *off,* press and hold **Test** until **Busy**
flashes

* PostScript module must be installed and default language must be set to PostScript via rear-panel
DIP switches (switches 5 & 6 up).

SELFTEST

CONFIGURATION:

Firmware Version: V7.01
Font Date Code: 19911114
Base Rom Checksums: 49CC D9EF 478C 2F24
RAM Size: 2 Megabytes
Page Count: 29
Media Type: Special
Rear Panel Switch Settings:
   [000000000]
   Serial IO: AppleTalk
   Baud Rate: 9.6 K
   IO Handshake: XON-XOFF
   Default Language: PCL5
   Symbol Set: Roman8
   Pitch: 10cpi
   Default Paper: English (Letter)
Appletalk Name: PaintJet XL300

ERROR REPORTING:

Memory Out Errors = 0
HPGL/2 Error: No Error

ACCESSORIES:

Font Cartridges Installed: None
Options Installed: None
Languages Installed: PCL5, HPGL/2

AppleTalk is a registered trademark of Apple Computer, Inc.
PostScript is a trademark of Adobe Systems Incorporated which may be registered in certain jurisdictions.

+3 | −3   +3 | −3   +3 | −3

+3   +3   +3
−3   −3   −3
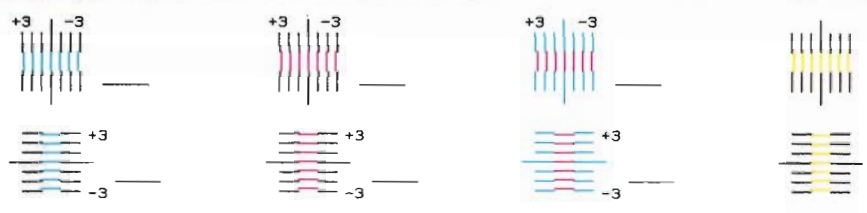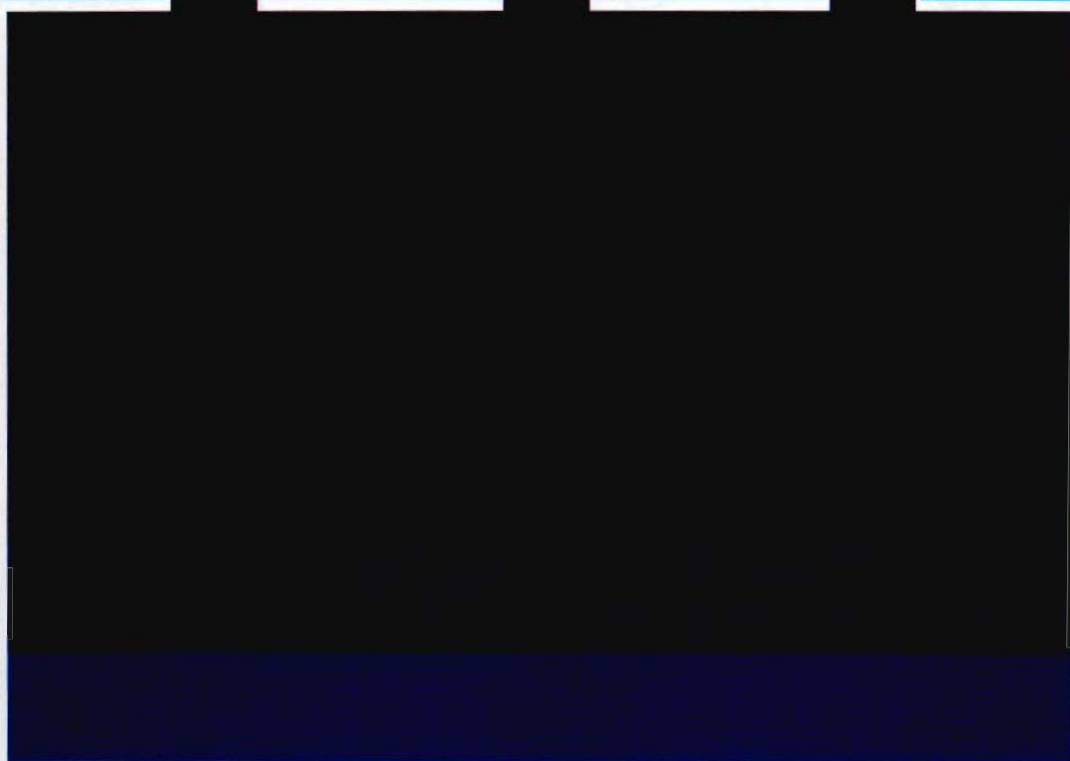
DATE: _____	LINE: T P
S/N: _____	SHIFT: 1st 2nd

I believe the Archives staff has found **exactly what we need** for our new *Space Exploration* display. It's **an eyewitness account of the dramatic July 16, 1969 launch of Apollo 11** at Cape Kennedy. Here's an excerpt:

