



# DESIGNJET T2300 eMFP series

Image-quality troubleshooting guide

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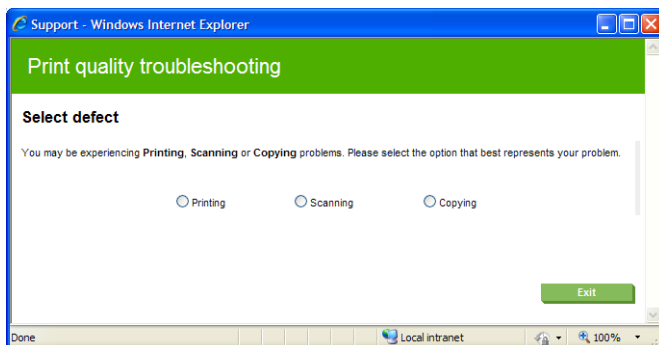
# 1 Introduction

This guide contains a list of the most common print-quality and scan-quality errors that may arise when using your HP Designjet product. You are recommended to read it if you find any defects or unsatisfactory results after using your product.

The guide will help you to correct most errors yourself. Failing that, it will help you to provide useful information to HP support, so that the error can be corrected as quickly as possible.

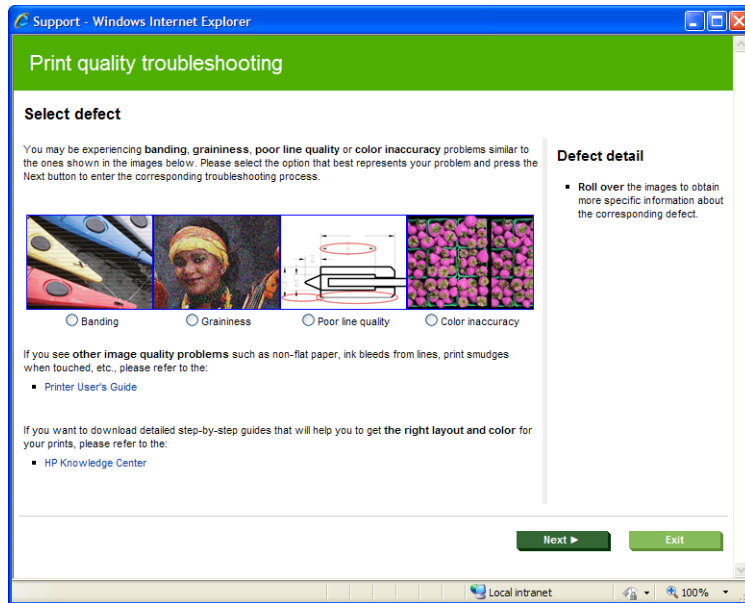
Sometimes you may assume that an image artifact or undesired effect represents a problem with your product, but in fact it may be caused by an incorrect selection of the print or scan settings or by a fundamental technological limitation of this kind of product. This guide may help you to recognize these situations, so that you can avoid wasting time on them.

## Most-common issues resolution



The Most Common Issues Resolution Wizard can help with the kinds of problems most commonly experienced with the product. If you choose **Printing**, for instance, the following specific problems are covered:

- Horizontal lines across the image (banding)
- The whole image is blurry or grainy
- Lines are too thick, too thin or missing
- Colors are inaccurate



To start the wizard:

- **From the Embedded Web Server:** go to the **Support** tab, select **Troubleshooting**, then select **Most common issues resolution**.
- **From the HP Utility for Windows:** go to the **Support** tab, and select **Most common issues resolution**.
- **From the HP Utility for Mac OS:** select **Most common issues resolution** in the Support group.
- **From the Mac OS Print dialog:** go to the **Services** panel, select **Device Maintenance**, then select **Most common issues resolution** from the list of maintenance tasks.

Alternatively, or if you have other problems, you can continue reading this guide.

## 2 Troubleshooting print-quality issues

- [General advice](#)
- [Horizontal lines across the image \(banding\)](#)
- [Lines are too thick, too thin or missing](#)
- [Lines appear stepped or jagged](#)
- [Lines print double or in the wrong colors](#)
- [Lines are discontinuous](#)
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- [The whole image is blurry or grainy](#)
- [The paper is not flat](#)
- [The print is scuffed or scratched](#)
- [Ink marks on the paper](#)
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- [Edges of objects are stepped or not sharp](#)
- [Edges of objects are darker than expected](#)
- [Horizontal lines at the end of a cut sheet print](#)
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- [The image is incomplete \(clipped at the bottom\)](#)
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- [Some objects are missing from the printed image](#)
- [A PDF file is clipped or objects are missing](#)
- [The Image Diagnostics Print](#)
- [If you still have a problem](#)

## General advice

When you have any print-quality problem:

- To achieve the best performance from your printer, use only genuine manufacturer's supplies and accessories, whose reliability and performance have been thoroughly tested to give trouble-free performance and best-quality prints. For details of recommended papers, see *Using your product*.
  - Make sure that the paper type selected in the front panel is the same as the paper type loaded into the printer. At the same time, check that the paper type has been calibrated. Also make sure that the paper type selected in your software is the same as the paper type loaded into the printer.
- 
- △ **CAUTION:** If you have the wrong paper type selected, you could experience poor print quality and incorrect colors, and perhaps even damage to the printheads.
- 
- Check that you are using the most appropriate print-quality settings for your purposes (see *Using your product*). You are likely to see lower print quality if you have moved the print-quality slider to the 'Speed' end of the scale, or set the custom quality level to **Fast**.
  - Check that your environmental conditions (temperature, humidity) are in the recommended range. See *Using your product*.
  - Check that your ink cartridges and printheads have not passed their expiration dates: see *Using your product*.



## Horizontal lines across the image (banding)

If your printed image suffers from added horizontal lines as shown (the color may vary):



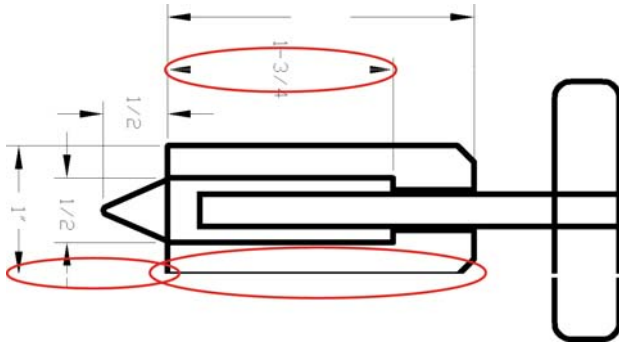
1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software.
2. Check that you are using appropriate print-quality settings for your purposes (see *Using your product*). In some cases, you can overcome a print-quality problem merely by selecting a higher print-quality level. For instance, if you have set the Print Quality slider to **Speed**, try setting it to **Quality**. If you change the print-quality settings, you may wish to reprint your job at this point in case the problem has been solved.







3. Print the Image Diagnostics Print. See [The Image Diagnostics Print on page 15](#).
4. If the printheads are working correctly, go to the front panel and press  and then  to see the paper advance calibration status. If the status is DEFAULT, try performing paper advance calibration: see *Using your product*.

If the problem persists despite all the above actions, contact your customer service representative for further support.

## Lines are too thick, too thin or missing

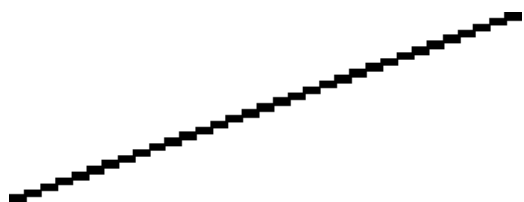


1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software.
2. Check that you are using appropriate print-quality settings for your purposes (see *Using your product*). Select the custom print-quality options in the driver dialog, and try turning on the **Maximum detail** option (if available). You may wish to reprint your job at this point in case the problem has been solved.
3. If the resolution of your image is greater than the printing resolution, you may notice a loss of line quality. If you are using the PCL or the HP-GL/2 and HP RTL driver for Windows, you can find the **Max. Application Resolution** option in the driver dialog's **Advanced** tab, under **Document Options > Printer Features**. If you change this option, you may wish to reprint your job at this point in case the problem has been solved.
4. If lines are too thin or missing, print the Image Diagnostics Print. See [The Image Diagnostics Print on page 15](#).
5. If the problem remains, go to the front panel and press  then  to see the printhead alignment status. If the status is PENDING, you should align the printheads. See *Using your product*. After alignment, you may wish to reprint your job in case the problem has been solved.
6. Go to the front panel and press  then  to see the paper advance calibration status. If the status is DEFAULT, you should perform paper advance calibration: see *Using your product*.

If the problem persists despite all the above actions, contact your customer service representative for further support.

## Lines appear stepped or jagged

If lines in your image appear stepped or jagged when printed:

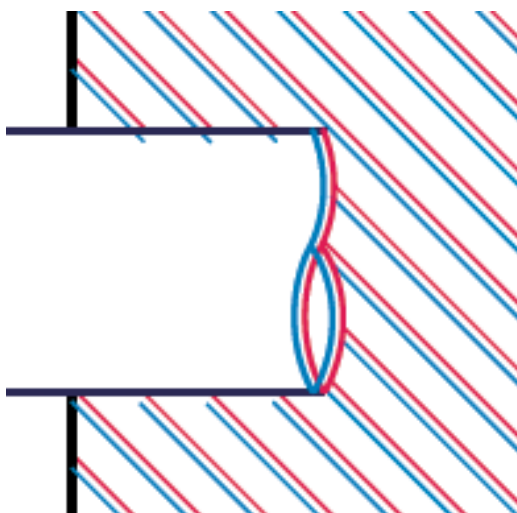


1. The problem may be inherent in the image. Try to improve the image with the application you are using to edit it.
2. Check that you are using appropriate print-quality settings. See *Using your product*.
3. Select the custom print-quality options in the driver dialog, and turn on the **Maximum detail** option (if available).

## Lines print double or in the wrong colors

This problem can have various visible symptoms:

- Colored lines are printed double, in different colors.



- The borders of colored blocks are wrongly colored.



