Service Manual

HP Designjet 10000s Series Printers

invent

For HP Internal Use Only

First Edition, September 2006

Second Edition, March 2007

Warranty

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

Electrostatic Discharge

Refer to the beginning of Chapter 4of 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.

WARNING

The Warning symbol calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning symbol until the indicated conditions are fully understood and met.

CAUTION

The Caution symbol 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. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood and met.

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Service Manual

HP Designjet 10000s Series Printers

Using this Manual

Purpose

This Service Manual contains information necessary to test, calibrate and service:

- HP Designjet 10000s Series Printers (Model Q6693A).

For information about using these printers, refer to the corresponding User Guide.

Readership

The procedures described in this Service Manual are to be performed by HP Certified service personnel only.

Part Numbers

Part Numbers for Printer options, accessories and service parts are located in Chapter 7.

Conventions

A small arrow ⇒ is used to indicate other parts of the Service Manual where you can find information related to the topic you are consulting.

Safety Precautions

The following Warnings and Cautions are presented in this Service Manual and must be observed.

Follow the instructions marked with these symbols.

⚠ WARNING	Failure to follow the guidelines marked with this symbol could result in severe personal injury or death.
⚠ CAUTION	Failure to follow the guidelines marked with this symbol could result in minor personal injury or product and/or peripheral damage.

⚠ WARNING

	Inks used in the printer and liquids in the HP Cleaning and Maintenance kits contain an organic solvent (ethylene glycol monobutyl ether acetate, CAS No. 112-07-2). Observe all local, state, and federal regulations related to the handling, use, storage, and disposal of organic solvents.
	Avoid contact between ink and skin, eyes, and clothing. ■ Immediately wash skin with soapy water. ■ Remove clothing soaked with ink from contact with skin. ■ Use an approved eye wash station if ink is splashed into eyes and consult a doctor if necessary. ■ If an approved eye wash station is unavailable, flush eyes with cold water and consult a doctor if necessary.
	Be sure the printer is well-grounded. Failure to ground the printer may result in electrical shock, fire, and susceptibility to electromagnetic interference.
	Ink and fluids used in the Cleaning and Maintenance Kits are combustible. Do not use or store within 8 meters (25 feet) of open flames, sparks, or other sources of ignition.
	Switch power OFF, remove the power cords from the electric outlets and allow the printer to cool before attempting to remove any panels or covers. The printer contains high voltage and hot components. Removal of panels or covers may result in exposure to electric shock and burns.
	Do not allow metal or liquids (except those used in HP Cleaning and Maintenance Kits) to touch the internal parts of the printer. Doing so may cause fire, electric shock, or other serious hazards.
	When shutting down the entire system, always turn OFF the printer switch as well as the heater switch (breaker).
	Use only an HP Waste Ink Bottle. The bottle must be installed according to instructions or waste ink may overflow.
	An HP Waste Ink Bottle must always be installed before turning the printer ON. Automatic and manual service cycles produce waste ink that must be contained in an HP Waste Ink Bottle.
	Always use both hands to remove and carry an HP Waste Ink Bottle.
	Keep the HP Waste Ink Bottle upright. Do not place on tables or shelves where it could fall.

	Waste ink is combustible. Keep an HP Waste Ink Bottle containing waste ink away from open flames, sparks, or other sources of ignition.
	Never store waste ink in a glass container.
	Never pour waste ink into a container filled with other chemicals.
	The HP Waste Ink Bottle contains organic solvents and must be disposed of in compliance with all local, state, and federal regulations.
	Always securely replace the cap on a full or partially-full the HP Waste Ink Bottle after removing it from the printer to prevent ink spills.

⚠ CAUTION

	Treat any media, paper, used cleaning and maintenance supplies, and wipes soaked with ink as combustible materials. Handle and dispose of properly.
	Do not clean the printer with benzene or paint thinner. This may damage the paint.
	Wipe the printer clean with a soft cloth. A cloth moistened with a neutral detergent may be used. Do not allow liquid to enter the printer. This may create risk of fire and electrical shock and cause a malfunction.
	Never touch the printhead nozzles. They can be easily damaged or clogged.
	Do not touch heater surfaces in the paper path. This may cause burns. Take care when touching printer components near the heaters.
	HP Ink Cartridges must be installed before the “Install By” printed on the cartridge. Use of the Ink Cartridge 3 months beyond the “Install By” date may cause deterioration in print quality or a printer malfunction.
	Do not separate the cap from a new HP Waste Ink Bottle. The cap is needed to properly seal the HP Waste Ink Bottle for disposal.
	The level in the HP Waste Ink Bottle should be checked by visual inspection to prevent overflow. If the waste ink level is above the indication line, the bottle must be replaced with an empty HP Waste Ink Bottle.
	The use of safety glasses and gloves is recommended when performing cleaning and maintenance operations.

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Troubleshooting 7

Guide to Troubleshooting the Printer

Introduction

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

Troubleshooting System Error Codes

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

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

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error number.
- The System and History Prints.
- Which software application the customer is using (name, version, etc.).

Whenever an Error Message is displayed, you should try to switch the Printer Off and then On again to see if the error disappears. If the error disappears, there is no need to troubleshoot the Printer any further.

Performing a Service Test on a Failed 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 actual 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 see Chapter 4 - *Maintenance Mode*.

Performing the Necessary Service Calibrations or Adjustments

Is the printer calibrated or adjusted correctly after replacing a component? For information on the Service Calibrations and Adjustments and how to use them, see Chapter 5 - *Adjustments and Calibrations*.

Remember that certain Calibrations or Adjustments are required even if an Assembly has been disassembled to gain access to another Assembly or Component.

Solving Print Quality Problems

Whenever a Print Quality problem appears, it is advisable to print the Test Print to help diagnose the problem. The Test Print will help you differentiate between possible Printhead errors or mechanical problems. For information on solving Print Quality problems see Chapter 6 - *Print Quality*.

The Printer does not Power ON

1. Check that the power cord is connected correctly to the Printer and to the Power Socket.
2. Check that the Power Switch on the BACK of the Printer is in the ON position.
3. Replace the Power Supply Unit ⇒ Page *8-45*.

Cover Sensors are not Working

1. Perform the Sensors Test ⇒ Page *4-57*.
2. Check if the cable for the faulty sensor is not damaged and is connected correctly.
3. Replace the faulty Sensor.

The File Sent is Not Processed Immediately

1. Check that the USB Cable is connected correctly to the Computer and the Printer and that it is NOT damaged.
2. Check that the Data LED on the Front Panel is flashing. If it is flashing and nothing is printed, then maybe the file sent is corrupted or too big.
3. Make sure that the Printer is in the Online state when the file is sent. The file will be rejected if the file is sent when the Printer is in the Offline state.

Troubleshooting Media Jam Messages

There are three different messages that appear on the Front Panel if a media Jam occurs in the Printer:

- Warning (0) Clear Media Jam.
- Warning (1) Clear Media Jam.
- Warning (2) Clear Media Jam.

Warning (0) Clear Media Jam

Over-current has been detected in the use of the Paper-Axis Motor. Try the following:

1. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
2. Check the Tension Bar to make sure that it is not applying too much weight on the Media (check the User's Guide for information on the correct usage of the Tension Bars).
3. If sticky media is being used, then either use different media or use it with the Liner.
4. Clean the Drive Roller and make sure that there is no paper dust or other dirt trapped around the Drive Roller.
5. Check the tension of the Paper-Axis Belt and adjust it if necessary ⇒ Page *5-14*.
6. If this problem continues, replace the Paper-Axis Motor ⇒ Page *8-68*.

Warning (1) Clear Media Jam

Over-current has been detected in the use of the Scan-Axis Motor. Try the following:

1. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
2. Check the Ink Supply Tubes Rail to make sure that it is correctly positioned (if not correctly positioned, it could cause extra friction on the Carriage).
3. Check the tension of the Carriage Belt and adjust it if necessary.
4. Check the Encoder Strip to make sure that it is not dirty or damaged.
5. Check the Slider Rod to make sure that it not dirty.
6. Check the tension of the Scan-Axis Belt and adjust it if necessary ⇒ Page *5-12*.
7. If this problem continues, replace the Scan-Axis Motor ⇒ Page *8-72*.

Warning (2) Clear Media Jam

This problem could be caused by a firmware error. Try the following:

1. Switch the Printer OFF and ON again and check if the message still appears.

Media Jams Occur Frequently

1. Make sure that the paper type setting matches the type of paper loaded into the Printer.
2. Open the Rear Cover and check for any visible obstacles in the paper path. If there is a wrinkled mass of paper inside the paper path, lift the Pinchwheels (using the Media Lever) and clear the obstruction.
3. Make sure that the Vacuum Fans are working correctly.

Print Speed is Very Slow

1. Make sure that the Printer is being used at temperatures of 20ºC or higher otherwise the Highlight mode is activated which will reduce the print speed by up to 15%.

Print Stops After Each Pass

1. Make sure that the host PC and the Printer are correctly connected with a USB 2.0 Cable.

No Ink Message when there is Enough Ink

1. Make sure that the Ink Cartridge is installed correctly.
2. Check that the connector in the Ink Cartridge is NOT damaged.
3. Make sure that the Ink Cartridge Sensors are working correctly. Perform the Ink Sensor Test ⇒ Page *4-58*.

Abnormal Sound Coming from the Printer

1. One of the Motors in the Printer might be defective. Check that the Motors are working correctly ⇒ Page *4-78*.
2. Check that there are no foreign or loose objects inside the Printer.
3. Check the Carriage Base to make sure it is correctly installed.

Front Panel is Not Working

1. Make sure that the Front Panel Cable is connected correctly to the Front Panel and to the Main PCA.
2. Make sure that the Front Panel Cable is NOT damaged.
3. Replace the Front Panel ⇒ Page *8-25*.

Heater Panel is Not Working

1. Make sure that ALL Heater Panel Cables are connected correctly to the Heater Panel.
2. Make sure that the Heater Panel Cables are NOT damaged.
3. Replace the Heater Panel ⇒ Page *8-27*.

Solving Heater Problems

"Power ON Heater Power Switch" appears on Heater Panel

1. Check that the Heater Power Cable is connected and that the heater Power Switch is switched On.
2. Replace the Heater Relay Assembly ⇒ Page *8-52*.
3. Replace the Heater Panel ⇒ Page *8-27*.

Heater Does NOT become Hot

1. Try performing the Heater Test ⇒ Page *4-96*. If the Heater **does not** work during the test, try the following:
   - Make sure that the Cable between the Heater Panel and the Heater Relay Assembly is connected correctly and NOT damaged.
   - Make sure that the Heaters are connected correctly to the power voltage alternation switch.
   - Replace the Heater Relay Assembly ⇒ Page *8-52*.
   - Replace the Heater Panel ⇒ Page *8-27*.
2. If the Heater **does** work during the Heater test, try the following:
   - Make sure that ALL Heater Panel Cables are connected correctly to the Heater Panel.
   - Make sure that the Heater Panel Cables are NOT damaged.
   - Replace the Heater Panel ⇒ Page *8-27*.
   - Replace the Main PCA ⇒ Page *8-36*.

Abnormal Temperature is Displayed

1. Make sure that the Heater that is experiencing the abnormal temperature is installed correctly. Check that the Heater Cable is connected correctly.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Heater that is experiencing the abnormal temperature.

The Heater Temperature Becomes Extremely High

1. Make sure that the Heater that is experiencing the high temperature is installed correctly. Check that the Heater Cable is connected correctly.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Heater Relay Assembly ⇒ Page *8-52*.

"Initializing" Continuously Appears on the Heater Panel

1. Make sure that the Cable between the Heater Panel and the Main PCA is connected correctly and NOT damaged.
2. Replace the Heater Panel ⇒ Page *8-27*.
3. Replace the Main PCA ⇒ Page *8-36*.

"Power Save Mode" Continuously Appears on the Heater Panel

1 Make sure that the Cable between the Heater Panel and the Power Supply Unit is connected correctly and NOT damaged.

2 Replace the Heater Panel ⇒ Page *8-27*.

3 Replace the Power Supply Unit ⇒ Page *8-45*.

4 Replace the Main PCA ⇒ Page *8-36*.

Special Power On Procedure

When turning On the Printer, the Printer will follow the internal initialization process, turning on the different systems and making the necessary system checks. In order to troubleshoot the Printer the following Power On options are available:

1 Press the **Cancel** key and Power On button - This will allow you to skip the system check of the Printer.

2 Press the **Cancel** and **Shift** keys and Power On button - This will allow you to skip the error recovery check of the Printer. You will be given the option to enter the Maintenance Mode in order to troubleshoot the Printer by entering a password: ◀, ▶, **Shift** and **OK**.

- This option is useful if you want to perform the following:
  - Ink purging without installing media. In a normal power On situation, the Printer cannot function without the media loaded.
  - Recovery of a damaged NVRAM. By powering in the special power On situation, the NVRAM can be recovered by entering the Maintenance Mode and by performing the necessary steps to recover the NVRAM.

Problems with Media End/Slack and TUR Sensors

If you see the following behavior when operating the Printer, it could be due to the incorrect installation of the Media End/Slack and TUR Sensors:

1 On the Media Load side:
- During media loading, when the Printer performs the slack check, the printer continues to ask you to check the Slack.
- If during media load, the media slack was too high, then at the end of the media loading process, the Printer will display "End of Media" on the Front Panel.

2 On the TUR side:
- The Take-Up-Reel will not rotate.

In all these situations, you should double check that the Sensors have been installed and connected correctly ⇒ Page *8-220*.

Both NVRAM and Main PCA are Replaced Together

When both the NVRAM and the Main PCA are replaced at the same time, mechanical correction value parameters, counters, calibrations, etc. are lost. Whenever possible, this most be prevented by just replacing either the NVRAM or the Main PCA. If for whatever reason, both the NVRAM and the Main PCA are replaced together, you need to perform the following:

1. Make sure that the NVRAM and the Main PCA have been installed correctly.
2. Press the **Cancel** key and Power On button in order to skip the system check.
3. Enter into the Maintenance Mode ⇒ Page *4-7*.
4. Press the **Shift** key once and then the ◀ key to enter in to the Setup menu.
5. In the Setup submenu, scroll to "NVRAM Init" and press the **OK** key.

```
# NVRAM INIT
>
```

6. You will need to confirm that you want to initialize the NVRAM by pressing the **OK** key.

```
# NVRAM INIT
* OK?
```

7. In the Setup submenu, scroll to "Language" and press the **OK** key.

```
# LANGUAGE
> ENGLISH
```

8. In the Language submenu, select "English" or "Japanese" and press the **OK** key.

```
# LANGUAGE
* ENGLISH
```

9. Power Off the Printer.
10. Press the **Cancel** and **Shift** keys and Power On button in order to skip the error recovery check of the Printer.
11. Perform the Line Sensor Test (⇒ Page *4-57*) to register the platen's maximum value read by the Line Sensor to the NVRAM automatically.
12. Power Off the Printer, wait a few seconds and power On the Printer again.
13. You will need to check, and if necessary perform the following:
    - Wiping Position Calibration ⇒ Page *5-58*.
    - Capping Position Calibration (the Cap Position Value must **not** be set to 0.0 mm in order for the Capping to work correctly) ⇒ Page *5-60*.
    - Printhead Voltage ⇒ Page *4-23*.
    - Printhead Row Value ⇒ Page *4-20*.
    - Printhead to Printhead Value ⇒ Page *4-21*.
    - Bidirection Definitions ⇒ Page *4-22*.

- Media Advance Print ⇒ Page *4-11*.
- Side Margin Position Calibration ⇒ Page *5-62*.
- Top Margin Position Calibration ⇒ Page *5-64*.

14 In the Printhead Maintenance submenu, scroll to "Ink Charge Done" and press the **OK** key.

```
# INK CHARGE DONE
> NO
```

15 In the Ink Charge Done submenu, select "Yes" to indicate that ink charge has been completed and then press the **OK** key.

```
# INK CHARGE DONE
* YES
```

16 In the Setup submenu, scroll to "Save Calibs" and press the **OK** key.

```
# SAVE CALIBS
>
```

17 You will need to confirm that you want to save the NVRAM Calibrations by pressing the **OK** key.

```
# SAVE CALIBS
* OK?
```

18 In the Setup submenu, scroll to "Save NVRAM" and press the **OK** key.

```
# SAVE NVRAM
>
```

19 You will need to confirm that you want to save the NVRAM contents by pressing the **OK** key.

```
# SAVE NVRAM
* OK?
```

20 Power Off the Printer, wait a few seconds and power On the Printer again.

Solving Media Skew and Differential Banding Problems

The following information is not intended to be an exhaustive description of the media loading process, but a list of the critical parts of the loading process in order to avoid the following problems:

- Media skew: when the media shifts from right to left or vice versa. This is mainly visible when the vertical section of the media on the input side is 'bending and flexing', or when the media rolls incorrectly onto the Take-Up Reel.
- Differential banding: when the banding is different from the right side to the left side through the carriage movement.

1 Ensure that the roll of media is correctly loaded onto the Take-Up Reel and the Main Scroller. This can be verified with the customer over the phone.

See the loading-guide table below for recommended settings to assist when printing in the following methods:

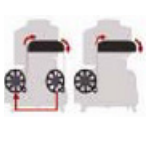
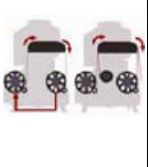
- Single-sided printing
- Dual-sided printing
  - Front side
  - Back side (with liner)
  - Back side (without liner)

HP does NOT recommend back-side printing without the liner.

- Dual roll printing
- Mesh printing

For a more in-depth description of the media-loading process, please refer to the User's Guide.

Loading-guide Table

	Single-side	Dual-side			Dual-roll	Mesh
		Front side (no liner)	Back side (without liner)	Back side (with liner)		
Suggested media path						
Front Panel mode	MAIN	FRONT	BACKm	BACKm	DUAL	BACKm
Main scroll Tension Bar	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)	Use two tension bars (one for each slack)	Depends on media (see media table)

	Loading-guide Table					
	Single-side	**Dual-side**			**Dual-roll**	**Mesh**
		Front side (no liner)	Back side (without liner)	Back side (with liner)		
Sub scroll	Not used	Not used	Not used	Not used	Not used	Not used
Take-up setting	Used to roll the media (optional), depends on media (see media table)	Used to roll the media (optional), depends on media (see media table)	Used to roll the media (not recommend-ed)	Used to roll the liner. Media Width Bar/Small Flanges/2xO-rings	Used to roll the media (optional), depends on media (see User's Guide Chapter 3)	Used to roll the liner. Media Width Bar/Small Flanges/2xO-rings
Media Pressure Lever	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)	Depends on media (see media table)
Carriage height	Low if the media is thinner than 0.5mm	Low if the media is thinner than 0.5mm	Low if the media is thinner than 0.5mm	High	Low if the media is thinner than 0.5mm	High
Extra parts needed	None	None	None	Special edge guard hook, Wiper side edge guard, Cap side edge guard, attachment magnets (3)	Flange spacer (2), Flange joint, Media edge guards (2)	Special edge guard hook, Wiper side edge guard, Cap side edge guard, attachment magnets (3)
Vacuum setting	High	High	High	High	High	High

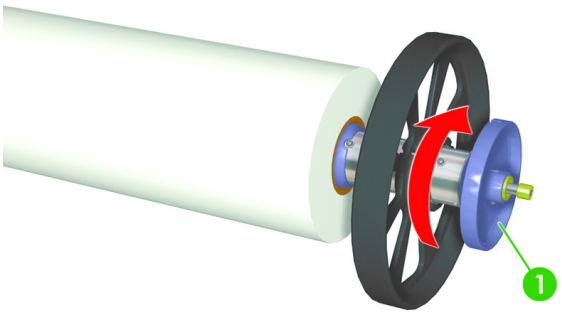
Printing method		**Comments**
Single-side		None
Dual-side	Front side (no liner)	Two lines at the end of each plot will be printed.
	Back side (no liner)	Rotate the image in the RIP before sending it. For alternative dual-side methods, see Chapter 4 of the User's Guide.
	Back side (with liner)	Rotate the image in the RIP by 180 degrees before sending it. Set the **DETECT WIDTH** setting to **NONE**. Use the Separator bar. For alternative dual-side methods, see Chapter 4 of the User's Guide.
Dual-roll		The maximum-media roll width is 50". Use identical media rolls (type and width). The wound diameter on each roll must be the same. Only print on the outside of the media rolls. For alternative dual-roll methods, see Chapter 3 of the User's Guide.
Mesh		Set the **DETECT WIDTH** setting to **NONE**. Use the Separator bar.

Media Table			
Media	**Main scroll Tension Bar (*)**	**Take-up Setting**	**Media Pressure Lever**
Banner	1/2 media width	Media Width Bar / Small Flanges / 2xO-rings	Down (Normal)
PVC (S/A Vinyl)	Shortest (16in)	Tension Bar not used / Big Flanges	Down (Normal)
Textile	1/2 media width	1/2 Media Width Bar / Small Flanges / 2xO-rings	Up (Low)
Premium backlit film	Shortest (16in)	Tension Bar not used / Big Flanges	Down (Normal)
Canvas	1/2 media width	Media Width Bar / Small Flanges / 2xO-rings	Down (Normal)
Universal photo realistic	Shortest (16in)	Tension Bar not used / Big Flanges	Down (Normal)

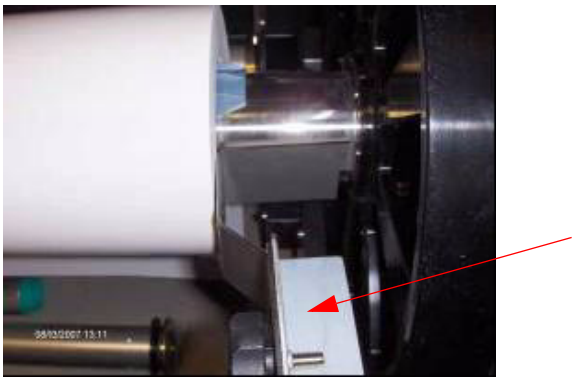
(*) For sticky media, consider the following points:

- Use a longer Tension Bar (up to 90% of the media width).
- Make the Tension Bar heavier by adding media. The maximum allowable Tension Bar weight is 3Kg.

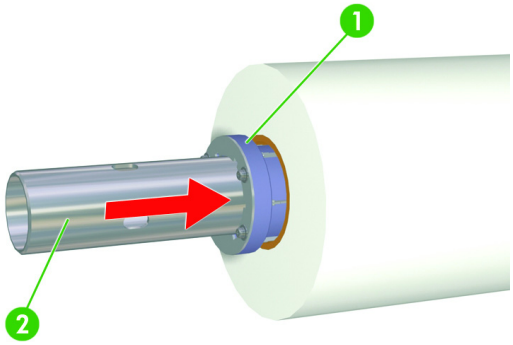
a Ensure that the core of the media is correctly fixed onto the Main Scroller. To lock the media roll to the main scroller, turn the hand-wheel (1) of the main scroller clockwise until it reaches the stop. This must also be done for the Take-Up Reel if it is used.



Use the Media Positioning Tool shown in the picture below to leave additional space between the media roll and the drive wheel. This will help to position the flange on the TUR side.

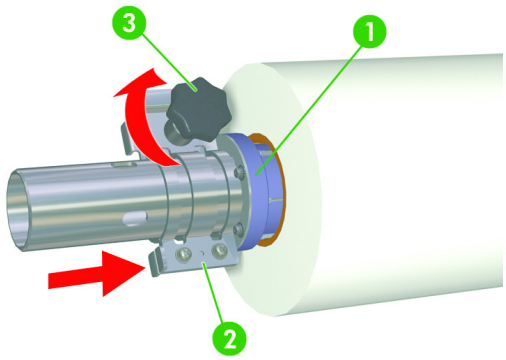


b Ensure that the toothed flange spacer (1) is correctly inserted on the left side of the roll on the Main Scroller (2). This must also be done for the Take-Up Reel if it is used.



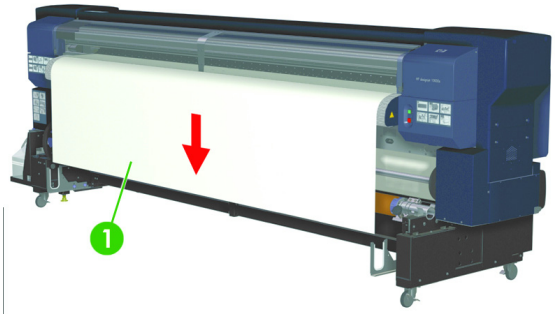
If the toothed flange spacer is not inserted correctly, the core of the media will not rotate in a circular motion, but will rotate in an elliptical motion, which will result in media skew.

c Ensure that the locking knob (3) is fully tightened on the flange stopper (2) to lock it to the flange spacer (1) and the main scroller. This must also be done on the Take-Up Reel if it is used.

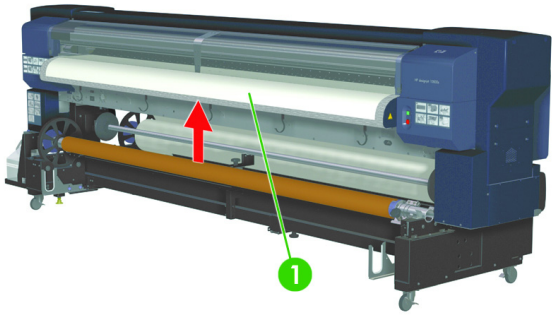


2 During the loading process of the media, ensure that the media is correctly wound into the roll.

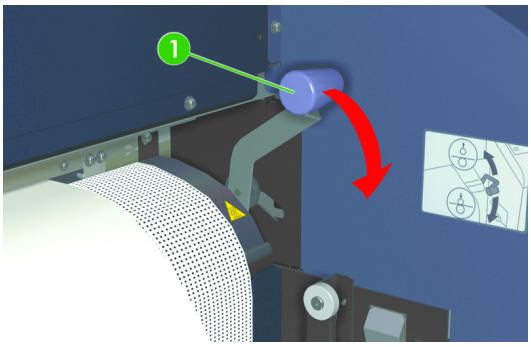
a Use the black media advance switch at the front of the printer to feed the media through the media feeder until it almost reaches the floor. Do not close the Media Lever yet.



b Use the white rewind switch at the front of the printer to rewind the media (1) until it is just protruding from the rear cover.

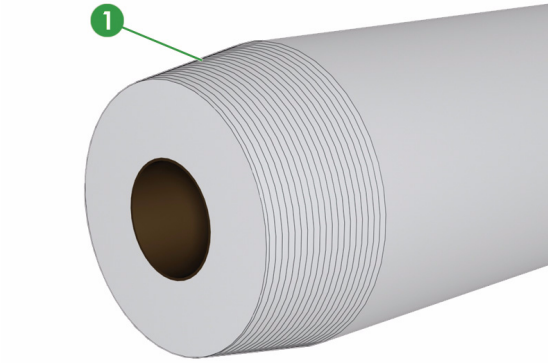


c Lower the Media Lever and follow the instruction from the Front Panel.

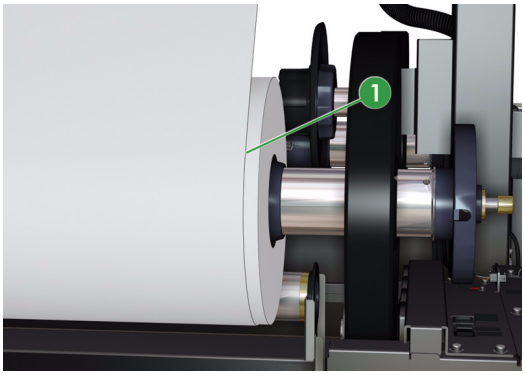


3 Ensure that the media is tightly rewound onto the roll.

If the media (1) is not correctly rewound onto the roll as explained in step 2b, do not use the roll. The probability of skew will be very high if you choose to continue. You can repeat steps 2a - 2c to get the roll to load straight and parallel with the ends of the cardboard core.

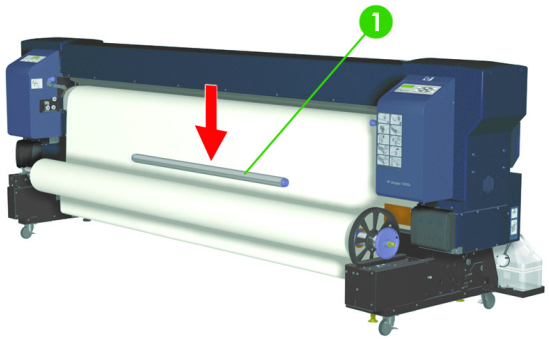


After rewinding the media, verify that the media is correctly rewound onto the Main Scroller. If the edge of the core of the media (1) is not straight, as shown in the picture, this will generate skew.



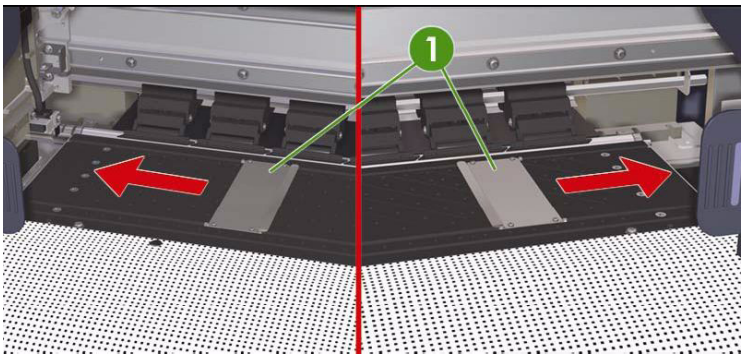
4 Ensure that the correct length of tension bar is being used in the slack area of the media.

The tension bar must be half the width of the media. If the tension bar is too big or too small it can create skew. Make sure the tension bar (1) is positioned in the center of the slack area of the media or the media may not feed smoothly.



When using PVC (Vinyl), it is recommended that you use a short tension bar (16”, 40cm).

5 Ensure that the Edge Guards (1) are correctly installed.

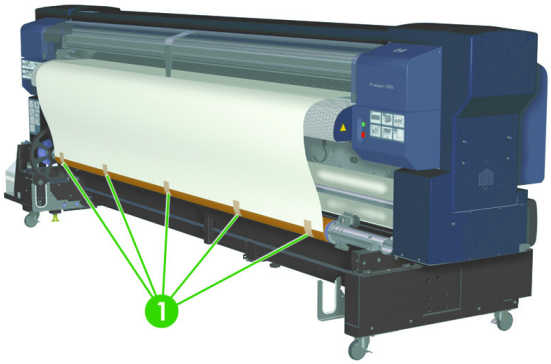


6 When using the Take-Up Reel, ensure that the correct process is being performed.

a When taping the media onto the Take-Up Reel, take the following points into consideration:

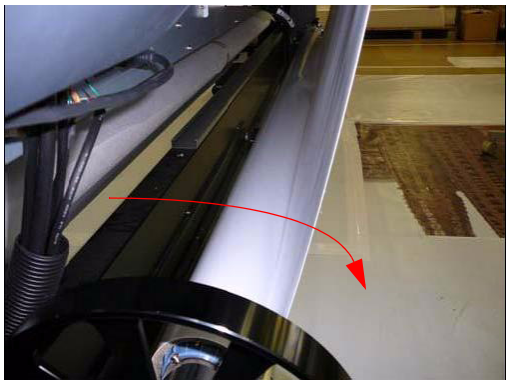
- Ensure that the media is advanced towards the empty core by using the feed entry from the Front Panel (the Media Load Lever should be closed. The media must remain fully loaded).
- Ensure that the media is straight.
- Ensure that you first tape the middle of the media to the core, and then tape from the inside, until you reach the outside edges of the media.
- Do not create any additional tension on the media when you are taping.

Carefully apply the tape to the media and core.

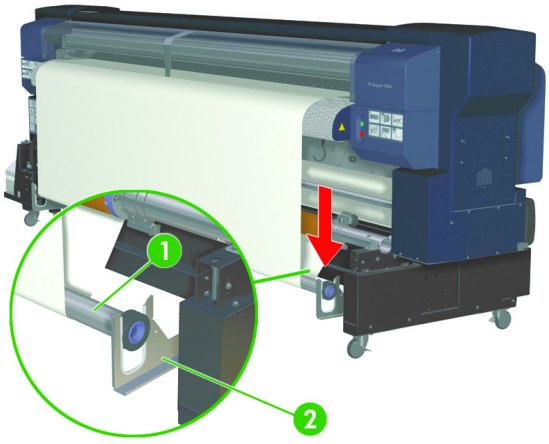


b Use the Front Panel Feed Menu to feed more media.

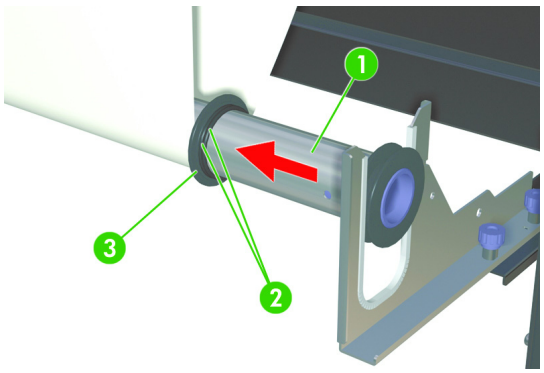
c Manually turn the Take-Up Reel a few times. This is not mentioned in the user's guide, but should be noted. This is done to ensure that no lengths of tape fall off, which could create skew.



d Ensure that the correct flanges are used for the loaded media. For most media (with the exception of film), the small flanges can be used. Using the big flanges on some media can cause skew. The tension bar (1) should be placed on the tension bar guides (2).

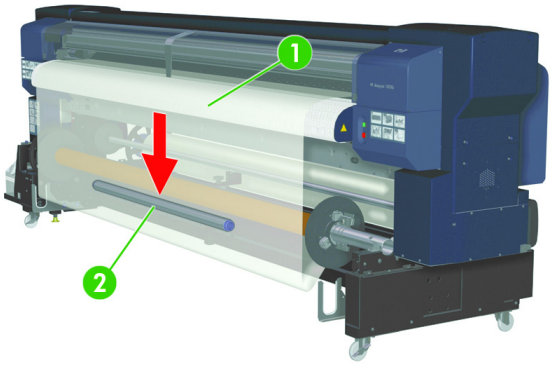


e Use the O-rings (2) to maintain the flanges on the Take-Up Reel.



f When using PVC media (1), taking the following points into consideration will help to reduce skew:

- Use the large, black Media Tube Flanges on the Take-Up Reel.
- Do not put the tension bar on the tension-bar guides.
- Use the tension bar without flanges (2) or try removing it to see if it reduces the skew.
- Adjust the length of the tension bar to approximately half the width of the media, and then position it in the slack area as shown below.



When using PVC (Vinyl), it is recommended that you use a short tension bar (16”, 40cm).

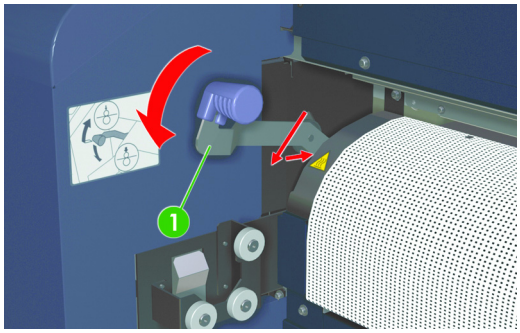
7 Use the dryer to dry the media before it is wound onto the Take-Up Reel.

Images printed with a lot of ink take longer to dry and can cause the Take-Up Reel core to stick, putting unwanted tension on the media. Using the dryer will help to keep the printed media from sticking to the core and will help to reduce skew.

8 Verify the position of the Media-Pressure Lever.

Verify the position of the Media-Pressure Lever on the right side of the printer. By default it should be in the lowered position, which adds pressure to the media. However, for certain media, such as textile media, the Media-Pressure Lever should be set at the raised position, which reduces pressure

on the media.



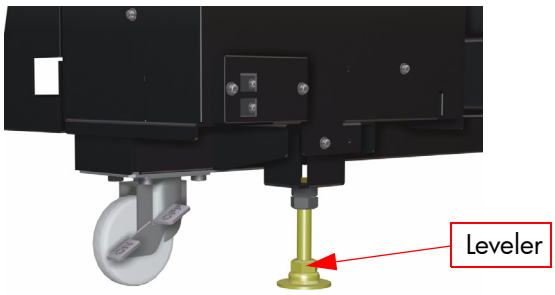
The table below shows recommended settings for the Tension Bar, Flanges, and the Media-Pressure Lever for a variety of HP media which have been tested and proven to provide the best image-quality results. Consult the table to choose a setting for a media similar to those listed when using third-party media.

	Main scroll Tension Bar	TUR Tension Bar	Take-up Flanges	Media Pressure Level
Premium scrim Banner	Half media width	Media width Bar	Small flanges 2x O-rings	Down (Normal)
Universal scrim Banner	Half media width	Media width Bar	Small flanges 2x O-rings	Down (Normal)
Premium self adhesive vinyl	Shortest (16 inches)	Not used	Big flanges	Down (Normal)
Textile (without backing)	Half media width	Media width Bar	Small flanges 2x O-rings	Up (Low)
Canvas	Half media width	Media width Bar	Small flanges 2x O-rings	Down (Normal)
Universal photo realistic	Shortest (16 inches)	Not used	Big flanges	Down (Normal)
Premium Backlit Film	Shortest (16 inches)	Not used	Big flanges	Down (Normal)

9 Verify the positions of the levelers.

Ensure that the levelers are correctly adjusted and touching the ground. There are 2 levelers per unit: one under the Main Scroller unit and one

under the Take-Up Reel.



10 Changing the Fan-Vacuum Level might help.

From the Front Panel select **Media-Reg**, select **Vacuum Fan**, and then select **Low**, **Middle**, or **High**.

If the previous section does not solve the skewing

To know if the Take-Up Reel is generating skew, try printing without the Take-Up Reel. If there is no skew, focus must be placed on how to set-up media on the Take-Up Reel.

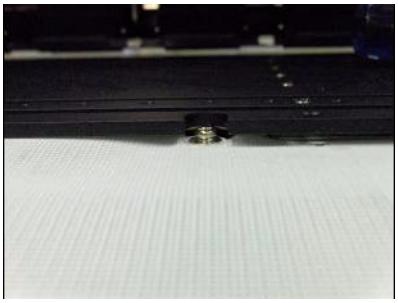
If the case can not be solved through the phone call, the following must be performed by an 'On site customer engineer'.

1 First verify that the customer is correctly following all of the necessary steps for loading media (refer the customer to the User's Guide and the advice presented in this section).

2 Ensure that the rear heater is correctly installed.

Ensure that the screws that are used to secure the heater to the printer are correctly inserted, and ensure that the heater border is correctly inserted into

the slot.



Incorrect installation

Correct insertion of the heater into the support slot

3 Perform the Media Feed and Take-Up-Reel Unit Adjustment ⇒ Page *5-30*.

Improving Image Quality when Frequently Printing Long Prints

Customers who frequently print long prints (more than 10m/33ft) need to configure some specific printer settings to keep the printheads in good condition and avoid image-quality issues.

Normal Printer Operation

Low-solvent printheads require frequent maintenance and servicing to keep the nozzles from becoming clogged. Therefore, in addition to the customer's required daily maintenance tasks, the printer performs automatic, periodic servicing between prints.

During the automatic servicing, the printer performs the following services:

- Primes the printheads to unblock any temporarily blocked nozzles.
- Wipes the nozzle plate to remove any residual solvent ink that may have accumulated around the nozzles to reduce the chances of nozzle blockage with additional usage.
- Opens the capping units to remove any ink accumulation inside the caps.

These processes are necessary to ensure the correct functioning of the printhead, which affects the image quality of the printed image.

When printing an average job, automatic servicing is done between prints. After a predetermined length of media has been printed, the printer performs the automatic servicing procedure. The amount of media that is printed on before the servicing is triggered depends on which print mode is selected:

Print Mode Selected (Bidirectional)	Amount of media printed before printhead servicing is performed
Draft (2 passes)	18m/60ft
Normal (4 passes)	9m/30ft
High Quality (8 passes)	4.5m/15ft
High Quality 200% (16 passes)	2.25m/7.4ft

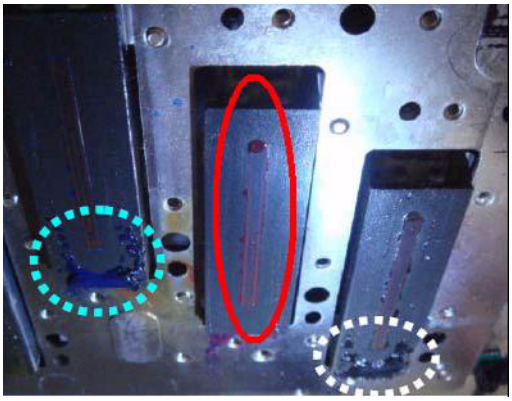
Long prints (more than 10m/33ft) operation

Canceling the automatic servicing is not recommended. Over time, doing so will negatively impact printhead performance and image quality.

As the nozzle plate accumulates ink from the tails of the drops of solvent ink, and the accumulation of ink in the capping units, image quality starts to deteriorate.

The accumulation of ink on the nozzle plate creates "nozzle-outs" that can

result in banding on vinyl material, and color deviation on textiles.



Dirty nozzle plate due to lack of regular servicing

This problem can be resolved by stopping the printer and allowing it to perform minimal printer maintenance.

Longer-term side effects can occur when frequently printing long plots. For more details on long-term side effects, see Page *1-26*.

How to correctly print frequent jobs of length longer than 10m/33ft

There are three different scenarios to consider:

1. The customer is printing individual jobs nested as one file. Printing in this manner is not recommended because it puts unnecessary stress on the printhead. The benefits of printing in this manner are likely to be offset by the need re-print all or some parts of the printout.
2. The customer is printing large tiles. When printing large tiles, ensure that the "Send tiles as independent job" setting is selected in the RIP. If it is not selected, the RIP will send the tile as one job, which will not allow the printer to perform servicing between the tiles.
3. The customer is printing single jobs that are longer than 10m/33 ft. When printing jobs of this size, the printer requires resting periods, during which it performs printhead servicing.

   As a guideline, the default resting period is 10 seconds for every 10 meters of printed media. The length of printed media per rest can be shortened or lengthened based on the amount of ink applied during printing.

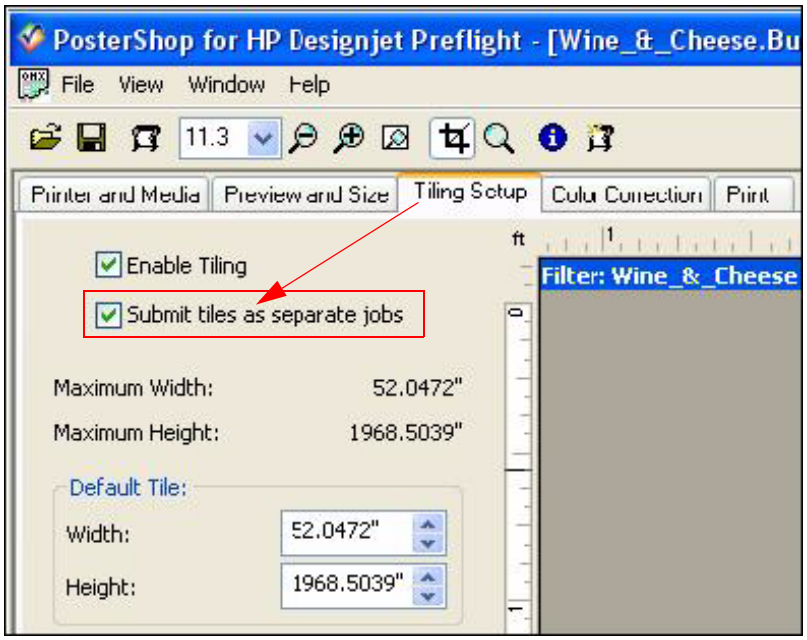
   For more information on defining periodic printhead resting periods, see Page *1-24*. Be aware that printhead resting periods can result in unwanted side effects such as banding. For more information on banding under these circumstances, see Page *1-25*.

   With any of these three printing scenarios, there are other factors to consider to ensure correct printhead functionality:

   - Ensure that the environmental temperature is above 20°C/69°F.
   - Ensure that the color stripe is set to ON.

- Ensure that the Central Platen Heater temperature is below 40°C/104°F.
- Ensure that the arrow on the Fan Guard Lever is aligned with the edge of the media, to avoid excessive hot air blowing on to the nozzle plate.

Select the "Send tiles as independent job" setting in the Postershop RIP



Define a periodic printhead resting period

The printer has the following two settings:

1 **#PH REST PERIOD**: The setting defines how many print cycles are made before the printer rests. One cycle equals one pass.

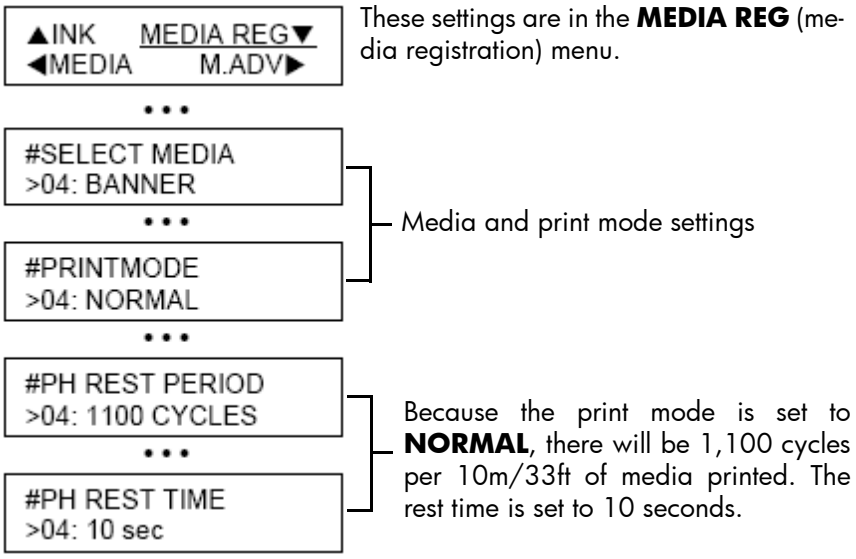
The recommendation is to allow the printer to rest every 10m/33 ft, but the length must be converted into cycles based on the print mode.

Printmode	DRAFT	FINE DRAFT FAST NORMAL	H-QUALITY H-DENSITY	H-QUALITY2 H-DENSITY2
Number of passes	2 passes	4 passes	8 passes	16 passes
Number of cycles for 10/ m33ft	550 cycles	1,100 cycles	2,200 cycles	4,400 cycles

2 **#PH REST TIME**: This setting defines the amount of time (in seconds) that the printer rests during each resting period.

Here is an example to illustrate the correct settings based on the recommendations in the table above. Imagine that the customer is going to print a job which will consist of 5 tiles, each 20m in length, on HP Premium Scrim Banner medium

(Q8678A), with the print mode set to **Normal** (4 passes).

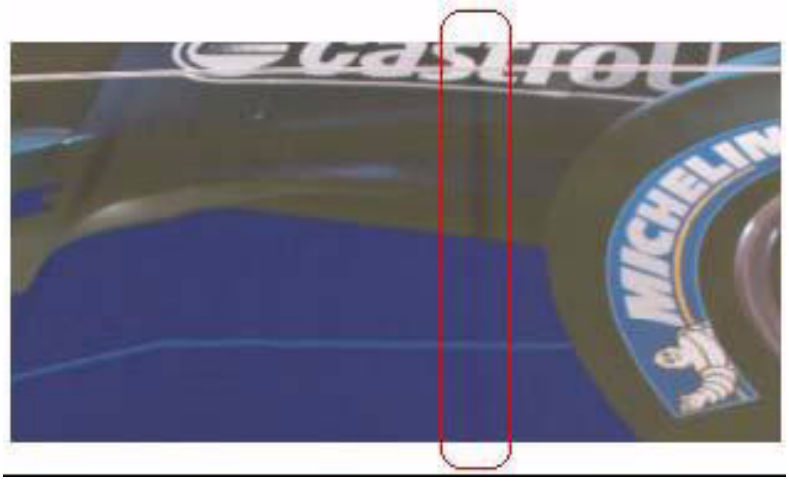


Banding while stopping

The previous recommendations will ensure the health of the printhead and image quality, allowing results like that shown below.

However, side effects may occur when using the aforementioned settings. The image below illustrates banding that can occur during the printer resting

periods.



This type of banding is not usually visible when viewed from a distance.

Depending on the media type and the printed image, the customer might experience a slight color change in the image (banding) where the printhead was positioned during the printer resting period. The banding is most likely to occur when printing dark images on textiles.

Banding can be reduced by testing different rest times, but the main factor is the type of media being printed on. Banding does not occur, for example, when printing on HP Self-Adhesive Vinyl.

Possible long-term side effects

Failure to follow the printhead maintenance recommendations will result in image-quality issues; the most significant and immediate of which being banding or color shift in the middle of a print. However, long-term failure to follow the maintenance recommendations will result in printhead damage.

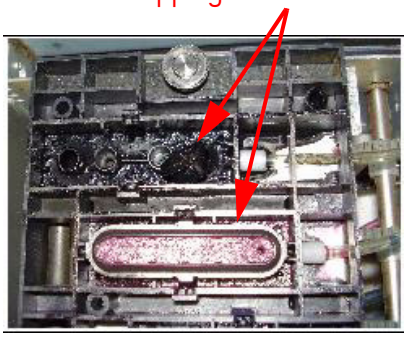
To maintain the health of the nozzles, the printhead spits into the capping units after every other pass. The ink accumulates in the capping units until printhead servicing, at which time they are emptied.

If printhead servicing is not done during the printing of long prints, two unwanted scenarios can occur.

1 The Printhead Nozzle Plate can come in contact with the ink while printing,

resulting in nozzle blockage.

2 The ink in the capping units can overflow. When this occurs, the ink seeps below the capping units where it dries and accumulates. Under these circumstances the printer is not able to adequately perform the capping and priming procedures. Over time, the nozzles become blocked.



To verify that the capping units are working correctly, follow these steps:

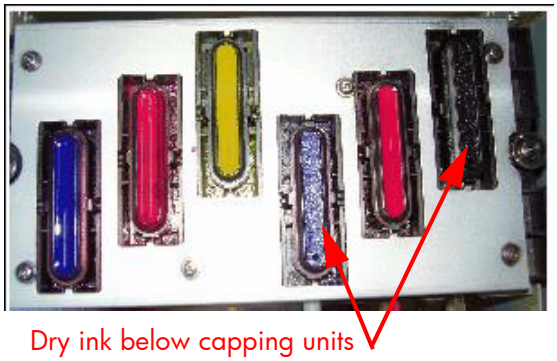
1 Perform the **PH WASH** procedure.

2 Turn the printer off by using the hard ON/OFF switch at the front of the printer, below the front heater.

3 Remove the covers to access the capping station.

4 Manually lower the capping station.

5 The capping units should not be empty. If any of the capping units are empty, they are not functioning correctly.



If the capping units are not functioning correctly, the entire capping station must be replaced. Adequate maintenance practices are the best way to assure maximum printhead life and image quality.

System Error Codes 2

System Error Codes

Introduction

The following pages contain a list of error codes and their respective descriptions and recommended corrective actions. Only try one recommended action at a time and check if the error code has disappeared.

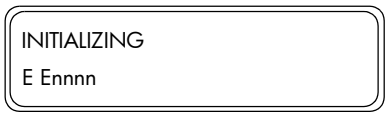
If you have an error code which is not documented in this Service Manual or you have an error which you cannot resolve, then report the error to the HP Response Center or the nearest HP Support Office. When reporting the error, have the following information ready:

- Model and Serial Number of the printer.
- Which firmware revision the printer is using.
- The complete error number.
- The Service Configuration Print.
- The Current configuration sheet.
- Which software application the customer is using (name, version, etc.).

Whenever an Error Message is displayed, you should try to switch the Printer Off and then On again to see if the error disappears. If the error disappears, there is no need to troubleshoot the Printer any further.

Self-Diagnostic Errors at Power On

When the Printer is powered up, it performs the Boot-Up sequence which initializes the major components of the Printer. If for some reason the Boot-Up sequence fails because a component has failed to initialize, an error code will appear on the Front Panel.



The Boot-Up error codes are hexa-decimal based numbers and correspond to bits which are explained in the following table:

Bit	Error Code (nnnn)	Diagnosis
0	0001	Internal RAM
1	0002	SRAM
2	0004	Flash ROM
3	0008	PIO
4	0010	NVRAM
5	0020	FPGA (Main PCA)
6	0040	FPGA (Carriage PCA)
7	0080	ASIC CONF (Main PCA)
8	0100	ASIC CONF (Carriage PCA)
9	0200	DRAM
10	0400	USB Register
11	0800	Power Supply
13	2000	Add-ON (HEB2) Control PCA
14	4000	Cap Position Adjustment Value
15	-	Reserved

When multiple errors occur during the Boot-Up sequence, the error codes are added together and only one hexa-decimal figure is displayed on the Front Panel. For example, if the **NVRAM** and the **Power Supply** fail during the Boot-Up sequence, the error code E0810 will be displayed.