Just before the emissaries left the cape, the morning star, Venus, failing in the early sunlight, seemed to wink down at Pad 39-A. It reminded some, that men were just inching into space by going to the moon. *But no stephen would be tougher than this one, the last stephen.*
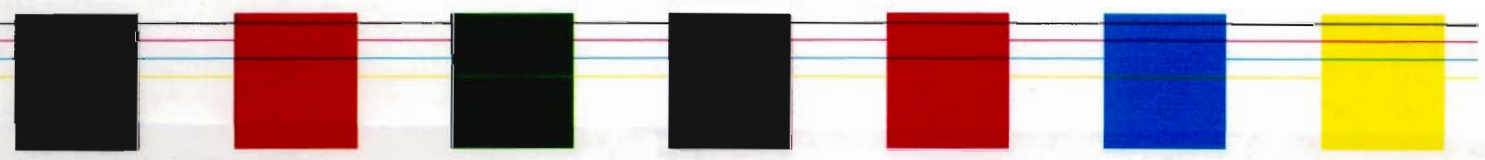
Cup standings

Cup standings

HP PaintJet XL300 color printer with laser-quality color!

The HP PaintJet XL300 color printer provides brilliant 300-dpi, laser-quality color on plain paper. It's ready to print in MS-DOS®, Microsoft® Windows, Apple Macintosh environments, and even mixed environments with no extras required.

Quality

- 300 dpi thermal inkjet color on plain paper; HP JetSeries media for special printing needs including transparency film
- Laser-quality text with scalable typefaces
- Up to 16.8 million richly saturated, laser-quality colors
- Fine resolution for accurate color imaging and smooth gradations
- Ideal for business, DTP, CAD, and graphic arts applications
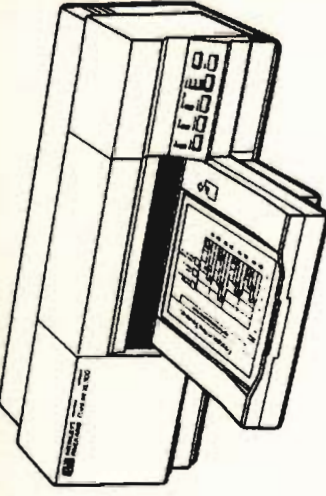
Connectivity

- Standard Centronics, AppleTalk/RS-422 interfaces, with automatic switching
- Extensive software support for MS-DOS, Windows, and Macintosh environments
- Printer drivers included for Windows (3.0, 3.1) and Macintosh (6.05 and higher including System 7)
- Optional Adobe™ PostScript™ Level 2 fully configured printer or board upgrade
- Full HP-GL/2 for plotter emulation
- Auto switching between color PCL5 and optional Adobe PostScript Level 2 for users in mixed environments

HP LaserJet Compatibility

- Color PCL 5 for easy document portability with HP LaserJet III family
- Two slots use all HP LaserJet typeface cartridges
- Direct network connection with optional HP JetDirect cards
- Accepts HP LaserJet IIISi SIMMs

Convenience

- Prints on A/A4, B/A3, B4, and legal sizes
- Plain-paper printing on office media
- Selectable screen-to-printer color matching and PANTONE®*-approved colors for Macintosh and Windows
- Four 300-dpi print cartridges for bright colors and true black
- Standard 2MB of memory, expandable to 18 MB

Adobe and PostScript are trademarks of Adobe Systems, Inc., which may be registered in certain jurisdictions. MS-DOS and Microsoft are U.S. registered trademarks of Microsoft Corporation.
*PANTONE, Inc.'s check-standard trademark for color.

Hewlett-Packard

This sample printed on the HP PaintJet XL300 color printer.

Worldwide Foods
1991 Revenue by Country
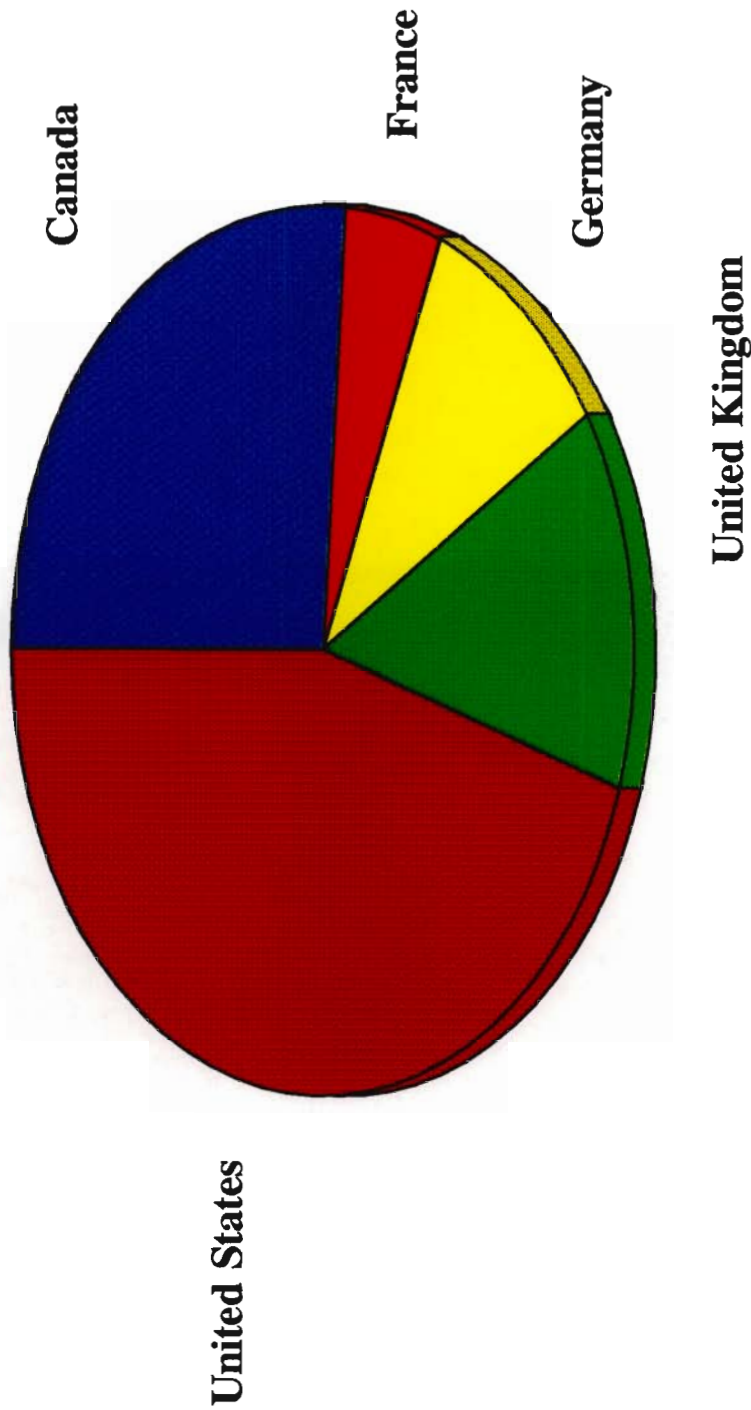
Canada