To correct this kind of problem:

1. Reseat the printheads by removing them and then reinserting them. See *Using your product*.
2. Align the printheads. See *Using your product*.

## Lines are discontinuous

If your lines are broken in the following way:



1. Check that you are using appropriate print-quality settings. See *Using your product*.
2. Reseat the printheads by removing them and then reinserting them. See *Using your product*.
3. Align the printheads. See *Using your product*.

## Lines are blurred



Humidity can cause ink to soak into the paper, making the lines blurred and fuzzy. Try the following:

1. Check that your environmental conditions (temperature, humidity) are suitable for high-quality printing. See *Using your product*.
2. Check that the paper type selected in the front panel is the same as the paper type you are using.
3. Try changing to a heavier paper type, such as HP Heavyweight Coated Paper or HP Super Heavyweight Plus Matte Paper.
4. Select a paper type that is slightly thinner than the paper you have loaded; this will persuade the printer to use less ink. Here are some example paper types in ascending order of thickness: Plain Paper, Coated Paper, Heavyweight Coated Paper, Super Heavyweight Plus Matte Paper.

5. If you are using glossy paper, try changing to a different type of glossy paper.
6. Align the printheads. See *Using your product*.

## Line lengths are inaccurate

If you have measured your printed lines and find that the lengths are not sufficiently accurate for your purposes, you can try to improve line length accuracy in the following ways.

1. Print on HP Matte Film, for which your printer's line length accuracy is specified. See *Using your product*.





Polyester film is about ten times more dimensionally stable than paper. However, using film that is thinner or thicker than HP Matte Film will reduce line length accuracy.

2. Set the Print Quality slider to **Quality**.
3. Maintain the room at a steady temperature between 10 and 30°C (50 and 86°F).
4. Load the roll of film and let it rest for five minutes before printing.
5. If you are still not satisfied, try recalibrating the paper advance. See *Using your product*.

## The whole image is blurry or grainy



1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software.
2. Check that you are printing on the correct side of the paper.
3. Check that you are using appropriate print-quality settings (see *Using your product*). In some cases, you can overcome a print-quality problem merely by selecting a higher print-quality level. For instance, if you have set the Print Quality slider to **Speed**, try setting it to **Quality**. If you change the print-quality settings, you may wish to reprint your job at this point in case the problem has been solved.

4. Go to the front panel and press  then  to see the printhead alignment status. If the status is PENDING, you should align the printheads. See *Using your product*. After alignment, you may wish to reprint your job in case the problem has been solved.
5. Go to the front panel and press  then  to see the paper advance calibration status. If the status is DEFAULT, you should perform paper advance calibration: see *Using your product*.

If the problem persists despite all the above actions, contact your customer service representative for further support.

## The paper is not flat

If the paper does not lie flat when it comes out of the printer, but has shallow waves in it, you are likely to see defects in the printed image, such as vertical stripes. This can happen when you use thin paper that becomes saturated with ink.



1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software.
2. Try changing to a thicker paper type, such as HP Heavyweight Coated Paper or HP Super Heavyweight Plus Matte Paper.
3. Select a paper type that is slightly thinner than the paper you have loaded; this will persuade the printer to use less ink. Here are some example paper types in ascending order of thickness: Plain Paper, Coated Paper, Heavyweight Coated Paper, Super Heavyweight Plus Matte Paper.

## The print is scuffed or scratched

The black ink pigment can be scuffed or scratched when touched by a finger, a pen or some other object. This is particularly noticeable on coated paper.

Glossy paper may be extremely sensitive to the basket or to anything else that it contacts soon after printing, depending on the amount of ink used and the environmental conditions at the time of printing.

To reduce the risk of scuffs and scratches:

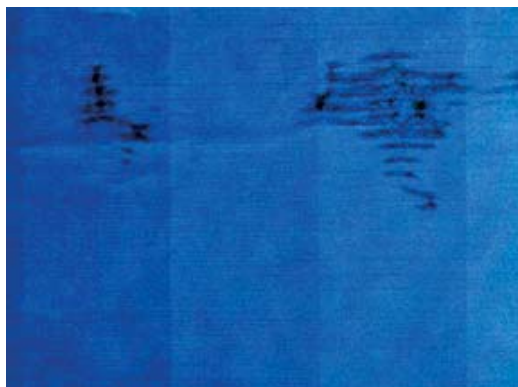
- Handle prints carefully.
- Avoid stacking prints on top of each other.
- Catch your prints as they are cut from the roll and do not let them fall into the basket. Alternatively, leave a sheet of paper in the basket so that freshly printed sheets do not make direct contact with the basket.


## Ink marks on the paper

This problem can occur for several different reasons.

### Horizontal smears on the front of coated paper

If a lot of ink is used on plain or coated paper, the paper absorbs the ink quickly and expands. As the printheads move over the paper, the printheads may come into contact with the paper and smear the printed image. This problem is normally seen only on cut sheets of paper (not on roll paper).



Whenever you notice this problem, cancel the printing job immediately. Press  and also cancel the job from your computer application. Soaked paper can damage the printheads.

Try the following suggestions to avoid this problem:

1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software.
2. Use a recommended paper type (see *Using your product*) and the correct print settings.
3. If using sheet paper, try rotating the sheet 90 degrees. The orientation of the paper fibers may affect performance.
4. Try changing to a thicker paper type, such as HP Heavyweight Coated Paper and HP Super Heavyweight Plus Matte Paper.
5. Select a paper type that is slightly thinner than the paper you have loaded; this will persuade the printer to use less ink. Here are some example paper types in ascending order of thickness: Plain Paper, Coated Paper, Heavyweight Coated Paper, Super Heavyweight Plus Matte Paper.
6. Try to increase the margins by relocating the image to the center of the page using your software application.

## Ink marks on the back of the paper

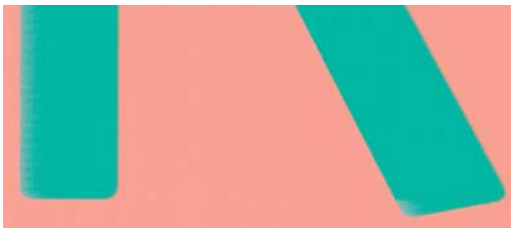
This can happen after a lot of borderless printing, especially with non-standard paper sizes. Ink residues on the platen are likely to mark the back of the paper.

Clean the platen with a soft cloth. Clean each rib separately without touching the foam between the ribs.

## Black ink comes off when you touch the print

This problem may be caused by printing with matte black ink on glossy paper. The printer will not use matte black ink if it knows that the paper will not retain it. To be sure of avoiding matte black ink, you can select Photo Glossy Paper as the paper type (in the Photo Paper category).

## Edges of objects are stepped or not sharp



If edges of objects or lines appear to be poorly defined or lighter in density, and you have already set the print-quality slider to **Quality** in the driver dialog, select the custom print-quality options, and try setting the quality level to **Normal**. See *Using your product*.

## Edges of objects are darker than expected



If edges of objects seem darker than expected, and you have already set the print-quality slider to **Quality** in the driver dialog, select the custom print-quality options, and try setting the quality level to **Normal**. See *Using your product*.

## Horizontal lines at the end of a cut sheet print

This type of defect affects only the end of a print, within approximately 30 mm of the trailing edge of the paper. You may see some very thin horizontal lines across the print.

To avoid this problem:

1. Print the Image Diagnostics Print. See [The Image Diagnostics Print on page 15](#).
2. Consider printing with roll paper.
3. Consider using larger margins around your image.

## Vertical lines of different colors

If your print has vertical bands of different colors along it:

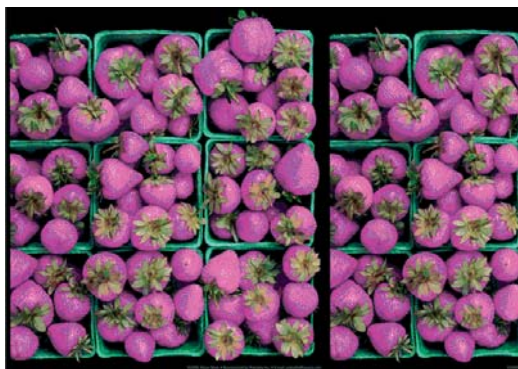
1. Try using thicker paper, choosing from the recommended paper types such as HP Heavyweight Coated Paper and HP Super Heavyweight Paper. See *Using your product*.
2. Try using higher print-quality settings (see *Using your product*). For instance, if you have set the Print Quality slider to **Speed**, try setting it to **Quality**.

## White spots on the print

You may notice white spots on the print. This is probably due to paper fibers, dust or loose coating material. To avoid this problem:

1. Try cleaning the paper manually with a brush before printing, to remove any loose fibers or particles.
2. Always keep the cover of your printer closed.
3. Protect your paper rolls and sheets by storing them in bags or boxes.

## Colors are inaccurate



If the colors of your print do not match your expectations, try the following:

1. Check that the paper type you have loaded corresponds to the paper type selected in the front panel and in your software. At the same time, check the color calibration status. If the status is PENDING or OBSOLETE, you should perform color calibration: see *Using your product*. If you have made any changes, you may wish to reprint your job in case the problem has been solved.
2. Check that you are printing on the correct side of the paper.
3. Check that you are using appropriate print-quality settings (see *Using your product*). If you have selected the **Speed** or **Fast** options, you may not get the most accurate colors. If you change the print-quality settings, you may wish to reprint your job at this point in case the problem has been solved.



4. If you are using Application Color Management, check that the color profile you are using corresponds to the selected paper type and print-quality settings. If you have doubts about which color settings to use, see *Using your product*.
5. If the problem consists of color differences between your print and your monitor, please follow the instructions in the “How to calibrate your monitor” section of the HP Color Center. At this point, you may wish to reprint your job in case the problem has been solved.
6. Print the Image Diagnostics Print. See [The Image Diagnostics Print on page 15](#).
7. Try using the color adjustment options to produce the colors you want. See *Using your product*.

If the problem persists despite all the above actions, contact your customer service representative for further support.

## Color accuracy using EPS or PDF images in page layout applications

Page layout applications such as Adobe InDesign and QuarkXPress do not support color management of EPS, PDF or grayscale files.



