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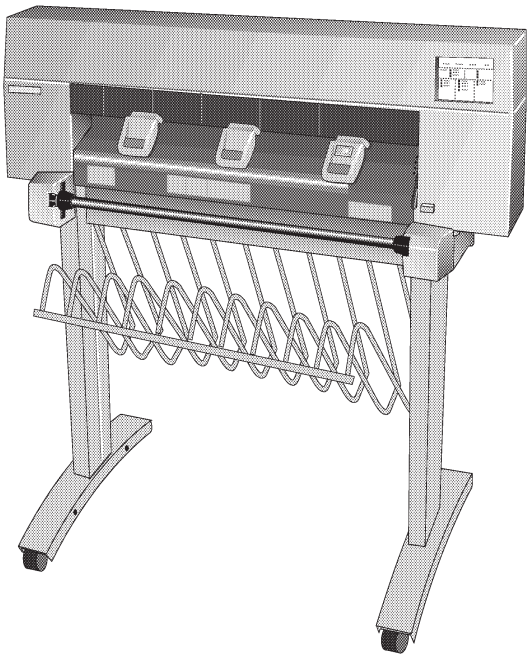


Service Manual

HP DesignJet 430
HP DesignJet 450C
HP DesignJet 455CA
Printers

For HP Internal Use Only

First edition, September 1997

Warranty

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

WARNING

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

Electrical Shock Hazard

Serious shock hazard leading to death or injury may result if you do not take the following precautions:

- Ensure that the ac power outlet (mains) has a protective earth (ground) terminal.
- Disconnect the Printer from the power source prior to performing any maintenance.
- Prevent water or other liquids from running onto electrical components or circuits, or through openings in the enclosure.

Electrostatic Discharge

Refer to the beginning of Chapter 8 of this manual, for precautions you should take to prevent damage to the Printer circuits from electrostatic discharge.

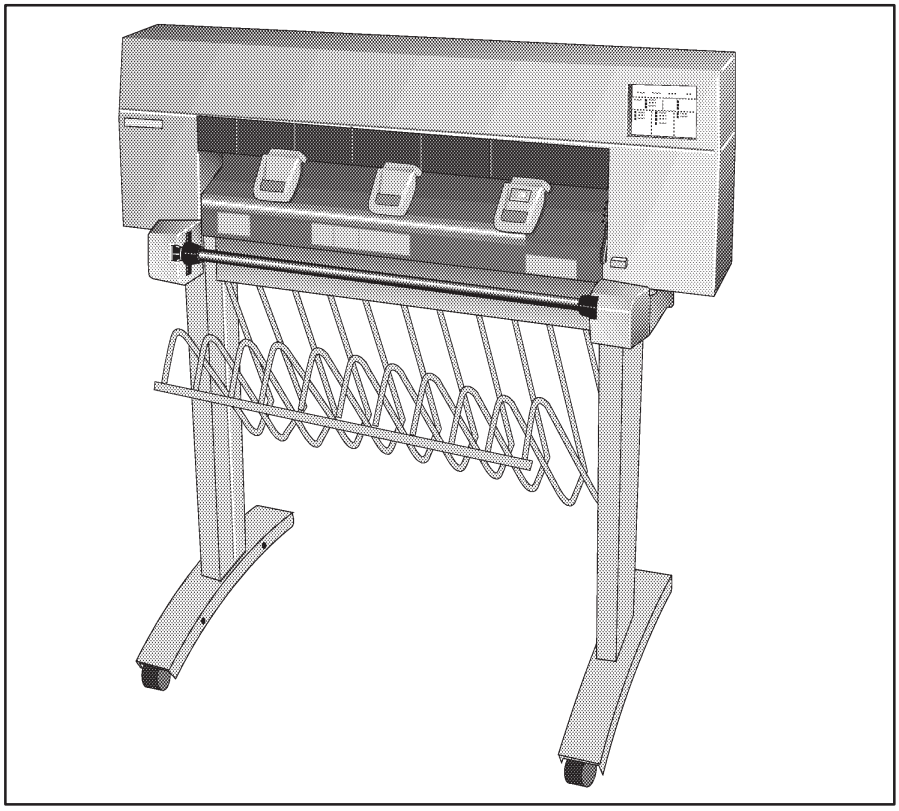
Safety Symbols

General definitions of safety symbols are given immediately after the table of contents.

