9

Print Quality

Print Quality Troubleshooting Checklist

When faced with a print quality problem, use the following checklist as a guide in troubleshooting the problem:

1 Problem reproduction

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

2 Printer configuration:

- Cartridge check: Set to "ON".
- Print Mode: Set to "Best" (in the printer and in the drivers).
- Dry time: Set to "Normal".
- Select the correct media setting when loading the media.

3 Hardware check list

Firmware Revision

- Install firmware revision A.02.10 (C3195-60135) if the firmware revision installed in the plotter is A.02.09 or older.

Mark Encoder (Service Note Details ◗ page 10-18)

- Perform the service test "23 Mark Position" ◗ page 8-44.
- Verify that the mark encoder has a line or a notch. If the mark encoder does not have a line or a notch, then install the "Mark label kit" (C3195-60141). This can be possible for plotters with serial numbers in these ranges:

  C3195A ESA0000000/ESA5B05350
  C3196A ESA0000000/ESA5B20304
  C3198A ESA0000000/ESA5B02306

Paper Advance Kit (Service Note Details ◗ page 10-12)

- Install the "Paper Advance Kit" (C3195-60142) if the serial number is in these ranges:

  C3195A ESA0000000/ESA5B05350
  C3196A ESA0000000/ESA5B20304
  C3198A ESA0000000/ESA5B02306

Fan Deflector (Service Note Details ◗ page 10-22)

- Install the "Fan Deflector" (C3195-40066) if the serial number is in these ranges:

  C3196A ESA0000000/ESA4508541
  C3198A ESA0000000/ESA4508541
  C3195A Not necessary

51644M Magenta Problem

- 51644M Magenta Cartridge: Replace the cartridges built from 12/95 through 3/96 (expiry dates from 6/97 to 9/97). These cartridges can cause banding problems (misdirection) and color shift (greenish black).

Cartridge Troubleshooting Process

- If you don't have any samples yet, reproduce the original problem with the correct printer settings.
- Perform the service test "15 Area fill PQ Plot" (details ▶ page 8-35) with the following configuration:

  PQ: Best
  Media setting: HP High-Gloss Photo, High-Gloss Film media or
                   HP Heavy coated media

You can identify the cartridges that are failing by checking the area fills. These are the area fills that will be affected by a cartridge problem (nozzle out or misdirected):

Defective Cartridge	Area Fills Affected
Magenta	Magenta, Red (MY), Blue (MC), Black (CMY), Greenish Black (CMY)
Cyan	Cyan, blue (CM), green (CY), black (CMY), Reddish black (CMY)
Yellow	Yellow, red (MY), green (CY), black (CMY), Bluish black (CMY) (Artifacts in the Yellow block are difficult to see)

- To check the nozzle check-out and the Pen to pen alignment, perform the service test "14 Color PQ Plot" (details ▶ page 8-35) with the following configuration:

  PQ: Fast
  Media setting: Opaque Bond

- Replace the cartridges if a problem is detected.

Cartridge Alignment

- Perform the cartridge alignment (details ▶ page 8-40) using HP Matte Film or High-Gloss Film. If not available, use Coated media or opaque bond if required.
- If you get an "Alignment Error", ensure that the carriage does not have a pen insertion problem (refer to service note ▶ page 10-20) and replace it if necessary.

How to Obtain Good Cartridges (Magenta, Cyan or Yellow)?

- In Europe, via the European CSC or ESO Grenoble.
- In US, via the Boise CSC and ESO Roseville.
- Contact Jerry Switzer from IJBU through the SSE of your country to obtain good cartridges if they are not available in your country.

5 Media

- Use HP media. Remember that the media qualified for LFP applications are Coated Heavyweight, High-Gloss White Film or Photo based.
- In case the customer is using "HP High-Gloss Photo", ensure that the lot number is equal to or bigger than C6A620XX. If this is not the case, ask the customer to replace it through the dealer channel (lot numbers of media with problems are 565080XX or 565300XX).
- Select the correct media type when loading it.

6 Driver print quality configuration:

- Describe the application and driver used by the customer.