If you have to use such files, try to ensure that the EPS, PDF or grayscale images are already in the same color space that you intend to use later on in Adobe InDesign or QuarkXPress. For instance, if your final goal is to print the job in a press that follows the SWOP standard, convert the image into SWOP when you create it.

## Colors are fading

If you print on instant-dry photo paper, your prints will fade rapidly. If you plan to display the prints for more than two weeks, you should laminate them to achieve longer life.

Prints on swellable coated papers will fade much less rapidly. However, lamination will increase the life of prints (depending on the type of lamination) with all paper types. For more information, consult your laminate provider.

## The image is incomplete (clipped at the bottom)

- Did you press **Cancel** before all the data were received by the printer? If so, you have ended the data transmission and will have to print the page again.
- The **I/O timeout** setting may be too short. This setting determines how long the printer waits for the computer to send more data, before deciding that the job is finished. From the front panel, increase the **I/O timeout** setting to a longer period and then send the print again. Press , then , then **Setup > Connectivity > Advanced > I/O timeout**.
- There may be a communications problem between your computer and the product. Check your USB or network cable.
- Check to make sure that your software settings are correct for your current page size (for example, long-axis prints).
- If you are using network software, make sure it has not timed out.


# The image is clipped

Clipping normally indicates a discrepancy between the actual printable area on the loaded paper and the printable area as understood by your software. You can often identify this kind of problem before printing by previewing your print (see *Using your product*).

- Check the actual printable area for the paper size you have loaded.  
$$\text{printable area} = \text{paper size} - \text{margins}$$
- Check what your software understands to be the printable area (which it may call "printing area" or "imageable area"). For example, some software applications assume standard printable areas that are larger than those used in this printer.
- If you have defined a custom page size with very narrow margins, the printer may impose its own minimal margins, clipping your image slightly. You may want to consider using a larger paper size, or borderless printing (see *Using your product*).
- If your image contains its own margins, you may be able to print it successfully by using the **Clip Contents by Margins** option (see *Using your product*).
- If you are trying to print a very long image on a roll, check that your software is capable of printing an image of that size.
- You may have asked to rotate the page from portrait to landscape on a paper size that is not wide enough.
- If necessary, reduce the size of the image or document in your software application, so it fits between the margins.

There is another possible explanation for a clipped image. Some applications, such as Adobe Photoshop, Adobe Illustrator and CorelDRAW, use an internal 16-bit coordinate system which means that they cannot handle an image of more than 32,768 pixels.

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 **NOTE:** An image 32,768 pixels long would print at a length of 1.39 m (54.61 in) if you select Best or Quality in the driver, 2.78 m (109.23 in) if you select Fast, Normal or Speed in the driver.

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If you try to print an image larger than this from these applications, the bottom of the image may be clipped. To print the whole image, try these suggestions:

- Try using the PostScript printer driver to print your job, if you have not already tried it.
- The Windows HP-GL/2 and HP RTL driver dialog includes an option called **Max. application resolution**, which enables you to print successfully in this situation. You will not normally need to change the default setting, which is **Auto**. However, you can find the option in the **Advanced** tab, under **Document Options > Printer Features**.
- Save the file in another format, such as TIFF or EPS, and open it with another application.
- Use a RIP to print the file.

## Some objects are missing from the printed image

Large quantities of data may be necessary to print a high-quality large-format print job, and in some specific workflows there may be issues that can lead to some objects missing from the output. Here are some suggestions to help you to avoid this problem.

- Try using the PostScript printer driver to print your job, if you have not already tried it.
- Select a smaller page size and scale to the desired final page size in the driver or in the front panel.
- Save the file in another format, such as TIFF or EPS, and open it with another application.
- Use a RIP to print the file.
- Reduce the resolution of bitmap images in your application software.
- Select a lower print quality in order to reduce the resolution of the printed image.

 **NOTE:** If you are working under Mac OS, not all of these options are available.

These options are suggested for troubleshooting purposes and may adversely affect the final output quality or the time necessary to generate the print job. Therefore, they should be cancelled if they do not help to solve the problem.



## A PDF file is clipped or objects are missing

In older versions of Adobe Acrobat or Adobe Reader, large PDF files could be clipped or lose some objects when printing with the HP-GL/2 and HP RTL driver at high resolution. In order to avoid such problems, upgrade your Adobe Acrobat or Adobe Reader software to the latest version. From version 7 onwards, these problems should be solved.

## The Image Diagnostics Print

The Image Diagnostics Print consists of patterns designed to highlight printhead reliability problems. It helps you to check the performance of the printheads that are currently installed in your printer, and whether any printhead suffers from clogging or other problems.

To print the Image Diagnostics Print:

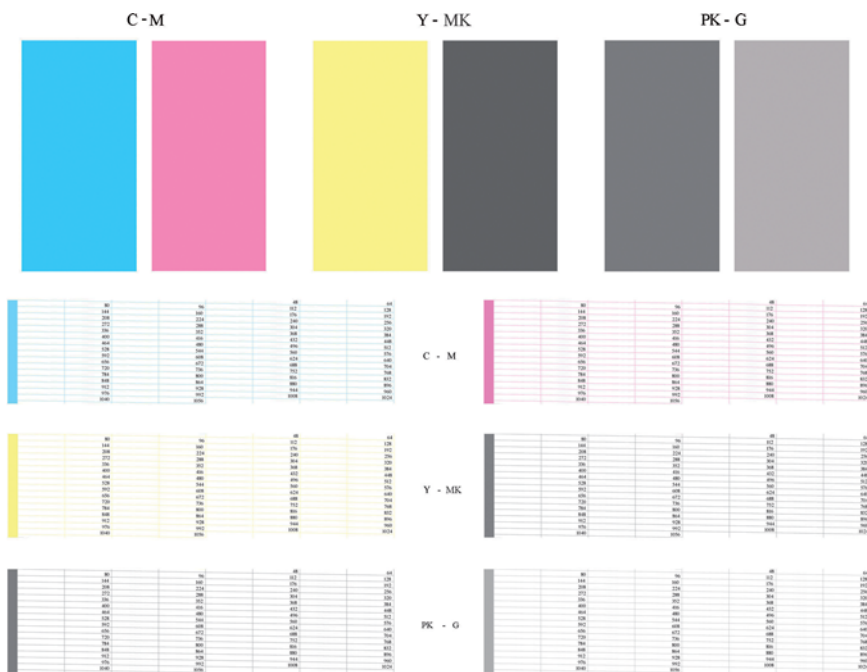
1. Use the same paper type that you were using when you detected a problem.
2. Check that the selected paper type is the same as the paper type loaded into the printer.
3. At the printer's front panel, press , then , then **Image Quality Maintenance > Print diagnostic image**.

It takes about two minutes to print the Image Diagnostics Print.

The print is divided into two parts, both of which test printhead performance.

- Part 1 (top) consists of rectangles of pure colors, one for each printhead. This part represents the print quality that you will get from each color.
- Part 2 (bottom) consists of small dashes, one for each nozzle on each printhead. This part complements the first, and aims more specifically to detect how many faulty nozzles each printhead has.

Please look carefully at the print. The names of the colors are shown above the rectangles and in the center of the patterns of dashes.

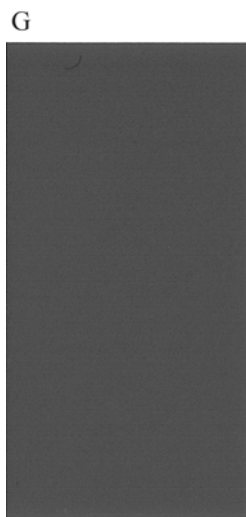


First look at the upper part of the print (part 1). Each colored rectangle should be a uniform color without any horizontal lines across it.

Then look at the bottom part of the print (part 2). For each individual colored pattern, check that most of the dashes are present.

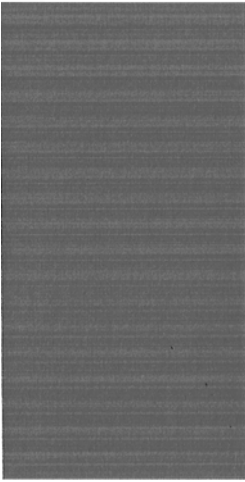
If you see horizontal lines in part 1 and also missing dashes in part 2 for the same color, the printhead responsible needs cleaning. However, if the rectangles look solid, do not worry about just a few missing dashes in part 2; these are acceptable because the printer can compensate for a few clogged nozzles.

Here is an example of a gray printhead in a good state:



And here is an example of the same printhead in a bad state:

G



## Corrective action

1. Clean any faulty printheads (see *Using your product*). Then reprint the Image Diagnostics Print to see whether the problem has been solved.
2. If the problem remains, clean the printheads again, and reprint the Image Diagnostics Print to see whether the problem has been solved.
3. If the problem remains, consider cleaning your printheads manually (see *Using your product*). You could also try reprinting your current print job, in case it now prints satisfactorily.
4. If the problem remains, try cleaning the printhead drop detector. The printer normally notifies you when this is necessary, but it may be worth trying even if the printer has not suggested it. See *Using your product*.
5. If the problem still remains, replace any persistently faulty printheads (see *Using your product*), or contact HP Support (see *Using your product*).

## If you still have a problem

If you still experience print-quality problems after applying the advice in this chapter, here are some further things that you can do:

- Try using a higher print-quality option. See *Using your product*.
- Check the driver you are using to print with. If it is a non-HP driver, consult the driver vendor about the problem. You could also try using the correct HP driver, if feasible. The latest HP drivers can be downloaded from <http://www.hp.com/go/T2300/drivers/>.
- If you are using a non-HP RIP, its settings may be incorrect. See the documentation that came with the RIP.
- Check that your product's firmware is up to date. See *Using your product*.
- Check that you have the right settings in your software application.