France

Germany

United Kingdom

United States

This sample printed on an HP PaintJet XL300 color printer.
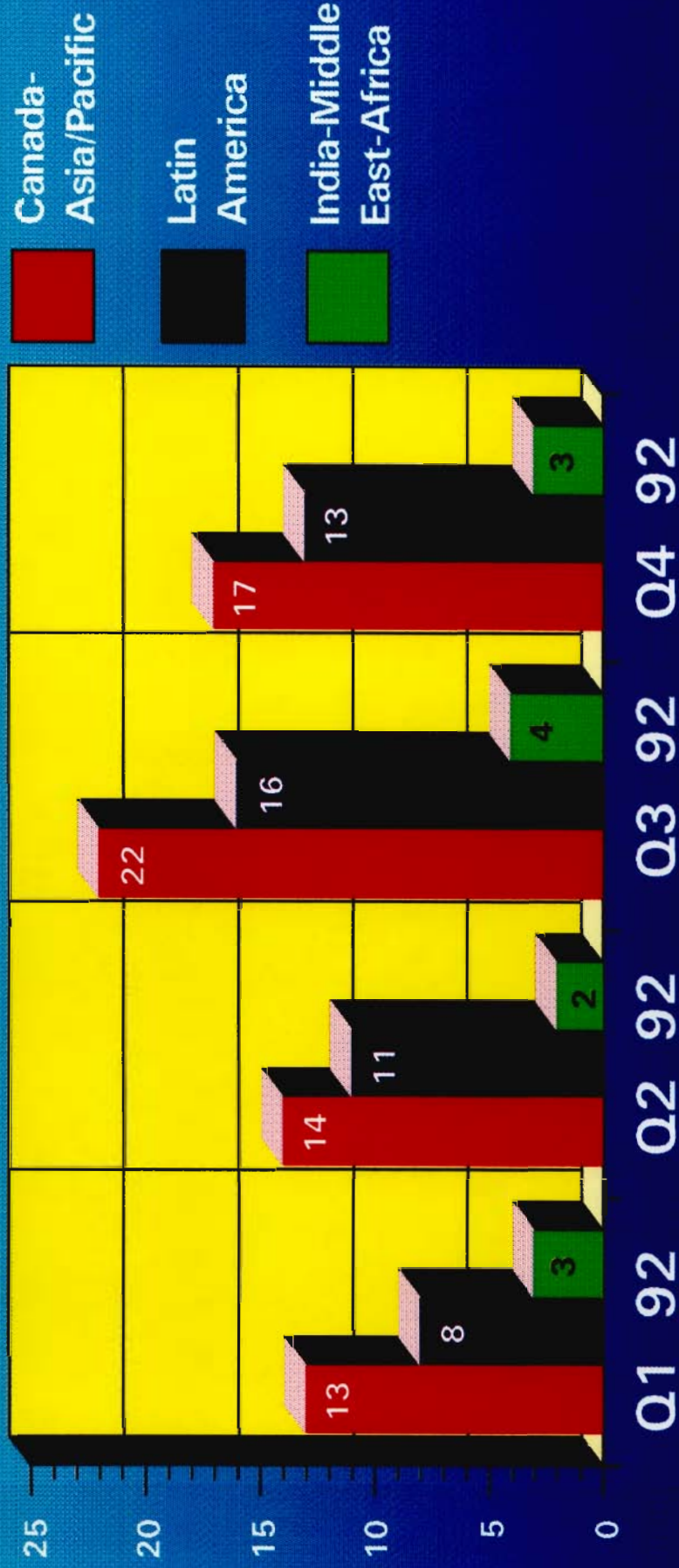
Hewlett-Packard