  Application (specify):

  Driver:

  HP Windows driver:
  HP Windows PostScript driver:
  HP Mac PostScript driver:
  Non-HP driver/Varware (specify name):

  (Only for the driver that the customer is using)

  HP Windows Driver (See "Options"):
  - (Print) Quality: Set to "Best"
  - Paper Type (Media setting): Select the same media type as loaded media.

  HP PostScript Driver (See "Color" folder):
  - Print Quality: Set to "Best"

  Non-HP Driver/Varware:
  - Ask the customer to select the maximim PQ performance (Best).

To clarify if the reason of the problem is related with the print mode defined with the Non-HP Driver that might use Varware, try the following:

- Print the same sample using the Non-HP driver and their normal media.
- Print one of the internal demos or perform the service test "15 Area fill PQ plot" (details ▶ page 8-35) using HP Media and configuring the plotter/printer as indicated previously.

If the output obtained using the HP Solution is good and the one obtained through the 3rd party solution is bad, HP support organization should:

- Communicate to the customer that the problem is not in the printer and that he should address it through the 3rd party vendor support structure.

7 Accuracy Calibration (details ▶ page 7-6)

- Perform "Accuracy calibration" using HP Matte Film or High-Gloss Film (if not available, use Coated media or bond).

Print Modes

The plotters/printers have a large number of print modes. A print mode specifies how to interpret and put on media a set of bitmap planes, each of which consists of a sequence of rows. Each mode corresponds to a unique combination of the following parameters:

- Print resolution (300 dpi, 600 dpi).
- Number of passes per swath.
- Number of advances per swath.
- Number of swaths per advance.
- Print direction (unidirectional or bidirectional).
- Swath height (swath width).
- Carriage speed.
- Smart Area Fill (SAF).
- Print masks.
- Servicing states.
- Multiple dotting (K).

User input to print mode selection consists of the following:

- Choice of media type.
- Choice of print-quality setting (fast, normal, best).
- The language in which the file is received.
- The model of plotter/printer used.

Print-Mode Characteristics

Information on some of the print mode parameters is given in the following print mode parameter tables:

750C 755 CM **Color plots on Opaque Bond**

This table is only applicable to DesignJets 750C and 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

Color plots on Opaque Bond

This table is only applicable to DesignJets 750C Plus and 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

Color plots on Vellum and Translucent Media

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

Color plots on Heavy-Coated Paper

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4

750C **Color plots on Coated Paper**

This table is only applicable to DesignJet 750C.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	1
Best	Unidir	18.33	300	2	0.32	2

750C Plus **Color plots on Coated Paper**

This table is only applicable to DesignJet 750C Plus.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	1
Best	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

755 CM **Color plots on Coated Paper**

This table is only applicable to DesignJet 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4

755
CM

Color plots on Coated Paper

This table is only applicable to DesignJet 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	18.33	300	1	0.32	1
Normal	Unidir	18.33	300	2	0.32	2
Best	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	600 addr.	4	0.32	4

750C
755
CM

Color plots on Matte Film

This table is only applicable to DesignJets 750C and 755CM (C3198A).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	2	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2

750C
Plus
755
CM

Color plots on Matte Film

This table is only applicable to DesignJets 750C Plus and 755CM (C3198B).

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	2	0.32	1
Normal	Bidir	18.33	300	2	0.32	1
Best	Bidir	18.33	300	4	0.32	2
Best	Unidir	18.33	600 addr.	4	0.32	4

750C
750C
Plus
755 CM

Color plots on Clear Film and High-Gloss Film

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	**IPS**		**N**	**IN**	**N**
Normal	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	300	6	0.32	4

750C
750C
Plus
755 CM

Color plots on High-Gloss Photo and Semi-Gloss Photo

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	**IPS**		**N**	**IN**	**N**
Normal	Unidir	18.33	300	4	0.32	4
Best	Unidir	18.33	300	6	0.32	4

Monochrome plots on Opaque Bond, Vellum and Translucent Media

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	**IPS**		**N**	**IN**	**N**
Fast	Bidir	36.66	300	1	0.48	1
Normal	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	600	1	0.32	1
Best	Bidir	18.33	300	2	0.32	2
Best	Bidir	18.33	600	2	0.32	2
Best	Unidir	18.33	600	2	0.32	2