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# 3 Troubleshooting scan-quality issues

- [Random vertical lines](#)
- [Wrinkles or folds](#)
- [Line discontinuities](#)
- [Grain in area fills when scanning plain paper](#)
- [Small color differences between adjacent CIS modules](#)
- [Vertical light lines at the intersection between CIS modules](#)
- [Variable line thickness or missing lines](#)
- [Inaccurately reproduced colors](#)
- [Color fringing](#)
- [Clipping in dark or light areas](#)
- [Flare in the image when scanning glossy originals](#)
- [Vertical red and green bands over white or black background](#)
- [The stop-start effect](#)
- [Vibration](#)
- [Horizontal periodical banding](#)
- [Defocus, blurring and fading colors](#)
- [Incorrect paper advance, skew during scanning, or horizontal wrinkles](#)
- [Vertical black band 20 cm wide](#)
- [The scanner damages some originals](#)
- [Completely wrong colors](#)
- [Vertical distortion](#)
- [Object replication \(ghosting\)](#)
- [Clipping or incorrect scale factor when down-scaling in copies and prints](#)
- [Incorrect edge detection, mostly when scanning tracing paper](#)
- [A copied or scanned image is very skewed](#)

In this chapter the most common defects and failure modes are shown, sorted by relevance and frequency of appearance. A defect is a common image artifact that usually appears when using any CIS scanner. These are due to incorrect settings, product limitations or easily solvable mistakes. A failure mode is due to malfunctions of some of the scanner components.

Some of the corrective actions proposed here require the use of the Scanner Diagnostic Plot, which you can print and scan as indicated in [The scanner diagnostic plot on page 41](#). Please do not use any printed version of this guide to test the scanner, as the resolution of the images included here is insufficient. Use the diagnostic plot when recommended in response to any of the errors described in this chapter.


## Random vertical lines

This is one of the most common issues in sheet-fed scanners. Usually, the vertical streaks are caused by dust particles inside the scanner, or miscalibration of the scanner (in these cases, the problem can be solved). Here are some examples of images suffering from vertical lines or streaks. Please note the black arrow indicating the scanning direction in these examples.



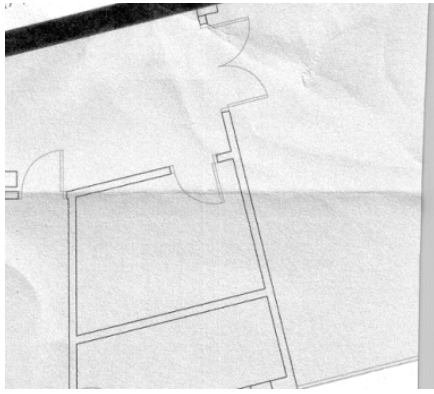
### Actions

1. Clean the scanner's glass plate and the original to be scanned as described in [Clean the scanner's glass plate on page 38](#). Re-scan your original afterwards.
2. If the streaks remain, recalibrate the scanner as indicated in [Calibrate the scanner on page 39](#). Make sure you clean the maintenance sheet before calibrating the scanner, and check that the maintenance sheet is not damaged (if so, call HP support and ask for a new maintenance sheet). Re-scan your original after the calibration is completed.
3. If the streaks still remain, check the scanner's glass plate visually. If it is damaged (scratched or broken), call HP support.
4. If the streaks remain, there may be dust particles inside the glass plate. Carefully take out the glass plate and clean it as described in [Clean the scanner's glass plate on page 38](#).

 **NOTE:** The problem of vertical streaks cannot always be solved, due to the technological limitations of CIS scanners. If the streaks remain after the corrective actions explained above, then no further action can be taken to improve the image quality, except to buy a more expensive CCD scanner.


## Wrinkles or folds

Scanners based on CIS technology have a high optical resolution within their focus plane, at the price of a very limited depth of field. Hence, the images are sharp and detailed when the scanned original is perfectly flat against the glass plate. However, whenever the original contains wrinkles or folds, these defects are clearly visible in the scanned image (as shown in the following example).



### Actions

1. Re-scan the original, setting the content type to **Image**, and contrast and background cleaning to zero.
2. If the problem persists, re-scan the original at a lower scanner resolution (Standard quality if scanning, Fast or Normal if copying). It may also help to flatten the original manually as much as possible before scanning it again.

 **NOTE:** The problem of wrinkles cannot always be solved, due to the technological limitations of CIS scanners. If the wrinkles remain after the corrective actions explained above, then no further action can be taken to improve the image quality, except to buy a more expensive CCD scanner.

## Line discontinuities

When scanning or copying large originals, you may sometimes find issues such as that shown in the following image, where a straight line (it does not necessarily have to be horizontal) appears with discontinuities or small steps. Please note the black arrow indicating the scanning direction in this example.



### Actions

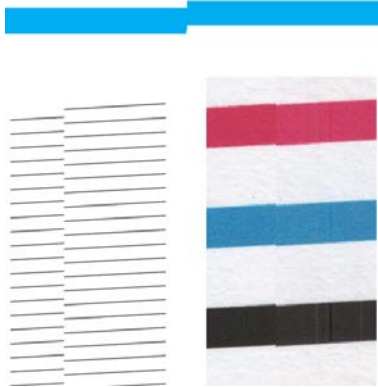
1. Repeat the scan, and this time make sure that the product is correctly positioned (it is flat on the floor and it does not move), and that the printer is not printing while you scan. Turning the original 90 or 180 degrees and scanning it again may also solve the problem.
2. If the problem persists, check that the original to be scanned is not skewed, and that it does not become skewed during the scan. If so, please refer to [Incorrect paper advance, skew during scanning, or horizontal wrinkles on page 31](#). You might also want to deactivate the automatic de-skew algorithm as indicated in [A copied or scanned image is very skewed on page 36](#).
3. If there is no skew but the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). Take care not to move the product during the calibration (the printer should not be printing during scanner calibration), and check that the maintenance sheet is correctly positioned before starting the calibration. Also check that the maintenance sheet is not



damaged before calibrating the scanner (an old or damaged maintenance sheet may cause this problem); if it is damaged, call HP support and ask for a new maintenance sheet.

4. If the problem persists, proceed to analyze the following areas of the diagnostic plot:
  - a. 4 (from module A to E).
  - b. 10, at the intersection between modules.
  - c. 13 in modules A and E, and 14 in modules B, C, and D.

If you see any of these defects in the studied areas, call HP support and report a “line discontinuities” error after calibration.



The four vertical thin black lines at the beginning and the end of the diagnostic plot show, approximately, the position of the intersection between CIS modules, where this kind of error usually appears. If the error appears outside these areas, call HP support and report “line discontinuities within a CIS module”.

## Grain in area fills when scanning plain paper

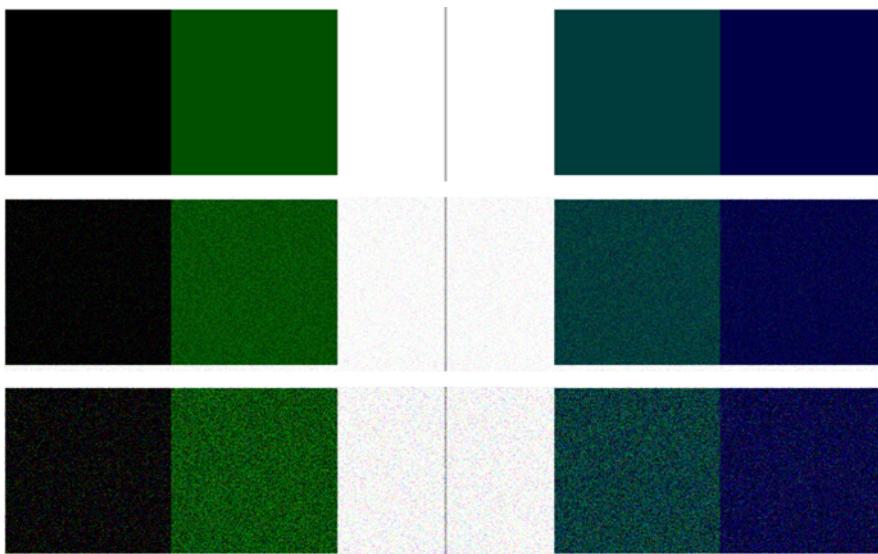
When making copies of an original containing area fills, if the paper used in the printer is plain paper (for instance, HP Universal Bond or HP Bright White Inkjet Bond), some grain may appear in the image. This error may also appear in scanned files of originals that were printed on textured paper. The example below shows the original image on the left and the scanned, grainy image on the right.



### Actions

1. Please look at the original and check if it is dirty, has fingerprints on it or if the grain is already present in the print. If not, then proceed to step 2.
2. Repeat the scan/copy, setting the content type to **Image**.

3. If the problem persists:
  - If the problem appears when copying, use Best quality. We also recommend using coated or glossy paper in order to avoid grain in copies.
  - If the problem appears in a scanned file, scan at a lower resolution (Standard quality).
4. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). Check that the maintenance sheet is also clean, and that it is not damaged before calibrating the scanner (an old or damaged maintenance sheet may cause this problem); if it is damaged, call HP support and ask for a new maintenance sheet.
5. If the problem persists, proceed to analyze areas 11 and 12 of the diagnostic plot across modules A to E. In the three examples below, the top example is ideal, the middle example can be regarded as acceptable; but, if you see something similar to the bottom example (or worse), call HP support and report "grain in area fills".



## Small color differences between adjacent CIS modules

When scanning wide plots, sometimes slightly different colors can be seen at both sides of the junction between two CIS modules. This issue, if present, can be easily seen by analyzing patterns 9 of the diagnostic plot at the intersection between CIS modules. Here are some examples. Please note the black arrow indicating the scanning direction in these examples.



Sometimes the color mismatch between adjacent modules can be enormous, showing a serious scanner malfunction, as in the following example. If this occurs, see [Completely wrong colors on page 33](#).



### Actions

1. Repeat the scan or copy, setting the content type to **Image**, reducing the background cleaning to 0 or turning the original 90 degrees before scanning it again.
2. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). If calibration ended without errors, proceed to analyze again pattern number 9 and modules A through E of the diagnostic plot.
3. After analyzing pattern 9, if you see some color differences between left and right sides of the bars for neutral and vivid colors, call HP support and report “small color differences between adjacent CIS modules”. Otherwise, if you see color differences for vivid colors but not for neutral colors, see [Clipping in dark or light areas on page 26](#). If necessary, see also [Grain in area fills when scanning plain paper on page 21](#).