Product Support, Barcelona Division

Hewlett-Packard Española, S.A.
Avda. Graells, 501
08190 Sant Cugat del Vallès
Spain

Service Manual



HP DesignJet 430
HP DesignJet 450C
HP DesignJet 455CA
Printers

Using this Manual

Purpose

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

- HP DesignJet 430 printers (models C4713A and 4714A).
- HP DesignJet 450C printers (models C4715A and 4716A).
- HP DesignJet 455CA printers (models C6080A and C6081A).

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

Readership

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

Part Numbers

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

Conventions

This manual contains information for the color HP DesignJet 430, 450C and 455CA printers.

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

Contents

4 Service Tests

5 Service Calibrations

6 Image Quality

7 Parts List

8 Removal and Installation

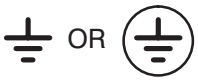
9 Preventive Maintenance

10 Functional Overview

General Definition of Safety Symbols

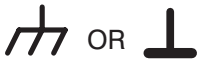
International caution symbol (refer to manual): the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the instrument.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must also be marked).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal that must be connected to ground before operating equipment.

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



Frame or chassis terminal. A connection to the frame (chassis) of the equipment, which normally includes all exposed metal.

Alternating current

Direct current

Alternating or direct current

WARNING

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

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

CAUTION

The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

1

Troubleshooting

Introduction

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

Is the Printer Using the Latest Firmware Revision?

Before spending time troubleshooting the problem by doing the various tests or replacing parts (which may not need replacing), check which firmware revision the printer is using. To check which firmware revision the printer is using, *Print the Service Configuration Plot* ➧ page 4-29. Some problems which occurred in earlier firmware releases may have been solved in later revisions. So if there is a new firmware revision then replace the Firmware SIMM before replacing any parts.

Important Information

The Printer firmware is contained either on a flash ROM SIMM at the back of the Printer or on a masked ROM inside the electronics module. The firmware-revision level, for example A.01.03, is printed by the Printer on the setup sheet and on the service configuration plot. The revision level is also printed on a label on any flash ROM SIMM. Do not open the electronics module.

Important: When replacing the electronics module, always remember to check the firmware revision level of the **new** electronics module. The revision level will be printed on the top surface of the module. Also, check the firmware revision level of the ROM SIMM installed in the **old** electronics module. With this information you must do the following:

1. If the firmware revision level of the ROM SIMM in the old electronics module is **lower** than the firmware revision level of the new electronics module, then you **must not** install the ROM SIMM into the module.
2. If the firmware revision level of the ROM SIMM in the old electronics module is **higher** than the firmware revision level of the new electronics module, then you **must** install the ROM SIMM into the module.

   Example 1: The ROM SIMM firmware revision level is A.01.03 and the firmware revision level of the electronics module is A.01.04. You would use the electronics module **without** the ROM SIMM installed.

   Example 2: The ROM SIMM firmware revision level is A.01.05 and the firmware revision level of the electronics module is A.01.04. You would use the electronics module **with** the ROM SIMM installed.

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

Chapter 2 contains a list of system error codes and their respective descriptions and recommended corrective actions. Only try one recommended action at a time and check if the error code has disappeared.

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error code.
- The Service Configuration Plot.
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).
- Is the problem reproducible by you?
- Additional comments about the usage, the setting, etc..

Have you performed a Service Test on the Failed Component/Assembly?

If possible, always perform a Service Test on the component/assembly that you are about to replace, just to make sure that is the component/assembly that has failed. **If the test on that component/assembly passes, you should NOT replace it.** For information on the Service Tests and how to use them ➧ Chapter 4.

Have you Performed the Accuracy Calibration?

Is the printer calibrated correctly after replacing a component? Refer to Chapter 5 to check when the Accuracy Calibration is required.

What can I do to Solve Print-Quality Problems?

Whenever an Print-Quality problem appears, it is advisable to print the Print-Quality Plot to help diagnose the problem. The Print-Quality Print will help you differentiate between possible Cartridge errors and other problems such as incorrect front-panel selection, driver or RIP configuration or mechanical problems. For information on solving Print-Quality problems ➧ Chapter 6.

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

1 Excessive ink deposits on the drive-roller surface can fool the sensor by reflecting the light. Clean the drive-roller ➧ Chapter 9.

2 **Line sensor incorrectly calibrated:** The accuracy calibration includes calibration of the line sensor on the carriage. You must use HP Matte film when performing the accuracy calibration (Details ➧ Chapter 5). Otherwise the line sensor will have problems loading some types of media.