NVRAM (0010) + Power Supply (0800) = 0810

Each error code and it's appropriate corrective actions are explained on the following pages.

Boot-Up Error: Internal RAM (**0001**)

Problem Description: The read/write of the RAM on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: SRAM (**0002**)

Problem Description: The read/write of the SRAM on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Flash ROM (**0004**)

Problem Description: The program area in the Flash ROM is sum-checked, and it could not be read, causing an error.

Corrective Action: Try the following:

- Reinstall the Firmware (Printer and Boot Firmware).
- If the Error continues, replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: PIO (**0008**)

Problem Description: The read/write of a specific Parallel I/O (PIO) was tested and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: NVRAM (**0010**)

Problem Description: Problems with the NVRAM detected.

Corrective Action: Try the following:

- If multiple errors have occurred that include the NVRAM error, try to resolve the other errors first. After resolving the other errors (except NVRAM), switch the Printer Off.
- Switch the Printer On again and only the NVRAM error recovery will be performed.
- If System Error Code 11Ax appears when the Printer is turned On, then refer to Page *2-11*.
- Replace NVRAM ⇒ Page *8-41*.
- Replace Main PCA ⇒ Page *8-36*.

Boot-Up Error: FPGA (Main PCA) (**0020**)

Problem Description: The read/write of the FPGA-ATG (Band Memory) and FPGA-RSM (Mask Memory) registers on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: FPGA (Carriage PCA) (**0040**)

Problem Description: The read/write of the FPGA-PTC (Print Timing Controller) and FPGA-PDD (Print Data Distributor) registers on the Carriage PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Carriage PCA ⇒ Page *8-97*.
- Make sure that the Carriage Cable is correctly connected.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: ASIC CONF (Main PCA) (**0080**)

Problem Description: The program load from the Flash ROM on the Main PCA to the FPGA on the Main PCA or sum-check was not performed correctly and an error occurred.

Corrective Action: Try the following:

- Reload the ASIC program from the IC Card.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: ASIC CONF (Carriage PCA) (**0100**)

Problem Description: The program load from the Flash ROM on the Main PCA to the ASIC on the Carriage PCA or sum-check was not performed correctly and an error occurred.

Corrective Action: Try the following:

- Reload the ASIC program from the IC Card.
- Make sure that the Carriage Cable is correctly connected.
- Replace the Carriage PCA ⇒ Page *8-97*.
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: DRAM (**0200**)

Problem Description: The read/write of the image band memory on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: USB Register (**0400**)

Problem Description: The read/write of the USB controller on the Main PCA was diagnosed and an error was detected.

Corrective Action: Try the following:

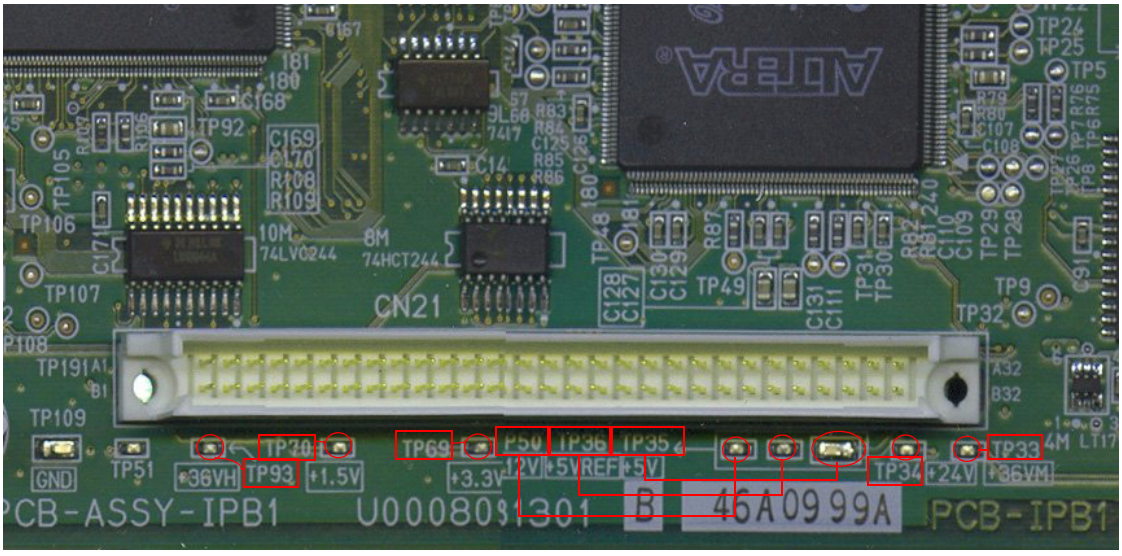
- Replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Power Supply (+36V, +24V, +12V) (**0800**)

Problem Description: The power supplies of +36, +24 and +12 V were diagnosed and could not be detected.

Corrective Action: Try the following:

- Open the Electronics Cover and check LED 11 and LED 13.
- If both LED 11 and LED 13 are OFF, then try the following:
  - Check the Interlock Switches to make sure they are installed/connected correctly. Make sure that the Rear Cover lips (that activate the Interlock Switches) are not bent and that the Rear Cover is closed correctly.
  - If the Interlock Switches are installed and connected correctly, then replace the Main PCA ⇒ Page *8-36*.
- If both LED 11 and LED 13 are ON, then try the following:
  - Check whether the correct voltages are supplied from the power source (refer to the table below). If the correct voltages are not supplied, then replace the Power Supply Unit ⇒ Page *8-45*.
  - It is possible that this error occurred because of a faulty Main PCA. Replace the Main PCA ⇒ Page *8-36*.
  - Check whether the motors have been short-circuited by testing +24 V. If +24 V is not supplied then replace both Scan-Axis/Paper-Axis Motors. If error continues, replace the Main PCA ⇒ Page *8-36*.



Power Line	Measuring Position (on the Main PCA)	Normal Value
+1.5 V	TP70	+1.45 V to +1.55 V
+3.3 V	TP69	+3.20 V to +3.40 V
+5 V REF	TP36	+4.90 V to +5.10 V
5 V	TP35	+4.75 V to +5.25 V
+12 V	TP50	+11.00 V to +13.00 V
+24 V	TP34	+23.00 V to +25.00 V
+36 V	TP93, TP33	+35.00 V to +37.00 V

Boot-Up Error: Add-On (HEB2) Control PCA (**2000**)

Problem Description: Problems with the Add-On (HEB2) Control PCA detected.

Corrective Action: Try the following:

- Make sure the HEB2 Board Interface Cable is connected correctly and is not damaged
- Replace the Add-On (HEB2) Control PCA ⇒ Page *8-45*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

Boot-Up Error: Cap Position Adjustment Value (**4000**)

Problem Description: This error appears when the Cap Position Adjustment Value is set to zero.

Corrective Action: Try the following:

- To clear this error:
  - Turn the Printer ON in error skip mode by holding down the **Cancel** and **Shift** keys and pressing the ON button.
  - Enter the Password to enter the Maintenance Mode menu: ◀, ▶, **Shift** and **OK**.
  - Set the correct Cap Position value (so that it is not set at 0.0 mm) ⇒ Page *4-13*.

System Error Codes

A System Error Code appears on the Front Panel when a component of the Printer has failed during normal usage. Each System Error Code and it's appropriate corrective actions are explained on the following pages.

System Error: System Error 1110: GA_ATG Block Clear Error

Problem Description: The ATG band memory block erase does not end. This error is checked during Boot-Up sequence and printing.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1111: GA_ATG DMA Transfer Error

Problem Description: There is a problem with the USB communication. This error is checked during printing.

Corrective Action: Try the following:

- Turn off the printer, and then turn it on again.
- Make sure that the host PC and the Printer are correctly connected with a USB 2.0 Cable.
- If the error occurs frequently, the problem might be that the RIP is hanging. Make sure the RIP is functioning correctly.
- Make sure that the printer is running the latest firmware.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 112x: Vacuum Fan Error

Problem Description:

- x = 0: The Vacuum Fan (Wiping Side) has failed.
- x = 1: The Vacuum Fan (2nd Fan from Wiping Side) has failed.
- x = 2: The Vacuum Fan (Center of the Platen) has failed.
- x = 3: The Vacuum Fan (2nd Fan from Capping Side) has failed.
- x = 4: The Vacuum Fan (Capping Side) has failed.

Corrective Action: Try the following:

- Make sure that the failing Vacuum Fan Cable is connected correctly and is not damaged
- Replace the failing Vacuum Fan ⇒ Page *8-35*.
- If the error continues, replace the Add-On (HEB2) Control PCA (for errors where x = 0 or 1) and the Main PCA (for errors where x = 2, 3 or 4).

System Error: System Error 1130: DMA Controller Error.

Problem Description: There is a problem with the USB communication.

Corrective Action: Try the following:

- Turn off the printer, and then turn it on again.

- Make sure that the host PC and the Printer are correctly connected with a USB 2.0 Cable.
- If the error occurs frequently, the problem might be that the RIP is hanging. Make sure the RIP is functioning correctly.
- Make sure that the printer is running the latest firmware.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1140: Flash ROM Write Error

Problem Description: A time-out error occurs when the NVRAM contents are being saved in the flash memory in Maintenance Mode and erasing does not end.

Corrective Action: Try the following:

- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1150: Home Position Sensor Error

Problem Description: The Carriage cannot be moved to it's home position.

Corrective Action: Try the following:

- Enter the Sensors Menu (in Maintenance Mode) and select "Printer Sensors". Then execute the "Home Position" option, which will display the state of the home position sensor. If the home position is detected, "1" will be displayed on the Front Panel. If the home position is not detected, manually move the Carriage and check the Front Panel to see if the "1" is displayed.
- Make sure the Home Position Sensor Cable is connected correctly and is not damaged.
- Replace the Home Position Sensor.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1160: Wiping Error

Problem Description: When the Wiping Motor has been running for a while, the sensor fails to detect that the Motor has made one turn.

Corrective Action: Check whether the Wiper turns once and the Wiper Sensor detects the turn when the Printer is initializing when it is powered On.

- If the Wiper **does not** turn once:
  - Check manually by turning the Wiper Gears to see if the Wiper turns. If it does not turn then replace the Wiping Station.
  - Check whether 24 V is supplied to the Main PCA with the circuit tester. If the Wiper Motor does **not** turn even though the 24 V is supplied, there is a possibility of a failure in the Wiper Motor. Replace the Wiping Station ⇒ Page *8-181*.
  - Make sure the Wiper Sensor Cable is connected correctly and is not damaged.
  - If the error continues, replace the Main PCA ⇒ Page *8-36*.

- If the Wiper **does** turn once:
  - Check whether the Wiper Sensor can be switched ON and OFF by manually rotating the Wiper. Check whether the lever type switch is not loose.
  - Make sure the Wiper Sensor Cable is connected correctly and is not damaged.
  - Make sure that the Wiper Sensor is clean.
  - If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1170: Temperature Sensor Error

Problem Description: The Temperature Sensor detects abnormal temperatures (-10°C or lower or 85°C or higher).

Corrective Action: Try the following:

- Make sure that the Printer is in an environment where the temperature is between -10°C and 85°C.
- Make sure the Ambient Temperature Sensor Cable is connected correctly and is not damaged.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1180: Capping Motor Error

Problem Description: Capping Motor over current is detected.

Corrective Action: Try the following:

- When the ambient temperature is very low, the Pump Motor Tube becomes hard and the load on the Capping Motor is increased. Make sure that the Printer is in an environment where the temperature is not below -10°C or higher than +85°C.
- The Capping Station has a Torque Limiter for up and down operation so that the Capping Station does not experience any over current.
- Apply grease on the shaft of the Capping Station Gear so that it helps with rotation.
- Enter the Motors Menu (in Maintenance Mode) and open Solenoids L and R. Access the Pump Motors and check whether the Motor Drive Circuit and Motor work correctly by manually rotating the Motor. When the home position is set to "0", it is clear that the home position has not been adjusted and that capping is not available.
- Make sure that the Capping Station cables are connected correctly and are not damaged
- If the Capping Motor cannot be rotated, replace the Capping Station ⇒ Page *8-156*.
- Make sure the Cap Sensor Cable is connected correctly and is not damaged.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 119x: Head Relay Variable Supply Error

Problem Description: Output voltages of the Head Relay Board are abnormal.

Corrective Action: Try the following:

- Check whether 36V is supplied to the Main PCA. If not, then:
  - Make sure that the Rear Cover is closed.
  - Replace Power Supply Unit ⇒ Page *8-45*.
- Preset the Head Relay Board Voltage from the Diagnostic Menu. Use a circuit tester to check the voltages of the channels that have an error.
- If the voltage is supplied, it means that the voltage check circuit is defective. Replace the Main PCA ⇒ Page *8-36*.
- If the voltage is not supplied, replace the Head Relay Board ⇒ Page *8-42*.
- There is a possibility of a short circuit off the Head Relay Board output line. Perform a short circuit test on the Main PCA.
- Make sure the Carriage Trailing Cable is connected correctly and is not damaged.

System Error: System Error 11Ax: NVRAM Error

Problem Description: The data in the NVRAM is incorrect.

Corrective Action: Try the following:

- Switch the Printer OFF and ON again and check if the error still appears.
- If the error continues, skip the Power-ON Self-Diagnostic by keeping the Cancel Key pressed and powering ON the Printer. Perform NVRAM Initialization (⇒ Page *4-50*) and then perform Restore Calibs (⇒ Page *4-51*). Switch the Printer OFF and ON again and check if the error still appears.
- If the error continues, restore the Printer to defaults settings. Switch the Printer OFF and ON again and check if the error still appears.
- Check whether the NVRAM is mounted on the Main PCA correctly. If necessary, replace the NVRAM ⇒ Page *8-41*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 11C0: Cap Position Error

Problem Description: The Carriage position sensors have detected more than a 2mm gap during the capping operation.

Corrective Action: Try the following:

- Make sure that the Encoder Strip is **not** stained.
- Make sure that the Encoder Sensor is mounted correctly and that the cable is connected correctly.
- Make sure that the Trailing Cable is connected correctly.
- Replace the Carriage PCA ⇒ Page *8-97*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 11D0: Cooling Fan Error

Problem Description: When the Printhead temperature reaches above 43°C, the Printer will check whether the temperature drops below 43°C during printing. This error will appear if the temperature does not drop below 43°C after 10 minutes.

Corrective Action: Try the following:

- Make sure that the Printhead Cooling Fans are working correctly. If the Printhead Cooling Fans are not working correctly, replace them ⇒ Page *8-88*.
- Make sure that the Printer Cooling Fans are connected and working correctly.

System Error: System Error 11E0: Long Term Storage Error

Problem Description: This error is displayed when the Printer has been left switched OFF for more than 31 days.

Corrective Action: Try the following:

- This error can be avoided if the "Store Ink System" procedure is performed before turning the Printer OFF for long periods.
- To clear this error:
  - Turn the Printer ON in error skip mode by holding down the **Cancel** and **Shift** keys and pressing the ON button.
  - Enter the Password to clear the internal error flag: ◀, ▶, **Shift** and **OK**.
  - Switch the Printer OFF and then ON again.

System Error: System Error 12Ax: End of Life of Part Reached

Problem Description: The end of life of the Pump Tube has been reached since it has been working for more than 73 hours.

Corrective Action: Try the following:

- Replace the Ink Pump Assembly ⇒ Page *8-120*.

System Error: System Error 120x: Printhead Drive IC Error

Problem Description: The Piezo Drive IC on a Printhead is too hot (85°C or higher) or too low (-10°C or lower).

Corrective Action: Try the following:

- Check whether the temperature of the Printhead voltage circuit on the Carriage PCA is extremely hot. If it is extremely high, check the short-circuit of the Printhead and the Printhead Cable using a tester. The Short-circuit may have been caused by the incorrect insertion of the Printhead Cable, internal failure of the Printhead or by a foreign object attached to the Carriage PCA.
- Replace the Printhead ⇒ Page *8-36*.
- Replace the Carriage PCA ⇒ Page *8-97*.

System Error: System Error 121x: Printhead Temperature Error

Problem Description: The Printhead temperature is too high (85ºC or higher) or too low (-10ºC or lower).

- x = 0: Printhead Number 1 (Black).
- x = 1: Printhead Number 2 (Light Magenta).
- x = 2: Printhead Number 3 (Light Cyan).
- x = 3: Printhead Number 4 (Yellow).
- x = 4: Printhead Number 5 (Magenta).
- x = 5: Printhead Number 6 (Cyan).

Corrective Action: Try the following:

- Check the failing Printhead to make sure that it is **not** damaged and that the cable are correctly connected
- Replace the Carriage PCA ⇒ Page *8-97*.
- Replace the Printhead ⇒ Page *8-36*.

System Error: System Error 1220: Edge Sensor Error

Problem Description: The Printer has problems detecting the edge of the Media.

Corrective Action: Try the following:

- Enter the Sensors Menu (in Maintenance Mode) and select "Printer Sensors". Then execute the "Line Sensor" option, and check if the Line Sensor is functioning correctly by inserting a white piece of paper underneath it. If the Line Sensor responds, then it is functioning correctly.
- If the Line Sensor does **not** respond to the white piece of paper, then replace the Line Sensor ⇒ Page *8-118*.
- Replace the Carriage PCA ⇒ Page *8-97*.

System Error: System Error 123x: Sub-Tank Sensor Error (Full or Half)

Problem Description: The Full and Half Sensors on the Sub-Tanks are defective.

- x = 0: Printhead Number 1 (Black).
- x = 1: Printhead Number 2 (Light Magenta).
- x = 2: Printhead Number 3 (Light Cyan).
- x = 3: Printhead Number 4 (Yellow).
- x = 4: Printhead Number 5 (Magenta).
- x = 5: Printhead Number 6 (Cyan).

Corrective Action: Try the following:

- Enter the Sensors Menu (in Maintenance Mode) and select "Sub Tank Sensor". Then execute ALL the "Full x" and "Half x" options, and check if the Sub-Tank Sensors are functioning correctly. Manually move the Sub-Tank Sensor Plate and if the Sensor responds, it means that it is working correctly.
- If any of the Sub-Tank Sensors fail to respond, then replace the corresponding Sub-Tank Sensor ⇒ Page *8-151*.
- Make sure that the Sub-Tank Sensor Relay Cables (Left/Right) and the Sub-Tank Sensor Cables are connected correctly and are not damaged.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 124x: Ink Supply Sensor Error

Problem Description: The Ink Supply Sensor does not change even though the specified time has passed after driving the Ink Supply Motor for the Sub-Tank.

- x = 0: Printhead Number 1 (Black).
- x = 1: Printhead Number 2 (Light Magenta).
- x = 2: Printhead Number 3 (Light Cyan).
- x = 3: Printhead Number 4 (Yellow).
- x = 4: Printhead Number 5 (Magenta).
- x = 5: Printhead Number 6 (Cyan).

Corrective Action: Try the following:

- Enter the Sensors Menu (in Maintenance Mode) and select "Sub Tank Sensor". Then, execute the "XX Ink Pump" option for each color, and check if the Ink Supply Sensor is functioning correctly. Manually move the gear and if the Sensor responds, it means that it is working correctly.
- If any of the Ink Supply Sensors fail to respond, then replace the corresponding Ink Supply Station ⇒ Page *8-122*.
- Enter the Motors Menu (in Maintenance Mode) and set the "X Pump Motor" option to "Normal" to drive the Ink Supply Motor. When the Sub-Tank is already full, it will not be checked and therefore ink should be discharged. Once the motor drive has been checked, set it "Stop" immediately. Repeat the process with the other colors.
- If any Ink Supply Motor fails, then replace the corresponding Ink Supply Station ⇒ Page *8-122*.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 125x: Sub-Tank Supply Error

Problem Description: The Sub-Tank Sensor does not switch to less than half even though ink has been consumed.

- x = 0: Printhead Number 1 (Black).
- x = 1: Printhead Number 2 (Light Magenta).
- x = 2: Printhead Number 3 (Light Cyan).
- x = 3: Printhead Number 4 (Yellow).
- x = 4: Printhead Number 5 (Magenta).
- x = 5: Printhead Number 6 (Cyan).

Corrective Action: Try the following:

- Enter the Motors Menu (in Maintenance Mode) and set the "Solenoid L" and "Solenoid R" options to "Closed" to cut the outside air. Now set the "Cap Stat Motor" to "Prime" to discharge the ink from the Sub-Tank and check if the Ink Supply Motor drives by turning the power ON again when there is a little bit of ink left. If the Motor is not driven, replace the corresponding Cable or Ink Supply Station.
- Check whether the Sub-Tank Sensor Plate works correctly and is not blocked by any foreign object.
- Enter the Sensors Menu (in Maintenance Mode) and select "Sub Tank Sensor". Then, execute the "XX Ink Pump" option for each color, and check

if the Ink Supply Sensor is functioning correctly. Manually move the gear and if the Sensor responds, it means that it is working correctly.

- If any of the Ink Supply Sensors fail to respond, then replace the corresponding Ink Supply Station ⇒ Page *8-122*.
- Replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 126x: Trailing Cable Connection Error

Problem Description: The Trailing Cable connected to the one of the following connectors is faulty.

- x = 0: Connector 9.
- x = 1: Connector 10.
- x = 2: Connector 11.
- x = 3: Connector 12.

Corrective Action: Try the following:

- Reconnect the Trailing Cable to the Carriage PCA and the Main PCA.
- Make sure that the Trailing Cable is not damaged.
- Replace the Carriage PCA ⇒ Page *8-97*.
- If the error continues, replace the Main PCA ⇒ Page *8-36*.

System Error: System Error 1270: Feed Motor Error

Problem Description: Over-current problem in the Feed Motor Drive Circuit.

Corrective Action: Try the following:

- Check the short-circuit of the internal cable of the Feed/Rewind Motor and Feed Motor Relay Cable.
- Check the short-circuit of the Feed Motor.
- Replace the Add-On (HEB2) Control PCA ⇒ Page *8-45*.

System Error: System Error 1280: Take-Up-Reel Motor Error

Problem Description: Over-current problem in the Take-Up-Reel Motor Drive Circuit.

Corrective Action: Try the following:

- Check the short-circuit of the internal cable of the Feed/Take-Up-Reel Motor and Take-Up-Reel Motor Relay Cable.
- Check the short-circuit of the Take-Up-Reel Motor.
- Replace the Add-On (HEB2) Control PCA ⇒ Page *8-45*.

System Error: System Error 1290: End of Life of Part Reached

Problem Description: The end of life of the Prime Assembly has been reached since it has been working for more than 58 hours.

Corrective Action: Try the following:

- Replace the Prime Assembly ⇒ Page *8-166*.

System Error: System Error 170X: Servo Motor Error

- x = 0: Feed System.
- x = 1: Carriage System.
- x = 2: Servo Unit.

Problem Description: The Paper-Axis or the Scan-Axis Motor moves the Carriage, but the input from the Linear Encoder Sensor does not change.

Corrective Action: Try the following:

- Make sure that there is no paper jam blocking the Carriage path.
- Make sure that the corresponding cables are connected correctly to Connectors CN14 and CN17 on the Main PCA.
- Make sure that the Linear Encoder Sensor Cable is connected correctly to the Carriage PCA.
- Make sure that the Encoder Strip is not damaged or scratched.
- Make sure that the pinchwheels rotate correctly.
- Make sure that the Carriage gears work correctly
- Replace the Main PCA ⇒ Page *8-36*.
- If the error continues, replace the Paper-Axis or Scan-Axis Motors.

Heater Error Codes

A Heater Error Code appears on the Heater Panel when a component of the Heater has failed during normal usage. Each Heater Error Code and it's appropriate corrective actions are explained on the following pages.

Heater Error: Heater Error H01: System Error

Problem Description: Abnormal operation of the Heater Relay Assembly.

Corrective Action: Try the following:

- Replace the Heater Relay Assembly ⇒ Page *8-52*.

Heater Error: Heater Error H02: Relay Board Error

Problem Description: The Heater Board and the Relay Board are not connected together.

Corrective Action: Try the following:

- Make sure that the Heater Board is connected correctly to the Relay Board via the Relay Cable.
- Replace the Heater Relay Assembly ⇒ Page *8-52*.

Heater Error: Heater Error H03: Front Heater Temperature Error

Problem Description: Temperature read by the Front Heater is abnormal (lower than -10ºC or higher than 70ºC).

Corrective Action: Try the following:

- Make sure that the Heater Relay Assembly is connected correctly to the Front Heater.
- Replace the Heater Relay Assembly ⇒ Page *8-52*.
- Replace the Front Heater ⇒ Page *8-29*.

Heater Error: Heater Error H04: Rear Heater Temperature Error

Problem Description: Temperature read by the Rear Heater is abnormal (lower than -10ºC or higher than 70ºC).

Corrective Action: Try the following:

- Make sure that the Heater Relay Assembly is connected correctly to the Rear Heater.
- Replace the Heater Relay Assembly ⇒ Page *8-52*.
- Replace the Rear Heater ⇒ Page *8-32*.

Heater Error:	Heater Error H05: Center Heater Temperature Error
Problem Description:	Temperature read by the Center Heater is abnormal (lower than -10°C or higher than 70°C).
Corrective Action:	Try the following: ■ Make sure that the Heater Relay Assembly is connected correctly to the Center Platen. ■ Replace the Heater Relay Assembly ⇒ Page *8-52*. ■ Replace the Center Platen ⇒ Page *8-34*.

Heater Error:	Heater Error H06: Front Heater Time-out Error
Problem Description:	The temperature of the Front Heater does not reach the preset temperature even after 15 minutes.
Corrective Action:	Try the following: ■ Make sure that the Voltage alternation switch located at the back of the Printer is set correctly to the AC voltage being used. ■ Make sure that the Fuse (F2) on the Heater Relay Assembly has not blown. If the fuse has blown, replace it. ■ Make sure that the Heater Board is connected correctly to the Relay Board via the Relay Cable. ■ Make sure that the Heater Relay Assembly is connected correctly to the Front Heater. ■ Replace the Heater Relay Assembly ⇒ Page *8-52*. ■ Replace the Front Heater ⇒ Page *8-29*.

Heater Error:	Heater Error H07: Rear Heater Time-out Error
Problem Description:	The temperature of the Rear Heater does not reach the preset temperature even after 15 minutes.
Corrective Action:	Try the following: ■ Make sure that the Voltage alternation switch located at the back of the Printer is set correctly to the AC voltage being used. ■ Make sure that the Fuse (F2) on the Heater Relay Assembly has not blown. If the fuse has blown, replace it. ■ Make sure that the Heater Board is connected correctly to the Relay Board via the Relay Cable. ■ Make sure that the Heater Relay Assembly is connected correctly to the Rear Heater. ■ Replace the Heater Relay Assembly ⇒ Page *8-52*. ■ Replace the Rear Heater ⇒ Page *8-32*.

Heater Error: Heater Error H08: Center Heater Time-out Error

Problem Description: The temperature of the Center Heater does not reach the preset temperature even after 15 minutes.

Corrective Action: Try the following:

- Make sure that the Voltage alternation switch located at the back of the Printer is set correctly to the AC voltage being used.
- Make sure that the Fuse (F2) on the Heater Relay Assembly has not blown. If the fuse has blown, replace it.
- Make sure that the Heater Board is connected correctly to the Relay Board via the Relay Cable.
- Make sure that the Heater Relay Assembly is connected correctly to the Center Platen.
- Replace the Heater Relay Assembly ⇒ Page *8-52*.
- Replace the Center Platen Heater ⇒ Page *8-34*.

Heater Error: Heater Error H09: Operation Panel Switch Error

Problem Description: The specified switch is not pressed for 30 seconds or more when the diagnostics that verifies the switch action is executed.

Corrective Action: Try the following:

- Replace the Heater Relay Assembly ⇒ Page *8-52*.

Heater Error: Heater Error H10: Zero Cross Error

Problem Description: This error occurs when the diagnostics for the AC Relay is executed.

Corrective Action: Try the following:

- Make sure that the Heater Board is connected correctly to the relays on the Heater Block Assembly
- Make sure that the Heater Board is connected correctly to the Relay Board via the Relay Cable.
- Replace the Heater Relay Assembly ⇒ Page *8-52*.

System Error Codes

A System Error Code appears on the Front Panel when an unrecoverable system exception interrupt occurs in the Printer.

nnnn: System Error Code

The System Error Codes are listed in the following table:

System Error Code	Error Description
F_es: 0001	Operation Code Exception
F_es: 0002	Slot Illegal Exception
F_es: 0003	Address Exception
F_es: 0004	DMA Error
F_es: 0005	NMI Occurrence (WatchDog Error)

Corrective Action

1. Replace the Main PCA ⇒ Page *8-36*.
2. Upgrade the Printer Firmware.

Printhead Adjustment 3

Printhead Adjustment

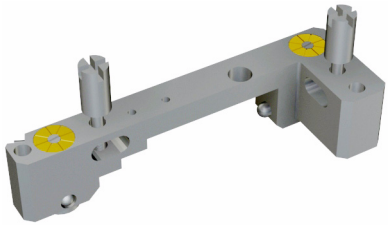
Introduction

The mechanical adjustment of a Printhead must be done every time a Printhead is removed or replaced. If the adjustment of the Printheads is not done, you could get Print Quality problems like banding. The Printhead Adjustment should be done in the following order:

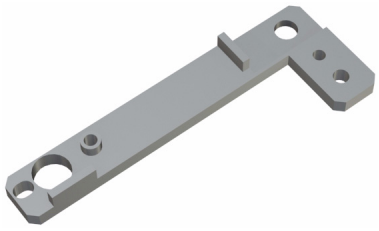
1. Calibrate the Printhead Adjustment Jig.
2. Install the Printhead Adjustment Jigs in to the Carriage.
3. Set Printhead Voltage.
4. Print the Printhead Adjustment pattern.
5. Perform Printhead Position correction.
6. Print the Check Printhead pattern.
7. Mechanically adjust the Printhead.
8. Perform the Bidirectional Calibration.

Tools Required

The Tools required to perform the Printhead Adjustment procedure are shown below. Without these tools, the Printhead Adjustment procedure cannot be completed correctly.



Printhead Adjustment Jig 1



Printhead Adjustment Reference Plate

Printhead Positioning Pins

Printhead Adjustment Jig 2

Small Flat-Head Screwdriver

Measuring Loupe

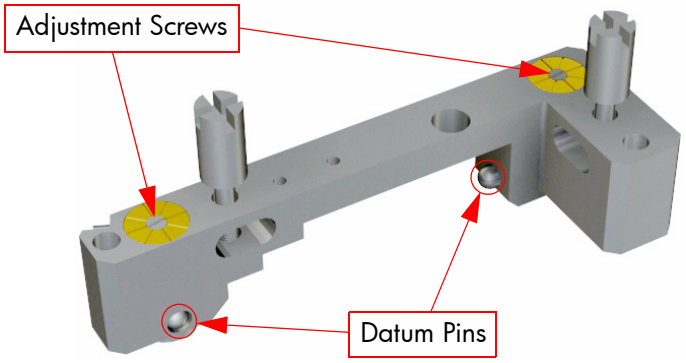
Cross-Head Screwdriver

Calibrate the Printhead Adjustment Jig

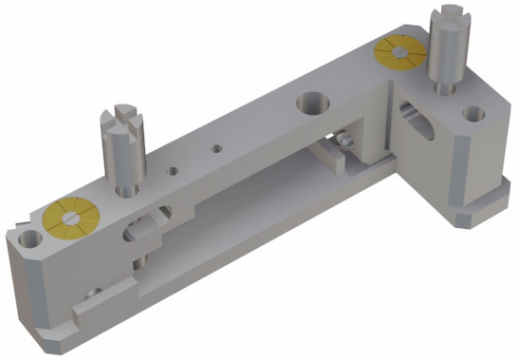
To speed up the Printhead Adjustment, you can follow the tip on Page *3-20*. If the tip is followed, then it is not necessary to calibrate the Printhead Adjustment Jig.

Before installing the Printhead Adjustment Jig 1 in to the Carriage, it needs to be calibrated as follows:

1 Retract the datum pins located in the Printhead Adjustment Jig 1 by turning the Adjustment Screws counterclockwise using a small Flat-Head Screwdriver.

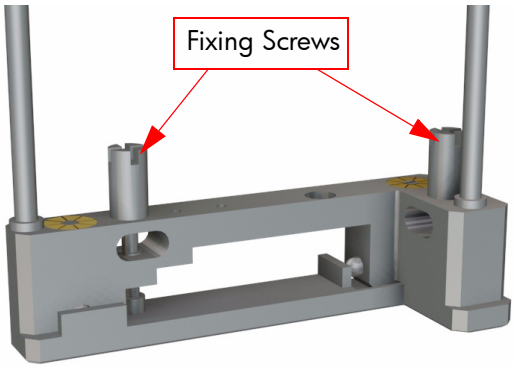


2 Place the Printhead Adjustment Jig 1 on top of the Printhead Adjustment Reference Plate as shown:

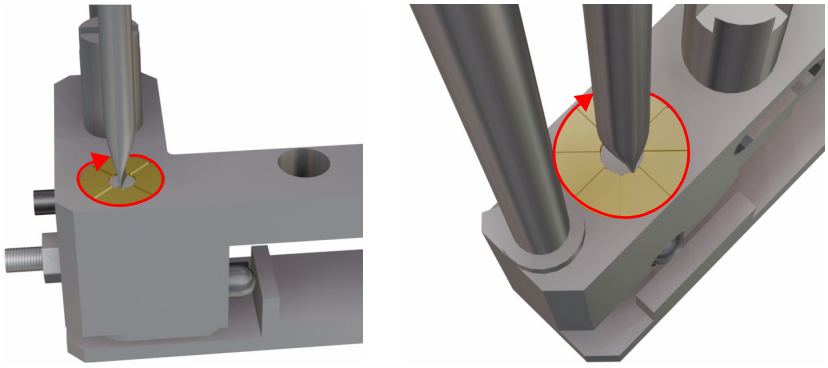


3 Insert the two Printhead Positioning Pins in to the Printhead Adjustment Jig 1.

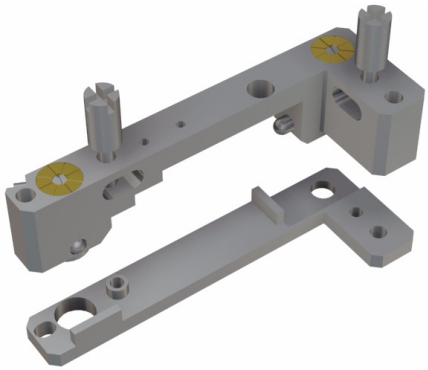
4 Tighten the two fixing screws so that the Printhead Adjustment Jig 1 is securely attached to the Printhead Adjustment Reference Plate.



5 Place the Printhead Adjustment Jig on a flat surface and without holding it, gently turn the Adjustment Screws clockwise until the Printhead Adjustment Jig begins to move. Check that the Datum Pins touch the walls of the Printhead Adjustment Reference Plate. Do **NOT** force the Adjustment Screws too much as this could damage the Datum Pins.



6 Once the Printhead Adjustment Jig 1 has been calibrated, you can loosen the fixing screws, remove the Printhead Positioning Pins and remove the Printhead Adjustment Reference Plate.

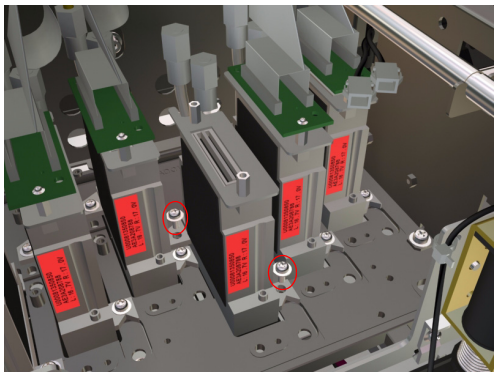


Install the Printhead Adjustment Jigs in the Carriage

The next procedure will be to install the Printhead in to the Carriage and install the Printhead Adjustment Jigs as follows:

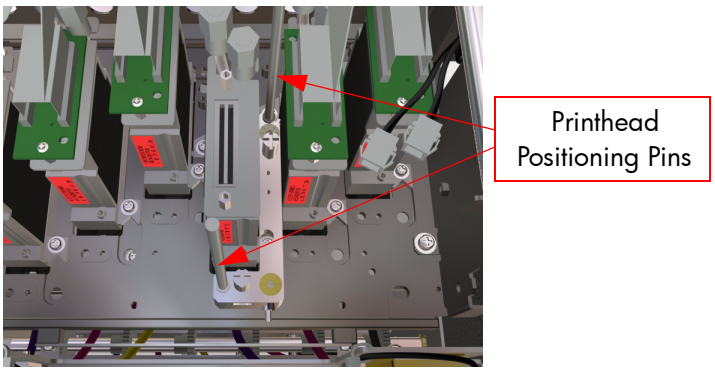
Never touch the Printhead nozzles. They can be easily damaged or clogged. For Printhead removal information, refer to Page *8-92*.

1 Install the new Printhead in to the Carriage and secure it with two screws. The screws should not be tightened too much, just enough so that the Printhead does not move loosely.

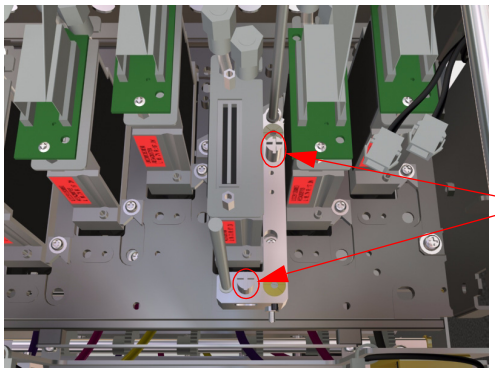


2 Install the Printhead Adjustment Jig 1 in to position against the Carriage Base Plate. Make sure that the 2 datum pins touch the Printhead as shown.

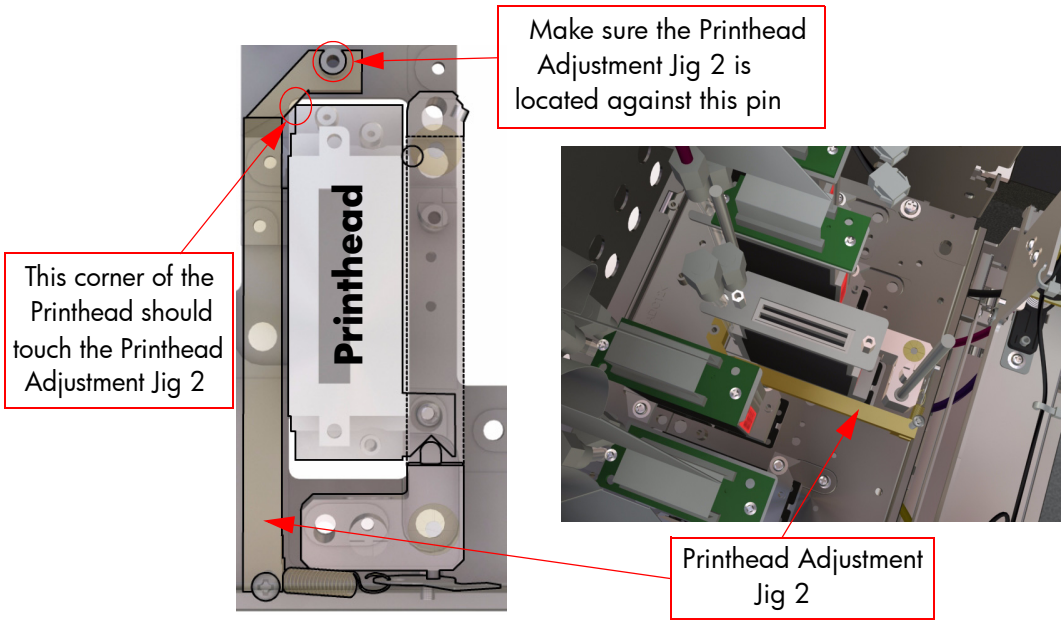
3 Insert the two Printhead Positioning Pins into the Printhead Adjustment Jig 1.



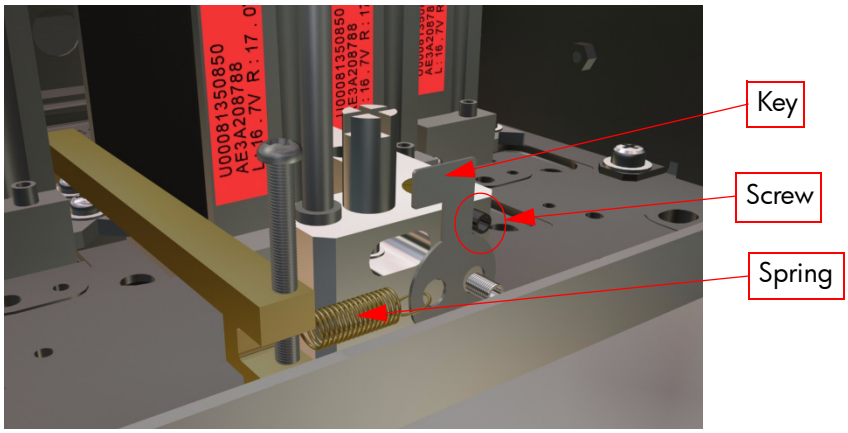
4 Tighten the two fixing screws so that the Printhead Adjustment Jig 1 is securely attached to the Carriage Base Plate.



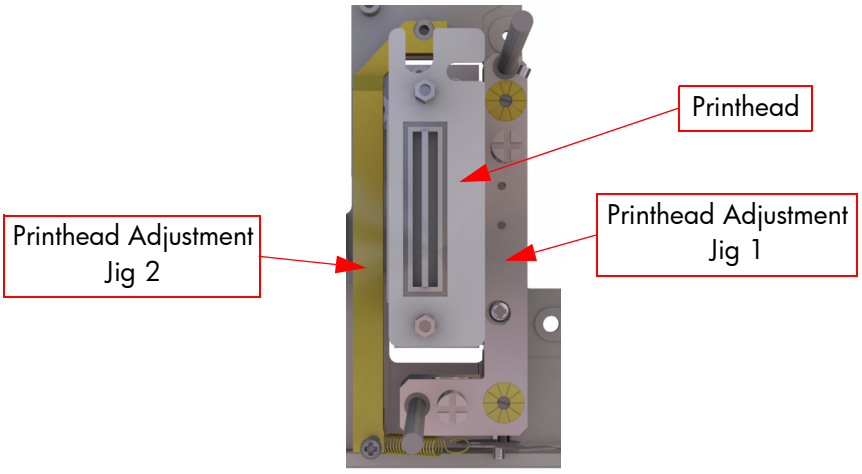
5 Install the Printhead Adjustment Jig 2 in to position against the Carriage Base Plate.



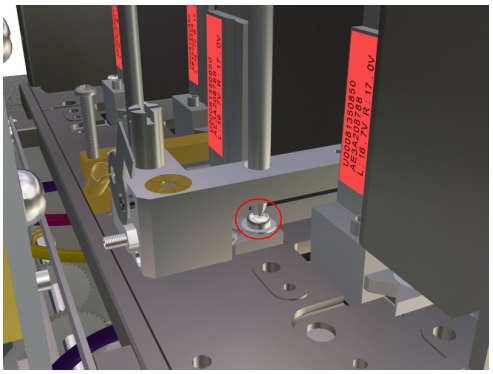
6 Stretch the spring and hook the key over the top screw of the Printhead Adjustment Jig 1 as shown.



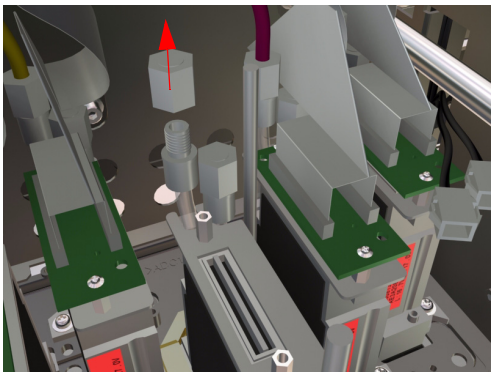
7 The following drawing shows the overall position of the Printhead Adjustment Jigs in relation to the Printhead (the tubes have been removed for clarity).



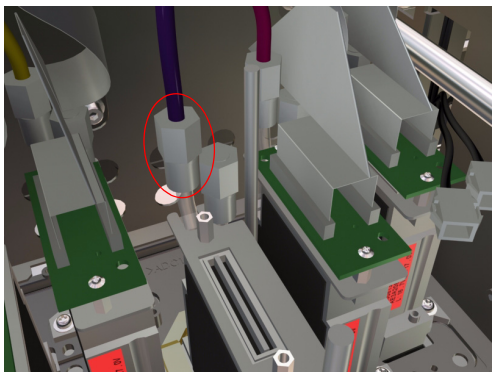
8 Once the Printhead Adjustment Jigs are in place, tighten the front screw that secures the Printhead to the Carriage Base Plate.



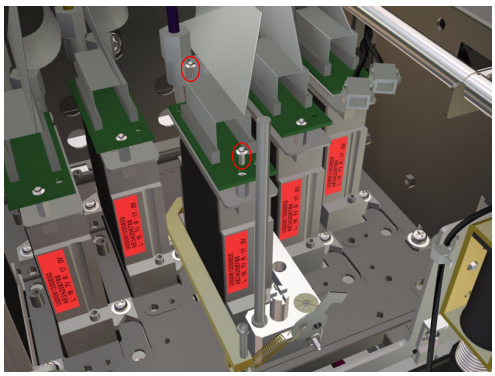
9 Remove the tube cap from the Printhead.



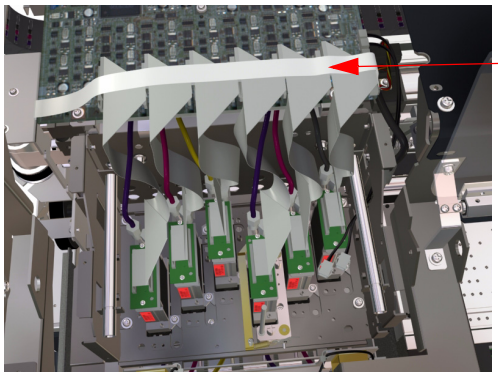
10 Attach the Ink Tube to the Printhead and secure it tightly.



11 Attach the Printhead Connector Assembly to the Printhead and secure it with 2 screws.



12 Before moving to the next stage of the Printhead Adjustment procedure, make sure that the Printhead Connector cables are safely secured with tape so that they don't hit other parts of the Printer.



13 Enter into the Ink System Options submenu and select "Wash Printheads" in order to charge the replaced Printhead with ink.

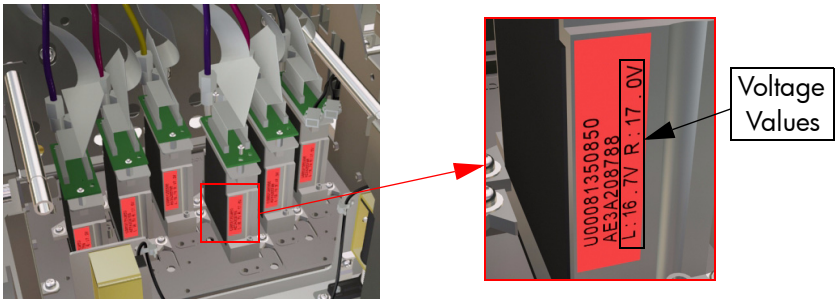
14 Print a Nozzle Check pattern in order to verify that ink has been charged correctly into the Printhead. If any of the nozzles are not firing correctly, then perform a Normal Printhead Recovery and then retry the nozzle Check pattern.

Set Printhead Voltage

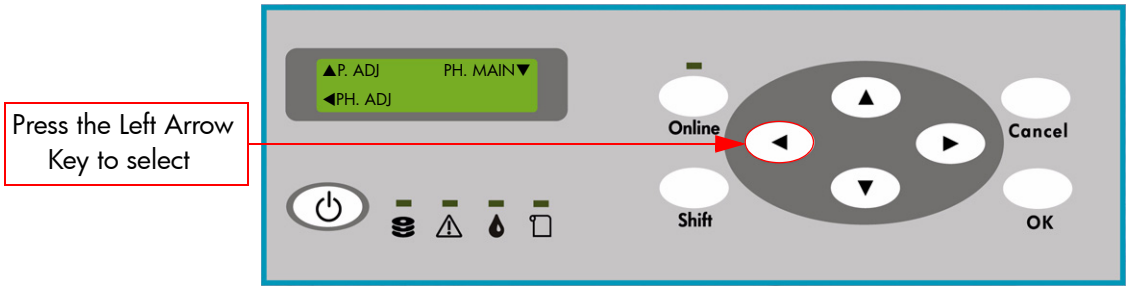
Before the Printhead can be used to print correctly, you must set the Printhead Voltage as follows:

Remember to correctly set BOTH the left and right Printhead Voltage values for each Printhead. To avoid damaging the Printheads, make sure that you do not modify the values by more than +/- 1 volt.

You can find the Printhead Voltage values on each Printhead as shown:



1. Power On the Printer and enter in to the Maintenance Mode ⇒ Page *4-7*.
2. Press the ◀ key to enter in to the Printhead Adjustment menu.



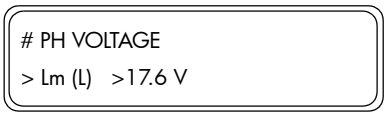
3. In the Printhead Adjustment submenu, scroll to "PH Voltage" and press the ▶ key.

```
# PH VOLTAGE
# Lm (L)
```

4. In the PH Voltage submenu, select the color of the Printhead (either left or right) for which you would like to set the Printhead Voltage and press the **OK** key. If you would like to exit the PH Voltage submenu, press the ◀ key.

```
# PH VOLTAGE
> Lm (L)   >16.0 V
```

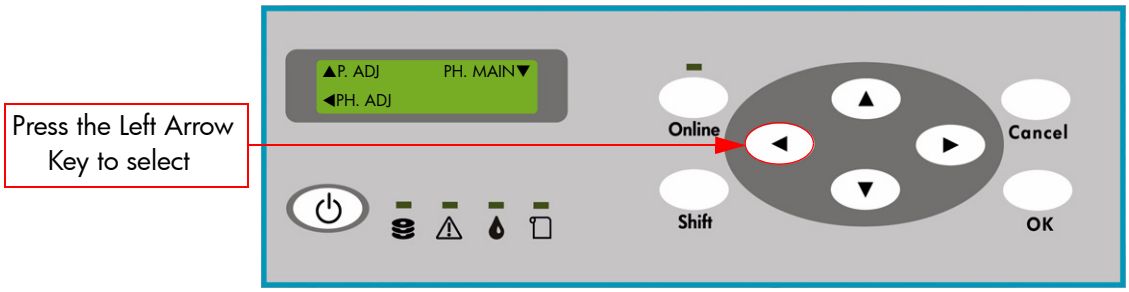
5 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of 12.0 to 20.0 V (in increments of 0.1 V). Press the **OK** key once you have entered the new value.