Monochrome plots on Coated Paper

This table is only applicable to DesignJets 700, 750C and 750C Plus.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	36.66	300	1	0.32	1
Normal	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	600	1	0.32	1
Best	Bidir	18.33	300	2	0.32	2
Best	Bidir	18.33	600	2	0.32	2
Best	Unidir	18.33	600	2	0.32	2

Monochrome plots on Coated Paper

This table is only applicable to DesignJet 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	2
Normal	Bidir	18.33	600	2	0.32	2
Best	Bidir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	4	0.32	4
Best	Unidir	18.33	600	4	0.32	4

Monochrome plots on Clear Film, Heavy Coated Paper and Matte Film

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Bidir	18.33	300	1	0.32	1
Normal	Bidir	18.33	300	2	0.32	2
Normal	Bidir	18.33	600	2	0.32	2
Best	Bidir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	4	0.32	4
Best	Unidir	18.33	600	4	0.32	4

**750C
750C
Plus
755
CM**

Monochrome plots on High-Gloss Film, High-Gloss Photo and Semi-Gloss Photo

This table is only applicable to DesignJets 750C, 750C Plus and 755CM.

PRINT QUALITY	PRINT DIRECTIONS	CARRIAGE SPEED	RESOLUTION	NO. OF PASSES	SWATH WIDTH	SWATHS/ ADVANCE
	Unidir/Bidir	IPS		N	IN	N
Fast	Unidir	36.66	300	4	0.32	4
Fast	Bidir	18.33	600	1	0.32	1
Normal	Unidir	18.33	300	4	0.32	4
Normal	Bidir	18.33	600	1	0.32	1
Best	Undir	18.33	300	4	0.32	4
Best	Bidir	18.33	600	1	0.32	1

How do I select the print mode?

The following table details how the print mode affects the relevant parameters:

How does the customer select a print mode?	Parameters affected	Software control settings		Printer settings
		RIP/Varware	HP drivers	
Media Selection (1)	• Number of passes • Pen temperature • Carriage speed • Dry time (between passes and before cutting) • True/comp. black	Varware (all parameters except for pen temperature)		• Media selected (HP drivers)) • The pen temperature depends uniquely on the printer settings)
Media Selection (2)	• Color map	RIP or Application	Media type (non-PostScript HP Windows driver)	Media selected (HP PostScript drivers)
Print Quality	• Number of passes • Carriage speed • Dry time (between passes and before cutting) • True/comp. black	Varware	Print Quality or Quality	Print Quality (for demos and Area fill PQ plot)
Dry Time	• Dry time (between passes and before cutting)	Varware		Dry time (only using HP drivers
Lightness	• Pen temperature			Lightness

Print-Quality Diagnostic Plots

CAD 2-D Monochrome Plot (Service Test 13 ⧫ page 8-33)

Objectives

The main objectives of this plot (represented below) is to check the vertical-line straightness of monochrome lines. The plot can be done in a unidirectional or bi-directional mode, so you can distinguish the theta-Z error from the bi-directional one.

The second objective is to check performance of the cartridge. The plot includes an area fill, and a number of parallel lines that show up directional problems. There is also a nozzle checkout with which you can identify faulty or weak nozzles.
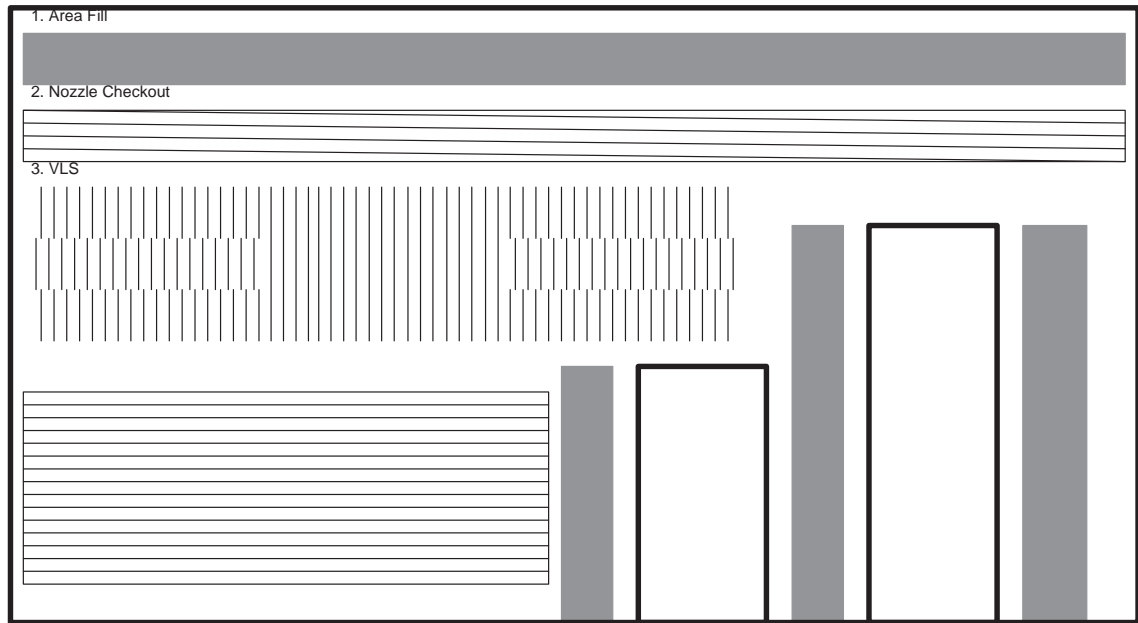
Print Modes