HP-GL/2 on the HP PaintJet XL300
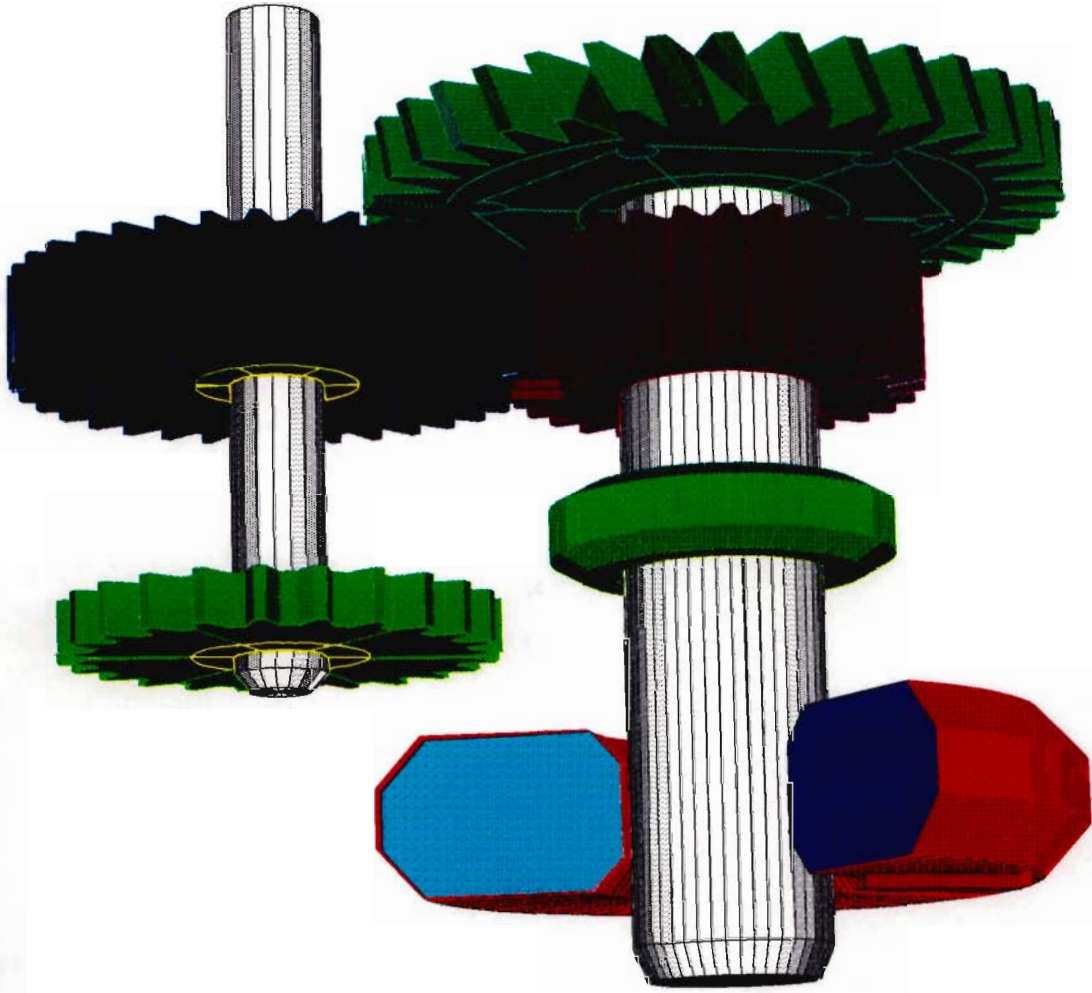
This sample printed on the HP PaintJet XL300 color printer.

Hewlett-Packard

The ■Financial

April 1, 1986   Financial News for N/B/M Shareholders   Vol. XIX, No. 4

We at Norton/Benton/McDonough are extremely proud of our progress throughout the network during the quarter.
Indeed, we faced a number of challenges in both our external environment and internal operations.

N/BM Meets Challenges

Worldwide economic conditions including uneven recovery, disparate interest rates and changing currency values have had an unsettling effect on operations. In addition, we have experienced a number of operational challenges in recovering from a disappointing first quarter. We have also aggressively expanded our business in major markets.

One of our most publicized challenges was directed at our property-liability subsidiary, *Oakleaf Recovery*. Industry-wide difficulties relating to Federal legislation plagued Oakleaf for most of the year. We are happy to report, however, that greater operating efficiency and diverting our attention to more profitable areas of business have transformed early problems into promising opportunities. Other company divisions faced and overcame less significant challenges.