Print the Printhead Adjustment Pattern

In order to correct the Printhead position, you must first print the Printhead Adjustment pattern as follows:

1. Enter in to the Maintenance Mode ⇒ Page *4-7*.
2. Press the ◀ key to enter in to the Printhead Adjustment menu.



1. In the Printhead Adjustment submenu, scroll to "PH Adj Print" and press the **OK** key.

```
# PH ADJ PRINTS
> NOZZLE CHECK
```

2. In the Printhead Adjustment Prints submenu, scroll to "Printhead Adj" and press the **OK** key.

```
# PH ADJ PRINTS
* PRINTHEAD ADJ
```

3. You will need to confirm that you want to print the Printhead Adjustment pattern by pressing the **OK** key.

```
# PH ADJ PRINTS
* PRINTHEAD ADJ   OK?
```

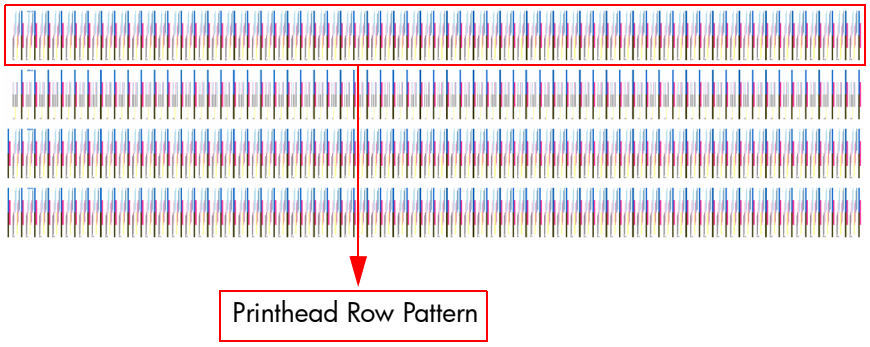
4. The Printer will start printing the Printhead Adjustment pattern and the following message will appear on the Front Panel.

```
# PH ADJ PRINTS
* EXECUTING
```

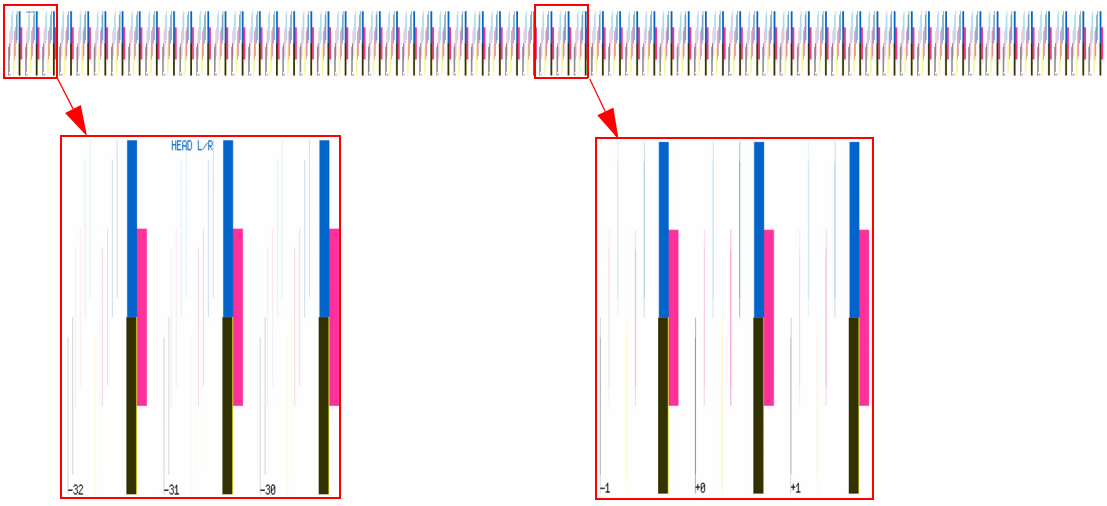
Perform Printhead Position Correction

Once you have printed the Printhead Adjustment pattern, you can use it to correct the position of the Printhead as follows:

1 Locate the Printhead Row pattern in the Printhead Adjustment pattern.



2 Select the pattern that looks the best aligned and note down the value (either a - value or a + value).



Lines **not** well aligned

Lines well aligned

3 In the Printhead Adjustment submenu, scroll to "PH Row Val" and press the ▶ key.

```
# PH ROW VAL
# Lm
```

4 In the PH Row Val submenu, select the color of the Printhead that you would like to adjust and press the **OK** key. If you would like to exit the PH Row Val submenu, press the ◀ key.

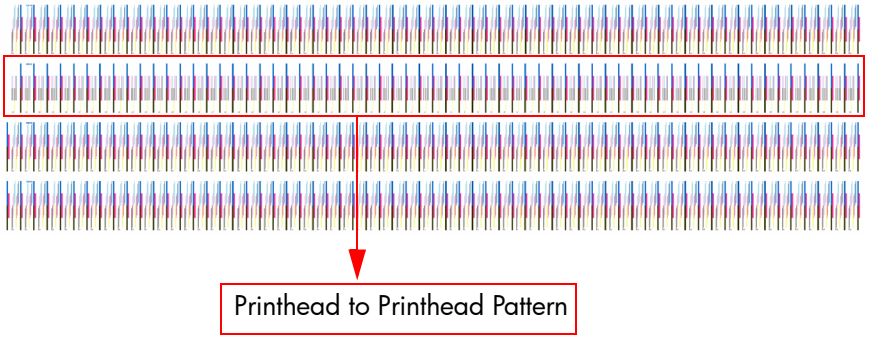
```
# PH ROW VAL
> Lm   >+00
```

5 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. Enter the value that you noted down in step 2.

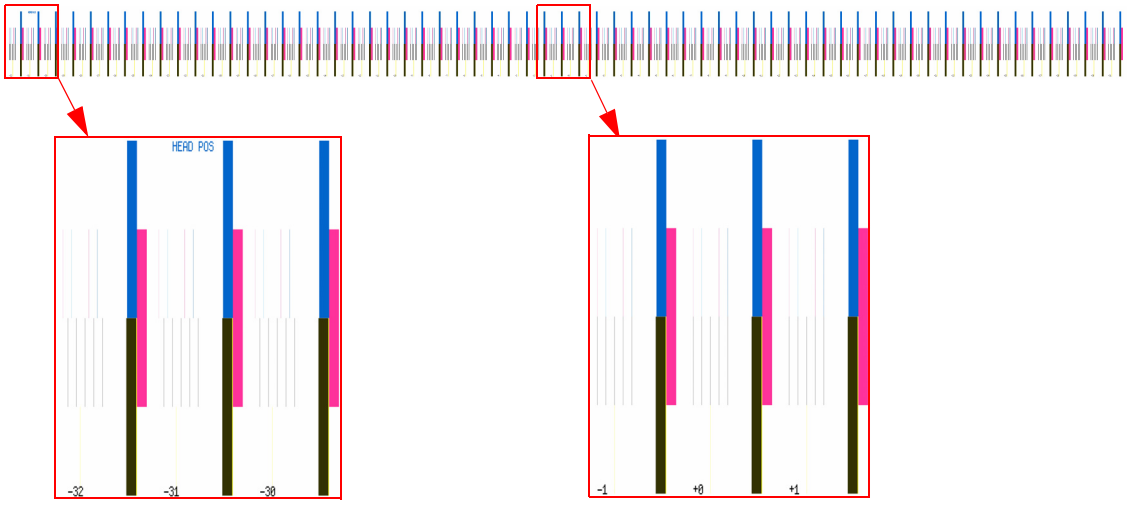
```
# PH ROW VAL
> Lm   >+01
```

6 Press the **OK** key once you have entered the new value.

7 Locate the Printhead to Printhead pattern in the Printhead Adjustment pattern.



8 Select the pattern that looks the best aligned and note down the value (either a - value or a + value).



Lines **not** well aligned

Lines well aligned

9 In the Printhead Adjustment submenu, scroll to "PH to PH Val" and press the ▶ key.

```
# PH TO PH VAL
# Lm
```

10 In the PH to PH Val submenu, select the color of the Printhead that you would like to adjust and press the **OK** key. If you would like to exit the PH to PH Val submenu, press the ◀ key.

```
# PH TO PH VAL
> Lm   >+00
```

11 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. Enter the value that you noted down in step 8.

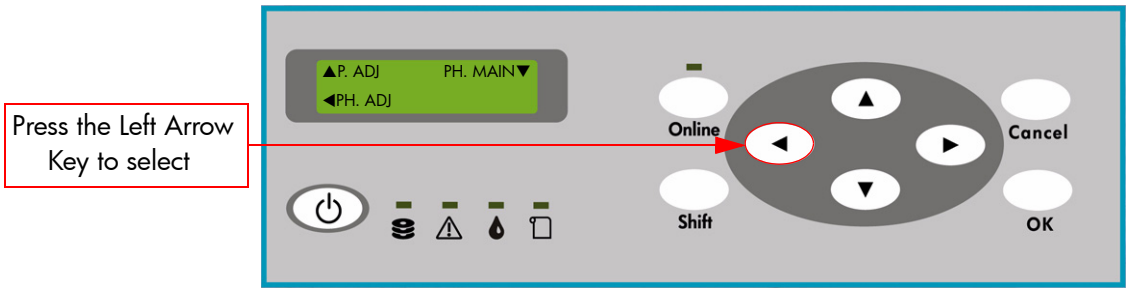
```
# PH TO PH VAL
> Lm   >+01
```

12 Press the **OK** key once you have entered the new value.

Print the Check Printhead Pattern

In order to adjust the Printhead, you must first print the Check Printhead pattern as follows:

1. Enter in to the Maintenance Mode ⇒ Page *4-7*.
2. Press the ◀ key to enter in to the Printhead Adjustment menu.



1. In the Printhead Adjustment submenu, scroll to "PH Adj Prints" and press the **OK** key.

```
# PH ADJ PRINTS
> NOZZLE CHECK
```

2. In the Printhead Adjustment Prints submenu, scroll to "Check Printhead" and press the **OK** key.

```
# PH ADJ PRINTS
* CHECK PRINTHEAD
```

3. You will need to confirm that you want to print the Check Printhead pattern by pressing the **OK** key.

```
# PH ADJ PRINTS
* CHECK PRINTHEAD   OK?
```

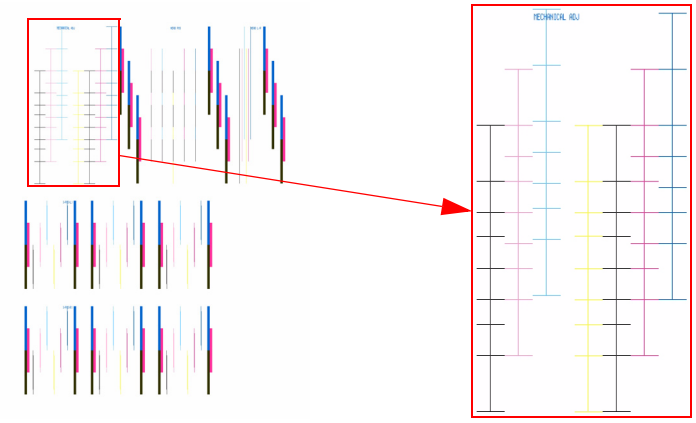
4. The Printer will start printing the Check Printhead pattern and the following message will appear on the Front Panel.

```
# PH ADJ PRINTS
* EXECUTING
```

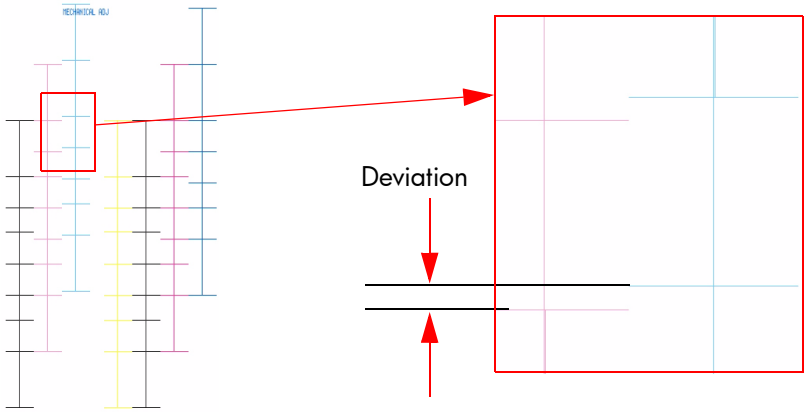
Adjust the Printhead

Once you have printed the Check Printhead pattern, you can use it to adjust the Printhead as follows:

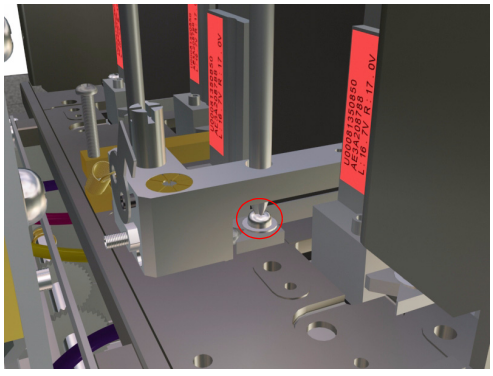
1 Locate the mechanical adjustment pattern in the Check Printhead pattern.



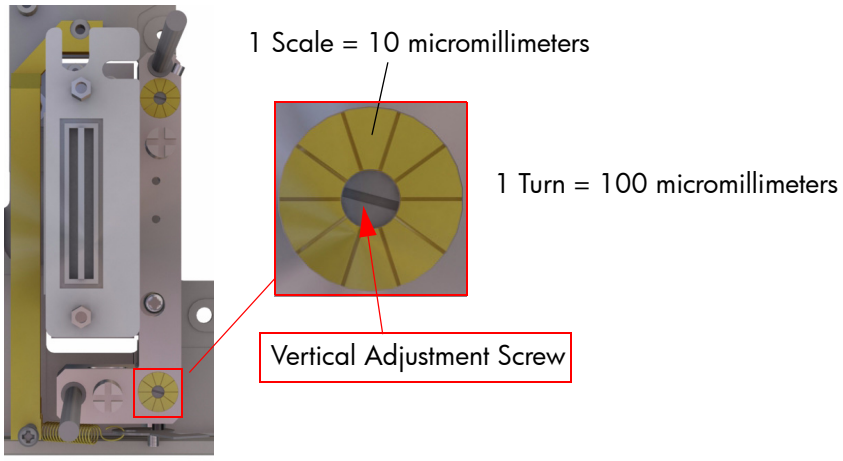
2 Using a Measuring Loupe, you must first measure the deviation of the Printhead in the vertical position.



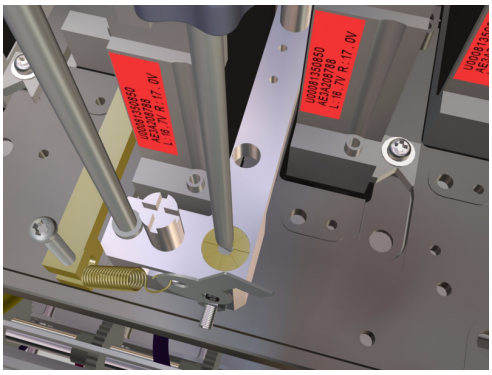
3 Loosen the front screw that secures the Printhead to the Carriage Base Plate.



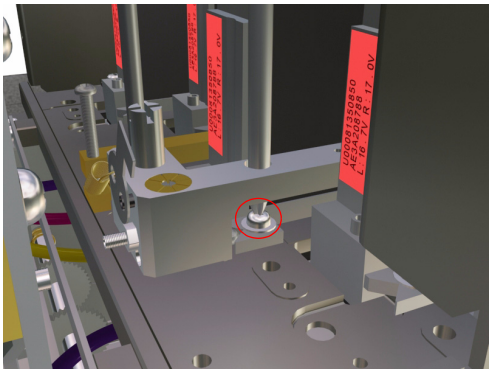
4 Using the measurement obtained in step 2, calculate how many scales you will need to turn the Vertical Adjustment Screw to adjust the vertical position of the Printhead.



5 If for example, the deviation measured in step 2 was 240 micro-millimeters, you would turn the Vertical Adjustment Screw 2 full turns and 4 scales.

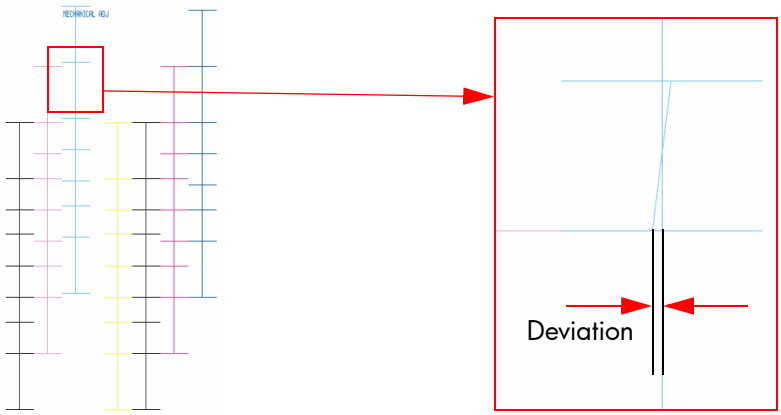


6 Tighten the front screw that secures the Printhead to the Carriage Base Plate.

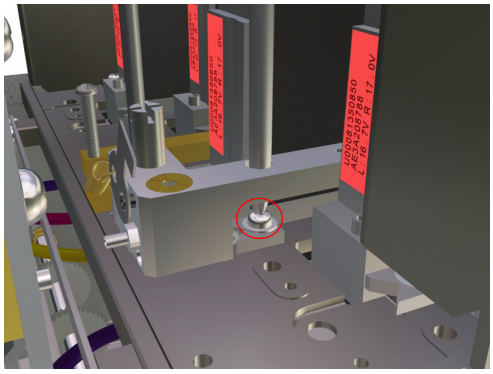


7 Reprint the Check Printhead pattern and measure again the deviation of the Printhead in the vertical position. If there is still deviation, repeat the instructions from step 3.

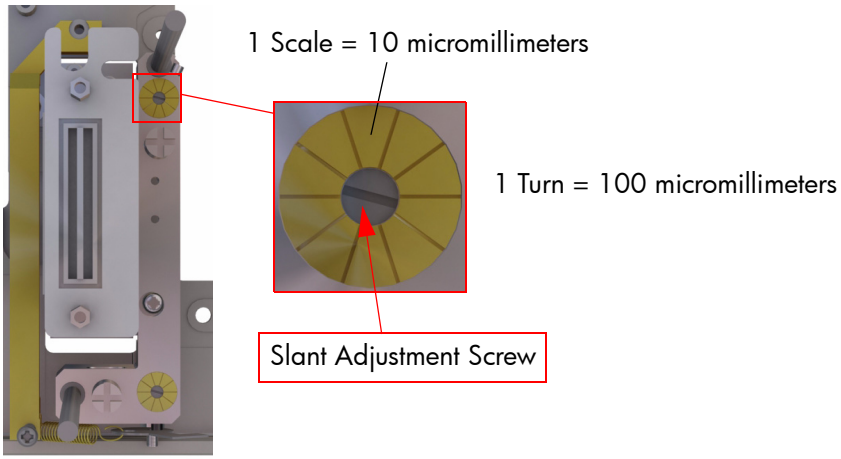
8 If the deviation measured is 0, you will now measure the deviation of the Printhead in the slant position.



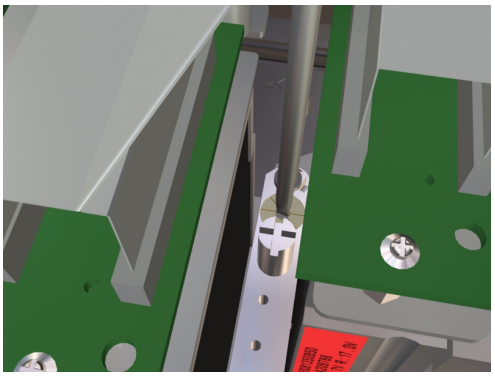
9 Loosen the front screw that secures the Printhead to the Carriage Base Plate.



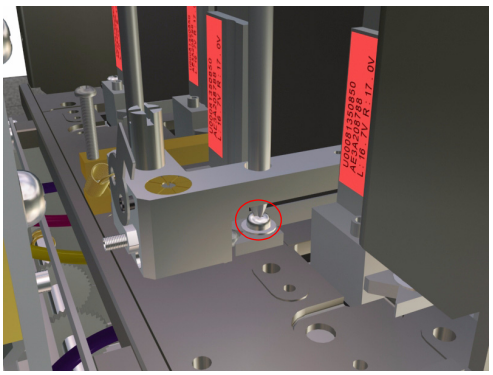
10 Using the measurement obtained in step 8, calculate how many scales you will need to turn the Slant Adjustment Screw to adjust the slant position of the Printhead.



11 If for example, the deviation measured in step 8 was 120 micro-millimeters, you would turn the Slant Adjustment Screw 1 full turn and 2 scales.



12 Tighten the front screw that secures the Printhead to the Carriage Base Plate.



13 Reprint the Check Printhead pattern and measure again the deviation of the Printhead in the slant position. If there is still deviation, repeat the instructions from step 9.

14 If the deviation measured is 0, you can remove Printhead Adjustment Jig 2 from the Carriage.

15 Tighten the rear Printhead mounting screw.

16 Remove Printhead Adjustment Jig 1 from the Carriage.

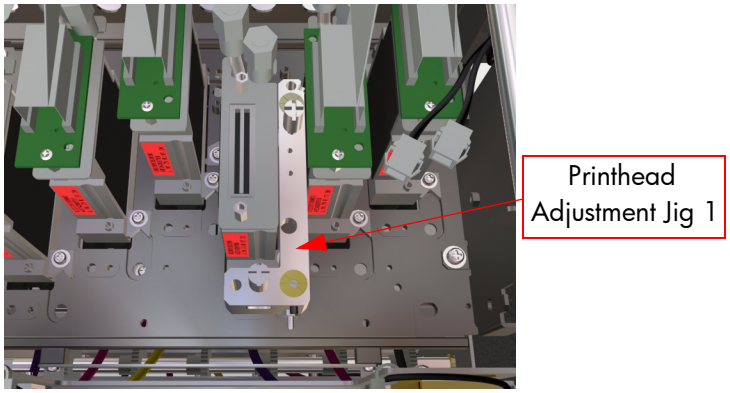
Perform the Bidirectional Calibration

If the customer will print using a Bidirectional print mode, it is important that you perform a Bidirectional calibration on the media that is being used. For further information, refer to Page *4-18*.

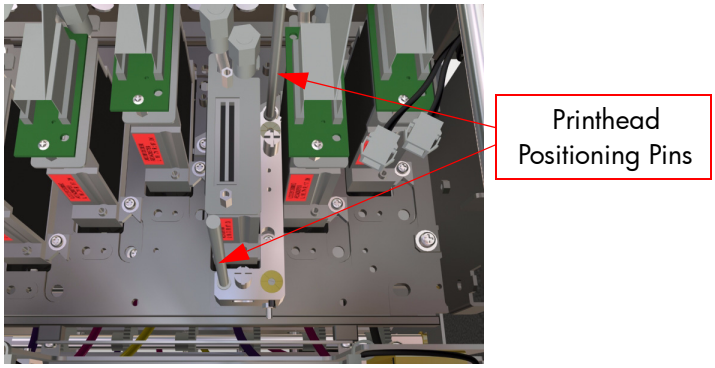
Tip to Speed-Up the Printhead Adjustment

An alternative and faster way to adjust a new Printhead is as follows:

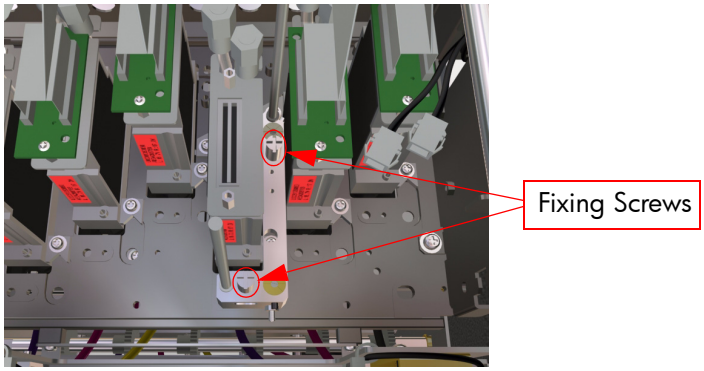
1 Before removing the **old** Printhead, install the Printhead Adjustment Jig 1 in to position against the Carriage Base Plate.



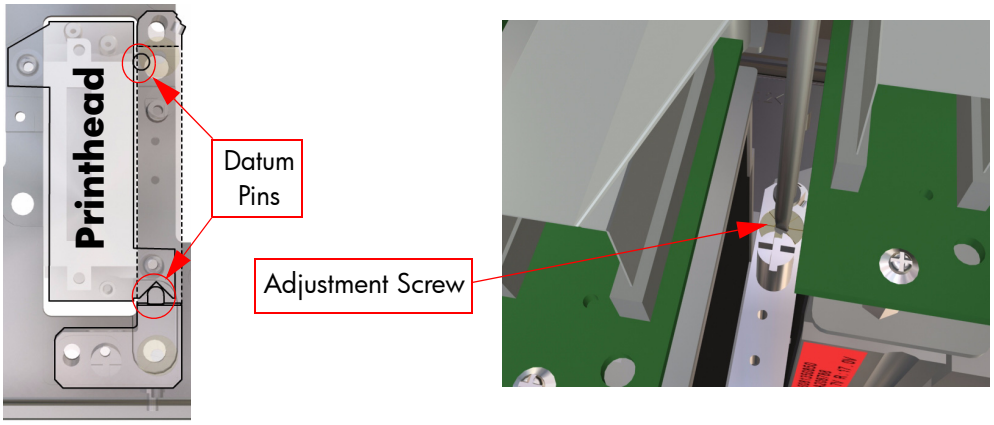
2 Insert the two Printhead Positioning Pins into the Printhead Adjustment Jig 1.



3 Tighten the two fixing screws so that the Printhead Adjustment Jig 1 is securely attached to the Carriage Base Plate.

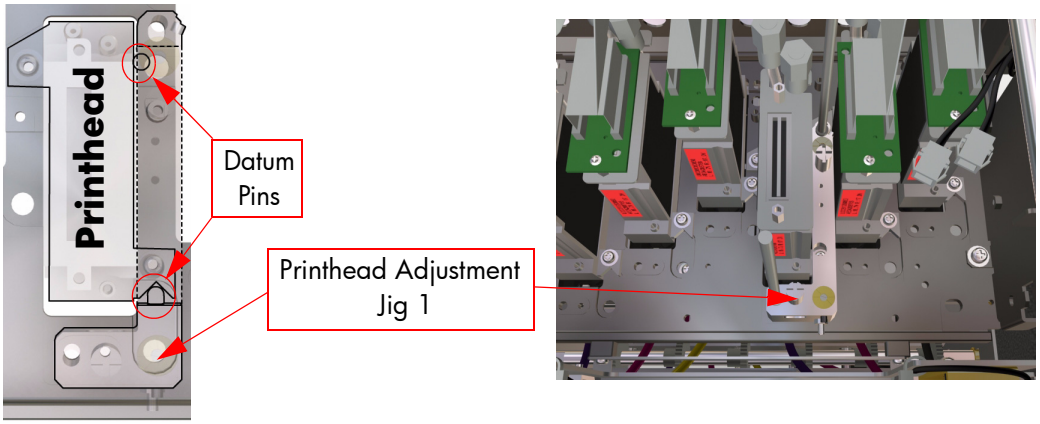


4 Turn both Adjustment Screws so that the 2 datum pins touch the Printhead as shown. You must **not** force the Adjustment Screws too much as this could damage the Datum Pins.

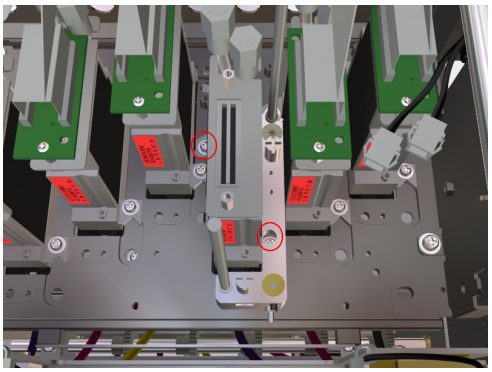


5 Now that the Printhead Adjustment Jig 1 is calibrated to the **old** Printhead, the Printhead can now be removed ⇒ Page *8-92*.

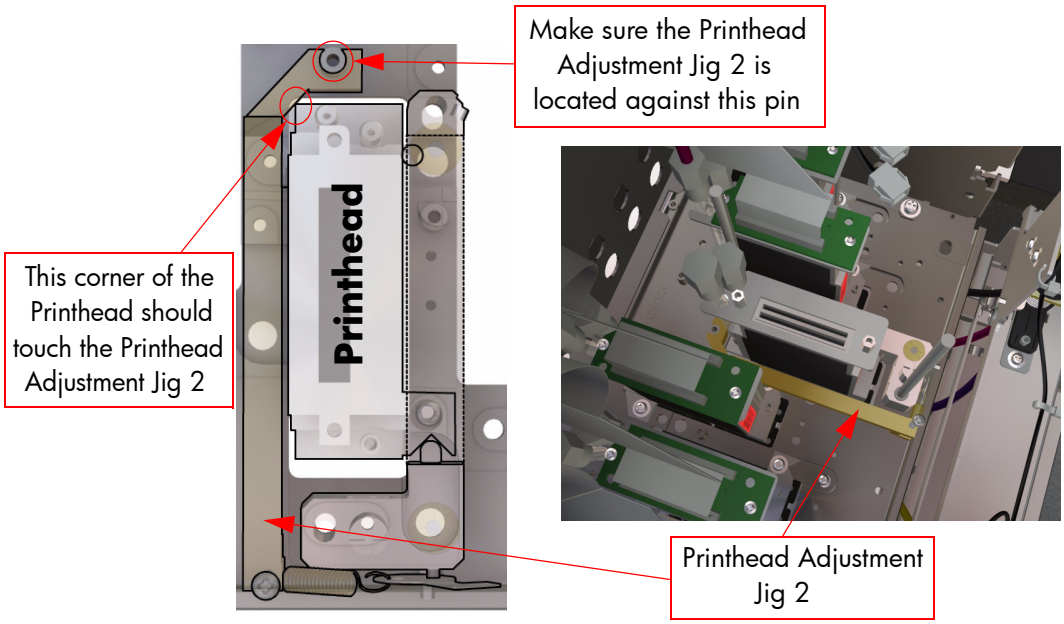
6 Install a **new** Printhead in to the Carriage and position it against the Printhead Adjustment Jig 1 as shown. Make sure that the 2 datum pins touch the Printhead as shown.



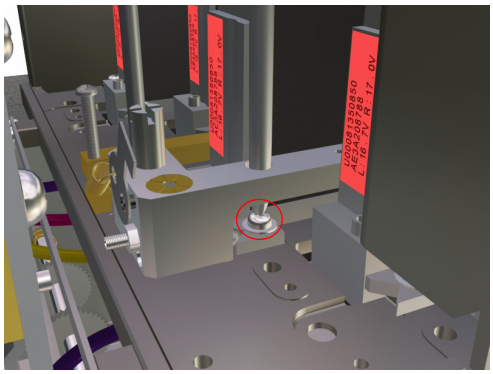
7 Install the two screws to secure the Printhead. The screws should **not** be tightened too much, just enough so that the Printhead does not move loosely.



8 Install the Printhead Adjustment Jig 2 in to position against the Carriage Base Plate.



9 Tighten the front screw that secures the Printhead to the Carriage Base Plate.



10 At this point the **new** Printhead should now be more or less in the same position as the **old** Printhead.

11 Before continuing, you should connect the Ink Tube and Printhead Connector Assembly to the Printhead.

12 You should now continue the Printhead Adjustment procedure from Page *3-9*.

Maintenance Mode 4

Maintenance Mode

Introduction

This chapter explains how to use the built-in Maintenance Mode which is designed to assist Service Personnel to make any necessary factory adjustments or to perform Service Tests to verify if certain components of the Printer are functioning correctly.

If possible, always perform a Service Test on the component that you are about to replace, just to make sure that is the component that has failed. If the test on that component passes, there is no need to replace it.

Diagnostics - Self Test

Initialization Sequences

Whenever the Printer is switched ON, it automatically performs a series of internal self tests and mechanical initialization sequences. If any of the parts fail, a system error will appear and you should consult Chapter 2 - *System Error Codes*.

Phone Support

In certain circumstances, a Call Agent can try and troubleshoot the Printer by requesting the Customer to perform a Service Test via the phone. Using this process, it can be determined whether the Printer requires any on-site maintenance.

Maintenance Mode Menus

The following is a list of all internal Maintenance Mode Menus available in the Printer. Instructions for entering the Maintenance Mode are explained on Page *4-7*.

1 P. ADJ. (Printer Adjustment) ⇒ Page *4-10*

This menu contains the necessary options to set the adjustment parameters of the Printer so that it functions correctly. The different options available in this menu are as follows:

- Adjust Print.
- Media Advance Print.
- Manufacturing Print 1.
- Cap Position.
- Wipe Position.
- Line Sensor (Top) Adjustment.
- Line Sensor (Side) Adjustment.
- Media Advance Value.
- Back Adjust Print.
- Back Adjust Value.

2 PH. ADJ. (Printhead Adjustment) ⇒ Page *4-18*

This menu contains the necessary options to set the adjustment parameters of the Printhead so that it functions correctly. The different options available in this menu are as follows:

- Printhead Adjustment Prints.
- Move Carriage.
- Printhead Row Value.
- Printhead to Printhead Value.
- Set Bidirection Media.
- Bidirection Definitions.
- Drive Voltage.
- Manufacturing Print 2.

3 PH. MAIN. (Printhead Maintenance) ⇒ Page *4-25*

This menu contains the necessary options related to the actual Printheads contained in the Carriage Assembly, like cleaning or servicing. The different options available in this menu are as follows:

- Charge Ink System.
- Purge Ink System.
- Ink System Options.
- Ink Charge Done.
- Printhead Recovery.
- Uncap Carriage.
- Cap Carriage.

4 MNFG-PRN. (Manufacturing Test Patterns) ⇒ Page *4-47*

This menu contains the test patterns which are used during the manufacturing process.

5 SETUP ⇒ Page *4-48*

This menu contains the necessary option to set the different system parameters, like language or system time. The different options available in this menu are as follows:

- Language.
- Beeper Settings.
- End of Ink Beeper Settings.
- System Date.
- System Time.
- Serial Number.
- NVRAM Initialization.
- Save Calibrations.
- Restore Calibrations.
- Save NVRAM.
- Restore NVRAM.
- Boot Version.
- Printer Firmware Version.
- Main PCA Version.
- Carriage PCA Version.
- ASIC Version.
- Heater Hardware Version.
- Heater Firmware Version.
- Add-ON (HEB2) Control PCA Version.
- Heater Upgrade.
- Install Done.

6 FEED ⇒ Page *4-55*

This option allows you to feed the media manually in to the Printer.

7 SENSORS ⇒ Page *4-57*

This menu can be used to check the status of the various sensors and thermistors in the Printer in real time. The different options available in this menu are as follows:

- Printer Sensors.
- Ink Sensor.
- Sub Tank Sensor.
- Bottle Sensor.
- Media Supply Reel (MSR) Sensors.
- TUR Sensors.
- Temperature Sensors.

8 ELECT (Electronics) ⇒ Page *4-65*

This menu contains the necessary diagnostics that can be used to test the various electronic components in the Printer. The different options available in this menu are as follows:

- Flash ROM.
- PIO.
- NVRAM.
- Ink EEPROM.
- ATG.
- DRAM.
- RSM.
- PTC.
- PDD.
- HEB.
- ALL.
- VDD.
- Front Panel.

9 VOLT (Voltage Check) ⇒ Page *4-77*

This menu can be used to turn the Voltage check to high or low. The different options available in this menu are as follows:

- Voltage Check.

10 MOTORS ⇒ Page *4-78*

This menu contains the necessary diagnostics that can be used to test the various Motors in the Printer. The different options available in this menu are as follows:

- Media Advance Motor.
- Capping Station Motor.
- Wiping Station Motor.
- Solenoid (Left or Right).
- Vacuum Fans (Left, Right or Center).
- Exhaust Fans.
- Printhead Cooling Fan.
- MSR Motor.
- TUR Motor.
- Pump Motors.

11 SYSTEM INF ⇒ Page *4-86*

This menu can be used to print various information pages. The different options available in this menu are as follows:

- System Print.
- Error Log Print.
- History Print.

12 COUNTER ⇒ Page *4-89*

This menu can be used to view and reset the different counters that are used to track the usage of various parts which need to be replaced as a preventive measure. Also, this menu can be used to check if Non-HP or Expired Ink is being used in the printer. The different options available in this menu are as follows:

- Media Used.
- Prime Assembly.
- Pump Tube.
- Wiper Cleaning.
- Wiper Belt.
- Wiper Blade.
- Capping Unit.
- Scan-Axis belt.
- Non-HP Ink Used.
- Expired Ink Used.

13 Heater Panel Maintenance Mode ⇒ Page *4-95*

The Heater Panel has a separate Maintenance Mode which can used to set certain parameters.

Entering the Maintenance Mode

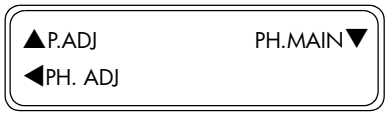
Enter in to the Maintenance Mode as follows:

1. When the "Printer Ready" message appears on the Front Panel, press the **Online** key to take the Printer offline.

2. When the following screen is displayed on the Front Panel, press the following keys in this order: **Cancel**, **Shift**, **Cancel**, **Cancel**.

3. When the following screen is displayed on the Front Panel, you will be requested to enter a password. Press the following keys in this order: ◀, ▶, **Shift** and **OK**.

4. Once the password has been entered correctly, you will enter in to the Maintenance Mode.

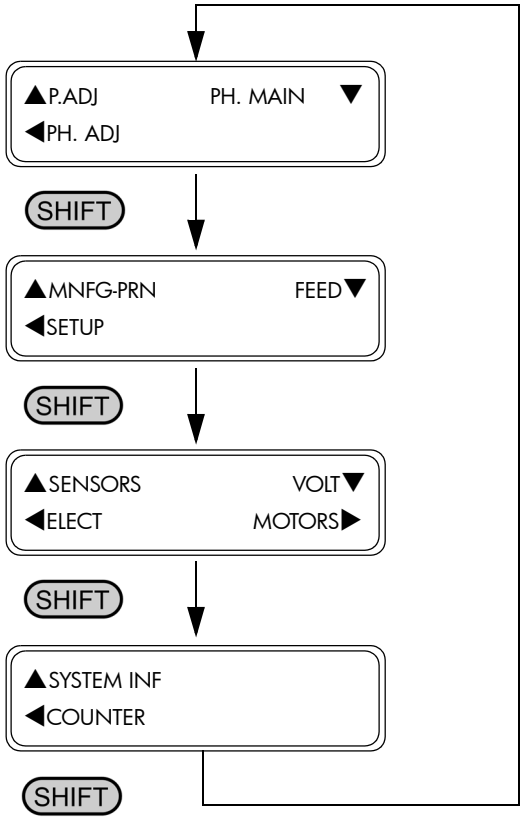


Basic Menu Operation

Menu Group Selection

You can select a menu group directly with the ▲, ▼, ◀ and ▶ keys.

In order to switch between the different Maintenance Mode menus, the **Shift** key has to be used. The order of the different menus is as follows:



Menu Selection

Use the ▲ and ▼ keys to change between the menus at the same level.

Use the ◀ key to move to a higher level menu and use the ▶ key to move to a lower level menu.

Use the **OK** key to select a menu.

Parameter Setting

Use the ▲ and ▼ keys to switch between the parameters and to change the value of the digits.

Use the ◀ and ▶ keys to move between the digits when entering a parameter.

Use the **OK** key to confirm the parameter.

Use the **Cancel** key to cancel the parameter (without changing it) and return to the menu selection level.

Exiting Maintenance Mode

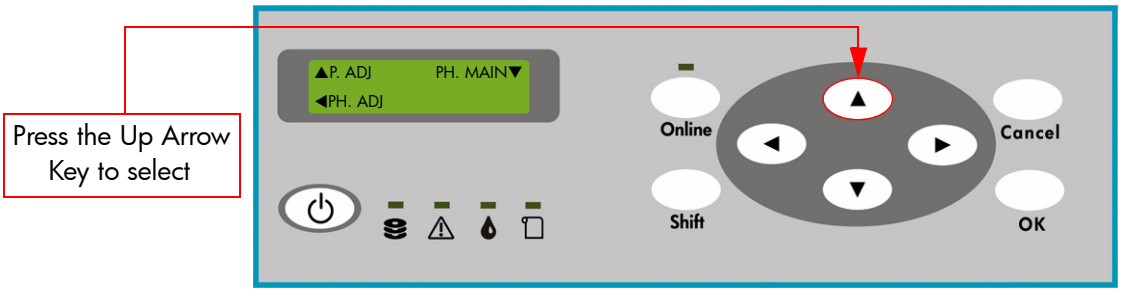
Use the **Online** key at anytime to immediately exit the Maintenance Mode.

P. ADJ. (Printer Adjustment)

This menu contains the necessary options to set the adjustment parameters of the Printer so that it functions correctly. The different options available in this menu are as follows:

- Adjust Print ⇒ Page *4-10*.
- Media Advance Print ⇒ Page *4-11*.
- Manufacturing Print 1 ⇒ Page *4-13*.
- Cap Position ⇒ Page *4-13*.
- Wipe Position ⇒ Page *4-14*.
- Line Sensor Adjust Top Value ⇒ Page *4-14*.
- Line Sensor Adjust Side Value ⇒ Page *4-15*.
- Media Advance Value ⇒ Page *4-15*.
- Back Adjust Print ⇒ Page *4-16*.
- Back Adjust Value ⇒ Page *4-17*.

To enter in to the Printer Adjustment menu, enter in to the Maintenance Mode and press the ▲ key.



Adjust Print

This option allows you to print an adjustment print that is then used to calibrate the Line Sensor:

1 In the Printer Adjustment submenu, scroll to "Adjust Print" and press the **OK** key.

```
# ADJUST PRINT
> LS ADJ PRINT
```

2 In the Adjust Print submenu, scroll to "LS Adj Print" and press the **OK** key.

```
# ADJUST PRINT
* LS ADJ PRINT
```

3 You will need to confirm that you want to print the Adjust Print by pressing the **OK** key.

```
# ADJUST PRINT
* OK?
```

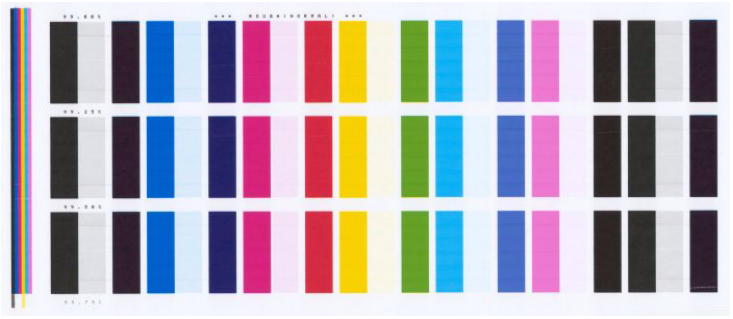
4 The Printer will start printing the Adjust Print and the following message will appear on the Front Panel.

```
# ADJUST PRINT
* EXECUTING
```

5 After printing the Adjust Print, you will need to enter the values (if necessary) for the Line Sensor adjustment ⇒ Page *4-14*.

Media Advance Print

This option allows you to print the media advance pattern which is then used to calibrate the media advance for the different media used in the printer:



Always set the Take-up-reel to Tension Mode when performing the Media Advance adjustment.

1 In the Printer Adjustment submenu, scroll to "Media Adv Print" and press the **OK** key.

```
# MEDIA ADV PRINT
> ROUGH (NORMAL)
```

2 In the Media Adv Print submenu, scroll to "Rough (Normal)" and press the **OK** key.

```
# MEDIA ADV PRINT
* ROUGH (NORMAL)
```

The other Media Advance Prints available in this menu are as follows:

- Rough (Normal) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (Standard 4-pass print mode).
- Rough (H-Qual) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (High Quality 8-pass print mode).
- Rough (H-Dens) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (High Density 8-pass print mode).
- Rough (3 Times) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (Triple Density 12-pass print mode).
- Rough (H-Qual2) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (High Quality2 16-pass print mode).

- Rough (H-Dens2) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (High Density2 16-pass print mode).
- Rough (Draft) - Prints the media advance adjustment pattern every 0.25% in the 99.0 to 101.1% range (Draft 2-pass print mode).
- Detail (Normal) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (Standard 4-pass print mode).
- Detail (H-Qual) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (High Quality 8-pass print mode).
- Detail (H-Dens) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (High Density 8-pass print mode).
- Detail (3 Times) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (Triple Density 12-pass print mode).
- Detail (H-Qual2) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (High Quality2 16-pass print mode).
- Detail (H-Dens2) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (High Density2 16-pass print mode).
- Detail (Draft) - Prints the media advance adjustment pattern every 0.06% in the current setting value ± 0.12% range (Draft 2-pass print mode).
- **Detail 2** prints are only used in the Manufacturing process, so should not be used.

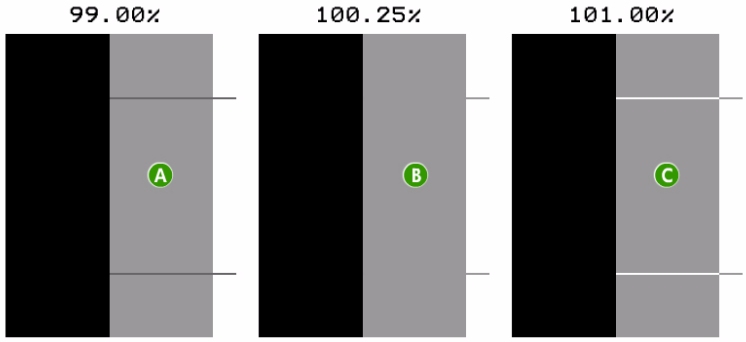
3 You will need to confirm that you want to print the selected Media Advance print by pressing the **OK** key.

```
# MEDIA ADV PRINT
* OK?
```

4 The Printer will start printing the selected Media Advance Print and the following message will appear on the Front Panel. You can press the **Cancel** key at any time to stop printing.

```
# MEDIA ADV PRINT
* EXECUTING
```

5 The Media Advance Print will show 9 patterns printed in 0.25% steps in a range from 99.00% to 101.00% (example shown using Black color).



A Dark lines are visible, so the value is too low.

B No line are visible, so the value is correct.

C Light lines are visible, so the value is too high.

6 From the printed pattern, select the best media advance calibration value.

7 Enter the "Media Adv Value" submenu and enter the value selected in the previous step ⇒ Page *4-15*.

8 Repeat the process from step 2, but this time selecting "Detail (Normal)" instead.

```
# MEDIA ADV PRINT
* DETAIL (NORMAL)
```

Manufacturing Print 1

This option is ONLY used for manufacturing purposes.

Cap Position

This option allows you to correct the value of the capping position:

Please refer to the instructions on Page *5-60* for the full instructions on how to calibrate the capping position.

1 In the Printer Adjustment submenu, scroll to "Cap Position" and press the **OK** key.

The value of the Cap Position should never be set as 0.0 mm as this means that the Cap Position has not been adjusted.

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of -5.0 to +5.0 mm.

3 Press the **OK** key once you have entered the new value.

Wipe Position

This option allows you to correct the value of the wiping position:

Please refer to the instructions on Page *5-58* for the full instructions on how to calibrate the wiping position.

1 In the Printer Adjustment submenu, scroll to "Wipe Position" and press the **OK** key.

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of -5.0 to +5.0 mm.

3 Press the **OK** key once you have entered the new value.

Line Sensor Adjust Top Value

This option allows you to correct the value for the Line Sensor (top margin position), according to the print results of the Adjust Print:

Please refer to the instructions on Page *5-64* for the full instructions on how to calibrate the Line Sensor Top Margin.

1 In the Printer Adjustment submenu, scroll to "LS Adj Top Val" and press the **OK** key.

```
# LS ADJ TOP VAL
> +0.0 mm
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of -5.0 to +5.0 mm.

```
# LS ADJ TOP VAL
* +0.8 mm
```

3 Press the **OK** key once you have entered the new value.

Line Sensor Adjust Side Value

This option allows you to correct the value for the Line Sensor (side margin position), according to the print results of the Adjust Print:

Please refer to the instructions on Page *5-62* for the full instructions on how to calibrate the Line Sensor Side Margin.

1 In the Printer Adjustment submenu, scroll to "LS Adj Side Val" and press the **OK** key.

```
# LS ADJ SIDE VAL
> +0.0 mm
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of -5.0 to +5.0 mm.

```
# LS ADJ SIDE VAL
* +1.1 mm
```

3 Press the **OK** key once you have entered the new value.

Media Advance Value

This option allows you to enter the media advance value which is needed to calibrate the media advance for the different media used in the printer.

For an image of the Media Advance Print, see Page *4-11*.

Do NOT change the MNFG value as this is ONLY used during the manufacturing process.

1 In the Printer Adjustment submenu, scroll to "Media Adv Value" and press the ▶ key.

```
# MEDIA ADV VALUE
# MNFG
```

2 In the Media Adv Value submenu, select the media that you would like to correct and press the **OK** key. If you would like to exit the Media Adv Value submenu, press the ◀ key.

```
# MEDIA ADV VALUE
# PAPER   >099.80%
```

3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of 097.00% to 103.00%.

```
# MEDIA ADV VALUE
# PAPER   >098.40%
```

4 Press the **OK** key once you have entered the new value.

Back Adjust Print

This option allows you to print an adjustment pattern so that the media back feed can be mechanically adjusted:

1 In the Printer Adjustment submenu, scroll to "Back Adj Print" and press the **OK** key.

```
# BACK ADJ PRINT
> NORMAL
```

2 In the Back Adj Print submenu, scroll to the pattern that you would like to print and press the **OK** key.

```
# BACK PATTERN
* NORMAL
```

The Back Adjust patterns available in this menu are as follows:

- Normal - Prints using a Standard 4-pass printmode.
- H-Quality - Prints using a High Quality 8-pass printmode.
- H-Density - Prints using a High Density 8-pass print mode.
- 3 Times - Prints using a Triple Density 12-pass print mode.
- H-Quality2 - Prints using a High Quality2 16-pass print mode.
- H-Density2 - Prints using a High Density2 16-pass print mode.

- Draft - Prints using a Draft 2-pass printmode.

3 You will need to confirm that you want to print the selected Back Adjust pattern by pressing the **OK** key.

```
# BACK ADJ PRINT
* OK?
```

4 The Printer will start printing the selected Back Adjust pattern and the following message will appear on the Front Panel.

```
# BACK ADJ PRINT
* EXECUTING
```

Back Adjust Value

Do NOT change the MNFG value as this is ONLY used during the manufacturing process.

This option allows you to correct the media back feed value based on the back adjust print:

1 In the Printer Adjustment submenu, scroll to "Back Adj Value" and press the ▶ key.

```
# BACK ADJ VALUE
# MNFG
```

2 In the Back Adj Value submenu, select the media that you would like to correct and press the **OK** key. If you would like to exit the Back Adj Value submenu, press the ◀ key.

```
# BACK ADJ VALUE
# PAPER   >+0000P
```

3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of ±2000P (±5 mm). 1 pulse = 2.5 micromillimeters.

```
# BACK ADJ VALUE
# PAPER   >+0100P
```

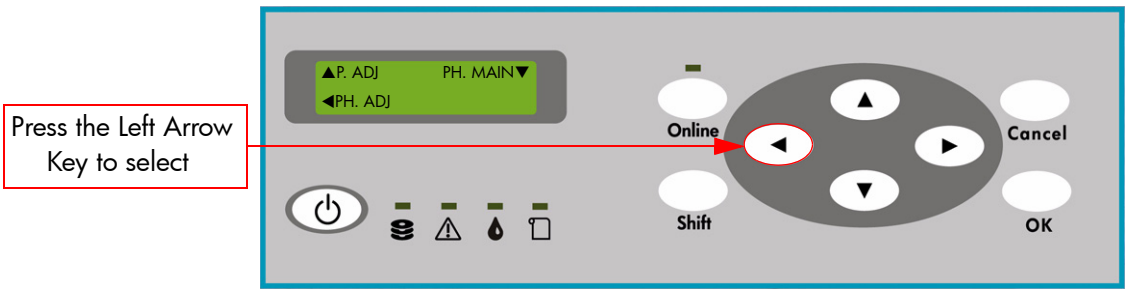
4 Press the **OK** key once you have entered the new value.

PH. ADJ (Printhead Adjustment)

This menu contains the necessary options to set the adjustment parameters of the Printhead so that it functions correctly. The different options available in this menu are as follows:

- Printhead Adjustment Prints ⇒ Page *4-18*.
- Move Carriage ⇒ Page *4-19*.
- Printhead Row Value ⇒ Page *4-20*.
- Printhead to Printhead Value ⇒ Page *4-21*.
- Set Bidirection Media ⇒ Page *4-21*.
- Bidirection Definitions ⇒ Page *4-22*.
- Printhead Voltage ⇒ Page *4-23*.
- Manufacturing Print 2 ⇒ Page *4-24*.

To enter in to the Printhead Adjustment menu, enter in to the Maintenance Mode and press the ◀ key.



Printhead Adjustment Prints

This option allows you to print the different adjustment patterns that need to be used to adjust the Printhead:

Make sure that media is loaded completely flat and that there are no bubbles forming when the media passes over the Print Platen.

1 In the Printhead Adjustment submenu, scroll to "PH Adj Prints" and press the **OK** key.

```
# PH ADJ PRINTS
> NOZZLE CHECK
```

2 In the Printhead Adjustment Prints submenu, scroll to the pattern that you would like to print and press the **OK** key.

```
# PH ADJ PRINTS
* NOZZLE CHECK
```

The Printhead Adjustment Prints available in this menu are as follows:

- Nozzle Check - Prints a nozzle check pattern that can be used to determine which nozzles are missing (if any).