3 The Line Sensor is faulty. Replace the Carriage Assembly ➧ page 8-37.

What can I do if the Carriage is Noisy?

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

2 Make sure that the belt is correctly positioned on the Y-axis motor.

3 Remove dust particles from the Back Beam and, if necessary, apply grease.

4 Check for a faulty Carriage. Perform the Carriage Axis Test ➧ page 4-10.

What can I do if the Cover Sensor isn't Working?

The cover sensor is part of the front-panel assembly.

1 Before troubleshooting, make sure that you are not in Service Mode 1 because the Cover sensor is disabled and Printer will think that the cover is always closed. Power OFF the Printer and switch it back ON again and check if the Cover sensor works.

2 Check if the cable for the front-panel assembly is connected correctly to the electronics module.

3 Replace the front-panel assembly ➧ page 8-12.

What can I do if the Carriage Assembly has problems parking in the Service Station?

1 **Mispositioned trailing cable:** The trailing cable may be preventing the carriage from reaching the left-hand stop. Make sure that the trailing cable is positioned under the plastic tabs at the back of the carriage cover, and not above them.

2 The Carriage is not at the correct height. Check and, if necessary, adjust the Carriage height (Details ➧ chapter 5).

3 The Belt is not correctly positioned over the idler pulley.

4 Check for a faulty bail lever mechanism because the Carriage may have trouble passing over it.

What can I do if the Printer continuously rejects Cartridges?

If you are in Service Mode 1, the cover sensor is disabled. In order to test a new Cartridge set, the Printer must be powered OF and and ON again.

1 **Remove tape and align cartridges:** One frequent cause of cartridge problems is that the user has forgotten to remove the tape from new cartridges. Remove the tape.

2 **Dirty pads:** The connection between the carriage PCA and the cartridge flex connector is made by means of a gold bubble on the flex connector that touches a gold pad on the PCA. The Carriage Test (details ➧ page 4-12) includes a test of this connection. When nozzle failures occur, clean the flex contacts on the cartridge and in the Carriage.

3 **Continuity Problem:** Remove all the cartridges from the Carriage and try installing just the rejected cartridge. If the cartridge is still rejected then replace the cartridge with a new one. If the new cartridge is not rejected then check, one by one, if the other cartridges are rejected or not.

4 **Faulty cartridge:** Some black cartridges (51640A) with USE BEFORE dates of April '96 and earlier may have thin-film damage. This means that the material used for channeling ink behind the nozzles can crack with aging. When this happens, ink seepage may cause many nozzles to fail (eight or more). Replace the black cartridge with one with USE BEFORE date of May '96 or later.

5 If the Cartridges are not inserted correctly into the Carriage, the Cartridges will be rejected. Make sure that the springs that hold the Cartridges in the Carriage are not broken or misplaced.

6 Perform the Carriage Test ➧ page 4-12.

7 Replace the Trailing Cable ➧ page 8-8.

8 Replace the Carriage Assembly ➧ page 8-37.

What can I do if the Media continuously crashes?

1. Check if the media loaded is HP approved. If the media is not HP approved, advise the customer to use HP media and check to see if the problem is now solved.
2. **Anti-static brush:** If this brush (located under the entry platen) is damaged or removed, static charge can build up on the media. A charge can cause the media to stick to itself and jam the Printer.
3. The Carriage is at the incorrect height in relation to the Drive Roller. Check and if necessary adjust the carriage-to-media distance ➧ page 5-5 and try to load the media again.
4. The Drive Roller is installed incorrectly. Remove the Drive Roller and install in the correct position ➧ page 8-44 and try to load the media again.
5. The overdrive wheels turn free in both directions, creating bubbles in the media. Make sure that the Clutch assembly is installed correctly and is not faulty.
6. **Missing or damaged starwheels**. Make sure that all the starwheels on the bail assembly are correctly installed and turn properly.
7. **Missing Media Deflectors**. Make sure that all the Media deflectors are installed on the Printer, otherwise there could be media crashes.

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

1. Check that the power cord is connected correctly.
2. Check that the ROM SIMM (firmware) is installed correctly in the correct slot (the slot furthest from you) at the back of the Printer.
3. Try to disconnect all the cables, apart from the Front Panel Cable, from the Electronics Module and then try to power ON the Printer again. If nothing appears on the front-panel display, then replace the Electronics Module ➧ page 8-13. If the Printer does Power On with the cables disconnected, then the problem must be with another component of the Printer. To find the faulty component, power OFF the Printer and connect one of the cables and power ON again. Once the faulty component is connected, it will not allow the Printer to power ON. This component should then be replaced.