In a tough year on the securities market, our Investment Services Division became the recognized leader in cost control and profitability. The division has been able to reduce the operational cost by 15% and increase

COMPANY PERFORMANCE

Legend: Investment Services — Oakleaf Recovery — Mister Chicken — Vision Photographics

1st Quarter 1985   2nd Quarter 1985   3rd Quarter 1985   4th Quarter 1985   1st Quarter 1986

INVESTMENT SERVICES PERFORMANCE

$15M $10M $5M   1985   1986

1ST QUARTER 1986

25%   10%   30%   35%

N/B/M companies reported a record $76.3 million in sales for the year ending last quarter.
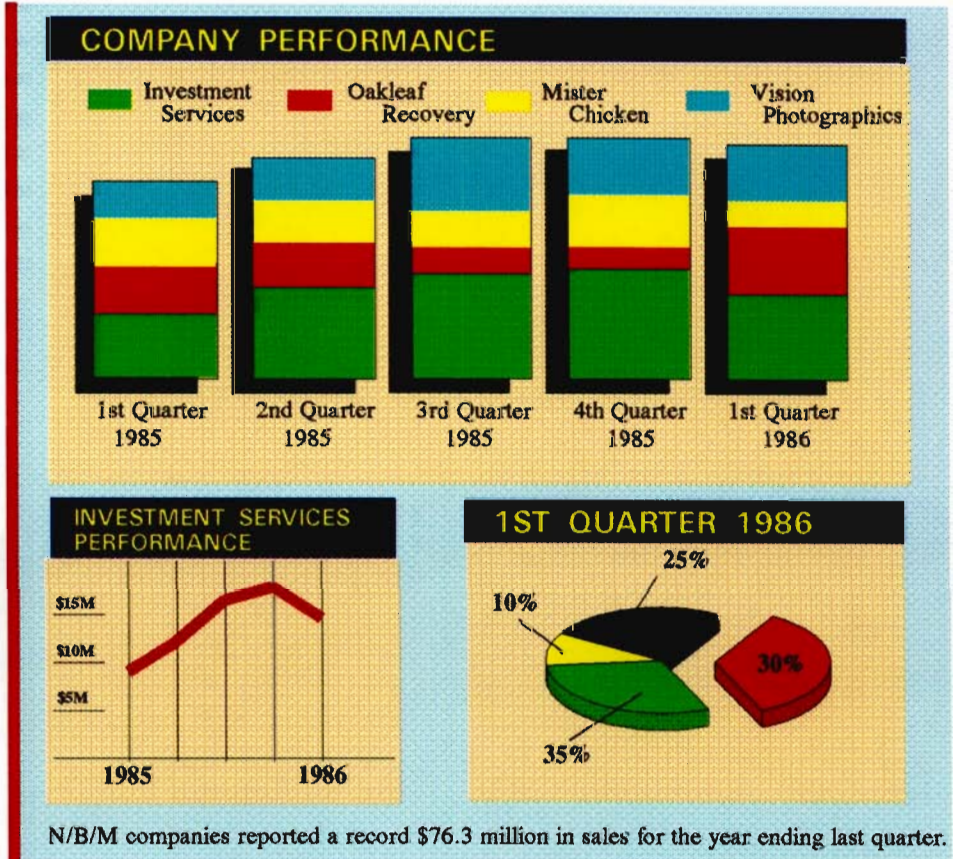
Marketing Changes & New Faces

We are creating a new and more viable kind of enterprise, with multiple distribution channels that target specific market segments with strong and high profile services. One expression of our new multiple marketing strategy is the new corporate image program we have adopted and the assignment of new names to divisions that accurately reflect our services.

One major reason for our improved position is the addition of new and dynamic leadership to our organization. Noted economist Reid H. Johnson was

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Planning the Future, Page 6
Crucial Tests Ahead, Page 7
The Financial Advisor, Page 7
The Desktop Publishing Revolution, Page 8

This sample printed on an HP PaintJet XL300 color printer.   Hewlett-Packard

Font List

Font #	Font ID	Symbol Set	Fix /PS	Pitch (cpi)	Point Size	Style	Stroke Weight	Name or Typeface		Default Orient	Print Sample & Escape Sequence
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<u>INTERNAL FONTS</u>