- Printhead Adj - Prints a Printhead adjustment pattern that can be used to adjust the printhead (used when installing a new Printhead).
- Check Printhead - Prints a Printhead adjustment check pattern.
- PH Row - Prints a Printhead alignment pattern.
- PH to PH - Prints a Printhead to Printhead alignment pattern.
- Bidirection Def - Prints a Bi-directional adjustment pattern.
- Bidirection F.D - Prints a Bi-directional adjustment pattern for the Fine Draft print mode.
- Check PH to PH - Prints a Printhead to Printhead check pattern
- Check Bidir Def - Prints a Bi-directional check pattern (this should be done when using any Bi-directional print mode, except for the Fine Draft print mode).
- Check Bidir F.D - Prints a Bi-directional check pattern for the Fine Draft print mode.

3 You will need to confirm that you want to print the selected printhead Adjustment Pattern by pressing the **OK** key.

```
# PH ADJ PRINTS
* OK?
```

4 The Printer will start printing the selected Printhead Adjustment Pattern and the following message will appear on the Front Panel.

```
# PH ADJ PRINTS
* EXECUTING
```

Move Carriage

This option allows you to move the Carriage when adjusting the Printhead:

1 In the Printhead Adjustment submenu, scroll to "Move Carriage" and press the **OK** key.

```
# MOVE CARRIAGE
> HOME
```

2 In the Move Carriage submenu, scroll to the position that you would like the Carriage to move to and press the **OK** key.

```
# MOVE CARRIAGE
* HOME
```

The positions that the Carriage can move to are as follows:

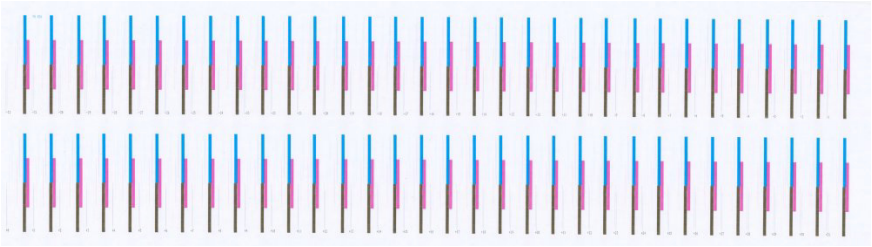
- Home - Moves the Carriage to the home position.
- Cap - Moves the Carriage to the capping position.
- Center - Moves the Carriage to the center of the Printer.
- Wipe - Moves the Carriage to the wiping position.

3 You will need to confirm that you want to move the Carriage to the selected position by pressing the **OK** key.

```
# MOVE CARRIAGE
* WIPE   OK?
```

Printhead Row Value

This option allows you to adjust the left and right position of each Printhead by entering the correction values according to the results obtained from the Printhead Adjustment Print:



1 In the Printhead Adjustment submenu, scroll to "PH Row Val" and press the ▶ key.

```
# PH ROW VAL
# K
```

2 In the PH Row Val submenu, select the color of the Printhead that you would like to adjust and press the **OK** key. If you would like to exit the PH Row Val submenu, press the ◀ key.

```
# PH ROW VAL
# K   >+00
```

The different colors of the Printheads are as follows:

- K - Black.
- Lm - Light Magenta.
- Lc - Light Cyan.
- Y - Yellow.
- M - Magenta.
- C - Cyan.

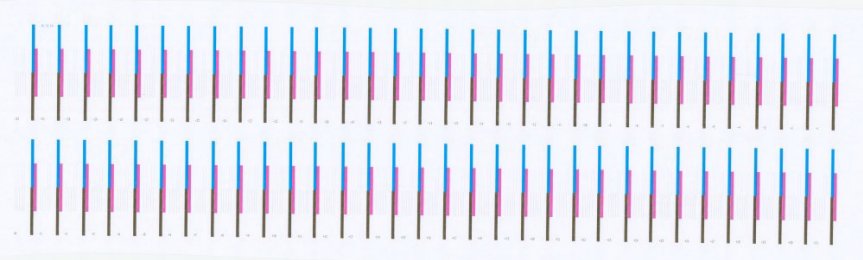
3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The numerical value can be changed in a range of -32 to +31 (1 unit = 1 dot).

```
# PH ROW VAL
# Lc   >+04
```

4 Press the **OK** key once you have entered the new value.

Printhead to Printhead Value

This option allows you to adjust the Printhead position in the main scanning direction of each head by entering the correction values according to the results obtained from the Printhead Adjustment Print:



1 In the Printhead Adjustment submenu, scroll to "PH to PH Val" and press the ▶ key.

```
# PH TO PH VAL
# Lm
```

2 In the PH to PH Val submenu, select the color of the Printhead that you would like to adjust and press the **OK** key. If you would like to exit the PH to PH Val submenu, press the ◀ key.

```
# PH TO PH VAL
# Lm   >+00
```

The different colors of the Printheads are as follows:

- Lm - Light Magenta.
- Lc - Light Cyan.
- Y - Yellow.
- M - Magenta.
- C - Cyan.

3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The numerical value can be changed in a range of -32 to +31 (1 unit = 1 dot).

```
# PH TO PH VAL
# Lm   >+03
```

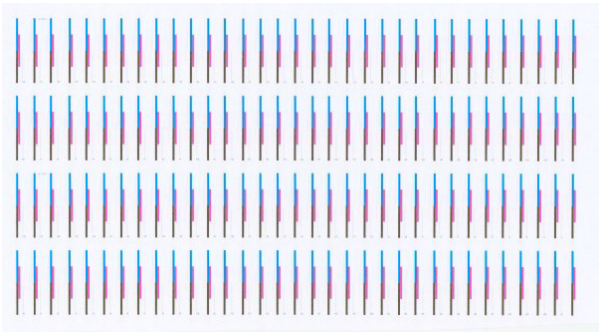
4 Press the **OK** key once you have entered the new value.

Set Bidirection Media

Do NOT use the MNFG value as this is ONLY used during the manufacturing process.

This option allows you to select the target media that will be used to adjust the Bidirectional values (media selected here will be used in the Bidirection

Definition):



1 In the Printhead Adjustment submenu, scroll to "Set Bidir Media" and press the **OK** key.

```
# SET BIDIR MEDIA
> MNFG
```

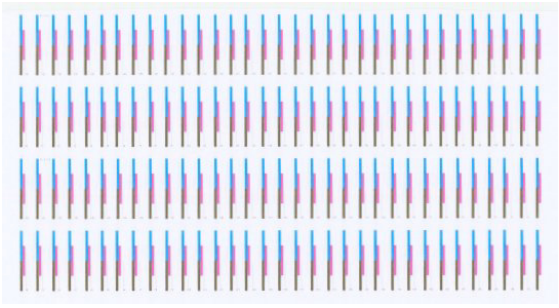
2 In the Set Bidir Media submenu, scroll to the media that you would like to use for Bidirection adjustment and press the **OK** key.

```
# SET BIDIR MEDIA
* PAPER
```

Bidirection Definition

The example on this page explains how to enter the correction values for the left Bidirection position. Use the same procedure in order to correct the right Bidirection value and the Bidirection values for Fine Draft (left and right positions).

This option allows you to adjust the left Bidirection position of each head for the selected media by entering the correction values according to the results obtained from the Printhead Adjustment Print:



1 In the Printhead Adjustment submenu, scroll to "Bi-Def/L xxxxxx" and press the ▶ key.

```
# BI-DEF/L xxxxxx
# K
```

2 In the Bi-Def/L submenu, select the color of the Printhead that you would like to adjust and press the **OK** key. If you would like to exit the Bi-Def/L submenu, press the ◀ key.

```
# BI-DEF/L xxxxxx
# K   >+00
```

xxxxxx = media selected in "Set Bidir Media"

The different colors of the Printheads are as follows:

- K - Black.
- Lm - Light Magenta.
- Lc - Light Cyan.
- Y - Yellow.
- M - Magenta.
- C - Cyan.

3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The numerical value can be changed in a range of -32 to +31 (1 unit = 1 dot).

```
# BI-DEF/L xxxxxx
> K   >+02
```

4 Press the **OK** key once you have entered the new value.

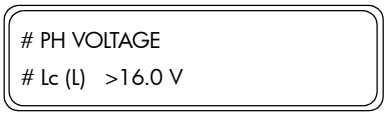
Printhead Voltage

This option allows you to enter the drive voltage value for each Printhead:

You MUST enter the drive voltage value of a new Printhead after installing it, or else it will NOT print correctly. Remember to set BOTH the left and right values for each Printhead.

1 In the Printhead Adjustment submenu, scroll to "PH Voltage" and press the ▶ key.

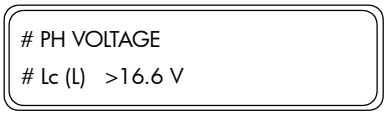
2 In the PH Voltage submenu, select the color of the Printhead (either left or right) for which you would like to set the Printhead Voltage and press the **OK** key. If you would like to exit the PH Voltage submenu, press the ◀ key.



The different colors of the Printheads are as follows:

- K - Black.
- Lm - Light Magenta.
- Lc - Light Cyan.
- Y - Yellow.
- M - Magenta.
- C - Cyan.

3 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits. The value can be changed in a range of 12.0 to 20.0 V (in increments of 0.1 V).



4 Press the **OK** key once you have entered the new value.

Manufacturing Print 2

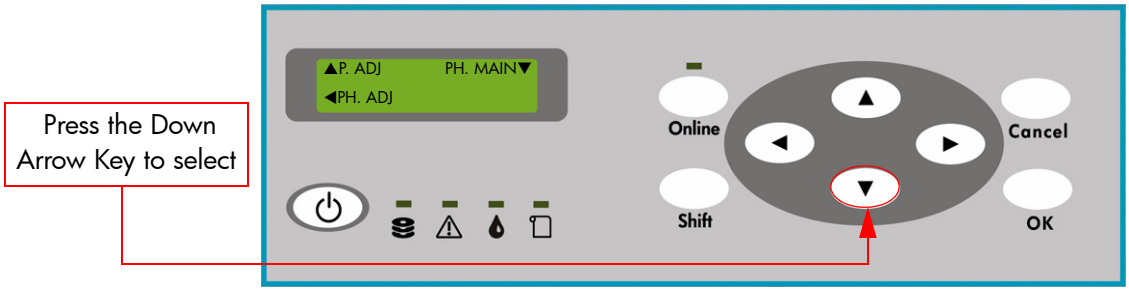
This option is ONLY used for manufacturing purposes.

PH. MAIN (Printhead Maintenance)

This menu contains the necessary options related to the actual Printheads contained in the Carriage Assembly, like cleaning or servicing. The different options available in this menu are as follows:

- Charge Ink System ⇒ Page *4-25*.
- Purge Ink System ⇒ Page *4-27*.
- Ink System Options:
  - Store Ink System ⇒ Page *4-30*.
  - Clean Ink System ⇒ Page *4-36*.
- Ink Charge Done ⇒ Page *4-45*.
- Printhead Recovery ⇒ Page *4-45*.
- Uncap Carriage ⇒ Page *4-46*.
- Cap Carriage ⇒ Page *4-46*.

To enter in to the Printhead Maintenance menu, enter in to the Maintenance Mode and press the ▼ key.



Charge Ink System

This option allows you to charge the complete ink system (e.g. when the Ink Tubes are empty) or individual inks (e.g. after replacing a Printhead):

1 In the Printhead Maintenance submenu, scroll to "Charge Ink Sys" and press the **OK** key.

```
# CHARGE INK SYS
> ALL
```

2 In the Charge Ink System submenu, select whether you would like to charge the complete Ink System, part of the Ink System or individual inks and then press the **OK** key.

```
# CHARGE INK SYS
* ALL
```

The different options available in this submenu are as follows:

- ALL - Charges the complete Ink System.
- Left (K, Lm, Lc) - Charges the Black, Light Magenta and Light Cyan inks.
- Right (Y, M, C) - Charges the Yellow, Magenta and Cyan inks.
- K - Charges the Black ink.

- Lm - Charges the Light Magenta ink.
- Lc - Charges the Light Cyan ink.
- Y - Charges the Yellow ink.
- M - Charges the Magenta ink.
- C - Charges the Cyan ink.

It is not possible to charge the ink for individual colors without a special tool, so this should NOT be tried.

3 When the following message appears on the Front Panel, check whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
# CHARGE INK SYS
* BOTTLE OK?
```

4 If any of the Ink Cartridges contain **less** than 350cc of Ink or if a Purging Cartridge has been installed, the following message will be displayed on the Front Panel. Install a correct Ink Cartridge that contains more than 350cc of Ink in the indicated slot in order to continue.

```
LOAD NEW INK CAR
LOAD XX SLOT
```

5 The Charge Ink System process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
START INK FILL
* BOTTLE OK?
```

6 The Printer will charge the ink and the following message will be displayed on the Front Panel:

```
INK FILLING
        xxx
```

7 Once the Ink Charge process has been completed, the Front Panel will return to the Charge Ink System submenu.

```
# CHARGE INK SYS
> ALL
```

Purge Ink System

This option allows you to remove the ink from the complete system or individual inks so that any relevant repair can be done to the Printer (e.g. replace the Ink Pump Assembly):

1 In the Printhead Maintenance submenu, scroll to "Purge Ink Sys" and press the **OK** key.

```
# PURGE INK SYS
> ALL
```

2 In the Purge Ink System submenu, select whether you would like to purge the complete Ink System, part of the Ink System or individual inks and then press the **OK** key.

```
# PURGE INK SYS
* ALL
```

The different options available in this submenu are as follows:

- ALL - Purges the complete Ink System.
- Left (K, Lm, Lc) - Purges the Black, Light Magenta and Light Cyan inks.
- Right (Y, M, C) - Purges the Yellow, Magenta and Cyan inks.
- K - Purges the Black ink.
- Lm - Purges the Light Magenta ink.
- Lc - Purges the Light Cyan ink.
- Y - Purges the Yellow ink.
- M - Purges the Magenta ink.
- C - Purges the Cyan ink.

It is not possible to purge the ink for individual colors without a special tool, so this should NOT be tried.

3 When the following message appears on the Front Panel, check whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
# PURGE INK SYS
* BOTTLE OK?
```

4 When the following message is displayed on the Front Panel, open the Left Ink Cartridge Door and remove ALL 3 Ink Cartridges.

```
OPEN L INKCOVER
REMOVE CARTRIDGE
```

5 Once the Ink Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD PURGING CAR
CLOSE L INKCOVER

6 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER	LOAD PURGING CAR
LOAD XX SLOT	LOAD XX SLOT

7 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Ink Cartridges.

OPEN R INKCOVER
REMOVE CARTRIDGE

8 Once the Ink Cartridges have been removed, install a Priming Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD PURGING CAR
CLOSE R INKCOVER

9 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER	LOAD PURGING CAR
LOAD XX SLOT	LOAD XX SLOT

10 The Ink Purging process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING
* BOTTLE OK?

11 The Printer will extract the ink (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

12 Once the ink has been extracted from the system, the following message will be displayed on the Front Panel. Power Off the Printer by pressing the **Cancel** and the **Power Off** keys together.

Ink System Options - Store Ink System

This option allows you to fill the ink system with Storage Liquid so that the Printer can be stored for a period of up to four weeks while switched Off:

Opening or closing of the rear covers or levers should be avoided while the Store Ink System process is being performed or the operation may have to be restarted from the beginning. This will result in the Storage Liquid being wasted. If the Store Ink System process has to be restarted, NEW Storage Liquid Cartridges will be needed.

Once the Store Ink System procedure has been completed, the Storage Liquid Cartridges must be left installed in the Printer.

In order to perform the Store Ink System procedure, you will need to have the HP 790 Ink System Storage Kit available.

1. In the Printhead Maintenance submenu, scroll to "Ink System Opt" and press the **OK** key.

```
# INK SYSTEM OPT
> STORE INK SYS
```

2. In the Ink System Opt submenu, scroll to the "Store Ink Sys" option and press the **OK** key.

```
# INK SYSTEM OPT
* STORE INK SYS
```

3. When the following message appears on the Front Panel, check whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
# INK SYSTEM OPT
* BOTTLE OK?
```

4. When the following message is displayed on the Front Panel, open the Left Ink Cartridge Door and remove ALL 3 Ink Cartridges.

```
OPEN L INKCOVER
REMOVE CARTRIDGE
```

5. Once the Ink Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

```
LOAD PURGING CAR
CLOSE L INKCOVER
```

6 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

7 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Ink Cartridges.

OPEN R INKCOVER
REMOVE CARTRIDGE

8 Once the Ink Cartridges have been removed, install a Purging Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD PURGING CAR
CLOSE R INKCOVER

9 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

10 The Ink extraction process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING
* BOTTLE OK?

11 The Printer will purge the ink (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

PURGING
xxx

12 Once the ink has been purged from the system, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN L INKCOVER
LOAD SL CART

13 Once the Purging Cartridges have been removed, install a NEW Storage Liquid Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD SL CART CLOSE L INKCOVER

14 If the Printer detects that a Storage Liquid Cartridge has been installed incorrectly, or if any of the Storage Liquid Cartridges contain less than 500cc of liquid or if an invalid Storage Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Storage Liquid Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD SL CART LOAD XX SLOT
LOAD NEW SL CART LOAD XX SLOT	

15 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN R INKCOVER LOAD SL CART

16 Once the Purging Cartridges have been removed, install a NEW Storage Liquid Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD SL CART CLOSE R INKCOVER

17 If the Printer detects that a Storage Liquid Cartridge has been installed incorrectly, or if any of the Storage Liquid Cartridges contain less than 500cc of liquid or if an invalid Storage Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Storage Liquid Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD SL CART LOAD XX SLOT
LOAD NEW SL CART LOAD XX SLOT	

18 The Storage Liquid charge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
START FILLING SL
* BOTTLE OK?
```

19 The Printer will charge the Storage Liquid and the following message will be displayed on the Front Panel:

```
FILLING SL
          xxx
```

20 Once the Storage Liquid has been charged, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Storage Liquid Cartridges.

```
OPEN L INKCOVER
REMOVE CARTRIDGE
```

21 Once the Storage Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

```
LOAD PURGING CAR
CLOSE L INKCOVER
```

22 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

```
OPEN L INKCOVER
LOAD XX SLOT
```

```
LOAD PURGING CAR
LOAD XX SLOT
```

23 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Storage Liquid Cartridges.

```
OPEN R INKCOVER
REMOVE CARTRIDGE
```

24 Once the Storage Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Right Ink Cartridge Door.

```
LOAD PURGING CAR
CLOSE R INKCOVER
```

25 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

26 The Storage Liquid purge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING * BOTTLE OK?

27 The Printer will extract the Storage Liquid (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

PURGING xxx

28 Once the Storage Liquid has been extracted from the system, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN L INKCOVER LOAD SL CART

29 Once the Purging Cartridges have been removed, install a used Storage Liquid Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD SL CART CLOSE L INKCOVER

30 If the Printer detects that a Maintenance Liquid Cartridge has been installed incorrectly, or if any of the Maintenance Liquid Cartridges contain less than 250cc of liquid or if an invalid Maintenance Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Maintenance Liquid Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD SL CART LOAD XX SLOT
LOAD NEW SL CART LOAD XX SLOT	

31 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Purging Cartridges.

```
OPEN R INKCOVER
LOAD SL CART
```

32 Once the Purging Cartridges have been removed, install a used Storage Liquid Cartridge in to each slot and close the Right Ink Cartridge Door.

```
LOAD SL CART
CLOSE R INKCOVER
```

33 If the Printer detects that a Maintenance Liquid Cartridge has been installed incorrectly, or if any of the Maintenance Liquid Cartridges contain less than 250cc of liquid or if an invalid Maintenance Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Maintenance Liquid Cartridge has been installed correctly before you can continue.

```
OPEN R INKCOVER
LOAD XX SLOT
```

```
LOAD SL CART
LOAD XX SLOT
```

```
LOAD NEW SL CART
LOAD XX SLOT
```

34 The Storage Liquid charge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
START FILLING SL
* BOTTLE OK?
```

35 The Printer will charge the Storage Liquid and the following message will be displayed on the Front Panel:

```
FILLING SL
              xxx
```

36 Once the Storage Liquid has been charged, the Capping Station will be filled and the following message will be displayed:

```
WASH PRINTHEADS
EXECUTING
```

37 Once the Store Ink System process has been completed, the Front Panel will return to the Ink SYstem Opt submenu.

```
# INK SYSTEM OPT
> STORE INK SYS
```

Ink System Options - Clean Ink System

This option allows you to clean the ink system with Cleaning Liquid after the Printer is powered On after being stored for a long period:

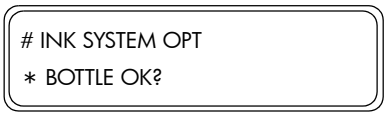
Opening or closing of the rear covers or levers should be avoided while the Clean Ink System process is being performed or the operation may have to be restarted from the beginning. This will result in the Cleaning Liquid being wasted. If the Clean Ink System process has to be restarted, NEW Cleaning Liquid Cartridges will be needed.

In order to perform the Store Ink System procedure, you will need to have the HP 790 Ink System Cleaning Kit available.

1. In the Printhead Maintenance submenu, scroll to "Ink System Opt" and press the **OK** key.

2. In the Ink System Opt submenu, scroll to the "Clean Ink Sys" option and press the **OK** key.

3. When the following message appears on the Front Panel, check whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.



4. When the following message is displayed on the Front Panel, open the Left Ink Cartridge Door and remove ALL 3 Storage Liquid Cartridges.

5. Once the Storage Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

6 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

7 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Storage Liquid Cartridges.

OPEN R INKCOVER REMOVE CARTRIDGE

8 Once the Storage Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD PURGING CAR CLOSE R INKCOVER

9 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

10 The Storage Liquid purge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING * BOTTLE OK?

11 The Printer will purge the Storage Liquid (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

PURGING xxx

12 Once the Storage Liquid has been purged from the system, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN L INKCOVER LOAD CL CART

13 Once the Purging Cartridges have been removed, install a NEW Cleaning Liquid Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD CL CART CLOSE L INKCOVER

14 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD CL CART LOAD XX SLOT
LOAD NEW CL CART LOAD XX SLOT	

15 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN R INKCOVER LOAD CL CART

16 Once the Purging Cartridges have been removed, install a NEW Cleaning Liquid Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD CL CART CLOSE R INKCOVER

17 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD CL CART LOAD XX SLOT
LOAD NEW CL CART LOAD XX SLOT	

18 The Cleaning Liquid charge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
START FILLING CL
* BOTTLE OK?
```

19 The Printer will charge the Cleaning Liquid and the following message will be displayed on the Front Panel:

```
FILLING CL
          xxx
```

20 Once the Cleaning Liquid has been charged, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Cleaning Liquid Cartridges.

```
OPEN L INKCOVER
REMOVE CARTRIDGE
```

21 Once the Cleaning Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

```
LOAD PURGING CAR
CLOSE L INKCOVER
```

22 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

```
OPEN L INKCOVER
LOAD XX SLOT
```

```
LOAD PURGING CAR
LOAD XX SLOT
```

23 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Cleaning Liquid Cartridges.

```
OPEN R INKCOVER
REMOVE CARTRIDGE
```

24 Once the Cleaning Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Right Ink Cartridge Door.

```
LOAD PURGING CAR
CLOSE R INKCOVER
```

25 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

26 The Cleaning Liquid purge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING
* BOTTLE OK?

27 The Printer will extract the Cleaning Liquid (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

PURGING
xxx

28 Once the Cleaning Liquid has been purged from the system, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Purging Cartridges.

OPEN L INKCOVER
LOAD CL CART

29 Once the Purging Cartridges have been removed, install a used Cleaning Liquid Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD CL CART
CLOSE L INKCOVER

30 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD CL CART LOAD XX SLOT

LOAD NEW CL CART
LOAD XX SLOT

31 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Purging Cartridges.

```
OPEN R INKCOVER
LOAD CL CART
```

32 Once the Purging Cartridges have been removed, install a used Cleaning Liquid Cartridge in to each slot and close the Right Ink Cartridge Door.

```
LOAD CL CART
CLOSE R INKCOVER
```

33 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

```
OPEN R INKCOVER
LOAD XX SLOT
```

```
LOAD CL CART
LOAD XX SLOT
```

```
LOAD NEW CL CART
LOAD XX SLOT
```

34 The Cleaning Liquid charge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

```
START FILLING CL
* BOTTLE OK?
```

35 The Printer will charge the Cleaning Liquid and the following message will be displayed on the Front Panel:

```
FILLING CL
          xxx
```

36 Once the Cleaning Liquid has been charged, the Printheads and the Sub-Tank will be flushed and the following message will be displayed:

```
FLUSHING
          xxx
```

37 Once the printheads and the Sub-Tank have been flushed, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Cleaning Liquid Cartridges.

OPEN L INKCOVER REMOVE CARTRIDGE

38 Once the Cleaning Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Left Ink Cartridge Door.

LOAD PURGING CAR CLOSE L INKCOVER

39 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN L INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

40 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Cleaning Liquid Cartridges.

OPEN R INKCOVER REMOVE CARTRIDGE

41 Once the Cleaning Liquid Cartridges have been removed, install a Purging Cartridge in to each slot and close the Right Ink Cartridge Door.

LOAD PURGING CAR CLOSE R INKCOVER

42 If the Printer detects that a Purging Cartridge has been installed incorrectly or if an invalid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Purging Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD PURGING CAR LOAD XX SLOT

43 The Cleaning Liquid purge process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

START PURGING * BOTTLE OK?

44 The Printer will extract the Cleaning Liquid (which could take at least 10 minutes) and the following message will be displayed on the Front Panel:

```
PURGING
xxx
```

45 Once the Cleaning Liquid has been purged from the system, the following message will be displayed on the Front Panel. Open the Left Ink Cartridge Door and remove ALL 3 Purging Cartridges.

```
OPEN L INKCOVER
LOAD CL CART
```

46 Once the Purging Cartridges have been removed, install a used Cleaning Liquid Cartridge in to each slot and close the Left Ink Cartridge Door.

```
LOAD CL CART
CLOSE L INKCOVER
```

47 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

```
OPEN L INKCOVER
LOAD XX SLOT
```

```
LOAD CL CART
LOAD XX SLOT
```

```
LOAD USED CL CART
LOAD XX SLOT
```

48 When the following message is displayed on the Front Panel, open the Right Ink Cartridge Door and remove ALL 3 Purging Cartridges.

```
OPEN R INKCOVER
LOAD CL CART
```

49 Once the Purging Cartridges have been removed, install a used Cleaning Liquid Cartridge in to each slot and close the Right Ink Cartridge Door.

```
LOAD CL CART
CLOSE R INKCOVER
```

50 If the Printer detects that a Cleaning Liquid Cartridge has been installed incorrectly, or if any of the Cleaning Liquid Cartridges contain less than 500cc of liquid or if an invalid Cleaning Liquid Cartridge has been installed, one of the following messages will be displayed on the Front Panel. You will need to make sure that a valid Cleaning Liquid Cartridge has been installed correctly before you can continue.

OPEN R INKCOVER LOAD XX SLOT	LOAD CL CART LOAD XX SLOT
LOAD USED CL CART LOAD XX SLOT	

51 The Sub-Tank priming process will start and you will need to recheck whether the Waste Ink Bottle is present and is NOT full. Press the **OK** key once the Waste Ink Bottle has been checked.

PRIME SUBTANK
* BOTTLE OK?

52 The Printer will extract the Sub-Tank and the following message will be displayed on the Front Panel:

PURGING
xxx

53 Once the Clean Ink System process has been completed, the Front Panel will return to the Ink System Opt submenu.

INK SYSTEM OPT
> CLEAN INK SYS

54 Remove the Cleaning Liquid Cartridges from the Printer.

55 Install normal Ink Cartridges into the Printer and perform the Charge Ink System procedure ⇒ Page *4-25*.

Ink Charge Done

This option allows you to check or indicate whether ink charge has been completed:

1 In the Printhead Maintenance submenu, scroll to "Ink Charge Done" and press the **OK** key.

```
# INK CHARGE DONE
> NO
```

2 In the Ink Charge Done submenu, select "Yes" if ink charge has been completed or "No" if ink charge has not been completed yet and then press the **OK** key.

```
# INK CHARGE DONE
* YES
```

Printhead Recovery

This option allows you to activate the Printhead Recovery process:

1 In the Printhead Maintenance submenu, scroll to "PH Recovery" and press the **OK** key.

```
# PH RECOVERY
> NORMAL ALL
```

2 In the PH Recovery submenu, select the level of Printhead recovery you would like to activate and then press the **OK** key.

```
# PH RECOVERY
* NORMAL ALL
```

The different options in this submenu are as follows:

- Normal All - Activates a normal recovery for all Printheads.
- Strong All - Activates a strong recovery for all colors.
- Strong K, Lm, Lc - Activates a strong recovery for the Black, Light Magenta and Light Cyan Printheads.
- Strong Y, M, C - Activates a strong recovery for the Yellow, Magenta and Cyan Printheads.

3 The Carriage will begin to perform the printhead recovery process, which can take a few minutes.

Uncap Carriage

This option allows you to uncap the Carriage from the Capping Station:

Never try to move the Carriage out of the Capping Station without first uncapping the Carriage.

1 In the Printhead Maintenance submenu, scroll to "Uncap Carriage" and press the **OK** key. The Capping Station will move downwards, uncapping the Carriage.

```
# UNCAP CARRIAGE
>
```

Cap Carriage

This option allows you to cap the Carriage in the Capping Station:

Never leave the Carriage uncapped for long periods of time since this can seriously damage the Printheads.

1 In the Printhead Maintenance submenu, scroll to "Cap Carriage" and press the **OK** key. The Capping Station will move upwards, capping the Carriage.

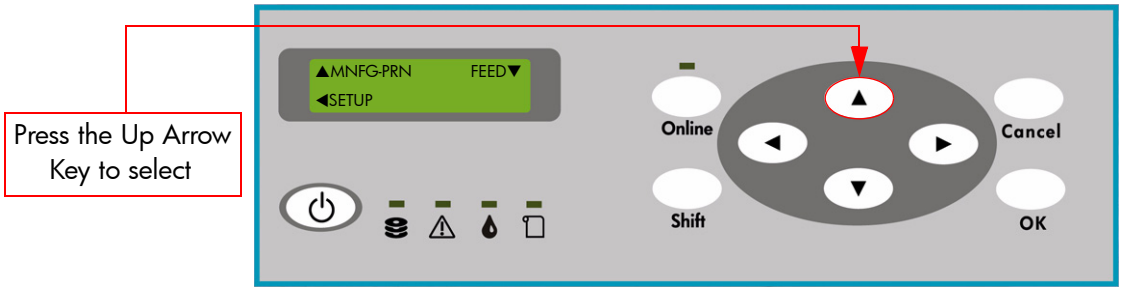
```
# CAP CARRIAGE
>
```

MNFG-PRN (Manufacturing Patterns)

This menu contains the necessary test patterns to check that the Printer is functioning correctly. The different options available in this menu are as follows:

- MNFG Pattern 0.
- MNFG Pattern 1.
- MNFG Pattern 2.
- MNFG Pattern 3.
- MNFG Pattern 4.
- MNFG Pattern 5.
- MNFG Pattern 6.
- MNFG Pattern 7.
- MNFG Pattern 8.
- MNFG Pattern 9.
- MNFG Pattern 10.
- MNFG Pattern 11.
- MNFG Pattern 12.

To enter in to the Manufacturing Pattern menu, enter in to the Maintenance Mode and press the **Shift** key once and then the ▲ key.



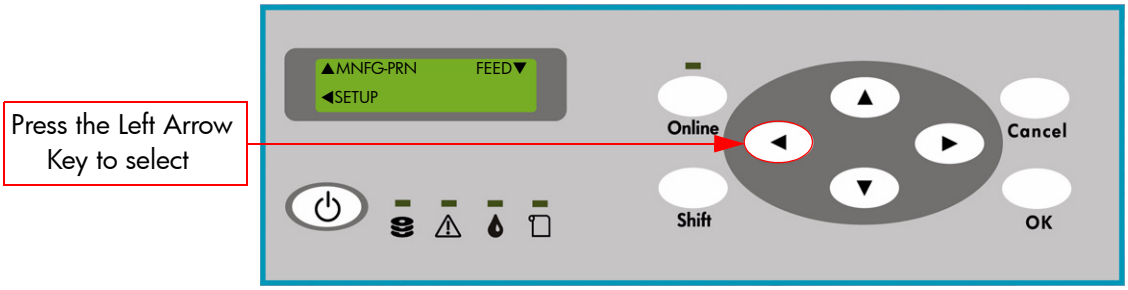
The MNFG Patterns in this menu are for Manufacturing purposes ONLY and should not be used for troubleshooting pur-

SETUP

This menu contains the necessary option to set the different system parameters, like language or system time. The different options available in this menu are as follows:

- Language ⇒ Page *4-48*.
- Beeper Settings ⇒ Page *4-49*.
- End of Ink Beeper Settings ⇒ Page *4-49*.
- System Date ⇒ Page *4-49*.
- System Time ⇒ Page *4-50*.
- OEM or HP Serial Number ⇒ Page *4-50*.
- NVRAM Initialization ⇒ Page *4-50*.
- Save Calibrations ⇒ Page *4-51*.
- Restore Calibrations ⇒ Page *4-51*.
- Save NVRAM ⇒ Page *4-51*.
- Restore NVRAM ⇒ Page *4-52*.
- Boot Version ⇒ Page *4-52*.
- Printer Firmware Version ⇒ Page *4-52*.
- Main PCA Version ⇒ Page *4-52*.
- Carriage PCA Version ⇒ Page *4-52*.
- ASIC version ⇒ Page *4-53*.
- Heater Hardware Version ⇒ Page *4-53*.
- Heater Firmware Version ⇒ Page *4-53*.
- Add-ON (HEB2) Control PCA Version ⇒ Page *4-53*.
- Heater Upgrade ⇒ Page *4-53*.
- Install Done ⇒ Page *4-55*.

To enter in to the Setup menu, enter in to the Maintenance Mode and press the **Shift** key once and then the ◀ key.



Language

This option allows you to select the language of the Front Panel display:

1 In the Setup submenu, scroll to "Language" and press the **OK** key.

```
# LANGUAGE
> ENGLISH
```

2 In the Language submenu, select "English" or "Japanese" and press the **OK** key.

```
# LANGUAGE
* JAPANESE
```

Beeper Settings

This option allows you to turn On/Off the beeper:

1 In the Setup submenu, scroll to "Beep" and press the **OK** key.

```
# BEEP
> ON
```

2 In the Beep submenu, select "On" or "Off" and then press the **OK** key.

```
# BEEP
* OFF
```

End of Ink Beeper Settings

This option allows you to turn On/Off the beeper that alerts you to end of ink during printing:

1 In the Setup submenu, scroll to "End of Ink Beep" and press the **OK** key.

```
# END OF INK BEEP
> ON
```

2 In the End of Ink Beep submenu, select "On" or "Off" and then press the **OK** key.

```
# END OF INK BEEP
* OFF
```

System Date

This option allows you to set the current date:

1 In the Setup submenu, scroll to "Date (yy/mm/dd)" and press the **OK** key.

```
# DATE (YY/MM/DD)
> 05/05/08
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# DATE (YY/MM/DD)
> 05/10/01
```

3 Press the **OK** key once you have entered the new date.

System Time

This option allows you to set the current time:

1 In the Setup submenu, scroll to "System Time" and press the **OK** key.

```
# SYSTEM TIME
> 01:01
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# SYSTEM TIME
> 09:30
```

Format: Hour:Minute

3 Press the **OK** key once you have entered the new time.

OEM or HP Serial Number

This option allows you to set the Serial Number of the Printer:

1 In the Setup submenu, scroll to "HP Serial No." or "OEM Serial No." and press the **OK** key.

```
# HP SERIAL No.
> 0000000000
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# HP SERIAL No.
> 012345678A
```

HP: 10 Digits
OEM: 8 Digits

3 Press the **OK** key once you have entered the new serial number.

NVRAM Initialization

This option allows you to initialize the NVRAM with the default values. The Printer correction values are returned to the values before adjustment:

1 In the Setup submenu, scroll to "NVRAM Init" and press the **OK** key.

```
# NVRAM INIT
>
```

2 You will need to confirm that you want to initialize the NVRAM by pressing the **OK** key.

```
# NVRAM INIT
* OK?
```

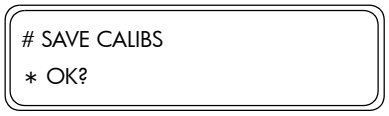
After the NVRAM has been initialized, you must set the option Ink Charge Done to "Yes" (refer to Page *4-45*).

Save Calibrations

This option allows you to save the Calibrations stored in the NVRAM into the Factory Defaults area in the flash memory:

1 In the Setup submenu, scroll to "Save Calibs" and press the **OK** key.

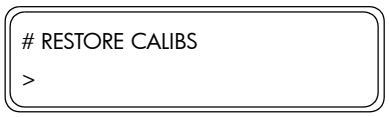
2 You will need to confirm that you want to save the NVRAM Calibrations by pressing the **OK** key.



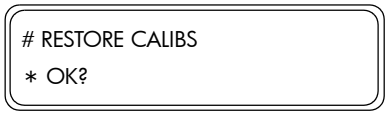
Restore Calibrations

This option allows you to restore the Calibrations stored in the Factory Defaults area to the NVRAM:

1 In the Setup submenu, scroll to "Restore Calibs" and press the **OK** key.



2 You will need to confirm that you want to restore the contents to the NVRAM by pressing the **OK** key.



Save NVRAM

This option allows you to save the contents stored in the NVRAM into the NVRAM backup area in the flash memory:

1 In the Setup submenu, scroll to "Save NVRAM" and press the **OK** key.

2 You will need to confirm that you want to save the NVRAM contents by pressing the **OK** key.

Restore NVRAM

This option allows you to restore the contents stored in the NVRAM backup area to the NVRAM:

1 In the Setup submenu, scroll to "Restore NVRAM" and press the **OK** key.

```
# RESTORE NVRAM
>
```

2 You will need to confirm that you want to restore the NVRAM contents by pressing the **OK** key.

```
# RESTORE NVRAM
* OK?
```

Boot Version

This option allows you to view the version of the Boot ROM:

1 In the Setup submenu, scroll to "Boot Version" and press the **OK** key.

```
# BOOT VERSION
* X.XX
```

X.XX: Version Number

Printer Firmware Version

This option allows you to view the version of the Printer Firmware:

1 In the Setup submenu, scroll to "Printer FW Ver" and press the **OK** key.

```
# PRINTER FW VER
* X.XX_YY
```

X.XX: Version Number
YY: Control Code

Main PCA Version

This option allows you to view the version of the Main PCA:

1 In the Setup submenu, scroll to "Main PCA Ver" and press the **OK** key.

```
# MAIN PCA VER
* X.X
```

X.X: Version Number

Carriage PCA Version

This option allows you to view the version of the Carriage PCA:

1 In the System submenu, scroll to "Carriage PCA Version" and press the **OK** key.

```
# CARRIAGE PCA
* XX.X
```

XX.X: Version Number

ASIC Version

This option allows you to view the version of the ASIC:

1 In the Setup submenu, scroll to "ASIC Ver" and press the **OK** key.

XX.X: Version Number

Heater Hardware Version

This option allows you to view the hardware version of the Heater:

1 In the System submenu, scroll to "Heater HW Ver" and press the **OK** key.

X.X: Version Number

If the Heater cannot be recognized, "_._" will be displayed.

Heater Firmware Version

This option allows you to view the firmware version of the Heater:

1 In the Setup submenu, scroll to "Heater FW Ver" and press the **OK** key.

X.X: Version Number

If the Heater cannot be recognized, "_._" will be displayed.

Add-On (HEB2) Control PCA Version

This option allows you to view the version of the Add-On (HEB2) Control PCA:

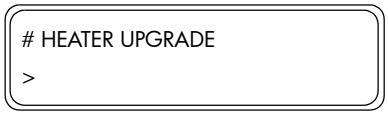
1 In the Setup submenu, scroll to "HEB Ver" and press the **OK** key.

X.X: Version Number

Heater Upgrade

This option allows you to update the firmware version of the Heater:

1 In the Setup submenu, scroll to "Heater Upgrade" and press the **OK** key.



2 You will need to confirm that you want to upgrade the firmware version of the Heater by pressing the **OK** key.

```
# HEATER UPGRADE
* OK?
```

3 You will need to insert the IC Card containing the latest version of the firmware into the Main PCA. Press the **OK** key once the IC Card has been inserted.

```
INSERT IC CARD
* OK?
```

4 The Printer will start upgrading the Heater firmware and the following message will appear on the Front Panel.

```
UPGRADING *
PLEASE WAIT
```

Flashes while the firmware is being updated

Do NOT power Off the Printer while the firmware is being upgraded as this may cause the upgrade process to fail.

5 Once the upgrade has been completed, the following message will appear on the Front Panel.

```
UPGRADE FINISHED
POWER OFF/ON
```

6 Power Off the Printer and power it On again and check the Heater firmware version once the Printer has initialized ⇒ Page *4-53*.

The following messages could appear during the Heater firmware upgrade procedure:

- The Printer does not recognize the Heater Control Panel.

```
HEATER PANEL ERR
POWER OFF/ON
```

  – Try powering Off the Printer and On again and retry the firmware upgrade procedure. If the message continues to appear after rebooting several times, then replace the Heater Panel ⇒ Page *8-27*.

- There is a problem with the IC Card.

```
IC CARD ERROR
POWER OFF/ON
```

  – Check that the IC Card contains the actual firmware image.

  – Make sure that the IC Card is inserted into the Main PCA correctly.

  – Try powering Off the Printer and On again and retry the firmware

upgrade procedure. If the message continues to appear after rebooting several times, then replace the Heater Panel ⇒ Page *8-27*.

- There is a communication problem between the Main PCA and the Heater Panel.

```
DATA ERROR
POWER OFF/ON
```

  – Try powering Off the Printer and On again and retry the firmware upgrade procedure. If the message continues to appear after rebooting several times, then replace the Heater Panel ⇒ Page *8-27*.

- The upgrade procedure cannot be performed because the Heater firmware has been deleted.

```
WRITING ERROR
POWER OFF/ON
```

  – Replace the Heater Panel ⇒ Page *8-27*.

Install Done

This option allows you to indicate whether the Printer Installation has been performed correctly so that the preventive maintenance counters can activated:

1 In the Setup submenu, scroll to "Install Done" and press the **OK** key.

```
# INSTALL DONE
> NO
```

2 In the Install Done submenu, scroll to "Yes" and press the **OK** key. This will indicate that the Printer has been successfully installed.

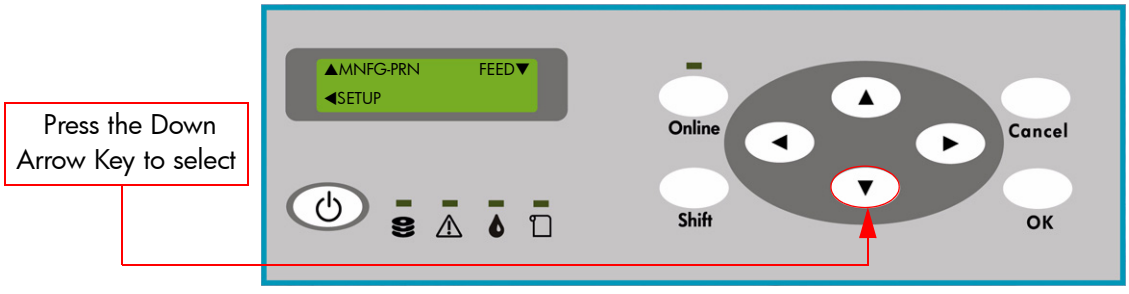
```
# INSTALL DONE
* YES
```

FEED

This option allows you to feed the media manually in to the Printer.

To feed the media manually:

1 Enter in to the Maintenance Mode and press the **Shift** key once and then keep the ▼ key pressed in order to manually feed the media.



2 During the manual feed process, the following message will appear on the Front Panel:

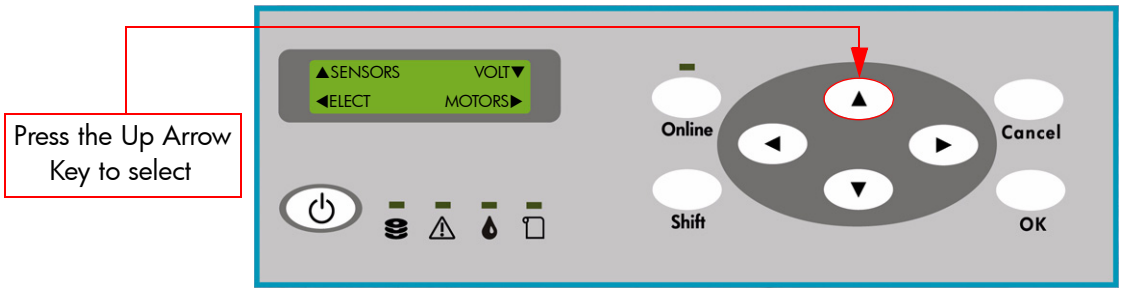
3 Once the ▼ key is released, the media stops feeding and the top menu will appear on the Front Panel.

SENSORS

This menu can be used to check the status of the various sensors and thermistors in the Printer in real time. The different options available in this menu are as follows:

- Printer Sensors ⇒ Page *4-57*.
- Ink Sensor ⇒ Page *4-58*.
- Sub Tank Sensor ⇒ Page *4-59*.
- Bottle Sensor ⇒ Page *4-60*.
- Media Supply Reel (MSR) Sensors ⇒ Page *4-61*.
- TUR Sensors ⇒ Page *4-62*.
- Temperature Sensors ⇒ Page *4-63*.

To enter in to the Sensors menu, enter in to the Maintenance Mode and press the **Shift** key twice and then the ▲ key.



Printer Sensors

This option allows you to check the status of the Printers sensors in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "Printer Sensors" and press the ▶ key.

```
# PRINTER SENSORS
# LINE SENSOR
```

2 In the Printer Sensors submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the Printer Sensors submenu, press the ◀ key.

```
# PRINTER SENSORS
# LINE SENSOR   >
```

3 The Front Panel will show the status of the selected Sensor. By activating and deactivating the selected Sensor, the status will change and a buzzer will make a sound.

```
# PRINTER SENSORS
# LINE SENSOR  *0
```

The Sensors that can be tested in this menu are as follows:

- Line Sensor - Displays the status of the Line Sensor located in the Carriage Assembly (0 = No media, 1 = Media present).
- Front Media - Displays the status of the Front Media Sensor located under the Front Heater (0 = Not blocked, 1 = blocked).
- Rear Media - Displays the status of the Rear Media Sensor located under the Rear Heater (0 = Not blocked, 1 = blocked).
- Home Position - Displays the status of the Home Position Sensor (0 = Home position not detected, 1 = Home position detected).
- Wiper Blade - Displays the status of the Wiper Sensor (0 = blocked, 1 = Not blocked).
- Media Lever - Displays the status of the Media Lever Sensor located (0 = Lowered, 1 = Raised).
- Rear Cover-L - Displays the status of the Capping Door Sensor (0 = Closed, 1 = Open).
- Rear Cover-R - Displays the status of the Wiping Door Sensor (0 = Closed, 1 = Open).

4 If you would like to exit the Printer Sensors submenu, first press the **Cancel** key and then press the ◀ key.

Ink Sensor

This option allows you to check the status of the sensors related to the Ink Cartridges in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "Ink Sensor" and press the ▶ key.

```
# INK SENSOR
# K INK CART
```

2 In the Ink Sensor submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the Ink Sensor submenu, press the ◀ key.

```
# INK SENSOR
# K INK CART   >
```

3 The Front Panel will show the status of the selected Sensor. By activating and deactivating the selected Sensor, the status will change and a buzzer will make a sound.

```
# INK SENSOR
# K INK CART  *0
```

The Sensors that can be tested in this menu are as follows:

- K Ink Cart - Displays the status of the Black Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- Lm Ink Cart - Displays the status of the Light Magenta Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- Lc Ink Cart - Displays the status of the Light Cyan Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- Y Ink Cart - Displays the status of the Yellow Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- M Ink Cart - Displays the status of the Magenta Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- C Ink Cart - Displays the status of the Cyan Ink Cartridge Sensor (0 = Ink Cartridge installed, 1 = Ink Cartridge not installed).
- Inkcover-L - Displays the status of the Left Ink Cartridge Door Sensor (0 = Closed, 1 = Open).
- Inkcover-R - Displays the status of the Right Ink Cartridge Door Sensor (0 = Closed, 1 = Open).

4 If you would like to exit the Ink Sensor submenu, first press the **Cancel** key and then press the ◀ key.

Sub Tank Sensor

This option allows you to check the status of the sensors related to the Sub-Tank system in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "Sub Tank Sensor" and press the ▶ key.

```
# SUB TANK SENSOR
# K FULL
```

2 In the Sub Tank Sensor submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the Sub Tank Sensor submenu, press the ◀ key.

```
# SUB TANK SENSOR
# K FULL   >
```

3 The Front Panel will show the status of the selected Sensor. By activating and deactivating the selected Sensor, the status will change and a buzzer will make a sound.

```
# SUB TANK SENSOR
# K FULL  *0
```

The Sensors that can be tested in this menu are as follows:

- K Full - Displays the status of the Black Sub-Tank Full Sensor.
- Lm Full - Displays the status of the Light Magenta Sub-Tank Full Sensor.
- Lc Full - Displays the status of the Light Cyan Sub-Tank Full Sensor.

- Y Full - Displays the status of the Yellow Sub-Tank Full Sensor.
- M Full - Displays the status of the Magenta Sub-Tank Full Sensor.
- C Full - Displays the status of the Cyan Sub-Tank Full Sensor.
- K Half - Displays the status of the Black Sub-Tank Half Sensor.
- Lm Half - Displays the status of the Light Magenta Sub-Tank Half Sensor.
- Lc Half - Displays the status of the Light Cyan Sub-Tank Half Sensor.
- Y Half - Displays the status of the Yellow Sub-Tank Half Sensor.
- M Half - Displays the status of the Magenta Sub-Tank Half Sensor.
- C Half - Displays the status of the Cyan Sub-Tank Half Sensor.
- K Ink Pump - Displays the status of the Black Ink Pump Sensor.
- Lm Ink Pump - Displays the status of the Light Magenta Ink Pump Sensor.
- Lc Ink Pump - Displays the status of the Light Cyan Ink Pump Sensor.
- Y Ink Pump - Displays the status of the Yellow Ink Pump Sensor.
- M Ink Pump - Displays the status of the Magenta Ink Pump Sensor.
- C Ink Pump - Displays the status of the Cyan Ink Pump Sensor.

You will need to manually move the Full/Half Sensors and the Ink Pump Motor to change the status of the Sensors. If the status changes from "0" to "1", it means that the Sensor is working correctly.

4 If you would like to exit the Sub Tank Sensor submenu, first press the **Cancel** key and then press the ◀ key.

Bottle Sensor

This option allows you to check the status of the Waste Bottle Sensor in real time so that if it is faulty, it can be replaced as necessary:

1 In the Sensors submenu, scroll to "Bottle Sensor" and press the ▶ key.

```
# BOTTLE SENSOR
# PRESENT
```

2 In the Bottle Sensor submenu, press the **OK** key. If you would like to exit the Bottle Sensor submenu, press the ◀ key.

```
# BOTTLE SENSOR
# PRESENT  >
```

3 The Front Panel will show the status of the Waste Bottle Sensor. By activating and deactivating the Waste Bottle Sensor, the status will change (0 = Present, 1 = Not present) and a buzzer will make a sound.

```
# BOTTLE SENSOR
# PRESENT  *0
```

4 If you would like to exit the Bottle Sensor submenu, first press the **Cancel** key and then press the ◀ key.

Media Supply Reel (MSR) Sensors

This option allows you to check the status of the sensors related to the Media Supply Reel in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "MSR Sensors" and press the ▶ key.

```
# MSR SENSORS
# DIRECTION
```

2 In the MSR Sensors submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the MSR Sensors submenu, press the ◀ key.

```
# MSR SENSORS
# ME SENSOR   >
```

3 The Front Panel will show the status of the selected Sensor. By activating and deactivating the selected Sensor, the status will change and a buzzer will make a sound.

```
# MSR SENSORS
# ME SENSOR  *0
```

The Sensors that can be tested in this menu are as follows:

- Direction - Displays the status of the Direction Switch on the Media Feed Drive Unit (0 = Inner winding direction, 1 = Outer winding direction).
- ME Sensor - Displays the status of the Media End Sensor (0 = Sensor blocked, 1 = Sensor not blocked).
- Loose - Displays the status of the Media Slack Sensor (1 = Sensor blocked, 0 = Sensor not blocked).
- Feeder SW - Displays the status of the Black Media Feed Switch on the Media Feed Drive Unit (1 = Switch not pressed, 0 = Switch pressed).
- Winder SW - Displays the status of White Media Rewind Switch on the Media Feed Drive Unit (1 = Switch not pressed, 0 = Switch pressed).

The Feeder SW and Winder SW tests can also be used to test the Foot Switches.

4 If you would like to exit the Media Supply Reel Sensors submenu, first press the **Cancel** key and then press the ◀ key.

TUR Sensors

This option allows you to check the status of the sensors related to the Take-Up-Reel in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "TUR Sensors" and press the ▶ key.