A special print mode is used to print the plot without adding noise to the data. This is independent of the print-quality and media settings on the front panel. The following are the parameters of this print mode:

- Two possible printing directions:
  - Unidirectional.
  - Bi-directional.
- Monochrome.
- Resolution 600 dpi.
- Swath advance of 0.32 inches (192 nozzles).
- 1 pass per swath.

Vertical Line Straightness (VLS)

If you look very closely at a vertical line produced by the plotter, you will notice that it's not perfectly straight. This is because, between consecutive swaths, there is usually some error in accuracy: a vertical line in one swath may be a little to the left or a little to the right of the line plotted in the previous swath. Depending on the causes of the error, lines that are supposed to be vertical may appear as shown below:

1	No error
2	Bidirectional error
3a	Theta–Z error
3b	Theta–Z error
4a	Combined error
4b	Combined error
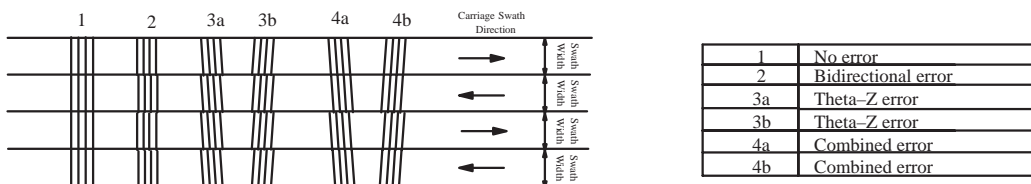
Bidirectional Error

Error numbered 2 above is called a bidirectional error. If you print the same plot using a unidirectional print mode, the error should not appear. (Print modes ▶ 9-5.)

This error can occur for various reasons, including:

- Encoder-strip slots are damaged or dirty.
- Friction between carriage bushings and slider rod:

Theta-Z Error

Errors numbered 3a and 3b are called Theta-Z errors. They appear when the rows of nozzles on a cartridge are not perpendicular to the carriage axis (Y-axis).

This error can occur for various reasons, including:

- Badly seated cartridge.
- Faulty cartridge.
- Faulty carriage.

Corrective Actions

- Perform the pen alignment test using white media ▶ page 8-40.
  Avoid the use of glossy media as the black pen cannot be aligned using this type of media.
- Perform the line-sensor calibration ▶ page 7-5 and perform the pen alignment test again.
- Replace all cartridges.
- Replace the carriage ▶ page 6-34.
- Troubleshoot the EEROM and the Main PCA.

Nozzle Check-Out

Note that, to print the nozzle check-out, the central nozzles of the cartridges have been used. So the numbers of the nozzles do not correspond to the actual numbers. If you want to test all the nozzles of the cartridges, you should perform the "Nozzle Print Test" ▶ page 8-32.

Misdirection Pattern

The main purpose of this plot is to qualitatively validate the pen-to-pen alignment. It also provides information on the pen performance, as it includes a nozzle check-out and area fill.