## Vertical light lines at the intersection between CIS modules

This problem can be found when scanning large uniform area fills which are made of some light color. You sometimes find light vertical bands (around 0.5 cm wide) at the intersection between two CIS modules, as in this example. Please note the black arrow indicating the scanning direction in this example.



### Actions

1. Repeat the scan or copy, setting the content type to **Image**, reducing the background cleaning to 0 or turning the original 90 degrees before scanning it again.

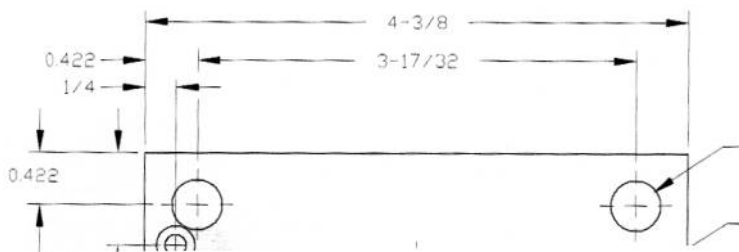
2. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). Then proceed to analyze pattern number 2 of the diagnostic plot at the intersections between CIS modules. The example below shows a good result on the left and a bad result on the right: the latter has light vertical banding 0.5 cm wide at the intersection between two CIS modules.



If you see the kind of result shown on the right, call HP support and report “vertical light bands in area fills at the intersection between CIS modules, after calibrating the scanner”.

## Variable line thickness or missing lines

When scanning some CAD plots at Standard resolution, mostly when working with grayscale or black-and-white prints that contain very thin lines, you may see a variation in line thickness, or even some missing lines, in some places:

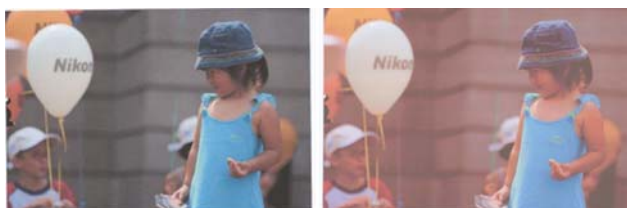


### Actions

1. Repeat the scan or copy using a higher resolution (High or Max if scanning, Normal or Best if copying). You should also set background cleaning to 0, or set the content type to **Mixed**. You might also deactivate the automatic de-skew as explained in [A copied or scanned image is very skewed on page 36](#). In case you were working in black-and-white mode, we recommend using grayscale instead.
2. If the problem persists, turn the original plot 90 degrees before scanning it again.
3. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#).
4. If the problem persists, see [Defocus, blurring and fading colors on page 30](#).

## Inaccurately reproduced colors

You have to deal with several variables if you want perfect color matching between the original you are scanning and the copy or scanned file you obtain as a result. If you find undesired colors in cases like the example shown below (original on the left, scanned image on the right), you can follow these guidelines.



## Actions

1. Make sure that you choose the correct paper type in the scan settings before scanning.
2. When dealing with copies, you must take into account that good color matching between a given original and its copy can be achieved only if both are printed on the same type of paper. In the case of scanned files, good color matching can be achieved only if your monitor is color-calibrated or compliant with sRGB or AdobeRGB standards.
3. If the above conditions are met, you should also take into account that various scanner settings can affect the final color result, such as contrast, background cleaning, content type and paper type. To obtain the best possible colors, set contrast and background cleaning to 0, set the content type to **Image**, and select the most appropriate type of paper according to the original you are scanning (if in doubt, use photo paper).
4. Note that the image enhancement settings are automatically reset to default values after a certain time, so you may get a different result from copying the same original if you have not checked the settings before starting the job.
5. If you scanned to a PDF file, try opening the PDF file in Adobe Acrobat and saving it as a PDF/A file. For more information, see <http://www.adobe.com/products/acrobat/standards.html> (English only).
6. For optimum color results, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#).
7. Avoid placing the scanner in direct sunlight or near sources of heat or cold.

## Color fringing

The problem called “color fringing” occurs when the scanner is affected by incorrect paper advance and/or miscalibration. Nevertheless, some amount of color fringing is unavoidable, especially at high scanning speeds. It can be seen at the borders of sharp black text over a white background, as in the example below (original on the left, scanned image on the right). Please note the black arrow indicating the scanning direction.



## Actions

1. Repeat the scan after increasing the scanner’s resolution (choose Max quality if scanning, Best if copying). Turn your original 90 degrees, if possible, before scanning it again.
2. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). Repeat the scan at a high resolution (Max if scanning, Best if copying) and check whether the problem disappears.

3. If the problem still persists, you can diagnose this issue by analyzing the patterns 6 and 8 (A to E) of the diagnostic plot. The black horizontal lines appear slightly colored at the top and bottom of each end (in the example on the right, below). Normally, they look red at the top and blue or green at the bottom, but it could be the other way around.



If you see this effect, call HP support and report “color fringing problem after calibration”.

## Clipping in dark or light areas

Sometimes you may see that the scanned file or copy of one of your plots has lost detail in light or dark areas (or both), as in the example below: original on the left, scanned image on the right.



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### Actions

1. If you are making copies, and the original is printed on photographic paper, while you are copying it onto matte paper, this problem is to be expected. However, you can try to improve the result by running a color calibration of the printer (see *Using your product*), and by reducing contrast and background cleaning; this also applies if you see this problem in scanned files.
2. If the problem persists, repeat the scan or copy using a higher resolution (High or Max if scanning, Normal or Best if copying). Set the content type to **Image**, and make sure that the type of original selected in the front panel really corresponds to the paper type of your original (white, photo, recycled or translucent). If you are not sure, select photo.
3. If the problem persists, recalibrate the scanner as indicated in [Scanner maintenance on page 37](#). Make sure you clean the maintenance sheet before calibrating the scanner, and check that the maintenance sheet is not damaged (if so, call HP support and ask for a new maintenance sheet). Re-scan your original after the calibration is completed.
4. If the problem persists, analyze patterns 16 (A to E) of the diagnostic plot. If you can distinguish lightness steps beyond the upper and lower specified thresholds, then the scanner is fine. Here you can see some examples of correct and incorrect functioning.



If your scanned pattern looks like the incorrect one on the right, whether the clipping is in dark and/or light areas, call HP support and report “Clipping in dark/light areas”.

## Flare in the image when scanning glossy originals

If the scanner is miscalibrated, or if the original plot you are trying to scan is very glossy or reflective, you can sometimes find flare in the scanned image, as in the following example: original on the left, scanned image on the right.



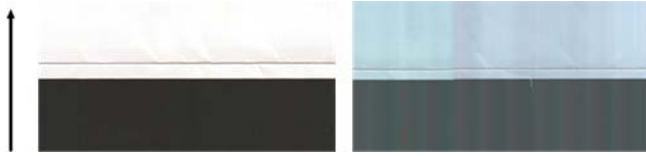
Image © www.convincingblack.com, reproduced with permission.

### Actions

1. Clean the original and the scanner’s glass plate, then scan again.
2. If the problem persists, recalibrate the scanner as indicated in [Scanner maintenance on page 37](#). Make sure you clean the maintenance sheet before calibrating the scanner, and check that the maintenance sheet is not damaged (if so, call HP support and ask for a new maintenance sheet). Re-scan your original after the calibration is completed.
3. If the problem persists, see [Clipping in dark or light areas on page 26](#).

## Vertical red and green bands over white or black background

If the scanner has not been calibrated for a long period of time, or if the last calibration failed, you can sometimes see defects like the following. Please note the black arrow indicating the scanning direction in this example: original on the left, scanned image on the right.



### Actions

1. Clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#). If the calibration failed, proceed as stated in [Calibrate the scanner on page 39](#). However, if the calibration ended correctly, scan your original again and check that the colored vertical bands have disappeared.
2. If the problem persists, call HP support and report “vertical red/green bands after calibration”.

## The stop-start effect

Your product is a complex machine, which may be working on several tasks at the same time. If you are trying to scan while printing or processing a job in the printer queue, you may find that the scanner stops for a while and then restarts. Although this is normal behavior, in some cases the scanned image may have defects as a result of this stop-start operation.

To illustrate this effect, here is an example of an original image.



The two images below are examples of the stop-start effect when the above image is scanned. Please note the black arrow indicating the scanning direction in these examples.



### Actions

1. Clean and calibrate your scanner as indicated in [Scanner maintenance on page 37](#). Scan your original again and make sure that the printer is not working while you are scanning. Reduce scanning resolution (choose Standard if scanning, Fast if copying) if necessary.



2. If the problem persists, proceed to analyze patterns 4, 13, and 14 of the diagnostic plot. If you find a problem similar to that shown below, call HP support and report a “stop-start effect” error.

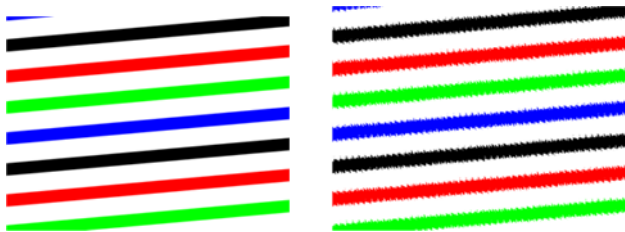


## Vibration

If your product is not properly placed on a flat surface, or if the scanner lid does not close correctly, you may sometimes find that the scanned image suffers from vibration, as in the following example: original on the left, scanned image on the right.



1. Make sure that the scanner is placed on a flat surface, the scanner lid is correctly closed, and the printer is not working while you are scanning. Scan your original again.
2. If the problem persists, change (increase or decrease) the scanning resolution and re-scan your original. We also recommend turning the original 90 degrees before scanning it again.
3. If the problem persists, analyze pattern 4 of the diagnostic plot. If you see the problem shown on the right, call HP support and report a “vibration problem”.