```
# TUR SENSORS
# BACKWARDS
```

2 In the TUR Sensors submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the TUR Sensors submenu, press the ◀ key.

```
# TUR SENSORS
# UPPER   >
```

3 The Front Panel will show the status of the selected Sensor. By activating and deactivating the selected Sensor, the status will change and a buzzer will make a sound.

```
# TUR SENSORS
# UPPER  *0
```

The Sensors that can be tested in this menu are as follows:

- Backwards - Displays the status of the Backwards Direction Switch on the TUR Drive Unit (0 = Switch activated, 1 = Switch deactivated).
- Forwards - Displays the status of the Forwards Direction Switch on the TUR Drive Unit (0 = Switch activated, 1 = Switch deactivated).
- Upper - Displays the status of the Upper TUR Sensor (0 = Sensor blocked, 1 = Sensor not blocked).
- Lower - Displays the status of the Lower TUR Sensor (1 = Sensor blocked, 0 = Sensor not blocked).
- Feeder SW - Displays the status of the White TUR Feed Switch on the TUR Drive Unit (1 = Switch not pressed, 0 = Switch pressed).
- Winder SW - Displays the status of Black TUR Rewind Switch on the TUR Drive Unit (1 = Switch not pressed, 0 = Switch pressed).

The Feeder SW and Winder SW tests can also be used to test the Foot Switches.

4 If you would like to exit the TUR Sensors submenu, first press the **Cancel** key and then press the ◀ key.

Temperature Sensors

This option allows you to check the status of the temperature sensors located in the Printer in real time so that faulty sensors can be replaced as necessary:

1 In the Sensors submenu, scroll to "Temp Sensors" and press the ▶ key.

```
# TEMP SENSORS
# AMBIENT
```

2 In the Temp Sensors submenu, select the Sensor that you would like to test and press the **OK** key. If you would like to exit the Temp Sensors submenu, press the ◀ key.

```
# TEMP SENSORS
# AMBIENT   >
```

3 The Front Panel will show the temperature read by the selected Sensor.

```
# TEMP SENSORS
# AMBIENT  *24.2
```

The Temperature Sensors that can be tested in this menu are as follows:

- Ambient - Displays the environment temperature.
- K PH - Displays the temperature of the Black Head.
- Lm PH - Displays the temperature of the Light Magenta Head.
- Lc PH - Displays the temperature of the Light Cyan Head.
- Y PH - Displays the temperature of the Yellow Head.
- M PH - Displays the temperature of the Magenta Head.
- C PH - Displays the temperature of the Cyan Head.
- Carriage1 - Displays the temperature read by the sensor located at position 1 on the Carriage PCA.
- Carriage2 - Displays the temperature read by the sensor located at position 2 on the Carriage PCA.
- Carriage3 - Displays the temperature read by the sensor located at position 3 on the Carriage PCA.
- Carriage4 - Displays the temperature read by the sensor located at position 4 on the Carriage PCA.
- Carriage5 - Displays the temperature read by the sensor located at position 5 on the Carriage PCA.
- Carriage6 - Displays the temperature read by the sensor located at position 6 on the Carriage PCA.
- Carriage7 - Displays the temperature read by the sensor located at position 7 on the Carriage PCA.

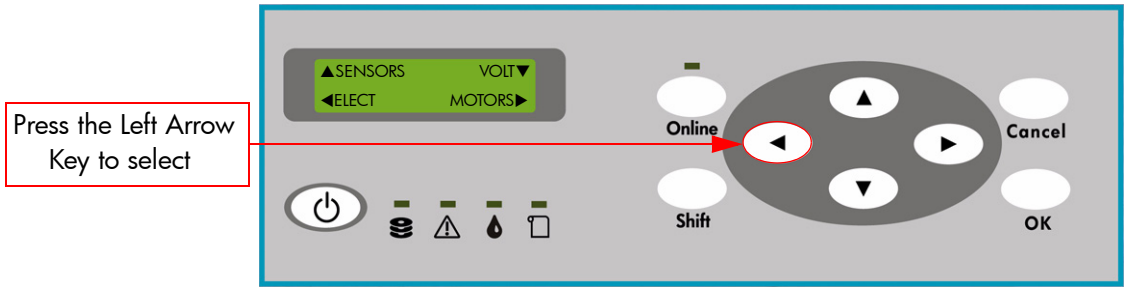
4 If you would like to exit the Temp Sensors submenu, first press the **Cancel** key and then press the ◀ key.

ELECT (Electronics)

This menu contains the necessary diagnostics that can be used to test the various electronic components in the Printer. The different options available in this menu are as follows:

- Flash ROM ⇒ Page *4-65*.
- PIO ⇒ Page *4-66*.
- NVRAM ⇒ Page *4-67*.
- Ink EEPROM ⇒ Page *4-68*.
- ATG ⇒ Page *4-68*.
- DRAM ⇒ Page *4-69*.
- RSM ⇒ Page *4-70*.
- PTC ⇒ Page *4-70*.
- PDD ⇒ Page *4-71*.
- HEB ⇒ Page *4-71*.
- ALL ⇒ Page *4-73*.
- VDD ⇒ Page *4-73*.
- Front Panel ⇒ Page *4-76*.

To enter in to the Electronics menu, enter in to the Maintenance Mode and press the **Shift** key twice and then the ◀ key.



Flash ROM

This option allows you to test the Flash ROM contained in the Main PCA:

1 In the Elect submenu, scroll to "Flash ROM" and press the **OK** key.

```
# FLASH ROM
>
```

2 You will need to confirm that you want to test the Flash ROM by pressing the **OK** key.

```
# FLASH ROM
* OK?
```

3 While the Flash ROM is being tested, the following message will be displayed on the Front Panel.

```
# FLASH ROM
* EXECUTING
```

4 If the Flash ROM test **passes**, the Front Panel will display the following message:

```
# FLASH ROM
* PASS
```

5 If the Flash ROM test **fails**, the Front Panel will display the following message:

```
# FLASH ROM
* FLASH ERR
```

If the Flash ROM test fails, try the following:

- Replace the Main PCA ⇒ Page *8-36*.

PIO (Parallel Input/Output)

This option allows you to test the Parallel Input/Output contained in the Main PCA:

1 In the Elect submenu, scroll to "PIO" and press the **OK** key.

```
# PIO
>
```

2 You will need to confirm that you want to test the PIO by pressing the **OK** key.

```
# PIO
* OK?
```

3 While the PIO is being tested, the following message will be displayed on the Front Panel.

```
# PIO
* EXECUTING
```

4 If the PIO test **passes**, the Front Panel will display the following message:

```
# PIO
* PASS
```

5 If the PIO test **fails**, the Front Panel will display the following message:

```
# PIO
* PIO ERR
```

If the PIO test fails, try the following:

- Replace the Main PCA ⇒ Page *8-36*.

NVRAM

This option allows you to test the NVRAM contained in the Main PCA:

1 In the Elect submenu, scroll to "NVRAM" and press the **OK** key.

```
# NVRAM
>
```

2 You will need to confirm that you want to test the NVRAM by pressing the **OK** key.

```
# NVRAM
* OK?
```

3 While the NVRAM is being tested, the following message will be displayed on the Front Panel.

```
# NVRAM
* EXECUTING
```

4 If the NVRAM test **passes**, the Front Panel will display the following message:

```
# NVRAM
* PASS
```

5 If the NVRAM test **fails**, the Front Panel will display the following message:

```
# NVRAM
* NVRAM ERR
```

If the NVRAM test fails, try the following:

- Replace the NVRAM ⇒ Page *8-41*.
- If the test fails again after replacing the NVRAM, replace the Main PCA ⇒ Page *8-36*.

Ink EEPROM

This option allows you to test the Ink EEPROM contained in the Ink Cartridge:

1 In the Elect submenu, scroll to "Ink EEPROM" and press the **OK** key.

2 You will need to confirm that you want to test the Ink EEPROM by pressing the **OK** key.

3 While the Ink EEPROM is being tested, the following message will be displayed on the Front Panel.

4 If the Ink EEPROM test **passes**, the Front Panel will display the following message:

5 If the Ink EEPROM test **fails**, the Front Panel will display the following message:

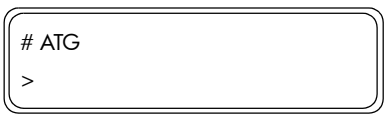
If the Ink EEPROM test fails, try the following:

- Replace the Ink Cartridge(s).
- Replace the Ink Supply Station (Left or Right) ⇒ Page *8-122*.
- Replace the Main PCA ⇒ Page *8-36*.

ATG (Band Memory Address Generator)

This option allows you to test the ATG contained in the Main PCA:

1 In the Elect submenu, scroll to "ATG" and press the **OK** key.



2 You will need to confirm that you want to test the ATG by pressing the **OK** key.

```
# ATG
* OK?
```

3 While the ATG is being tested, the following messages will be displayed on the Front Panel.

```
# ATG
FILL 00
```

```
# ATG
CHECK 00 00 00
```

4 If the ATG test **passes**, the Front Panel will display the following message:

```
# ATG
* PASS
```

5 If the ATG test **fails**, the Front Panel will display the following message:

```
# ATG
* ATG ERR
```

If the ATG test fails, try the following:

- Replace the Main PCA ⇒ Page *8-36*.

DRAM

This option allows you to test the DRAM contained in the Main PCA:

1 In the Elect submenu, scroll to "DRAM" and press the **OK** key.

```
# DRAM
>
```

2 You will need to confirm that you want to test the DRAM by pressing the **OK** key.

```
# DRAM
* OK?
```

3 While the DRAM is being tested, the following messages will be displayed on the Front Panel.

```
# DRAM
WRITE 00 00
```

```
# DRAM
READ 00 00
```

4 If the DRAM test **passes**, the Front Panel will display the following message:

```
# DRAM
* PASS
```

5 If the DRAM test **fails**, the Front Panel will display the following message:

```
# DRAM
* DRAM ERR
```

If the DRAM test fails, try the following:

- Replace the Main PCA ⇒ Page *8-36*.

RSM

This option allows you to test the RSM contained in the Main PCA:

1 In the Elect submenu, scroll to "RSM" and press the **OK** key.

```
# RSM
>
```

2 You will need to confirm that you want to test the RSM by pressing the **OK** key.

```
# RSM
* OK?
```

3 While the RSM is being tested, the following message will be displayed on the Front Panel.

```
# RSM
* EXECUTING
```

4 If the RSM test **passes**, the Front Panel will display the following message:

```
# RSM
* PASS
```

5 If the RSM test **fails**, the Front Panel will display the following message:

```
# RSM
* RSM ERR
```

If the RSM test fails, try the following:

- Replace the Main PCA ⇒ Page *8-36*.

PTC

This option allows you to test the PTC contained in the Carriage PCA:

1 In the Elect submenu, scroll to "PTC" and press the **OK** key.

```
# PTC
>
```

2 You will need to confirm that you want to test the PTC by pressing the **OK** key.

```
# PTC
* OK?
```

3 While the PTC is being tested, the following message will be displayed on the Front Panel.

```
# PTC
* EXECUTING
```

4 If the PTC test **passes**, the Front Panel will display the following message:

```
# PTC
* PASS
```

5 If the PTC test **fails**, the Front Panel will display the following message:

```
# PTC
* PTC ERR
```

If the PTC test fails, try the following:

- Replace the Carriage PCA ⇒ Page *8-36*.
- Replace the Trailing Cable ⇒ Page *8-80*.
- Replace the Main PCA ⇒ Page *8-36*.

PDD

This option allows you to test the PDD contained in the Carriage PCA:

1 In the Elect submenu, scroll to "PDD" and press the **OK** key.

```
# PDD
>
```

2 You will need to confirm that you want to test the PDD by pressing the **OK** key.

```
# PDD
* OK?
```

3 While the PDD is being tested, the following message will be displayed on the Front Panel.

```
# PDD
* EXECUTING
```

4 If the PDD test **passes**, the Front Panel will display the following message:

```
# PDD
* PASS
```

5 If the PDD test **fails**, the Front Panel will display the following message:

```
# PDD
* PDD ERR
```

If the PDD test fails, try the following:

- Replace the Carriage PCA ⇒ Page *8-36*.
- Replace the Trailing Cable ⇒ Page *8-80*.
- Replace the Main PCA ⇒ Page *8-36*.

HEB

This option allows you to test the Add-On (HEB2) Control PCA:

1 In the Elect submenu, scroll to "HEB" and press the **OK** key.

```
# HEB
>
```

2 You will need to confirm that you want to test the HEB by pressing the **OK** key.

```
# HEB
* OK?
```

3 While the HEB is being tested, the following message will be displayed on the Front Panel.

```
# HEB
* EXECUTING
```

4 If the HEB test **passes**, the Front Panel will display the following message:

```
# HEB
* PASS
```

5 If the HEB test **fails**, the Front Panel will display the following message:

```
# HEB
* HEB ERR
```

If the HEB test fails, try the following:

- Replace the Add-On (HEB2) Control PCA ⇒ Page *8-45*.

ALL

This option allows you to perform **all** the previous tests in one go:

1 In the Elect submenu, scroll to "ALL" and press the **OK** key.

```
# ALL
>
```

2 You will need to confirm that you want to perform **all** the test by pressing the **OK** key.

```
# ALL
* OK?
```

3 While **all** the tests are being performed, the following message will be displayed on the Front Panel.

```
# ALL
* EXECUTING
```

4 If **all** the tests **pass**, the Front Panel will display the following message:

```
# ALL
* PASS
```

5 If any of the tests **fails**, the Front Panel will display the name of the part that has failed. In this case, refer to the corrective action for the failing part.

VDD

This option allows you to test the VDD voltage (either 24V, 17V or 6V) of the Carriage PCA:

1 In the Elect submenu, scroll to "VDD" and press the **OK** key.

```
# VDD
> 24V
```

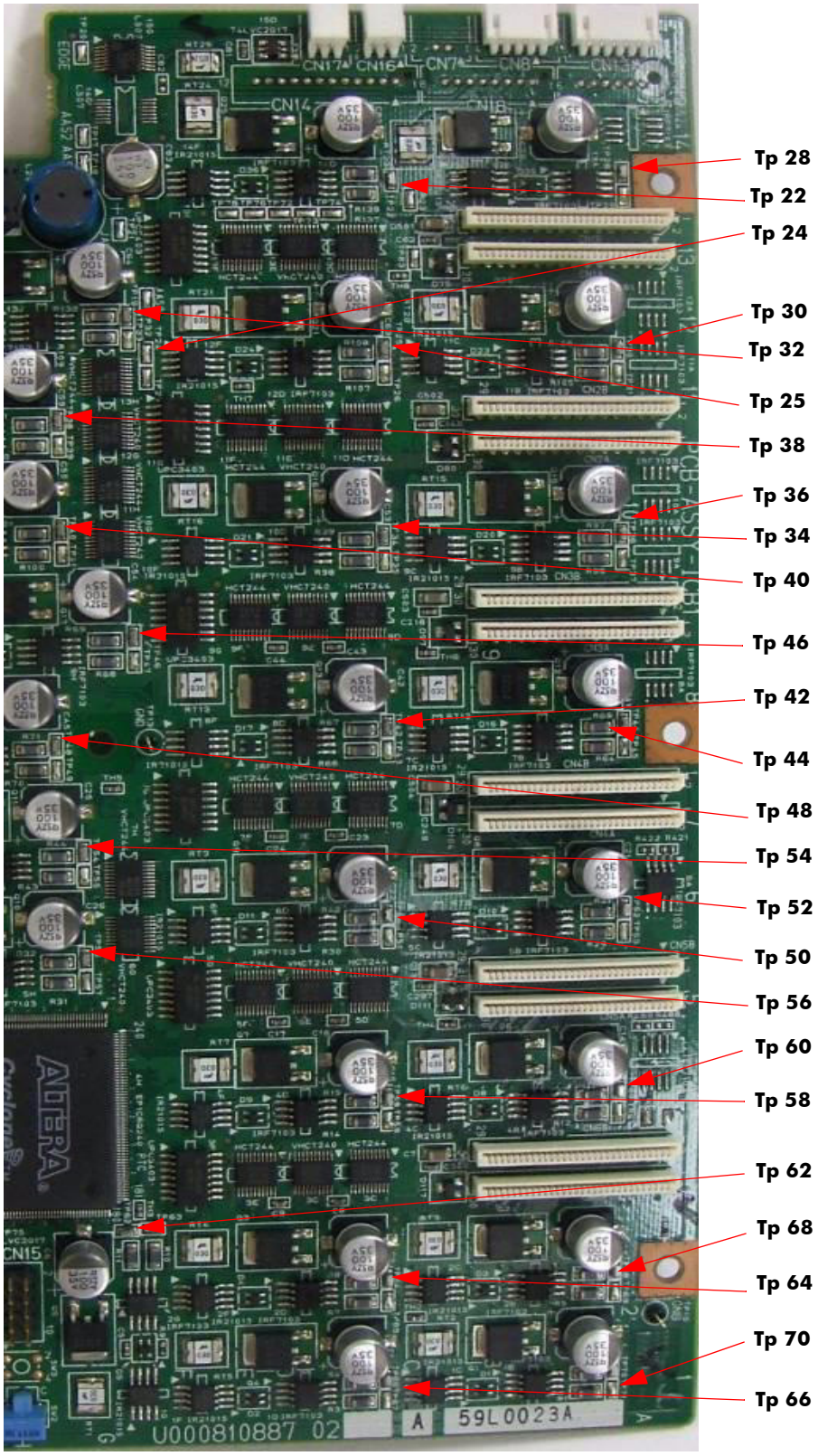
2 Select the Voltage of the Head Relay Board that you want to test and press the **OK** key.

```
# VDD
* 17V
```

3 Measure the voltage (using a tester) of the different points on the Head Relay Board to verify that the voltage settings are correct. Measuring points and expected values on the Carriage PCA should be as follows:

Measuring point on the carriage PCA						Voltage Selected			Usage
						24V	17V	6V	
K	Lm	Lc	Y	M	C	Expected Voltage (V)			
TP22	TP32	TP40	TP48	TP56	TP64	24	17	6	Left-On Voltage
TP25	TP24	TP42	TP50	TP58	TP66	12	8.5	3	Left-Off Voltage
TP28	TP36	TP44	TP52	TP60	TP68	24	17	6	Right-On Voltage
TP30	TP38	TP46	TP54	TP62	TP70	12	8.5	3	Right-Off Voltage

The image below identifies the Head Relay Board measuring points.



If the VDD test fails, try the following:

- Replace the Carriage PCA ⇒ Page *8-97*.

Front Panel

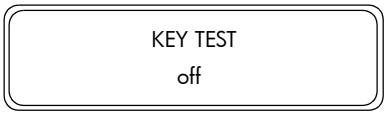
This option allows you to test the Display and keys of the Front Panel:

1. In the Elect submenu, scroll to "Front Panel" and press the **OK** key.

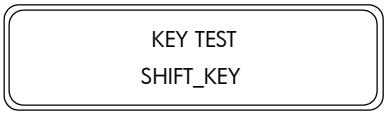
2. Select whether you want to test the "Display" or "Keys" and press the **OK** key.

3. If you select to test the "Display", the Front Panel will turn ON and Off the LED's in sequence, display the different character strings and activate the buzzer.
4. If you select to test the "Keys", you will need to confirm that you want to perform the test by pressing the **OK** key.

5. When the following message is displayed on the Front Panel, press the different keys on the Front Panel to test if they are working correctly.



6. If the key is pressed correctly, the Front Panel will display the name of the key that was pressed. Press the **OK** key to exit.



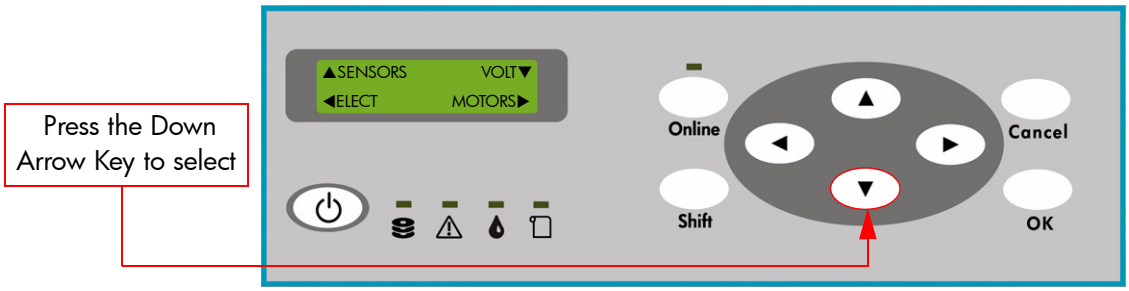
If the Front Panel test fails, try the following:

- Replace the Front Panel Assembly ⇒ Page *8-25*.

VOLT (Voltage Check)

This menu can be used to ensure that the voltages on the Main PCA are not in Standby.

1 To enter in to the Volt menu, enter in to the Maintenance Mode and press the **Shift** key twice and then the ▼ key.



2 Once in the Voltage Check submenu, press the **OK** key.

```
# VOLTAGE CHECK
> HIGH
```

3 In the Voltage Check submenu, select either "High" or "Low" and then press the **OK** key.

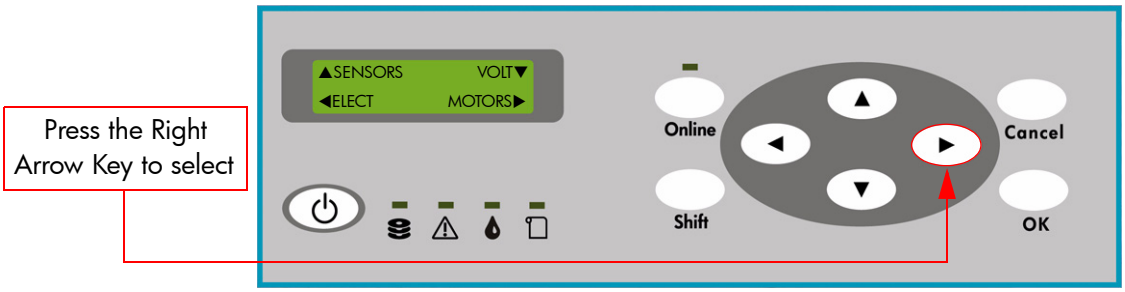
```
# VOLTAGE CHECK
* LOW
```

MOTORS

This menu contains the necessary diagnostics that can be used to test the various Motors in the Printer. The different options available in this menu are as follows:

- Media Advance Motor ⇒ Page *4-78*.
- Capping Station Motor ⇒ Page *4-79*.
- Wiping Station Motor ⇒ Page *4-80*.
- Solenoid (Left or Right) ⇒ Page *4-80*.
- Vacuum Fans ⇒ Page *4-81*.
- Exhaust Fans ⇒ Page *4-82*.
- Printhead Cooling Fans ⇒ Page *4-82*.
- MSR Motor ⇒ Page *4-83*.
- TUR Motor ⇒ Page *4-83*.
- Pump Motors ⇒ Page *4-84*.

To enter in to the Motors menu, enter in to the Maintenance Mode and press the **Shift** key twice and then the ▶ key.



Media Advance Motor

Make sure you unload Media from the Printer before attempting to turn the Media Advance Motor.

This option allows you to turn the Media Advance Motor:

1 In the Motors submenu, scroll to "Media Adv Motor" and press the **OK** key.

```
# MEDIA ADV MOTOR
> OFF
```

2 In the Media Adv Motor submenu, select the direction that you would like the Media Advance Motor to turn and then press the **OK** key.

```
# MEDIA ADV MOTOR
* FORWARDS
```

The different directions that you can turn the Media Advance Motor are as follows:

- Off - Stops the Motor turning.
- Forwards - Turns the Motor in the media feeding direction.

- Backwards - Turns the Motor in the reverse direction.

3 You will need to confirm that you want to turn the Media Advance Motor in the selected direction by pressing the **OK** key.

```
# MEDIA ADV MOTOR
* FORWARDS OK?
```

4 To stop the motor turning, select "Off" in the Media Adv Motor submenu and then press the **OK** key.

```
# MEDIA ADV MOTOR
* OFF
```

Capping Station Motor

This option allows you to control the Capping Station Motor:

1 In the Motors submenu, scroll to "Cap Stat Motor" and press the **OK** key.

```
# CAP STAT MOTOR
> STOP
```

2 In the Cap Stat Motor submenu, select the direction that you would like the Capping Station Motor to run and then press the **OK** key.

```
# CAP STAT MOTOR
* UNCAP
```

The different directions that you can run the Pump Motor are as follows:

- Stop - Stops the Motor running.
- Prime - Runs the Motor in the normal direction (causes priming).
- Uncap - Moves the Capping Station downwards and then turns the Motor in the reverse direction.

It is recommended to select "Uncap" first before trying to select "Prime". If the Printheads are capped when "Prime" is selected, it may cause damage to the Printheads.

3 You will need to confirm that you want to run the Capping Station Motor in the selected direction by pressing the **OK** key.

```
# CAP STAT MOTOR
* UNCAP OK?
```

4 To stop the Capping Station Motor turning, select "Stop" in the Camp Stat Motor submenu and then press the **OK** key.

```
# CAP STAT MOTOR
* STOP
```

Wiping Station Motor

This option allows you to control the Wiping Station Motor:

1 In the Motors submenu, scroll to "Wipe Stat Motor" and press the **OK** key.

```
# WIPE STAT MOTOR
> STOP
```

2 In the Wipe Stat Motor submenu, select the direction that you would like the Wiping Station Motor to run and then press the **OK** key.

```
# WIPE STAT MOTOR
* NORMAL
```

The different directions that you can run the Wiping Station Motor are as follows:

- Stop - Stops the Motor running.
- Normal - Runs the Motor in the normal direction.
- Reverse - Turns the Motor in the reverse direction.

3 You will need to confirm that you want to run the Wiping Station Motor in the selected direction by pressing the **OK** key.

```
# WIPE STAT MOTOR
* NORMAL OK?
```

4 To stop the Wiping Station Motor turning, select "Stop" in the Wipe Stat Motor submenu and then press the **OK** key.

```
# WIPE STAT MOTOR
* STOP
```

Solenoid (Left or Right)

This option allows you to control the Solenoid (left or right):

1 In the Motors submenu, scroll to "Solenoid L" or "Solenoid R" and press the **OK** key.

```
# SOLENOID L
> CLOSED
```

2 In the Solenoid submenu, select "Open" to start the selected Solenoid and then press the **OK** key.

```
# SOLENOID L
* OPEN
```

3 You will need to confirm that you want to start the selected Solenoid by pressing the **OK** key.

4 To stop the Pump Solenoid, select "Off" in the Pump Solenoid submenu and then press the **OK** key.

Vacuum Fans

This option allows you to control the five Vacuum Fans (left, left-center, center, right or right-center).

1 In the Motors submenu, scroll to "Vacuum Fan L", "Vacuum Fan L-C", "Vacuum Fan C" or "Vacuum Fan R-C" or "Vacuum Fan R" and press the **OK** key.

2 In the Vacuum Fan submenu, select "On" to start the selected Vacuum Fan and then press the **OK** key.

3 You will need to confirm that you want to start the selected Vacuum Fan by pressing the **OK** key.

4 To stop the Vacuum Fan, select "Off" in the Vacuum Fan submenu and then press the **OK** key.

Exhaust Fans

This option allows you to control the Exhaust Fans:

1 In the Motors submenu, scroll to "Exhaust Fans" and press the **OK** key.

2 In the Exhaust Fans submenu, select "On" to start the Exhaust Fans and then press the **OK** key.

3 You will need to confirm that you want to start the Exhaust Fans by pressing the **OK** key.

4 To stop the Exhaust Fans, select "Off" in the Exhaust Fans submenu and then press the **OK** key.

PH Cooling Fans

This option allows you to control the Printhead Cooling Fans:

1 In the Motors submenu, scroll to "PH Cooling Fan" and press the **OK** key.

2 In the PH Cooling Fan submenu, select "On" to start the PH Cooling Fans and then press the **OK** key.

3 You will need to confirm that you want to start the PH Cooling Fans by pressing the **OK** key.

4 To stop the Printhead Cooling Fans, select "Off" in the PH Cooling Fan submenu and then press the **OK** key.

MSR Motor

This option allows you to control the Media Supply Reel Motor:

1 In the Motors submenu, scroll to "MSR Motor" and press the **OK** key.

2 In the MSR Motor submenu, select "On" to start the MSR Motor and then press the **OK** key.

3 You will need to confirm that you want to start the MSR Motor by pressing the **OK** key.

4 To stop the MSR Motor, select "Off" in the MSR Motor submenu and then press the **OK** key.

TUR Motor

This option allows you to control the Take-up-reel Motor:

1 In the Motors submenu, scroll to "TUR Motor" and press the **OK** key.

2 In the TUR Motor submenu, select "On" to start the TUR Motor and then press the **OK** key.

3 You will need to confirm that you want to start the TUR Motor by pressing the **OK** key.

```
# TUR MOTOR
* ON OK?
```

4 To stop the TUR Motor, select "Off" in the TUR Motor submenu and then press the **OK** key.

```
# TUR MOTOR
* OFF
```

Pump Motors

This option allows you to control the Ink Pump Motors:

1 In the Motors submenu, scroll to "XX Pump Motor" and press the **OK** key.

```
# XX PUMP MOTOR
> STOP
```

The ink colors that correspond to each Ink Pump Motor are as follows:

- K Pump Motor - Black Ink Pump Motor.
- Lm Pump Motor - Light Magenta Ink Pump Motor.
- Lc Pump Motor - Light Cyan Ink Pump Motor.
- Y Pump Motor - Yellow Ink Pump Motor.
- M Pump Motor - Magenta Ink Pump Motor.
- C Pump Motor - Cyan Ink Pump Motor.

2 In the Pump Motor submenu, select the direction that you would like the selected Ink Pump Motor to run and then press the **OK** key.

```
# XX PUMP MOTOR
* NORMAL
```

The different directions that you can run the Ink Pump Motor are as follows:

- Stop - Stops the Motor running.
- Normal - Runs the Motor in the normal direction.
- Reverse - Turns the Motor in the reverse direction.

Make sure you have the Subtank Station visible before running the Ink Pump Motor in the "Normal" direction. This will prevent the Subtanks from overfilling and possibly exploding the Subtanks. It is also recommended NOT to run the Ink Pump Motor in the "Reverse" direction as this will cause ink in the Subtank to be pumped back into the Ink Cartridge, which could also explode if it is already full of ink.

3 You will need to confirm that you want to run the selected Ink Pump Motor in the selected direction by pressing the **OK** key.

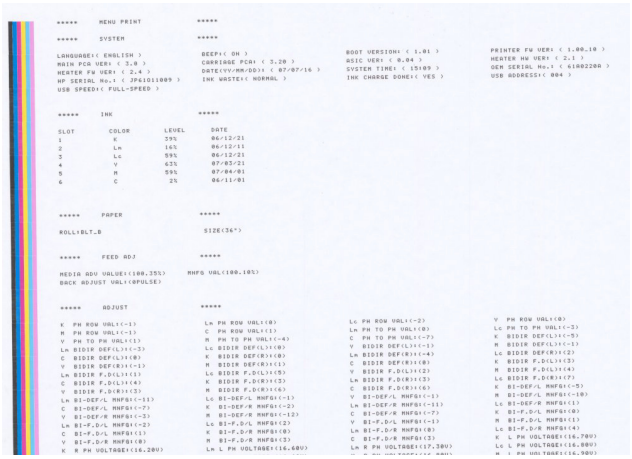
```
# XX PUMP MOTOR
* NORMAL OK?
```

4 To stop the Ink Pump Motor turning, select "Stop" in the Pump Motor submenu and then press the **OK** key.

```
# XX PUMP MOTOR
* STOP
```

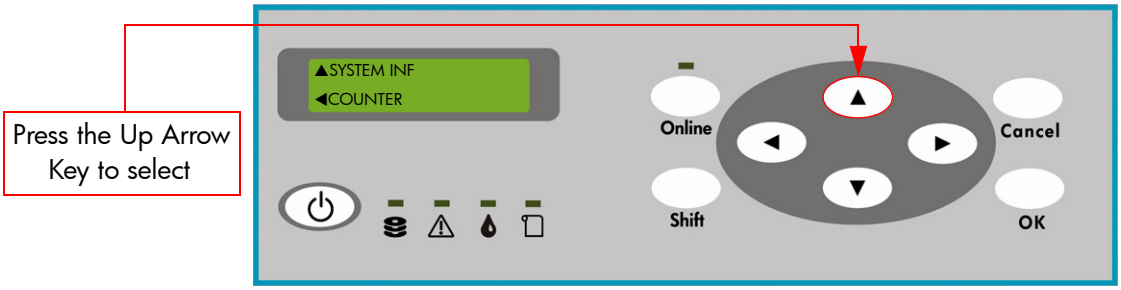
SYSTEM INF

This menu can be used to print various information pages. The different options available in this menu are as follows:



- System Print ⇒ Page *4-86*.
- Error Log Print ⇒ Page *4-87*.
- History Print ⇒ Page *4-87*.

To enter in to the System Information menu, enter in to the Maintenance Mode and press the **Shift** key three times and then the ▲ key.



System Print

This option allows you to turn print information relating to the system, settings, mechanical parameters and ink:

1 In the System Inf submenu, scroll to "System Print" and press the **OK** key.

```
# SYSTEM PRINT
>
```

2 You will need to confirm that you want to print the System Print by pressing the **OK** key.

```
# SYSTEM PRINT
* OK?
```

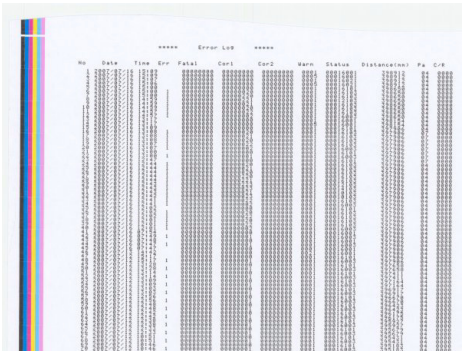
3 While the System Print is being printed, the following message will be displayed on the Front Panel.

```
# SYSTEM PRINT
* EXECUTING
```

4 To cancel the print, press the **Cancel** key.

Error Log Print

This option allows you to turn print error log information stored in the Printer:



1 In the System Inf submenu, scroll to "Error Log Print" and press the **OK** key.

```
# ERROR LOG PRINT
>
```

2 You will need to confirm that you want to print the Error Log Print by pressing the **OK** key.

```
# ERROR LOG PRINT
* OK?
```

3 While the Error Log Print is being printed, the following message will be displayed on the Front Panel.

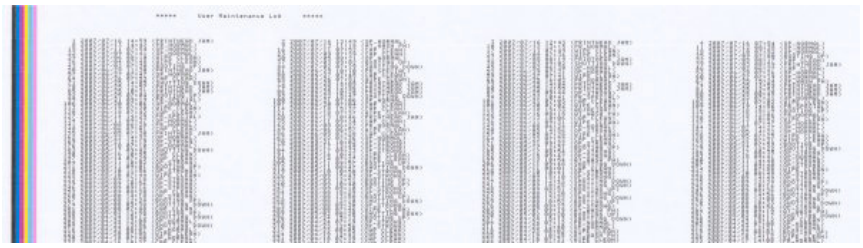
```
# ERROR LOG PRINT
* EXECUTING
```

4 To cancel the print, press the **Cancel** key.

History Print

This option allows you to turn print information relating to the ink system

cleaning condition which is stored in the Printer:



1 In the System Inf submenu, scroll to "History Print" and press the **OK** key.

```
# HISTORY PRINT
>
```

2 You will need to confirm that you want to print the History Print by pressing the **OK** key.

```
# HISTORY PRINT
* OK?
```

3 While the History Print is being printed, the following message will be displayed on the Front Panel.

```
# HISTORY PRINT
* EXECUTING
```

4 To cancel the print, press the **Cancel** key.

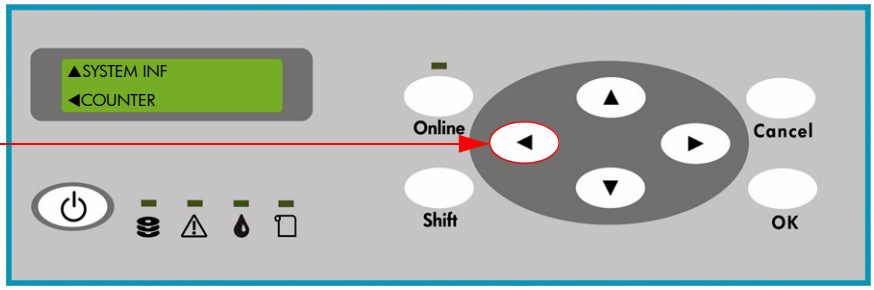
COUNTER

This menu can be used to view and reset the different counters that are used to track the usage of various parts which need to be replaced as a preventive measure. Also, this menu can be used to check if Non-HP or Expired Ink is being used in the printer. The different options available in this menu are as follows:

- Media Used ⇒ Page *4-89*.
- Prime Assembly ⇒ Page *4-90*.
- Pump Tube ⇒ Page *4-91*.
- Wiper Blade ⇒ Page *4-92*.
- Capping Unit ⇒ Page *4-92*.
- Scan-Axis belt ⇒ Page *4-93*.
- Non-HP Ink Used ⇒ Page *4-94*.
- Expired Ink Used ⇒ Page *4-94*.

To enter in to the Counter menu, enter in to the Maintenance Mode and press the **Shift** key three times and then the ◀ key.

Press the Left Arrow Key to select



Media Used

This option allows you to view and change the amount of media used in the Printer:

1 In the Counter submenu, scroll to "Media Used" and press the **OK** key to view the media used since the last reset.

```
# MEDIA USED
> 0000350m
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# MEDIA USED
> 0000200m
```

3 Press the **OK** key once you have entered the new usage length.

4 If the Media Used counter needs to be reset, return to the Counter submenu, scroll to "Reset Media Used" and press the **OK** key.

```
# RESET MEDIA USED
>
```

5 You will need to confirm that you want to reset the counter by pressing the **OK** key.

```
# RESET MEDIA USED
* OK?
```

Prime Assembly

This option allows you to view and change the usage counter related to the Prime Assemblies:

After replacing the Prime Assemblies, make sure you reset the usage counter related to the Prime Assemblies.

1 In the Counter submenu, scroll to "Prime Assy" and press the **OK** key to view the usage counter related to the Prime Assemblies.

```
# PRIME ASSY
> 000045000sec
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# PRIME ASSY
> 000053000sec
```

3 Press the **OK** key once you have entered the new usage amount.

4 If the Prime Assembly counter needs to be reset, return to the Counter submenu, scroll to "Reset Prime Assy" and press the **OK** key.

```
# RESET PRIME ASSY
>
```

5 You will need to confirm that you want to reset the counter by pressing the **OK** key.

```
# RESET PRIME ASSY
* OK?
```

Reset All Counters

This option allows you to reset the following counters at once:

- Scan Axis Belt

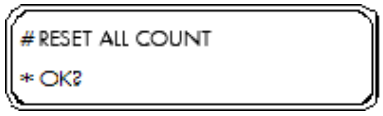
- Capping Unit
- Prime Assembly
- Wiper Blade

Selecting this option will *not* reset the following counter:

- YY Pump Tube

1 In the Counter submenu, scroll to "Reset all Count" and press the **OK** key.

2 Press the **OK** key to confirm your selection.



Pump Tube

This option allows you to view and change the usage counter related to the different Pump Tubes:

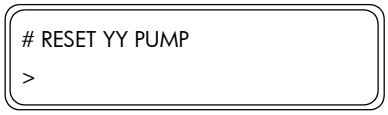
After replacing the relevant Pump Tube, make sure you reset the usage counter related to that Pump Tube.

1 In the Counter submenu, scroll to "YY Pump Tube" and press the **OK** key to view the usage counter related to the Pump Tube (YY relates to the ink color).

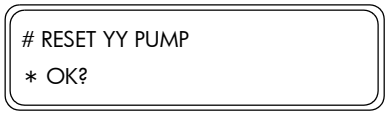
2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

3 Press the **OK** key once you have entered the new usage amount.

4 If the Pump Tube counter needs to be reset, return to the Counter submenu, scroll to "Reset YY Pump" and press the **OK** key.



5 You will need to confirm that you want to reset the counter by pressing the **OK** key.



Wiper Blade

This option allows you to view and change the usage counter related to the Wiper Blade:

After replacing the Wiper Blade, make sure you reset the usage counter related to the Wiper Blade.

1 In the Counter submenu, scroll to "Wiper Blade" and press the **OK** key to view the usage counter related to the Wiper Blade.

```
# WIPER BLADE
> 0017800
```

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

```
# WIPER BLADE
> 0013400
```

3 Press the **OK** key once you have entered the new usage amount.

4 If the Wiper Blade counter needs to be reset, return to the Counter submenu, scroll to "Reset Wipe Blade" and press the **OK** key.

```
# RESET WIPE BLADE
>
```

5 You will need to confirm that you want to reset the counter by pressing the **OK** key.

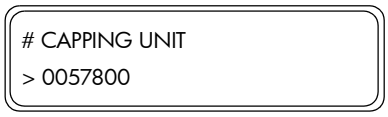
```
# RESET WIPE BLADE
* OK?
```

Capping Unit

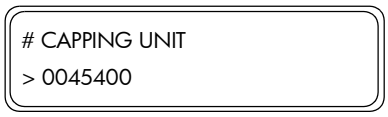
This option allows you to view and change the usage counter related to the Capping Units:

After replacing the Capping Units, make sure you reset the usage counter related to the Capping Units.

1 In the Counter submenu, scroll to "Capping Unit" and press the **OK** key to view the usage counter related to the Capping Units.

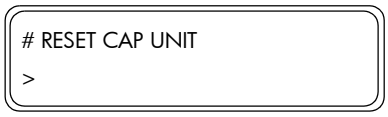


2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

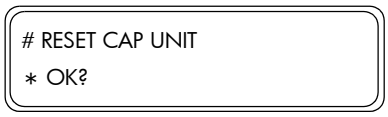


3 Press the **OK** key once you have entered the new usage amount.

4 If the Capping Unit counter needs to be reset, return to the Counter submenu, scroll to "Reset Cap Unit" and press the **OK** key.



5 You will need to confirm that you want to reset the counter by pressing the **OK** key.



Scan-Axis Belt

This option allows you to view and change the usage counter related to the Scan-Axis Belt:

After replacing the Preventive Maintenance Kit, make sure you reset the usage counter related to the Scan-Axis Belt.

1 In the Counter submenu, scroll to "Scan Axis Belt" and press the **OK** key to view the usage counter related to the Scan-Axis Belt.

2 Use the ▲ and ▼ keys to change the digits and use the ◀ and ▶ keys to select the digits.

3 Press the **OK** key once you have entered the new usage amount.

4 If the Scan-Axis Belt counter needs to be reset, return to the Counter submenu, scroll to "Reset Scan Belt" and press the **OK** key.

```
# RESET SCAN BELT
>
```

5 You will need to confirm that you want to reset the counter by pressing the **OK** key.

```
# RESET SCAN BELT
* OK?
```

Non-HP Ink Used

This option allows you to view whether Non-HP Ink has been used in the Printer:

1 In the Counter submenu, scroll to "Non-HP Ink Used" and press the **OK** key to view whether Non-HP ink has been used in the Printer.

```
# NON-HP INK USED
# XX > YES
```

XX: Ink Color

2 If Non-HP ink has been used in some or all of the colors, then you can check which date the Non-HP ink was used. Return to the Counter submenu, scroll to "Non-HP Ink Date" and press the **OK** key.

```
# NON-HP INK DATE
# XX > 06/12/22
```

Format: Year/Month/Day

Expired Ink Used

This option allows you to view whether expired ink has been used in the Printer:

1 In the Counter submenu, scroll to "Expire Ink Used" and press the **OK** key to view whether expired ink has been used in the Printer.