CAD Color Diagnostic Plot (Service Test 14 ▶ page 8-34)

Objectives

The main purpose of this plot is to qualitatively validate the pen-to-pen alignment. It also provides information on the cartridge performance, as it includes a nozzle check-out and area fill.

1. - Area Fill.

2. - Nozzle Checkout.

3. - VLS & Pen to Pen Alignment Primary.

4. - Pen-to-Pen Alignment Secondary.
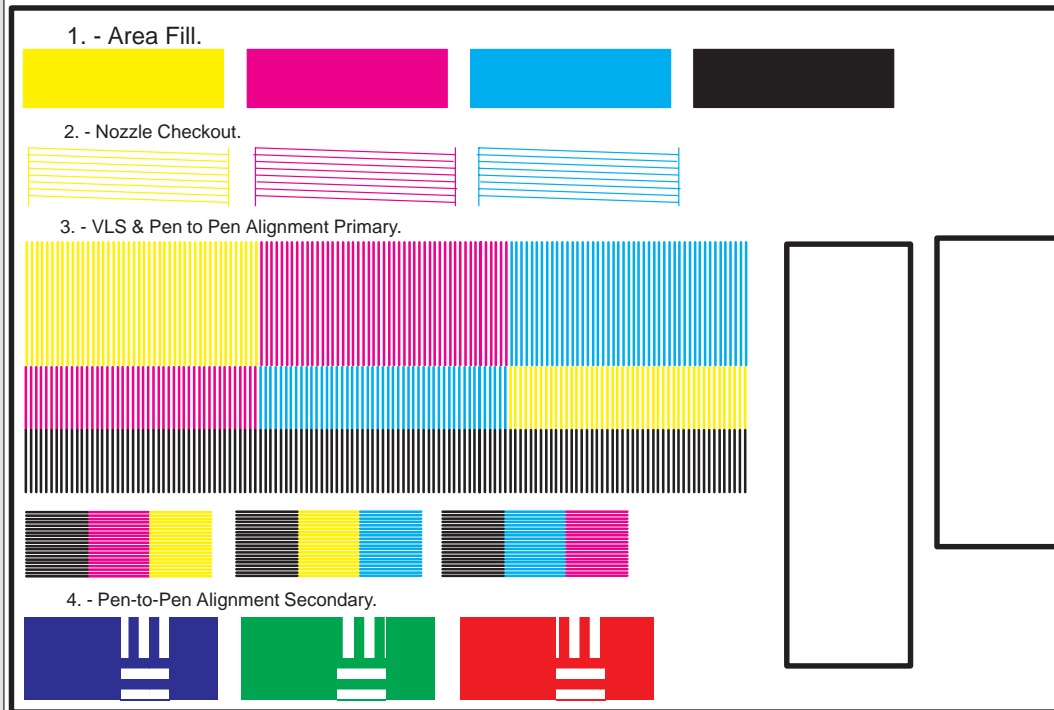
Print Modes

This plot also uses a special print mode, independent of the front-panel settings. The following are the parameters that define the print mode:

- Unidirectional.
- Color.
- Resolution 300 dpi (addressable 600 dpi for HP DesignJet 750C Plus and 755CM model C3198B).
- Swath advance = 0.32 inches (using 96 nozzles in the color pens and 192 in the black pen).
- 1 pass per swath.

Pen-to-pen Alignment verification

The specification for the maximum pen-to-pen alignment error is 3.33 mils. Use the plot to calculate the error.

Pattern 3 (on the CAD color diagnostic pot) contains vertical and horizontal lines of the four basic colors (cyan, magenta, yellow and black). This is a worst case situation, which provides qualitative information.