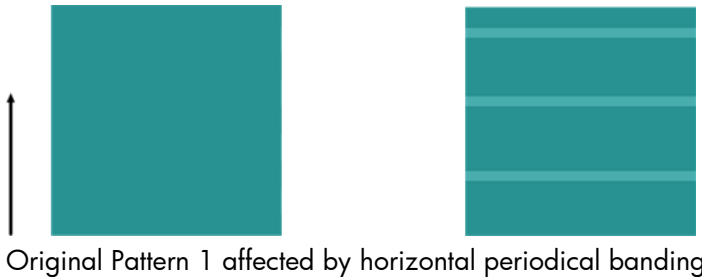
## Horizontal periodical banding

This problem can be found in scanners with a defective pressure roll in some CIS modules. In this case, you may sometimes find horizontal periodical bands in your scanned images, separated by around 5 cm (2 in), in the area covered by one CIS module, as in this example: original on the left, scanned image on the right. Please note the black arrow indicating the scanning direction in this example.



## Actions

1. Open the scanner lid. Clean the motor wheels (small black rubber) and the pressure rolls (wide white plastic). Check that all the pressure rolls can move freely. If you find dust particles or objects that obstruct the movement of the rollers, try to remove them, then close the scanner lid and repeat your scan.
2. If the problem persists, clean and calibrate the scanner as indicated in [Scanner maintenance on page 37](#), and analyze pattern 1 of the diagnostic plot. If you can find horizontal periodical banding inside this pattern, as shown on the right below, call HP support and report "horizontal periodical banding". Please note the black arrow indicating the scanning direction in this example.



Original Pattern 1 affected by horizontal periodical banding

## Defocus, blurring and fading colors

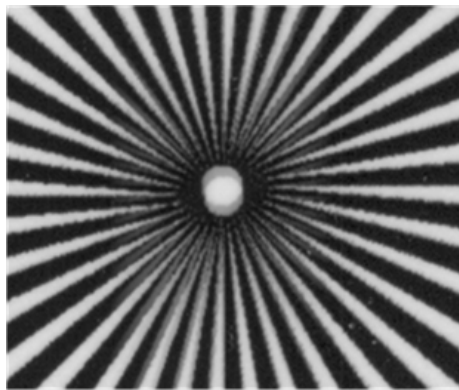
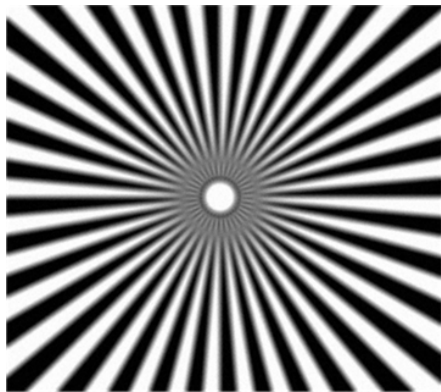
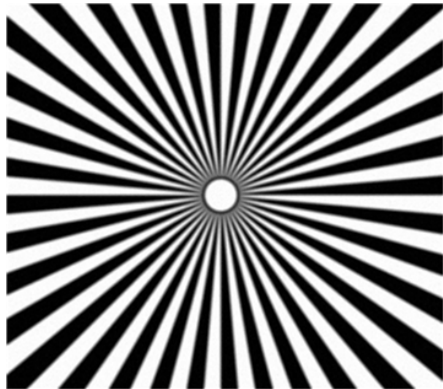
CIS technology scanners are tuned to work at a fixed focal distance, and they are very sensitive to small variations in the position of the original with respect to the scanner glass plate. If the scanner lid is not properly closed, or if the original has deep wrinkles or texture, you may sometimes find problems as in the following example (on the right), where the scanned image is blurred and colors are faded.



## Actions

1. Check the scanner lid sensor by opening the scanner lid and checking that the five CIS modules show blinking red, green and blue lights alternately. If not, reboot the machine and call HP support reporting the error appearing at the front panel. If no error is given in the front panel then report "scanner lid sensor failure".
2. If all the modules lit up correctly in the previous step, close the scanner lid by pushing it down until you hear a click. Then calibrate the scanner as indicated in [Scanner maintenance on page 37](#) and repeat your scan.
3. If the problem persists, repeat the scan or copy using a higher resolution (High or Max if scanning, Normal or Best if copying). You should also set background cleaning to 0, or set the content type to **Mixed**.

4. If the problem persists, analyze pattern number 7 in modules A through E of the diagnostic plot. A correct example is given below, followed by two incorrect examples. Note that there is a black ring near the center of pattern 7. In this step, you must look at the region near the black ring. If you can see discontinuities in the black and white lines, call HP support and report a “defocus or blurring” error.



## Incorrect paper advance, skew during scanning, or horizontal wrinkles

You may encounter problems with some thick glossy originals being moved through the scanner’s paper path. In some cases, the original may become skewed during the scanning process.

If some of the paper rollers are not working correctly, you may find small horizontal wrinkles in the scanned image, due to the paper being stuck in some regions while not in others.

## Actions

1. Turn your original 90 degrees and repeat your scan.
2. If the problem persists, open the scanner lid. Clean the motor wheels (small black rubber) and the pressure rolls (wide white plastic). Check that all the pressure rolls can move freely. If you find dust particles or objects that obstruct the movement of the rollers, try to remove them, then close the scanner lid and repeat your scan.
3. If the problem persists, restart the scanner by turning it off and on again. If you find an error message on the front panel during this operation, call HP support and report the error message. If no error message appears, try repeating your scan.
4. If the problem persists, analyze patterns 4, 13 and 14 of the diagnostic plot. The plot should look like this:



If you see an image resembling the incorrect examples below, call HP support and report an "incorrect paper advance" problem.



## Vertical black band 20 cm wide

Your scanner contains various different CIS modules, each of which covers an area 20 cm (7.9 in) wide. If one of the modules fails, and the scanner hardware check does not detect the failure, you may see a black vertical band, corresponding to the area covered by a single CIS module, in your scanned image or copy. Here is an example (on the right). Please note the black arrow indicating the scanning direction in this example.



Original Scan affected by a CIS failing module

## Actions

1. Open the lid of the scanner and check that the five CIS modules show blinking red, green and blue lights alternately. If a module is failing, call HP support and report a “CIS module illumination” error.
2. If all the modules lit up correctly in the previous step, restart the scanner by turning it off and on again. If you find an error message on the front panel during this operation, call HP support and report the error message. If no error message appears, try repeating your scan.
3. If the problem persists, try to calibrate the scanner as indicated in [Scanner maintenance on page 37](#). If this operation fails, call HP support with the error code given on the front panel. If no error code appears, try to repeat your scan.
4. If the problem persists, call HP support and report a “vertical black band 20 cm wide”.

## The scanner damages some originals

HP is aware that this scanner may cause vertical scratches on inkjet originals on thick glossy paper. Very thin tracing paper or old originals may also be damaged. This is because CIS technology requires the original to be held down with high pressure to obtain accurate results and avoid blurring and defocus problems.

If the original you intend to scan is valuable, and if it belongs to one of the types described above (inkjet-printed, thick, glossy original or old/thin/tracing paper original), HP recommends using a CCD scanner such as the HP Designjet T1200 HD MFP.

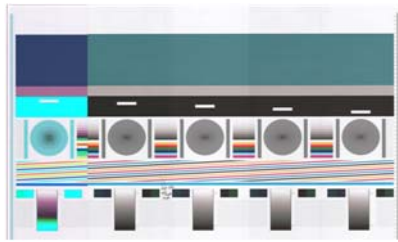
## Completely wrong colors

If some of the LEDs used for illumination in the CIS modules are failing, or the last calibration did not work correctly, although no error message was given on the front panel, you may experience some completely wrong colors in your scanned images, as in the example below: original on the left, scanned image on the right.



1. Open the lid of the scanner and check that the five CIS modules show blinking red, green and blue lights alternately. If some module is failing, call HP support and report a “CIS module illumination” error.
2. If all the modules lit up correctly in the previous step, restart the scanner by turning it off and on again. If you find an error message on the front panel during this operation, call HP support and report the error message.
3. If no error message appears on the front panel during the restart process, try to calibrate your scanner, as indicated in [Scanner maintenance on page 37](#), once it is fully functional. If some error message appears on the front panel, call HP support and report the error, adding that you found it after seeing “completely wrong colors in the scanned image”.
4. If calibration succeeded, repeat your scan and check the colors.

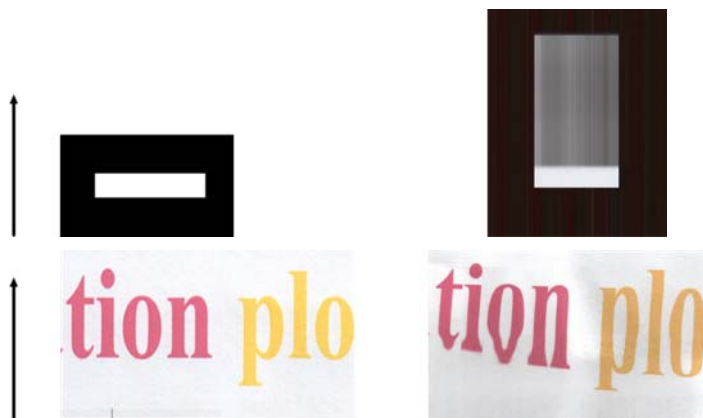
5. If the colors are still wrong, analyze the whole diagnostic sheet. Check that you find completely wrong colors in the area corresponding to just one of the CIS modules, as in the following figure. If so, call HP support and report “completely wrong colors after calibration”, and report the letter of the CIS module that is failing (module A at the example).



If all the modules are failing, call HP support and report that.

## Vertical distortion

If the lid sensor of the scanner fails, the scanner cannot detect when the lid is open. Hence, you can start a scan, and at some point find that the pressure rolls do not move the original through the scanner paper path. You may see images like the following when this happens (original on the left, scanned image on the right). Please note the black arrow indicating the scanning direction in these examples.



### Actions

1. Check that the scanner lid sensor is working by opening the scanner lid and checking that the five CIS modules show blinking red, green and blue lights alternately. If not, call HP support and report “scanner lid sensor failure”.
2. If all the modules lit up correctly in the previous step, close the scanner lid by pushing it down until you hear a click. Then repeat your scan and visually check that the original advances correctly through the scanner path. If not, call HP support and report an “incorrect paper advance” error. Remember that your scanner is not intended to work with originals thicker than 0.75 mm (29 mil).