Font #	Font ID	Symbol Set	Fix /PS	Pitch (cpi)	Point Size	Style	Stroke Weight	Name or Typeface		Default Orient	Print Sample & Escape Sequence
I000		ROMAN-8	F	10.00	12.0	Upright	Medium	Courier		Port	ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~ \<Esc\>(8U\<Esc\>(s0p10.00h12.0v0s0b3T
I001		ROMAN-8	F	16.67	8.5	Upright	Medium	Line Printer		Port	ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàèëöÅØåæÄÜßÁÐÒ \<Esc\>(8U\<Esc\>(s0p16.67h8.5v0s0b0T
I002		ROMAN-8	F	12.00	10.0	Upright	Medium	Courier		Port	ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè \<Esc\>(8U\<Esc\>(s0p12.00h10.0v0s0b3T
I003		ROMAN-8	F	12.00	10.0	Upright	Bold	Courier		Port	**ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè** \<Esc\>(8U\<Esc\>(s0p12.00h10.0v0s3b3T
I004		ROMAN-8	F	12.00	10.0	Italic	Medium	Courier		Port	*ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè* \<Esc\>(8U\<Esc\>(s0p12.00h10.0v1s0b3T
I005		ROMAN-8	F	10.00	12.0	Upright	Bold	Courier		Port	**ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~** \<Esc\>(8U\<Esc\>(s0p10.00h12.0v0s3b3T
I006		ROMAN-8	F	10.00	12.0	Italic	Medium	Courier		Port	*ABCDEfghijÃÂ°ÇÑ¡¿£§ê#$@[]^'{|}~* \<Esc\>(8U\<Esc\>(s0p10.00h12.0v1s0b3T
I008		ROMAN-8	P		Scale	Upright	Medium	CG Times		Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123 \<Esc\>(8U\<Esc\>(s1p__v0s0b4101T
I009		ROMAN-8	P		Scale	Upright	Bold	CG Times	Bd	Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~**123** \<Esc\>(8U\<Esc\>(s1p__v0s3b4101T
I010		ROMAN-8	P		Scale	Italic	Medium	CG Times	It	Port	*ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123* \<Esc\>(8U\<Esc\>(s1p__v1s0b4101T
I011		ROMAN-8	P		Scale	Italic	Bold	CG Times	BdIt	Port	*ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~**123*** \<Esc\>(8U\<Esc\>(s1p__v1s3b4101T
I012		PS DINGBT	P		Scale	Upright	Medium	ITCZapf Dingbats		Port	✤✜✦✤✱✴✽✾✿✹☞☜①②③④⑤⑥⑦⑧⑨✂ \<Esc\>(10L\<Esc\>(s1p__v0s0b4141T
I013		ROMAN-8	P		Scale	Upright	Medium	Univers	Md	Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123 \<Esc\>(8U\<Esc\>(s1p__v0s0b4148T
I014		ROMAN-8	P		Scale	Upright	Bold	Univers	Bd	Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~**123** \<Esc\>(8U\<Esc\>(s1p__v0s3b4148T
I015		ROMAN-8	P		Scale	Italic	Medium	Univers	MdIt	Port	*ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123* \<Esc\>(8U\<Esc\>(s1p__v1s0b4148T
I016		ROMAN-8	P		Scale	Italic	Bold	Univers	BdIt	Port	*ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~**123*** \<Esc\>(8U\<Esc\>(s1p__v1s3b4148T
I017		ROMAN-8	P		Scale	Upright	Medium	Univers	MdCd	Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123 \<Esc\>(8U\<Esc\>(s1p__v4s0b4148T
I018		ROMAN-8	P		Scale	Upright	Bold	Univers	BdCd	Port	ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~**123** \<Esc\>(8U\<Esc\>(s1p__v4s3b4148T
I019		ROMAN-8	P		Scale	Italic	Medium	Univers	MdCdIt	Port	*ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123* \<Esc\>(8U\<Esc\>(s1p__v5s0b4148T

ID	Symbol Set		Pitch	Point	Style	Weight	Typeface		Orient	Sample
I020	ROMAN-8	P		Scale	Italic	Bold	Univers	BdCdIt	Port	*ₐᵦCDEfghijÀÂ°ÇÑ¡¿£$ê#$@ℓ^´{|}~123*

<Esc>(8U<Esc>(s1p__v5s3b4148T

| I021 | ECMA94 L1 | F | 16.67 | 8.5 | Upright | Medium | Line Printer | | Port | ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~123ÀÈÉÍ̶ĐÒÓ×ØÙþàãè |

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| I022 | ECMA94 L1 | F | 12.00 | 10.0 | Upright | Medium | Courier | | Port | ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~123ÀÈÉ |

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| I023 | ECMA94 L1 | F | 12.00 | 10.0 | Upright | Bold | Courier | | Port | **ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~123ÀÈÉ** |

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| I024 | ECMA94 L1 | F | 12.00 | 10.0 | Italic | Medium | Courier | | Port | *ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~123ÀÈÉ* |

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| I025 | ECMA94 L1 | F | 10.00 | 12.0 | Upright | Medium | Courier | | Port | ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~ |

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| I026 | ECMA94 L1 | F | 10.00 | 12.0 | Upright | Bold | Courier | | Port | **ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~** |

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| I027 | ECMA94 L1 | F | 10.00 | 12.0 | Italic | Medium | Courier | | Port | *ABCDEfghij¡¢³´¶.¹»½Á#$@[]^`{|}~* |

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| I029 | PC-8 | F | 16.67 | 8.5 | Upright | Medium | Line Printer | | Port | ABCDEfghijíó⌐¬½¼ªⁿ⌐⌐¬ª#$@[]``{|}~123+⌐┐┴┬┤╫█▌◙◄‡ |

<Esc>(10U<Esc>(s0p16.67h8.5v0s0b0T

| I030 | PC-8 | F | 12.00 | 10.0 | Upright | Medium | Courier | | Port | ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔ |

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| I031 | PC-8 | F | 12.00 | 10.0 | Upright | Bold | Courier | | Port | **ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔** |

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| I032 | PC-8 | F | 12.00 | 10.0 | Italic | Medium | Courier | | Port | *ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔* |

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| I033 | PC-8 | F | 10.00 | 12.0 | Upright | Medium | Courier | | Port | ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~ |

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| I034 | PC-8 | F | 10.00 | 12.0 | Upright | Bold | Courier | | Port | **ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~** |

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| I035 | PC-8 | F | 10.00 | 12.0 | Italic | Medium | Courier | | Port | *ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~* |

<Esc>(10U<Esc>(s0p10.00h12.0v1s0b3T

| I037 | PC-8 DN | F | 16.67 | 8.5 | Upright | Medium | Line Printer | | Port | ABCDEfghijíó⌐¬½¼ªⁿ⌐⌐¬ª#$@[]``{|}~123+⌐┐┴┬┤╫█▌◙◄‡ |