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

1. Check that the Media Sensor is installed correctly.
2. Check if the cable for the Media Sensor is connected correctly.
3. Check if the Pincharms are down (the Pincharm lever should be **up**).
4. If the media is continuously rejected during the media edge check, then make sure that the Line Sensor is installed correctly. If necessary, perform the Carriage Test ➧ page 4-12.
5. Make sure the line sensor is calibrated. Perform the Accuracy Calibration ➧ page 5-2.
6. Replace the Media Sensor (part of the overdrive assembly) ➧ page 8-50.
7. Replace the Carriage Assembly ➧ page 8-37.

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

What can I do if the Printer has problems with the Cutter?

1. If the Carriage Assembly has problems picking up the Cutter:
   - Check that the cable for the Front-Panel Assembly is is not loose and is routed correctly in the cover clips. A loose cable can be trapped by the Cutter, preventing the Cutter from moving.
   - Make sure that the Spittoon Assembly is correctly installed and is aligned with the Overdrive Assembly. If the Spittoon is loose or mispositioned, the cutter will have problems parking in the right cover.
2. If the media crashes when moving the Cutter:
   - Make sure that there is no media trapped inside the Cutter mechanism. Remove the Cutter to inspect it correctly.
   - Remove the Cutter and make sure that both rotary blades are touching each other by the flat sides and not the sloping sides. If the rotary blades are touching each other by the sloping sides, you must reseat them.
   - If the Printer is placed on a table, it must be placed as close to the edge as possible to make sure that the media that is coming out falls correctly. If the Printer is in the middle of the table, the media that is coming out will be lifted up causing the cutter to crash into it.

What can I do if the Bail Mechanism Fails?

1. **Obstructions:** Check that there are no obstructions in the way of the Bail Assembly.
2. **Wearing of parts:** The cam gear and engaging gear may not make correct contact with the left drive-roller gear even though the carriage is actuating the engaging lever. This can happen due to excessive wearing of parts. Another problem may be that the bail cable has broken.
3. **Carriage motor control:** The carriage may not properly locate the engagement lever, preventing the gears from engaging. Any problems with the carriage-motor control system (for example, the encoder strip) or associated mechanics could cause this problem. Also, if the carriage cannot find the true left stop during initialization (caused by interference), the engaging lever cannot be located.
4. **Bail cam:** The bail may fall from the up position. This can happen if the cam is over or under-rotated. The notch on the cam, used to engage the left bail bracket, is not properly located for the "bail up" condition, and the bail falls abruptly. Perform a bail cycle test.
5. **Adjust carriage:** If the carriage moves over the engaging lever without raising it, you may need to adjust the carriage angle on the slider rod. (Details ➧ page 5-5.) However, be careful not to jeopardize the print quality, which is very sensitive to the carriage angle.

EEROM Errors

What is an EEROM error?

An EEROM error means that some of the internal tests that the firmware performs have detected that, when re-reading information from the EEROM, it doesn't correspond to the information that had previously been written there, or that the checksum of all the information is incorrect. This failure has five possible causes:

- Faulty electronics module.
- Contact problems with the trailing-cable connections.
- Faulty trailing cable.
- Faulty carriage.
- The Printer was turned off while a test was writing to the EEROM, thus leaving corrupt information (or a communication cable was disconnected while sending information to the EEROM using software diagnostic tools).

It is generally not easy to discover the cause, due to the intermittent character of the failure modes.

If you are sure that the failure occurred just after an electricity power-cut, or after turning off the Printer during the bench run or other service tests, then the Printer is not faulty. You just need to reset the EEROM. In other cases, you need to find the cause:

- There is always an EEROM error when you switch on the Printer:
- If it is easy to reproduce a **Steady EKL** error, then try one or all of the following steps for a possible solution:

1 Configure the EEROM with the correct model ID (instructions ➧ page 4-27).

2 If you cannot configure the EEROM with the correct model ID after several attempts and you continue getting the same error code, replace the electronics module ➧ page 8-13.

- There is sometimes an EEROM error when you switch on the Printer (normally shows up as a **Steady EK** error):

1 Switch on the Printer, allow it to initialize until it has completed the power-on LED sequence, and switch off the Printer. (You are now sure that the EEROM has not been corrupted. If a **Steady EK** error appeared, it also corrects the EEROM contents, and the next time you switch the Printer ON, the error should not occur in good units.)