```
# EXPIRE INK USED
# XX > YES
```

XX: Ink Color

2 If expired ink has been used in some or all of the colors, then you can check which date the expired ink was used. Return to the Counter submenu, scroll to "Expire Ink Date" and press the **OK** key.

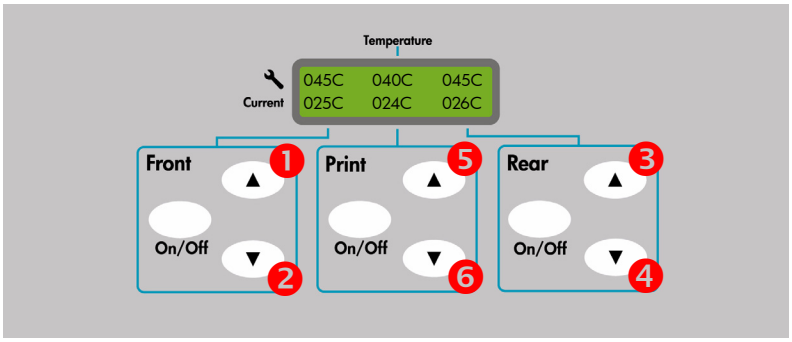
```
# EXPIRE INK DATE
# XX > 06/12/22
```

Format: Year/Month/Day

Heater Panel Maintenance Mode

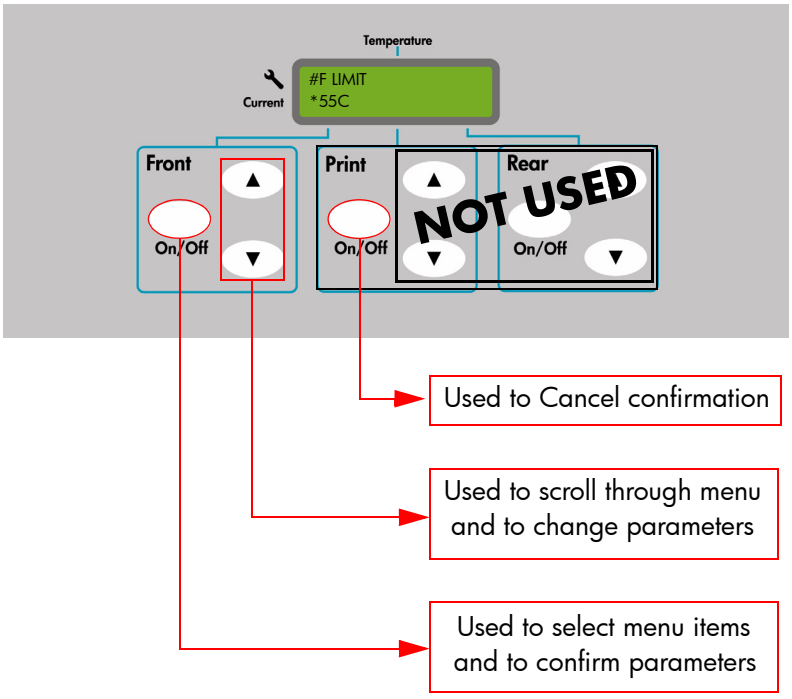
Entering Heater Panel Maintenance Mode

Press the following keys on the Heater Panel in the order shown in the drawing:



Basic Menu Operation

To operate the Heater Panel Maintenance Menu, only the "Front" keys are used.



Heater Panel Maintenance Menu

The different menu options that can be selected in the Heater Panel Maintenance Mode are as follows:

Menu Item	Description	Setting Options
F LIMIT	Front Heater maximum temperature limit preset by User.	15 to 60°C
R LIMIT	Rear Heater maximum temperature limit preset by User.	15 to 60°C
P LIMIT	Print Heater maximum temperature limit preset by User.	15 to 60°C
STANDBY TEMP	Preset temperature for standby state	15 to 40°C
HEATER TEST	Turn the Heaters ON/OFF	On or OFF
RESET PARAM	Return all parameters to the factory default settings	Yes or No
EXIT	Exit from the Maintenance Mode	Yes or No

Adjustments and Calibrations 5

Adjustments and Calibrations

The Printer requires certain adjustments and calibration procedures that must be performed under certain conditions.

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

Adjustments refer to procedures that require physical mechanical fine tuning of the different components in the Printer.

Calibrations refer to procedures that require entering values through the Front Panel in order to fine tune the components in the Printer.

All adjustment procedures that need to be done after replacing a Printhead are contained in Chapter 3.

Adjustments

Calibrations

Belt Tension Adjustment

This adjustment must be performed whenever:

- Carriage Assembly is disassembled or replaced.
- Carriage Belt is disassembled or replaced.

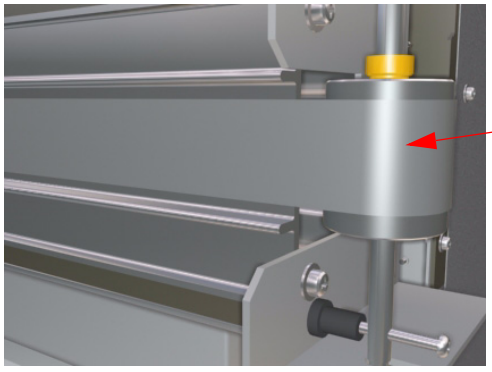
Be very careful when handling the Carriage Belt because you could easily cut yourself.

Perform the Belt Tension Adjustment as follows:

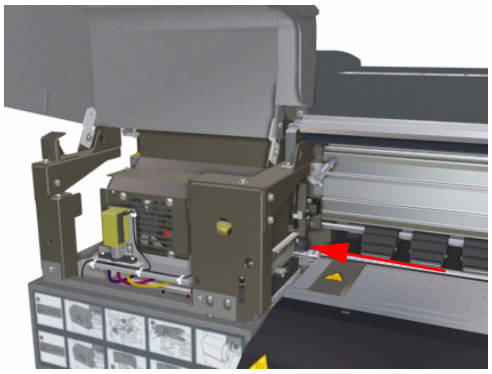
1 Make sure that the Carriage Belt is correctly installed.

Make sure that the Carriage is Uncapped before performing the following steps. Trying to move the Carriage out of the Capping Station while it is still capped will cause damage to the Printheads.

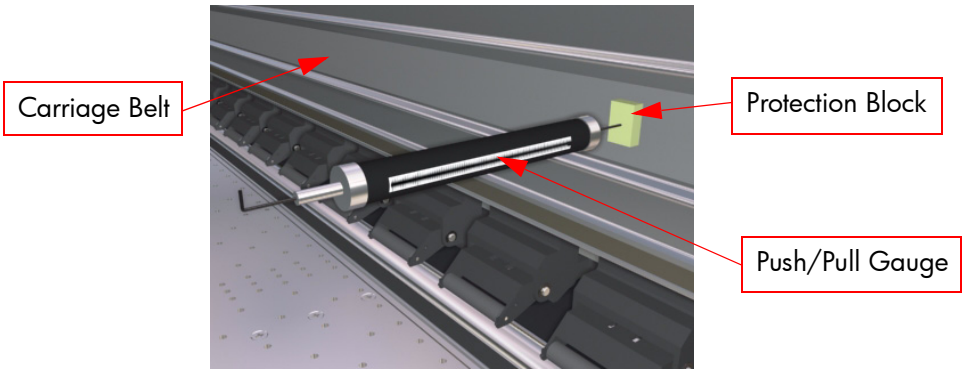
2 Move the Carriage to the Wiping Station and Capping Station several times to make sure that the Carriage Belt does not move vertically on the Tension Pulley. If necessary, adjust the slant of the Tension Pulley by tightening or loosening the screws.



3 Move the Carriage to the Capping Station.

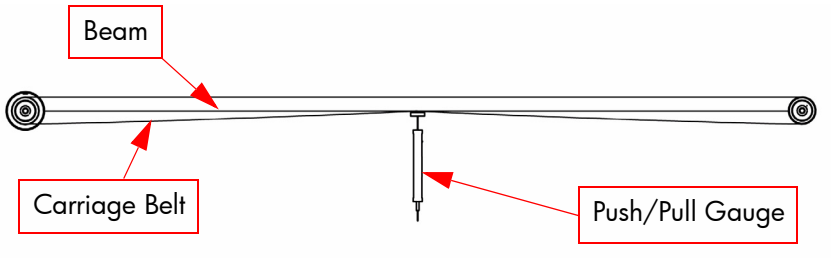


4 Using the Push/Pull Gauge, measure the tension in the middle of the Carriage Belt. The tension measured should be between **3.2 N ±0.3 N (between 0.300 and 0.330 kgf)**.

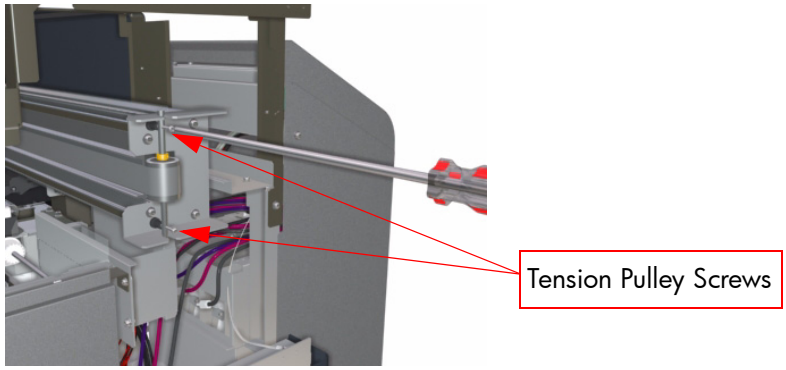


In order not to damage the Carriage Belt, please use a protection block between the Push/Pull Gauge and the belt.

5 When measuring the tension, make sure you push the Carriage Belt using the Push/Pull Gauge until it touches the beam behind the Carriage Belt.



6 If the tension is below 2.9 N (0.300 kgf), then you must tighten the Tension Pulley screws. If the tension is above 3.5 N (0.330 kgf), then you must loosen the Tension Pulley screws.

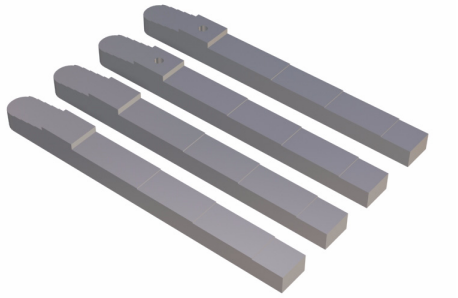


Carriage Height Adjustment

This adjustment must be performed whenever:

- Carriage Assembly is disassembled or replaced.
- Center Platen is disassembled or replaced.

For this adjustment, you will need the Carriage Height Adjustment Tools.



You must first check the Carriage height, and only if it is out of the accepted limits, you must adjust the Carriage height.

Before you check the Carriage Height, you must do the following:

- Make sure that the Media Load Lever is in the lower position and that the Media Pressure Lever is set in the "Normal" position.
- Enter the Heater Panel Maintenance Mode and the activate the Heater Test ⇒ Page *4-95*. Set the temperature of the Heaters at 45°C (Front), 40°C (Center) and 45°C (Rear).

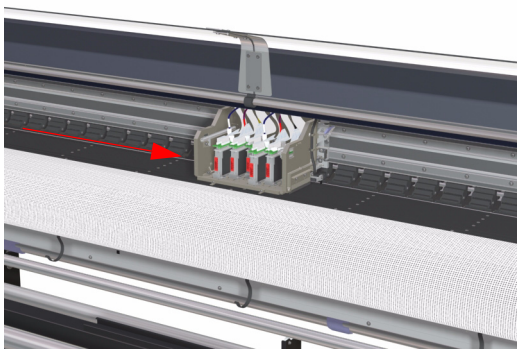
Make sure you wait at least 30 minutes so that the temperature of the Heaters become stable. While waiting make sure Carriage is capped so that the Printheads do not dry out.

Check the Carriage Height

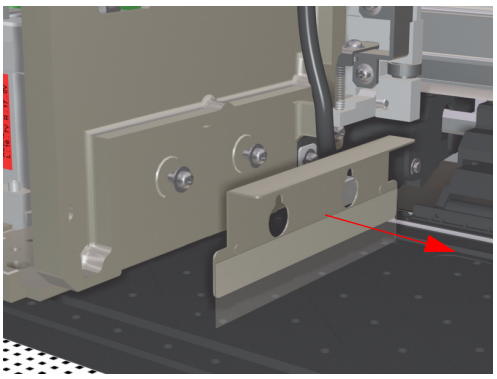
Check the Carriage height as follows:

Make sure that the Carriage is Uncapped before performing the following steps. Trying to move the Carriage out of the Capping Station while it is still capped will cause damage to the Printheads.

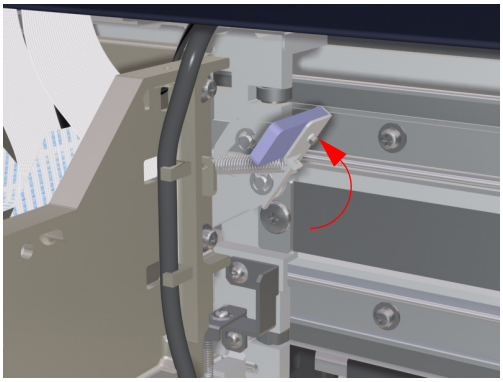
1 Move the Carriage Assembly to the middle of the Center Platen, so that it is positioned between the 6th and 7th screw position on the center Platen.



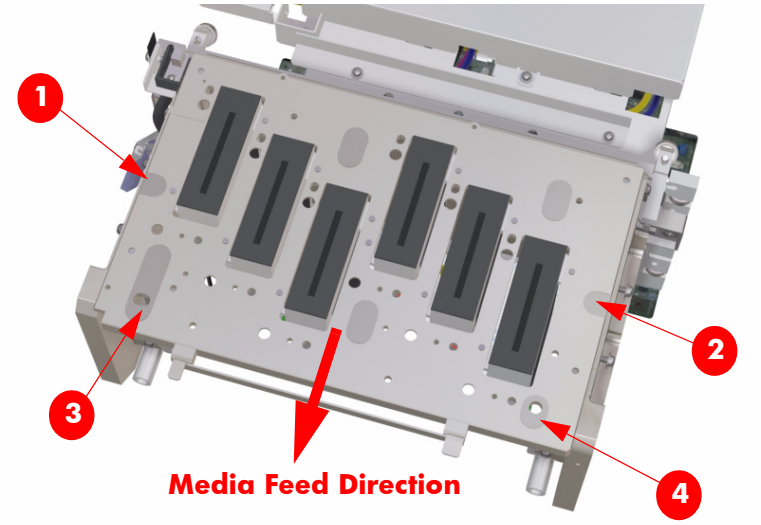
2 Remove the Carriage Shields from both sides of the Carriage Assembly.



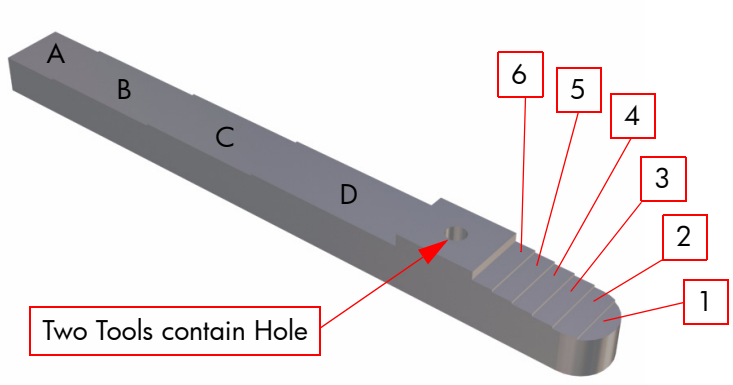
3 Make sure that the Printhead Height Lever is in the **upper** position (so that the Printhead height is actually in the **lower** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.



4 Identify the four positions that will be used to measure the Carriage height (the image below shows the Carriage viewed from underneath).



5 Before starting to measure the Carriage height, you should become familiar with the Carriage Height Adjustment Tools.

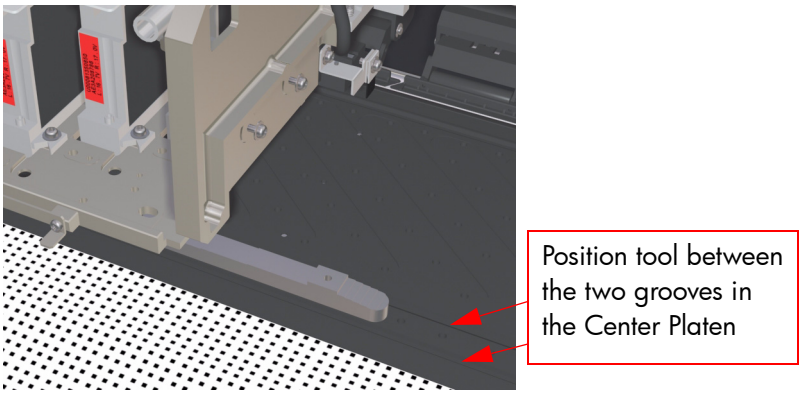


- Steps 1 - 6 of the Tool will be used to measure the Carriage Height at positions 1 and 2.
- Steps A through D of the Tool will be used to measure the Carriage Height at positions 3 and 4.

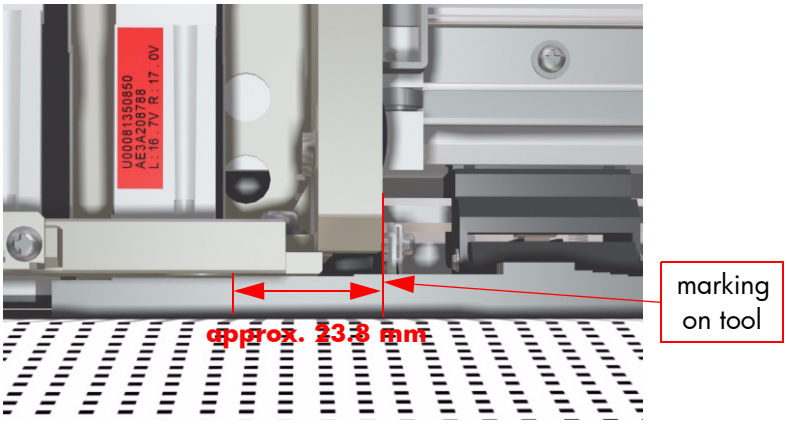
There are two types of carriage Height Adjustment tools, one with a hole and the other without a hole. As the height measured may differ at positions 3 and 4, use a corresponding step of the Tool depending on the position that you would like to measure. The thickness of each step is shown below:

	A	B	C	D	1	2	3	4	5	6
w/o Hole	5.9	6.0	6.1	6.2	6.4	6.5	6.6	6.7	6.8	6.9
with Hole	6.2	6.3	6.4	6.5	6.4	6.5	6.6	6.7	6.8	6.9

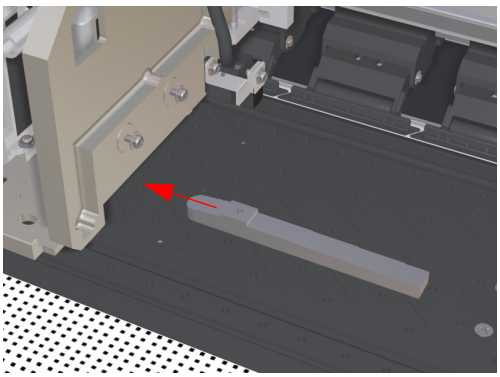
6 Insert the Carriage Height Adjustment Tool under the Carriage at positions 3 and 4 as shown below.



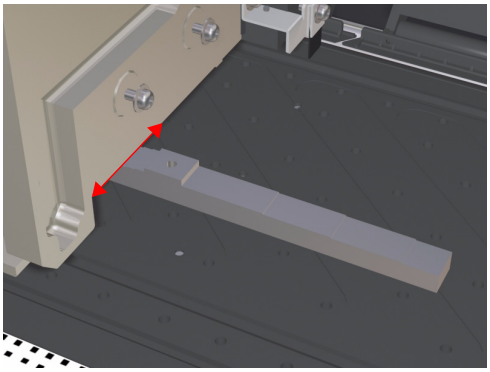
7 Make a mark on the side of the Tool to indicate where the Tool stops going under the Carriage. From this mark, measure 23.8 mm to locate the step that indicates the Carriage Height at that position. Make a note of this step.



8 Insert the Carriage Height Adjustment Tool under the Carriage at positions 1 and 2 as shown below. As a guide, use the 3rd screw on the Center Platen to find the correct position.



9 Once the Tool stops going in, make sure that it has reached the correct measuring point by moving it in the directions shown until it hits the right and left walls. Once in the correct position, check the Carriage height.



10 The Carriage Height is judged correct when the readings at the different positions are within the following range:

- Positions1 and 2 = between 6.4 and 6.8 mm.
- Positions 3 and 4 = between 6.0 and 6.4 mm.

Adjust the Carriage Height

Before you adjust the Carriage Height, you must do the following:

- Make sure that the Media Load Lever is in the lower position and that the Media Pressure Lever is set in the "Normal" position.
- Enter the Heater Panel Maintenance Mode and the activate the Heater Test ⇒ Page *4-95*. Set the temperature of the Heaters at 45°C (Front), 40°C (Center) and 45°C (Rear).

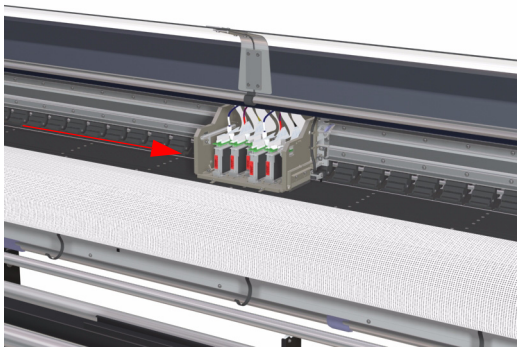
Make sure you wait at least 30 minutes so that the temperature of the Heaters become stable. While waiting make sure Carriage is capped so that the Printheads do not dry out.

Adjust the Carriage Height as follows:

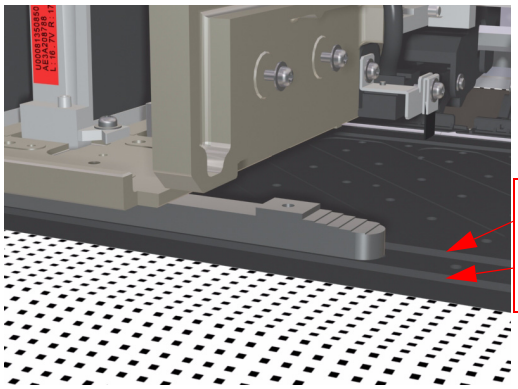
1 Make sure that the following parts have been removed:

- Upper Side Cover (Right).
- Top Side Cover (Right).
- Capping Door.
- Cooling Fan Assembly.

1 Move the Carriage Assembly to the middle of the Center Platen, so that it is positioned between the 6th and 7th screw position on the center Platen.



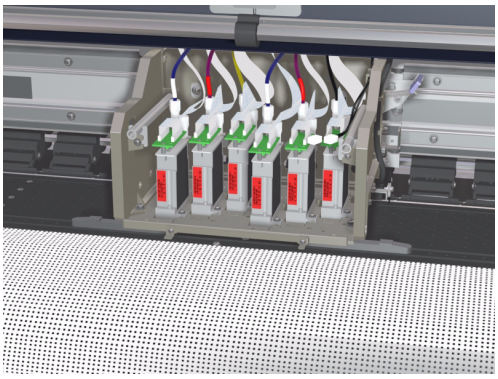
2 Insert the Carriage Height Adjustment Tool (with hole) under the Carriage at positions 3 and 4 as shown below.



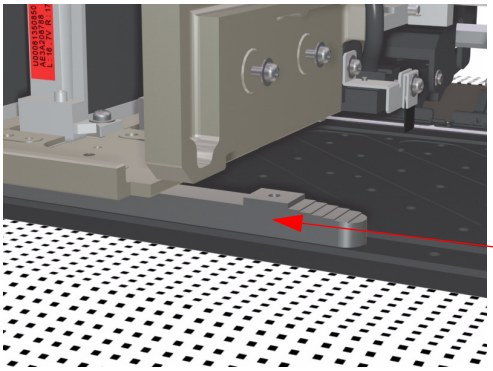
3 Loosen the three screws that secure the Carriage base to the main Carriage Assembly and raise the Carriage Assembly.

To loosen the three screws, you will need a 3mm Allen Key that is at least 20 cm long.

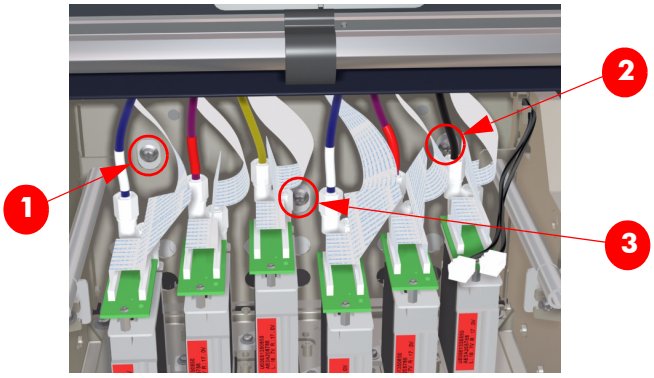
4 Lower the Carriage onto the Carriage Height Tools inserted in the previous steps.



5 Lift the Carriage slightly and reposition the Carriage Height Tools. The front Tools should be positioned so that the Carriage is sitting on top of step C of the tool.



6 With the Carriage Height Tools still in position, press down on the front of the Carriage and tighten the three screws that secure the Carriage base to the main Carriage Assembly. Tighten the left screw first, then the right screw and then the middle screw.



Before tightening the screws, make sure you place some weight (using your finger) on the front of the Carriage. If this is NOT done, the Carriage will be incorrectly adjusted and could cause some serious Print Quality issues.

7 Remove the Carriage Height Tools from the Carriage base.

8 Insert the Carriage Height Tools again to check that readings at the different positions are within the following range:

- Positions1 and 2 = between 6.4 and 6.8 mm.
- Positions 3 and 4 = between 6.0 and 6.4 mm.

If the error exceeds this range, you will need to adjust the Carriage height again.

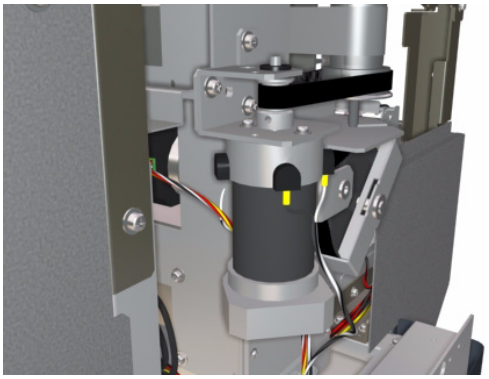
Scan-Axis Belt Tension Adjustment

This adjustment must be performed whenever:

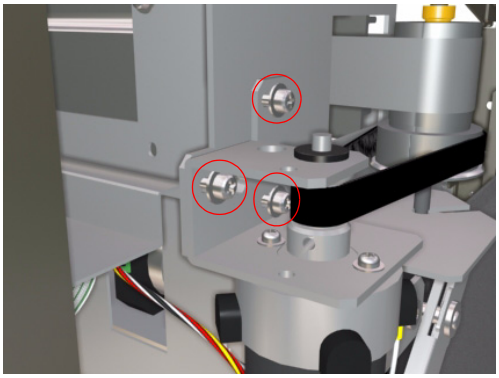
- Scan-Axis Motor is disassembled or replaced.
- Scan-Axis Belt is disassembled or replaced.

Perform the Scan-Axis Belt Tension Adjustment as follows:

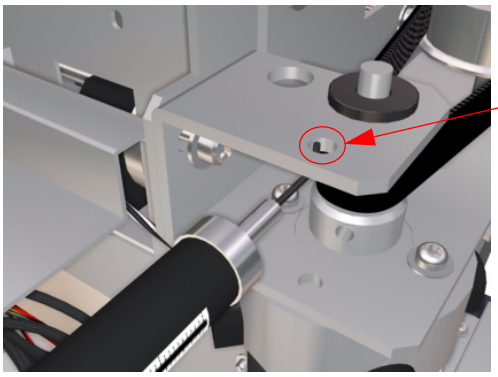
1 Make sure that the Scan-Axis Motor and Belt are correctly installed.



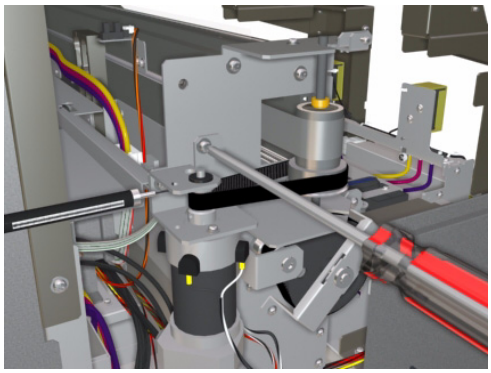
2 Loosen three screws that secure the Scan-Axis Motor Bracket to the Printer.



3 Hook the Push/Pull Gauge onto the Scan-Axis Motor Bracket and tension the Scan-Axis Belt to a force of 41.0 N ±2.0 N (4.18 kgf ±0.2 kgf).



4 While tensioning the Scan-Axis Belt, tighten the three screws that you loosened in step 2.



Paper-Axis Belt Tension Adjustment

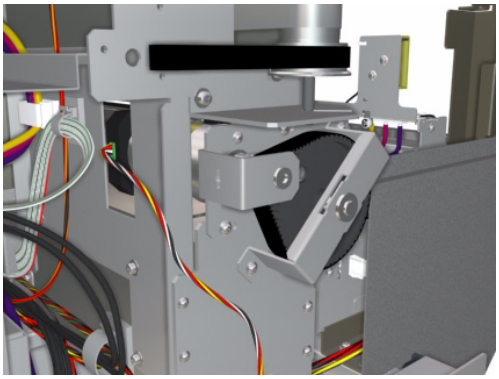
This adjustment must be performed whenever:

- Paper-Axis Motor is disassembled or replaced.
- Paper-Axis Belt is disassembled or replaced.

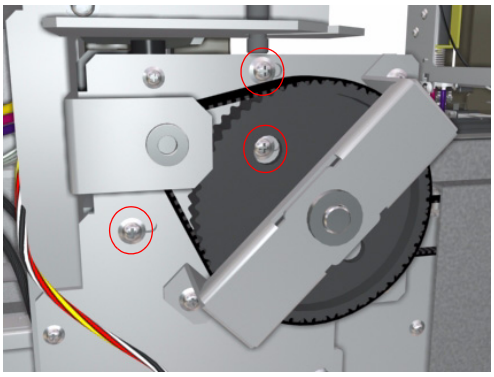
In order to adjust the Paper-Axis Belt, you will need to first remove the Scan-Axis Motor.

Perform the Paper-Axis Belt Tension Adjustment as follows:

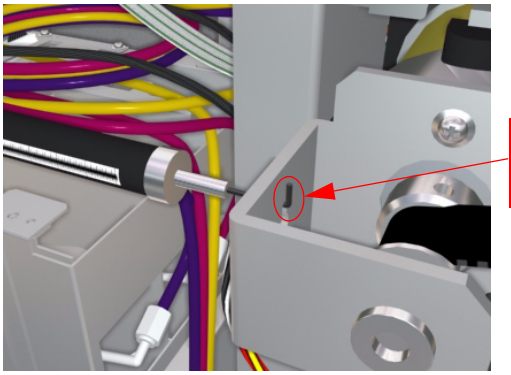
1 Make sure that the Paper-Axis Motor and Belt are correctly installed.



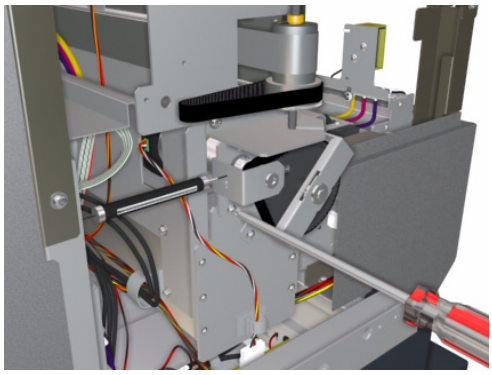
2 Loosen three screws that secure the Paper-Axis Motor Bracket to the Printer.



3 Hook the Push/Pull Gauge onto the Paper-Axis Motor Bracket and tension the Paper-Axis Belt to a force of 49.0 N ±2.0 N (5.0 kgf ±0.2 kgf).



4 While tensioning the Paper-Axis Belt, tighten the three screws that you loosened in step 2.



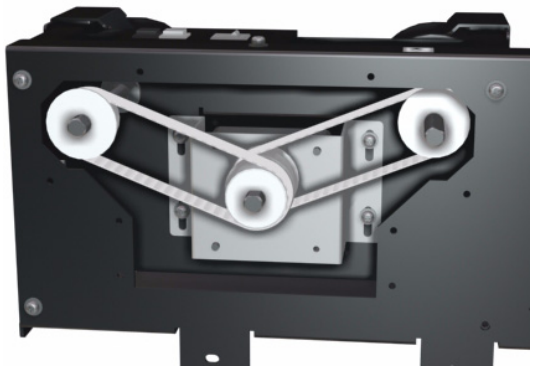
Timing Belt (for Feed/TUR Unit) Tension Adjustment

This adjustment must be performed whenever:

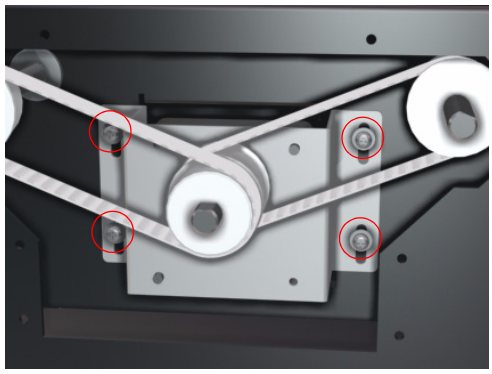
- Timing Belt (for Feed/TUR Unit) is disassembled or replaced.

Perform the Timing Belt (for Feed/TUR Unit) Tension Adjustment as follows:

1 Make sure that the Timing Belts (for Feed/TUR Unit) are correctly installed.

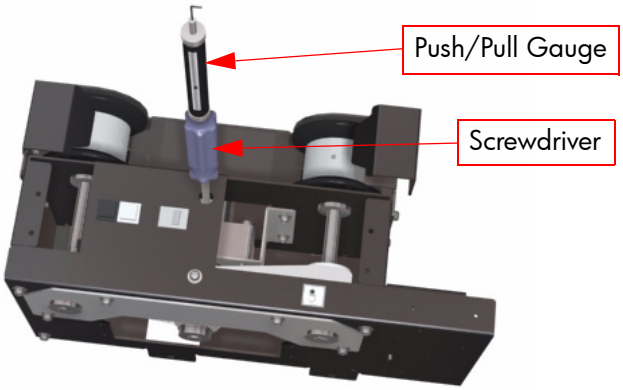


2 Loosen four screws that secure the Drive Unit Motor Bracket to the Printer.

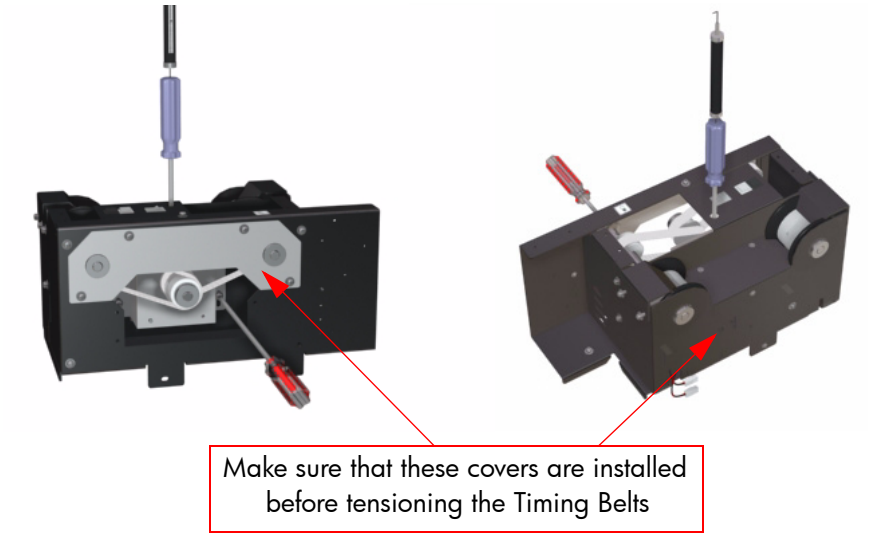


3 Re-install the three Bearings onto the shafts and re-install the Top Drive Motor Cover (and secure with four screws).

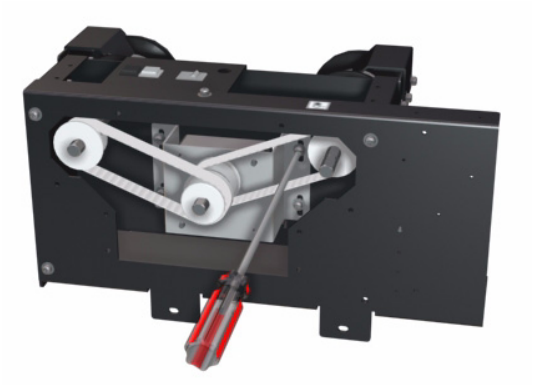
4 Position a screwdriver on top of the Drive Unit Motor (by passing it through a hole) and then Push the Push/Pull Gauge onto the Screwdriver and tension the Timing Belts to a force of 19.6 to 24.5 N (2.0 kgf to 2.5 kgf).



5 While tensioning the Timing Belts, tighten the bottom two screws in order to secure the Drive Unit Motor.



6 Remove the Top Drive Motor Cover and tighten the top two screws that secure the Drive Unit Motor.



7 Re-install all the covers.

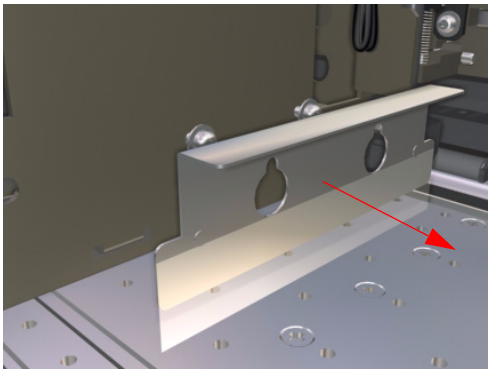
Wiping Station Height Adjustment

This adjustment must be performed whenever:

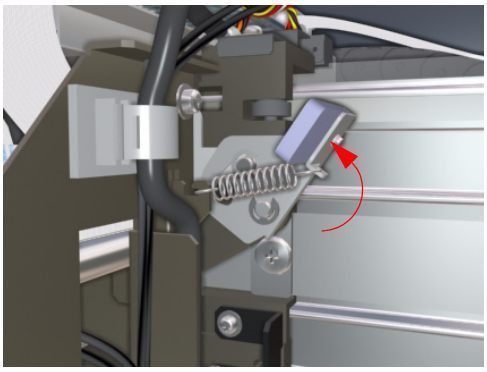
- Wiping Station is disassembled or replaced.

Perform the Wiping Station Height Adjustment as follows:

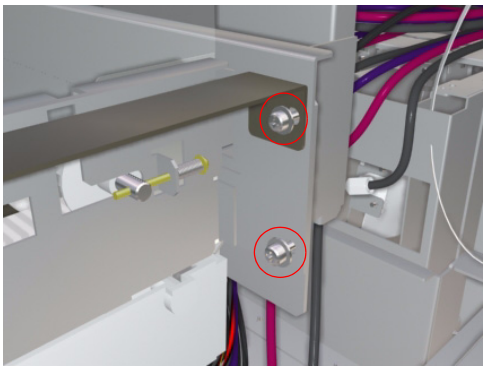
1. Make sure that the Wiping Station is correctly installed.
2. Remove the Carriage Shields from both sides of the Carriage Assembly.



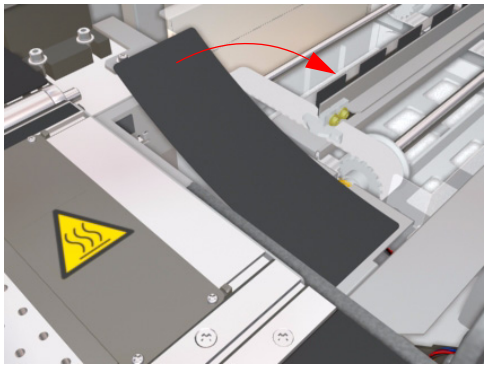
3. Make sure that the Printhead Height Lever is in the **upper** position (so that Printhead height is actually in the **lower** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.



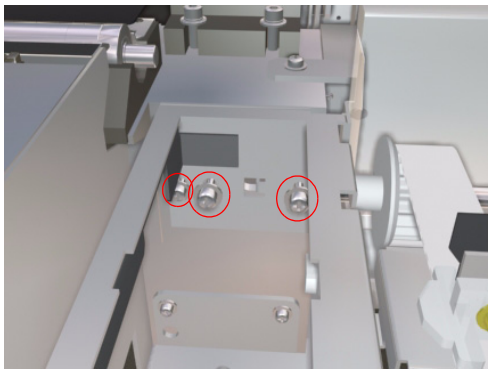
4. Loosen two screws that secure the Wiping Station on the right hand side.



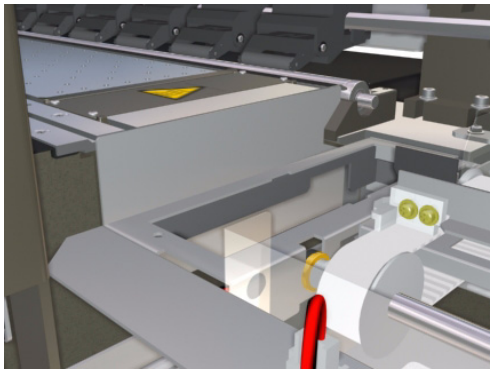
5 Remove the Black Cover that is stuck over the hole in the Wiping Station.



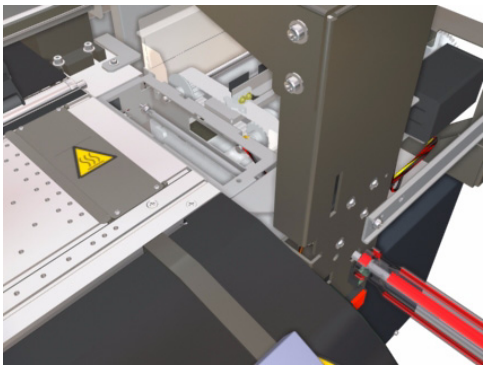
6 Loosen three screws that secure the Wiping Station on the left hand side.



7 Adjust the Wiping Station so that it is level with the aluminum frame piece on the left rear of the Wiping Station. Make sure that the Wiping Station is as level as possible before tightening the screws in the next step.

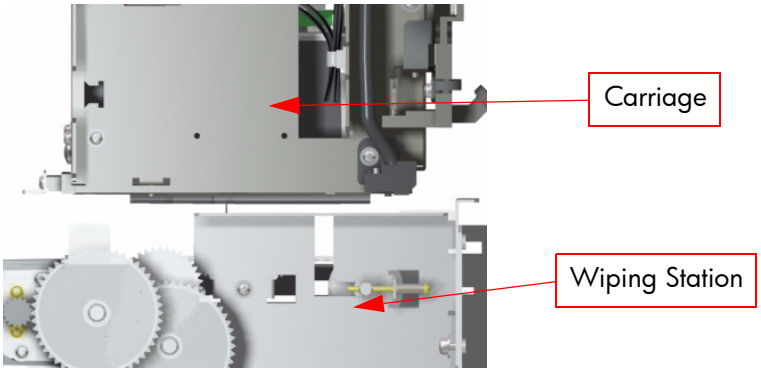


8 Tighten the five screws that you loosened in the previous steps and insert the black cover removed in step 5.



Make sure that the Carriage is Uncapped before performing the following step. Trying to move the Carriage out of the Capping Station while it is still capped will cause damage to the Printheads.

9 Gently move the Carriage to the Wiping Station, making sure that the Carriage does not hit the Wiping Station. There should be a slight gap between the Carriage and the Wiping Station.



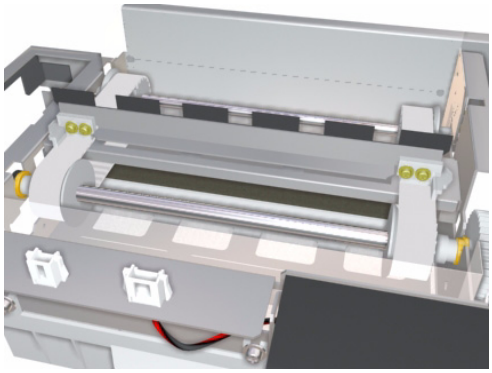
Wiper Belt Tension Adjustment

This adjustment must be performed whenever:

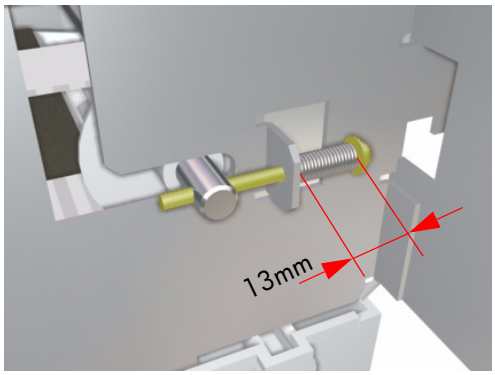
- Wiper Blade is disassembled or replaced.
- Wiper Belts are disassembled or replaced.

Perform the Wiper Belt Height Adjustment as follows:

1 Make sure that the Wiper Belts are correctly installed.



2 Tighten or loosen the Tension screw on both sides of the Wiping Station (for each Wiper Belt) until the remaining length of the screw is 13 mm.



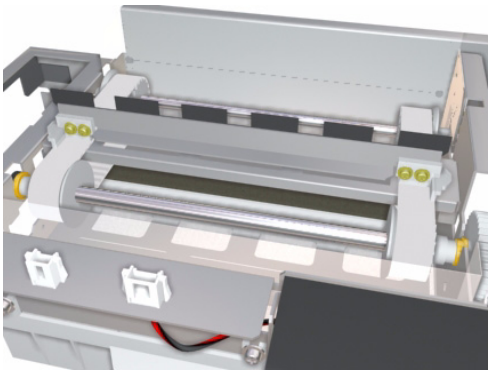
Wiper Blade Height Adjustment

This adjustment must be performed whenever:

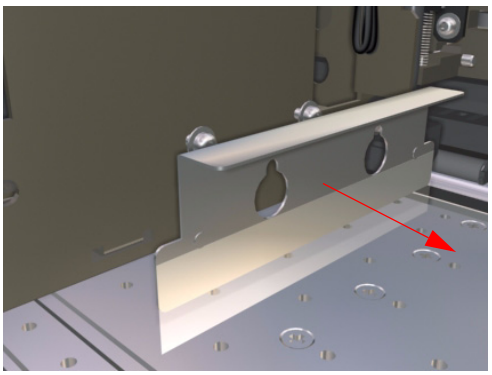
- Wiping Station is disassembled or replaced.
- Wiper Blade is disassembled or replaced.
- Wiper Belts are disassembled or replaced.

Perform the Wiper Blade Height Adjustment as follows:

1. Make sure that the Wiping Station and the Wiper Belts are correctly installed and adjusted.
2. Make sure that the Wiper Blade is correctly installed.

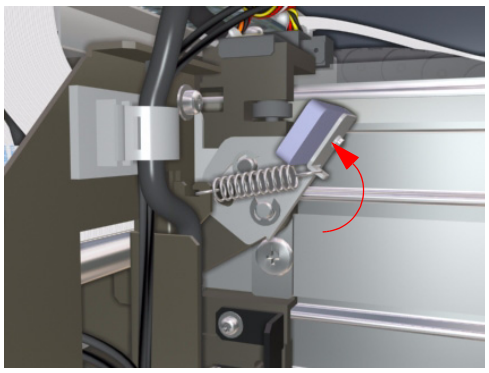


3. Remove the Carriage Shields from both sides of the Carriage Assembly.

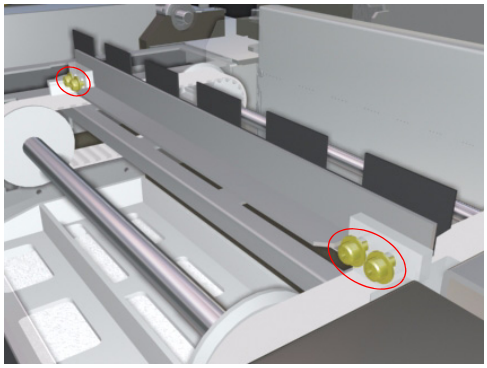


4. Make sure that the Printhead Height Lever is in the **upper** position (so that Printhead height is actually in the **lower** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the

position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.

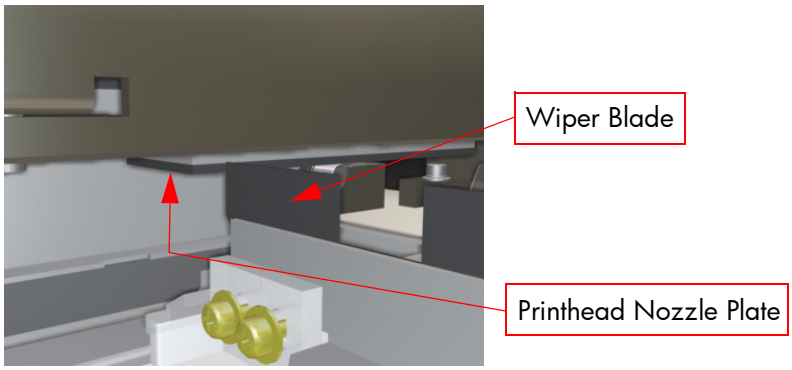


5 Loosen four screws that secure the Wiper Blade to the Wiper Belts.

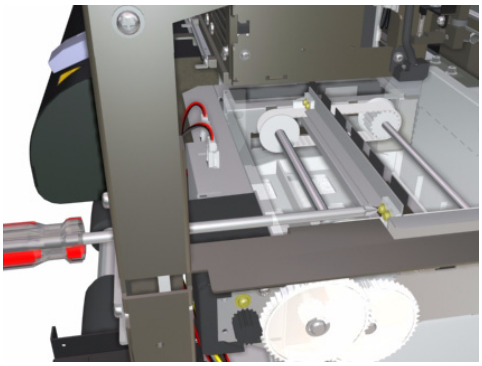


Make sure that the Carriage is Uncapped before performing the following step. Trying to move the Carriage out of the Capping Station while it is still capped will cause damage to the Printheads.

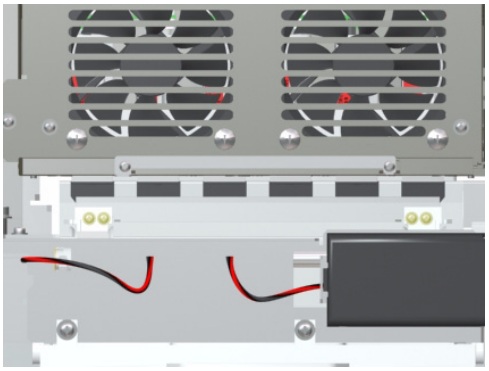
6 Move the Carriage to the Wiping Station and position the top edge of the Wiper Blade at least 0.5 mm above the top edge of the Printhead Nozzle Plate (black part).



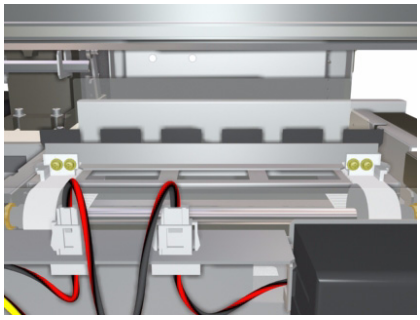
7 While holding the Wiper Blade in position, tighten the two screws that you loosened in a previous step.

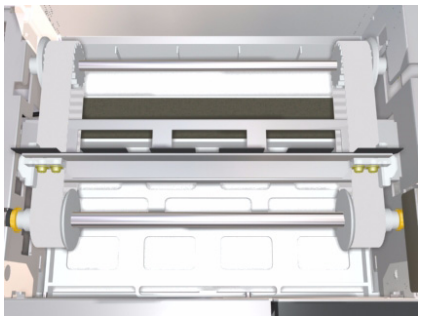


8 Manually rotate the Wiper Blade using the Wiping Station Gear and check that the Wiper Blade touches the Printheads evenly.



9 Also check that the Wiper Blade is level and not slanted.





Capping Station Height Adjustment

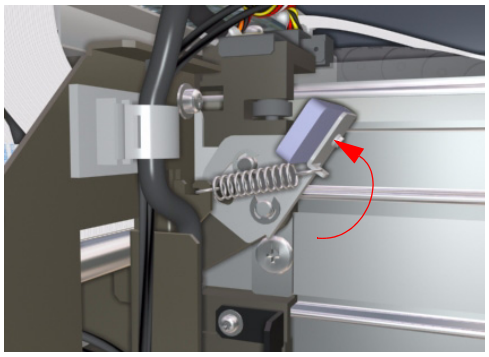
This adjustment must be performed whenever:

- Capping Station is disassembled or replaced.

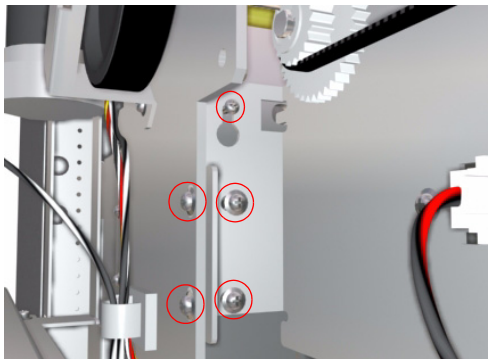
For this adjustment, you will need the Capping Height Tools.

Perform the Capping Station Height Adjustment as follows:

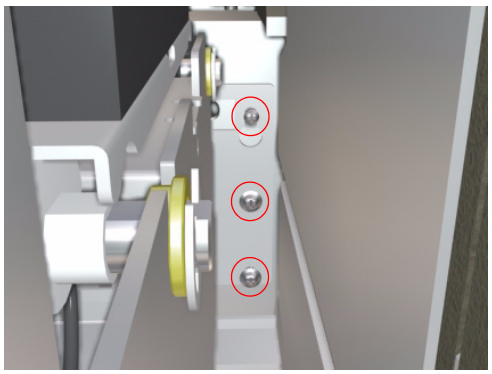
1. Make sure that the Capping Station is correctly installed and that the Carriage is moved to the Capping Station.
2. Make sure that the Printhead Height Lever is in the **upper** position (so that Printhead height is actually in the **lower** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.



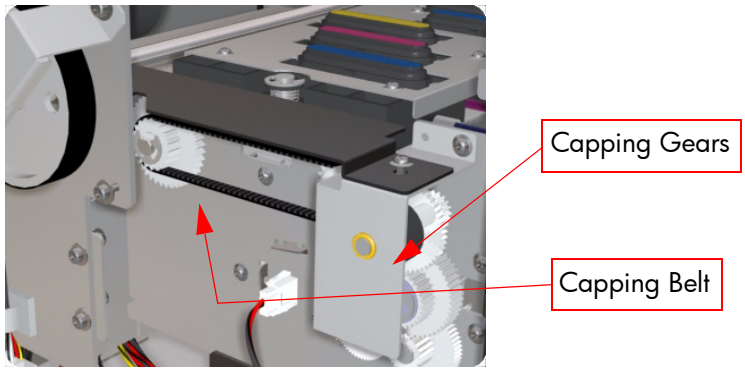
3. Loosen five screws from the left hand side of the Capping Station.



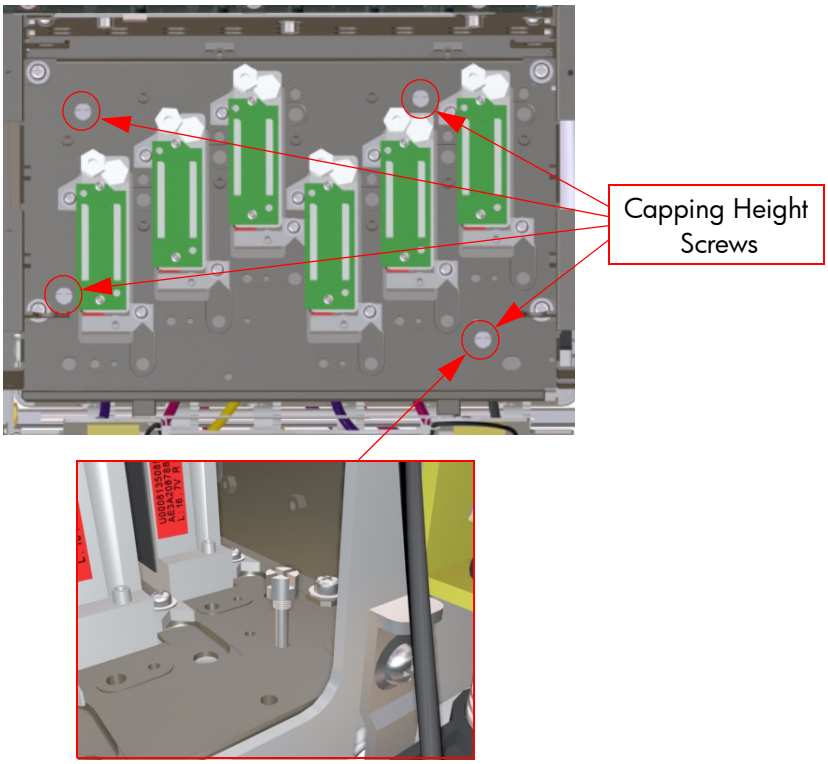
4. Loosen three screws from the right hand side of the Capping Station.



5 Before continuing with the Capping Station Height Adjustment, make sure that the Capping Station is at it's lowest position by rotating the Capping Belt.



6 Install the four Capping Height screws into the Carriage in the positions shown below.



7 Adjust the height of the Capping Station so that at least three Capping Height screws are touching the top part of the capping Station.

8 While holding the Capping Station in position, tighten the screws that you loosened in the previous steps.

9 Remove the four Capping Height Screws from the Carriage.

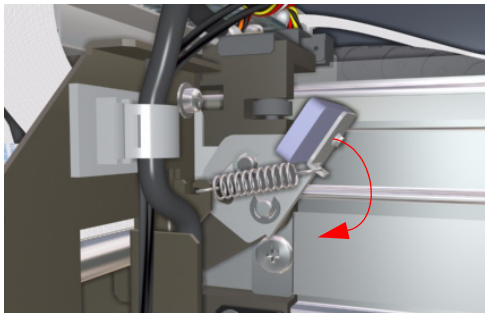
Printhead Capping Limit Adjustment

This adjustment is necessary in order to stop the Capping Units from pushing against the Printheads too much. This adjustment must be performed whenever:

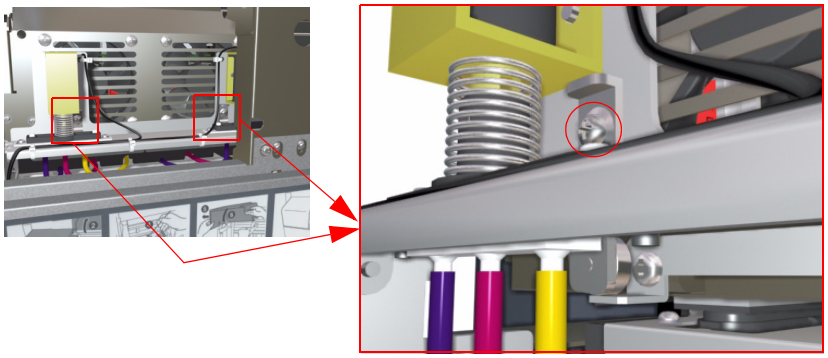
- Capping Station is disassembled or replaced.

Perform the Printhead Capping Limit Adjustment as follows:

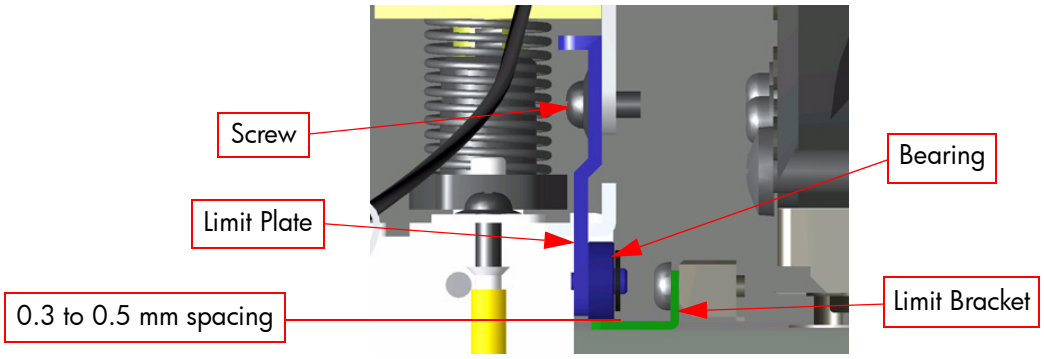
1. Make sure that the Capping Station is correctly installed.
2. Uncap the Carriage Assembly ⇒ Page *4-19*.
3. Make sure that the Printhead Height Lever is in the **lower** position (so that Printhead height is actually in the **upper** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.



4. Loosen the screw which secures each Capping Limit Plate to the Carriage.



5. Lower each Limit Plate until the bearing (attached to the Plate) almost touches the Limit Brackets on the Capping Station. The space between the Bearing and the Limit Brackets should be between 0.3 and 0.5 mm.



6. Tighten the screws that secure the Plates.

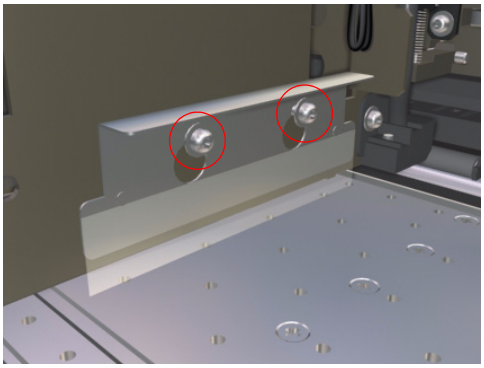
Carriage Shield Height Adjustment

This adjustment must be performed whenever:

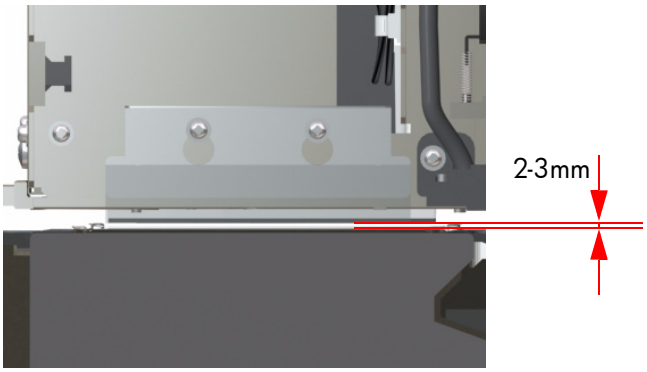
- Carriage Shields are disassembled or replaced.

Perform the Carriage Shield Height Adjustment as follows:

1. Make sure that the Carriage Shields are correctly installed.
2. Loosen 2 screws that secure the Carriage Shield to the Carriage.



3. Adjust the Carriage Shield so that there is a 2-3 mm clearance between the Carriage Shield and the Center Platen.



4. While holding the Carriage Shield in position, tighten the two screws that you loosened in a previous step.

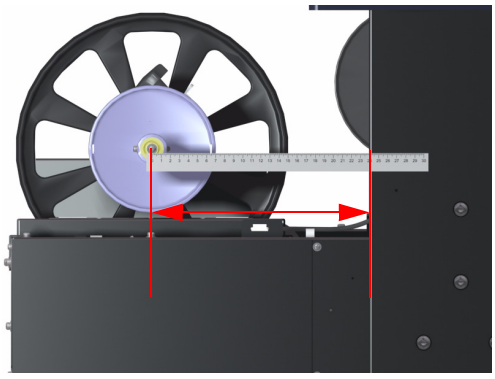
Media Feed and Take-Up-Reel Unit Adjustment

Whenever the Media Feed or Take-Up-Reel Unit has been disassembled or replaced, you must adjust them horizontally and vertically.

Horizontal Adjustment

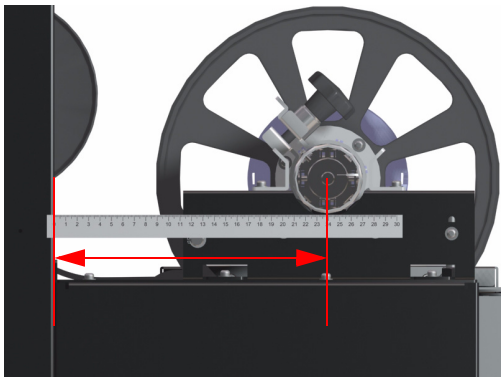
Perform the Horizontal Adjustment on the Media Feed or Take-Up-Reel Unit as follows:

1. Make sure that the Media Feed or the Take-Up-Reel Unit is correctly installed and that the Main Scrollers are in position.
2. Measure the distance from the side of the Printer Stand to the center of the Main Scroller (on the Capping Side). The distance should be approximately 239.5 mm for the Media Feed Unit and 159.5 mm for the Take-Up-Reel Unit.



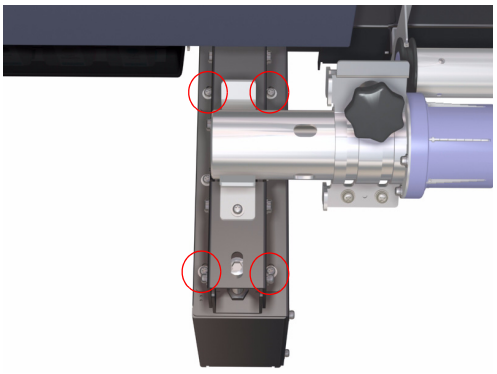
When measuring the distance on both sides, make sure you use a flat ruler or meter tape. make sure that the ruler or tape measure is not too bent. As an alternative you can also use a Caliper that can measure up to at least 25 cm (10 inches).

3. Measure the distance from the side of the Printer Stand to the center of the Main Scroller (on the Wiping Side). The distance should be approximately the same as measured in the previous step.



4. If the distance measured on the wiping side is different to the distance measured on the capping side, you will need to adjust the position of the Idle Unit as explained in step 5.

5 Loosen four screws that secure the Idle Unit on the wiping side and adjust the Idle Unit until the distance from the Printer Stand to the center of the Main Scroller is the same as the distance measured in step 2.

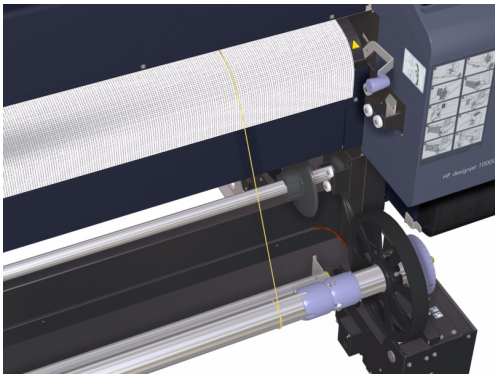


6 Tighten the screws loosened in the previous step.

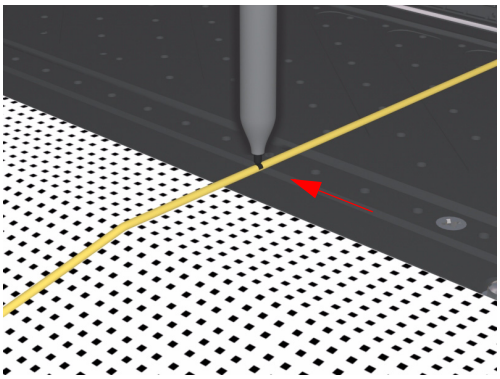
Vertical Adjustment

Perform the Vertical Adjustment on the Media Feed or Take-Up-Reel Unit as follows:

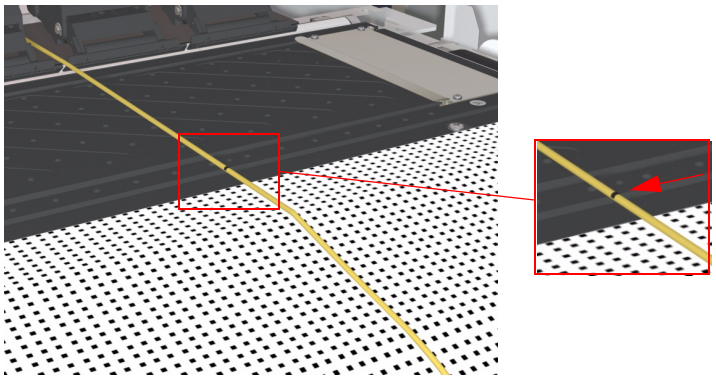
1 Tie a piece of string around the Main Scroller (on the Capping Side) and pass it through the paper entry path.



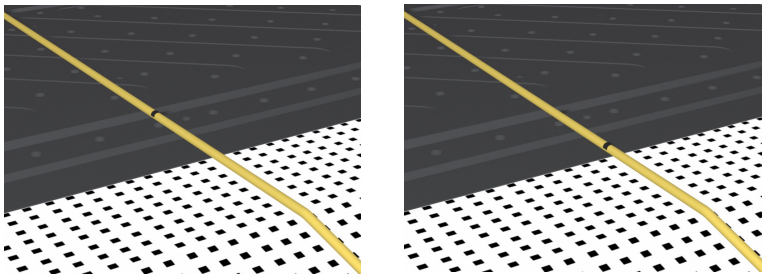
2 Pull the string tight and mark the point where it crosses the Cutter Groove on the Center Platen.



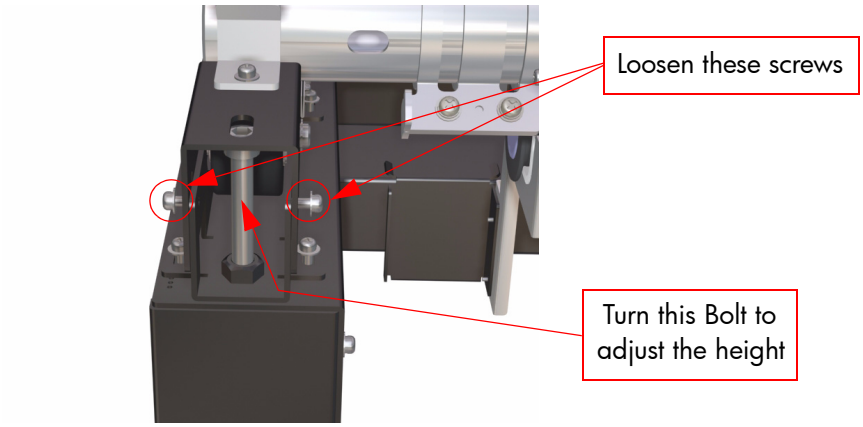
3 Slide the string across to the Wiping Side and check that the point marked in step 2 is aligned with the Cutter Groove in the Center Platen.



4 If the point marked in step 2 is either above or below the Cutter Groove, you will need to adjust the position of the Idle Unit as explained in step 5.



5 Loosen one screw on each side of the Idle Unit and use an 8mm Allen Key to turn the Bolt to adjust the height of the Idle Unit until it is the same as the height on the Capping side.



6 Tighten the screws loosened in the previous step.

7 Apply red paint to the bottom of the Bolt so it does not accidently loosen.

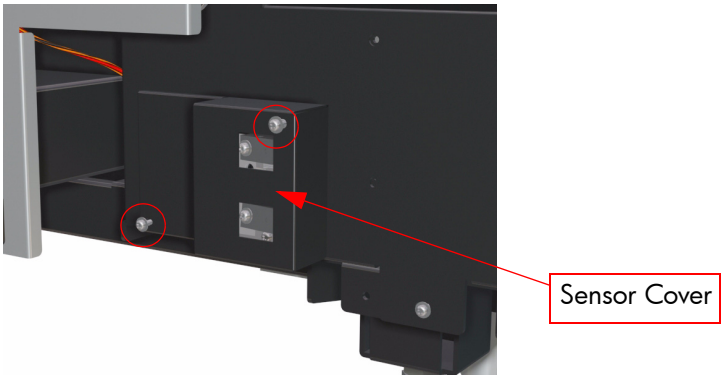
Media End Sensor Adjustment

This adjustment is necessary to adjust the direction of the light emitted from the light emission unit of the Media End Sensor (located on the Media Feed side in the upper location). This adjustment must be performed whenever:

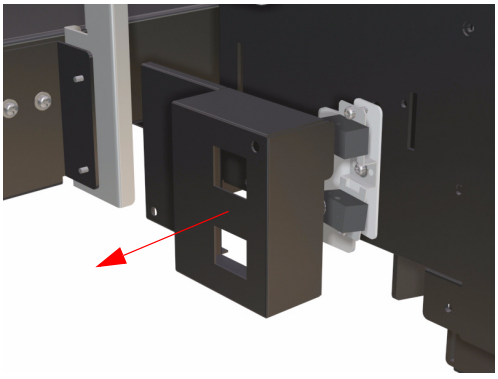
- Media End Sensor is disassembled or replaced.

Perform the Media End Sensor Adjustment as follows:

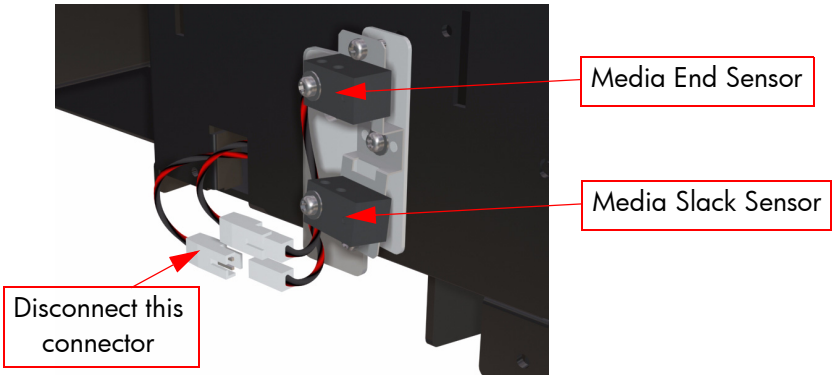
1. Remove the Main Scroller and Sub Scroller from the Media Feed side.
2. Remove two screws that secure the Sensor Cover on the Media Feed Unit.



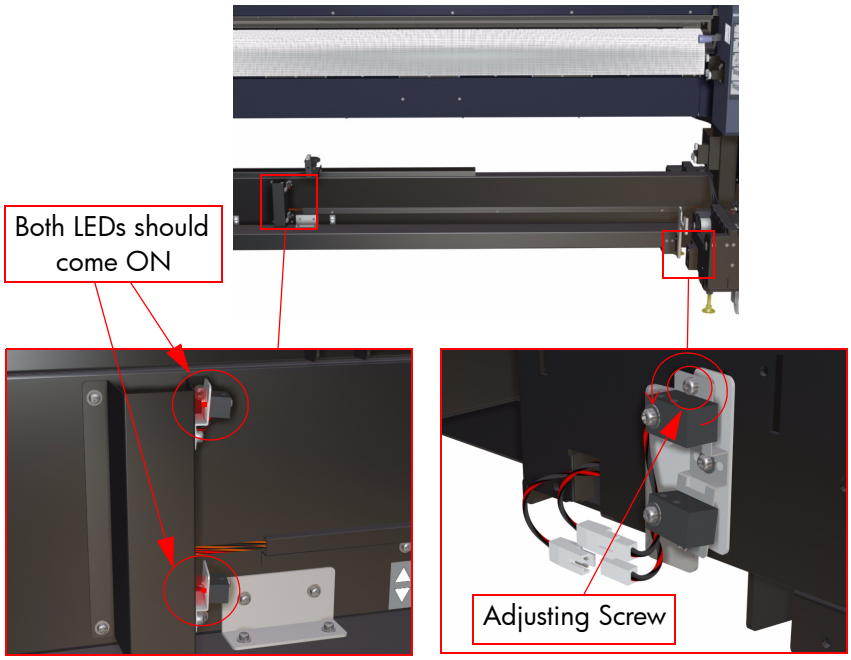
3. Remove the Sensor Cover from the light emission units on the Media Feed Unit.



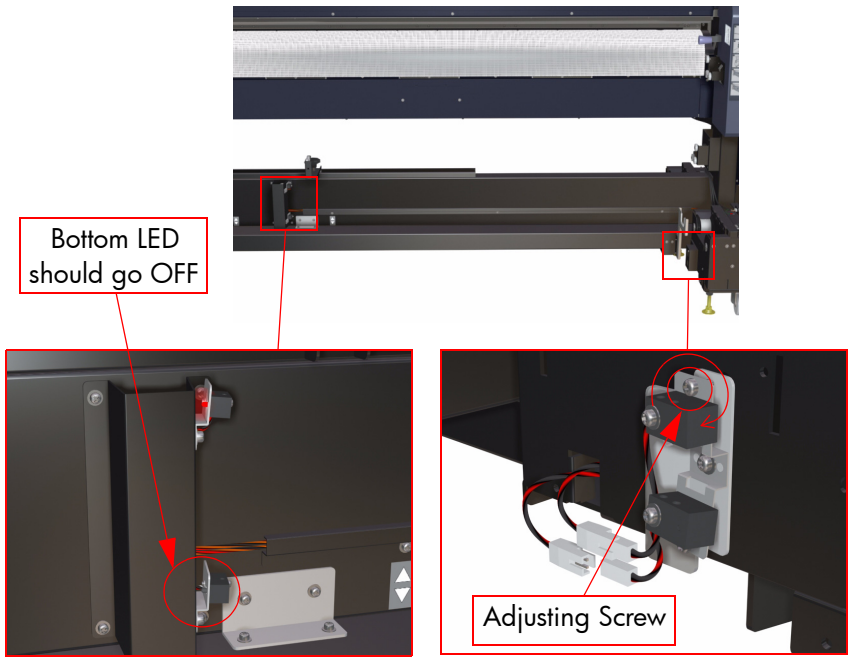
4. Disconnect the connector (labelled **K-Slack**) of the light emission unit of the Media Slack Sensor (lower sensor) on the Media feed Unit.



5 Turn the top adjusting screw (counter-clockwise) to adjust the light emission unit to a position where both the upper and lower light receiving units receive the light (the red LEDs are ON).

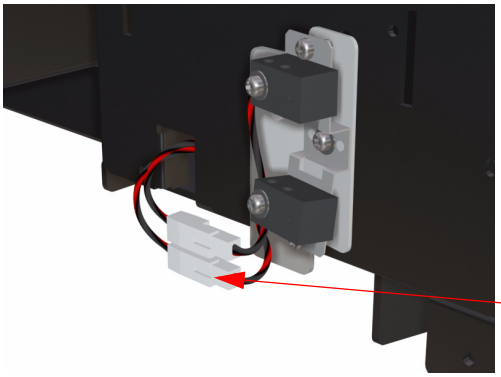


6 Turn the top adjusting screw (clockwise) gradually until the Media Slack Sensor (lower sensor) no longer receives the light (the red LED light goes OFF).

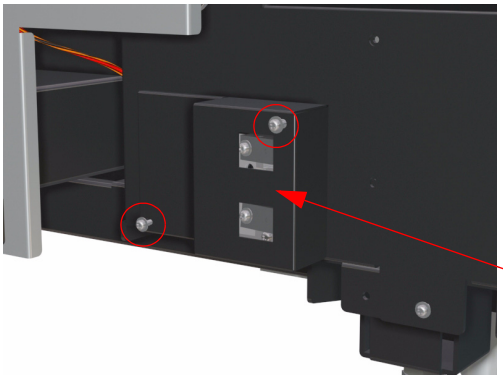


7 Turn the top adjusting screw (clockwise) a further **1.25 times**.

8 Check that the Media End Sensor (upper sensor) receives the light (the red LED light is ON) and connect the connector of the light emission unit of the Media Slack Sensor (lower sensor).



9 Install the Sensor Cover and secure with two screws.



If the Sensors do not work correctly during the adjustment, you should double check that the Sensors have been installed and connected correctly ⇒ Page *8-220*.

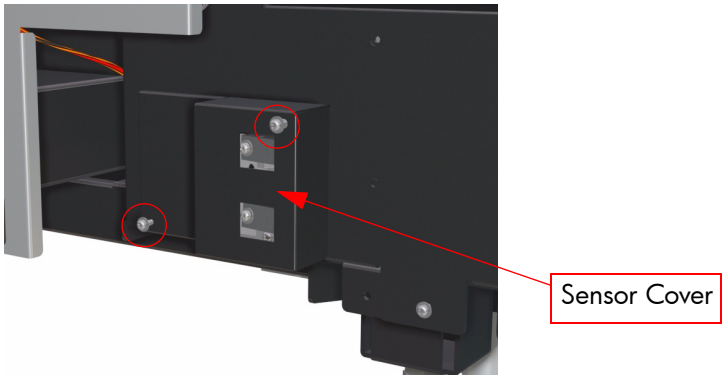
Media Slack Sensor Adjustment

This adjustment is necessary to adjust the direction of the light emitted from the light emission unit of the Media Slack Sensor (located on the Media Feed side in the lower location). This adjustment must be performed whenever:

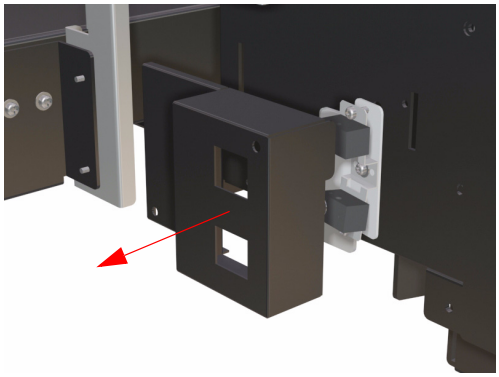
- Media Slack Sensor is disassembled or replaced.

Perform the Media Slack Sensor Adjustment as follows:

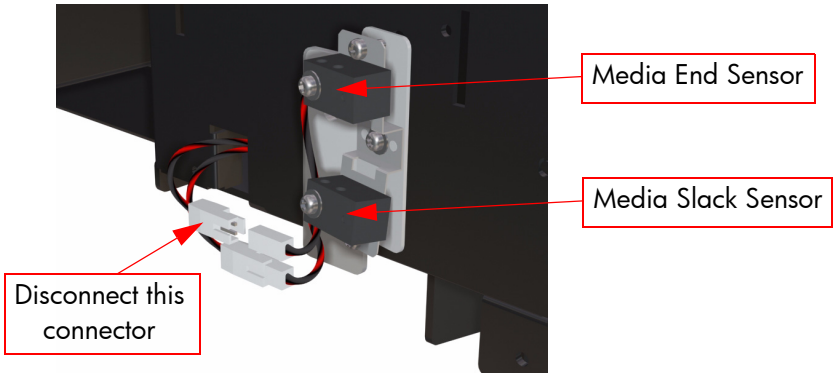
1. Remove the Main Scroller and Sub Scroller from the Media Feed side.
2. Remove two screws that secure the Sensor Cover on the Media Feed Unit.



3. Remove the Sensor Cover from the light emission units on the Media Feed Unit.

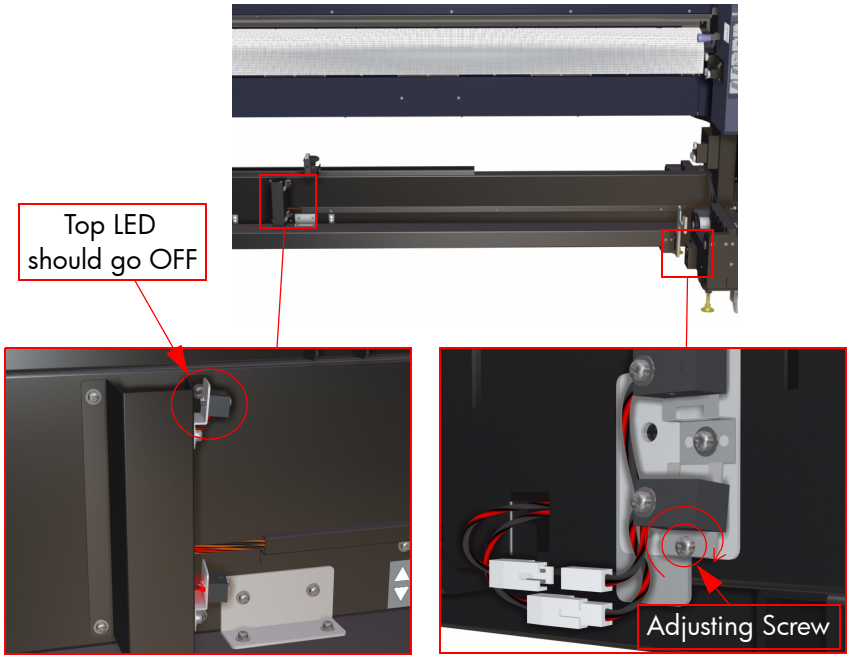


4. Disconnect the connector (labelled **K-End**) of the light emission unit of the Media End Sensor (upper sensor) on the Media feed Unit.



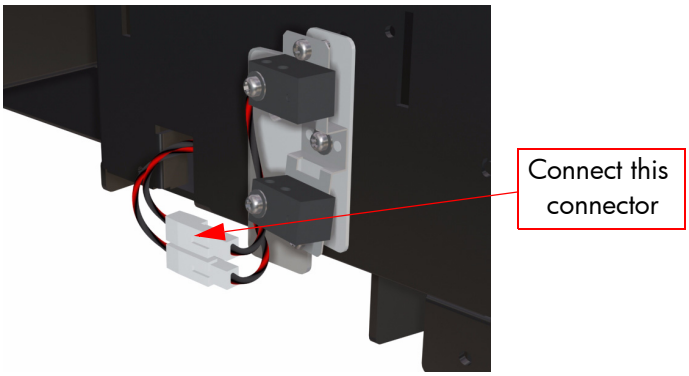
5 Turn the bottom adjusting screw (counter-clockwise) to adjust the light emission unit to a position where both the upper and lower light receiving units receive the light ((the red LEDs are ON).

6 Turn the bottom adjusting screw (clockwise) gradually until the Media End Sensor (upper sensor) no longer receives the light (the red LED light goes OFF).



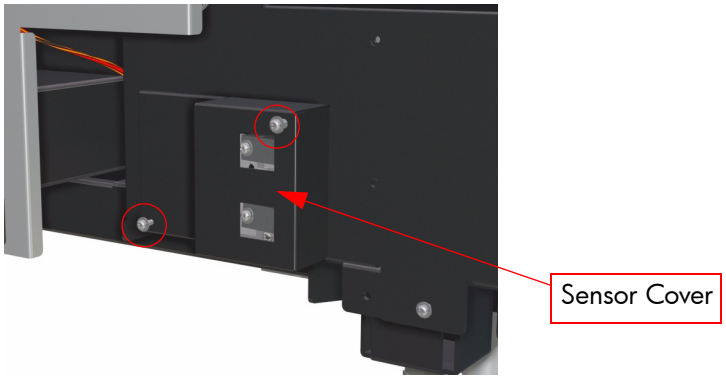
7 Turn the adjusting screw (clockwise) a further **1.25 times**.

8 Check that the Media Slack Sensor (lower sensor) receives the light (the red LED light is ON) and connect the connector of the light emission unit of the Media End Sensor (upper sensor).



9 Adjust the direction of the light from the light emission unit of the Media End Sensor ⇒ Page *5-33*.

10 Install the Sensor Cover and secure with two screws.



If the Sensors do not work correctly during the adjustment, you should double check that the Sensors have been installed and connected correctly ⇒ Page *8-220*.

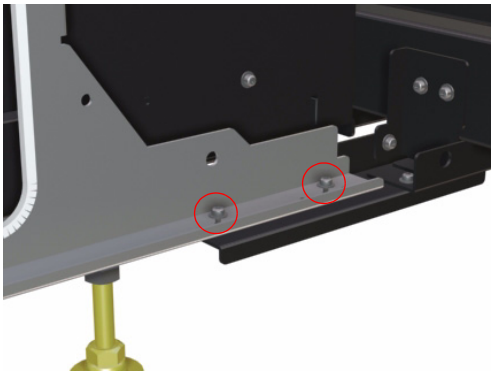
Take-Up-Reel Sensors Adjustment

This adjustment is necessary to adjust the direction of the light received by the light receiving units (upper and lower limit sensors) of the Take-Up-Reel Sensor (located on the Take-Up-Reel side). This adjustment must be performed whenever:

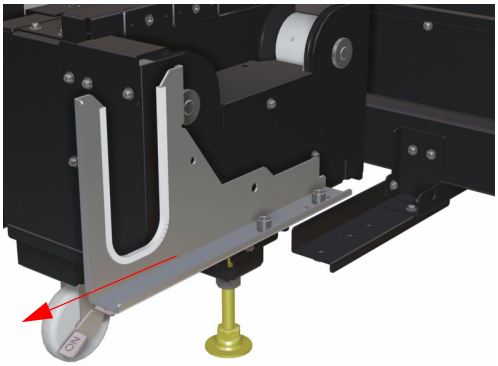
- Take-Up-Reel Sensor is disassembled or replaced.

Perform the Take-Up-Reel Sensors Adjustment as follows:

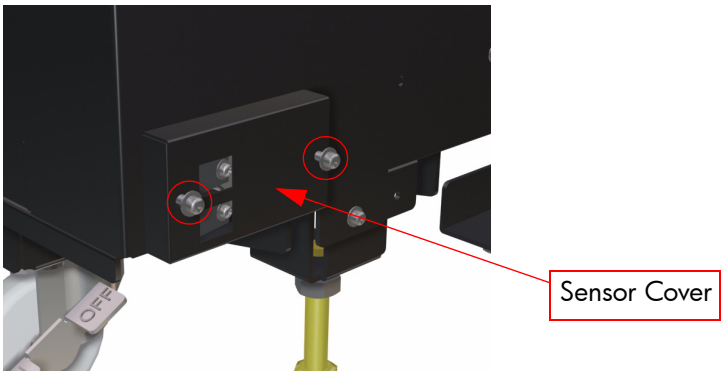
1. Remove the Main Scroller from the Take-Up-Reel side.
2. Remove the two screws that secure the Tension Bar Guide.



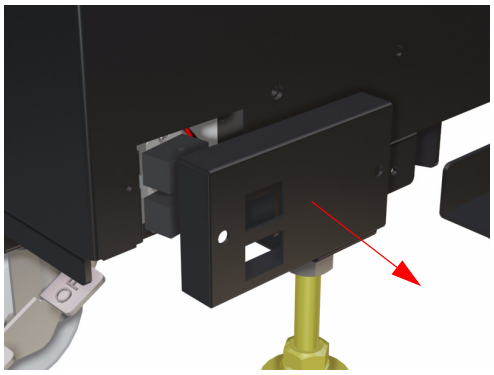
3. Remove the Tension Bar Guide from the Take-Up-Reel side.



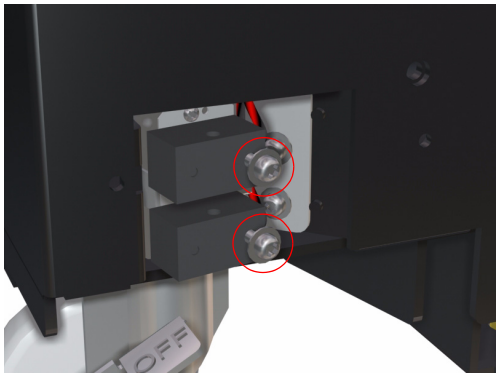
4. Remove two screws that secure the Sensor Cover on the Take-Up-Reel Unit.



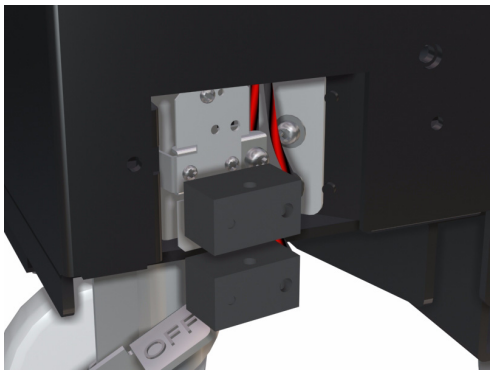
5 Remove the Sensor Cover from the light receiving units on the Take-Up-Reel Unit.



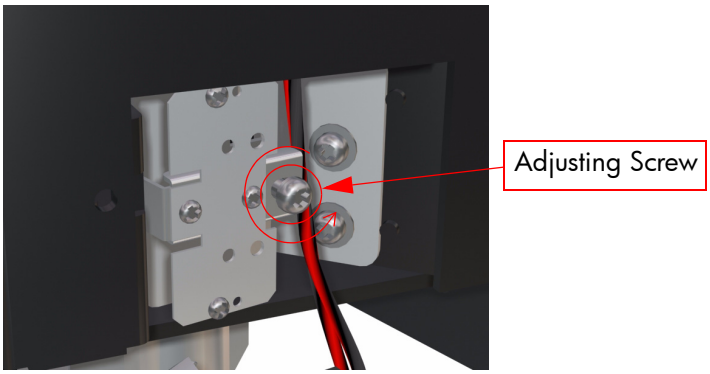
6 Remove the two screws that secure the upper and lower light receiving units to the Take-Up-Reel Unit.



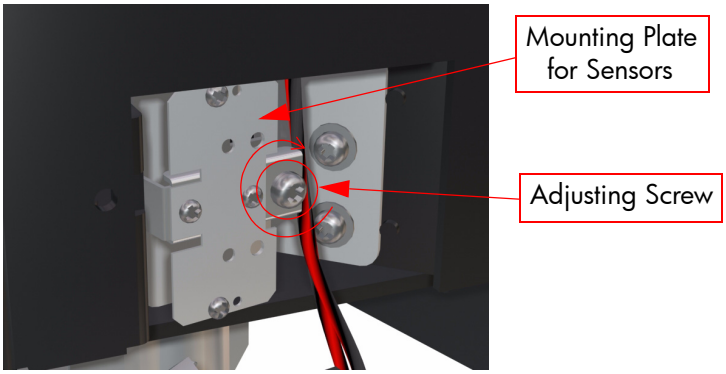
7 Remove the upper and lower light receiving units from the Take-Up-Reel Unit (there is no need to disconnect them).



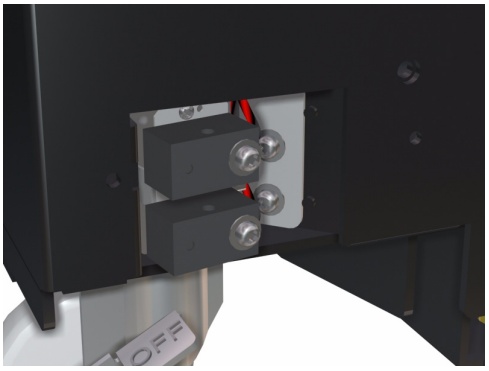
8 Loosen the adjusting screw (turn it counter-clockwise).



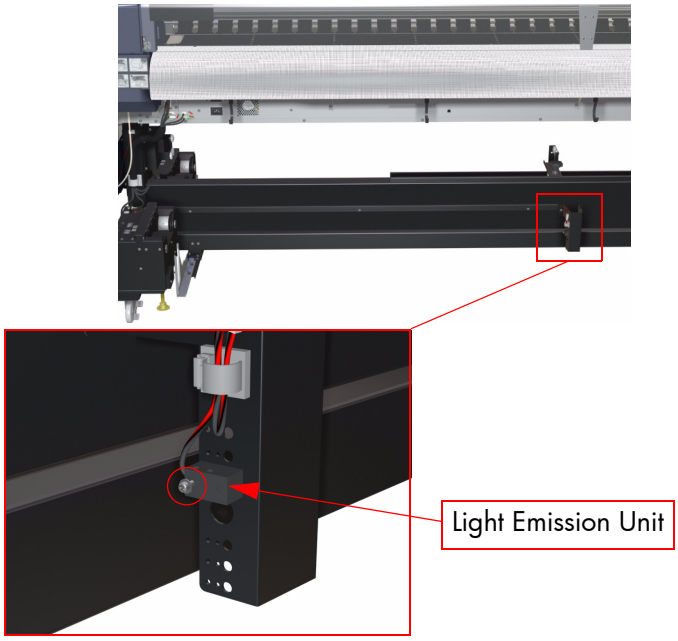
9 Tighten the adjusting screw (clockwise) gradually and then give it one full turn when the Mounting Plate for the Sensors begins to move (starts to bend).



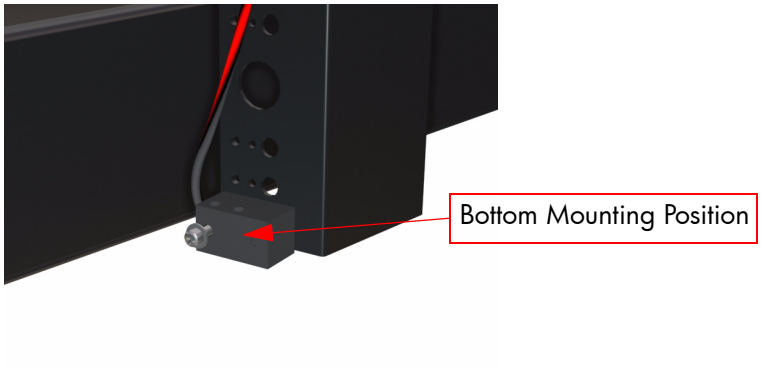
10 Re-install the upper and lower light receiving units onto the Take-Up-Reel Unit and secure with the two screws.



11 Remove the screw that secures the Light Emission Unit to the Mounting Bracket.



12 Install the Light Emission Unit on the bottom hole of the Mounting Bracket.

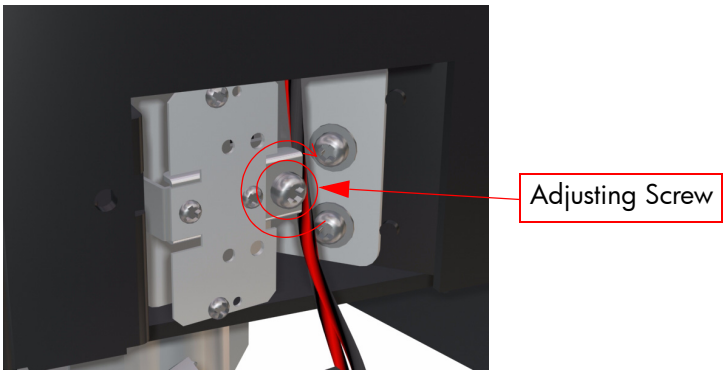


13 Enter into the Maintenance Mode ⇒ Page *4-7* or with the Printer power Off, press the **Cancel** and **Shift** keys and Power On button (this is useful if you cannot enter the Maintenance Mode because no media is loaded). Enter the password when requested: ◀, ▶, **Shift** and **OK**.

14 Enter into the "TUR Sensors" Menu (⇒ Page *4-62*) and check that both the upper and lower limit sensors receive the light (the red LED lights).

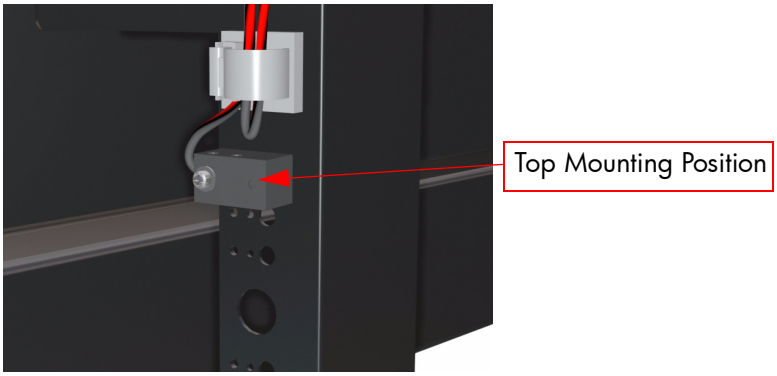
- For the Upper Sensor, the Front Panel will indicate **1** when it is receiving the red LED light and **0** when it is not receiving it.
- For the Lower Sensor, the Front Panel will indicate **0** when it is receiving the red LED light and **1** when it is not receiving it.

15 If the light is **not** received, adjust the sensor(s) by tightening the adjusting screw (clockwise) by **0.25** of a turn.



16 Repeat steps **14** and **15** until the light is received.

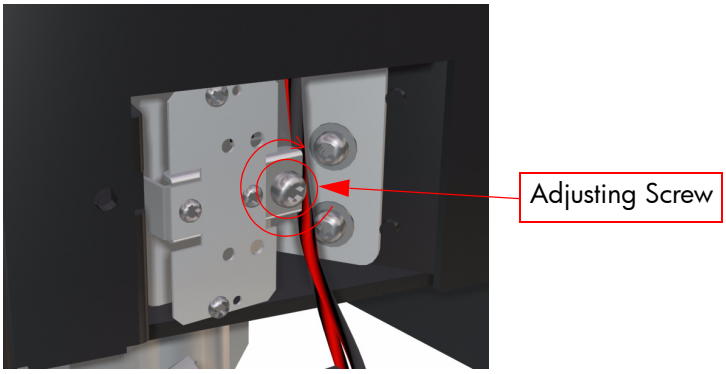
17 Remove the Light Emission Unit and install it on the top hole of the Mounting Bracket.



18 Using the "TUR Sensors" Menu (⇒ Page *4-62*), check that both the upper and lower limit sensors receive the light (the red LED lights).

- For the Upper Sensor, the Front Panel will indicate **1** when it is receiving the red LED light and **0** when it is not receiving it.
- For the Lower Sensor, the Front Panel will indicate **0** when it is receiving the red LED light and **1** when it is not receiving it.

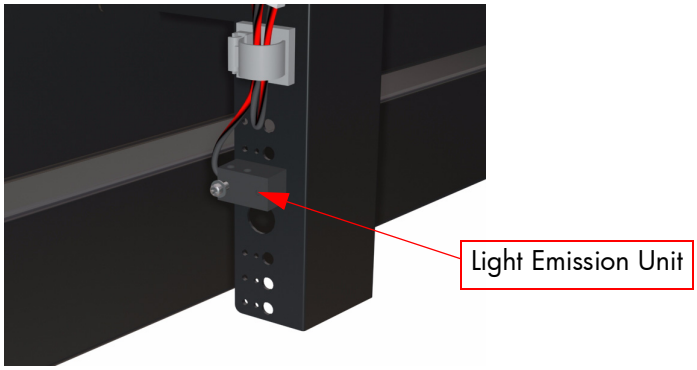
19 If the light is **not** received, adjust the sensor(s) by tightening the adjusting screw (clockwise) by **0.25** of a turn.



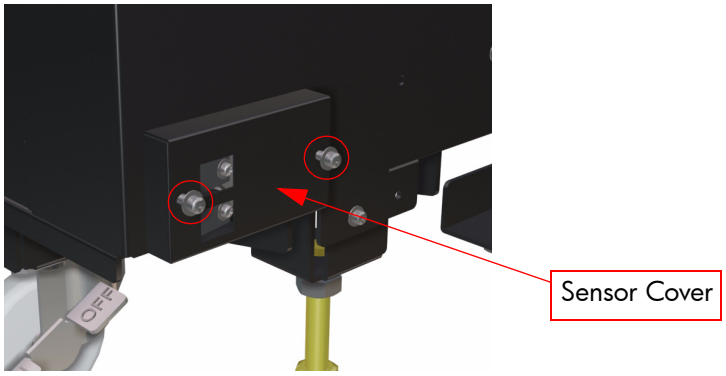
20 Repeat steps **18** and **19** until the light is received.

21 Repeat steps **11** to **20** so that the Light Emission Unit of both the upper and lower limit sensors can receive the light irrespective of it's mounting position (either at the top or the bottom) on the Mounting Bracket.

22 Remove the light emission unit of the Take-Up-reel Sensor and install it on the third hole (from the top) of the Mounting Bracket.



23 Install the Sensor Cover and secure with two screws.



If the Sensors do not work correctly during the adjustment, you should double check that the Sensors have been installed and connected correctly ⇒ **Page *8-220*.**

Platen Flatness Measurement and Adjustment

This measurement and adjustment is necessary to ensure that the center Platen is completely flat (within given tolerances). The flatness of the Center Platen should first be measured to check if it is out of the given tolerances, and only then should it be adjusted.

This adjustment must be performed whenever:

- Center Platen or Media Drive Roller is disassembled or replaced.
- There is a higher level of ink spray due to Center Platen not being flat.

Using the Carriage Height Tools to Measure Platen Flatness

Before ordering the Platen Flatness Adjustment Tools to measure the Platen Flatness, it is possible to use the Carriage Height Adjustment Tools to measure the Platen Flatness along the Printer. You should refer to Page *5-5* for more detailed information on how to perform the Carriage Height Adjustment.

1. Check the Carriage height along the complete Center Platen in every screw position (11 positions in total) starting from the Capping side.
2. You should only measure one side of the Carriage (positions 1 and 3), so there is no need to measure positions 2 and 4. Include the values measured in a table as shown below.

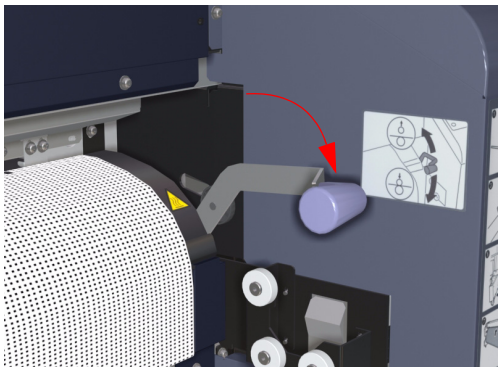
	1	2	3	4	5	6	7	8	9	10	11
Pos 1	6.0	6.2	6.1	6.3	6.1	6.2	6.2	6.1	6.2	6.2	6.1
Pos 3	6.5	6.6	6.4	6.7	6.5	6.4	6.6	6.7	6.5	6.6	6.5

3. For each row, take the minimum and maximum value and check that the difference between them is less than 0.4 mm (400 μm). For example, using the values for Position 1, row 1 has the lowest value (6.0 mm) and row 4 has the highest value (6.3 mm), so the difference between the two is 0.3 mm (300 μm) - this is within the tolerance range of 0.4 mm (400 μm).
4. If the Carriage Height is out of the tolerance range, then you must order the Platen Flatness Adjustment Tools and perform the Platen Flatness adjustment.
5. The part number for the Platen Flatness Adjustment Tools is Q6693-60037 and includes the following parts:
   - Flatness Measurement Gauge.
   - Dummy Heater Sensor.
   - Set of Shims:
     - 30 Shims 0.1 mm (100 μm).
     - 30 Shims 0.2 mm (200 μm).
     - 15 Shims 0.1 mm (100 μm).
     - 15 Shims 0.2 mm (200 μm).

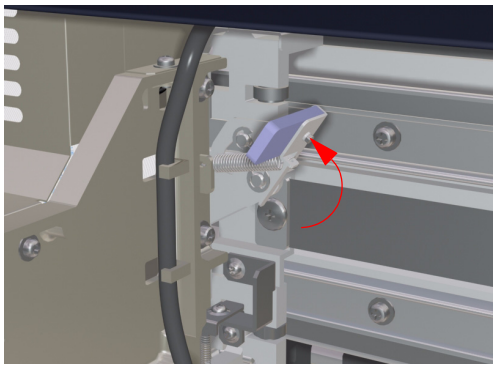
Platen Flatness Measurement

Perform the Platen Flatness Measurement as follows:

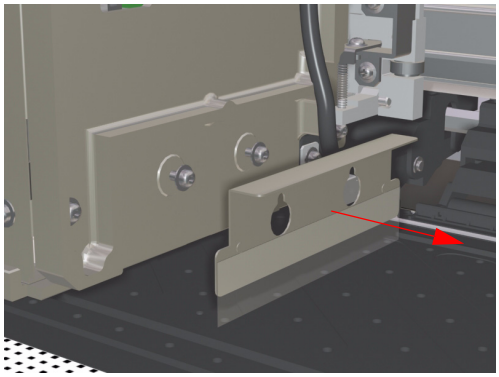
1. Turn On the Printer in the Maintenance Mode by pressing the **Cancel** and **Shift** keys and Power On button. Enter the password when requested: ◀, ▶, **Shift** and **OK**.
2. Make sure that the Media Load Lever is in the lower position.



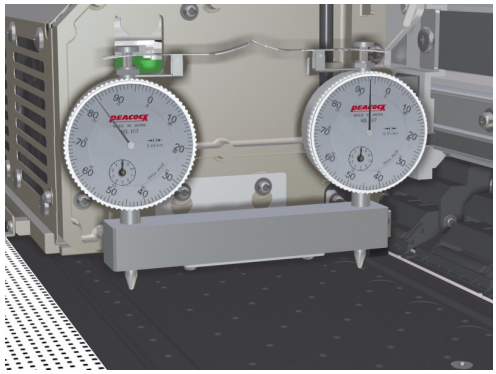
3. Make sure that the Media Pressure Lever is set in the "Normal" position.
4. Open the Rear Cover, Capping Door and the Wiping Door.
5. Make sure that the Printhead Height Lever is in the **upper** position (so that the Printhead height is actually in the **lower** position). Make sure you loosen the two Printhead Height Adjustment screws before trying to change the position of the Printhead Height Lever and make sure you tighten the screws after changing the Printhead Height.



6. Loosen the two screws and remove the Carriage Shields from the Carriage Assembly (from the right hand side).



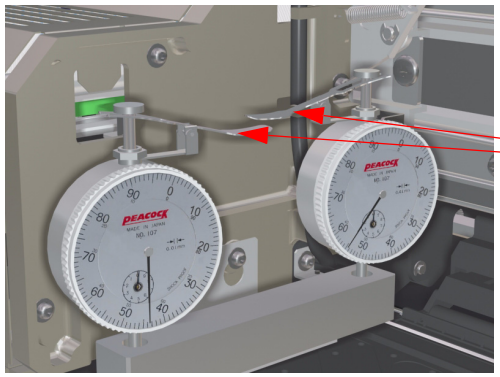
7 Install the Flatness Measurement Gauge onto the Carriage Assembly (reusing the two screws used for the Carriage Shield). Make sure you tighten the two screws so that the Gauge is securely positioned.



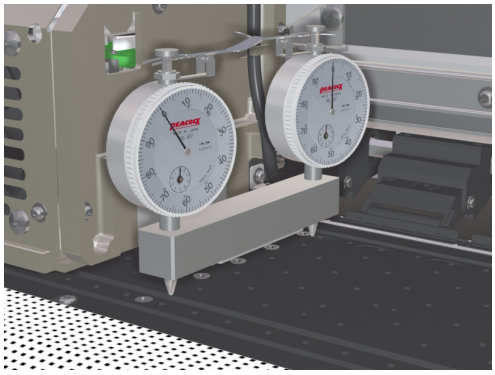
8 Enter the Heater Panel Maintenance Mode and the activate the Heater Test ⇒ Page *4-95*. Set the temperature of the Heaters at 45°C (Front), 40°C (Center) and 45°C (Rear).

Make sure you wait at least 30 minutes so that the temperature of the Heaters become stable. While waiting make sure Carriage is capped so that the Printheads do not dry out.

9 Uncap the Carriage and move it to the 6th screw position on the center Platen. While moving the Carriage, make sure you press down both handles of the Flatness Measurement Gauge so that the measurement pins are raised.



10 At the 6th screw position, adjust the dials of the Flatness Measurement Gauge so that the scale is set at **zero**.

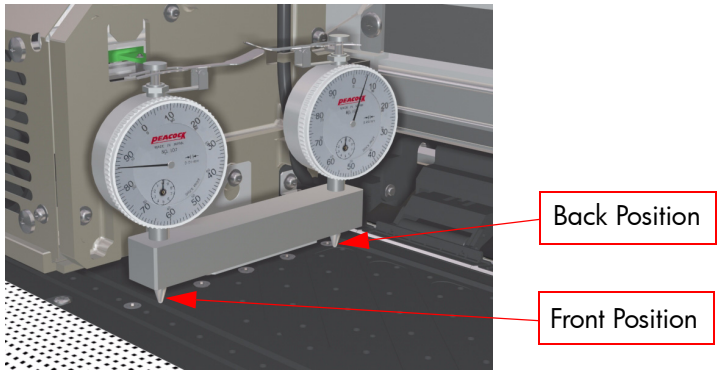


Make sure that the measurement pins are not positioned directly over the screws when adjusting the dials to zero.

11 Measure the Center Platen in every screw position (11 positions in total) starting from the Capping side.

When measuring the Center Platen, make sure you to do not place anything heavy on top of the center Platen. Also make sure you do not lean on the Center Platen as this could affect the final values.

12 When measuring each screw position, note the value of the Back and Front positions on a piece of paper.



13 Before noting the values, make sure you multiply the read values by 10. For example, if the needle moves counter-clockwise to 85, this should be read as a value of -15 (negative value). This should then be multiplied by 10, which

will give you a final value of -150 µm. This is an example of how to note down the values on a piece of paper:

	1	2	3	4	5	6	7	8	9	10	11
Front	-130	-110	-60	-110	+110	-120	-100	-110	-180	-70	-110
Back	-170	-270	-180	-140	+140	-30	-10	-90	-110	-110	-40

Make sure you correctly note the values of the Platen Flatness. If the needle on the gauge moves clockwise, this will be a positive value (+) and if the needle moves counter-clockwise, then this will be a negative value (-).

14 Once all the screw positions have been measured, you will need to verify that they are within the range of the accepted tolerance (400 µm).

- You will need to check the difference between the row with the highest value and the row with the lowest value to ensure that the difference is less than 300 µm. For example, using the Front Values, row 9 has the lowest value (-180) and row 5 has the highest value (+110), so the difference between the two is 290 µm - this is within the tolerance range of 400 µm.
- To give you an example of a Platen that is out of the accepted range, take a look at the Back Values in the above table. Row 2 has the lowest value (-270) and row 5 has the highest value (+140), so the difference between the two is 410 µm - this is out of the tolerance range of 400 µm. To resolve this problem, you would need to add a large Shim 0.2 mm (200 µm) at the back part of the Center Platen at row 2.

15 If all of the positions of the Platen are within the accepted range, then you can remove the Flatness Measurement Gauge and reinstall the Carriage Shield(s).

If any of the positions of the Platen are out of the accepted tolerance range, then you will need to adjust the Platen Flatness.

16 Turn Off the printer.

Platen Flatness Adjustment

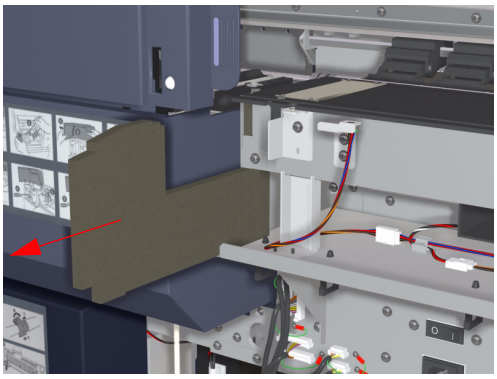
Perform the Platen Flatness Adjustment as follows:

1 Move the Carriage to the Capping Station turn Off the Printer from the switch at the rear of the Printer (if not already done so).

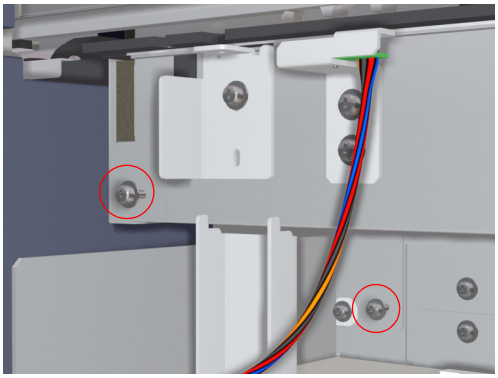
Make sure you leave the Carriage uncapped.

2 Remove the Rear Heater ⇒ Page *8-32*.

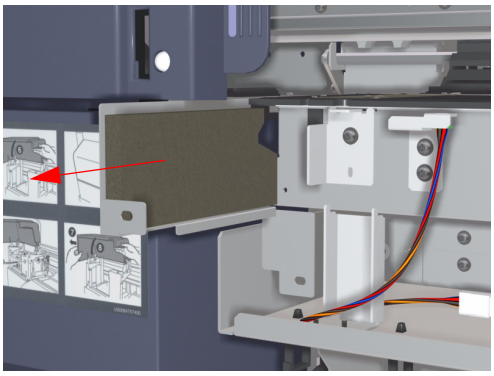
3 Remove the sponges from both ends of the Printer.



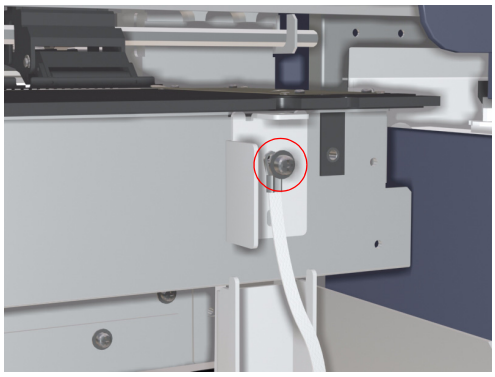
4 Remove two screws that secure the Sponge Plate (from both ends of the Printer).



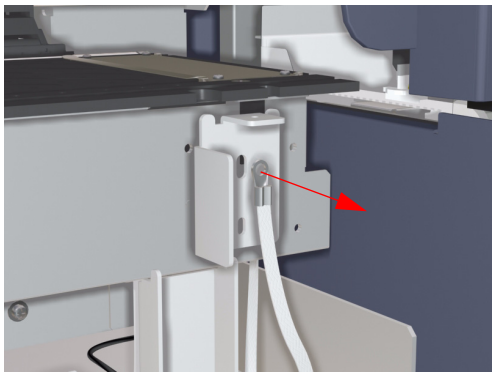
5 Remove the Sponge Plates from both ends of the Printer.



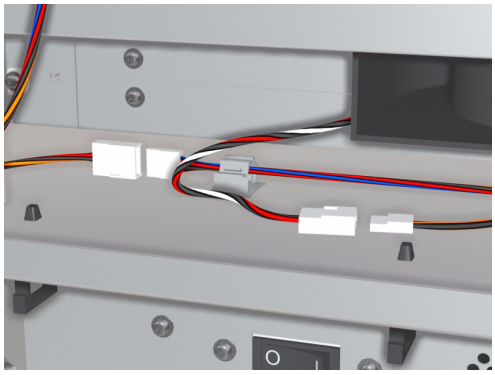
6 Remove one screw that secures the Grounding Strip and Bracket at the wiping end of the Printer. Remove the Bracket from the Printer.



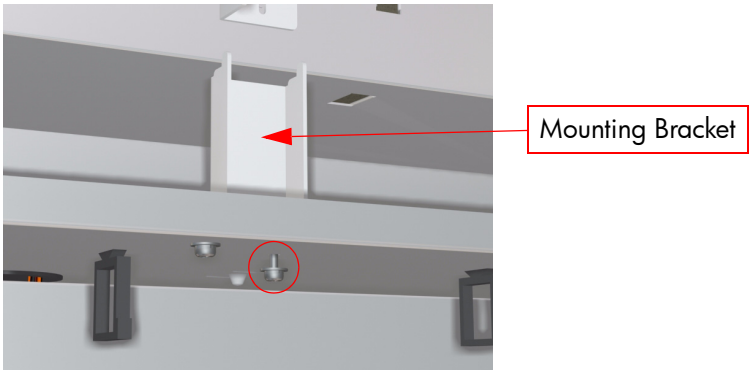
7 Release the Grounding Strip and remove the Bracket from the Printer.



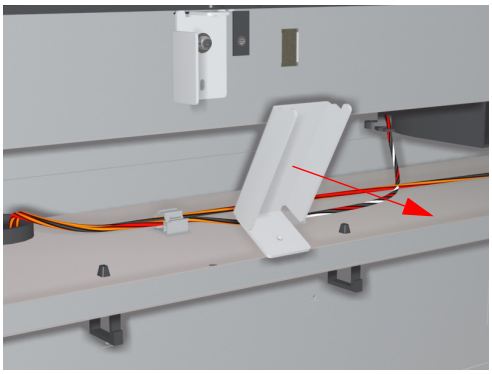
8 Disconnect the connectors from ALL the Vacuum Fans and from the Media Sensor.



9 Remove the screws securing the 5 Mounting Brackets.



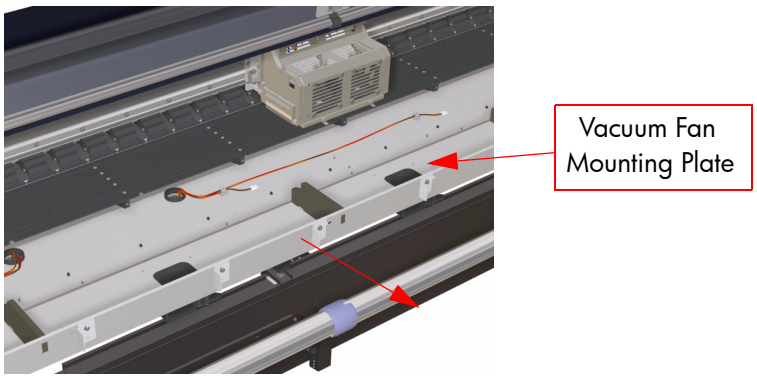
10 Remove the five Mounting Brackets from the Printer.



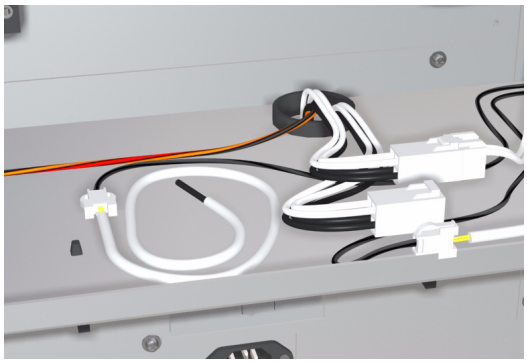
11 Disconnect the connectors of the Heater Power Supply and the Temperature Sensor for the Center Platen.

12 Remove ALL the screws that secure the Vacuum Fan Mounting Plate.

13 Remove the Vacuum Fan Mounting Plate from the Printer.



14 Connect the connectors of the Heater Power Supply and the Temperature Sensor for the Center Platen. Also connect a Dummy Sensor to the connector of the Temperature Sensor for the Rear Heater.



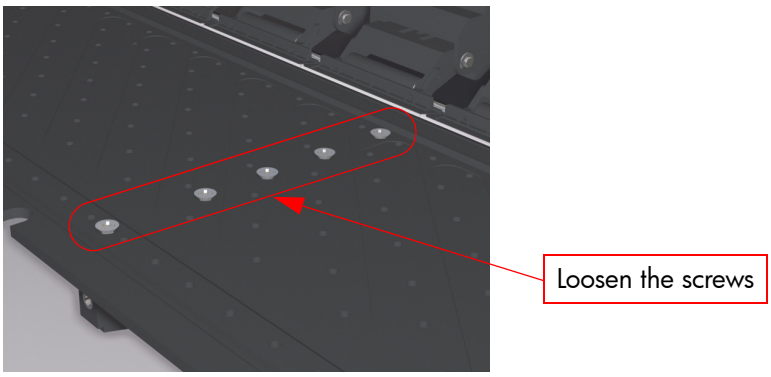
15 Turn On the Printer.

A System Error Code will appear on the Front Panel because the Vacuum Fans have been disconnected, but this can be ignored.

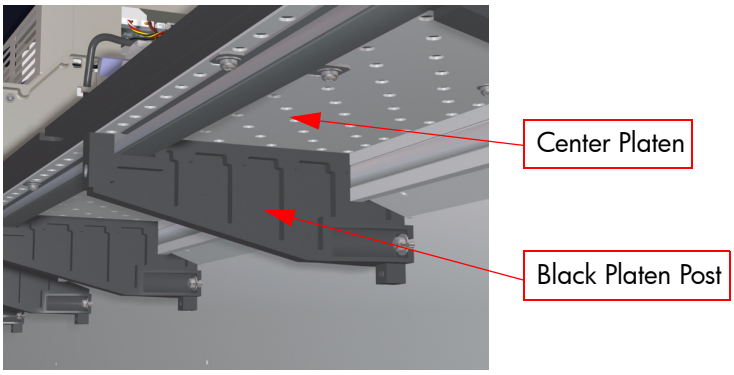
16 Enter the Heater Panel Maintenance Mode and the activate the Heater Test ⇒ Page *4-95*. Set the temperature of the Heaters at 45°C (Front), 40°C (Center) and 45°C (Rear).

Make sure you wait at least 30 minutes so that the temperature of the Heaters become stable. While waiting make sure Carriage is capped so that the Printheads do not dry out.

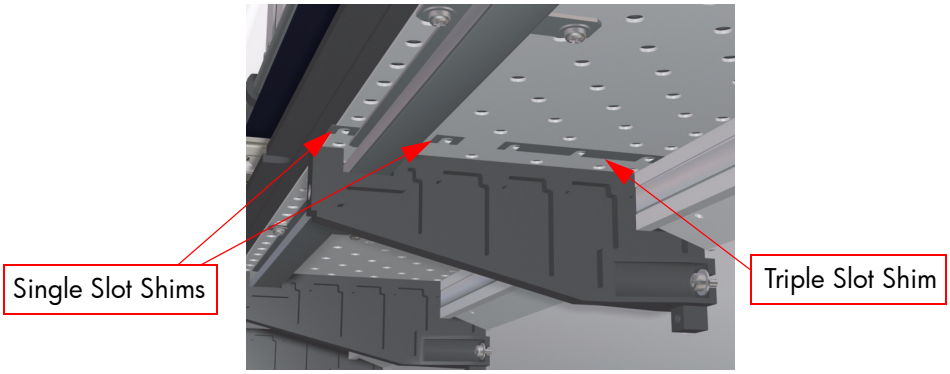
17 Locate the screw position that was out of the accepted tolerance range and loosen the five screws.



18 Adjust the gap between the Black Platen Post and the Center Platen by adding or removing Shims until it is within a range of 200 µm. Using the example on Page *5-50*, row 2 on the Back part of the Center Platen needed to be adjusted. A Shim of 0.1 mm (100 µm) could be enough to bring the row within the accepted tolerance range of 300 µm, but it is best to always use the 0.2 mm (200 µm) Shim so that the Platen Flatness is well below the accepted tolerance range and is below or very close to a range of 200 µm.



19 The single slot (small) Shims should be used in the front two screw positions and the triple slot (large) Shims should be used in the rear three screw positions.



20 After adding the Shims, measure the screw position that was out of the accepted range again to ensure that the gap is within a range of 200 µm. If the gap is still out of range, then you will need to repeat this procedure.

21 Turn Off the Printer from the switch at the rear of the Printer.

22 Reinstall the following components that were removed:

- Vacuum Fan Mounting Plate (reconnect ALL connectors).
- Five Mounting Brackets.
- Grounding Strip and Bracket.

When installing the Bracket, make sure there is a small gap between the Bracket and the Center Platen.

- Sponge Plates from each end of the Printer.
- Sponges from each end of the Printer.

Make sure you reconnect ALL connectors that you had disconnected during the removal of these components.

23 Remove the Dummy Sensor and re-install the Rear Heater.

24 Measure the flatness of the Center Platen again ⇒ Page *5-45*.

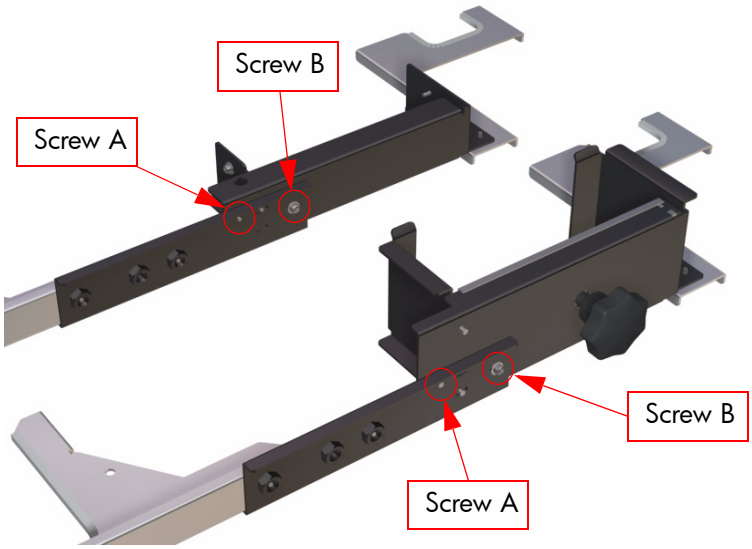
Tension Bar Guides Adjustment

This adjustment must be performed whenever:

- Tension Bar Guides are disassembled or replaced.
- Take-Up Reel is causing the Media to be skewed.

Perform the Tension Bar Guides Adjustment as follows:

1. Remove both the Tension Bar Guides from the Printer.
2. Loosen screws A and B and adjust the Tension Bar Guides so that they are of equal length.



3. Tighten the screws once the Tension Bar Guides have been adjusted.
4. Reinstall the Tension Bar Guides back onto the Printer.

Wiping Position Calibration

This calibration must be performed whenever:

- Wiping Station is disassembled or replaced.
- Wiper Blade is disassembled or replaced.
- Wiper Belts are disassembled or replaced.

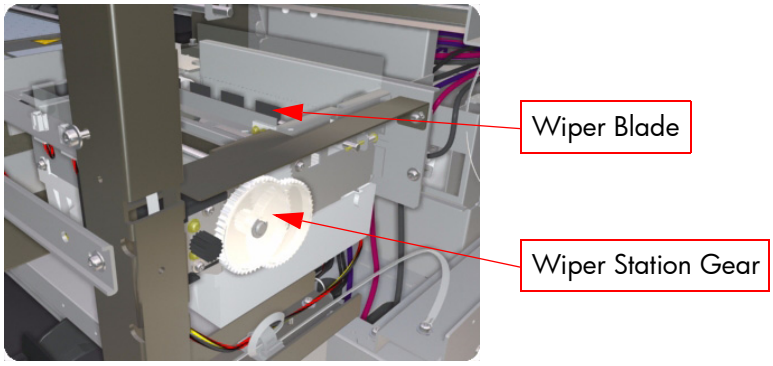
Perform the Wiping Position Calibration as follows:

1. Enter into the Maintenance Mode ⇒ Page *4-7*.
2. Move the Carriage Assembly to the Wiping Station ⇒ Page *4-19*.
3. Enter into the "Wipe Position" Menu ⇒ Page *4-14*.

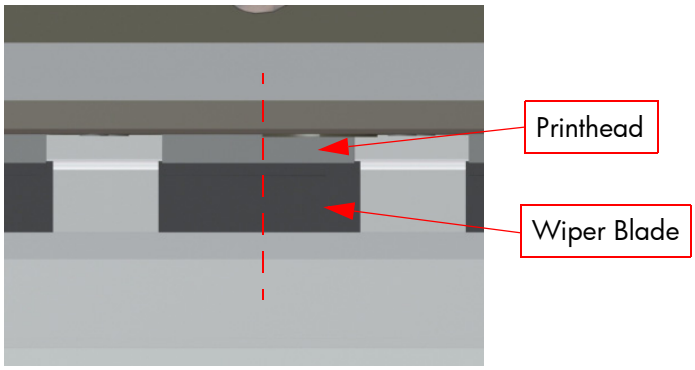
```
# WIPE POSITION
> +0.0 mm
```

This adjustment must be performed when the Carriage is at the Wiping Station. Do NOT move the Carriage when the Wiper Blade is raised as this could damage the Printheads.

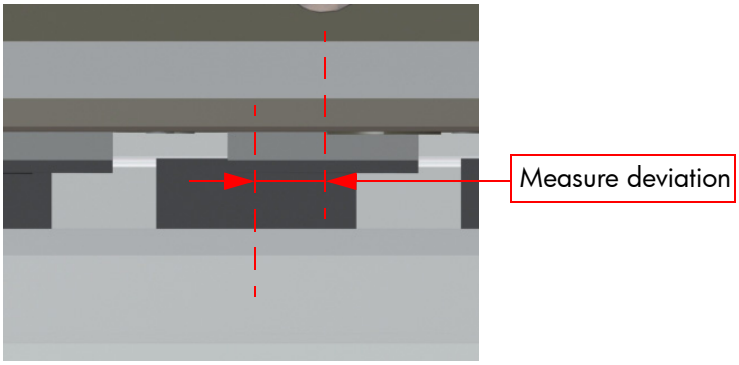
4. Manually rotate the Wiper Blade using the Wiping Station Gear until the Wiper Blade touches the Printheads (image is shown without the Carriage positioned in the Wiping Station). Remove the necessary covers in order to get access to the Wiping Station Gear.



5. Check that the center of the Wiper Blades are aligned with the center of the Printheads.

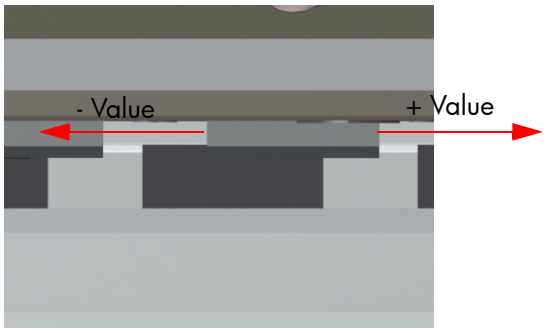


6 If the center of the Wiper Blades are **not** aligned with the center of the Printheads, you will need to visually estimate the deviation between the Wiper Blades and the Printheads.



7 Manually rotate the Wiper Blades using the Wiping Station Gear so that the Wiper Blades are lowered and **not** touching the Printheads.

8 Enter the deviation measured using the ▲ and ▼ keys to change the digits and the ◀ and ▶ keys to select the digits. If the Printheads are on the right side of the Wiper Blades, then enter a - value, and if the Printheads are on the left side of the Wiper Blades, then enter a + value.



9 Press the **OK** key once you have entered the deviation value.

10 Check again that the center of the Wiper Blades are aligned with the center of the Printheads. If they are still not aligned, then repeat the procedure from step 4.

11 Once the Wiping position is aligned, clean the edges of the Wiper Blades with a swab dipped in Wiping Liquid.

Capping Position Calibration

This calibration must be performed whenever:

- Capping Station is disassembled or replaced.
- Capping Unit is disassembled or replaced.

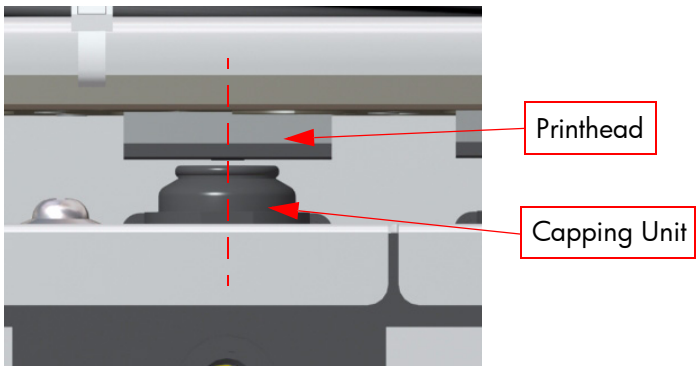
Perform the Capping Position Calibration as follows:

1. Enter into the Maintenance Mode ⇒ Page *4-7*.
2. Move the Carriage Assembly to the Capping Station (if not already at the Capping Station) ⇒ Page *4-19*.
3. If the Printheads are capped, uncap them ⇒ Page *4-46*.
4. Enter into the "Cap Position" Menu ⇒ Page *4-13*.

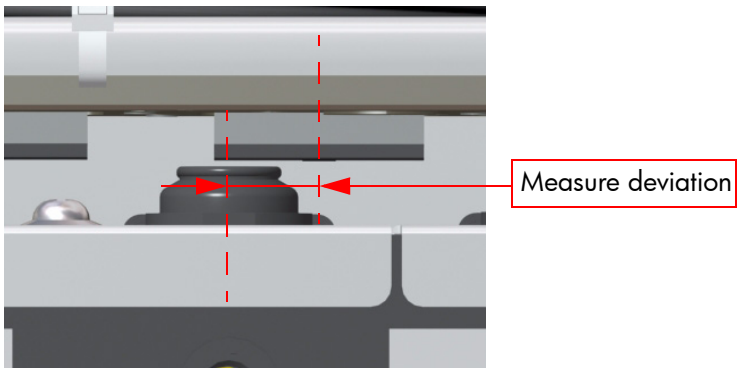
```
# CAP POSITION
> +0.0 mm
```

This adjustment must be performed when the Printheads have been uncapped. Do NOT move the Carriage when the Printheads are capped as this could damage the Printheads.

5. Visually check that the center of the Capping Units are aligned with the center of the Printheads.

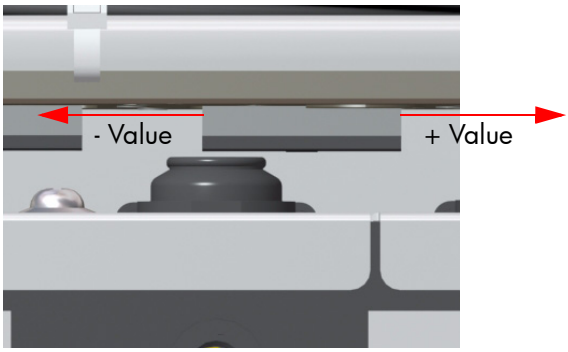


6. If the center of the Capping Units are **not** aligned with the center of the Printheads, you will need to visually estimate the deviation between the Capping Units and the Printheads.



7 Enter the deviation measured using the ▲ and ▼ keys to change the digits and the ◀ and ▶ keys to select the digits. If the Printheads are on the right side of the Capping Units, then enter a - value, and if the Printheads are on the left side of the Capping, then enter a + value.