## Object replication (ghosting)

This error very rarely appears in CIS scanners. However, you can occasionally find image defects like the following: original on the left, scanned image on the right.



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### Actions

1. Restart your product. Then calibrate the scanner, as indicated in [Scanner maintenance on page 37](#), and repeat your scan. Turn the original 90 degrees if possible before rescanning.
2. If the problem persists, analyze pattern 3, modules A through E, of the diagnostic plot. Call HP support and report an “object replication” issue if you see the kind of error shown on the right.



## Clipping or incorrect scale factor when down-scaling in copies and prints

When doing copies or prints (from USB, Embedded Web Server, or printer driver), the scaling setting is available with various possible options. If you are experiencing problems related to border clipping, or it seems that your print has lost the scale-factor adjustment, please read this section carefully in order to select the best value for the scaling setting in future jobs.

- **Precise scaling:** In this case, the content of the original image is scaled by the percentage factor that you have selected. For example, in an original CAD image with a 1:100 scale, if user selects scale to 50%, the printed plot will have an accurate scale of 1:200. Nevertheless, in the case of down-scalings when selecting a fixed percentage, some clipping of the marginal content of the plot may occur, as it is impossible for the printer to print up to the borders of the paper.
- **Scale to fit into page size:** In this case, the content of the original image is scaled by the percentage necessary to make sure that all the content is correctly printed and no clipping occurs. Nevertheless, in the case of down-scalings when selecting fit to page, the scale-factor adjustment may not be an integer divisor of the original. For example, in an original CAD plot with a 1:100 scale on A2 paper size, if user selects scale to fit on A3 paper size, the scaling factor will not be exactly 50% and the scale of the printed plot will not be 1:200 exactly. However, the plot will be printed completely without clipping any content.

## Incorrect edge detection, mostly when scanning tracing paper


Tracing or translucent papers can be scanned with your product with good results, although totally transparent papers are not supported. Nevertheless, the resulting image may have extra margins or some clipping of the content in some situations when detection of the edge of the paper is not accurate, which may also happen when scanning plain paper if the glass plate is dirty. In order to avoid these undesired effects, please follow these recommendations.



### Actions

1. Carefully clean the scanner's glass plate and the original to be scanned with a cloth. Turn the original 90 degrees if possible and re-scan it afterwards. Remember to select **Translucent** as the paper type at the scanner if your original is translucent.
2. If the problem persists, please calibrate your scanner, and re-scan your original again afterwards.
3. If the problem persists in the case of translucent paper, attach a sheet of white paper to the back of the original to be scanned. Remember to select **White paper** as the paper type for the scanner in this case.

## A copied or scanned image is very skewed

Originals are often loaded into the scanner with some degree of skew. In order to correct for this unavoidable problem, the scanner has a built-in automatic de-skew algorithm, which measures the skew in the original and rotates the scanned image so that the result is perfectly straight. However, in some cases the de-skew algorithm may increase the skew rather than correcting it. In other cases, the skew is so bad that it cannot be automatically corrected.

To load the original with minimum skew, grasp the original with the image facing up and your hands at left and right edges. You are recommended to avoid resting your hands or the original on the scanner's input tray. Push the original into the scanner insertion slot until you feel the whole top border of the original pressing against the scanner rubber rolls, which will load the original after a delay of 0.5 seconds. Now you can take your hands off the original. If you are not happy with the way the scanner has grabbed your original, you can press  and try again.

The action of the automatic de-skew algorithm can be deactivated by pressing , then , then **Scan preferences** or **Copy preferences** (you might want to deactivate it in one case but not in the other). You can also deactivate the automatic de-skew from the **Settings** button at every new scanner job.



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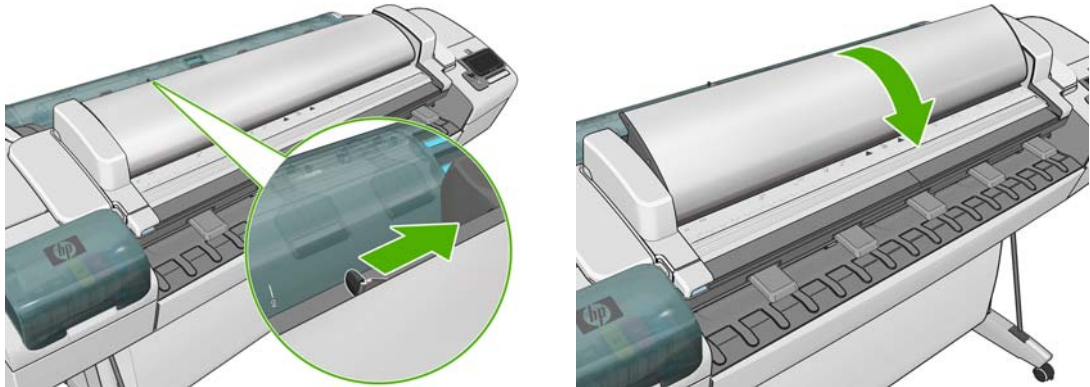
## 4 Scanner maintenance

- [Clean the scanner's glass plate](#)
- [Calibrate the scanner](#)

## Clean the scanner's glass plate

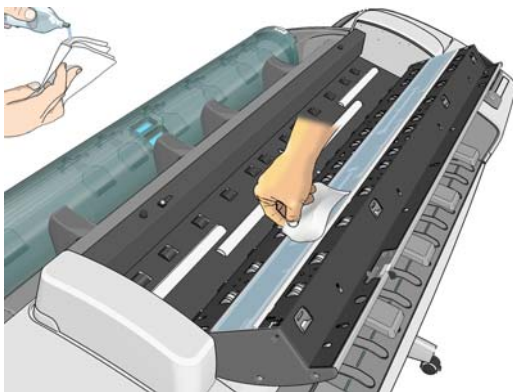
To maintain high image quality, you are recommended to clean the scanner's glass plate periodically: depending on how often you use the scanner, the types of originals that you scan and how clean your environment is. For routine maintenance, you can skip step 4, which is appropriate only when your scanner needs thorough cleaning.

1. Turn off the product using the **Power** key at the front, then also turn off the power switch at the rear and disconnect the power cable.
2. There is a small lever at the rear left of the scanner. Slide the lever to the right and open the scanner cover.



3. Gently wipe the glass plate with a lint-free cloth dampened with water and then wrung dry. A suitable cloth is provided with the product. Also clean the area in front of and behind the glass plate (the two black areas surrounding the pressure rollers), and the paper feed internal area (the black area surrounding the feed rollers). Make sure that all dust and dirt is gone.

△ **CAUTION:** Do not use abrasives, acetone, benzene or fluids that contain these chemicals. Do not spray liquids directly onto the scanner glass plate or anywhere else in the scanner.



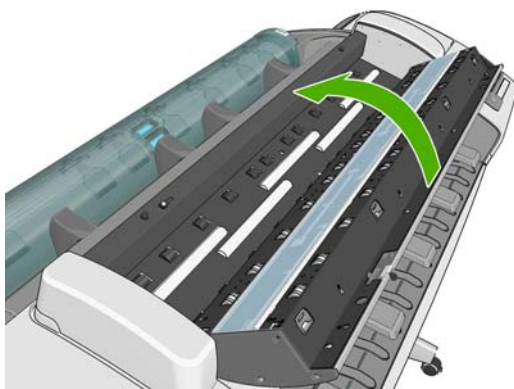
Do not worry about tiny droplets of water left on the glass: they will evaporate.

4. Optionally, for more thorough cleaning:
  - Remove the glass plate and clean it on both sides. See *Using your product*.

- Clean the pressure rollers.



5. Close the scanner cover and gently push it down to lock it into place.



6. Clean the area immediately in front of the scanner, where the scanned sheet rests before scanning.
7. Reconnect the product's power cable, turn on the power switch at the rear, and turn on the product using the **Power** key.

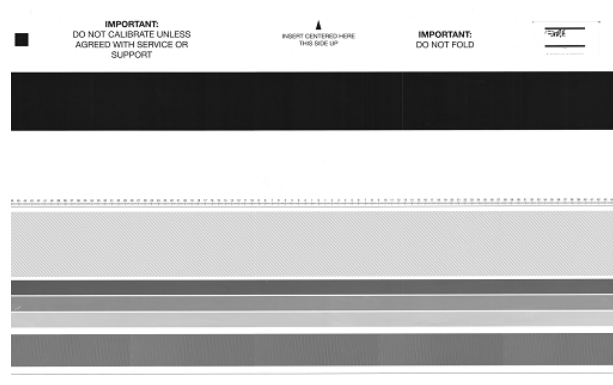
## Calibrate the scanner

Your scanner has been calibrated at the factory, and theoretically CIS scanners do not need to be recalibrated during their lifetimes. Nevertheless, because of environmental changes, your scanner may start showing image defects that can be easily corrected by recalibrating the scanner. The whole procedure takes less than 10 minutes, and you are recommended to recalibrate the scanner whenever you see some undesired artifact or a lack of quality in scanned files or copies, bearing in mind the limitations of CIS technology already explained in this guide. If you perform calibration successfully and still have concerns about the image quality, please read [Troubleshooting scan-quality issues on page 18](#) in order to detect whether you are facing a product limitation, and may want to consider buying a CCD scanner.

### To calibrate the scanner

1. Clean the scanner. See [Clean the scanner's glass plate on page 38](#).
2. Go to the front panel and press **i**, then **w**, then **Image Quality Maintenance > Calibrate scanner**.
3. Follow the instructions in the front panel.

The supplied maintenance sheet required to perform scanner calibration looks like this:



Load the maintenance sheet into the scanner face up, centered and with as little skew as possible. Once the calibration is finished, the maintenance sheet should be carefully placed into its solid cover, and saved in a fresh and dry place. Otherwise, it could be damaged, which could affect the operation of your scanner in the future. Check that the maintenance sheet is not dirty, wrinkled, scratched or folded before calibrating the scanner. If necessary, call HP support and ask for a new maintenance sheet.