2 Leave the unit off for 15 minutes to detect if the EEROM is losing its information. Then turn it on again and allow it to initialize. If a **Steady EK** error appears during the initialization sequence, and the carriage does not begin to move, then the EEROM is probably faulty. Replace the electronics module.

2

System Error Codes

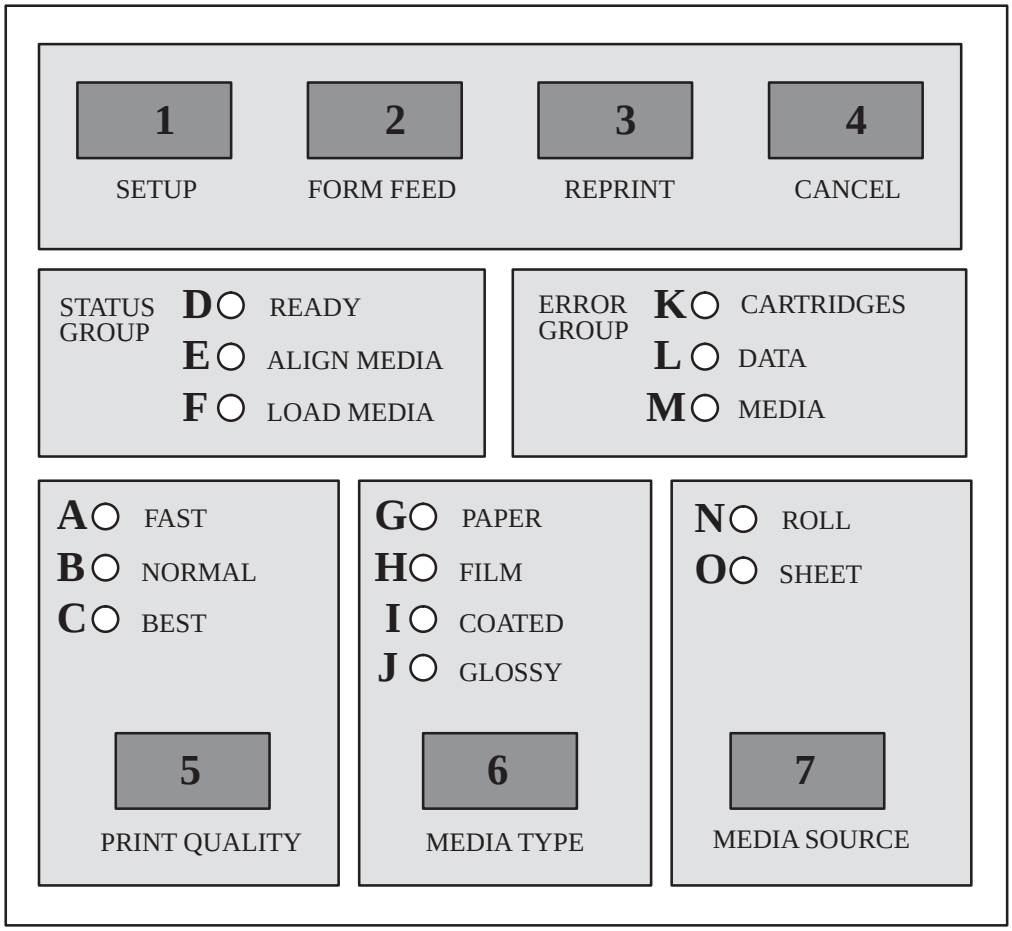
System Error Codes

If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error number.
- The Service Print (*Utilities* / *Service Tests*).
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).
- Is the problem reproducible by you?
- Additional comments about the usage, the setting, etc..

Important Information on Troubleshooting Error Codes

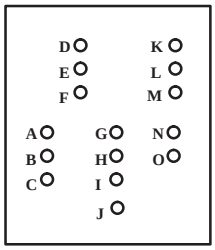
Before spending time troubleshooting the problem by doing the various tests or replacing parts (which may not need replacing), check which firmware revision the printer is using or check if a service note deals with this particular problem. Some problems which occurred in earlier firmware releases may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



LED Symbols:

- ○ Off
- ● On (Steady)
- ✳ Flashing

LED Letters:



LED-Code Examples:

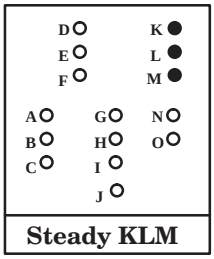
Flashing KLM LEDs K, L and M are flashing.