```
# CAP POSITION
* +0.3 mm
```



The value of the Cap Position should never be set as 0.0 mm as this means that the Cap Position has not been adjusted and will not work.

8 Press the **OK** key once you have entered the deviation value.

9 Open the Rear Cover and close it again so that the Carriage adjusts itself in relation to the Capping Station.

10 Check again that the center of the Capping Units are aligned with the center of the Printheads. If they are still not aligned, then repeat the procedure from step 6.

11 Once the Capping position is aligned, move the Carriage Assembly to the Home Position ⇒ Page *4-19* or power Off and On the Printer.

Line Sensor Calibration (Side Margin)

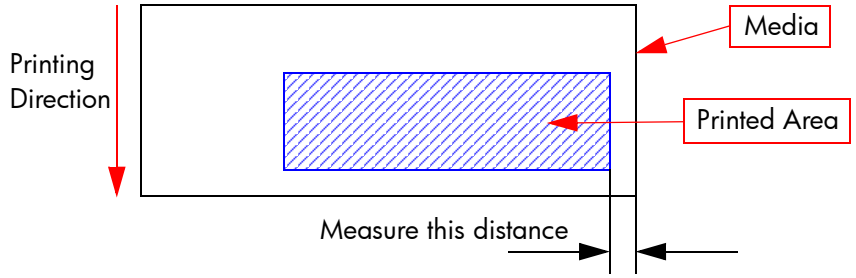
This calibration allows you to correct the value for the side margin position.

This calibration must be performed whenever:

- Line Sensor is disassembled or replaced.
- Black Printhead is disassembled or replaced.

Perform the Side Margin Position Calibration as follows:

1. Before unloading the Media, cut the leading edge (front edge) of the media in a straight line (use the Center Platen as a reference if necessary). If the Media is not cut straight, the measurement that you make later will be incorrect.
2. In the User's Menu, enter into the "Media Reg" menu and select the "Leading Edge" option and set it to "Reduced".
3. Unload the Media and load it again into the Printer (just lifting and lowering the Media Lever should be enough). When requested, make sure that you select the same Media for which you defined the "Reduced" setting.
4. The Media will retract until the Line Sensor detects the front margin.
5. Enter into the Maintenance Mode ⇒ Page *4-7*.
6. Print the Adjust Pattern ⇒ Page *4-10*.
7. Measure the side margin using a ruler. If the distance measured is more or less than 15 mm, then the side margin value will need to be changed.



8. Enter into the "LS Adj Side Val" Menu ⇒ Page *4-15*.