Pattern 4 (on the CAD color diagnostic pot) includes one square and horizontal and vertical lines in red (yellow plus magenta), blue (cyan plus magenta), and green (yellow plus cyan). The horizontal and vertical lines can be used to verify whether the alignment between the cartridges used to print them is within the required specification. The lines are one pixel in thickness. If the plot is printed on "matte film" media the dot size is approximately 3.33 mils diameter (the same value as the alignment specification). Focus on one horizontal or vertical blue line (see figure below), that is generated by two lines of cyan and magenta. If there is a misalignment between the two cartridges, bigger than 3.33 mils, the lines will be this distance apart. In this case, there will be a white line between the magenta and the cyan, as the dots of each color will not come in contact. (The distance will be bigger than the dot size.) When there is a blue line between the magenta and the cyan, then the distance between the lines is smaller than 3.33 mils, hence, the alignment error is within the required specifications.
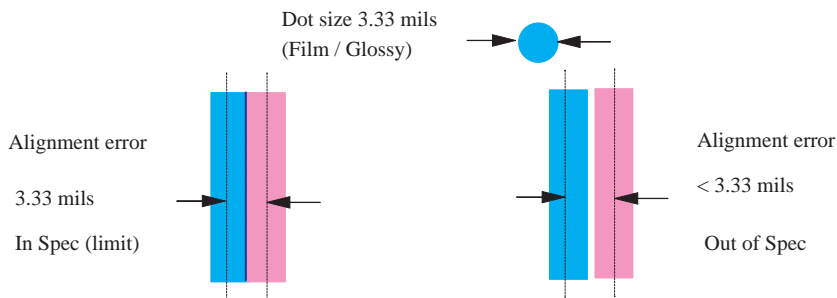
Corrective Actions

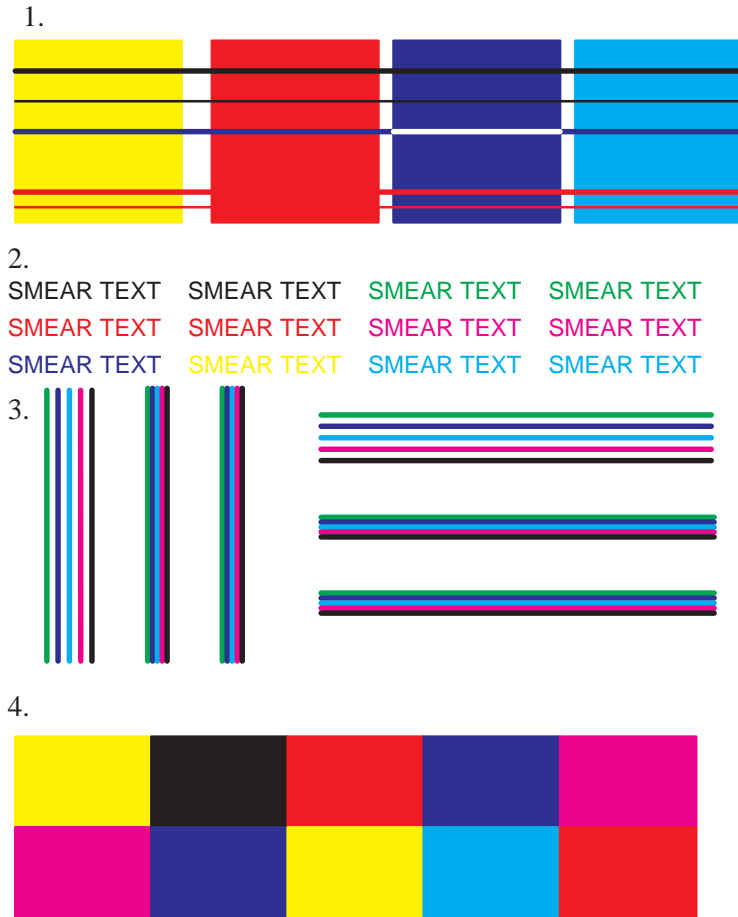If the pen-to-pen alignment error is out of specification:

- Perform the pen alignment test using white media ◗ page 8-40.
- Perform the line-sensor calibration (details ◗ page 7-5) and perform the pen alignment test again.
- Replace all cartridges.
- Replace the carriage ◗ page 6-34.
- Troubleshoot the EEROM and the Main PCA.

Area-Fill Diagnostic Plot (Service Test 15 ◗ page 8-35)

Objectives

This plot is intended to check the print-quality performance when printing area fills. The plot presents a worst case situation for the main-ink media interaction problems:

1.

2.

SMEAR TEXT   SMEAR TEXT   SMEAR TEXT   SMEAR TEXT
SMEAR TEXT   SMEAR TEXT   SMEAR TEXT   SMEAR TEXT
SMEAR TEXT   SMEAR TEXT   SMEAR TEXT   SMEAR TEXT

3.