Steady DEL LEDs D, E and L are on.

System Error codes

The following pages contain the possible error codes and the instructions necessary to solve the problem.

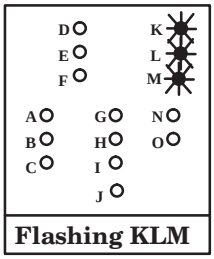
Error Codes for the HP DesignJet 430, 450C and 455CA Printers



Steady KLM

Cartridges + Data + Media:

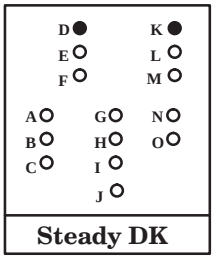
An error which the customer could probably solve, like a paper jam, minor cartridge problem etc. In order to get more information on the error, the **CANCEL** key must be pressed which will display a **Subcode**. Use the error codes below to find information on the subcode.



Flashing KLM

Cartridges + Data + Media:

This error code indicates a severe problem which will require a Service Engineer to troubleshoot. In order to get more information on the error, the **CANCEL** key must be pressed which will display a **Subcode**. Use the error codes below to find information on the subcode.

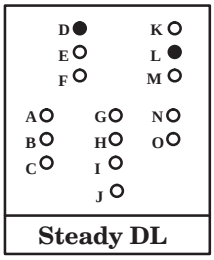


Steady DK

Ready + Cartridges: The RAM SIMM test failed.

Possible causes:

- RAM SIMM installed is not an original HP supported part.
- RAM SIMM badly connected.
- Faulty RAM SIMM.
- Faulty electronics module.

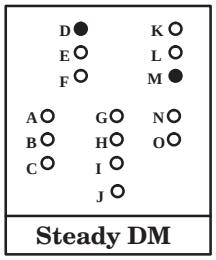


Steady DL

Ready + Data: Cartridge Continuity Test Failure.

Possible causes:

- Cartridges faulty or badly seated.
- Faulty or badly connected trailing cable.
- Dirty carriage flex circuit.
- Faulty carriage.
- Faulty electronics module.

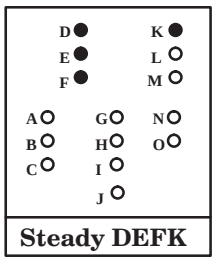


Steady DM

Ready + Media: X-axis Shutdown.

Possible causes:

- Obstacle or friction in X-axis.
- Faulty or badly connected X-axis Encoder Cable.
- Faulty media motor, or motor cable pinched.
- Faulty electronics module.



Steady DEFK

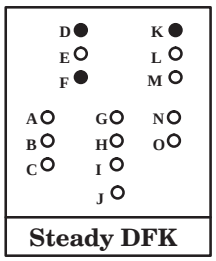
Ready + Align Media + Load Media + Cartridges: Memory or Accuracy Calibration Problems.

Possible causes:

- Not enough memory for the current plot. Add extra memory by installing a bigger RAM SIMM. Refer to Chapter 7 for the correct part numbers of the RAM SIMMs.

If this error code appeared while performing the Accuracy Calibration:

- Check that the quality of the Accuracy Calibration print is good. If the quality is bad, try to clean the black cartridge or replace it.
- Make sure that you load the Accuracy Calibration print in the correct position and orientation, and make sure that you select the correct media type.
- Make sure that the line sensor on the carriage is clean. If the Line sensor is dirty or not functioning correctly, it will have problems reading the accuracy calibration print.
- Faulty Trailing Cable.
- Faulty Carriage Assembly.
- Faulty Electronics Module.

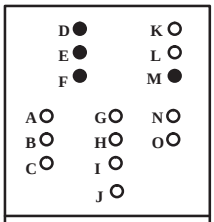


Steady DFK

Ready + Load Media + Cartridges: Mechanical Problem.

Possible causes:

- Check the Bail Assembly.
- Check the Capping Position in the Service Station.

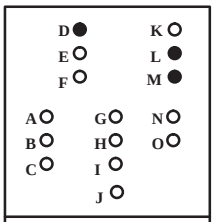


Steady DEFM

Ready + Align Media + Load Media + Media: Error in bail-lift mechanism. The bail-lift system is unable to raise or lower the bail. (It is the carriage that tests to see whether the bail is in the correct position by trying to knock against it.)