```
# LS ADJ SIDE VAL
> +0.0 mm
```

9. Determine the side margin value to be entered by subtracting the distance measured from the specified side margin value of 15 mm. For example, if the distance measured was 17 mm, then you subtract 17 mm from 15 mm and you get a result of +2 mm. If the distance measured was 12 mm, then you subtract 12 mm from 15 mm and you get a result of -3 mm.
10. Enter the side margin value using the ▲ and ▼ keys to change the digits and the ◀ and ▶ keys to select the digits.

```
# LS ADJ SIDE VAL
* +3.0 mm
```

11. Press the **OK** key once you have entered the side margin value.

Line Sensor Calibration (Top Margin)

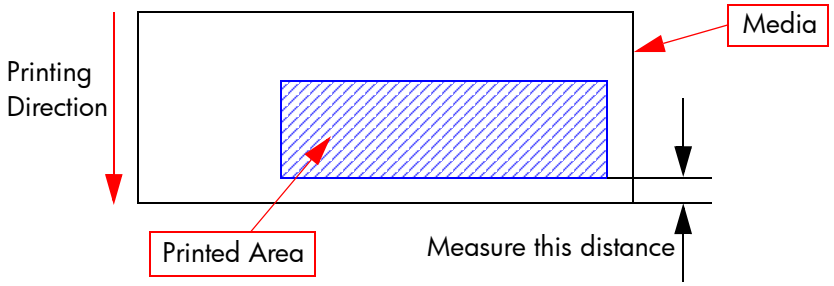
This calibration allows you to correct the value for the top margin position.

This calibration must be performed whenever:

- Line Sensor is disassembled or replaced.
- Black Printhead is disassembled or replaced.

Perform the Top Margin Position Calibration as follows:

1. Before unloading the Media, cut the leading edge (front edge) of the media in a straight line (use the Center Platen as a reference if necessary). If the Media is not cut straight, the measurement that you make later will be incorrect.
2. In the User's Menu, enter into the "Media Reg" menu and select the "Leading Edge" option and set it to "Reduced".
3. Unload the Media and load it again into the Printer (just lifting and lowering the Media Lever should be enough). When requested, make sure that you select the same Media for which you defined the "Reduced" setting.
4. The Media will retract until the Line Sensor detects the front margin.
5. Enter into the Maintenance Mode ⇒ Page *4-7*.
6. Print the Adjust Pattern ⇒ Page *4-10*.
7. Measure the top margin using a ruler. If the distance measured is more or less than 15 mm, then the top margin value will need to be changed.



8. Enter into the "LS Adj Top Val" Menu ⇒ Page *4-14*.

```
# LS ADJ TOP VAL
> +0.0 mm
```

9. Determine the top margin value to be entered by subtracting the distance measured from the specified top margin value of 5 mm. For example, if the distance measured was 18 mm, then you subtract 18 mm from 15 mm and you get a result of +3 mm. If the distance measured was 13 mm, then you subtract 13 mm from 15 mm and you get a result of -2 mm.
10. Enter the top margin value using the ▲ and ▼ keys to change the digits and the ◀ and ▶ keys to select the digits.

```
# LS ADJ TOP VAL
* +2.0 mm
```

11. Press the **OK** key once you have entered the top margin value.
12. Reselect the "Leading Edge" option and set it back to "Normal".

Print Quality 6

Print Quality

Print Quality Troubleshooting Actions

For some Print Quality problems, a Call Agent can try and troubleshoot the Printer by requesting the Customer to perform certain actions. Using this process, most problems can be resolved without the need of an on-site visit.

When faced with a Print Quality problem, perform the following actions in order to resolve the problem:

1. Printer Configuration:
   - Check that the **media type** selected in the Front Panel is the same as the media type loaded into the Printer.
   - Make sure that the correct adjustments have been made for each media.
2. Perform the Printhead Recovery procedure.
3. Media:
   - Select the correct media type through the front panel when loading it.
   - Make sure that HP or HP-approved media is being used.
4. Check that original HP Ink Cartridges are being used in the Printer.
5. Check that the "Ink Charge Done" option is set to "Yes" - (Maintenance Mode: *PH. Main* > *Ink Charge Done* > *Yes*). If this option is set to "No", the Printer will not perform any of the automatic Printhead Maintenance tasks.
6. Check if the latest version of the firmware is installed. If not, install the latest firmware revision.
7. For further information, refer directly to the Troubleshooting section that covers the different Print Quality problems.

Print Quality General Advice

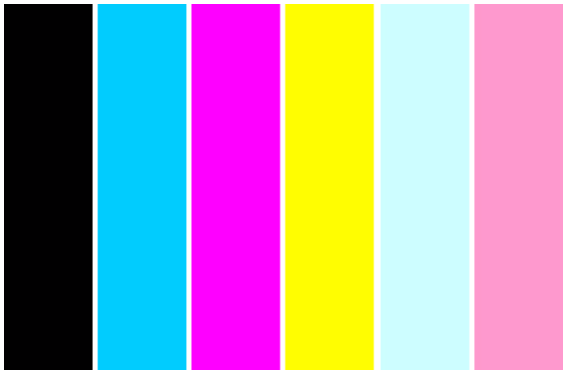
1. Performing the Daily Maintenance ensures that the Printheads stay in a good condition and the nozzles don't get blocked.
2. Make sure that the **media type** selected in the Front Panel is the same as the media type loaded into the Printer.
3. Roll media usually gives better Print Quality than a single sheet of the same type of media.
4. The most appropriate print quality settings must be used for the current purpose.

Check that the environmental conditions (temperature, humidity) are within the temperature/humidity range as specified for the Printer (refer to the User's Guide for further information).

5. Remember that certain print quality problems can be solved by:
   - Performing the Printhead Recovery procedure.
   - Adjusting the Media Advance.

Using the IQ Print to Troubleshoot

The IQ Print can be used to check for Print Quality problems (like banding) and can be used to isolate the root cause of the problem.



1 When the "Printer Ready" message appears on the Front Panel, press the **Online** key to take the Printer offline.

PRINTER READY
ROLL: 64/PAPER

2 When the following screen is displayed on the Front Panel, press the **Shift** key twice.

▲INK	MEDIA REG▼
◀MEDIA	M.ADV▶

3 When the following screen is displayed on the Front Panel, press the ◀ key to enter into the Adjust Menu.

▲PRINTER	SETUP▼
◀ADJUST	

4 In the Adjust submenu, scroll to "Test Prints" and press the **OK** key.

TEST PRINTS
> IQ PRINT

5 In the Test Prints submenu, scroll to "IQ Print" and press the **OK** key.

TEST PRINTS
* IQ PRINT

6 You will need to confirm that you want to print the IQ Print by pressing the **OK** key.

TEST PRINTS
* IQ PRINT OK?

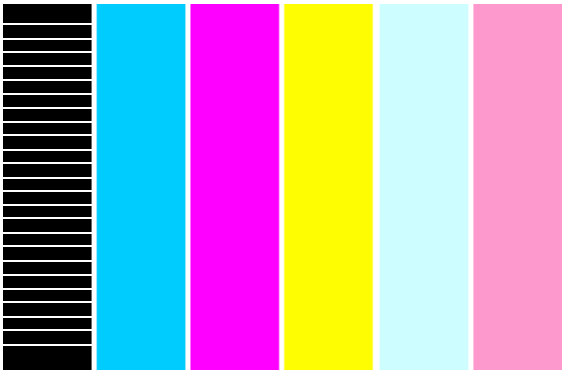
7 The Printer will start to print the IQ Print and the following message will appear on the Front Panel.

```
# TEST PRINTS
* EXECUTING
```

If problems are found in the Test print, try the following:

Banding in One or Several Colors

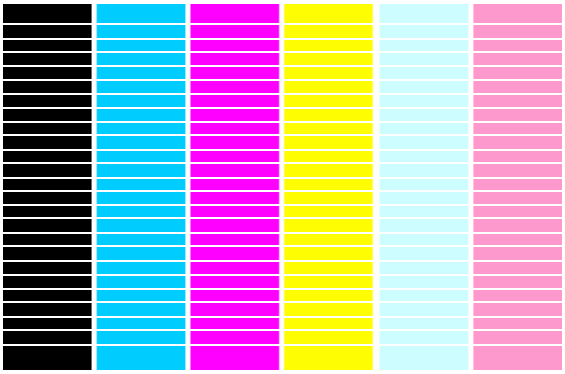
If the problem detected is banding in one or several colors, it is more than likely that the nozzles are either blocked or misfiring.



In this situation it is recommended to perform the Printhead Recovery procedure ⇒ Refer to the User's Guide.

Banding in ALL the Colors

If the problem detected is banding across ALL the colors, it is more than likely that the feed adjust is not correct for the media currently loaded.



In this situation it is recommended to perform the Media Advance adjustment on the media that is currently being used ⇒ Refer to the User's Guide.

Troubleshooting Print Quality Problems

Horizontal Lines Across the Image (Banding)

Description of problem

When you look at the image you have printed, there are horizontal lines across the image. Shown below is an example of what you might see if you have this problem:

Corrective Action

1. Check that the appropriate print quality settings are being used and reprint the image.
2. If not already done so, perform the Printhead Recovery procedure and reprint the image with the same settings as before.
3. Perform the Media Advance adjustment on the media that is currently being used ⇒ Refer to the User's Guide.
4. Check the temperature of the Heaters to make sure that they are not set too high (high temperatures could cause the media to become sticky). If necessary, lower the temperature of the Heaters and reprint the image.
5. Print the Nozzle Check Pattern (⇒ Page *4-18*) to verify if any Printhead Nozzle are missing. If any missing nozzles cannot be recovered, the failing Printhead may need to be replaced.
6. If banding occurs unevenly across the printed image, this could be caused by the misalignment between the Drive Unit and the Idle Unit (either on the TUR side or the Media Feed side). To correct this problem, perform the Media Feed and Take-Up-Reel Unit Adjustment (⇒ Page *5-30*).
7. Check that the "Ink Charge Done" option is set to "Yes" - (Maintenance Mode: *PH. Main* > *Ink Charge Done* > *Yes*). If this option is set to "No", the Printer will not perform any of automatic Printhead Maintenance tasks.

Images are Blurred

Description of problem

This problem is often caused by incorrect adjustment of the Bi-directional print position causing the image or text to look blurred.

Corrective Action

1. Use the Printer in an environment that is less humid.
2. Make sure that the **media type** selected in the Front Panel is the same as the media type loaded into the Printer.
3. Check the temperature of the Heaters to make sure that they are not set too high. If necessary, lower the temperature of the Heaters and reprint the image.
4. Perform the Bi-Directional Print Position Correction.

Bleeding, Repelling or Mottling Problems

Description of problem

The problems can be described as follows:

- Ink Bleeding can spoil the sharpness of the image and cause the text to be blurred.
- Ink Repelling can cause the lines to be dotty or uneven.
- Ink Mottling can cause dark lines in high density prints.

Corrective Action

1. Try printing using a higher quality print mode.
2. Check the temperature of the Heaters to make sure that they are not set too high. If necessary, lower the temperature of the Heaters and reprint the image (if you see mottling when using lower temperatures, it is best to raise the temperature).

Image is Completely Blank or Faded

Corrective Action

1. There might be a problem between the Printer and Computer. Check the cable between the computer and the Printer to make sure it is not damaged and is connected correctly.
2. Check the data file that was sent to print.
3. Make sure that the **media type** selected in the Front Panel is the same as the media type loaded into the Printer.
4. Check that the room temperature is higher than 20°C and make sure that you leave the Printer to warm up sufficiently.

Print Quality is only guaranteed in a temperature range of between 20°C to 25°C.

Output Only Contains a Partial Print

Corrective Action

1. There might be a problem between the Printer and Computer. Check the cable between the computer and the Printer to make sure it is not damaged and is connected correctly.
2. There might be foreign objects attached to the Printhead. Perform the Printhead Recovery procedure and reprint the image.
3. If cleaning the Printheads does NOT solve the problem, then the nozzles might be blocked. Perform the Wash Printheads procedure (refer to the User's Guide) and reprint image.

The Printer Area is Stained

Corrective Action

1. Check if the Carriage Shields are covered in ink. If the Carriage Shields are covered in ink, then try to clean them with a cloth.
2. Check if the Carriage Shields are correctly positioned because they could be installed too low. If necessary, adjust the Carriage Shields ⇒ Page *5-29*.
3. Check if the leading edge of the media is curled. If it is curled, cut off the leading edge before printing.
4. Check if the media is wrinkled. If it is wrinkled, advance the media and cut off the part of the media that is wrinkled.
5. Make sure that the **media type** selected in the Front Panel is the same as the media type loaded into the Printer.
6. Make sure that the Center Platen is not stained with ink since this could be transferred to the printed image.

Part of Image is Missing at the Start of the Print

Corrective Action

1. There might be a problem between the Printer and Computer. Check the cable between the computer and the Printer to make sure it is not damaged and is connected correctly.
2. Make sure that the environmental conditions (temperature, humidity) are within the temperature/humidity range as specified for the Printer (refer to the User's Guide for further information).

Print Quality is not Improved After Printhead Recovery

Corrective Action

1. Perform the Daily Maintenance procedure (⇒ Page *9-3*).
2. Repeat the Printhead Recovery procedure (⇒ Page *9-11*) and reprint the image.
3. Print the Nozzle Check pattern and check if there any nozzles missing. If there are several nozzles missing and the Printhead Recovery procedure has not improved the print quality, then it might be necessary to replace the failing Printhead.

Color Density Irregularities at the Edges of the Media

Corrective Action

1. Check the temperature of the Heaters to make sure that they are not set too low. If necessary, raise the temperature of the Heaters and reprint the image.
2. If raising the temperature of the heaters does not solve the problem, it is recommended to use the Offset Media Loading option to reload the media (refer to the User's Guide for further information).

Ink Overspray

Under certain conditions, the printer might spray an excessive amount ink from one printhead. This occurrence is called overspray.

OK

Too much ink spray

Corrective Action

1 Adjust the printhead carriage height.

Overspray can occur for a number of reasons. However, the most common reason is that the printhead carriage height is set too high, creating too much space between the nozzle plate and the media.

For detailed information on carriage height adjustment, see Page *5-5*. If overspray persists after adjusting the carriage height, try the following remedies.

2 Calibrate the printhead carriage and the printheads.

- Bi-directional calibration: There are two bi-directional calibrations. Perform one or the other based on the print mode, as described below.

Make sure to perform the bi-directional calibration with the carriage set to the correct height position. Bi-directional calibration should be performed whenever the carriage height is adjusted.

  - BIDIRECTIONAL DEF: Select this calibration option for all print modes except the FINE DRAFT print mode. For more information on bi-directional calibration, see Page *4-22*.

    Selecting the BIDIRECTIONAL DEF calibration while printing with the print mode set to FINE DRAFT will result in overspray.

  - BIDIRECTIONAL F.D: Select this calibration option if you are using the FINE DRAFT print mode. For more information on bi-directional calibration, see Page *4-22*.

- Printhead calibration: There are two printhead calibrations to be performed.
  - PH ROW: This calibration option is used to adjust the left and right position of each printhead.
  - PH to PH: This calibration option is used to adjust the printhead position in the main scanning direction of each head.

If overspray persists after performing the calibrations, perform the following corrective action procedures.

3 Perform mechanical calibrations.

If you think the printheads might not be correctly positioned, try the following remedies:

- Perform a mechanical printhead-position calibration ⇒ Page *3-2*.
- Perform a printhead capping limit adjustment ⇒ Page *5-27*.
- Perform a capping station height adjustment ⇒ Page *5-25*.

4 Adjust the print mode

Overspray is more likely to occur when using the FINE DRAFT print mode, because the printhead carriage moves much faster than when using other print modes. If you have performed the printer calibrations and the overspray problem persists, try using another print mode.

5 Ink temperature

Overspray and other image-quality issues can occur if the temperature of the ink inside the printhead is too high or too low. The temperature of the ink can be affected by the following conditions:

- Environment conditions: The printer should be used within the environmental parameters specified below.
  - Temperature: 15 C to 30 C (59 F to 86 F)
  - Humidity: 30% to 70%

For optimal print quality, operate the printer at environmental temperatures between 20-25C (68-77F). If environmental temperatures fall below 20C (68F), printing speed might be reduced to maintain adequate print quality.

If the printer is not used within the specified operating temperature and humidity ranges, print time can be lengthened or printing might be interrupted, and print quality is likely to deteriorate.

6 Printhead voltage

Make sure that the voltage settings in the printer's EEROM match the voltage marked on the printhead label. You can tune the voltages by 1 or 2V and see if overspray is corrected.

Never set the voltage more than 2V over the voltage marked on the printhead label. Doing so may permanently damage the printhead.

For more information on environmental conditions specifications, refer to the User's Guide.

Intermittent Misalignment Between Colors in Bi-directional Print Modes

How to detect miss-alignment between colors in bi-directional print modes when printing:

1. Some of the vertical thin lines look doubled.
2. In some of the text, the borders of the letters seem fuzzy.

Cause:

1. The bi-directional calibration has not been performed sufficiently or at all. In this case, the mis-alignment should be visible along the entire print platen.
2. During the print, some bubbles of media form on the print platen. If it's a thin vertical line, or if text is printed on the bubbles, the image quality is bad.

Corrective Action

1. Perform the bi-directional calibration.

   Hint: When looking at the yellow in the calibration it can be difficult to see, we recommend shining a blue light on the yellow part of the calibration to increase the visibility of the lines.

   From the front panel, enter in ◀ PH.ADJ -> #PH ADJ PRINTS

   Select one of the following:

   BIDIRECTION DEF if using a bi-directional print mode (except for fine draft (540*720, 4 pass).

   BIDIRECTION F.D if using the fine draft print mode (540*720, 4 pass).

   Before starting to print the calibration patterns, make sure that there are no bubbles on the media.

   Enter the corresponding values under: ◀ PH.ADJ -> BI–DEF/L XXXXXX, BI–DEF/R XXXXXX, BI–F.D/L XXXXXX, BI–F.D/R XXXXXX

   These values will be valid only for the media type which is currently loaded. If you want to have the same values applied for another media type, re-enter the same values under MEDIA-REG, set the media type that you want to set correctly, and set the corresponding values (these entries are also available within MEDIA_REG menu).

2. If there are a few bubbles forming intermittently, try to reduce the formation of the bubbles by trying the following settings:
   - Set the media pressure to low (this seems to have a high success rate).
   - Alter the temperature settings.
   - Reduce the weight of the tension bars within the slack part of the media.
3. In case the customer is using the print mode 'Fine draft' (540*720) 4pass (equivalent name in the ONYX RIP: 'DRAFT NORMAL'), we recommend

using another 4 pass print mode, such as FAST (input res 360*360) 4pass (equivalent name from ONYX RIP: 'Normal Low Res') or NORMAL 4pass 720*720.

The reason for this is when using the 540*720 print mode, the carriage speed is 20-30% faster than any other print mode, and so is more sensitive to any bubbles that may be on the media or any variation of thickness of the media.

4 In order to help troubleshoot this intermittent miss-alignment, there is an internal plot which can help. This internal plot prints thin vertical lines (1 dot) along the complete width of the media, with the colors and the print mode that you select. This plot is accessible only from the maintenance mode.

Printing the Plot (Manufacturing Pattern 3)

1 From the maintenance mode, select ▲ MNFG-PRN -> MNFG PATTERN 3.

2 Here are the meanings of the different settings (to enter a sub-menu, do not press ENTER, but press the right arrow key, this is a different behavior than the standard menu):

- **Direction**: select UNI for Unidirectional printing or BI for Bidirectional printing.
- **Each Color:** K, ... Lm set to ON/OFF: You select each color that you want to print, can be only one or more than one color. To detect media that is uneven, we recommend selecting black color only (default) as the lines are more visible.
- **Mode:** Here is the table with the corresponding print mode names on the front panel:
  - 070410: 720 dpi, 4-pass, NORMAL
  - 070810: 720 dpi, 8-pass, H-QUALITY
  - 070811: 720 dpi, 8-pass, H-DENSITY
  - 071212: 720 dpi, 12-pass, 3TIMES (*)
  - 071610: 720 dpi, 16-pass, H-QUALITY2
  - 071611: 720 dpi, 16-pass, H-DENSITY2
  - 030210: 360 dpi, 2-pass, DRAFT
  - 030410: 360 dpi, 4-pass, FAST
  - 030810: 360 dpi, 8-pass, F-H-QUALITY (*)
  - 030811: 360 dpi, 8-pass, F-H-DENSITY (*)
  - 031212: 360 dpi, 12-pass, F-3TIMES (*)
  - 031610: 360 dpi, 16-pass, F-H-QUAL2 (*)
  - 031611: 360 dpi, 16-pass, F-H-DENS2 (*)
  - 050410: 540 dpi, 4-pass, FINE DRAFT

(*): Print mode only available on the HP Designjet 10000s.

- **Length:**, Enter the length of the test plot, in mm, default length: 40cm (around 16 inches)
- **Count:** Number of times you want to print this plot.
- **Execute:** To start the print.

Intermittent Nozzles out in the Printer

The printer's image quality can be affected because of the printhead having intermittently nozzles out. The problem may occur after having printed a few meters without any problems. The problem can occur every few days or once a week. If you perform the printhead cleaning procedure the problem can come back once again.

Troubleshooting the problem over the telephone

1. Check that there are the side colored bars on the printed media.
2. Set **Media Reg > Head Motion > Image Gradient > Highlight**. The objective of this is that the printer will do a kind of 'shaking of the printhead', however this will reduce the throughput by around 15%.
3. Set **Media Reg > #Ph Rest Period > 1110**, and set **Media Reg > #PH Rest Time** >**1 sec** (mainly when printing long plots). With this setting, every 10 meters* of media printed, the carriage will go into the CAP position and will empty the CAP and stay there for 1 second.
4. Set the **Media Reg > #Ph Rest Period > 0110**, and set **Media Reg > #PH Rest Time** > **10 seconds**. With this setting, every 1 meter* of media printed, the carriage will go into CAP position, will empty the CAP and stay in the CAP position for 10 second (the temperature should then decrease).
5. Perform the "**Charge Ink System**" procedure, this is to ensure that there are no bubbles in the ink system.

*Assumption is that the print mode is 4 passes bidirectional. If the print mode is 4 passes unidirectional or 8 passes bidirectional, then divide the length by 2.

When the issue cannot be solved over the phone and the solution requires a visit, the onsite engineer can perform the following:

1. Perform the above troubleshooting by telephone.
2. In the **Maintenance** menu, check that the following is set: **PH Main > Ink Charge Done > Yes.** If it was set to **No**, there will have been no printhead servicing performed (manual or automatic).
3. Ensure that the calibrations of the CAP station and Wipe station have been correctly performed (if one value is set to 0, no capping will be performed).
4. Remove the Carriage PCA in order to access the dampers, and fasten the connectors between the dampers and the tubes. Check the connections between the tubes, printheads and the dampers. Check also on each printhead that the other small tube is correctly installed.
5. Inspect the ink tubes for bubbles or pockets of air, they may not be visible all the time, you can use a torch with a strong light, especially check the ink tubes going into to the printheads, in some cases a bubble can be seen.
6. Check that the reference voltage of each of the printheads (each column) are correctly set, and in line with the marking on each of the printheads.

7. Try modifying the printhead voltage by +/-1V or by +/-2V. Caution: Do not exceed 2V or you could damage the printhead. Try this with only one color, for example the black, and reduce the reference voltage by -1V.
8. Check that there is no accumulation of ink or dirt under the printheads. To check for this you must remove the complete wiping station (removing only the cleaning part is not enough, move the carriage to the wiping station and check if there is ink around the printhead. If there is an accumulation of ink or dirt, perform a printhead wash during an evening/night, or gently remove the accumulation (the actual nozzles on the printhead should not be touched).
9. In one very rare case, we have noticed that the issue has been improved after having replaced the carriage PCA and the Printhead relay board.
10. In case of high level of spray, perform the Carriage Height Adjustment ⇒ Page *5-5*.

Troubleshooting Printhead Problems

If a Print Quality problem occurs, it could be due to a problem with the actual Printheads. Use this checklist to try and resolve any problems with the Printheads:

1. Print the Nozzle Check Pattern (⇒ Page *4-18*) to verify if any Printhead Nozzle are missing. If any missing nozzles cannot be recovered, the failing Printhead may need to be replaced.
2. Is the problem caused by an electrical issue or by the Ink System?
   - If ALL the Printheads are faulty, then this definitely points to an electrical problem. Check all cables connected to the Printheads and from the Carriage PCA to the Main PCA to make sure that they are connected correctly and not damaged.
   - If only one Printhead is faulty, then this points to a Printhead/Ink System or electrical system problem. To check if it is an electrical problem, swap the connector on the faulty Printhead with a connector from a working Printhead. If the Printhead continues to be faulty, then this definitely points to a Printhead Problem.
3. How to check if the Ink System is defective?
   - Verify that the ink is being absorbed. If not, then you will need to check the Capping Station, Capping Unit or Ink Tubes.
   - Verify if there is air in the Ink Tube. If there is air in the Ink Tube, then you will need to refill the sub-tank, replace the Capping Unit, tighten the Tube joints or replace the Printhead.
4. If a Printhead is actually defective.
   - Perform the Printhead Recovery procedure.
   - Perform the Fill Cap procedure.
   - Purge the Ink System ⇒ Page *4-27*.
   - Charge the Ink System with new ink ⇒ Page *4-25*.
5. If a problem occurs due to a Printhead rubbing or a Media crash.
   - Check the Printhead Nozzle plate for any damage.
   - Check the carriage Height and adjust it if necessary ⇒ Page *5-5*.
   - Make sure that the Media is loaded correctly and that the Media Edge Guards are correctly positioned.
   - Check the flatness of the Center Platen and adjust if necessary ⇒ Page *5-45*.
6. If the amount of missing nozzles increases while printing.
   - Check the voltage of the Printhead and if necessary adjust it ⇒ Page *4-23*.
   - Clean any dust that is on the media passing through the Media Feed side.
   - Check for jagged edges on the Media that could cause friction against the Printheads.
   - Clean the Capping Units and the Wiper Blade.
   - Change the settings for the Printhead Cleaning cycle ⇒ **Media Reg Menu** / **PH Cleaning** / **During Print** or **During Print2**.
7. Make sure that there is no ink on the Printhead Connector Cable or the Carriage Cable.