### If calibration fails

1. Ensure that the product is turned on and ready for normal operation.
2. Ensure that the scanner is working correctly. To test it, scan a small document to file.
3. Ensure that the scanner is clean before calibration. If in doubt, clean the scanner and restart the calibration process.
4. Eject and reload the calibration sheet, checking that it is clean, in good condition, face up and perfectly centered in the scanner.
5. If the above steps do not help, eject the sheet and restart the product (turn off and on). When the system has restarted, repeat the calibration.
6. If you cannot perform the calibration successfully in three consecutive attempts, call HP support and report the error code that appears in the front panel.

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# 5 The scanner diagnostic plot

- [Prepare the product and the paper to print the diagnostic sheet](#)
- [Visual check for errors while printing the diagnostic sheet](#)
- [Scan or copy the diagnostic plot](#)
- [Monitor calibration](#)
- [Save the diagnostic plot for future use](#)

# Prepare the product and the paper to print the diagnostic sheet

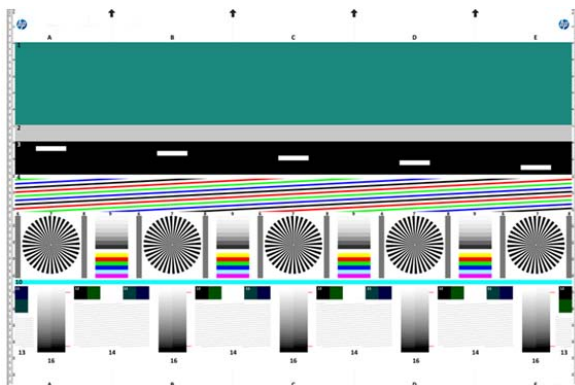
Turn on your product and wait until it is functioning. Then select the paper on which the diagnostic plot is going to be printed (you can reuse the diagnostic plot any time in the future, if it is saved carefully). Ideally, the diagnostic plot should be printed on glossy paper, and you are highly recommended to do that if you use your product mostly for scanning or copying photo originals (posters, pictures printed on glossy paper, etc). If you use your product mostly to scan or copy matte originals, then you can use any matte white paper to print the diagnostic plot. Please do not use recycled or tracing paper to print this plot. The size of the diagnostic plot is 610 × 914 mm (24 × 36 in). It can be printed on any 914 mm (36 in) landscape or 610 mm (24 in) portrait paper roll. You can also use a single sheet that is at least 610 × 914 mm (24 × 36 in).

Once the correct paper is loaded, if this paper permits color calibration then we recommend color-calibrating the printer (see *Using your product*).

You can print the diagnostic plot from the front panel: press **i**, then **🔧**, then **Internal prints** > **Scanner IQ plot** or **Image Quality Maintenance** > **Scanner IQ plot**.

## Visual check for errors while printing the diagnostic sheet

Once the diagnostic plot is printed, the first step is to check that all the patterns included in it are correctly printed. The diagnostic plot, if printed correctly, should look like this:

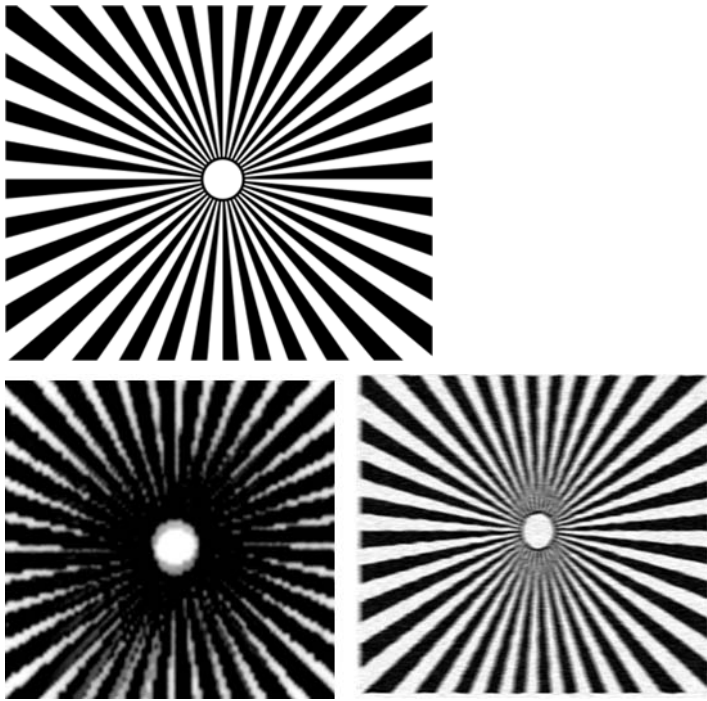


Some of the most common defects that may appear in a printed diagnostic plot are described below. If you find any of these problems, you should follow the recommended recovery procedure, all of which are available by pressing **i**, then **🔧**, then **Image Quality Maintenance** at the front panel. Once the printer has been diagnosed and it is working correctly, you can reprint the diagnostic sheet as described in [Prepare the product and the paper to print the diagnostic sheet on page 42](#).

## Resolution

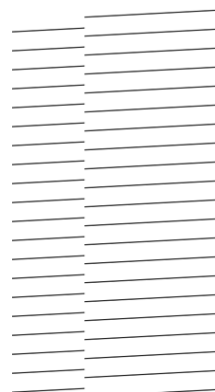
By looking at pattern 7 you may find problems with the printer's resolution for the loaded paper. Usually, this test does not reveal a printer problem, but a defect in the paper, which may not be suitable for printing the diagnostic sheet with the required quality.

Here is what you should see if all is well, followed by two defective examples.



## Alignment

Looking at patterns 4, 13, and 14, you may find problems with the printer's printhead alignment, which can cause defects such as the following.



Additionally, misalignment problems can be seen in patterns 4 and 9 in the form of color fringing (which is exaggerated below, on the right). That is, the limits between two strong colors are not well defined or a third color appears between them.



Finally, a special pattern for checking the printer's printhead alignment can be found at the top left of the diagnostic sheet. This pattern has no number as it is not used for scanner checking. It is made of



three colored crosses that may be used to identify the problem in question. The correct pattern is shown on the left, an example of misalignment on the right.



## Loss of shadow or highlight details

Looking at pattern 16, you may find a problem with the color calibration of the printer (CLC process). If you can distinguish lightness steps beyond the upper and lower specified thresholds, then the printer is fine. Here you can see examples of correct functioning on the left, incorrect on the right.





If the printer does not pass this test, you should run a color calibration if the paper loaded in the printer can be calibrated (coated or glossy paper, for instance). The color calibration can be launched from the front panel by pressing , then , then **Image Quality Maintenance > Color calibration**.

## Printer banding

Looking at patterns 1, 2, and 3, you can see vertical banding problems due to a miscalibrated paper advance in the printer.

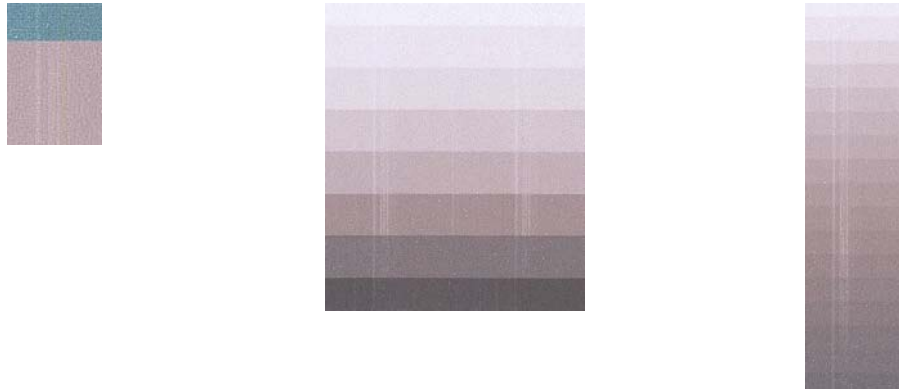


You can also see some banding in patterns 4, 9, 10, and 11, indicating that the printheads need to be cleaned. You can launch printhead cleaning from the front panel by pressing , then , then **Image Quality Maintenance > Clean printheads**.



## Streaks

Looking at patterns 1, 2, 3, 9 and 16, you may find vertical streaks as in the examples shown below, if the printer's printheads are not working correctly. Replacing the printhead for the color showing the streaks may solve the problem.



## Grain

Looking at patterns 1, 2, and 3, you may find problems in the printer's paper advance or the printheads that cause visible grain in area fills. The following examples show this defect: original on the left, printed image on the right.



## Scan or copy the diagnostic plot

There are two options for evaluating the diagnostic plot: scanning into a JPEG file, or copying onto paper. We recommend using the scan option, so that the generated file can be analyzed more easily by a remote support engineer if necessary. If you decide to scan the plot, first adjust your computer's monitor as described in [Monitor calibration on page 46](#). Once you have scanned the diagnostic plot, please remember to open the scanned file in any image viewer software and select a zoom of 100% for correct visual evaluation of patterns.

If you decide to copy, make sure that a paper roll at least 36 in (914 mm) wide is loaded in the printer. Ideally, the same type of paper used to print the diagnostic plot should be used for copying it.

These are the settings that you should select:

## Scan

- Quality: Max
- File type: JPG
- Content type: Image
- Paper type: photo or matte, according to the paper used to print the diagnostic plot. Use photo if in doubt.

## Copy

- Quality: Best
- Content type: Image
- Paper type: photo or matte, according to the paper used to print the diagnostic plot. Use photo if in doubt.

Load the diagnostic plot into the scanner input tray, making sure that the printed side of the plot is facing up. The black arrows on the diagnostic plot indicate the direction of loading. Make sure that the diagnostic plot is loaded without skew, and it is centered (that is, it covers the whole scanner area).

Once you have scanned the diagnostic plot (in case you selected the scan option), please remember to open the scanned file in any image viewer software and select a zoom of 100% for correct visual evaluation of patterns.

## Monitor calibration

The monitor on which the plot is going to be evaluated should ideally be calibrated. As this is not always feasible, we propose here to follow an easy procedure for adjusting the brightness and contrast of the monitor in order to see the patterns correctly.

Adjust the brightness and contrast of your monitor until you can see a difference in lightness between these two squares:



Now you are ready to check each pattern individually.

## Save the diagnostic plot for future use

We recommend saving the diagnostic plot with the maintenance sheet, in the solid tube provided.

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