Possible causes:

- Check the bail-lift system to see if it is working correctly.
- Use the bail cycle test to help troubleshoot.

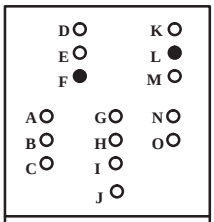


Steady DLM

Ready + Data + Media: Error in X-axis calibration.

Possible causes:

- Is X-axis calibration done? (details ➧ Chapter 5)
- Did you load media in correct orientation?
- Are the marks visible on the plot? If not, check cartridges.
- Are cartridges correctly aligned? If so, the problem may be in the electronics module, media motor or drive-roller gear; if alignment is incorrect, the problem may be in the carriage.

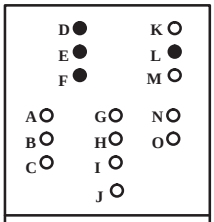


Steady FL

Load Media + Data: Firmware has a problem interacting with some of the characteristics of the print.

The Printer is using an old Firmware revision - Install the latest firmware revision.

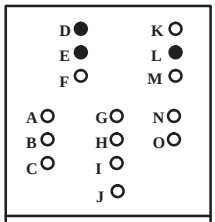
- If this error remains, report the problem to your HP Response Center. Note conditions and actions before error occurred. Include setup sheet and service configuration plot in report.



Steady DEFL

Ready + Align Media + Load Media + Data: This is a generic System Error that covers about 600 error codes.

- Report the problem to your HP Response Center. Note conditions and actions before error occurred. Include setup sheet and service configuration plot in report.

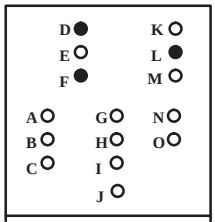


Steady DEL

Ready + Align Media + Data: Communication problem with RS-232 (Serial Port).

Possible causes:

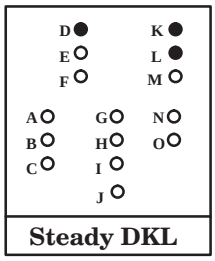
- Incorrect configuration in communications speed/protocol.
- Incorrect communications cable.
- Error in host computer.



Steady DFL

Ready + Load Media + Data: There is a communication problem between the Main PCA and the internal microprocessors.

The Main PCA is faulty - Replace the Electronics Module.

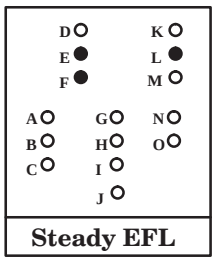


Steady DKL

Ready + Cartridges + Data: Mark Encoder not detected.

Possible causes:

- The line on the mark encoder is dirty or missing.
- Faulty or badly connected trailing cable.
- Faulty or badly connected carriage sensor.
- Faulty or badly connected X-axis Encoder Cable.
- The drive roller has shifted slightly from the expected position (mechanics). Check that the carriage sensor lights just over the white mark on the drive roller when starting.
- Faulty carriage PCA.
- Faulty X-motor.
- Faulty Y-motor.
- Faulty electronics module.

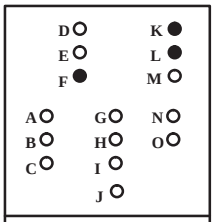


Steady EFL

Align Media + Load Media + Data: Error reading Centronics I/O

Problems in the Centronics Communications. Probably due to the bad contacts of the connector.

- If this error remains, report the problem to your HP Response Center. Note conditions and actions before error occurred. Include setup sheet and service configuration plot in report.

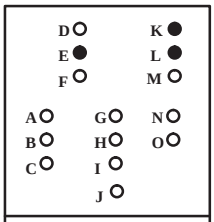


Steady FKL

Load Media + Cartridges + Data: Problems when initializing the carriage.

Possible causes:

- Carriage assembly is not present.
- Faulty or badly connected trailing cable.
- Faulty carriage PCA.
- Faulty electronics module.



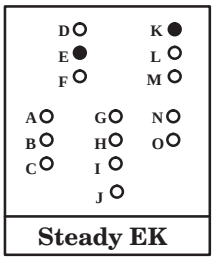
Steady EKL

Align Media + Cartridges + Data: Model ID not configured.