4.

Print Modes

In this case, the print modes depend on the front-panel settings, so that it is possible to verify influence on print-quality performance. It is possible to modify the print modes using the following variables:

- print-quality: Fast, Normal and Best. The number of carriage passes per swath depends on the print-quality and media-type settings.
- Lightness: Lighter, Normal or Darker. This reduces or increases the drop volume of the cartridges modifying nozzle temperature.
- Dry time. This increases the minimum time between swaths and before cutting which we can find by printing in certain conditions (media & print mode).

Print Quality Problems

The following is a list of print quality problems that you may find when printing in certain conditions.

Cockle

Description

The surface of the media wrinkles in saturated area fills.

Causes

Ink media interaction during the drying process. The affected medias are:

- Translucent Bond.
- Natural tracing paper.
- Japanese tracing paper.
- Vellum.
- Coated paper (saturated colors).
- Opaque bond.

The worst case occurs in cold and dry conditions.

Corrective Actions

- Print in multi-pass print modes.
- Set the lightness to "lighter" to reduce the amount of ink used.

Coalescence

Description

Uneven area fill produced by accumulations of ink, showing up as a reptile skin pattern.

Causes

The chemistry of the ink attracts drops and produces local ink aggregates of a different color. Affects all area fills but the most sensitive are the secondary colors. The worst case is with green (yellow + cyan).

Corrective Actions

- Plot in an interlaced print mode thus increasing the number of passes over the media .
- Set the lightness to "lighter" to reduce the amount of ink used.

Bleeding

Description

Color inks, printed side by side, mix together at the border. Also occurs at area-fill borders with a high color saturation.

Causes

The ink is not properly absorbed by the media and spreads from its original position. Media types affected are bonds.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media. Set the lightness to "lighter" to reduce the amount of ink used.

Feathering

Description

Ink spreads along the media fibers, affecting the edge roughness of the lines and text.

Causes

The medias does not control the dot growth. The affected media types are:

- Bonds.
- Natural tracing paper.
- Vellum.
- Translucent bond.

Some third party media types have unacceptable results.

Too large a drop volume increases the severity of the problem.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media. Set the lightness to "lighter" to reduce the amount of ink used. Use HP media.

Migration (Black)

Description

In area fills, ink accumulates in the external part of the swath, where the black is more saturated.

Causes

Ink not properly absorbed by the media, and surface forces, push the black ink to the borders (due to the chemistry of the black ink). All the CAD media types except coated paper are affected.

Corrective Actions

Plot in an interlaced print mode (Best) thus increasing the number of passes over the media. Set the lightness to "lighter" to reduce the amount of ink used. Increase the dry time to reduce the migration in multi-pass print modes.

<table>
<tr><td>750C
750C
Plus
755
CM</td><td></td></tr>
</table>

Halo

Description

There is a white border between black and color area fills.

Causes

There is a reaction between the inks that changes the tensional forces at the edge, causing the black ink to move away from the color.

This is also a common problem for all the CAD media types except the coated media.

Corrective Actions

Plot in an interlaced print mode (Best), thus increasing the number of passes over the media.

Banding

Description

There are repetitive bands in the area fills.

Causes

The following are the main causes of this problem:

- X-axis advance error: This error causes a variation of hue between consecutive bands. The hue is constant within each band. Nozzles are misaligned from one swath to the next.
- Cartridge nozzles out, weak or misdirected: These problems generate horizontal lines of different color in area fills. In this case, instead of affecting the complete swath, the problem is restricted to the particular nozzles that are failing.

In both cases, drop volume can help to hide the problems. A low drop volume makes the problems more visible.

Corrective Actions

- X-axis advance error: Perform the accuracy calibration ▶ page 7-6. If this does not fix the problem, troubleshoot the X-axis system (mark position test ▶ page 8-44). If necessary, replace the X-axis motor ▶ page 6-25.
- Cartridge problems: Set the plotter to multi-pass print mode. Replace the cartridges. Check the wipers and caps of the Service Station and if necessary, replace the service station ▶ page 6-42.
- Drop volume too small: Troubleshoot the pen thermal management system, the TTOE, the carriage electronics and the cartridge.