<Esc>(11U<Esc>(s0p16.67h8.5v0s0b0T

| I038 | PC-8 DN | F | 12.00 | 10.0 | Upright | Medium | Courier | | Port | ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔ |

<Esc>(11U<Esc>(s0p12.00h10.0v0s0b3T

| I039 | PC-8 DN | F | 12.00 | 10.0 | Upright | Bold | Courier | | Port | **ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔** |

<Esc>(11U<Esc>(s0p12.00h10.0v0s3b3T

| I040 | PC-8 DN | F | 12.00 | 10.0 | Italic | Medium | Courier | | Port | *ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~123+╚╔* |

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| I041 | PC-8 DN | F | 10.00 | 12.0 | Upright | Medium | Courier | | Port | ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~ |

<Esc>(11U<Esc>(s0p10.00h12.0v0s0b3T

| I042 | PC-8 DN | F | 10.00 | 12.0 | Upright | Bold | Courier | | Port | **ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~** |

<Esc>(11U<Esc>(s0p10.00h12.0v0s3b3T

| I043 | PC-8 DN | F | 10.00 | 12.0 | Italic | Medium | Courier | | Port | *ABCDEfghijíó⌐┤║┐╣┐╫┴┘#$@[]^`{|}~* |

<Esc>(11U<Esc>(s0p10.00h12.0v1s0b3T

I045	PC-850	F	16.67	8.5	Upright	Medium	Line Printer	Port	ABCDEfghijí6|┤Â©|┐¢┴#\$ɑ[]^`{|}~123┴┌┼ßÈÈîï█îòþ
									<Esc>(12U<Esc>(s0p16.67h8.5v0s0b0T
I046	PC-850	F	12.00	10.0	Upright	Medium	Courier	Port	ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~123┴└┌
									<Esc>(12U<Esc>(s0p12.00h10.0v0s0b3T
I047	PC-850	F	12.00	10.0	Upright	Bold	Courier	Port	**ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~123┴└┌**
									<Esc>(12U<Esc>(s0p12.00h10.0v0s3b3T
I048	PC-850	F	12.00	10.0	Italic	Medium	Courier	Port	*ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~123┴└┌*
									<Esc>(12U<Esc>(s0p12.00h10.0v1s0b3T
I049	PC-850	F	10.00	12.0	Upright	Medium	Courier	Port	ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~
									<Esc>(12U<Esc>(s0p10.00h12.0v0s0b3T
I050	PC-850	F	10.00	12.0	Upright	Bold	Courier	Port	**ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~**
									<Esc>(12U<Esc>(s0p10.00h12.0v0s3b3T
I051	PC-850	F	10.00	12.0	Italic	Medium	Courier	Port	*ABCDEfghijí6|┤Â©|┐¢┴#\$@[]^`{|}~*
									<Esc>(12U<Esc>(s0p10.00h12.0v1s0b3T
I053	LEGAL	F	16.67	8.5	Upright	Medium	Line Printer	Port	ABCDEfghij#\$ɑ[]©°§¶†™123
									<Esc>(1U<Esc>(s0p16.67h8.5v0s0b0T
I054	LEGAL	F	12.00	10.0	Upright	Medium	Courier	Port	ABCDEfghij#\$@[]©°§¶†™123
									<Esc>(1U<Esc>(s0p12.00h10.0v0s0b3T
I055	LEGAL	F	12.00	10.0	Upright	Bold	Courier	Port	**ABCDEfghij#\$@[]©°§¶†™123**
									<Esc>(1U<Esc>(s0p12.00h10.0v0s3b3T
I056	LEGAL	F	12.00	10.0	Italic	Medium	Courier	Port	*ABCDEfghij#\$@[]©°§¶†™123*
									<Esc>(1U<Esc>(s0p12.00h10.0v1s0b3T
I057	LEGAL	F	10.00	12.0	Upright	Medium	Courier	Port	ABCDEfghij#\$@[]©°§¶†™123
									<Esc>(1U<Esc>(s0p10.00h12.0v0s0b3T
I058	LEGAL	F	10.00	12.0	Upright	Bold	Courier	Port	**ABCDEfghij#\$@[]©°§¶†™123**
									<Esc>(1U<Esc>(s0p10.00h12.0v0s3b3T
I059	LEGAL	F	10.00	12.0	Italic	Medium	Courier	Port	*ABCDEfghij#\$@[]©°§¶†™123*
									<Esc>(1U<Esc>(s0p10.00h12.0v1s0b3T

Font List

Font #	Font ID	Symbol Set	Fix /PS	Pitch (cpi)	Point Size	Style	Stroke Weight	Name or Typeface	Default Orient	Print Sample & Escape Sequence