- After replacing a new electronics module, it must be configured either as a DesignJet 430, 450C or 455CA. If a new module does not show this error, it means that it has been installed previously and was probably calibrated with other parameters. After configuring the module Error code **Steady DLM** will appear which means the accuracy calibration must be done. After the accuracy calibration is done, all other calibrations must be done. If configuring the module does not remove the error, even after switching the Printer OFF and ON, then the EEROM in the main PCA is probably defective. Before trying to replace the electronics module try clearing the EEROM and perform all the calibrations again and see if that solves the problem.

Refer to page 4-27 in order to configure the correct model ID.

For more information ➧ page 1-8.

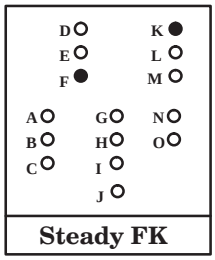


Steady EK

Align Media + Cartridges: EEROM test error.

Possible causes:

- Switch the Printer OFF and ON again and see if the error remains. If the error appears continuously, replace the Electronics Module.
- The Calibrations in the EEROM have been lost. Perform the Accuracy Calibration (refer to Chapter 5).

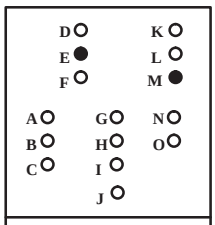


Steady FK

Load Media + Cartridges: Electronics Module Failure.

Possible causes:

- Fan faulty or badly connected.
- Faulty ROM SIMM.
- Faulty RAM SIMM.
- Faulty Electronics Module.

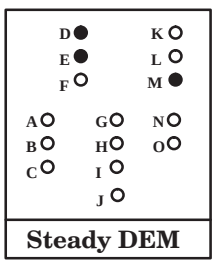


Steady EM

Align Media + Media: Y-axis Shutdown.

Possible causes:

- Problems with the Cutter Assembly.
- Clear any binding due to a media jam.
- Turn the Printer off. Manually move the carriage along the carriage axis. Check for any areas where the carriage may be binding.
- Ensure that the belt and belt pulley are in correct working order. Remove dirt from the pulley that could cause the belt to slip.
- Perform the carriage-axis test and the servo/encoder test to check for problems with the carriage motor, encoder strip, and electronics module.
- Remove dirt from the slider rod and chassis beam. Apply oil (Anderol 4068, HP part number: 6040-0858) to the carriage bushings.
- At high temperatures, and if the fan is not working correctly, the internal resistance of the motor driver may increase, causing a decrease in the voltage between the motor contacts, and a shutdown of the motor.
- Ensure that the encoder strip is not inverted, damaged or absent.
- Reconnect or replace the trailing cable ➧ page 8-8.
- Replace the carriage assembly ➧ page 8-37.

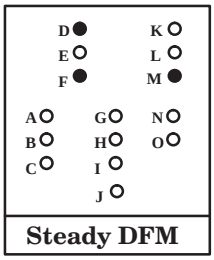


Steady DEM

Ready + Align Media + Media: Y-axis Movement Error.

Possible causes:

- Something is causing excessive friction in the Y-axis (carriage axis).
- The carriage touches the bail as it moves.

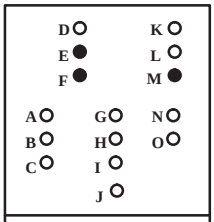


Steady DFM

Ready + Load Media + Media: Error in X-axis encoder quadrature.

Possible causes:

- Incorrect routing of the motor cables.
- Electrical noise in motors.
- Faulty motor encoder.
- Motor received an electrostatic discharge while operating.

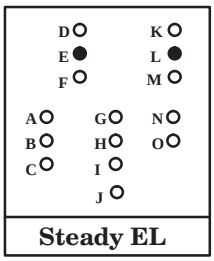


Steady EFM

Align Media + Load Media + Media: Error in Y-axis encoder quadrature.

Possible causes:

- Damaged or broken encoder strip.
- Faulty or badly connected trailing cable.
- Incorrect routing of the motor cables.
- Electrical noise in motors.
- Faulty motor encoder.
- Trailing Cable received an electrostatic discharge while the Printer was operating. Replace the Trailing Cable ➧ page 8-8.



Steady EL

Align Media + Data: Cartridge Alignment Error.

Possible causes:

- Faulty Cartridges.
- Dirty or incorrect media.
- Faulty Line Sensor.
- Faulty Carriage Assembly.
- Faulty Electronics Module.