INTERNAL FONTS

	1007	ROMAN-8	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghijÀÅ°ÇÑ¡¿£§×¥$ä[]^`ç(|)~123éàèëöÀØäæÄÜ8ÀÒÓ <Esc>(8U<Esc>(s0p16.67h8.5v0s0b0T
	1028	ECMA94 L1	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghij¡¢'¶.'»½Ä¥$ä[]^`ç(|)~123ÀÈÉíÌÐÒÒ×ØÚÞàèè <Esc>(0N<Esc>(s0p16.67h8.5v0s0b0T
	1036	PC-8	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghij16||{||┤╤┐║╝┘┌┴┴╜123┴┘~`ç(|)~$ä[]~`ç(|)~απΣΦ <Esc>(10U<Esc>(s0p16.67h8.5v0s0b0T
	1044	PC-8 DN	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghij16||{||┤╤┐║╝┘┌┴┴╜123┴┘~`ç(|)~$ä[]~`ç(|)~απΣΦ <Esc>(11U<Esc>(s0p16.67h8.5v0s0b0T
	1052	PC-850	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghij16||Àq¢─#$ä[]~`ç(|)~123┴┘~╟ÒÉÍÝ▌íóþ <Esc>(12U<Esc>(s0p16.67h8.5v0s0b0T
	1060	LEGAL	F	16.67	8.5	Upright	Medium	Line Printer	Land	ABCDEfghij#$ä[]°§¶†™123 <Esc>(1U<Esc>(s0p16.67h8.5v0s0b0T

POSTSCRIPT™ CONFIGURATION PAGE

HP PaintJet XL300 color printer with
Adobe's PostScript™ Level 2 option

OPERATOR/VARIABLE	PERSISTENT VALUE

SYSTEM SETUP OPERATORS

Password:	0
Print Errors:	true (on)
Left Margin:	0 (1/300 inch increments)
Top Margin:	0 (1/300 inch increments)
Page Count:	3123
PostScript Available Memory:	9.22299 Megabytes
Global Virtual Memory:	3793416 (maximum available)
Local Virtual Memory:	3022464 (maximum available)
Maximum Size of Font Cache:	580260
Current Size of Font Cache:	314776
Printer Name:	PaintJet XL300
Product Name:	PaintJet XL300
PostScript Code Version:	2011.112
Device Specific Revision:	0

TIMEOUT OPERATORS

Job Timeout:	0 (no time limit)
Manual Feed Timeout:	60 (seconds)
Wait Timeout:	40 (seconds)

POSTSCRIPT™ FONT PAGE
HP PaintJet XL300 color printer with
Adobe's PostScript™ Level 2 option

ITC Avant Garde Gothic® Book	ABCDEabcde012345()*%#!?'"
ITC Avant Garde Gothic Book Oblique	*ABCDEabcde012345()*%#!?'"*
ITC Avant Garde Gothic Demi	**ABCDEabcde012345()*%#!?'"**
ITC Avant Garde Gothic Demi Oblique	***ABCDEabcde012345()*%#!?'"***
ITC Bookman® Demi	**ABCDEabcde012345[]*%#!?'"**
ITC Bookman Demi Italic	***ABCDEabcde012345[]*%#!?'"***
ITC Bookman Light	ABCDEabcde012345[]*%#!?'"
ITC Bookman Light Italic	*ABCDEabcde012345[]*%#!?'"*
Courier	ABCDEabcde012345[]*%#!?'"
Courier Bold	**ABCDEabcde012345[]*%#!?'"**
Courier Bold Oblique	***ABCDEabcde012345[]*%#!?'"***
Courier Oblique	*ABCDEabcde012345[]*%#!?'"*
Helvetica*	ABCDEabcde012345[]*%#!?'"
Helvetica Bold	**ABCDEabcde012345[]*%#!?'"**
Helvetica Bold Oblique	***ABCDEabcde012345[]*%#!?'"***
Helvetica Oblique	*ABCDEabcde012345[]*%#!?'"*
Helvetica Narrow	ABCDEabcde012345[]*%#!?'"
Helvetica Narrow Bold	**ABCDEabcde012345[]*%#!?'"**
Helvetica Narrow Bold Oblique	***ABCDEabcde012345[]*%#!?'"***
Helvetica Narrow Oblique	*ABCDEabcde012345[]*%#!?'"*
New Century Schoolbook Bold	**ABCDEabcde012345[]*%#!?'"**
New Century Schoolbook Bold Italic	***ABCDEabcde012345[]*%#!?'"***
New Century Schoolbook Italic	*ABCDEabcde012345[]*%#!?'"*
New Century Schoolbook Roman	ABCDEabcde012345[]*%#!?'"
Palatino*	ABCDEabcde012345[]*%#!?'"
Palatino Bold	**ABCDEabcde012345[]*%#!?'"**
Palatino Bold Italic	***ABCDEabcde012345[]*%#!?'"***
Palatino Italic	*ABCDEabcde012345[]*%#!?'"*
Symbol	ABXΔEαβχδε012345[]*%#!? ∀
Times* Roman	ABCDEabcde012345[]*%#!?'"
Times Bold	**ABCDEabcde012345[]*%#!?'"**
Times Bold Italic	***ABCDEabcde012345[]*%#!?'"***
Times Italic	*ABCDEabcde012345[]*%#!?'"*
ITC Zapf Chancery® Medium Italic	*ABCDEabcde012345[]*%#!?'"*
ITC Zapf Dingbats®	✿✛✢✤✦❂❍✱✲✳✺✁✂✃✄✓✔✗✶✴☛☞❏✿➢➣☩✻✄